



2141 E BROADWAY ROAD, STE 207
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Design Documents

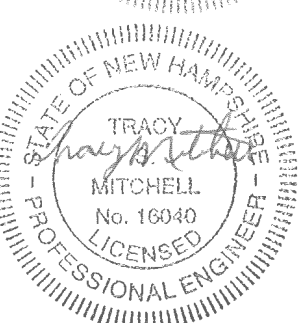
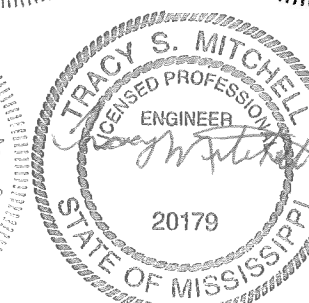
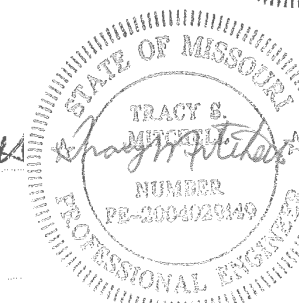
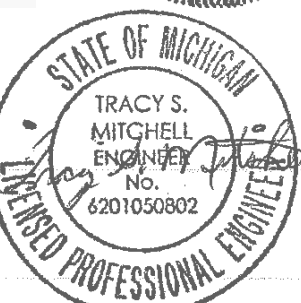
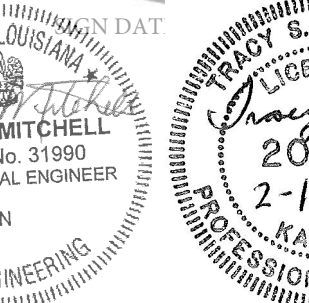
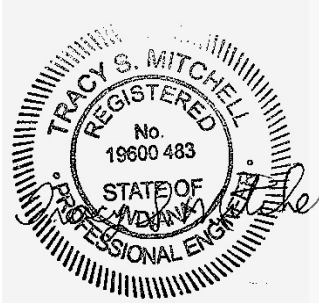
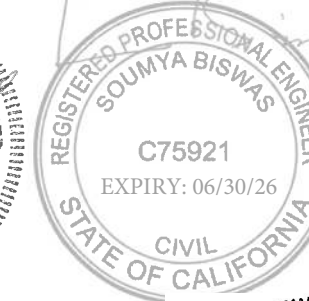
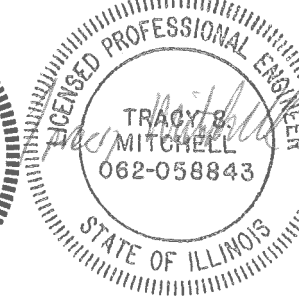
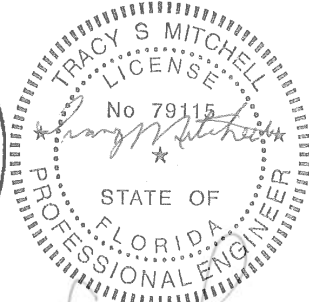
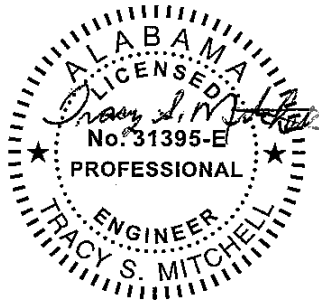
Project:

K2 Ground Mount
Schedule 80 PV Structure

Project No. AZ20170

Date: June 02, 2025

This Document Approved for the below:



This Document is Approved for the State of Arizona



Expiry - 03/31/2027



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4 MODULES 80 SCH.

	GM Solar Shade				
	JOB NAME JOB NO.	→	AZ20170	DATE CHECKER	→ → 05 July 2024 SAM

CRITERIA

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

[A] - **GOVERNING CODE** → IBC 2015, ACI 318-14, ASCE 7-10, CBC 2016 & IBC 2018, ACI 318-14, ASCE 7-16, CBC 2019.

[B] - **MODULE AREA** → 28.125 Square Foot.

[C] - **WIND SPEED (MPH)** → 90,95,100,105,110,115,120,130,140,150 & 160 mph for exposure B & C

[D] - **SNOW LOAD (PSF)** → 0 PSF TO 70 PSF (in increments of 10 psf)

[E] - **TILT ANGLE** → 5 DEGREE TO 35 DEGREE (in increments of 5 Degree)

[F] - **FOUNDATION** → POLE FOOTING

→ HELICAL PILES (US Helicals Cataloge)

→ KRINNER GROUND SCREW

[G] - **SOIL- ASSUMPTION** → **SOIL BEARING**

Bottoms of bearing footings shall bear on Undisturbed Native Soil

(Refer tables for exact pile depths)

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/below natural grade)**

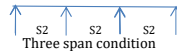
150 psf

→ **Coefficient of friction**

0.25

[H] - **ASSUMPTION**

→ 3" Dia pipe beam (Sch. 80)



→ 3" Dia pipe Column (Sch. 80) → Base fix & Top Free

→ Yield Strss of 3" dia pipe (Sch. 80) - Fy = 35 ksi & Fu = 58 ksi

→ Yield Strss of krinner ground screw- Fy = 35 ksi

→ 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.

[I] - **Pole foundation Assumptions and Limitations:**

→ The references used in the different analysis methods in this program are as follows:-

International Building Code (IBC) 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.

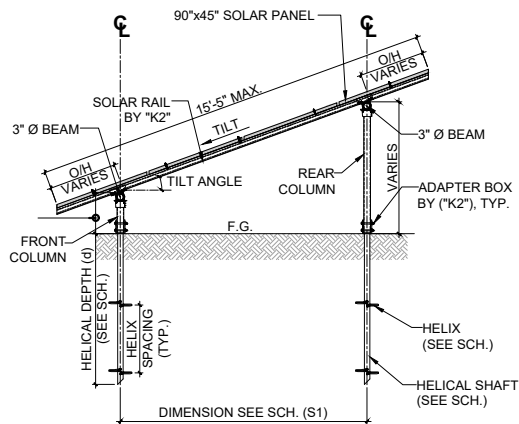
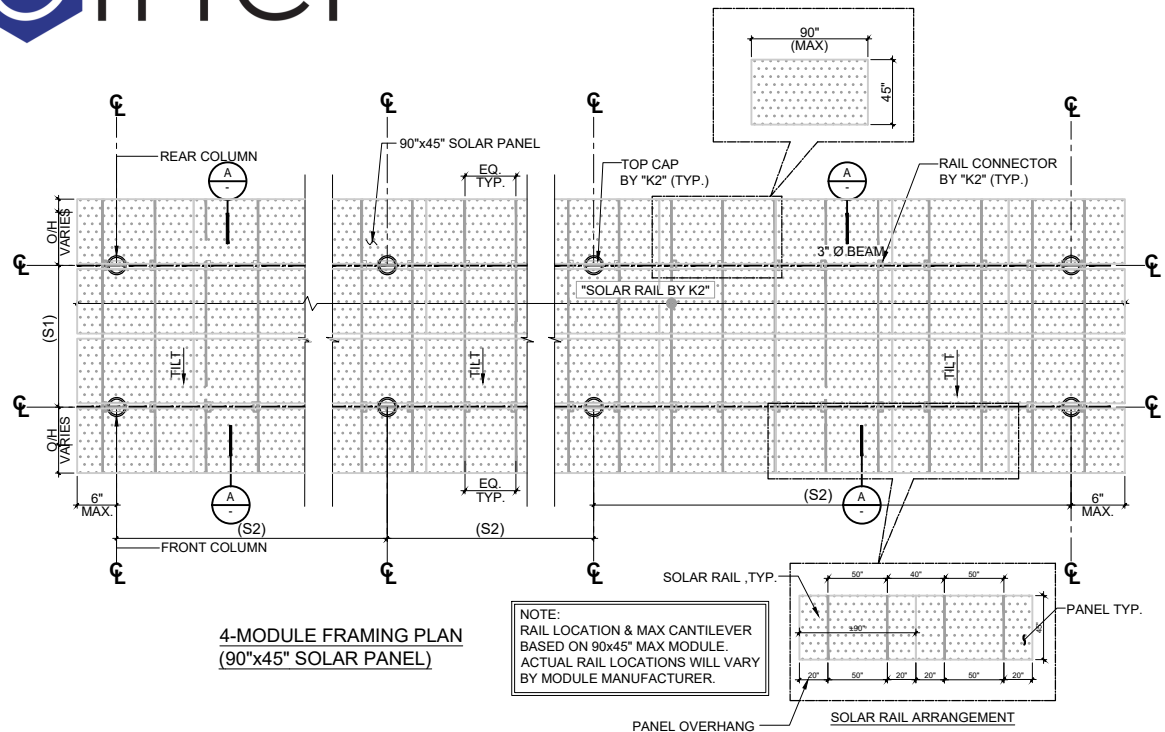
→ This program assumes that the actual resisting surface is at or below the ground surface level.

→ This accounts for any weak soil or any soil which may be removed at the top

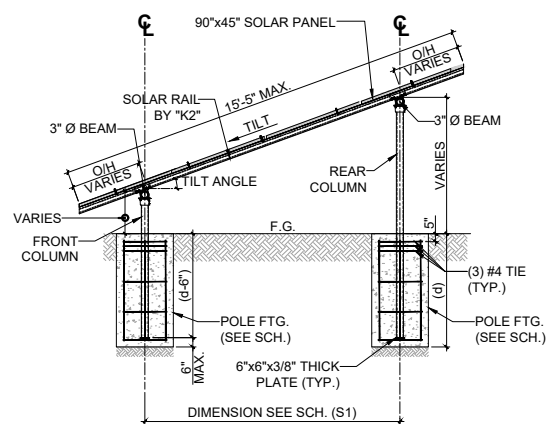
→ Yield strength of 2-7/8" dia piles - Fy = 60 ksi

→ Compression values are based on fully laterally supported piles (full embeded in soil), if not, contact engineer department for calculations.

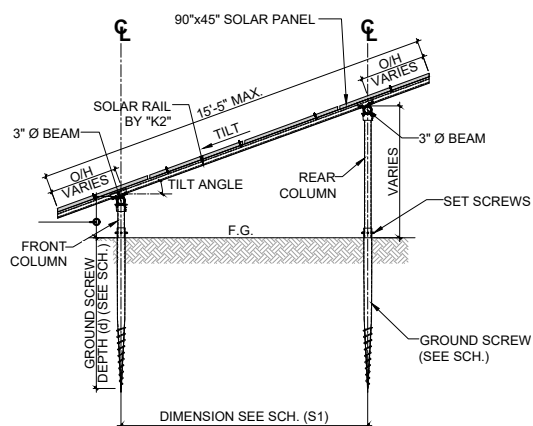
→ All Design performed using ASD Method.



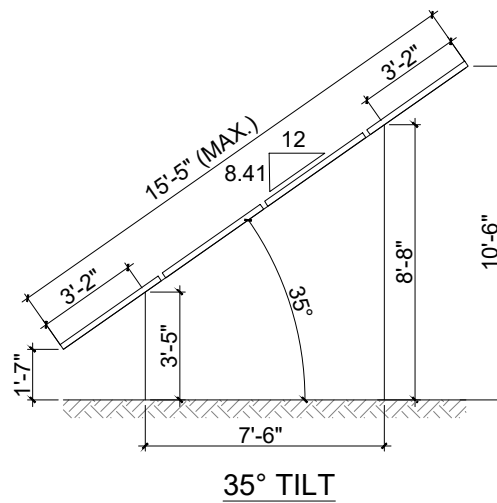
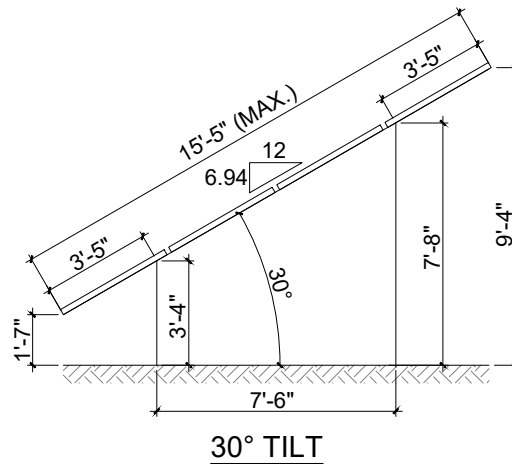
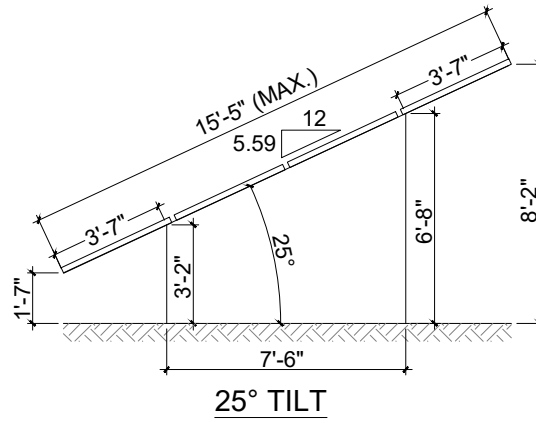
SECTION-'A' W/ HELICAL FOUNDATION



SECTION-'A' W/ POLE FOUNDATION



SECTION-'A' W/ GROUND SCREW





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Exposure B, ASCE 7-16, SCH 80- GM Chart for 4 Modules 90-160 Mph



Ground Mount Structure Spans (ASCE 7-16)

4 modules with max. area 28,125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME

JOB NO.

→

→

AZ20170

DATE

CHECKER

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July 5, 2024

SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)		Foundation																								US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
									Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.				Actual Force (kg)												
									Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column														
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.								
1	90	B	5	0-10	76"	18'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	535	1247	2.49	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1625								
2				11-20		15'-0"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	435	1669	3.34									
3				21-30		12'-0"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	349	1864	3.72									
4				31-40		9'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	277	1891	3.78									
5				41-50		7'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	218	1823	3.65									
6				51-60		6'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	190	1864	3.73									
7				61-70		5'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	159	1819	3.64									
8			10	0-10	76"	18'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	590	1234	2.47	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950								
9				11-20		15'-0"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	476	1651	3.3									
10				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	381	1841	3.68									
11				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	304	1868	3.74									
12				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	240	1800	3.61									
13				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	209	1846	3.69									
14				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	177	1800	3.6									
15			15	0-10	76"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	698	1220	2.44	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950								
16				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	567	1633	3.27									
17				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	454	1823	3.65									
18				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	358	1850	3.71									
19				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	286	1782	3.57									
20				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	245	1828	3.65									
21				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	209	1782	3.56									
22			20	0-10	76"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	748	1211	2.42	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950								
23				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	608	1619	3.24									
24				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	485	1805	3.61									
25				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	385	1832	3.66									
26				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	304	1764	3.53									
27				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	263	1805	3.61									
28				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	222	1764	3.52									
29			25	0-10	76"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	816	1184	2.37	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950								
30				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	662	1583	3.17									
31				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	531	1764	3.53									
32				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	417	1791	3.58									
33				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	331	1728	3.45									
34				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	286	1769	3.53									
35				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	245	1723	3.45									
36			30	0-10	76"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	825	1161	2.32	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950								
37				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	667	1551	3.1									
38				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	535	1728	3.45									
39				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	422	1751	3.51									
40				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	336	1687	3.37									
41				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	290	1728	3.45									
42				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	245	1683	3.37									
43			3																																		



Ground Mount Structure Spans (ASCE 7-16)

4 modules with max. area 28,125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME

JOB NO.

→

→

AZ20170

DATE

CHECKER

→

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July 5, 2024

SAM

SR- No's	Wind Speed (mph)	Expo-sure Cata-gory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																								US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)		
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.				Actual Force (kg)													
								Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column															
					[S1] (ft-in)	[S2] (ft-in)		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)	Uplift Force	Downward	Horiz.									
50	95	B	5	0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	626	1247	2.49	YES		Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950 1625	YES					
51				11-20		15'-0"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	508	1669	3.34									
52				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	404	1864	3.72									
53				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	322	1891	3.78									
54				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	254	1823	3.65									
55				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	218	1864	3.73									
56				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	186	1819	3.64									
57				0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	680	1234	2.47	YES								
58				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	553	1651	3.3									
59				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	444	1841	3.68									
60				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	349	1868	3.74									
61				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	277	1800	3.61									
62				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	240	1846	3.69									
63				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	204	1800	3.6									
64			15	0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	807	1220	2.44	YES								
65				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	653	1633	3.27									
66				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	522	1823	3.65									
67				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	413	1850	3.71									
68				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	327	1782	3.57									
69				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	281	1828	3.65									
70				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	240	1782	3.56									
71			20	0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	862	1211	2.42	YES								
72				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	698	1619	3.24									
73				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	558	1805	3.61									
74				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	440	1832	3.66									
75				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	349	1764	3.53									
76				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	304	1805	3.61									
77				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	254	1764	3.52									
78			25	0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	934	1184	2.37	YES								
79				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	757	1583	3.17									
80				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	608	1764	3.53									
81				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	481	1791	3.58									
82				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	381	1728	3.45									
83				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	327	1769	3.53									
84				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	277	1723	3.45									
85			30	0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	943	1161	2.32	YES								
86				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	766	1551	3.1									
87				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	612	1728	3.45									
88				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	485	1751	3.51									
89				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	381	1687	3.37									
90				51-60																																	



Ground Mount Structure Spans (ASCE 7-16)

4 modules with max. area 28,125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME →

JOB NO. →

AZZ0170

DATE →

CHECKER →

July 5, 2024
SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)				
								Pole Footing Size			Rear Column			US Helical Size			Rear Column			Krinner Ground Screws G114x1600.			Actual Force (kg)								
								Front Column			Front Column		Rear Column		Front Column		Rear Column		Uplift Force		Downward		Horiz.								
					[S1] (ft-in)	[S2] (ft-in)		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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)		
99				0-10				18'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	717	1247	2.49	YES
100				11-20				15'-0"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	580	1669	3.34	YES
101				21-30				12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	463	1864	3.72	YES
102				31-40				9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	367	1891	3.78	YES
103				41-50				7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	290	1823	3.65	YES
104				51-60				6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	249	1864	3.73	YES
105				61-70				5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	213	1819	3.64	YES
106				0-10				18'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	780	1234	2.47	YES
107				11-20				15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	630	1651	3.3	YES
108				21-30				12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	508	1841	3.68	YES
109				31-40				9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	399	1868	3.74	YES
110				41-50				7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	317	1800	3.61	YES
111				51-60				6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	272	1846	3.69	YES
112				61-70				5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	231	1800	3.6	YES
113				0-10				18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	916	1220	2.44	YES
114				11-20				15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	744	1633	3.27	YES
115				21-30				12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	594	1823	3.65	YES
116				31-40				9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	472	1850	3.71	YES
117				41-50				7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	372	1782	3.57	YES
118				51-60				6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	322	1828	3.65	YES
119				61-70				5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	272	1782	3.56	YES
120				0-10				18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	980	1211	2.42	YES
121				11-20				15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	794	1619	3.24	YES
122				21-30				12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	635	1805	3.61	YES
123				31-40				9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	503	1832	3.66	YES
124				41-50				7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	395	1764	3.53	YES
125				51-60				6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	345	1805	3.61	YES
126				61-70				5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	290	1764	3.52	YES
127				0-10				18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1061	1184	2.37	YES
128				11-20				15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	857	1583	3.17	YES
129				21-30				12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	685	1764	3.53	YES
130				31-40				9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	544	1791	3.58	YES
131				41-50				7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	431	1728	3.45	YES
132				51-60				6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	372	1769	3.53	YES
133				61-70				5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	313	1723	3.45	YES
134				0-10				18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1066	1161	2.32	YES
135				11-20				15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	866	1551	3.1	YES
136				21-30				12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	694	1728	3.45	YES
137				31-40				9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	549	1751	3.51	YES
138				41-50				7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	431	1687	3.37	YES
139				51-60				6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	376	1728	3.45	YES
140				61-70				5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	317	1683	3.37	YES
141				0-10				18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	998	1125	2.24	YES
142				11-20				15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	807	1501	3	YES
143				21-30				12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	644	1669	3.34	YES
144				31-40				9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	512	1696	3.39	YES
145				41-50				7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8									



Ground Mount Structure Spans (ASCE 7-16)

4 modules with max. area 28,125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME

JOB NO.

→

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AZ20170

DATE

CHECKER

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July 5, 2024

SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																					US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size																			
								Front Column			Rear Column			Front Column						Rear Column						Krinner Ground Screws G114x1600.		Actual Force (kg)					
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)			
148				0-10		18'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	812	1247	2.49	YES				
149				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	658	1669	3.34	YES				
150				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	526	1864	3.72	YES				
151				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	417	1891	3.78	YES				
152				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	331	1823	3.65	YES				
153				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	286	1864	3.73	YES				
154				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	240	1819	3.64	YES				
155				0-10		18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	884	1234	2.47	YES				
156				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	717	1651	3.3	YES				
157				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	571	1841	3.68	YES				
158				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	454	1868	3.74	YES				
159				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	358	1800	3.61	YES				
160				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	308	1846	3.69	YES				
161				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	263	1800	3.6	YES				
162				0-10		18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1034	1220	2.44	YES				
163				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	839	1633	3.27	YES				
164				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	671	1823	3.65	YES				
165				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	531	1850	3.71	YES				
166				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	417	1782	3.57	YES				
167				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	363	1828	3.65	YES				
168				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	308	1782	3.56	YES				
169				0-10		18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1102	1211	2.42	YES				
170				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	893	1619	3.24	YES				
171				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	712	1805	3.61	YES				
172				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	567	1832	3.66	YES				
173				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	444	1764	3.53	YES				
174				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	385	1805	3.61	YES				
175				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	327	1764	3.52	YES				
176				0-10		18'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1156	1152	2.3	YES				
177				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	966	1583	3.17	YES				
178				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	1764	3.53	YES				
179				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	612	1791	3.58	YES				
180				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	481	1728	3.45	YES				
181				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	417	1769	3.53	YES				
182				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	354	1723	3.45	YES				
183				0-10		18'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1166	1129	2.25	YES				
184				11-20		15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	971	1551	3.1	YES				
185				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	776	1728	3.45	YES				
186				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	617	1751	3.51	YES				
187				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	485	1687	3.37	YES				
188				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	422	1728	3.45	YES				
189				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	358	1683	3.37	YES				
190				0-10		18'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1088	1093	2.19	YES				
191				11-20		15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	907	1501	3	YES				
192				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	726	1669	3.34	YES				
193				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	576	1696	3.39	YES				
194				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	454	1633	3.27	YES				
195				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	395	1669	3.34	YES				
196				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	331	1628	3.26	YES				



Ground Mount Structure Spans (ASCE 7-16)

4 modules with max. area 28,125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME

JOB NO.

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→

AZ20170

DATE

CHECKER

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→

July 5, 2024

SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)			
								Pole Footing Size				US Helical Size								Krinner Ground Screws G114x1600.										
								Front Column		Rear Column		Front Column		Rear Column		Front Column		Rear Column		Front Column		Rear Column		Actual Force (kg)						
					[S1] (ft-in)	[S2] (ft-in)		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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950 1625	
197				0-10			18'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	916	1247	2.49	YES
198				11-20			15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	739	1669	3.34	YES
199				21-30			12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	594	1864	3.72	YES
200				31-40			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	472	1891	3.78	YES
201				41-50			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	372	1823	3.65	YES
202				51-60			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	322	1864	3.73	YES
203				61-70			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	272	1819	3.64	YES
204				0-10			18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	993	1234	2.47	YES
205				11-20			15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	803	1651	3.3	YES
206				21-30			12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	644	1841	3.68	YES
207				31-40			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	508	1868	3.74	YES
208				41-50			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	404	1800	3.61	YES
209				51-60			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	349	1846	3.69	YES
210				61-70			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	295	1800	3.6	YES
211				0-10			18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1156	1220	2.44	YES
212				11-20			15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	939	1633	3.27	YES
213				21-30			12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	748	1823	3.65	YES
214				31-40			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	594	1850	3.71	YES
215				41-50			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	467	1782	3.57	YES
216				51-60			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	408	1828	3.65	YES
217				61-70			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	345	1782	3.56	YES
218				0-10			18'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1197	1175	2.35	YES
219				11-20			15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	998	1619	3.24	YES
220				21-30			12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	1805	3.61	YES
221				31-40			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	630	1832	3.66	YES
222				41-50			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	499	1764	3.53	YES
223				51-60			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	431	1805	3.61	YES
224				61-70			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	367	1764	3.52	YES
225				0-10			17'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1256	1120	2.24	YES
226				11-20			15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1075	1583	3.17	YES
227				21-30			12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	862	1764	3.53	YES
228				31-40			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	680	1791	3.58	YES
229				41-50			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	540	1728	3.45	YES
230				51-60			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	467	1769	3.53	YES
231				61-70			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	395	1723	3.45	YES
232				0-10			17'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1265	1098	2.2	YES
233				11-20			15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1084	1551	3.1	YES
234				21-30			12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	866	1728	3.45	YES
235				31-40			9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	685	1751	3.51	YES
236				41-50			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	544	1687	3.37	YES
237				51-60			6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	472	1728	3.45	YES
238				61-70			5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	399	1683	3.37	YES
239				0-10			17'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1184	1061	2.13	YES
240				11-20			15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1011	1501	3	YES
241				21-30			12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	812	1669	3.34	YES
242				31-40			9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	639	1696	3.39	YES
243				41-50			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	508	1633	3.27	YES
244				51-60			6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	440			



Ground Mount Structure Spans (ASCE 7-16)

4 modules with max. area 28,125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME

JOB NO.

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AZ20170

DATE

CHECKER

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July 5, 2024

SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																								US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.				Actual Force (kg)												
								Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column														
					[S1] (ft-in)	[S2] (ft-in)		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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950 1625							
246	115	B	5	0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1020	1247	2.49	YES							
247				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	825	1669	3.34	YES							
248				12'-0"		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	662	1864	3.72	YES							
249				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	526	1891	3.78	YES							
250				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	413	1823	3.65	YES							
251				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	358	1864	3.73	YES							
252				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	304	1819	3.64	YES							
253				0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1107	1234	2.47	YES							
254				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	893	1651	3.3	YES							
255				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	717	1841	3.68	YES							
256				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	567	1868	3.74	YES							
257				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	449	1800	3.61	YES							
258				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	390	1846	3.69	YES							
259				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	327	1800	3.6	YES							
260				0-10	7'6"	18'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1247	1188	2.38	YES							
261				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1043	1633	3.27	YES							
262				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1823	3.65	YES							
263				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	658	1850	3.71	YES							
264				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	522	1782	3.57	YES							
265				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	449	1828	3.65	YES							
266				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	381	1782	3.56	YES							
267				0-10	7'6"	17'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1293	1143	2.29	YES							
268				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1107	1619	3.24	YES							
269				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	884	1805	3.61	YES							
270				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	703	1832	3.66	YES							
271				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	553	1764	3.53	YES							
272				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	481	1805	3.61	YES							
273				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	404	1764	3.52	YES							
274				0-10	7'6"	17'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1351	1088	2.18	YES							
275				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1193	1583	3.17	YES							
276				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	952	1764	3.53	YES							
277				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	757	1791	3.58	YES							
278				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	599	1728	3.45	YES							
279				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	517	1769	3.53	YES							
280				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	435	1723	3.45	YES							
281				0-10	7'6"	16'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1320	1034	2.07	YES							
282				11-20		15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1202	1551	3.1	YES							
283				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	961	1728	3.45	YES							
284				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	762	1751	3.51	YES							
285				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	599	1687	3.37	YES							
286				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	522	1728	3.45	YES							
287				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5												



Ground Mount Structure Spans (ASCE 7-16)

4 modules with max. area 28,125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME

JOB NO.

→

AZ20170

DATE

CHECKER

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July 5, 2024

SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																								US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.																
								Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column														
					[S1] (ft-in)	[S2] (ft-in)		Dia. (D) (ft)	Depth (d) (ft)	#S Reinf. Spacing	Dia. (D) (ft)	Depth (d) (ft)	#S 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)	Uplift Force	Downward	Horiz.								
295	120	B	5	0-10	7'6"		18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1129	1247	2.49	YES						
296				11-20			15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	916	1669	3.34	YES						
297				21-30			12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	735	1864	3.72	YES						
298				31-40			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	580	1891	3.78	YES						
299				41-50			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	458	1823	3.65	YES						
300				51-60			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	399	1864	3.73	YES						
301				61-70			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	336	1819	3.64	YES						
302			10	0-10	7'6"		18'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1188	1197	2.4	YES						
303				11-20			15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	993	1651	3.3	YES						
304				21-30			12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	794	1841	3.68	YES						
305				31-40			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	626	1868	3.74	YES						
306				41-50			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	494	1800	3.61	YES						
307				51-60			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	431	1846	3.69	YES						
308				61-70			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	363	1800	3.6	YES						
309			15	0-10	7'6"		17'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1302	1120	2.24	YES						
310				11-20			15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1152	1633	3.27	YES						
311				21-30			12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	921	1823	3.65	YES						
312				31-40			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	730	1850	3.71	YES						
313				41-50			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	576	1782	3.57	YES						
314				51-60			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	449	1828	3.65	YES						
315				61-70			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	422	1782	3.56	YES						
316			20	0-10	7'6"		16'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1342	1079	2.16	YES						
317				11-20			15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1220	1619	3.24	YES						
318				21-30			12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	975	1805	3.61	YES						
319				31-40			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	1832	3.66	YES						
320				41-50			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	612	1764	3.53	YES						
321				51-60			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	531	1805	3.61	YES						
322				61-70			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	449	1764	3.52	YES						
323			25	0-10	7'6"		16'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1401	1025	2.05	YES						
324				11-20			15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1315	1583	3.17	YES						
325				21-30			12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1052	1764	3.53	YES						
326				31-40			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1791	3.58	YES						
327				41-50			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	658	1728	3.45	YES						
328				51-60			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	571	1769	3.53	YES						
329				61-70			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	481	1723	3.45	YES						
330			30	0-10	7'6"		16'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1410	1002	2	YES						
331				11-20			15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1324	1551	3.1	YES						
332	21-30	12'-0"		0'-6"			2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1057	1728	3.45	YES								
333	31-40	9'-6"		0'-6"			2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	1751	3.51	YES								
334	41-50	7'-6"		0'-6"			2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	662	1687	3.37	YES								
335	51-60	6'-6"		0'-6"			2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	571	1728	3.45	YES								
336	61-70	5'-6"		0'-6"			2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	485	1683	3.37	YES								
337	35	0-10	7'6"		16'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1320	970.5	1.94	YES								
338		11-20			15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1238	1501	3	YES								
339		21-30			12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	989	1669	3.34	YES								
340		31-40			9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	785	1696	3.39	YES								
341		41-50			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	617	1633	3.27	YES								
342		51-60			6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	535	1669	3.34	YES								
343		61-70			5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	454	1628	3.26	YES								

Ground Mount Structure Spans (ASCE 7-16)

4 modules with max. area 28,125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME →
JOB NO. → AZ20170

DATE →
CHECKER →

July 5, 2024
SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hange (ft-in)	Foundation																								US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.																
					Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column		Actual Force (kg)															
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950 1625						
344				0-10		76"	17'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1293	1179	2.36		YES					
345				11-20		76"	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1107	1669	3.34		YES					
346				21-30		76"	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	889	1864	3.72		YES					
347				31-40		76"	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	703	1891	3.78		YES					
348				41-50		76"	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	553	1823	3.65		YES					
349				51-60		76"	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	481	1864	3.73		YES					
350				61-70		76"	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	408	1819	3.64		YES					
351				0-10		76"	17'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1356	1134	2.27		YES					
352				11-20		76"	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1197	1651	3.3		YES					
353				21-30		76"	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	957	1841	3.68		YES					
354				31-40		76"	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	757	1868	3.74		YES					
355				41-50		76"	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	599	1800	3.61		YES					
356				51-60		76"	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	517	1846	3.69		YES					
357				61-70		76"	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	440	1800	3.6		YES					
358				0-10		76"	15'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1429	1025	2.05		YES					
359				11-20		76"	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1383	1633	3.27		YES					
360				21-30		76"	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1107	1823	3.65		YES					
361				31-40		76"	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	875	1850	3.71		YES					
362				41-50		76"	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	689	1782	3.57		YES					
363				51-60		76"	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	599	1828	3.65		YES					
364				61-70		76"	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	508	1782	3.56		YES					
365				0-10		76"	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1465	979.6	1.96		YES					
366				11-20		76"	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1465	1619	3.24		YES					
367				21-30		76"	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1170	1805	3.61		YES					
368				31-40		76"	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	925	1832	3.66		YES					
369				41-50		76"	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	730	1764	3.53		YES					
370				51-60		76"	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	635	1805	3.61		YES					
371				61-70		76"	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	535	1764	3.52		YES					
372				0-10		76"	14'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1524	929.7	1.85		YES					
373				11-20		76"	14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1524	1533	3.06		YES					
374				21-30		76"	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1261	1764	3.53		YES					
375				31-40		76"	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	998	1791	3.58		YES					
376				41-50		76"	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	789	1728	3.45		YES					
377				51-60		76"	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	680	1769	3.53		YES					
378				61-70		76"	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	576	1723	3.45		YES					
379				0-10		76"	14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1533	907	1.82		YES					
380				11-20		76"	14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1533	1497	2.99		YES					
381				21-30		76"	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1265	1728	3.45		YES					
382				31-40		76"	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1002	1751	3.51		YES					
383				41-50		76"	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	794	1687	3.37		YES					
384				51-60		76"	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	685	1728	3.45		YES					
385				61-70		76"	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	580	1683	3.37		YES					
386				0-10		76"	15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1483	911.6	1.82		YES					
387				11-20		76"	15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1483	1501	3		YES					
388				21-30		76"	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1188	1669	3.34		YES					
389				31-40		76"	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	939	1696	3.39		YES					
390				41-50		76"	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	739	1633	3.27		YES					
391				51-60		76"	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-																					



Ground Mount Structure Spans (ASCE 7-16)

4 modules with max. area 28,125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME

JOB NO.

→

→

AZ20170

DATE

CHECKER

→

→

July 5, 2024

SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																								US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.				Actual Force (kg)												
								Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column														
					[S1] (ft-in)	[S2] (ft-in)		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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950 1625							
393	140	B	5	0-10	7'6"			16'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1401	1079	2.15		YES				
394				11-20				15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1315	1669	3.34		YES				
395				21-30				12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1052	1864	3.72		YES				
396				31-40				9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1891	3.78		YES				
397				41-50				7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	658	1823	3.65		YES				
398				51-60				6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	571	1864	3.73		YES				
399				61-70				5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	481	1819	3.64		YES				
400			10	0-10	7'6"			15'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1465	1034	2.06		YES				
401				11-20				15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1415	1651	3.3		YES				
402				21-30				12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1134	1841	3.68		YES				
403				31-40				9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	898	1868	3.74		YES				
404				41-50				7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	707	1800	3.61		YES				
405				51-60				6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	612	1846	3.69		YES				
406				61-70				5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	517	1800	3.6		YES				
407			15	0-10	7'6"			14'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1578	956.9	1.91		YES				
408				11-20				14'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1578	1578	3.16		YES				
409				21-30				12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1306	1823	3.65		YES				
410				31-40				9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1034	1850	3.71		YES				
411				41-50				7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	816	1782	3.57		YES				
412				51-60				6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	707	1828	3.65		YES				
413				61-70				5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	599	1782	3.56		YES				
414			20	0-10	7'6"			14'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1610	916.1	1.83		YES				
415				11-20				14'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1610	1510	3.02		YES				
416				21-30				12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1383	1805	3.61		YES				
417				31-40				9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1093	1832	3.66		YES				
418				41-50				7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	862	1764	3.53		YES				
419				51-60				6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	748	1805	3.61		YES				
420				61-70				5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	635	1764	3.52		YES				
421			25	0-10	7'6"			13'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1605	829.9	1.66		YES				
422				11-20				13'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1605	1374	2.74		YES				
423				21-30				12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1483	1764	3.53		YES				
424				31-40				9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1175	1791	3.58		YES				
425				41-50				7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	925	1728	3.45		YES				
426				51-60				6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	803	1769	3.53		YES				
427				61-70				5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	680	1723	3.45		YES				
428			30	0-10	7'6"			13'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1615	816.3	1.63		YES				
429				11-20				13'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1615	1342	2.68		YES				
430				21-30				12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1492	1728	3.45		YES				
431				31-40				9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1179	1751	3.51		YES				
432				41-50				7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	934	1687	3.37		YES				
433				51-60				6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	807	172							

Ground Mount Structure Spans (ASCE 7-16)

4 modules with max. area 28,125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME →
JOB NO. → AZ20170

DATE →
CHECKER →

July 5, 2024
SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																		US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)		
								Pole Footing Size					US Helical Size					Krinner Ground Screws G114x1600.													
								Front Column			Rear Column		Front Column			Rear Column		Front Column		Rear Column		Front Column		Rear Column		Actual Force (kg)					
								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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950 1625		
442				0-10			15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1537	1011	2.02		YES
443				11-20			15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1537	1669	3.34		YES
444				21-30			12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1229	1864	3.72		YES
445				31-40			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	975	1891	3.78		YES
446				41-50			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	771	1823	3.65		YES
447				51-60			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	667	1864	3.73		YES
448				61-70			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	562	1819	3.64		YES
449				0-10			14'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1542	934.2	1.86		YES
450				11-20			14'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1542	1542	3.08		YES
451				21-30			12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1324	1841	3.68		YES
452				31-40			9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1048	1868	3.74		YES
453				41-50			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	825	1800	3.61		YES
454				51-60			6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	717	1846	3.69		YES
455				61-70			5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	608	1800	3.6		YES
456				0-10			12'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1583	825.4	1.65		YES
457				11-20			12'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1583	1361	2.73		YES
458				21-30			12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1519	1823	3.65		YES
459				31-40			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1202	1850	3.71		YES
460				41-50			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	948	1782	3.57		YES
461				51-60			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	821	1828	3.65		YES
462				61-70			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	698	1782	3.56		YES
463				0-10			12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1610	784.6	1.57		YES
464				11-20			12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1610	1293	2.59		YES
465				21-30			12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1610	1805	3.61		YES
466	150	B		31-40			9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1274	1832	3.66		YES
467				41-50			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1007	1764	3.53		YES
468				51-60			6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	871	1805	3.61		YES
469				61-70			5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	735	1764	3.52		YES
470				0-10			11'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1578	702.9	1.41		YES
471				11-20			11'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1578	1161	2.32		YES
472				21-30			11'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1578	1619	3.24		YES
473				31-40			9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1365	1791	3.58		YES
474				41-50			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1079	1728	3.45		YES
475				51-60			6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	934	1769	3.53		YES
476				61-70			5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	789	1723	3.45		YES
477				0-10			11'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1587	689.3	1.38		YES
478				11-20			11'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1587	1134	2.27		YES
479				21-30			11'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1587	1583	3.17		YES
480				31-40			9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1370	1751	3.51		YES
481				41-50			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1084	1687	3.37		YES
482				51-60			6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	939	1728	3.45		YES
483				61-70			5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	794	1683	3.37		YES
484				0-10			11'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1488	666.7	1.34		YES
485				11-20			11'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1488	1098	2.2		YES
486				21-30			11'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1488	1528	3.06		YES
487				31-40			9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1288	1696	3.39		YES
488				41-50			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1016	1633	3.27		YES
489				51-60			6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	880	1669	3.34		YES
490				61-70																											



Ground Mount Structure Spans (ASCE 7-16)

4 modules with max. area 28,125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME

JOB NO.

→

→

AZ20170

DATE

CHECKER

→

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July 5, 2024

SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																								US Helicals /Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.				Actual Force (kg)												
								Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column														
					[S1] (ft-in)	[S2] (ft-in)		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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950 1625							
491	160	B	5	0-10	76"	13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1596	907	1.82	YES							
492				11-20		13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1596	1501	3.01	YES							
493				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1420	1864	3.72	YES							
494				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1125	1891	3.78	YES							
495				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	889	1823	3.65	YES							
496				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	1864	3.73	YES							
497				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	653	1819	3.64	YES							
498			10	0-10	76"	12'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1587	834.5	1.66	YES							
499				11-20		12'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1587	1374	2.75	YES							
500				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1524	1841	3.68	YES							
501				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1206	1868	3.74	YES							
502				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	952	1800	3.61	YES							
503				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	825	1846	3.69	YES							
504				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	698	1800	3.6	YES							
505			15	0-10	76"	11'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1605	725.6	1.45	YES							
506				11-20		11'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1605	1197	2.4	YES							
507				21-30		11'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1605	1673	3.34	YES							
508				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1383	1850	3.71	YES							
509				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1093	1782	3.57	YES							
510				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	948	1828	3.65	YES							
511				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	803	1782	3.56	YES							
512			20	0-10	76"	10'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1619	684.8	1.37	YES							
513				11-20		10'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1619	1134	2.27	YES							
514				21-30		10'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1619	1578	3.16	YES							
515				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1465	1832	3.66	YES							
516				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1156	1764	3.53	YES							
517				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1002	1805	3.61	YES							
518				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	848	1764	3.52	YES							
519			25	0-10	76"	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1569	607.7	1.22	YES							
520				11-20		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1569	1002	2	YES							
521				21-30		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1569	1397	2.79	YES							
522				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1569	1791	3.58	YES							
523				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1238	1728	3.45	YES							
524				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1075	1769	3.53	YES							
525				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	907	1723	3.45	YES							
526			30	0-10	76"	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1578	594.1	1.19	YES							
527				11-20		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1578	979.6	1.96	YES							
528				21-30		9'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1578	1365	2.73	YES							
529				31-40		9'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1578	1751	3.51	YES							
530				41-50		7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1243	1687	3.37	YES							
531				51-60		6'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1079	1728	3.45	YES							
532				61-70		5'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8																



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Exposure B, ASCE 7-10, SCH 80- GM Chart for 4
Modules 90-160 Mph



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME

JOB NO.

→

→

AZ20170

DATE

CHECKER

→

→

July 5, 2024

SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)		
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.									
								Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column		Actual Force (kg)					
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.
1				0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	535	1247	2.49	YES
2				11-20		15'-0"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	435	1669	3.34	YES
3				21-30		12'-0"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	349	1864	3.72	YES
4				31-40		9'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	277	1891	3.78	YES
5				41-50		7'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	218	1823	3.65	YES
6				51-60		6'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	190	1864	3.73	YES
7				61-70		5'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	159	1819	3.64	YES
8				0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	590	1234	2.47	YES
9				11-20		15'-0"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	476	1651	3.3	YES
10				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	381	1841	3.68	YES
11				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	304	1868	3.74	YES
12				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	240	1800	3.61	YES
13				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	209	1846	3.69	YES
14				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	177	1800	3.6	YES
15				0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	698	1220	2.44	YES
16				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	567	1633	3.27	YES
17				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	454	1823	3.65	YES
18				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	358	1850	3.71	YES
19				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	286	1782	3.57	YES
20				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	245	1828	3.65	YES
21				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	209	1782	3.56	YES
22				0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	748	1211	2.42	YES
23				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	608	1619	3.24	YES
24				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	485	1805	3.61	YES
25				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	385	1832	3.66	YES
26				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	304	1764	3.53	YES
27				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	263	1805	3.61	YES
28				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	222	1764	3.52	YES
29				0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	816	1184	2.37	YES
30				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	662	1583	3.17	YES
31				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	531	1764	3.53	YES
32				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	417	1791	3.58	YES
33				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	331	1728	3.45	YES
34				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	286	1769	3.53	YES
35				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	245	1723	3.45	YES
36				0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	825	1161	2.32	YES
37				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	667	1551	3.1	YES
38				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	535	1728	3.45	YES
39				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	422	1751	3.51	YES
40				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	336	1687	3.37	YES
41				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	290	1728	3.45	YES
42				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	245	1683	3.37	YES
43				0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	766	1125	2.24	YES
44				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	621	1501	3	YES
45				21-30		12'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	499	1669	3.34	YES
46				31-40		9'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	395	1696	3.39	YES
47				41-50		7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	313	1633	3.27	YES
48				51-60		6'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	268	1669	3.34	YES
49				61-70		5'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	227	1628	3.26	YES



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME

JOB NO.

→

AZ20170

DATE

CHECKER

→

July 5, 2024

SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size					US Helical Size					Krinner Ground Screws G114x1600.										
								Front Column			Rear Column		Front Column			Rear Column		Fornt Column		Rear Column		Actual Force (kg)						
					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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950 1625	
50	95	8	5	0-10	18'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	626	1247	2.49	YES
51				11-20	15'-0"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	508	1669	3.34	YES
52				21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	404	1864	3.72	YES
53				31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	322	1891	3.78	YES
54				41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	254	1823	3.65	YES
55				51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	218	1864	3.73	YES
56				61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	186	1819	3.64	YES
57			10	0-10	18'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	680	1234	2.47	YES
58				11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	553	1651	3.3	YES
59				21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	444	1841	3.68	YES
60				31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	349	1868	3.74	YES
61				41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	277	1800	3.61	YES
62				51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	240	1846	3.69	YES
63				61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	204	1800	3.6	YES
64			15	0-10	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	807	1220	2.44	YES
65				11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	653	1633	3.27	YES
66				21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	522	1823	3.65	YES
67				31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	413	1850	3.71	YES
68				41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	327	1782	3.57	YES
69				51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	281	1828	3.65	YES
70				61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	240	1782	3.56	YES
71			20	0-10	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	862	1211	2.42	YES
72				11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	698	1619	3.24	YES
73				21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	558	1805	3.61	YES
74				31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	440	1832	3.66	YES
75				41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	349	1764	3.53	YES
76				51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	304	1805	3.61	YES
77				61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	254	1764	3.52	YES
78			25	0-10	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	934	1184	2.37	YES
79				11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	757	1583	3.17	YES
80				21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	608	1764	3.53	YES
81				31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	481	1791	3.58	YES
82				41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	381	1728	3.45	YES
83				51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	327	1769	3.53	YES
84				61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	277	1723	3.45	YES
85			30	0-10	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	943	1161	2.32	YES
86				11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	766	1551	3.1	YES
87				21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	612	1728	3.45	YES
88				31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	485	1751	3.51	YES
89				41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	381	1687	3.37	YES
90				51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	331	1728	3.45	YES
91				61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	281	1683	3.37	YES
92			35	0-10	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	880	1125	2.24	YES
93				11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	712	1501	3	YES
94				21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	571	1669	3.34	YES
95				31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	454	1696	3.39	YES
96	41-50	7'-6"		0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	358	1633	3.27	YES		
97	51-60	6'-6"		0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	308	1669	3.34	YES		
98				61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	263	1628	3.26	YES



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→	DATE	→	July 5, 2024
JOB NO.	→	CHECKER	→	SAM
AZ20170				

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)		
								Pole Footing Size					US Helical Size						Krinner Ground Screws G114x1600.										
								Front Column			Rear Column		Front Column			Rear Column			Fornt Column		Rear Column			Actual Force (kg)					
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.
99				0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	717	1247	2.49	YES
100				11-20		15'-0"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	580	1669	3.34	YES
101				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	463	1864	3.72	YES
102				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	367	1891	3.78	YES
103				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	290	1823	3.65	YES
104				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	249	1864	3.73	YES
105				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	213	1819	3.64	YES
106				0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	780	1234	2.47	YES
107				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	630	1651	3.3	YES
108				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	508	1841	3.68	YES
109				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	399	1868	3.74	YES
110				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	317	1800	3.61	YES
111				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	272	1846	3.69	YES
112				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	231	1800	3.6	YES
113				0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	916	1220	2.44	YES
114				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	744	1633	3.27	YES
115				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	594	1823	3.65	YES
116				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	472	1850	3.71	YES
117				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	372	1782	3.57	YES
118				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	322	1828	3.65	YES
119				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	272	1782	3.56	YES
120				0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	980	1211	2.42	YES
121				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	794	1619	3.24	YES
122				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	635	1805	3.61	YES
123				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	503	1832	3.66	YES
124				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	395	1764	3.53	YES
125				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	345	1805	3.61	YES
126				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	290	1764	3.52	YES
127				0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1061	1184	2.37	YES
128				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	857	1583	3.17	YES
129				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	685	1764	3.53	YES
130				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	544	1791	3.58	YES
131				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	431	1728	3.45	YES
132				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	372	1769	3.53	YES
133				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	313	1723	3.45	YES
134				0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1066	1161	2.32	YES
135				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	866	1551	3.1	YES
136				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	694	1728	3.45	YES
137				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	549	1751	3.51	YES
138				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	431	1687	3.37	YES
139				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	376	1728	3.45	YES
140				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	317	1683	3.37	YES
141				0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	998	1125	2.24	YES
142				11-20		15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	807	1501	3	YES
143				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	644	1669	3.34	YES
144				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	512	1696	3.39	YES
145				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	404	1633	3.27	YES
146				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	349	1669	3.34	YES
147				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	295	1628	3.26	YES	

	Ground Mount Structure Spans (ASCE 7-10) 4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.									
	JOB NAME JOB NO.	→ →	A220170					DATE CHECKER	→ →	July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																		US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)			
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.												
								Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column										
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950 1625		
148				0-10				18'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	812	1247	2.49		YES
149				11-20				15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	658	1669	3.34		YES
150				21-30				12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	526	1864	3.72		YES
151				31-40				9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	417	1891	3.78		YES
152				41-50				7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	331	1823	3.65		YES
153				51-60				6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	286	1864	3.73		YES
154				61-70				5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	240	1819	3.64		YES
155				0-10				18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	884	1234	2.47		YES
156				11-20				15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	717	1651	3.3		YES
157				21-30				12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	571	1841	3.68		YES
158				31-40				9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	454	1868	3.74		YES
159				41-50				7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	358	1800	3.61		YES
160				51-60				6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	308	1846	3.69		YES
161				61-70				5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	263	1800	3.6		YES
162				0-10				18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1034	1220	2.44		YES
163				11-20				15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	839	1633	3.27		YES
164				21-30				12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	671	1823	3.65		YES
165				31-40				9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	531	1850	3.71		YES
166				41-50				7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	417	1782	3.57		YES
167				51-60				6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	363	1828	3.65		YES
168				61-70				5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	308	1782	3.56		YES
169				0-10				18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1102	1211	2.42		YES
170				11-20				15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	893	1619	3.24		YES
171				21-30				12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	712	1805	3.61		YES
172				31-40				9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	567	1832	3.66		YES
173				41-50				7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	444	1764	3.53		YES
174				51-60				6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	385	1805	3.61		YES
175				61-70				5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	327	1764	3.52		YES
176				0-10				18'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1156	1152	2.3		YES
177				11-20				15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	966	1583	3.17		YES
178				21-30				12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	771	1764	3.53		YES
179				31-40				9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	612	1791	3.58		YES
180				41-50				7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	481	1728	3.45		YES
181				51-60				6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	417	1769	3.53		YES
182				61-70				5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	354	1723	3.45		YES
183				0-10				18'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1166	1129	2.25		YES
184				11-20				15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	971	1551	3.1		YES
185				21-30				12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	776	1728	3.45		YES
186				31-40				9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	617	1751	3.51		YES
187				41-50				7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	485	1687	3.37		YES
188				51-60				6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	422	1728	3.45		YES
189				61-70				5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	358	1683	3.37		YES
190				0-10				18'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1088	1093	2.19		YES
191				11-20				15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	907	1501	3		YES
192				21-30				12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	726	1669	3.34		YES
193				31-40				9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	576	1696	3.39		YES
194				41-50				7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	454	1633	3.27		YES
195				51-60				6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-																



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME
JOB NO. →
→ A220170DATE
CHECKER →July 5, 2024
SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																								US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)				
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.				Actual Force (kg)															
								Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column																	
					[S1] (ft-in)	[S2] (ft-in)		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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950 1625										
197				0-10	76"	18'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	916	1247	2.49	YES										
198				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	739	1669	3.34	YES										
199				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	594	1864	3.72	YES										
200				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	472	1891	3.78	YES										
201				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	372	1823	3.65	YES										
202				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	322	1864	3.73	YES										
203				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	272	1819	3.64	YES										
204				0-10	76"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	993	1234	2.47	YES										
205				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	803	1651	3.3	YES										
206				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	644	1841	3.68	YES										
207				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	508	1868	3.74	YES										
208				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	404	1800	3.61	YES										
209				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	349	1846	3.69	YES										
210				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	295	1800	3.6	YES										
211				0-10	76"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1156	1220	2.44	YES										
212				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	939	1633	3.27	YES										
213				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	748	1823	3.65	YES										
214				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	594	1850	3.71	YES										
215				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	467	1782	3.57	YES										
216				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	408	1828	3.65	YES										
217				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	345	1782	3.56	YES										
218				0-10	76"	18'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1197	1175	2.35	YES										
219				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	998	1619	3.24	YES										
220				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	1805	3.61	YES										
221				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	630	1832	3.66	YES										
222				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	499	1764	3.53	YES										
223				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	431	1805	3.61	YES										
224				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	367	1764	3.52	YES										
225				0-10	76"	17'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1256	1120	2.24	YES										
226				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1075	1583	3.17	YES										
227				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	862	1764	3.53	YES										
228				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	680	1791	3.58	YES										
229				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	540	1728	3.45	YES										
230				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	467	1769	3.53	YES										
231				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	395	1723	3.45	YES										
232				0-10	76"	17'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1265	1098	2.2	YES										
233				11-20		15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1084	1551	3.1	YES										
234				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	866	1728	3.45	YES										
235				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	685	1751	3.51	YES										
236				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	544	1687	3.37	YES										
237				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	472	1728	3.45	YES											
238				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	399	1683	3.37	YES											
239				0-10	35	17'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1184	1061	2.13	YES										
240				11-20		15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1011	1501	3	YES										
241				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	812	1669	3.34	YES										
242				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	639	1696	3.39	YES										
243				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	508	1633	3.27	YES										
244				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	440	1669	3.34	YES										
245				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	372	1628	3.26	YES										

	Ground Mount Structure Spans (ASCE 7-10) 4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.									
	JOB NAME JOB NO.	→ →	AZ20170					DATE CHECKER	→ →	July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																								US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size								Krinner Ground Screws G114x1600.														
								Front Column			Rear Column			Front Column				Rear Column				Fornt Column		Rear Column		Actual Force (kg)										
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950 1625						
246				0-10	7'6"		18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1020	1247	2.49		YES					
247				11-20			15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	825	1669	3.34		YES					
248				21-30			12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	662	1864	3.72		YES					
249				31-40			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	526	1891	3.78		YES					
250				41-50			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	413	1823	3.65		YES					
251				51-60			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	358	1864	3.73		YES					
252				61-70			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	304	1819	3.64		YES					
253				0-10	7'6"		18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1107	1234	2.47		YES					
254				11-20			15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	893	1651	3.3		YES					
255				21-30			12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	717	1841	3.68		YES					
256				31-40			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	567	1868	3.74		YES					
257				41-50			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	449	1800	3.61		YES					
258				51-60			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	390	1846	3.69		YES					
259				61-70			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	327	1800	3.6		YES					
260				0-10	7'6"		18'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1247	1188	2.38		YES					
261				11-20			15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1043	1633	3.27		YES					
262				21-30			12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1823	3.65		YES					
263				31-40			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	658	1850	3.71		YES					
264				41-50			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	522	1782	3.57		YES					
265				51-60			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	449	1828	3.65		YES					
266				61-70			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	381	1782	3.56		YES					
267				0-10	7'6"		17'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1293	1143	2.29		YES					
268				11-20			15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1107	1619	3.24		YES					
269				21-30			12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	884	1805	3.61		YES					
270				31-40			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	703	1832	3.66		YES					
271				41-50			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	553	1764	3.53		YES					
272				51-60			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	481	1805	3.61		YES					
273				61-70			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	404	1764	3.52		YES					
274				0-10	7'6"		17'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1351	1088	2.18		YES					
275				11-20			15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1193	1583	3.17		YES					
276				21-30			12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	952	1764	3.53		YES					
277				31-40			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	757	1791	3.58		YES					
278				41-50			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	599	1728	3.45		YES					
279				51-60			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	517	1769	3.53		YES					
280				61-70			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	435	1723	3.45		YES					
281				0-10	7'6"		16'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1320	1034	2.07		YES					
282				11-20			15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1202	1551	3.1		YES					
283				21-30			12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	961	1728	3.45		YES					
284				31-40			9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	762	1751	3.51		YES					
285				41-50			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	599	1687	3.37		YES					
286				51-60			6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	522	1728	3.45		YES					
287				61-70			5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	440	1683	3.37		YES					
288				0-10	7'6"		16'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1234	1002	2		YES					
289				11-20			15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1125	1501	3		YES					
290				21-30			12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	898	1669	3.34		YES					
291				31-40			9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	712	1696	3.39		YES					
292				41-50			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	562	1633	3.27		YES					
293				51-60			6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	485	1669	3.34		YES					
294				61-70			5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	413	1628	3.26		YES					

	Ground Mount Structure Spans (ASCE 7-10) 4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.									
	JOB NAME JOB NO.	→ →	AZ20170					DATE CHECKER	→ →	July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																			US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size					US Helical Size					Krinrer Ground Screws G114x1600.													
								Front Column			Rear Column		Front Column			Rear Column		Fornt Column		Rear Column											
					[S1] (ft-in)	[S2] (ft-in)		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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950 1625		
295	120	B	5	0-10	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1129	1247	2.49	YES			
296				11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	916	1669	3.34	YES			
297				21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	735	1864	3.72	YES			
298				31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	580	1891	3.78	YES			
299				41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	458	1823	3.65	YES			
300				51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	399	1864	3.73	YES			
301				61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	336	1819	3.64	YES			
302			10	0-10	18'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1188	1197	2.4	YES			
303				11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	993	1651	3.3	YES			
304				21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	794	1841	3.68	YES			
305				31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	626	1868	3.74	YES			
306				41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	494	1800	3.61	YES			
307				51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	431	1846	3.69	YES			
308				61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	363	1800	3.6	YES			
309			15	0-10	17'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1302	1120	2.24	YES			
310				11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1152	1633	3.27	YES			
311				21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	921	1823	3.65	YES			
312				31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	730	1850	3.71	YES			
313				41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	576	1782	3.57	YES			
314				51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	449	1828	3.65	YES			
315				61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	422	1782	3.56	YES			
316			20	0-10	16'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1342	1079	2.16	YES			
317				11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1220	1619	3.24	YES			
318				21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	975	1805	3.61	YES			
319				31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	1832	3.66	YES			
320				41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	612	1764	3.53	YES			
321				51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	531	1805	3.61	YES			
322				61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	449	1764	3.52	YES			
323			25	0-10	16'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1401	1025	2.05	YES			
324				11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1315	1583	3.17	YES			
325				21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1052	1764	3.53	YES			
326				31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1791	3.58	YES			
327				41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	658	1728	3.45	YES			
328				51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	571	1769	3.53	YES			
329				61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	481	1723	3.45	YES			
330			30	0-10	16'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1410	1002	2	YES			
331				11-20	15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1324	1551	3.1	YES			
332				21-30	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1057	1728	3.45	YES			
333				31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	1751	3.51	YES			
334				41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	662	1687	3.37	YES			
335				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	571	1728	3.45	YES			
336				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	485	1683	3.37	YES			
337	35	0-10	16'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1320	970.5	1.94	YES					
338		11-20	15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1238	1501	3	YES					
339		21-30	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	989	1669	3.34	YES					
340		31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	785	1696	3.39	YES					
341		41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	617	1633	3.27	YES					
342		51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	535	1669	3.34	YES					
343		61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	454	1628	3.26	YES					



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→		DATE	→	July 5, 2024
JOB NO.	→	AZ20170	CHECKER	→	SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																								US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.																
								Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column														
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950 1625						
344				0-10		7'6"	17'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1293	1179	2.36		YES					
345				11-20			15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1107	1669	3.34		YES					
346				21-30			12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	889	1864	3.72		YES					
347				31-40			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	703	1891	3.78		YES					
348				41-50			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	553	1823	3.65		YES					
349				51-60			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	481	1864	3.73		YES					
350				61-70			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	408	1819	3.64		YES					
351				0-10			17'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1356	1134	2.27		YES					
352				11-20			15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1197	1651	3.3		YES					
353				21-30			12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	957	1841	3.68		YES					
354				31-40			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	757	1868	3.74		YES					
355				41-50			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	599	1800	3.61		YES					
356				51-60			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	517	1846	3.69		YES					
357				61-70			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	440	1800	3.6		YES					
358				0-10			15'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1429	1025	2.05		YES					
359				11-20			15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1383	1633	3.27		YES					
360				21-30			12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1107	1823	3.65		YES					
361				31-40			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	875	1850	3.71		YES					
362				41-50			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	689	1782	3.57		YES					
363				51-60			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	599	1828	3.65		YES					
364				61-70			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	508	1782	3.56		YES					
365				0-10			15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1465	979.6	1.96		YES					
366				11-20			15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1465	1619	3.24		YES					
367				21-30			12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1170	1805	3.61		YES					
368				31-40			9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	925	1832	3.66		YES					
369				41-50			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	730	1764	3.53		YES					
370				51-60			6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	635	1805	3.61		YES					
371				61-70			5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	535	1764	3.52		YES					
372				0-10			14'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1524	929.7	1.85		YES					
373				11-20			14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1524	1533	3.06		YES					
374				21-30			12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1261	1764	3.53		YES					
375				31-40			9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	998	1791	3.58		YES					
376				41-50			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	789	1728	3.45		YES					
377				51-60			6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	680	1769	3.53		YES					
378				61-70			5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	576	1723	3.45		YES					
379				0-10			14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1533	907	1.82		YES					
380				11-20			14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1533	1497	2.99		YES					
381				21-30			12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1265	1728	3.45		YES					
382				31-40			9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1002	1751	3.51		YES					
383				41-50			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	794	1687	3.37		YES					
384				51-60			6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	685	1728	3.45		YES					
385				61-70			5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	580	1683	3.37		YES					
386				0-10			15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1483	911.6	1.82		YES					
387				11-20			15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1483	1501	3		YES					
388				21-30			12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1188	1669	3.34		YES					
389				31-40			9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	939	1696	3.39		YES					
390				41-50			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	739	1633	3.27		YES					
391				51-60			6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	644	1669	3.34		YES					
392				61-70			5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2																				

	Ground Mount Structure Spans (ASCE 7-10) 4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.									
	JOB NAME JOB NO.	→ →	AZ20170					DATE CHECKER	→ →	July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																				US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.												
								Front Column			Rear Column			Front Column			Rear Column			Fornt Column		Rear Column		Actual Force (kg)								
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950 1625		
393				0-10	16'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1401	1079	2.15	YES				
394				11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1315	1669	3.34	YES				
395				21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1052	1864	3.72	YES				
396			5	31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1891	3.78	YES				
397				41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	658	1823	3.65	YES				
398				51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	571	1864	3.73	YES				
399				61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	481	1819	3.64	YES				
400				0-10	15'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1465	1034	2.06	YES				
401				11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1415	1651	3.3	YES				
402				21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1134	1841	3.68	YES				
403			10	31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	898	1868	3.74	YES				
404				41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	707	1800	3.61	YES				
405				51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	612	1846	3.69	YES				
406				61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	517	1800	3.6	YES				
407				0-10	14'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1578	956.9	1.91	YES				
408				11-20	14'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1578	1578	3.16	YES				
409				21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1306	1823	3.65	YES				
410				31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1034	1850	3.71	YES				
411				41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	816	1782	3.57	YES				
412				51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	707	1828	3.65	YES				
413				61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	599	1782	3.56	YES				
414				0-10	14'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1610	916.1	1.83	YES				
415				11-20	14'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1610	1510	3.02	YES				
416				21-30	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1383	1805	3.61	YES				
417				31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1093	1832	3.66	YES				
418				41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	862	1764	3.53	YES				
419				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	748	1805	3.61	YES				
420				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	635	1764	3.52	YES				
421				0-10	13'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1605	829.9	1.66	YES				
422				11-20	13'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1605	1374	2.74	YES				
423				21-30	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1483	1764	3.53	YES				
424				31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1175	1791	3.58	YES				
425				41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	925	1728	3.45	YES				
426				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	803	1769	3.53	YES				
427				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	680	1723	3.45	YES				
428				0-10	13'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1615	816.3	1.63	YES				
429				11-20	13'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1615	1342	2.68	YES				
430				21-30	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1492	1728	3.45	YES				
431				31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1179	1751	3.51	YES				
432				41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	934	1687	3.37	YES				
433				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	807	1728	3.45	YES				
434				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	685	1683	3.37	YES				
435				0-10	13'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1515	789.1	1.58	YES				
436				11-20	13'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1515	1297	2.6	YES				
437				21-30	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1397	1669	3.34	YES				
438				31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1107	1696	3.39	YES				
439				41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	875	1633	3.27	YES				
440				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	757	1669	3.34	YES				
441				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	639	1628	3.26	YES				

NOTE:

- Top Cap design to be provided by "K2 Systems". Average Force of top Cap = 1950 kg (4299 lbs).
- If Actual force is greater than Average force, Please contact "K2 Systems" For special engineering design of Top Cap.
- Top Cap is reviewed only for the uplift value provided in Report.
- Factor of Safety (FOS) = 1.2
- Uplift force of top cap = 1950 kg, uplift force of top cap with factor of safety = 1950 kg/1.2 = 1625 kg.
- Yield Stress of 3" dia pipe - Fy = 35 ksi & Fu = 58 ksi
- Yield Stress of 2-7/8" dia US Helical pipe - Fy = 60 ksi (refer US Helical Chart)
- Bracing not required.

	Ground Mount Structure Spans (ASCE 7-10) 4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.									
	JOB NAME JOB NO.	→ →	AZ20170					DATE CHECKER	→ →	July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																		US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.										
					Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column		Actual Force (kg)									
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950 1625
442				0-10		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1537	1011	2.02	YES	
443				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1537	1669	3.34	YES	
444				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1229	1864	3.72	YES	
445				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	975	1891	3.78	YES	
446				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	771	1823	3.65	YES	
447				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	667	1864	3.73	YES	
448				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	562	1819	3.64	YES	
449				0-10		14'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1542	934.2	1.86	YES	
450				11-20		14'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1542	1542	3.08	YES	
451				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1324	1841	3.68	YES	
452				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1048	1868	3.74	YES	
453				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	825	1800	3.61	YES	
454				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	717	1846	3.69	YES	
455				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	608	1800	3.6	YES	
456				0-10		12'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1583	825.4	1.65	YES	
457				11-20		12'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1583	1361	2.73	YES	
458				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1519	1823	3.65	YES	
459				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1202	1850	3.71	YES	
460				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	948	1782	3.57	YES	
461				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	821	1828	3.65	YES	
462				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	698	1782	3.56	YES	
463				0-10		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1610	784.6	1.57	YES	
464				11-20		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1610	1293	2.59	YES	
465				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1610	1805	3.61	YES	
466				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1274	1832	3.66	YES	
467				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1007	1764	3.53	YES	
468				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	871	1805	3.61	YES	
469				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	735	1764	3.52	YES	
470				0-10		11'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1578	702.9	1.41	YES	
471				11-20		11'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1578	1161	2.32	YES	
472				21-30		11'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1578	1619	3.24	YES	
473				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1365	1791	3.58	YES	
474				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1079	1728	3.45	YES	
475				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	934	1769	3.53	YES	
476				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	789	1723	3.45	YES	
477				0-10		11'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1587	689.3	1.38	YES	
478				11-20		11'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1587	1134	2.27	YES	
479				21-30		11'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1587	1583	3.17	YES	
480				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1370	1751	3.51	YES	
481				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1084	1687	3.37	YES	
482				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	939	1728	3.45	YES	
483				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	794	1683	3.37	YES	
484				0-10		11'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1488	666.7	1.34	YES	
485				11-20		11'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1488	1098	2.2	YES	
486				21-30		11'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1488	1528	3.06	YES	
487				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1288	1696	3.39	YES	
488				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1016	1633	3.27	YES	
489				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	880	1669	3.34	YES	
490				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5								



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME

JOB NO.

→

DATE

CHECKER

→

July 5, 2024

SAM

AZ20170

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																								US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size								K'rinner Ground Screws G114x1600.														
								Front Column			Rear Column			Front Column				Rear Column				Front Column		Rear Column		Actual Force (kg)										
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950 1625						
491	160	B	5	0-10	7'6"	7'6"	13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1596	907	1.82	YES						
492				11-20			13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1596	1501	3.01	YES						
493				21-30			12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1420	1864	3.72	YES						
494				31-40			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1125	1891	3.78	YES						
495				41-50			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	889	1823	3.65	YES						
496				51-60			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	771	1864	3.73	YES						
497				61-70			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	653	1819	3.64	YES						
498			10	0-10	7'6"	7'6"	12'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1587	834.5	1.66	YES						
499				11-20			12'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1587	1374	2.75	YES						
500				21-30			12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1524	1841	3.68	YES						
501				31-40			9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1206	1868	3.74	YES						
502				41-50			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	952	1800	3.61	YES						
503				51-60			6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	825	1846	3.69	YES						
504				61-70			5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	698	1800	3.6	YES						
505			15	0-10	7'6"	7'6"	11'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1605	725.6	1.45	YES						
506				11-20			11'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1605	1197	2.4	YES						
507				21-30			11'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1605	1673	3.34	YES						
508				31-40			9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1383	1850	3.71	YES						
509				41-50			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1093	1782	3.57	YES						
510				51-60			6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	948	1828	3.65	YES						
511				61-70			5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	803	1782	3.56	YES						
512			20	0-10	7'6"	7'6"	10'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1619	684.8	1.37	YES						
513				11-20			10'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1619	1134	2.27	YES						
514				21-30			10'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1619	1578	3.16	YES						
515				31-40			9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1465	1832	3.66	YES						
516				41-50			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1156	1764	3.53	YES						
517				51-60			6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1002	1805	3.61	YES						
518				61-70			5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	848	1764	3.52	YES						
519			25	0-10	7'6"	7'6"	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1569	607.7	1.22	YES						
520				11-20			9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1569	1002	2	YES						
521				21-30			9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1569	1397	2.79	YES						
522				31-40			9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1569	1791	3.58	YES						
523				41-50			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1238	1728	3.45	YES						
524				51-60			6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1075	1769	3.53	YES						
525				61-70			5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	907	1723	3.45	YES						
526			30	0-10	7'6"	7'6"	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1578	594.1	1.19	YES						
527				11-20			9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1578	979.6	1.96	YES						
528				21-30			9'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1578	1365	2.73	YES						
529				31-40			9'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1578	1751	3.51	YES						
530				41-50			7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1243	1687	3.37	YES						
531	51-60	6'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1079	1728	3.45	YES											
532	61-70	5'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	512	1683	3.37	YES											
533	35	0-10	7'6"	7'6"	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1478	576	1.15	YES								
534		11-20			9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1478	947.8	1.9	YES								
535		21-30			9'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1478	1320	2.64	YES								
536		31-40			9'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1478	1696	3.39	YES								
537		41-50			7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1166	1633	3.27	YES								
538		51-60			6'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1011	1669	3.34	YES								
539		61-70			5'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	857	1628	3.26	YES								



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Exposure C, ASCE 7-16, SCH 80- GM Chart for 4 Modules 90-160 Mph



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-16)

4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME JOB NO.	→ →	AZ20170	DATE CHECKER	→ →	July 5, 2024 SAM
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SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																				US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size								Krriner Ground Screws G114x1600.										
								Front Column			Rear Column			Front Column				Rear Column				Front Column		Rear Column								
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950 1625		
1				0-10	76"	18'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	698	1247	2.49	YES			
2				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	567	1669	3.34	YES			
3				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	454	1864	3.72	YES			
4				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	358	1891	3.78	YES			
5				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	286	1823	3.65	YES			
6				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	245	1864	3.73	YES			
7				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	209	1819	3.64	YES			
8				0-10	76"	18'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	762	1234	2.47	YES			
9				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	617	1651	3.3	YES			
10				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	494	1841	3.68	YES			
11				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	390	1868	3.74	YES			
12				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	308	1800	3.61	YES			
13				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	268	1846	3.69	YES			
14				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	227	1800	3.6	YES			
15				0-10	76"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	898	1220	2.44	YES			
16				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	726	1633	3.27	YES			
17				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	580	1823	3.65	YES			
18				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	463	1850	3.71	YES			
19				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	363	1782	3.57	YES			
20				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	317	1828	3.65	YES			
21				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	268	1782	3.56	YES			
22				0-10	76"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	957	1211	2.42	YES			
23				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	776	1619	3.24	YES			
24				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	621	1805	3.61	YES			
25				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	490	1832	3.66	YES			
26				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	390	1764	3.53	YES			
27				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	336	1805	3.61	YES			
28				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	286	1764	3.52	YES			
29				0-10	76"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1039	1184	2.37	YES			
30				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	844	1583	3.17	YES			
31				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	671	1764	3.53	YES			
32				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	535	1791	3.58	YES			
33				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	422	1728	3.45	YES			
34				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	363	1769	3.53	YES			
35				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	308	1723	3.45	YES			
36				0-10	76"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1048	1161	2.32	YES			
37				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	848	1551	3.1	YES			
38				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	680	1728	3.45	YES			
39				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	535	1751	3.51	YES			
40				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	426	1687	3.37	YES			
41				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	367	1728	3.45	YES			
42				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	313	1683	3.37	YES			
43				0-10	76"	18'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	975	1125	2.24	YES			
44				11-20		15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	794	1501	3	YES			
45				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	335	1669	3.34	YES			
46				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	503	1696	3.39	YES			
47				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	395	1633	3.27	YES			
48				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	345	1669	3.34	YES			
49				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	290	1628	3.26	YES				



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-16)

4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME JOB NO.	→ →	AZ20170	DATE CHECKER	→ →	July 5, 2024 SAM
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SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																								US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size								Krinner Ground Screws G114x1600.														
								Front Column			Rear Column			Front Column				Rear Column				Front Column		Rear Column		Actual Force (kg)										
								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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950 1625							
50					0-10	18'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	807	1247	2.49		YES						
51					11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	653	1669	3.34		YES						
52					21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	522	1864	3.72		YES						
53					31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	413	1891	3.78		YES						
54					41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	327	1823	3.65		YES						
55					51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	281	1864	3.73		YES						
56					61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	240	1819	3.64		YES						
57					0-10	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	875	1234	2.47		YES						
58					11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	712	1651	3.3		YES						
59					21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	567	1841	3.68		YES						
60					31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	449	1868	3.74		YES						
61					41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	354	1800	3.61		YES						
62					51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	308	1846	3.69		YES						
63					61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	259	1800	3.6		YES						
64					0-10	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1025	1220	2.44		YES						
65					11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	830	1633	3.27		YES						
66					21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	667	1823	3.65		YES						
67					31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	526	1850	3.71		YES						
68					41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	417	1782	3.57		YES						
69					51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	358	1828	3.65		YES						
70					61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	304	1782	3.56		YES						
71					0-10	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1093	1211	2.42		YES						
72					11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	884	1619	3.24		YES						
73					21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	707	1805	3.61		YES						
74					31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	562	1832	3.66		YES						
75					41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	444	1764	3.53		YES						
76					51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	385	1805	3.61		YES						
77					61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	327	1764	3.52		YES						
78					0-10	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1184	1184	2.37		YES						
79					11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	957	1583	3.17		YES						
80					21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	766	1764	3.53		YES						
81					31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	608	1791	3.58		YES						
82					41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	481	1728	3.45		YES						
83					51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	417	1769	3.53		YES						
84					61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	349	1723	3.45		YES						
85					0-10	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1193	1161	2.32		YES						
86					11-20	15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	966	1551	3.1		YES						
87					21-30	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	771	1728	3.45		YES						
88					31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	612	1751	3.51		YES						
89					41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	481	1687	3.37		YES						
90					51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	417	1728	3.45		YES						
91					61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	354	1683	3.37		YES						
92					0-10	18'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1111	1125	2.24		YES						
93					11-20	15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	902	1501	3		YES						
94					21-30	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	721	1669	3.34		YES						
95					31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	571	1696	3.39		YES						
96					41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	449	1633	3.27		YES						
97					51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	390	1669	3.34		YES						
98					61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	331	1628	3.26		YES						



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-16)

4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME JOB NO.	→ →	AZ20170	DATE CHECKER	→ →	July 5, 2024 SAM
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SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)		
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.									
								Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column							
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.
99				0-10	76"	18'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	921	1247	2.49	YES
100				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	477	1669	3.34	YES
101				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	594	1864	3.72	YES
102				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	472	1891	3.78	YES
103				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	372	1823	3.65	YES
104				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	322	1864	3.73	YES
105				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	272	1819	3.64	YES
106				0-10	76"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	998	1234	2.47	YES
107				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	807	1651	3.3	YES
108				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	644	1841	3.68	YES
109				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	512	1868	3.74	YES
110				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	404	1800	3.61	YES
111				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	349	1846	3.69	YES
112				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	295	1800	3.6	YES
113				0-10	76"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1161	1220	2.44	YES
114				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	943	1633	3.27	YES
115				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	753	1823	3.65	YES
116				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	594	1850	3.71	YES
117				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	472	1782	3.57	YES
118				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	408	1828	3.65	YES
119				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	345	1782	3.56	YES
120				0-10	76"	18'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1202	1175	2.35	YES
121				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1002	1619	3.24	YES
122				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	803	1805	3.61	YES
123				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	635	1832	3.66	YES
124				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	499	1764	3.53	YES
125				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	435	1805	3.61	YES
126				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	367	1764	3.52	YES
127				0-10	76"	17'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1261	1120	2.24	YES
128				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1079	1583	3.17	YES
129				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	866	1764	3.53	YES
130				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	685	1791	3.58	YES
131				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	540	1728	3.45	YES
132				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	467	1769	3.53	YES
133				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	395	1723	3.45	YES
134				0-10	76"	17'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1270	1098	2.2	YES
135				11-20		15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1088	1551	3.1	YES
136				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	871	1728	3.45	YES
137				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	689	1751	3.51	YES
138				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	544	1687	3.37	YES
139				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	472	1728	3.45	YES
140				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	399	1683	3.37	YES
141				0-10	76"	17'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1188	1061	2.13	YES
142				11-20		15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1016	1501	3	YES
143				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	816	1669	3.34	YES
144				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	644	1696	3.39	YES
145				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	508	1633	3.27	YES
146				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	440	1669	3.34	YES
147				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	372	1628	3.26	YES



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-16)

4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME
JOB NO.

AZ20170

DATE
CHECKERJuly 5, 2024
SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																						US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size								Krinner Ground Screws G114x1600.												
								Front Column			Rear Column			Front Column				Rear Column				Front Column		Rear Column		Actual Force (kg)								
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950 1625				
148				0-10	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1034	1247	2.49	YES						
149				11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	839	1669	3.34	YES						
150				21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	671	1864	3.72	YES						
151				31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	531	1891	3.78	YES						
152				41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	422	1823	3.65	YES						
153				51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	363	1864	3.73	YES						
154				61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	308	1819	3.64	YES						
155				0-10	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1120	1234	2.47	YES						
156				11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	907	1651	3.3	YES						
157				21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	726	1841	3.68	YES						
158				31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	576	1868	3.74	YES						
159				41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	454	1800	3.61	YES						
160				51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	395	1846	3.69	YES						
161				61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	331	1800	3.6	YES						
162				0-10	17'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1234	1156	2.31	YES						
163				11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1057	1633	3.27	YES						
164				21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	844	1823	3.65	YES						
165				31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	671	1850	3.71	YES						
166				41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	526	1782	3.57	YES						
167				51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	458	1828	3.65	YES						
168				61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	385	1782	3.56	YES						
169				0-10	17'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1311	1143	2.29	YES						
170				11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1125	1619	3.24	YES						
171				21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	898	1805	3.61	YES						
172				31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	712	1832	3.66	YES						
173				41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	562	1764	3.53	YES						
174				51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	485	1805	3.61	YES						
175				61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	413	1764	3.52	YES						
176				0-10	16'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1329	1057	2.11	YES						
177				11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1211	1583	3.17	YES						
178				21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	966	1764	3.53	YES						
179				31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	766	1791	3.58	YES						
180				41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	603	1728	3.45	YES						
181				51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	526	1769	3.53	YES						
182				61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	444	1723	3.45	YES						
183				0-10	16'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1338	1034	2.07	YES						
184				11-20	15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1220	1551	3.1	YES						
185				21-30	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	975	1728	3.45	YES						
186				31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	771	1751	3.51	YES						
187				41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	608	1687	3.37	YES						
188				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	526	1728	3.45	YES						
189				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	444	1683	3.37	YES						
190				0-10	16'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1252	1002	2	YES						
191				11-20	15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1138	1501	3	YES						
192				21-30	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	912	1669	3.34	YES						
193				31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	721	1696	3.39	YES						
194				41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	571	1633	3.27	YES						
195				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	494	1669	3.34	YES						
196				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	417	1628	3.26	YES						

NOTE:

- Top Cap design to be provided by "K2 Systems". Average Force of top Cap = 1950 kg (4299 lbs).
- If Actual force is greater than Average force, Please contact "K2 Systems" For special engineering design of Top Cap.
- Top Cap is reviewed only for the uplift value provided in Report.



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-16)

4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→		DATE	→	
JOB NO.	→	AZ20170	CHECKER	→	July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)			
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.										
								Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column								
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950 1625
197				0-10		76"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1161	1247	2.49	YES
198				11-20		76"	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	839	1669	3.34	YES
199				21-30		76"	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	753	1864	3.72	YES
200				31-40		76"	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	594	1891	3.78	YES
201				41-50		76"	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	472	1823	3.65	YES
202				51-60		76"	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	408	1864	3.73	YES
203				61-70		76"	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	345	1819	3.64	YES
204				0-10		76"	18'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1220	1197	2.4	YES
205				11-20		76"	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1016	1651	3.3	YES
206				21-30		76"	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	812	1841	3.68	YES
207				31-40		76"	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	644	1868	3.74	YES
208				41-50		76"	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	508	1800	3.61	YES
209				51-60		76"	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	440	1846	3.69	YES
210				61-70		76"	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	372	1800	3.6	YES
211				0-10		76"	17'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1333	1120	2.24	YES
212				11-20		76"	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1179	1633	3.27	YES
213				21-30		76"	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	943	1823	3.65	YES
214				31-40		76"	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	744	1850	3.71	YES
215				41-50		76"	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	590	1782	3.57	YES
216				51-60		76"	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	508	1828	3.65	YES
217				61-70		76"	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	431	1782	3.56	YES
218				0-10		76"	16'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1374	1079	2.16	YES
219				11-20		76"	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1252	1619	3.24	YES
220				21-30		76"	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	998	1805	3.61	YES
221				31-40		76"	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	789	1832	3.66	YES
222				41-50		76"	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	626	1764	3.53	YES
223				51-60		76"	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	540	1805	3.61	YES
224				61-70		76"	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	458	1764	3.52	YES
225				0-10		76"	16'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1433	1025	2.05	YES
226				11-20		76"	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1347	1583	3.17	YES
227				21-30		76"	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1075	1764	3.53	YES
228				31-40		76"	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	853	1791	3.58	YES
229				41-50		76"	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	671	1728	3.45	YES
230				51-60		76"	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	585	1769	3.53	YES
231				61-70		76"	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	494	1723	3.45	YES
232				0-10		76"	15'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1401	970.5	1.94	YES
233				11-20		76"	15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1356	1551	3.1	YES
234				21-30		76"	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1084	1728	3.45	YES
235				31-40		76"	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	857	1751	3.51	YES
236				41-50		76"	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	676	1687	3.37	YES
237				51-60		76"	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	585	1728	3.45	YES
238				61-70		76"	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	494	1683	3.37	YES
239				0-10		76"	15'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1311	943.3	1.88	YES
240				11-20		76"	15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1265	1501	3	YES
241				21-30		76"	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1011	1669	3.34	YES
242				31-40		76"	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	803	1696	3.39	YES
243				41-50		76"	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	635	1633	3.27	YES
244				51-60		76"	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"																	



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-16)

4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME JOB NO.	→ →	AZ20170	DATE CHECKER	→ →	July 5, 2024 SAM
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SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size					US Helical Size						Krinner Ground Screws G114x1600.									
					Front Column			Rear Column		Front Column			Rear Column			Front Column		Rear Column			Actual Force (kg)							
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward
246				0-10	17'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1220	1179	2.36	YES
247				11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1043	1669	3.34	YES
248				21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1864	3.72	YES
249				31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	662	1891	3.78	YES
250				41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	522	1823	3.65	YES
251				51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	454	1864	3.73	YES
252				61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	381	1819	3.64	YES
253				0-10	17'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1315	1166	2.33	YES
254				11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1129	1651	3.3	YES
255				21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	902	1841	3.68	YES
256				31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	712	1868	3.74	YES
257				41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	562	1800	3.61	YES
258				51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	490	1846	3.69	YES
259				61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	413	1800	3.6	YES
260				0-10	16'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1392	1057	2.11	YES
261				11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1302	1633	3.27	YES
262				21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1043	1823	3.65	YES
263				31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	825	1850	3.71	YES
264				41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	653	1782	3.57	YES
265				51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	567	1828	3.65	YES
266				61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	476	1782	3.56	YES
267				0-10	15'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1429	1011	2.03	YES
268				11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1383	1619	3.24	YES
269				21-30	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1107	1805	3.61	YES
270				31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	875	1832	3.66	YES
271				41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	689	1764	3.53	YES
272				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	599	1805	3.61	YES
273				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	508	1764	3.52	YES
274				0-10	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1488	961.5	1.92	YES
275				11-20	15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1488	1583	3.17	YES
276				21-30	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1188	1764	3.53	YES
277				31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	943	1791	3.58	YES
278				41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	744	1728	3.45	YES
279				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	644	1769	3.53	YES
280				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	544	1723	3.45	YES
281				0-10	15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1497	938.8	1.88	YES
282				11-20	15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1497	1551	3.1	YES
283				21-30	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1197	1728	3.45	YES
284				31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	948	1751	3.51	YES
285				41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	748	1687	3.37	YES
286				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	649	1728	3.45	YES
287				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	549	1683	3.37	YES
288				0-10	15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1401	911.6	1.82	YES
289				11-20	15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1401	1501	3	YES
290				21-30	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1120	1669	3.34	YES
291				31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	889	1696	3.39	YES
292				41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	698	1633	3.27	YES
293				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	608	1669	3.34	YES
294				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	512	1628	3.26	YES



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-16)

4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→		DATE	→	
JOB NO.	→	AZ20170	CHECKER	→	July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																								US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size								Krriner Ground Screws G114x1600.														
								Front Column			Rear Column			Front Column				Rear Column				Front Column		Rear Column		Uplift Force		Downward		Horiz.						
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950 1625						
295				0-10			17'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1306	1143	2.29		YES					
296				11-20			15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1152	1669	3.34		YES					
297				21-30			12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	921	1864	3.72		YES					
298				31-40			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	730	1891	3.78		YES					
299				41-50			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	576	1823	3.65		YES					
300				51-60			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	499	1864	3.73		YES					
301				61-70			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	422	1819	3.64		YES					
302				0-10			16'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1370	1098	2.2		YES					
303				11-20			15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1243	1651	3.3		YES					
304				21-30			12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	993	1841	3.68		YES					
305				31-40			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	789	1868	3.74		YES					
306				41-50			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	621	1800	3.61		YES					
307				51-60			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	540	1846	3.69		YES					
308				61-70			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	458	1800	3.6		YES					
309				0-10			15'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1483	1025	2.05		YES					
310				11-20			15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1433	1633	3.27		YES					
311				21-30			12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1147	1823	3.65		YES					
312				31-40			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	907	1850	3.71		YES					
313				41-50			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	717	1782	3.57		YES					
314				51-60			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	621	1828	3.65		YES					
315				61-70			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	526	1782	3.56		YES					
316				0-10			15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1519	979.6	1.96		YES					
317				11-20			15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1519	1619	3.24		YES					
318				21-30			12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1215	1805	3.61		YES					
319				31-40			9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	961	1832	3.66		YES					
320				41-50			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	762	1764	3.53		YES					
321				51-60			6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	658	1805	3.61		YES					
322				61-70			5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	558	1764	3.52		YES					
323				0-10			14'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1578	929.7	1.85		YES					
324				11-20			14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1578	1533	3.06		YES					
325				21-30			12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1306	1764	3.53		YES					
326				31-40			9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1034	1791	3.58		YES					
327				41-50			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	816	1728	3.45		YES					
328				51-60			6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	707	1769	3.53		YES					
329				61-70			5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	599	1723	3.45		YES					
330				0-10			14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1587	907	1.82		YES					
331				11-20			14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1587	1497	2.99		YES					
332				21-30			12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1315	1728	3.45		YES					
333				31-40			9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1043	1751	3.51		YES					
334				41-50			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1687	3.37		YES					
335				51-60			6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	712	1728	3.45		YES					
336				61-70			5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	603	1683	3.37		YES					
337				0-10			14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1488	879.8	1.76		YES					
338				11-20			14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1488	1451	2.9		YES					
339				21-30			12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1234	1669	3.34		YES					
340				31-40			9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	975	1696	3.39		YES					
341				41-50			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	1633	3.27		YES					
342				51-60			6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63												



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-16)

4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME
JOB NO.

AZ20170

DATE
CHECKERJuly 5, 2024
SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																				US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size								Krinner Ground Screws G114x1600.										
								Front Column			Rear Column			Front Column				Rear Column				Front Column		Rear Column								
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950 1625		
344				0-10	15'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1433	1043	2.09	YES				
345				11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1388	1669	3.34	YES				
346				21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1111	1864	3.72	YES				
347				31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	880	1891	3.78	YES				
348				41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	694	1823	3.65	YES				
349				51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	599	1864	3.73	YES				
350				61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	508	1819	3.64	YES				
351				0-10	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1492	997.7	2	YES				
352				11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1492	1651	3.3	YES				
353				21-30	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1193	1841	3.68	YES				
354				31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	943	1868	3.74	YES				
355				41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	744	1800	3.61	YES				
356				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	649	1846	3.69	YES				
357				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	549	1800	3.6	YES				
358				0-10	14'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1601	925.2	1.85	YES				
359				11-20	14'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1601	1524	3.05	YES				
360				21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1374	1823	3.65	YES				
361				31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1088	1850	3.71	YES				
362				41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	857	1782	3.57	YES				
363				51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	744	1828	3.65	YES				
364				61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	630	1782	3.56	YES				
365				0-10	13'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1574	848.1	1.7	YES				
366				11-20	13'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1574	1401	2.8	YES				
367				21-30	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1456	1805	3.61	YES				
368				31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1152	1832	3.66	YES				
369				41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	907	1764	3.53	YES				
370				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	789	1805	3.61	YES				
371				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	667	1764	3.52	YES				
372				0-10	12'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1624	798.2	1.6	YES				
373				11-20	12'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1624	1320	2.64	YES				
374				21-30	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1560	1764	3.53	YES				
375				31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1234	1791	3.58	YES				
376				41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	975	1728	3.45	YES				
377				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	844	1769	3.53	YES				
378				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	717	1723	3.45	YES				
379				0-10	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1569	752.8	1.51	YES				
380				11-20	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1569	1238	2.48	YES				
381				21-30	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1569	1728	3.45	YES				
382				31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1243	1751	3.51	YES				
383				41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	980	1687	3.37	YES				
384				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	848	1728	3.45	YES				
385				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	721	1683	3.37	YES				
386				0-10	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1469	730.2	1.46	YES				
387				11-20	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1469	1197	2.4	YES				
388				21-30	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1469	1669	3.34	YES				
389				31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1166	1696	3.39	YES				
390				41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	921	1633	3.27	YES				
391				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	1669	3.34	YES				
392				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	676	1628	3.26	YES				



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-16)

4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME
JOB NO. →
→ A220170DATE
CHECKER →
→July 5, 2024
SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																		US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.										
								Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column								
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950 1625
393				0-10	14'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1583	975.1	1.95	YES		
394				11-20	14'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1583	1615	3.23	YES		
395				21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1311	1864	3.72	YES		
396			5	31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1039	1891	3.78	YES		
397				41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	816	1823	3.65	YES		
398				51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	707	1864	3.73	YES		
399				61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	599	1819	3.64	YES		
400				0-10	13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1583	898	1.8	YES		
401				11-20	13'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1583	1488	2.97	YES		
402				21-30	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1406	1841	3.68	YES		
403			10	31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1116	1868	3.74	YES		
404				41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	880	1800	3.61	YES		
405				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	762	1846	3.69	YES		
406				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	644	1800	3.6	YES		
407				0-10	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1615	793.7	1.58	YES		
408				11-20	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1615	1306	2.62	YES		
409				21-30	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1615	1823	3.65	YES		
410				31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1279	1850	3.71	YES		
411				41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1011	1782	3.57	YES		
412				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	875	1828	3.65	YES		
413				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	739	1782	3.56	YES		
414				0-10	11'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1565	721.1	1.44	YES		
415				11-20	11'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1565	1188	2.37	YES		
416				21-30	11'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1565	1655	3.31	YES		
417			20	31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1351	1832	3.66	YES		
418				41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1070	1764	3.53	YES		
419				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	925	1805	3.61	YES		
420				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	785	1764	3.52	YES		
421				0-10	10'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1601	671.2	1.34	YES		
422				11-20	10'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1601	1107	2.22	YES		
423				21-30	10'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1601	1546	3.09	YES		
424				31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1451	1791	3.58	YES		
425				41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1143	1728	3.45	YES		
426				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	993	1769	3.53	YES		
427				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	839	1723	3.45	YES		
428				0-10	10'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1610	657.6	1.32	YES		
429				11-20	10'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1610	1084	2.17	YES		
430				21-30	10'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1610	1510	3.02	YES		
431				31-40	9'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1456	1751	3.51	YES		
432				41-50	7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1152	1687	3.37	YES		
433				51-60	6'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	998	1728	3.45	YES		
434				61-70	5'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	844	1683	3.37	YES		
435				0-10	10'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1510	639.5	1.27	YES		
436				11-20	10'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1510	1048	2.1	YES		
437				21-30	10'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1510	1460	2.92	YES		
438			35	31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1365	1696	3.39	YES		
439				41-50	7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1079	1633	3.27	YES		
440				51-60	6'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	934	1669	3.34	YES		
441				61-70	5'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	789	1628	3.26	YES		



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-16)

4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→		DATE	→	
JOB NO.	→	AZ20170	CHECKER	→	July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																				US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size								Krinner Ground Screws G114x1600.										
								Front Column			Rear Column			Front Column				Rear Column				Front Column		Rear Column		Actual Force (kg)						
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)		
442				0-10		12'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1587	843.5	1.68		YES		
443				11-20		12'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1587	1392	2.78		YES		
444				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1524	1864	3.72		YES		
445				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1206	1891	3.78		YES		
446				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	952	1823	3.65		YES		
447				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	825	1864	3.73		YES		
448				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	698	1819	3.64		YES		
449				0-10		11'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1569	766.4	1.53		YES		
450				11-20		11'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1569	1265	2.53		YES		
451				21-30		11'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1569	1764	3.53		YES		
452				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1297	1868	3.74		YES		
453				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1025	1800	3.61		YES		
454				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	889	1846	3.69		YES		
455				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	748	1800	3.6		YES		
456				0-10		10'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1565	662.1	1.32		YES		
457				11-20		10'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1565	1088	2.18		YES		
458				21-30		10'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1565	1519	3.04		YES		
459				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1488	1850	3.71		YES		
460				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1175	1782	3.57		YES		
461				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1016	1828	3.65		YES		
462				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	862	1782	3.56		YES		
463				0-10		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1569	621.3	1.24		YES		
464				11-20		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1569	1025	2.05		YES		
465				21-30		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1569	1429	2.86		YES		
466				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1569	1832	3.66		YES		
467				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1238	1764	3.53		YES		
468				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1075	1805	3.61		YES		
469				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	907	1764	3.52		YES		
470				0-10		9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1592	576	1.15		YES		
471				11-20		9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1592	947.8	1.9		YES		
472				21-30		9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1592	1324	2.65		YES		
473				31-40		9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1592	1696	3.4		YES		
474				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1329	1728	3.45		YES		
475				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1152	1769	3.53		YES		
476				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	975	1723	3.45		YES		
477				0-10		9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1601	562.4	1.13		YES		
478				11-20		9'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1601	929.7	1.86		YES		
479				21-30		9'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1601	1293	2.59		YES		
480				31-40		9'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1601	1660	3.32		YES		
481				41-50		7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1333	1687	3.37		YES		
482				51-60		6'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1156	1728	3.45		YES		
483				61-70		5'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	980	1683	3.37		YES		
484				0-10		9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1501	548.8	1.09		YES		
485				11-20		9'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1501	898	1.8		YES		
486				21-30		9'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1501	1252	2.5		YES		
487				31-40		9'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1501	1605	3.21		YES		
488				41-50		7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1252	1633	3.27		YES		
489				51-60		6'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1084	1669	3.34		YES		
490				61-70		5'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	916						



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-16)

4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→		DATE	→	
JOB NO.	→	AZ20170	CHECKER	→	July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																								US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size								Krinner Ground Screws G114x1600.														
					Front Column			Rear Column			Front Column				Rear Column				Front Column		Rear Column		Actual Force (kg)													
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950 1625						
491				0-10		11'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1610	739.2	1.48	YES							
492				11-20		11'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1610	1224	2.45	YES							
493				21-30		11'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1610	1705	3.41	YES							
494				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1392	1891	3.78	YES							
495				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1098	1823	3.65	YES							
496				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	952	1864	3.73	YES							
497				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	803	1819	3.64	YES							
498				0-10		10'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1569	666.7	1.33	YES							
499				11-20		10'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1569	1102	2.2	YES							
500				21-30		10'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1569	1533	3.07	YES							
501				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1492	1868	3.74	YES							
502				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1179	1800	3.61	YES							
503				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1020	1846	3.69	YES							
504				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	862	1800	3.6	YES							
505				0-10		9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1615	594.1	1.19	YES							
506				11-20		9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1615	979.6	1.96	YES							
507				21-30		9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1615	1370	2.73	YES							
508				31-40		9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1615	1755	3.51	YES							
509				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1374	1782	3.57	YES							
510				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1166	1828	3.65	YES							
511				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	989	1782	3.56	YES							
512				0-10		8'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1615	557.8	1.11	YES							
513				11-20		8'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1615	916.1	1.83	YES							
514				21-30		8'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1615	1279	2.56	YES							
515				31-40		8'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1615	1642	3.28	YES							
516				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1424	1764	3.53	YES							
517				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1234	1805	3.61	YES							
518				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1043	1764	3.52	YES							
519				0-10		8'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1624	512.5	1.02	YES							
520				11-20		8'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1624	843.5	1.69	YES							
521				21-30		8'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1624	1169	2.35	YES							
522				31-40		8'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1624	1510	3.02	YES							
523				41-50		7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1542	1751	3.5	YES							
524				51-60		6'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1320	1769	3.53	YES							
525				61-70		5'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1116	1723	3.45	YES							
526				0-10		7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1528	471.7	0.94	YES							
527				11-20		7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1528	775.5	1.55	YES							
528				21-30		7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1528	1079	2.16	YES							
529				31-40		7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1528	1383	2.77	YES							
530				41-50		7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1528	1687	3.37	YES							
531				51-60		6'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1324	1728	3.45	YES							
532				61-70		5'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1120	1683	3.37	YES							
533				0-10		7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1433	453.5	0.91	YES							
534				11-20		7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1433	748.3	1.5	YES							
535				21-30		7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1433	1043	2.09	YES							
536				31-40		7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1433	1338	2.68	YES							
537				41-50		7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1433	1633	3.27	YES							
538				51-60		6'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1243	1669	3.34	YES							
539				61-70		5'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-6"	8"	2-7/8"	2	8	7"	2-7/8"	2	8	7"	4.5	63	4.5	63	1052	1628	3.26	YES							



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Exposure C, ASCE 7-10, SCH 80- GM Chart for 4 Modules 90-160 Mph



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME JOB NO.	→ →	AZ20170	DATE CHECKER	→ →	July 5, 2024 SAM
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SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)		
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.									
								Front Column			Rear Column			Front Column			Rear Column			Fornt Column		Rear Column		Actual Force (kg)					
								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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950 1625
1				0-10	76"	18'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	698	1247	2.49	YES
2				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	567	1669	3.34	YES
3				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	454	1864	3.72	YES
4				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	358	1891	3.78	YES
5				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	286	1823	3.65	YES
6				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	245	1864	3.73	YES
7				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	209	1819	3.64	YES
8				0-10	76"	18'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	762	1234	2.47	YES
9				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	617	1651	3.3	YES
10				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	494	1841	3.68	YES
11				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	390	1868	3.74	YES
12				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	308	1800	3.61	YES
13				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	268	1846	3.69	YES
14				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	227	1800	3.6	YES
15				0-10	76"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	898	1220	2.44	YES
16				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	726	1633	3.27	YES
17				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	580	1823	3.65	YES
18				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	463	1850	3.71	YES
19				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	363	1782	3.57	YES
20				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	317	1828	3.65	YES
21				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	268	1782	3.56	YES
22				0-10	76"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	957	1211	2.42	YES
23				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	776	1619	3.24	YES
24				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	621	1805	3.61	YES
25				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	490	1832	3.66	YES
26				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	390	1764	3.53	YES
27				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	336	1805	3.61	YES
28				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	286	1764	3.52	YES
29				0-10	76"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1039	1184	2.37	YES
30				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	844	1583	3.17	YES
31				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	671	1764	3.53	YES
32				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	535	1791	3.58	YES
33				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	422	1728	3.45	YES
34				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	363	1769	3.53	YES
35				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	308	1723	3.45	YES
36				0-10	76"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1048	1161	2.32	YES
37				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	848	1551	3.1	YES
38				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	680	1728	3.45	YES
39				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	535	1751	3.51	YES
40				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	426	1687	3.37	YES
41				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	367	1728	3.45	YES
42				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	313	1683	3.37	YES
43				0-10	76"	18'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	975	1125	2.24	YES
44				11-20		15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	794	1501	3	YES
45				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	335	1669	3.34	YES
46				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	503	1696	3.39	YES
47				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	395	1633	3.27	YES
48				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	345	1669	3.34	YES
49				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	290	1628	3.26	YES



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME
JOB NO. →
→
AZ20170DATE
CHECKER →
→July 5, 2024
SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																				US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.				Actual Force (kg)								
					Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column		Uplift Force											
					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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)					
50	95	C	5	0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	807	1247	2.49	YES			
51				11-20			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	653	1669	3.34	YES			
52				21-30			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	522	1864	3.72	YES			
53				31-40			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	413	1891	3.78	YES			
54				41-50			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	327	1823	3.65	YES			
55				51-60			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	281	1864	3.73	YES			
56				61-70			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	240	1819	3.64	YES			
57			10	0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	875	1234	2.47	YES			
58				11-20			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	712	1651	3.3	YES			
59				21-30			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	567	1841	3.68	YES			
60				31-40			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	449	1868	3.74	YES			
61				41-50			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	354	1800	3.61	YES			
62				51-60			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	308	1846	3.69	YES			
63				61-70			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	259	1800	3.6	YES			
64			15	0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1025	1220	2.44	YES			
65				11-20			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	830	1633	3.27	YES			
66				21-30			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	667	1823	3.65	YES			
67				31-40			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	526	1850	3.71	YES			
68				41-50			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	417	1782	3.57	YES			
69				51-60			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	358	1828	3.65	YES			
70				61-70			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	304	1782	3.56	YES			
71			20	0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1093	1211	2.42	YES			
72				11-20			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	884	1619	3.24	YES			
73				21-30			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	707	1805	3.61	YES			
74				31-40			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	562	1832	3.66	YES			
75				41-50			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	444	1764	3.53	YES			
76				51-60			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	385	1805	3.61	YES			
77				61-70			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	327	1764	3.52	YES			
78			25	0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1184	1184	2.37	YES			
79				11-20			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	957	1583	3.17	YES			
80				21-30			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	766	1764	3.53	YES			
81				31-40			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	608	1791	3.58	YES			
82				41-50			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	481	1728	3.45	YES			
83				51-60			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	417	1769	3.53	YES			
84				61-70			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	349	1723	3.45	YES			
85			30	0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1193	1161	2.32	YES			
86				11-20			0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	966	1551	3.1	YES			
87				21-30			0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	1728	3.45	YES			
88				31-40			0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	612	1751	3.51	YES			
89				41-50			0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	481	1687	3.37	YES			
90				51-60			0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	417	1728	3.45	YES			
91				61-70			0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	354	1683	3.37	YES			
92	35	0-10	7'6"	18'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1111	1125	2.24	YES					
93		11-20			0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	902	1501	3	YES					
94		21-30			0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	721	1669	3.34	YES					
95		31-40			0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	571	1696	3.39	YES					
96		41-50			0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	449	1633	3.27	YES					
97		51-60			0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	390	1669	3.34	YES					
98		61-70			0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	331	1628	3.26	YES					



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME
JOB NO. →
→ A220170DATE
CHECKER →
→July 5, 2024
SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)		
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.									
								Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column		Actual Force (kg)					
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.
99				0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	921	1247	2.49	YES
100				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	477	1669	3.34	YES
101				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	594	1864	3.72	YES
102				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	472	1891	3.78	YES
103				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	372	1823	3.65	YES
104				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	322	1864	3.73	YES
105				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	272	1819	3.64	YES
106				0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	998	1234	2.47	YES
107				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	807	1651	3.3	YES
108				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	644	1841	3.68	YES
109				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	512	1868	3.74	YES
110				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	404	1800	3.61	YES
111				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	349	1846	3.69	YES
112				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	295	1800	3.6	YES
113				0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1161	1220	2.44	YES
114				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	943	1633	3.27	YES
115				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	753	1823	3.65	YES
116				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	594	1850	3.71	YES
117				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	472	1782	3.57	YES
118				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	408	1828	3.65	YES
119				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	345	1782	3.56	YES
120				0-10	7'6"	18'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1202	1175	2.35	YES
121				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1002	1619	3.24	YES
122				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	803	1805	3.61	YES
123				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	635	1832	3.66	YES
124				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	499	1764	3.53	YES
125				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	435	1805	3.61	YES
126				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	367	1764	3.52	YES
127				0-10	7'6"	17'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1261	1120	2.24	YES
128				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1079	1583	3.17	YES
129				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	866	1764	3.53	YES
130				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	685	1791	3.58	YES
131				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	540	1728	3.45	YES
132				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	467	1769	3.53	YES
133				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	395	1723	3.45	YES
134				0-10	7'6"	17'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1270	1098	2.2	YES
135				11-20		15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1088	1551	3.1	YES
136				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	871	1728	3.45	YES
137				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	689	1751	3.51	YES
138				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	544	1687	3.37	YES
139				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	472	1728	3.45	YES
140				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	399	1683	3.37	YES
141				0-10	7'6"	17'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1188	1061	2.13	YES
142				11-20		15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1016	1501	3	YES
143				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	816	1669	3.34	YES
144				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	644	1696	3.39	YES
145				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	508	1633	3.27	YES
146				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	440	1669	3.34	YES
147				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	372	1628	3.26	YES



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME
JOB NO. →
→ A220170DATE
CHECKER →
→July 5, 2024
SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																				US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size								Krinner Ground Screws G114x1600.										
								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)	Uplift Force	Downward	Horiz.				
						[S1] (ft-in)	[S2] (ft-in)																			Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950 1625						
148				0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1034	1247	2.49	YES			
149				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	839	1669	3.34	YES			
150				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	671	1864	3.72	YES			
151				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	531	1891	3.78	YES			
152				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	422	1823	3.65	YES			
153				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	363	1864	3.73	YES			
154				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	308	1819	3.64	YES			
155				0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1120	1234	2.47	YES			
156				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	907	1651	3.3	YES			
157				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	726	1841	3.68	YES			
158				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	576	1868	3.74	YES			
159				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	454	1800	3.61	YES			
160				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	395	1846	3.69	YES			
161				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	331	1800	3.6	YES			
162				0-10	7'6"	17'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1234	1156	2.31	YES			
163				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1057	1633	3.27	YES			
164				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	844	1823	3.65	YES			
165				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	671	1850	3.71	YES			
166				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	526	1782	3.57	YES			
167				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	458	1828	3.65	YES			
168				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	385	1782	3.56	YES			
169				0-10	7'6"	17'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1311	1143	2.29	YES			
170				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1125	1619	3.24	YES			
171				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	898	1805	3.61	YES			
172				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	712	1832	3.66	YES			
173				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	562	1764	3.53	YES			
174				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	485	1805	3.61	YES			
175				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	413	1764	3.52	YES			
176				0-10	7'6"	16'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1329	1057	2.11	YES			
177				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1211	1583	3.17	YES			
178				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	966	1764	3.53	YES			
179				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	766	1791	3.58	YES			
180				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	603	1728	3.45	YES			
181				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	526	1769	3.53	YES			
182				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	444	1723	3.45	YES			
183				0-10	7'6"	16'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1338	1034	2.07	YES			
184				11-20		15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1220	1551	3.1	YES			
185				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	975	1728	3.45	YES			
186				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	1751	3.51	YES			
187				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	608	1687	3.37	YES			
188				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	526	1728	3.45	YES			
189				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	444	1683	3.37	YES			
190				0-10	7'6"	16'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1252	1002	2	YES			
191				11-20		15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1138	1501	3	YES			
192				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	912	1669	3.34	YES			
193				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	721	1696	3.39	YES			
194				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	571	1633	3.27	YES			
195				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	494	1669	3.34	YES			
196				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	417	1628	3.26	YES			



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME
JOB NO. →
→ AZ20170DATE
CHECKER →
→July 5, 2024
SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																				US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size								Krinner Ground Screws G114x1600.										
								Front Column			Rear Column			Front Column				Rear Column				Front Column		Rear Column		Actual Force (kg)						
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift Force= 1950 kg (1625 kg w/ FOS) 1950 1625		
197				0-10	7'6"	18'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1161	1247	2.49	YES			
198				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	839	1669	3.34	YES			
199				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	753	1864	3.72	YES			
200				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	594	1891	3.78	YES			
201				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	472	1823	3.65	YES			
202				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	408	1864	3.73	YES			
203				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	345	1819	3.64	YES			
204				0-10	7'6"	18'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1220	1197	2.4	YES			
205				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1016	1651	3.3	YES			
206				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	812	1841	3.68	YES			
207				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	644	1868	3.74	YES			
208				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	508	1800	3.61	YES			
209				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	440	1846	3.69	YES			
210				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	372	1800	3.6	YES			
211				0-10	7'6"	17'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1333	1120	2.24	YES			
212				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1179	1633	3.27	YES			
213				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	943	1823	3.65	YES			
214				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	744	1850	3.71	YES			
215				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	590	1782	3.57	YES			
216				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	508	1828	3.65	YES			
217				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	431	1782	3.56	YES			
218				0-10	7'6"	16'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1374	1079	2.16	YES			
219				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1252	1619	3.24	YES			
220				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	998	1805	3.61	YES			
221				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	789	1832	3.66	YES			
222				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	626	1764	3.53	YES			
223				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	540	1805	3.61	YES			
224				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	458	1764	3.52	YES			
225				0-10	7'6"	16'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1433	1025	2.05	YES			
226				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1347	1583	3.17	YES			
227				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1075	1764	3.53	YES			
228				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	853	1791	3.58	YES			
229				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	671	1728	3.45	YES			
230				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	585	1769	3.53	YES			
231				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	494	1723	3.45	YES			
232				0-10	7'6"	15'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1401	970.5	1.94	YES			
233				11-20		15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1356	1551	3.1	YES			
234				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1084	1728	3.45	YES			
235				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	857	1751	3.51	YES			
236				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	676	1687	3.37	YES			
237				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	585	1728	3.45	YES			
238				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	494	1683	3.37	YES			
239				0-10	7'6"	15'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1311	943.3	1.88	YES			
240				11-20		15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1265	1501	3	YES			
241				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1011	1669	3.34	YES			
242				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	803	1696	3.39	YES			
243				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	635	1633	3.27	YES			
244				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	549	1669	3.34	YES			
245				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	463	1628	3.26	YES			



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME
JOB NO. →
→ A220170DATE
CHECKER →
→July 5, 2024
SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																			US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.											
								Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column									
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950 1625	
246	115	C	5	0-10	17'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1220	1179	2.36	YES			
247				11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1043	1669	3.34	YES			
248				21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1864	3.72	YES			
249				31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	662	1891	3.78	YES			
250				41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	522	1823	3.65	YES			
251				51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	454	1864	3.73	YES			
252				61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	381	1819	3.64	YES			
253			10	0-10	17'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1315	1166	2.33	YES			
254				11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1129	1651	3.3	YES			
255				21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	902	1841	3.68	YES			
256				31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	712	1868	3.74	YES			
257				41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	562	1800	3.61	YES			
258				51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	490	1846	3.69	YES			
259				61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	413	1800	3.6	YES			
260			15	0-10	16'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1392	1057	2.11	YES			
261				11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1302	1633	3.27	YES			
262				21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1043	1823	3.65	YES			
263				31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	825	1850	3.71	YES			
264				41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	653	1782	3.57	YES			
265				51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	567	1828	3.65	YES			
266				61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	476	1782	3.56	YES			
267			20	0-10	15'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1429	1011	2.03	YES			
268				11-20	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1383	1619	3.24	YES			
269				21-30	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1107	1805	3.61	YES			
270				31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	875	1832	3.66	YES			
271				41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	689	1764	3.53	YES			
272				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	599	1805	3.61	YES			
273				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	508	1764	3.52	YES			
274			25	0-10	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1488	961.5	1.92	YES			
275				11-20	15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1488	1583	3.17	YES			
276				21-30	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1188	1764	3.53	YES			
277				31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	943	1791	3.58	YES			
278				41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	744	1728	3.45	YES			
279				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	644	1769	3.53	YES			
280				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	544	1723	3.45	YES			
281			30	0-10	15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1497	938.8	1.88	YES			
282				11-20	15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1497	1551	3.1	YES			
283				21-30	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1197	1728	3.45	YES			
284				31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	948	1751	3.51	YES			
285				41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	748	1687	3.37	YES			
286				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	649	1728	3.45	YES			
287				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	549	1683	3.37	YES			
288			35	0-10	15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1401	911.6	1.82	YES			
289				11-20	15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1401	1501	3	YES			
290				21-30	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1120	1669	3.34	YES			
291				31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	889	1696	3.39	YES			
292	41-50	7'-6"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	698	1633	3.27	YES					
293	51-60	6'-6"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	608	1669	3.34	YES					
294	61-70	5'-6"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	512	1628	3.26	YES					



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→		DATE	→	
JOB NO.	→	AZ20170	CHECKER	→	July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)		
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.									
								Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column							
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.
295				0-10		17'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1306	1143	2.29	YES
296				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1152	1669	3.34	YES
297				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	921	1864	3.72	YES
298				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	730	1891	3.78	YES
299				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	576	1823	3.65	YES
300				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	499	1864	3.73	YES
301				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	422	1819	3.64	YES
302				0-10		16'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1370	1098	2.2	YES
303				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	1243	1651	3.3	YES
304				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	993	1841	3.68	YES
305				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	789	1868	3.74	YES
306				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	621	1800	3.61	YES
307				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	540	1846	3.69	YES
308				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	458	1800	3.6	YES
309				0-10		15'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1483	1025	2.05	YES
310				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1433	1633	3.27	YES
311				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1147	1823	3.65	YES
312				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	907	1850	3.71	YES
313				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	717	1782	3.57	YES
314				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	621	1828	3.65	YES
315				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	526	1782	3.56	YES
316				0-10		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1519	979.6	1.96	YES
317				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1519	1619	3.24	YES
318				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1215	1805	3.61	YES
319				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	961	1832	3.66	YES
320				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	762	1764	3.53	YES
321				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	658	1805	3.61	YES
322				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	558	1764	3.52	YES
323				0-10		14'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1578	929.7	1.85	YES
324				11-20		14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1578	1533	3.06	YES
325				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1306	1764	3.53	YES
326				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1034	1791	3.58	YES
327				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	816	1728	3.45	YES
328				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	707	1769	3.53	YES
329				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	599	1723	3.45	YES
330				0-10		14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1587	907	1.82	YES
331				11-20		14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1587	1497	2.99	YES
332				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1315	1728	3.45	YES
333				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1043	1751	3.51	YES
334				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1687	3.37	YES
335				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	712	1728	3.45	YES
336				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	603	1683	3.37	YES
337				0-10		14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1488	879.8	1.76	YES
338				11-20		14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1488	1451	2.9	YES
339				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	1234	1669	3.34	YES
340				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	975	1696	3.39	YES
341				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	1633	3.27	YES
342				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	667	1669	3.34	YES
343				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	562	1628	3.26	YES

NOTE:

- Top Cap design to be provided by "K2 Systems". Average Force of top Cap = 1950 kg (4299 lbs).
- If Actual force is greater than Average force, Please contact "K2 Systems"



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME JOB NO.	→ →	AZ20170	DATE CHECKER	→ →	July 5, 2024 SAM
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SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)		
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.									
								Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column		Actual Force (kg)					
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.
344	130	C	5	0-10	76"	15'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1433	1043	2.09	YES
345				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	1388	1669	3.34	YES
346				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1111	1864	3.72	YES
347				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	880	1891	3.78	YES
348				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	694	1823	3.65	YES
349				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	599	1864	3.73	YES
350				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	508	1819	3.64	YES
351			10	0-10	76"	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1492	997.7	2	YES
352				11-20		15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1492	1651	3.3	YES
353				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1193	1841	3.68	YES
354				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	943	1868	3.74	YES
355				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	744	1800	3.61	YES
356				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	649	1846	3.69	YES
357				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	549	1800	3.6	YES
358			15	0-10	76"	14'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1601	925.2	1.85	YES
359				11-20		14'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1601	1524	3.05	YES
360				21-30		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1374	1823	3.65	YES
361				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1088	1850	3.71	YES
362				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	857	1782	3.57	YES
363				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	744	1828	3.65	YES
364				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	630	1782	3.56	YES
365			20	0-10	76"	13'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1574	848.1	1.7	YES
366				11-20		13'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1574	1401	2.8	YES
367				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1456	1805	3.61	YES
368				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1152	1832	3.66	YES
369				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	907	1764	3.53	YES
370				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	789	1805	3.61	YES
371				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	667	1764	3.52	YES
372			25	0-10	76"	12'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1624	798.2	1.6	YES
373				11-20		12'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1624	1320	2.64	YES
374				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1560	1764	3.53	YES
375				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1234	1791	3.58	YES
376				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	975	1728	3.45	YES
377				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	844	1769	3.53	YES
378				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	717	1723	3.45	YES
379			30	0-10	76"	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1569	752.8	1.51	YES
380				11-20		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1569	1238	2.48	YES
381				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1569	1728	3.45	YES
382				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1243	1751	3.51	YES
383				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	980	1687	3.37	YES
384				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	848	1728	3.45	YES
385				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	721	1683	3.37	YES
386			35	0-10	76"	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1469	730.2	1.46	YES
387				11-20		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1469	1197	2.4	YES
388				21-30		12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1469	1669	3.34	YES
389				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1166	1696	3.39	YES
390	35	41-50	76"	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	921	1633	3.27	YES		
391		51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	798	1669	3.34	YES		
392		61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	676	1628	3.26	YES		



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME
JOB NO. →
→ A220170DATE
CHECKER →
→July 5, 2024
SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																								US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size								Krinner Ground Screws G114x1600.														
								Front Column			Rear Column			Front Column				Rear Column				Front Column		Rear Column												
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950 1625						
393				0-10	14'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1583	975.1	1.95	YES								
394				11-20	14'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1583	1615	3.23	YES								
395				21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1311	1864	3.72	YES								
396				31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1039	1891	3.78	YES								
397				41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	816	1823	3.65	YES								
398				51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	707	1864	3.73	YES								
399				61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	599	1819	3.64	YES								
400				0-10	13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1583	898	1.8	YES								
401				11-20	13'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1583	1488	2.97	YES								
402				21-30	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1406	1841	3.68	YES								
403				31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1116	1868	3.74	YES								
404				41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	880	1800	3.61	YES								
405				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	762	1846	3.69	YES								
406				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	644	1800	3.6	YES								
407				0-10	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1615	793.7	1.58	YES								
408				11-20	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1615	1306	2.62	YES								
409				21-30	12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1615	1823	3.65	YES								
410				31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1279	1850	3.71	YES								
411				41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1011	1782	3.57	YES								
412				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	875	1828	3.65	YES								
413				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	739	1782	3.56	YES								
414				0-10	11'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1565	721.1	1.44	YES								
415				11-20	11'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1565	1188	2.37	YES								
416				21-30	11'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1565	1655	3.31	YES								
417				31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1351	1832	3.66	YES								
418				41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1070	1764	3.53	YES								
419				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	925	1805	3.61	YES								
420				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	785	1764	3.52	YES								
421				0-10	10'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1601	671.2	1.34	YES								
422				11-20	10'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1601	1107	2.22	YES								
423				21-30	10'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1601	1546	3.09	YES								
424				31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1451	1791	3.58	YES								
425				41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1143	1728	3.45	YES								
426				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	993	1769	3.53	YES								
427				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	839	1723	3.45	YES								
428				0-10	10'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1610	657.6	1.32	YES								
429				11-20	10'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1610	1084	2.17	YES								
430				21-30	10'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1610	1510	3.02	YES								
431				31-40	9'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1456	1751	3.51	YES								
432				41-50	7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1152	1687	3.37	YES								
433				51-60	6'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	998	1728	3.45	YES								
434				61-70	5'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	844	1683	3.37	YES								
435				0-10	10'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1510	639.5	1.27	YES								
436				11-20	10'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1510	1048	2.1	YES								
437				21-30	10'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1510	1460	2.92	YES								
438				31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1365	1696	3.39	YES								
439				41-50	7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1079	1633	3.27	YES								
440				51-60	6'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	934	1669	3.34	YES								
441				61-70	5'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	789	1628	3.26	YES								

NOTE:

- Top Cap design to be provided by "K2 Systems". Average Force of top Cap = 1950 kg (4299 lbs).
- If Actual force is greater than Average force, Please contact "K2 Systems" For special engineering design of Top Cap.
- Top Cap is reviewed only for the uplift value provided in Report.
- Factor of Safety (FOS) = 1.2
- Uplift force of top cap = 1950 kg, uplift force of top cap with factor of safety =



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→		DATE	→	
JOB NO.	→	AZ20170	CHECKER	→	July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																				US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.												
								Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column		Actual Force (kg)								
								[S1] (ft-in)	[S2] (ft-in)		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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS) 1950 1625
442				0-10	12'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1587	843.5	1.68	YES				
443				11-20	12'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1587	1392	2.78	YES				
444				21-30	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1524	1864	3.72	YES				
445				31-40	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1206	1891	3.78	YES				
446				41-50	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	952	1823	3.65	YES				
447				51-60	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	825	1864	3.73	YES				
448				61-70	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	698	1819	3.64	YES				
449				0-10	11'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1569	766.4	1.53	YES				
450				11-20	11'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1569	1265	2.53	YES				
451				21-30	11'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1569	1764	3.53	YES				
452				31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1297	1868	3.74	YES				
453				41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1025	1800	3.61	YES				
454				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	889	1846	3.69	YES				
455				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	748	1800	3.6	YES				
456				0-10	10'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1565	662.1	1.32	YES				
457				11-20	10'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1565	1088	2.18	YES				
458				21-30	10'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1565	1519	3.04	YES				
459				31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1488	1850	3.71	YES				
460				41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1175	1782	3.57	YES				
461				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1016	1828	3.65	YES				
462				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	862	1782	3.56	YES				
463				0-10	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1569	621.3	1.24	YES				
464				11-20	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1569	1025	2.05	YES				
465				21-30	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1569	1429	2.86	YES				
466				31-40	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1569	1832	3.66	YES				
467				41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1238	1764	3.53	YES				
468				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1075	1805	3.61	YES				
469				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	907	1764	3.52	YES				
470				0-10	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1592	576	1.15	YES				
471				11-20	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1592	947.8	1.9	YES				
472				21-30	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1592	1324	2.65	YES				
473				31-40	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1592	1696	3.4	YES				
474				41-50	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1329	1728	3.45	YES				
475				51-60	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1152	1769	3.53	YES				
476				61-70	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	975	1723	3.45	YES				
477				0-10	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1601	562.4	1.13	YES				
478				11-20	9'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1601	929.7	1.86	YES				
479				21-30	9'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1601	1293	2.59	YES				
480				31-40	9'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1601	1660	3.32	YES				
481				41-50	7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1333	1687	3.37	YES				
482				51-60	6'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1156	1728	3.45	YES				
483				61-70	5'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	980	1683	3.37	YES				
484				0-10	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1501	548.8	1.09	YES				
485				11-20	9'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1501	898	1.8	YES				
486				21-30	9'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1501	1252	2.5	YES				
487				31-40	9'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1501	1605	3.21	YES				
488				41-50	7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1252	1633	3.27	YES				
489				51-60	6'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	1084	1669	3.34	YES				
490				61-70	5'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7"	2'-7/8"	2	8	7"	4.5	63	4.5	63	916	1628	3.26	YES				



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

4 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME
JOB NO. →
A220170DATE
CHECKER →July 5, 2024
SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)		
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.									
								Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column		Actual Force (kg)					
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.
491	160	C	5	0-10	7'6"	11'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1610	739.2	1.48	YES
492				11-20		11'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1610	1224	2.45	YES
493				21-30		11'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1610	1705	3.41	YES
494				31-40		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1392	1891	3.78	YES
495				41-50		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1098	1823	3.65	YES
496				51-60		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	952	1864	3.73	YES
497				61-70		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	803	1819	3.64	YES
498			10	0-10	7'6"	10'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1569	666.7	1.33	YES
499				11-20		10'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1569	1102	2.2	YES
500				21-30		10'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1569	1533	3.07	YES
501				31-40		9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1492	1868	3.74	YES
502				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1179	1800	3.61	YES
503				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1020	1846	3.69	YES
504				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	862	1800	3.6	YES
505			15	0-10	7'6"	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1615	594.1	1.19	YES
506				11-20		9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1615	979.6	1.96	YES
507				21-30		9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1615	1370	2.73	YES
508				31-40		9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1615	1755	3.51	YES
509				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1374	1782	3.57	YES
510				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1166	1828	3.65	YES
511				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	989	1782	3.56	YES
512			20	0-10	7'6"	8'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1615	557.8	1.11	YES
513				11-20		8'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1615	916.1	1.83	YES
514				21-30		8'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1615	1279	2.56	YES
515				31-40		8'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1615	1642	3.28	YES
516				41-50		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1424	1764	3.53	YES
517				51-60		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1234	1805	3.61	YES
518				61-70		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1043	1764	3.52	YES
519			25	0-10	7'6"	8'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1624	512.5	1.02	YES
520				11-20		8'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1624	843.5	1.69	YES
521				21-30		8'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1624	1169	2.35	YES
522				31-40		8'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1624	1510	3.02	YES
523				41-50		7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1542	1751	3.5	YES
524				51-60		6'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1320	1769	3.53	YES
525				61-70		5'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1116	1723	3.45	YES
526			30	0-10	7'6"	7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1528	471.7	0.94	YES
527				11-20		7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1528	775.5	1.55	YES
528				21-30		7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1528	1079	2.16	YES
529				31-40		7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1528	1383	2.77	YES
530				41-50		7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1528	1687	3.37	YES
531				51-60		6'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1324	1728	3.45	YES
532				61-70		5'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1120	1683	3.37	YES
533			35	0-10	7'6"	7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1433	453.5	0.91	YES
534				11-20		7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1433	748.3	1.5	YES
535				21-30		7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1433	1043	2.09	YES
536				31-40		7'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1433	1338	2.68	YES
537	41-50	7'-6"		0'-6"		2'-0"	3'-6"	8"	2'-0"	5'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1433	1633	3.27	YES		
538	51-60	6'-6"		0'-6"		2'-0"	3'-6"	8"	2'-0"	5'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1243	1669	3.34	YES		
539	61-70	5'-6"		0'-6"		2'-0"	3'-6"	8"	2'-0"	5'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	1052	1628	3.26	YES		



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5 MODULES 80 SCH.

	GM Solar Shade				
	JOB NAME JOB NO.	→ →	AZ20170	DATE CHECKER	→ → 05 July 2024 SAM

CRITERIA

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

[A] - **GOVERNING CODE** → IBC 2015, ACI 318-14, ASCE 7-10, CBC 2016 & IBC 2018, ACI 318-14, ASCE 7-16, CBC 2019.

[B] - **MODULE SIZE** → 28.125 Square Foot.

[C] - **WIND SPEED (MPH)** → 90,95,100,105,110,115,120,130,140,150 & 160 mph for exposure B & C

[D] - **SNOW LOAD (PSF)** → 0 PSF TO 70 PSF (in increments of 10 psf)

[E] - **TILT ANGLE** → 5 DEGREE TO 30 DEGREE (in increments of 5 Degree)

[F] - **FOUNDATION** → POLE FOOTING

→ HELICAL PILES (US Helicals Cataloge)

→ KRINNER GROUND SCREW

[G] - **SOIL- ASSUMPTION** → **SOIL BEARING**

Bottoms of bearing footings shall bear on Undisturbed Native Soil

(Refer tables for exact pile depths)

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/ft below natural grade)**

150 psf

→ **Coefficient of friction** 0.25

[H] - **ASSUMPTION**

→ 3" Dia pipe beam (Sch. 80) → 

→ 3" Dia pipe Column (Sch. 80) → Base fix & Top Free

→ Yield Strss of 3" dia pipe (Sch. 80) - Fy = 35 ksi & Fu = 58 ksi

→ Yield Strss of krinner ground screw- Fy = 35 ksi

→ 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.

[I] - **Pole foundation Assumptions and Limitations:**

→ The references used in the different analysis methods in this program are as follows:-

International Building Code (IBC) 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.

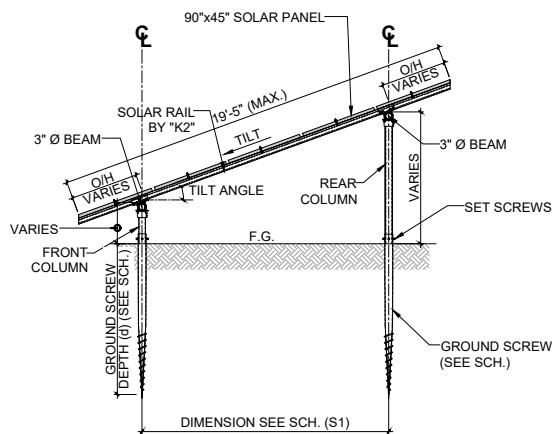
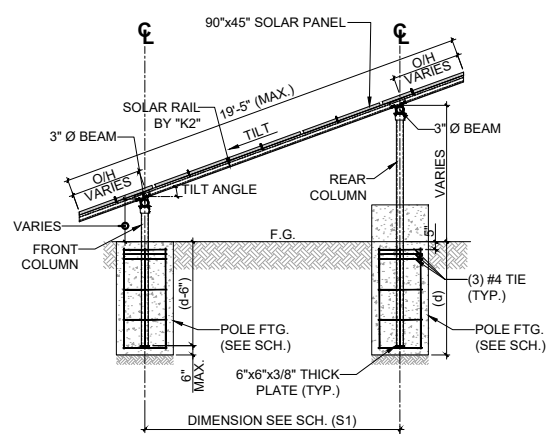
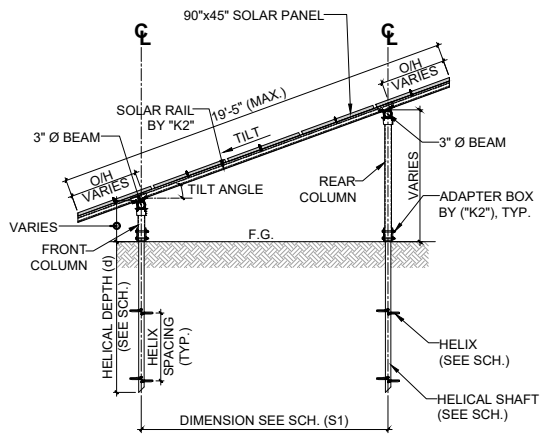
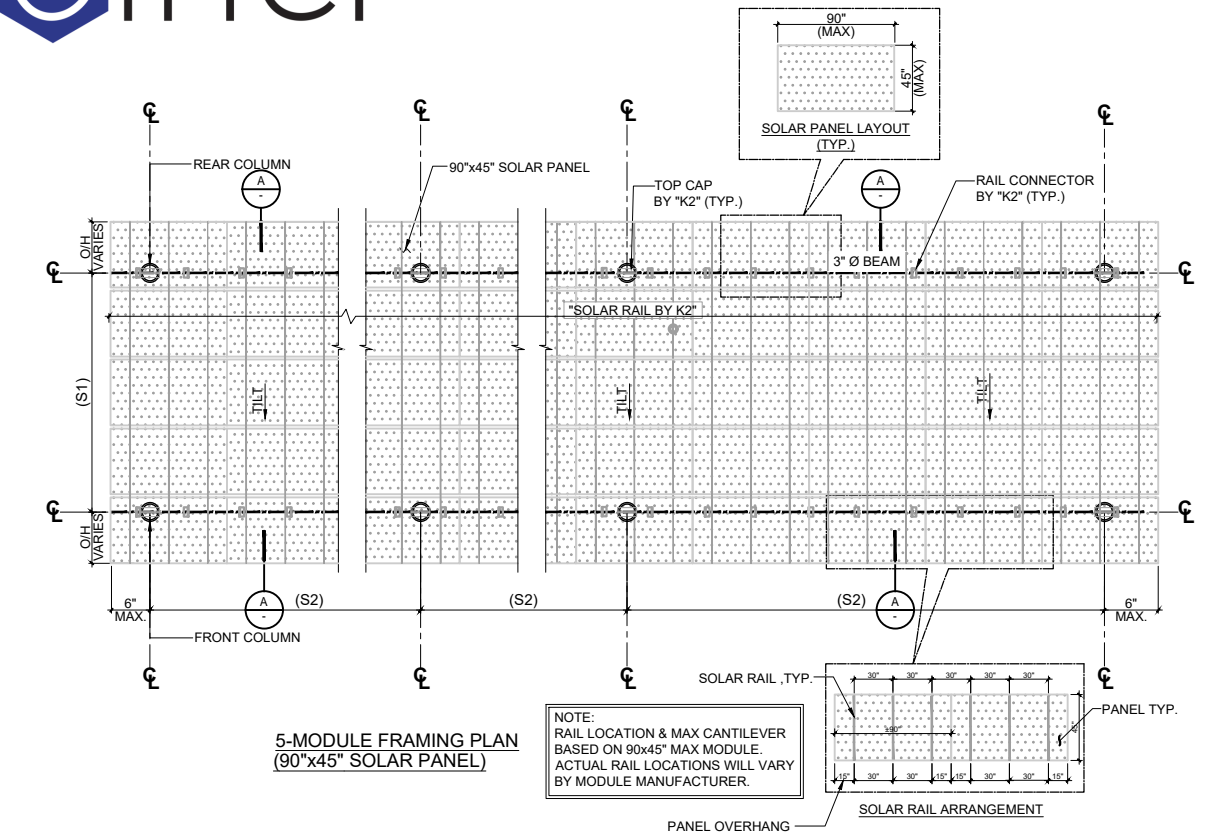
→ This program assumes that the actual resisting surface is at or below the ground surface level.

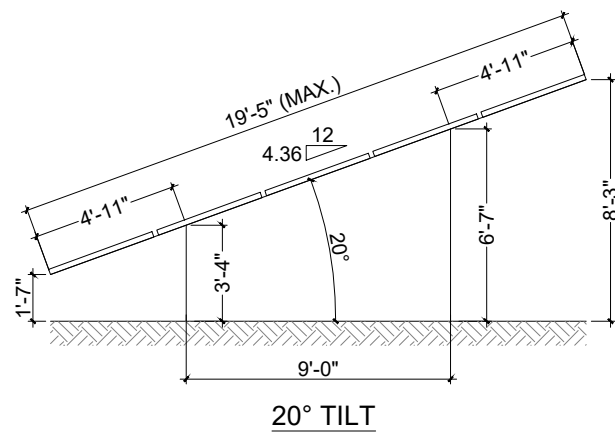
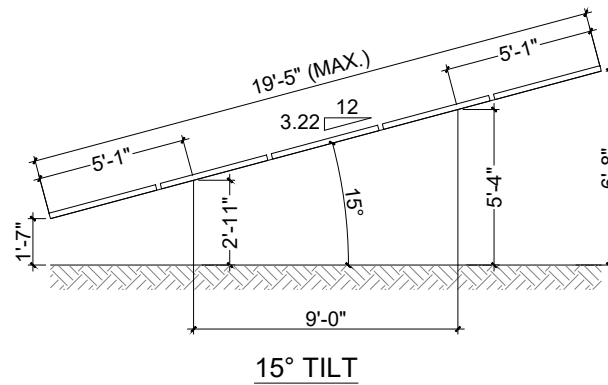
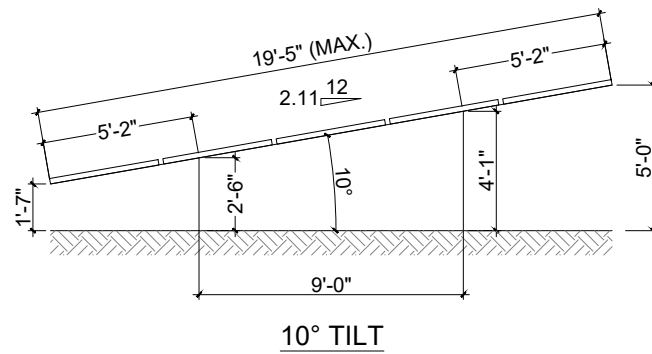
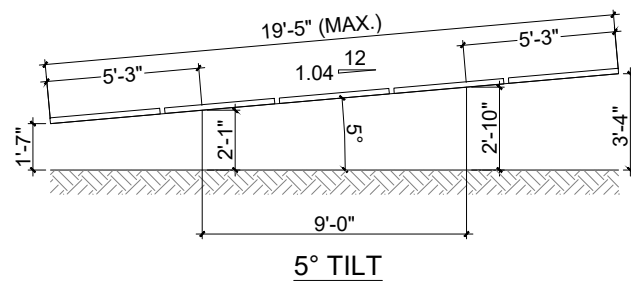
→ This accounts for any weak soil or any soil which may be removed at the top

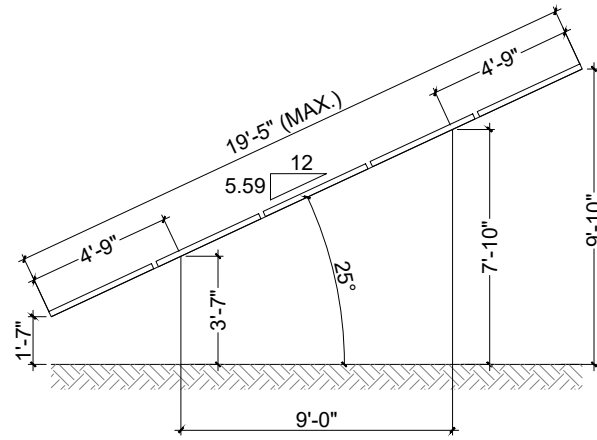
→ Yield strength of 2-7/8" dia piles - Fy = 60 ksi

→ Compression values are based on fully laterally supported piles (full embeded in soil), if not, contact engineer department for calculations.

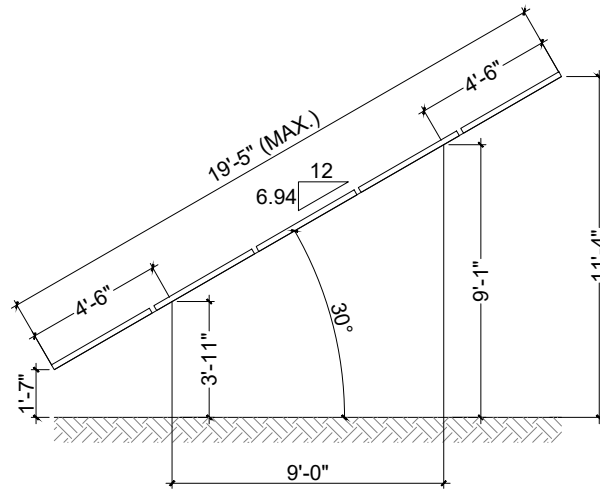
→ All Design performed using ASD Method.







25° TILT



30° TILT



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Exposure B, ASCE 7-16, SCH 80- GM Chart for 5 Modules 90-160 Mph



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-16)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→		DATE	→	
JOB NO.	→	AZ20170	CHECKER	→	July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																		US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size								Krinner Ground Screws G114x1600.								
								Front Column			Rear Column			Front Column				Rear Column				Fornt Column		Rear Column		Actual Force (kg)				
								[S1] (ft-in)	[S2] (ft-in)		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)	Uplift Force	Downward
1				0-10			17'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	653	1456	2.91	YES
2				11-20			13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	503	1868	3.74	YES
3				21-30			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	354	1841	3.68	YES
4				31-40			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	281	1868	3.74	YES
5				41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	222	1828	3.65	YES
6				51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	186	1796	3.6	YES
7				61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	168	1868	3.73	YES
8				0-10			17'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	717	1442	2.89	YES
9				11-20			13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	553	1855	3.71	YES
10				21-30			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	390	1823	3.65	YES
11				31-40			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	308	1850	3.7	YES
12				41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	245	1810	3.62	YES
13				51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	204	1782	3.56	YES
14				61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	186	1850	3.7	YES
15				0-10			17'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	853	1433	2.87	YES
16				11-20			13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	658	1837	3.68	YES
17				21-30			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	463	1810	3.62	YES
18				31-40			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	363	1837	3.67	YES
19				41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	290	1796	3.59	YES
20				51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	245	1769	3.53	YES
21				61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	218	1837	3.67	YES
22				0-10			16'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	853	1329	2.66	YES
23				11-20			13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	698	1805	3.61	YES
24				21-30			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	490	1778	3.56	YES
25				31-40			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	385	1805	3.61	YES
26				41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	308	1764	3.53	YES
27				51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	259	1737	3.47	YES
28				61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	231	1800	3.61	YES
29				0-10			15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	848	1188	2.38	YES
30				11-20			14'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	789	1846	3.69	YES
31				21-30			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	535	1751	3.5	YES
32				31-40			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	442	1773	3.55	YES
33				41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	340	1732	3.47	YES
34				51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	281	1705	3.41	YES
35				61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	254	1773	3.55	YES
36				0-10			15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	853	1161	2.32	YES
37				11-20			14'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	794	1796	3.59	YES
38				21-30			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	540	1705	3.41	YES
39				31-40			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	426	1728	3.46	YES
40				41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	340	1687	3.37	YES
41				51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	286	1660	3.32	YES
42				61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	254	1723	3.45	YES



5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																		US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.										
								Front Column			Rear Column			Front Column			Rear Column			Fornrt. Column		Rear Column		Actual Force (kg)						
					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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)			
[S1] (ft-in)	[S2] (ft-in)																					1950 1625								
43				0-10	17'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	757	1456	2.91	YES		
44				11-20	13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	585	1868	3.74	YES		
45				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	413	1841	3.68	YES		
46				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	322	1868	3.74	YES		
47				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	259	1828	3.65	YES		
48				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	218	1796	3.6	YES		
49				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	195	1868	3.73	YES		
50				0-10	17'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	830	1442	2.89	YES		
51				11-20	13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	639	1855	3.71	YES		
52				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	449	1823	3.65	YES		
53				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	354	1850	3.7	YES		
54				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	286	1810	3.62	YES		
55				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	236	1782	3.56	YES		
56				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	213	1850	3.7	YES		
57				0-10	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	839	1229	2.46	YES		
58				11-20	13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	753	1837	3.68	YES		
59				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	531	1810	3.62	YES		
60				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	417	1837	3.67	YES		
61				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	336	1796	3.59	YES		
62				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	281	1769	3.53	YES		
63				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	249	1837	3.67	YES		
64				0-10	14'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	857	1166	2.34	YES		
65				11-20	13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	798	1805	3.61	YES		
66				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	562	1778	3.56	YES		
67				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	444	1805	3.61	YES		
68				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	354	1764	3.53	YES		
69				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	295	1737	3.47	YES		
70				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	268	1800	3.61	YES		
71				0-10	13'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	839	1029	2.06	YES		
72				11-20	13'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	839	1710	3.42	YES		
73				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	612	1751	3.5	YES		
74				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	485	1773	3.55	YES		
75				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	385	1732	3.47	YES		
76				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	322	1705	3.41	YES		
77				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	290	1773	3.55	YES		
78				0-10	13'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	844	1002	2.01	YES		
79				11-20	13'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	844	1669	3.33	YES		
80				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	617	1705	3.41	YES		
81				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	485	1728	3.46	YES		
82				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	390	1687	3.37	YES		
83				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	327	1660	3.32	YES		
84				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	290	1723	3.45	YES		

- 1 Top Cap design to be provided by "K2 Systems". Average Force of top Cap = 1950 kg (4299 lbs).
- 2 If Actual force is greater than Average Force, Please contact "K2 Systems" For special engineering design of Top Cap.
- 3 Top Cap is reviewed only for the uplift value provided in Report.
- 4 Factor of Safety (FOS) = 1.2
- 5 Uplift force of top cap = 1950 kg, uplift force of top cap with factor of safety = $1950 \text{ kg}/1.2 = 1625 \text{ kg}$.
- 6 Yield Strss of 3" dia pipe - $F_y = 35 \text{ ksi}$ & $F_u = 58 \text{ ksi}$
- 7 Yield Strss of 2-7/8" dia US Helical pipe - $F_y = 60 \text{ ksi}$ (refer US Helical Chart)
- 8 Bracing not required.



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-16)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→		DATE	→	
JOB NO.	→	AZ20170	CHECKER	→	July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)		
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.									
								Front Column			Rear Column			Front Column			Rear Column			Fornrt. Column		Rear Column		Actual Force (kg)					
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.
																										1950 1625			
85	100	B	5	0-10	9'-0"	17'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	839	1415	2.83	YES
86				11-20		13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	667	1868	3.74	YES
87				21-30		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	472	1841	3.68	YES
88				31-40		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	372	1868	3.74	YES
89				41-50		6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	295	1828	3.65	YES
90				51-60		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	249	1796	3.6	YES
91				61-70		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	222	1868	3.73	YES
92			10	0-10	9'-0"	15'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	834	1279	2.56	YES
93				11-20		13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	730	1855	3.71	YES
94				21-30		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	512	1823	3.65	YES
95				31-40		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	404	1850	3.7	YES
96				41-50		6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	322	1810	3.62	YES
97				51-60		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	268	1782	3.56	YES
98				61-70		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	245	1850	3.7	YES
99			15	0-10	9'-0"	13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	857	1107	2.21	YES
100				11-20		13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	857	1837	3.68	YES
101				21-30		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	603	1810	3.62	YES
102				31-40		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	476	1837	3.67	YES
103				41-50		6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	381	1796	3.59	YES
104				51-60		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	317	1769	3.53	YES
105				61-70		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	286	1837	3.67	YES
106			20	0-10	9'-0"	12'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	839	1007	2.01	YES
107				11-20		12'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	1673	3.35	YES
108				21-30		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	639	1778	3.56	YES
109				31-40		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	503	1805	3.61	YES
110				41-50		6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	404	1764	3.53	YES
111				51-60		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	336	1737	3.47	YES
112				61-70		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	304	1800	3.61	YES
113			25	0-10	9'-0"	11'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	839	911.6	1.82	YES
114				11-20		11'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	1515	3.03	YES
115				21-30		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	694	1751	3.5	YES
116				31-40		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	549	1773	3.55	YES
117				41-50		6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	440	1732	3.47	YES
118				51-60		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	367	1705	3.41	YES
119				61-70		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	327	1773	3.55	YES
120			30	0-10	9'-0"	11'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	844	888.9	1.78	YES
121				11-20		11'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	844	1474	2.95	YES
122				21-30		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	698	1705	3.41	YES
123				31-40		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	549	1728	3.46	YES
124				41-50		6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	440	1687	3.37	YES
125				51-60		5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	367	1660	3.32	YES
126				61-70		4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	331	1723	3.45	YES

NOTE:

- Top Cap design to be provided by "K2 Systems". Average Force of top Cap = 1950 kg (4299 lbs).
- If Actual force is greater than Average force, Please contact "K2 Systems" For special engineering design of Top Cap.
- Top Cap is reviewed only for the uplift value provided in Report.
- Factor of Safety (FOS) = 1.2
- Uplift force of top cap = 1950 kg, uplift force of top cap with factor of safety = 1950 kg/1.2 = 1625 kg.
- Yield Strss of 3" dia pipe - Fy = 35 ksi & Fu = 58 ksi
- Yield Strss of 2-7/8" dia US Helical pipe - Fy = 60 ksi (refer US Helical Chart)
- Bracing not required.



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-16)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME
JOB NO. →
A220170DATE
CHECKER →July 5, 2024
SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																				US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size								Krinner Ground Screws G114x1600.										
					Front Column			Rear Column			Front Column				Rear Column				Fornt Column		Rear Column				Actual Force (kg)							
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)		
																									1950 1625							
127				0-10	9'-0"	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	839	1247	2.5	YES			
128			11-20	13'-6"		0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	757	1868	3.74	YES				
129			21-30	9'-6"		0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	531	1841	3.68	YES				
130			31-40	7'-6"		0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	422	1868	3.74	YES				
131			41-50	6'-0"		0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	336	1828	3.65	YES				
132			51-60	5'-0"		0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	281	1796	3.6	YES				
133			61-70	4'-6"		0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	254	1868	3.73	YES				
134				0-10	9'-0"	14'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	853	1156	2.31	YES			
135			11-20	13'-6"		0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	825	1855	3.71	YES				
136			21-30	9'-6"		0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	580	1823	3.65	YES				
137			31-40	7'-6"		0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	458	1850	3.7	YES				
138			41-50	6'-0"		0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	367	1810	3.62	YES				
139			51-60	5'-0"		0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	304	1782	3.56	YES				
140			61-70	4'-6"		0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	277	1850	3.7	YES				
141				0-10	9'-0"	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	857	984.1	1.96	YES			
142			11-20	12'-0"		0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	857	1633	3.27	YES				
143			21-30	9'-6"		0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	680	1810	3.62	YES				
144			31-40	7'-6"		0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	535	1837	3.67	YES				
145			41-50	6'-0"		0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	426	1796	3.59	YES				
146			51-60	5'-0"		0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	558	1769	3.53	YES				
147			61-70	4'-6"		0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	322	1837	3.67	YES				
148	105	B		0-10	9'-0"	11'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	830	884.4	1.77	YES			
149			11-20	11'-0"		0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	1474	2.94	YES				
150			21-30	9'-6"		0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	717	1778	3.56	YES				
151			31-40	7'-6"		0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	567	1805	3.61	YES				
152			41-50	6'-0"		0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	454	1764	3.53	YES				
153			51-60	5'-0"		0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	376	1737	3.47	YES				
154			61-70	4'-6"		0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	340	1800	3.61	YES				
155				0-10	9'-0"	10'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	821	793.7	1.59	YES			
156			11-20	10'-0"		0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1315	2.63	YES				
157			21-30	9'-6"		0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	721	1751	3.5	YES				
158			31-40	7'-6"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	617	1773	3.55	YES				
159			41-50	6'-0"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	490	1732	3.47	YES				
160			51-60	5'-0"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	408	1705	3.41	YES				
161			61-70	4'-6"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	367	1773	3.55	YES				
162				0-10	9'-0"	10'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	821	1771	1.55	YES			
163			11-20	10'-0"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1283	2.57	YES				
164			21-30	9'-6"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	780	1705	3.41	YES				
165			31-40	7'-6"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	617	1728	3.46	YES				
166			41-50	6'-0"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	494	1687	3.37	YES				
167			51-60	5'-0"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	413	1660	3.32	YES				
168			61-70	4'-6"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	372	1723	3.45	YES				



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-16)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→		DATE	→	
JOB NO.	→	AZ20170	CHECKER	→	July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.								
								Front Column			Rear Column			Front Column			Rear Column			Fornt Column		Rear Column		Actual Force (kg)				
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward
169				0-10	13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	848	1125	2.24	YES
170				11-20	13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	848	1868	3.74	YES
171				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	599	1841	3.68	YES
172				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	472	1868	3.74	YES
173				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	376	1828	3.65	YES
174				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	313	1796	3.6	YES
175				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	281	1868	3.73	YES
176				0-10	12'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	857	1029	2.06	YES
177				11-20	12'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	857	1714	3.43	YES
178				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	649	1823	3.65	YES
179				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	512	1850	3.7	YES
180				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	408	1810	3.62	YES
181				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	340	1782	3.56	YES
182				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	308	1850	3.7	YES
183				0-10	10'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	839	861.7	1.72	YES
184				11-20	10'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	1429	2.86	YES
185				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	757	1810	3.62	YES
186				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	599	1837	3.67	YES
187				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	481	1796	3.59	YES
188				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	399	1769	3.53	YES
189				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	358	1837	3.67	YES
190				0-10	10'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	844	807.3	1.61	YES
191				11-20	10'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	844	1338	2.68	YES
192				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	1778	3.56	YES
193				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	630	1805	3.61	YES
194				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	503	1764	3.53	YES
195				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	422	1737	3.47	YES
196				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	381	1800	3.61	YES
197				0-10	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	821	712	1.43	YES
198				11-20	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1184	2.37	YES
199				21-30	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1655	3.32	YES
200				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	685	1773	3.55	YES
201				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	549	1732	3.47	YES
202				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	458	1705	3.41	YES
203				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	413	1773	3.55	YES
204				0-10	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	825	693.9	1.39	YES
205				11-20	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	825	1615	3.23	YES
206				21-30	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	780	1705	3.41	YES
207				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	689	1728	3.46	YES
208				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	549	1687	3.37	YES
209				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	458	1660	3.32	YES
210				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	413	1723	3.45	YES

NOTE:

- Top Cap design to be provided by "K2 Systems". Average Force of top Cap = 1950 kg (4299 lbs).
- If Actual force is greater than Average force, Please contact "K2 Systems" For special engineering design of Top Cap.
- Top Cap is reviewed only for the uplift value provided in Report.
- Factor of Safety (FOS) = 1.2
- Uplift force of top cap = 1950 kg, uplift force of top cap with factor of safety = 1950 kg/1.2 = 1625 kg.
- Yield Strss of 3" dia pipe - Fy = 35 ksi & Fu = 58 ksi
- Yield Strss of 2-7/8" dia US Helical pipe - Fy = 60 ksi (refer US Helical Chart)
- Bracing not required.



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-16)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME
JOB NO. →
→ A220170DATE
CHECKER →
→July 5, 2024
SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																						US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size								Krinner Ground Screws G114x1600.												
								Front Column			Rear Column			Front Column				Rear Column				Front Column		Rear Column						Uplift Force		Downward		
					[S1] (ft-in)	[S2] (ft-in)		Dia. (ft)	Depth (d) (ft)	#5 Reinf. Spacing	Dia. (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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)					
																													1950	1625				
211	115	B	5	0-10	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	844	997.7	2	YES						
212				11-20	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	844	1660	3.32	YES						
213				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	667	1841	3.68	YES						
214				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	526	1868	3.74	YES						
215				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	422	1828	3.65	YES						
216				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	349	1796	3.6	YES						
217				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	317	1868	3.73	YES						
218			10	0-10	11'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	839	907	1.81	YES						
219				11-20	11'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	839	1510	3.02	YES						
220				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	721	1823	3.65	YES						
221				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	571	1850	3.7	YES						
222				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	458	1810	3.62	YES						
223				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	381	1782	3.56	YES						
224				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	340	1850	3.7	YES						
225			15	0-10	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	839	775.5	1.56	YES						
226				11-20	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	839	1293	2.59	YES						
227				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	839	1810	3.62	YES						
228				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	662	1837	3.67	YES						
229				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	531	1796	3.59	YES						
230				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	444	1769	3.53	YES						
231				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	399	1837	3.67	YES						
232			20	0-10	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	839	725.6	1.45	YES						
233				11-20	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	839	1206	2.41	YES						
234				21-30	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	839	1687	3.37	YES						
235				31-40	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	698	1805	3.61	YES						
236				41-50	6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	558	1764	3.53	YES						
237				51-60	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	467	1737	3.47	YES						
238				61-70	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	422	1800	3.61	YES						
239			25	0-10	8'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	807	634.9	1.27	YES						
240				11-20	8'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	807	1052	2.11	YES						
241				21-30	8'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	807	1474	2.95	YES						
242				31-40	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	757	1773	3.55	YES						
243				41-50	6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	608	1732	3.47	YES						
244				51-60	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	508	1705	3.41	YES						
245				61-70	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	454	1773	3.55	YES						
246	30	0-10	8'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	812	616.8	1.24	YES								
247		11-20	8'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	812	1025	2.05	YES								
248		21-30	8'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	812	1433	2.87	YES								
249		31-40	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	762	1728	3.46	YES								
250		41-50	6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	608	1687	3.37	YES								
251		51-60	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	508	1660	3.32	YES								
252		61-70	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	458	1723	3.45	YES								



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-16)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→		DATE	→	
JOB NO.	→	AZ20170	CHECKER	→	July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																				US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size								Krrinner Ground Screws G114x1600.										
								Front Column			Rear Column			Front Column				Rear Column				Front Column		Rear Column		Actual Force (kg)						
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.			
					Average Uplift force= 1950 kg (1625 kg w/ FOS)																											
1950																																
1625																																
253	120	B	5	0-10	9'-0"	11'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	857	916.1	1.83	YES			
254				11-20				11'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	857	1524	3.05	YES	
255				21-30				9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	739	1841	3.68	YES	
256				31-40				7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	585	1868	3.74	YES	
257				41-50				6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	467	1828	3.65	YES	
258				51-60				5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	390	1796	3.6	YES	
259				61-70				4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	349	1868	3.73	YES	
260			10	0-10	9'-0"	10'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	844	825.4	1.65	YES			
261				11-20				10'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	844	1374	2.74	YES	
262				21-30				9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	1823	3.65	YES	
263				31-40				7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	630	1850	3.7	YES	
264				41-50				6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	503	1810	3.62	YES	
265				51-60				5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	422	1782	3.56	YES	
266				61-70				4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	376	1850	3.7	YES	
267			15	0-10	9'-0"	8'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	830	693.9	1.39	YES			
268				11-20				8'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	1156	2.31	YES	
269				21-30				8'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	1619	3.24	YES	
270				31-40				7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	735	1837	3.67	YES	
271				41-50				6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	585	1796	3.59	YES	
272				51-60				5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	490	1769	3.53	YES	
273				61-70				4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	440	1837	3.67	YES	
274			20	0-10	9'-0"	8'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	825	644	1.29	YES			
275				11-20				8'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	825	1070	2.14	YES	
276				21-30				8'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	825	1497	2.99	YES	
277				31-40				7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	1805	3.61	YES	
278				41-50				6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	617	1764	3.53	YES	
279				51-60				5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	512	1737	3.47	YES	
280				61-70				4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	463	1800	3.61	YES	
281			25	0-10	9'-0"	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	834	594.1	1.19	YES			
282				11-20				7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	988.7	1.98	YES	
283				21-30				7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1383	2.76	YES	
284				31-40				7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1773	3.55	YES	
285				41-50				6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	667	1732	3.47	YES	
286				51-60				5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	558	1705	3.41	YES	
287				61-70				4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	503	1773	3.55	YES	
288			30	0-10	9'-0"	7'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	839	580.5	1.16	YES			
289	11-20	7'-6"		0'-6"				2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	961.5	1.92	YES			
290	21-30	7'-6"		0'-6"				2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	1347	2.69	YES			
291	31-40	7'-6"		0'-6"				2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	1728	3.46	YES			
292	41-50	6'-0"		0'-6"				2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	671	1687	3.37	YES			
293	51-60	5'-0"		0'-6"				2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	558	1660	3.32	YES			
294	61-70	4'-6"		0'-6"				2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	503	1723	3.45	YES			



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-16)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME
JOB NO. →
A220170

DATE
CHECKER →

July 5, 2024
SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																US Helicals Adapter (See note 1,2,3,4,5)				K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.									
								Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column		Actual Force (kg)					
					[S1] (ft-in)	[S2] (ft-in)		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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)
295	130	B	5	0-10	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	844	748	1.5	YES	
11-20				9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	844	1247	2.49	YES		
21-30				9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	844	1746	3.49	YES		
31-40				9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	703	1868	3.74	YES		
41-50				9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	562	1828	3.65	YES		
51-60				9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	467	1796	3.6	YES		
61-70				9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	422	1868	3.73	YES		
302				10	0-10	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	812	662	1.32	YES
11-20					9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	812	1098	2.2	YES	
21-30					9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	812	1537	3.07	YES	
31-40					9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	762	1850	3.7	YES	
41-50					9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	608	1810	3.62	YES	
51-60			9'-0"		0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	508	1782	3.56	YES		
61-70			9'-0"		0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	458	1850	3.7	YES		
309			15		0-10	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	821	571	1.15	YES
11-20					9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	821	952	1.9	YES	
21-30					9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	821	1333	2.67	YES	
31-40					9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	821	1714	3.43	YES	
41-50					9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	703	1796	3.59	YES	
51-60				9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	585	1769	3.53	YES		
61-70				9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	526	1837	3.67	YES		
316				20	0-10	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	803	522	1.05	YES
11-20					9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	803	871	1.74	YES	
21-30					9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	803	1215	2.44	YES	
31-40					9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	803	1565	3.13	YES	
41-50					9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	739	1764	3.53	YES	
51-60			9'-0"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	617	1737	3.47	YES		
61-70			9'-0"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	553	1800	3.61	YES		
323			25		0-10	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	798	476	0.95	YES
11-20					9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	798	789	1.58	YES	
21-30					9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	798	1107	2.21	YES	
31-40					9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	798	1420	2.84	YES	
41-50					9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	798	1732	3.47	YES	
51-60				9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	667	1705	3.41	YES		
61-70				9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	599	1773	3.55	YES		
330				30	0-10	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	803	463	0.93	YES
11-20	9'-0"	0'-6"			2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	803	771	1.54	YES			
21-30	9'-0"	0'-6"			2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	803	1075	2.15	YES			
31-40	9'-0"	0'-6"			2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	803	1383	2.76	YES			
41-50	9'-0"	0'-6"			2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	803	1687	3.37	YES			
51-60	9'-0"	0'-6"	2'-0"		3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	667	1660	3.32	YES				
61-70	9'-0"	0'-6"	2'-0"		3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	599	1723	3.45	YES				

NOTE:

- Top Cap design to be provided by "K2 Systems". Average Force of top Cap = 1950 kg (4299 lbs).
- If Actual force is greater than Average force, Please contact "K2 Systems" For special engineering design of Top Cap.
- Top Cap is reviewed only for the uplift value provided in Report.
- Factor of Safety (FOS) = 1.2
- Uplift force of top cap = 1950 kg, uplift force of top cap with factor of safety = 1950 kg/1.2 = 1625 kg.
- Yield Stress of 3" dia pipe - Fy = 35 ksi & Fu = 58 ksi
- Yield Stress of 2-7/8" dia US Helical pipe - Fy = 60 ksi (refer US Helical Chart)
- Bracing not required.



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-16)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→		DATE	→	
JOB NO.	→	AZ20170	CHECKER	→	July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																				US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.												
								Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column		Actual Force (kg)								
					[S1] (ft-in)	[S2] (ft-in)		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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)			
																													1950	1625		
337	140	B	5	0-10	9'-0"	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	834	626	1.25	YES			
338				11-20			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1039	2.08	YES			
339				21-30			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1451	2.91	YES			
340				31-40			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1868	3.74	YES			
341				41-50			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	667	1868	3.65	YES			
342				51-60			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	558	1796	3.6	YES			
343			61-70	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	499	1868	3.73	YES						
344			10	9'-0"	0-10	7'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	839	576	1.16	YES			
345						11-20	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	961	1.92	YES			
346						21-30	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	1342	2.69	YES			
347						31-40	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	1728	3.46	YES			
348						41-50	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	721	1660	3.62	YES			
349						51-60	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	599	1782	3.56	YES			
350			61-70	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	540	1850	3.7	YES						
351			15	9'-0"	0-10	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	830	490	0.98	YES			
352						11-20	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	816	1.63	YES		
353						21-30	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	1143	2.29	YES		
354						31-40	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	1469	2.94	YES		
355						41-50	6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	1796	3.59	YES		
356						51-60	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	689	1769	3.53	YES		
357			61-70	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	621	1837	3.67	YES					
358			20	9'-0"	0-10	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	798	444	0.88	YES			
359						11-20	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	735	1.47	YES		
360						21-30	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	1029	2.06	YES		
361						31-40	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	1324	2.64	YES		
362						41-50	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	1615	3.23	YES		
363						51-60	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	726	1737	3.47	YES		
364			61-70	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	653	1800	3.61	YES					
365			25	9'-0"	0-10	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	785	395	0.79	YES			
366						11-20	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	785	658	1.32	YES		
367						21-30	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	785	921	1.84	YES		
368						31-40	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	785	1184	2.37	YES		
369						41-50	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	785	1447	2.89	YES		
370						51-60	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	785	1705	3.41	YES		
371			61-70	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	707	1773	3.55	YES					
372			30	9'-0"	0-10	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	785	386	0.77	YES			
373						11-20	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	785	639	1.28	YES		
374						21-30	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	785	898	1.79	YES		
375						31-40	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	785	1152	2.3	YES		
376						41-50	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	785	1406	2.81	YES		
377						51-60	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	785	1660	3.32	YES		
378			61-70	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	707	1723	3.45	YES					

NOTE:

- Top Cap design to be provided by "K2 Systems". Average Force of top Cap = 1950 kg (4299 lbs).
- If Actual force is greater than Average force, Please contact "K2 Systems" For special engineering design of Top Cap.
- Top Cap is reviewed only for the uplift value provided in Report.
- Factor of Safety (FOS) = 1.2
- Uplift force of top cap = 1950 kg, uplift force of top cap with factor of safety = 1950 kg/1.2 = 1625 kg.
- Yield Strss of 3" dia pipe - Fy = 35 ksi & Fu = 58 ksi
- Yield Strss of 2-7/8" dia US Helical pipe - Fy = 60 ksi (refer US Helical Chart)
- Bracing not required.



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-16)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→		DATE	→	
JOB NO.	→	AZ20170	CHECKER	→	July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)			
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.										
								Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column		Actual Force (kg)						
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)
379	150	B	5	0-10	9'-0"	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	844	540	1.08	YES	
380				11-20			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	844	898	1.8	YES
381				21-30			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	844	1261	2.52	YES
382				31-40			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	844	1619	3.24	YES
383				41-50			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	780	1828	3.65	YES
384				51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	649	1796	3.6	YES
385				61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	585	1868	3.73	YES
386			10	0-10	9'-0"	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	839	495	0.99	YES	
387				11-20			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	825	1.65	YES
388				21-30			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	1152	2.3	YES
389				31-40			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	1483	2.96	YES
390				41-50			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	1810	3.62	YES
391				51-60			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	698	1782	3.56	YES
392				61-70			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	630	1850	3.7	YES
393			15	0-10	9'-0"	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	803	408	0.82	YES	
394				11-20			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	803	680	1.36	YES
395				21-30			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	803	952	1.9	YES
396				31-40			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	803	1224	2.45	YES
397				41-50			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	803	1497	2.99	YES
398				51-60			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	803	1769	3.53	YES
399				61-70			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	726	1837	3.67	YES
400			20	0-10	9'-0"	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	844	403	0.81	YES	
401				11-20			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	844	672	1.34	YES
402				21-30			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	844	935	1.87	YES
403				31-40			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	844	1202	2.4	YES
404				41-50			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	844	1469	2.94	YES
405				51-60			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	844	1737	3.47	YES
406				61-70			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	762	1800	3.61	YES
407			25	0-10	9'-0"	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	821	359	0.71	YES	
408				11-20			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	594	1.18	YES
409				21-30			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	830	1.66	YES
410				31-40			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1066	2.13	YES
411				41-50			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1302	2.6	YES
412				51-60			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1537	3.07	YES
413				61-70			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1773	3.55	YES
414			30	0-10	9'-0"	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	821	349	0.69	YES	
415				11-20			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	576	1.16	YES
416				21-30			4'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	808	1.61	YES
417				31-40			4'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1039	2.07	YES
418				41-50			4'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1265	2.53	YES
419				51-60			4'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1497	2.99	YES
420				61-70			4'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1723	3.45	YES

NOTE:

- 1 Top Cap design to be provided by "K2 Systems". Average Force of top Cap = 1950 kg



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-16)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→		DATE	→	
JOB NO.	→	AZ20170	CHECKER	→	July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation															US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)				
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.										
								Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column	Actual Force (kg)							
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)
																									1950 1625					
421	160	B	5	0-10	9'-0"	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	825	458	0.92	YES	
422				11-20			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	825	762	1.52	YES
423				21-30			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	825	1066	2.13	YES
424				31-40			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	825	1370	2.74	YES
425				41-50			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	825	1673	3.35	YES
426				51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	748	1796	3.6	YES
427				61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	676	1868	3.73	YES
428			10	0-10	9'-0"	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	807	413	0.83	YES	
429				11-20			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	807	685	1.37	YES
430				21-30			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	807	961	1.92	YES
431				31-40			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	807	1234	2.47	YES
432				41-50			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	807	1506	3.02	YES
433				51-60			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	807	1782	3.56	YES
434				61-70			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	726	1850	3.7	YES
435			15	0-10	9'-0"	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	834	368	0.73	YES	
436				11-20			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	612	1.22	YES
437				21-30			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	857	1.71	YES
438				31-40			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1102	2.2	YES
439				41-50			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1347	2.69	YES
440				51-60			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1592	3.18	YES
441				61-70			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1837	3.67	YES
442			20	0-10	9'-0"	4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	776	322	0.64	YES	
443				11-20			4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	776	535	1.07	YES
444				21-30			4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	776	749	1.5	YES
445				31-40			4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	776	962	1.92	YES
446				41-50			4'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	776	1175	2.35	YES
447				51-60			4'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	776	1388	2.78	YES
448				61-70			4'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	776	1601	3.21	YES
449			25	0-10	9'-0"	4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	834	318	0.63	YES	
450				11-20			4'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	527	1.05	YES
451				21-30			4'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	735	1.47	YES
452				31-40			4'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	948	1.89	YES
453				41-50			4'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1156	2.31	YES
454				51-60			4'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1365	2.73	YES
455				61-70			4'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1574	3.15	YES
456			30	0-10	9'-0"	4'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	839	308	0.62	YES	
457				11-20			4'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	512	1.02	YES
458				21-30			4'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	717	1.43	YES
459				31-40			4'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	920	1.84	YES
460				41-50			4'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	1125	2.25	YES
461				51-60			4'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	1329	2.66	YES
462				61-70			4'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	1533	3.07	YES

NOTE:

- Top Cap design to be provided by "K2 Systems". Average Force of top Cap = 1950 kg (4299 lbs).
- If Actual force is greater than Average force, Please contact "K2 Systems" For special engineering design of Top Cap.
- Top Cap is reviewed only for the uplift value provided in Report.
- Factor of Safety (FOS) = 1.2
- Uplift force of top cap = 1950 kg, uplift force of top cap with factor of safety = 1950 kg/1.2 = 1625 kg.
- Yield Strs of 3" dia pipe - Fy = 35 ksi & Fu = 58 ksi
- Yield Strs of 2-7/8" dia US Helical pipe - Fy = 60 ksi (refer US Helical Chart)
- Bracing not required.



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Exposure B, ASCE 7-10, SCH 80- GM Chart for 5 Modules 90-160 Mph



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→		DATE	→	
JOB NO.	→	AZ20170	CHECKER	→	July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																		US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size								Krinner Ground Screws G114x1600.								
					Front Column			Rear Column			Front Column				Rear Column				Front Column		Rear Column		Actual Force (kg)							
					[S1] (ft-in)	[S2] (ft-in)		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)	Uplift Force	Downward	Horiz.		
																													Average Uplift force= 1950 kg (1625 kg w/ FOS)	
1				0-10	17'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	653	1456	2.91	YES		
2			5	11-20	13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	503	1868	3.74	YES		
3				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	354	1841	3.68	YES		
4				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	281	1868	3.74	YES		
5				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	222	1828	3.65	YES		
6				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	186	1796	3.6	YES		
7				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	168	1868	3.73	YES		
8				0-10	17'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	717	1442	2.89	YES		
9			10	11-20	13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	553	1855	3.71	YES		
10				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	390	1823	3.65	YES		
11				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	308	1850	3.7	YES		
12				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	245	1810	3.62	YES		
13				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	204	1782	3.56	YES		
14				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	186	1850	3.7	YES		
15				0-10	17'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	853	1433	2.87	YES		
16			15	11-20	13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	658	1837	3.68	YES		
17				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	463	1810	3.62	YES		
18				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	363	1837	3.67	YES		
19				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	290	1796	3.59	YES		
20				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	245	1769	3.53	YES		
21				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	218	1837	3.67	YES		
22				0-10	16'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	853	1329	2.66	YES		
23			20	11-20	13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	698	1805	3.61	YES		
24				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	490	1778	3.56	YES		
25				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	385	1805	3.61	YES		
26				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	308	1764	3.53	YES		
27				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	259	1737	3.47	YES		
28				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	231	1800	3.61	YES		
29				0-10	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	848	1188	2.38	YES		
30			25	11-20	14'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	789	1846	3.69	YES		
31				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	535	1751	3.5	YES		
32				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	442	1773	3.55	YES		
33				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	340	1732	3.47	YES		
34				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	281	1705	3.41	YES		
35				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	254	1773	3.55	YES		
36				0-10	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	853	1161	2.32	YES		
37			30	11-20	14'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	794	1796	3.59	YES		
38				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	540	1705	3.41	YES		
39				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	426	1728	3.46	YES		
40				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	340	1687	3.37	YES		
41				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	286	1660	3.32	YES		
42				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	254	1723	3.45	YES		

NOTE:

- Top Cap design to be provided by "K2 Systems". Average Force of Top Cap = 1950 kg (4299 lbs).
- If Actual force is greater than Average force, Please contact "K2 Systems" For special engineering design of Top Cap.
- Top Cap is reviewed only for the uplift value provided in Report.
- Factor of Safety (FOS) = 1.2
- Uplift force of top cap = 1950 kg, uplift force of top cap with factor of safety = 1950 kg/1.2 = 1625 kg.
- Yield Stress of 3" dia pipe - Fy = 35 ksi & Fu = 58 ksi
- Yield Stress of 2-7/8" dia US Helical pipe - Fy = 60 ksi (refer US Helical Chart)
- Bracing not required.



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME
JOB NO. →
AZ20170DATE
CHECKER →July 5, 2024
SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																				US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size								Krinner Ground Screws G114x1600.										
					Front Column			Rear Column			Front Column				Rear Column				Fornt Column		Rear Column		Actual Force (kg)									
					[S1] (ft-in)	[S2] (ft-in)		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)	Uplift Force	Downward	Horiz.				
																													Average Uplift force= 1950 kg (1625 kg w/ FOS)			
																									1950 1625							
43				0-10	17'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	757	1456	2.91		YES			
44				11-20	13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	585	1868	3.74		YES			
45				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	413	1841	3.68		YES			
46				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	322	1868	3.74		YES			
47				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	259	1828	3.65		YES			
48				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	218	1796	3.6		YES			
49				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	195	1868	3.73		YES			
50				0-10	17'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	830	1442	2.89		YES			
51				11-20	13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	639	1855	3.71		YES			
52				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	449	1823	3.65		YES			
53				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	354	1850	3.7		YES			
54				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	286	1810	3.62		YES			
55				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	236	1782	3.56		YES			
56				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	213	1850	3.7		YES			
57				0-10	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	839	1229	2.46		YES			
58				11-20	13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	753	1837	3.68		YES			
59				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	531	1810	3.62		YES			
60				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	417	1837	3.67		YES			
61				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	336	1796	3.59		YES			
62				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	881	1769	3.53		YES			
63				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	249	1837	3.67		YES			
64				0-10	14'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	857	1166	2.34		YES			
65				11-20	13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	1805	3.61		YES			
66				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	562	1778	3.56		YES			
67				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	444	1805	3.61		YES			
68				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	354	1764	3.53		YES			
69				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	295	1737	3.47		YES			
70				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	268	1800	3.61		YES			
71				0-10	13'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	839	1029	2.06		YES			
72				11-20	13'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	1710	3.42		YES			
73				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	612	1751	3.5		YES			
74				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	485	1773	3.55		YES			
75				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	385	1732	3.47		YES			
76				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	322	1705	3.41		YES			
77				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	290	1773	3.55		YES			
78				0-10	13'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	844	1002	2.01		YES			
79				11-20	13'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	844	1669	3.33		YES			
80				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	617	1705	3.41		YES			
81				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	485	1728	3.46		YES			
82				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	390	1687	3.37		YES			
83				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	327	1660	3.32		YES			
84				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	290	1723	3.45		YES			



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME
JOB NO. →
→ A220170DATE
CHECKER →
→July 5, 2024
SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																						US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size								Krinner Ground Screws G114x1600.												
								Front Column			Rear Column			Front Column				Rear Column				Front Column		Rear Column										
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.					
Average Uplift force= 1950 kg (1625 kg w/ FOS)																																		
1950																																		
85				0-10			17'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	839	1415	2.83	YES				
86				11-20			13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	667	1868	3.74	YES				
87				21-30			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	472	1841	3.68	YES				
88				31-40		9'-0"	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	372	1868	3.74	YES				
89				41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	295	1828	3.65	YES				
90				51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	249	1796	3.6	YES				
91				61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	222	1868	3.73	YES				
92				0-10			15'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	834	1279	2.56	YES				
93				11-20			13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	730	1855	3.71	YES				
94				21-30			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	512	1823	3.65	YES				
95				31-40		9'-0"	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	404	1850	3.7	YES				
96				41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	322	1810	3.62	YES				
97				51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	268	1782	3.56	YES				
98				61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	245	1850	3.7	YES				
99				0-10			13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	857	1107	2.21	YES				
100				11-20			13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	857	1837	3.68	YES				
101				21-30			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	603	1810	3.62	YES				
102				31-40		9'-0"	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	476	1837	3.67	YES				
103				41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	381	1796	3.59	YES				
104				51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	317	1769	3.53	YES				
105				61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	286	1837	3.67	YES				
106				0-10			12'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	839	1007	2.01	YES				
107				11-20			12'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	839	1673	3.35	YES				
108				21-30			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	639	1778	3.56	YES				
109				31-40		9'-0"	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	503	1805	3.61	YES				
110				41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	404	1764	3.53	YES				
111				51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	336	1737	3.47	YES				
112				61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	304	1800	3.61	YES				
113				0-10			11'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	839	911.6	1.82	YES				
114				11-20			11'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	839	1515	3.03	YES				
115				21-30			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	694	1751	3.5	YES				
116				31-40		9'-0"	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	549	1773	3.55	YES				
117				41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	440	1732	3.47	YES				
118				51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	367	1705	3.41	YES				
119				61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	327	1773	3.55	YES				
120				0-10			11'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	844	888.9	1.78	YES				
121				11-20			11'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	844	1474	2.95	YES				
122				21-30			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	698	1705	3.41	YES				
123				31-40		9'-0"	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	549	1728	3.46	YES				
124				41-50			6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	440	1687	3.37	YES				
125				51-60			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	367	1660	3.32	YES				
126				61-70			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	331	1723	3.45	YES				

NOTE:

- Top Cap design to be provided by "K2 Systems". Average Force of top cap = 1950 kg (4299 lbs).
- If Actual force is greater than Average force, Please contact "K2 Systems" For special engineering design of Top Cap.
- Top Cap is reviewed only for the uplift value provided in Report.
- Factor of Safety (FOS) = 1.2
- Uplift force of top cap = 1950 kg, uplift force of top cap with factor of safety = 1950 kg/1.2 = 1625 kg.
- Yield Strss of 3" dia pipe - Fy = 35 ksi & Fu = 58 ksi
- Yield Strss of 2-7/8" dia US Helical pipe - Fy = 60 ksi (refer US Helical Chart)
- Bracing not required.



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→		DATE	→	
JOB NO.	→	AZ20170	CHECKER	→	July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																		US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.										
								Front Column			Rear Column			Front Column			Rear Column			Fornt Column			Rear Column							
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)
127	105	B	5	0-10	15'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	839	1247	2.5	YES		
128				11-20	13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	757	1868	3.74	YES		
129				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	531	1841	3.68	YES		
130				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	422	1868	3.74	YES		
131				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	336	1828	3.65	YES		
132				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	281	1796	3.6	YES		
133				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	254	1868	3.73	YES		
134			10	0-10	14'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	853	1156	2.31	YES		
135				11-20	13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	825	1855	3.71	YES		
136				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	580	1823	3.65	YES		
137				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	458	1850	3.7	YES		
138				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	367	1810	3.62	YES		
139				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	304	1782	3.56	YES		
140				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	277	1850	3.7	YES		
141			15	0-10	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	857	984.1	1.96	YES		
142				11-20	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	857	1633	3.27	YES		
143				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	680	1810	3.62	YES		
144				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	535	1837	3.67	YES		
145				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	426	1796	3.59	YES		
146				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	558	1769	3.53	YES		
147				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	322	1837	3.67	YES		
148			20	0-10	11'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	830	884.4	1.77	YES		
149				11-20	11'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	1474	2.94	YES		
150				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	717	1778	3.56	YES		
151				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	567	1805	3.61	YES		
152				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	454	1764	3.53	YES		
153				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	376	1737	3.47	YES		
154				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	340	1800	3.61	YES		
155			25	0-10	10'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	821	793.7	1.59	YES		
156				11-20	10'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1315	2.63	YES		
157				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	721	1751	3.5	YES		
158				31-40	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	617	1773	3.55	YES		
159				41-50	6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	490	1732	3.47	YES		
160				51-60	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	408	1705	3.41	YES		
161				61-70	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	367	1773	3.55	YES		
162			30	0-10	10'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	821	1771	1.55	YES		
163				11-20	10'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1283	2.57	YES		
164				21-30	9'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	780	1705	3.41	YES		
165				31-40	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	617	1728	3.46	YES		
166	41-50	6'-0"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	494	1687	3.37	YES				
167	51-60	5'-0"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	413	1660	3.32	YES				
168	61-70	4'-6"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	372	1723	3.45	YES				



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→		DATE	→	
JOB NO.	→	AZ20170	CHECKER	→	July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																			US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size								Krinner Ground Screws G114x1600.									
								Front Column			Rear Column			Front Column				Rear Column				Fornt Column		Rear Column			Actual Force (kg)				
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.		
																															Average Uplift force= 1950 kg (1625 kg w/ FOS)
																									1950 1625						
169				0-10	13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	848	1125	2.24	YES			
170				11-20	13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	848	1868	3.74	YES			
171				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	599	1841	3.68	YES			
172			5	31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	472	1868	3.74	YES			
173				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	376	1828	3.65	YES			
174				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	313	1796	3.6	YES			
175				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	281	1868	3.73	YES			
176				0-10	12'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	857	1029	2.06	YES			
177				11-20	12'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	857	1714	3.43	YES			
178				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	649	1823	3.65	YES			
179			10	31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	512	1850	3.7	YES			
180				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	408	1810	3.62	YES			
181				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	340	1782	3.56	YES			
182				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	308	1850	3.7	YES			
183				0-10	10'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	839	861.7	1.72	YES			
184				11-20	10'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	1429	2.86	YES			
185				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	757	1810	3.62	YES			
186				31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	599	1837	3.67	YES			
187				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	481	1796	3.59	YES			
188				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	399	1769	3.53	YES			
189				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	358	1837	3.67	YES			
190	110	B		0-10	10'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	844	807.3	1.61	YES			
191				11-20	10'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	844	1338	2.68	YES			
192				21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	1778	3.56	YES			
193				31-40	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	630	1805	3.61	YES			
194				41-50	6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	503	1764	3.53	YES			
195				51-60	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	422	1737	3.47	YES			
196				61-70	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	381	1800	3.61	YES			
197				0-10	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	821	712	1.43	YES			
198				11-20	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1184	2.37	YES			
199				21-30	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1655	3.32	YES			
200				31-40	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	685	1773	3.55	YES			
201				41-50	6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	549	1732	3.47	YES			
202				51-60	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	458	1705	3.41	YES			
203				61-70	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	413	1773	3.55	YES			
204				0-10	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	825	693.9	1.39	YES			
205				11-20	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	825	1615	3.23	YES			
206				21-30	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	780	1705	3.41	YES			
207				31-40	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	689	1728	3.46	YES			
208				41-50	6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	549	1687	3.37	YES			
209				51-60	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	458	1660	3.32	YES			
210				61-70	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	413	1723	3.45	YES			



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→		DATE	→	
JOB NO.	→	AZ20170	CHECKER	→	July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																	US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.									
					Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column			Actual Force (kg)							
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.
																										1950	1625		
211				0-10		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	844	997.7	2	YES
212				11-20		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	844	1660	3.32	YES
213				21-30		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	667	1841	3.68	YES
214				31-40	9'-0"	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	526	1868	3.74	YES
215				41-50		6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	422	1828	3.65	YES
216				51-60		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	349	1796	3.6	YES
217				61-70		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	317	1868	3.73	YES
218				0-10		11'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	839	907	1.81	YES
219				11-20		11'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	839	1510	3.02	YES
220				21-30	9'-0"	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	721	1823	3.65	YES
221				31-40		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	571	1850	3.7	YES
222				41-50		6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	458	1810	3.62	YES
223				51-60		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	381	1782	3.56	YES
224				61-70		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	340	1850	3.7	YES
225				0-10		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	839	775.5	1.56	YES
226				11-20		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	839	1293	2.59	YES
227				21-30		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	839	1810	3.62	YES
228				31-40	9'-0"	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	662	1837	3.67	YES
229				41-50		6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	531	1796	3.59	YES
230				51-60		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	444	1769	3.53	YES
231				61-70		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	399	1837	3.67	YES
232	115	B		0-10		9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	839	725.6	1.45	YES
233				11-20		9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	839	1206	2.41	YES
234				21-30		9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	839	1687	3.37	YES
235				31-40	9'-0"	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	698	1805	3.61	YES
236				41-50		6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	558	1764	3.53	YES
237				51-60		5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	467	1737	3.47	YES
238				61-70		4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	422	1800	3.61	YES
239				0-10		8'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	807	634.9	1.27	YES
240				11-20		8'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	807	1052	2.11	YES
241				21-30		8'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	807	1474	2.95	YES
242				31-40	9'-0"	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	757	1773	3.55	YES
243				41-50		6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	608	1732	3.47	YES
244				51-60		5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	508	1705	3.41	YES
245				61-70		4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	454	1773	3.55	YES
246				0-10		8'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	812	616.8	1.24	YES
247				11-20		8'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	812	1025	2.05	YES
248				21-30		8'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	812	1433	2.87	YES
249				31-40	9'-0"	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	762	1728	3.46	YES
250				41-50		6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	608	1687	3.37	YES
251				51-60		5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	508	1660	3.32	YES
252				61-70		4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	458	1723	3.45	YES

NOTE:

- 1 Top Cap design to be provided by "K2 Systems". Average Force of top Cap = 1950 kg (4299 lbs).
- 2 If Actual force is greater than Average force, Please contact "K2 Systems" For special engineering design of Top Cap.
- 3 Top Cap is reviewed only for the uplift value provided in Report.
- 4 Factor of Safety (FOS) = 1.2
- 5 Uplift force of top cap = 1950 kg, uplift force of top cap 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 US Helical pipe - Fy = 60 ksi (refer US Helical Chart)
- 8 Bracing not required.



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→		DATE	→	
JOB NO.	→	AZ20170	CHECKER	→	July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																	US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)			
								Pole Footing Size						US Helical Size								Krinner Ground Screws G114x1600.									
								Front Column			Rear Column			Front Column				Rear Column				Front Column		Rear Column		Actual Force (kg)					
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.		
																											Average Uplift force= 1950 kg (1625 kg w/ FOS)				
																									1950 1625						
253				0-10			11'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	857	916.1	1.83		YES
254				11-20			11'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	857	1524	3.05		YES
255				21-30			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	739	1841	3.68		YES
256				31-40			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	585	1868	3.74		YES
257				41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	467	1828	3.65		YES
258				51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	390	1796	3.6		YES
259				61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	349	1868	3.73		YES
260				0-10			10'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	844	825.4	1.65		YES
261				11-20			10'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	844	1374	2.74		YES
262				21-30			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	798	1823	3.65		YES
263				31-40			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	630	1850	3.7		YES
264				41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	503	1810	3.62		YES
265				51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	422	1782	3.56		YES
266				61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	376	1850	3.7		YES
267				0-10			8'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	830	693.9	1.39		YES
268				11-20			8'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	830	1156	2.31		YES
269				21-30			8'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	830	1619	3.24		YES
270				31-40			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	735	1837	3.67		YES
271				41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	585	1796	3.59		YES
272				51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	490	1769	3.53		YES
273				61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	440	1837	3.67		YES
274				0-10			8'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	825	644	1.29		YES
275				11-20			8'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	825	1070	2.14		YES
276				21-30			8'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	825	1497	2.99		YES
277				31-40			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	771	1805	3.61		YES
278				41-50			6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	617	1764	3.53		YES
279				51-60			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	512	1737	3.47		YES
280				61-70			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	463	1800	3.61		YES
281				0-10			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	834	594.1	1.19		YES
282				11-20			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	834	988.7	1.98		YES
283				21-30			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	834	1383	2.76		YES
284				31-40			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	834	1773	3.55		YES
285				41-50			6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	667	1732	3.47		YES
286				51-60			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	558	1705	3.41		YES
287				61-70			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	503	1773	3.55		YES
288				0-10			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	839	580.5	1.16		YES
289				11-20			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	839	961.5	1.92		YES
290				21-30			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	839	1347	2.69		YES
291				31-40			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	839	1728	3.46		YES
292				41-50			6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	671	1687	3.37		YES
293				51-60			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	558	1660	3.32		YES
294				61-70			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	503	1723	3.45		YES

NOTE:

- Top Cap design to be provided by "K2 Systems". Average Force of top Cap = 1950 kg (4299 lbs).
- If Actual force is greater than Average force, Please contact "K2 Systems" For special engineering design of Top Cap.
- Top Cap is reviewed only for the uplift value provided in Report.
- Factor of Safety (FOS) = 1.2
- Uplift force of top cap = 1950 kg, uplift force of top cap with factor of safety = 1950 kg/1.2 = 1625 kg.
- Yield Strss of 3" dia pipe - Fy = 35 ksi & Fu = 58 ksi
- Yield Strss of 2-7/8" dia US Helical pipe - Fy = 60 ksi (refer US Helical Chart)
- Bracing not required.



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→		DATE	→	
JOB NO.	→	AZ20170	CHECKER	→	July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catego-ry	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																				US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size								Krinner Ground Screws G114x1600.										
					Front Column			Rear Column			Front Column				Rear Column				Fornr. Column		Rear Column		Actual Force (kg)									
					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)	Uplift Force	Downward	Horiz.						
					[S1] (ft-in)	[S2] (ft-in)																						Average Uplift force= 1950 kg (1625 kg w/ FOS)				
295	130	B	5	0-10	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	844	748	1.5	YES				
296				11-20	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	844	1247	2.49	YES				
297				21-30	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	844	1746	3.49	YES				
298				31-40	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	703	1868	3.74	YES				
299				41-50	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	562	1828	3.65	YES				
300				51-60	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	467	1796	3.6	YES				
301				61-70	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	422	1868	3.73	YES				
302			10	0-10	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	812	662	1.32	YES				
303				11-20	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	812	1098	2.2	YES				
304				21-30	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	812	1537	3.07	YES				
305				31-40	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	762	1850	3.7	YES				
306				41-50	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	608	1810	3.62	YES				
307				51-60	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	508	1782	3.56	YES				
308				61-70	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	458	1850	3.7	YES				
309			15	0-10	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	821	571	1.15	YES				
310				11-20	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	952	1.9	YES				
311				21-30	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1333	2.67	YES				
312				31-40	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1714	3.43	YES				
313				41-50	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	703	1796	3.59	YES				
314				51-60	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	585	1769	3.53	YES				
315				61-70	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	526	1837	3.67	YES				
316			20	0-10	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	803	522	1.05	YES				
317				11-20	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	803	871	1.74	YES				
318				21-30	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	803	1215	2.44	YES				
319				31-40	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	803	1565	3.13	YES				
320				41-50	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	739	1764	3.53	YES				
321				51-60	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	617	1737	3.47	YES				
322				61-70	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	553	1800	3.61	YES				
323			25	0-10	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	798	476	0.95	YES				
324				11-20	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	789	1.58	YES				
325				21-30	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	1107	2.21	YES				
326				31-40	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	1420	2.84	YES				
327				41-50	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	1732	3.47	YES				
328				51-60	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	667	1705	3.41	YES				
329				61-70	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	599	1773	3.55	YES				
330			30	0-10	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	803	463	0.93	YES				
331				11-20	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	803	771	1.54	YES				
332				21-30	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	803	1075	2.15	YES				
333				31-40	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	803	1383	2.76	YES				
334				41-50	9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	803	1687	3.37	YES				
335	51-60	9'-0"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	667	1660	3.32	YES						
336	61-70	9'-0"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	599	1723	3.45	YES						



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→		DATE	→	
JOB NO.	→	AZ20170	CHECKER	→	July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)			
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.										
								Front Column			Rear Column			Front Column			Rear Column			Formt. Column		Rear Column		Actual Force (kg)						
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)
																												1950 1625		
337				0-10			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	834	626	1.25	YES
338				11-20			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	834	1039	2.08	YES
339				21-30			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	834	1451	2.91	YES
340				31-40		9'-0"	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	834	1868	3.74	YES
341				41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	667	1868	3.65	YES
342				51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	558	1796	3.6	YES
343				61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	499	1868	3.73	YES
344				0-10			7'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	839	576	1.16	YES
345				11-20			7'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	839	961	1.92	YES
346				21-30			7'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	839	1342	2.69	YES
347				31-40		9'-0"	7'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	839	1728	3.46	YES
348				41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	721	1660	3.62	YES
349				51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	599	1782	3.56	YES
350				61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	540	1850	3.7	YES
351				0-10			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	830	490	0.98	YES
352				11-20			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	830	816	1.63	YES
353				21-30			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	830	1143	2.29	YES
354				31-40		9'-0"	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	830	1469	2.94	YES
355				41-50			6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	830	1796	3.59	YES
356				51-60			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	689	1769	3.53	YES
357				61-70			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	621	1837	3.67	YES
358				0-10			5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	798	444	0.88	YES
359				11-20			5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	798	735	1.47	YES
360				21-30			5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	798	1029	2.06	YES
361				31-40		9'-0"	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	798	1324	2.64	YES
362				41-50			5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	798	1615	3.23	YES
363				51-60			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	726	1737	3.47	YES
364				61-70			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	653	1800	3.61	YES
365				0-10			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	785	395	0.79	YES
366				11-20			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	785	658	1.32	YES
367				21-30			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	785	921	1.84	YES
368				31-40		9'-0"	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	785	1184	2.37	YES
369				41-50			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	785	1447	2.89	YES
370				51-60			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	785	1705	3.41	YES
371				61-70			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	707	1773	3.55	YES
372				0-10			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	785	386	0.77	YES
373				11-20			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	785	639	1.28	YES
374				21-30			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	785	898	1.79	YES
375				31-40		9'-0"	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	785	1152	2.3	YES
376				41-50			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	785	1406	2.81	YES
377				51-60			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	785	1660	3.32	YES
378				61-70			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	707	1723	3.45	YES

NOTE:

- 1 Top Cap design to be provided by "K2 Systems". Average Force of top Cap = 1950 kg (4299 lbs).
- 2 If Actual force is greater than Average force, Please contact "K2 Systems" For special engineering design of Top Cap.
- 3 Top Cap is reviewed only for the uplift value provided in Report.
- 4 Factor of Safety (FOS) = 1.2
- 5 Uplift force of top cap = 1950 kg, uplift force of top cap 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 US Helical pipe - Fy = 60 ksi (refer US Helical Chart)
- 8 Bracing not required.



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→		DATE	→	
JOB NO.	→	AZ20170	CHECKER	→	July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																			US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size								Krinner Ground Screws G114x1600.									
								Front Column			Rear Column			Front Column				Rear Column				Fornit Column		Rear Column			Actual Force (kg)				
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)	
																															1950 1625
379	150	B	5	0-10	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	844	540	1.08	YES			
380				11-20	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	844	898	1.8	YES			
381				21-30	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	844	1261	2.52	YES			
382				31-40	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	844	1619	3.24	YES			
383				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	780	1828	3.65	YES			
384				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	649	1796	3.6	YES			
385				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	585	1868	3.73	YES			
386			10	0-10	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	839	495	0.99	YES			
387				11-20	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	825	1.65	YES			
388				21-30	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	1152	2.3	YES			
389				31-40	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	1483	2.96	YES			
390				41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	1810	3.62	YES			
391				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	698	1782	3.56	YES			
392				61-70	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	630	1850	3.7	YES			
393			15	0-10	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	803	408	0.82	YES			
394				11-20	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	803	680	1.36	YES			
395				21-30	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	803	952	1.9	YES			
396				31-40	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	803	1224	2.45	YES			
397				41-50	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	803	1497	2.99	YES			
398				51-60	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	803	1769	3.53	YES			
399				61-70	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	726	1837	3.67	YES			
400			20	0-10	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	844	403	0.81	YES			
401				11-20	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	844	672	1.34	YES			
402				21-30	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	844	935	1.87	YES			
403				31-40	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	844	1202	2.4	YES			
404				41-50	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	844	1469	2.94	YES			
405				51-60	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	844	1737	3.47	YES			
406				61-70	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	762	1800	3.61	YES			
407			25	0-10	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	821	359	0.71	YES			
408				11-20	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	594	1.18	YES			
409				21-30	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	830	1.66	YES			
410				31-40	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1066	2.13	YES			
411				41-50	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1302	2.6	YES			
412				51-60	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1537	3.07	YES			
413				61-70	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1773	3.55	YES			
414			30	0-10	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	821	349	0.69	YES			
415				11-20	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	576	1.16	YES			
416				21-30	4'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	808	1.61	YES			
417				31-40	4'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1039	2.07	YES			
418				41-50	4'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1265	2.53	YES			
419				51-60	4'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1497	2.99	YES			
420	61-70	4'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1723	3.45	YES						



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→		DATE	→	
JOB NO.	→	AZ20170	CHECKER	→	July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																								US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size								Krinner Ground Screws G114x1600.														
					Front Column			Rear Column			Front Column				Rear Column				Fornt Column		Rear Column		Actual Force (kg)													
					[S1] (ft-in)	[S2] (ft-in)		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)	Uplift Force	Downward	Horiz.								
																													Average Uplift Force = 1950 kg (1625 kg w/ FOS)							
																								1950	1625											
421	160	B	5	0-10	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	825	458	0.92	YES								
422				11-20	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	825	762	1.52	YES								
423				21-30	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	825	1066	2.13	YES								
424				31-40	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	825	1370	2.74	YES								
425				41-50	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	825	1673	3.35	YES								
426				51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	748	1796	3.6	YES								
427				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	676	1868	3.73	YES								
428			10	0-10	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	807	413	0.83	YES								
429				11-20	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	807	685	1.37	YES								
430				21-30	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	807	961	1.92	YES								
431				31-40	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	807	1234	2.47	YES								
432				41-50	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	807	1506	3.02	YES								
433				51-60	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	807	1782	3.56	YES								
434				61-70	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	726	1850	3.7	YES								
435			15	0-10	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	834	368	0.73	YES								
436				11-20	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	612	1.22	YES								
437				21-30	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	857	1.71	YES								
438				31-40	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1102	2.2	YES								
439				41-50	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1347	2.69	YES								
440				51-60	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1592	3.18	YES								
441				61-70	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1837	3.67	YES								
442			20	0-10	4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	776	322	0.64	YES								
443				11-20	4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	776	535	1.07	YES								
444				21-30	4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	776	749	1.5	YES								
445				31-40	4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	776	962	1.92	YES								
446				41-50	4'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	776	1175	2.35	YES								
447				51-60	4'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	776	1388	2.78	YES								
448				61-70	4'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	776	1601	3.21	YES								
449			25	0-10	4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	834	318	0.63	YES								
450				11-20	4'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	527	1.05	YES								
451				21-30	4'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	735	1.47	YES								
452				31-40	4'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	948	1.89	YES								
453				41-50	4'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1156	2.31	YES								
454				51-60	4'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1365	2.73	YES								
455				61-70	4'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1574	3.15	YES								
456			30	0-10	4'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	839	308	0.62	YES								
457				11-20	4'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	512	1.02	YES								
458				21-30	4'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	717	1.43	YES								
459				31-40	4'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	920	1.84	YES								
460				41-50	4'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	1125	2.25	YES								
461	51-60	4'-0"		0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	1329	2.66	YES										
462	61-70	4'-0"		0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	1533	3.07	YES										



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Exposure C, ASCE 7-16, SCH 80- GM Chart for 5 Modules 90-160 Mph



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-16)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→	DATE	→
JOB NO.	→	CHECKER	→
AZ20170			
			July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)				
								Pole Footing Size				US Helical Size				Krinner Ground Screws G114x1600.															
								Front Column		Rear Column		Front Column		Rear Column		Front Column		Rear Column		Actual Force (kg)											
					[S1] (ft-in)	[S2] (ft-in)		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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)		
1				0-10				17'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	848	1456	2.91	YES
2				11-20				13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	653	1868	3.74	YES
3				21-30				9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	458	1841	3.68	YES
4				31-40				7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	363	1868	3.74	YES
5				41-50				6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	290	1828	3.65	YES
6				51-60				5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	240	1796	3.6	YES
7				61-70				4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	218	1868	3.73	YES
8				0-10				16'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	844	1320	2.64	YES
9				11-20				13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	712	1855	3.71	YES
10				21-30				9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	503	1823	3.65	YES
11				31-40				7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	395	1850	3.7	YES
12				41-50				6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	317	1810	3.62	YES
13				51-60				5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	263	1782	3.56	YES
14				61-70				4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	236	1850	3.7	YES
15				0-10				13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	839	1107	2.21	YES
16				11-20				13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	839	1837	3.68	YES
17				21-30				9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	590	1810	3.62	YES
18				31-40				7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	467	1837	3.67	YES
19				41-50				6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	372	1796	3.59	YES
20				51-60				5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	308	1769	3.53	YES
21				61-70				4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	281	1837	3.67	YES
22				0-10				13'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	853	1048	2.1	YES
23				11-20				13'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	853	1741	3.48	YES
24				21-30				9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	626	1778	3.56	YES
25				31-40				7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	494	1805	3.61	YES
26				41-50				6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	395	1764	3.53	YES
27				51-60				5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	327	1737	3.47	YES
28				61-70				4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	295	1800	3.61	YES
29				0-10				11'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	825	912	1.82	YES
30				11-20				11'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	825	1515	3.03	YES
31				21-30				9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	680	1751	3.5	YES
32				31-40				7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	535	1773	3.55	YES
33				41-50				6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	431	1732	3.47	YES
34				51-60				5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	358	1705	3.41	YES
35				61-70				4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	322	1773	3.55	YES
36				0-10				11'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	825	889	1.78	YES
37				11-20				11'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	825	1474	2.95	YES
38				21-30				9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	685	1705	3.41	YES
39				31-40				7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	540	1728	3.46	YES
40				41-50				6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	431	1687	3.37	YES
41				51-60				5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	358	1660	3.32	YES
42				61-70				4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	322	1723	3.45	YES

NOTE:

- Top Cap design to be provided by "K2 Systems". Average Force of top Cap = 1950 kg (4299 lbs).
- If Actual force is greater than Average force, Please contact "K2 Systems" For special engineering design of Top Cap.
- Top Cap is reviewed only for the uplift value provided in Report.
- Factor of Safety (FOS) = 1.2
- Uplift force of top cap = 1950 kg, uplift force of top cap with factor of safety = 1950 kg/1.2 = 1625 kg.
- Yield Stress of 3" dia pipe - Fy = 35 ksi & Fu = 58 ksi
- Yield Stress of 2-7/8" dia US Helical pipe - Fy = 60 ksi (refer US Helical Chart)
- Bracing not required.



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-16)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→	DATE	→
JOB NO.	→	CHECKER	→
	AZ0170		July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)		
								Pole Footing Size						US Helical Size						Krunner Ground Screws G114x1600.				Actual Force (kg)					
								Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column							
					[S1] (ft-in)	[S2] (ft-in)		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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)
43				0-10	9'-0"	15'-0"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	834	1247	2.5	YES
44				11-20		13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	753	1868	3.74	YES
45				21-30		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	531	1841	3.68	YES
46				31-40		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	417	1868	3.74	YES
47				41-50		6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	336	1828	3.65	YES
48				51-60		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	277	1796	3.6	YES
49				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	249	1868	3.73	YES	
50				0-10	9'-0"	14'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	848	1156	2.31	YES
51				11-20		13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	816	1855	3.71	YES
52				21-30		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	576	1823	3.65	YES
53				31-40		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	454	1850	3.7	YES
54				41-50		6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	363	1810	3.62	YES
55				51-60		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	304	1782	3.56	YES
56				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	272	1850	3.7	YES	
57				0-10	9'-0"	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	853	985	1.96	YES
58				11-20		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	853	1633	3.27	YES
59				21-30		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	671	1810	3.62	YES
60				31-40		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	531	1837	3.67	YES
61				41-50		6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	426	1796	3.59	YES
62				51-60		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	354	1769	3.53	YES
63				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	317	1837	3.67	YES	
64				0-10	9'-0"	11'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	825	885	1.77	YES
65				11-20		11'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	825	1474	2.94	YES
66				21-30		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	712	1778	3.56	YES
67				31-40		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	562	1805	3.61	YES
68				41-50		6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	449	1764	3.53	YES
69				51-60		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	376	1737	3.47	YES
70				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	336	1800	3.61	YES	
71				0-10	9'-0"	10'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	857	830	1.66	YES
72				11-20		10'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	857	1383	2.77	YES
73				21-30		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	776	1751	3.5	YES
74				31-40		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	612	1773	3.55	YES
75				41-50		6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	490	1732	3.47	YES
76				51-60		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	408	1705	3.41	YES
77				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	367	1773	3.55	YES	
78				0-10	9'-0"	10'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	816	771	1.55	YES
79				11-20		10'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	816	1283	2.57	YES
80				21-30		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	776	1705	3.41	YES
81				31-40		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	612	1728	3.46	YES
82				41-50		6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	490	1687	3.37	YES
83				51-60		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	408	1660	3.32	YES
84				61-70		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	367	1723	3.45	YES

NOTE:

- Top Cap design to be provided by "K2 Systems". Average Force of top Cap = 1950 kg (4299 lbs).
- If Actual force is greater than Average force, Please contact "K2 Systems" For special engineering design of Top Cap.
- Top Cap is reviewed only for the uplift value provided in Report.
- Factor of Safety (FOS) = 1.2
- Uplift force of top cap = 1950 kg, uplift force of top cap with factor of safety = 1950 kg/1.2 = 1625 kg.
- Yield Strss of 3" dia pipe - Fy = 35 ksi & Fu = 58 ksi
- Yield Strss of 2-7/8" dia US Helical pipe - Fy = 60 ksi (refer US Helical Chart)
- Bracing not required.



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-16)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME JOB NO.	→	→	DATE CHECKER	→	→	July 5, 2024 SAM
	→	AZ20170		→		

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation												US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
								Front Column			Rear Column			Front Column			Rear Column			Fornt Column		Rear Column			Actual Force (kg)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
					[S1] (ft-in)	[S2] (ft-in)		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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-16)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→		DATE	→	
JOB NO.	→	AZ20170	CHECKER	→	July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																								US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size						Krrinner Ground Screws G114x1600.						Actual Force (kg)										
								Front Column			Rear Column			Front Column			Rear Column			Fornt Column		Rear Column														
					[S1] (ft-in)	[S2] (ft-in)		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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)							
																										1950 1625										
127	105	C	5	0-10	9'-0"		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	853	998	2	YES						
128				11-20			12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	853	1660	3.32	YES						
129				21-30			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	676	1841	3.68	YES						
130				31-40			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	535	1868	3.74	YES						
131				41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	426	1828	3.65	YES						
132				51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	358	1796	3.6	YES						
133				61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	322	1868	3.73	YES						
134			10	0-10	9'-0"		11'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	848	907	1.81	YES						
135				11-20			11'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	848	1510	3.02	YES						
136				21-30			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	735	1823	3.65	YES						
137				31-40			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	580	1850	3.7	YES						
138				41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	463	1810	3.62	YES						
139				51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	385	1782	3.56	YES						
140				61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	349	1850	3.7	YES						
141			15	0-10	9'-0"		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	853	776	1.56	YES						
142				11-20			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	853	1293	2.59	YES						
143				21-30			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	853	1810	3.62	YES						
144				31-40			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	676	1837	3.67	YES						
145				41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	540	1796	3.59	YES						
146				51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	449	1769	3.53	YES						
147				61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	404	1837	3.67	YES						
148			20	0-10	9'-0"		9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	853	726	1.45	YES						
149				11-20			9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	853	1206	2.41	YES						
150				21-30			9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	853	1687	3.37	YES						
151				31-40			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	712	1805	3.61	YES						
152				41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	567	1764	3.53	YES						
153				51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	472	1737	3.47	YES						
154				61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	426	1800	3.61	YES						
155			25	0-10	9'-0"		8'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	821	635	1.27	YES						
156				11-20			8'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	821	1052	2.11	YES						
157				21-30			8'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	821	1474	2.95	YES						
158				31-40			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	771	1773	3.55	YES						
159				41-50			6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	617	1732	3.47	YES						
160				51-60			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	512	1705	3.41	YES						
161				61-70			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	463	1773	3.55	YES						
162			30	0-10	9'-0"		8'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	821	616.8	1.24	YES						
163				11-20			8'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	821	1025	2.05	YES						
164				21-30			8'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	821	1433	2.87	YES						
165				31-40			7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	771	1728	3.46	YES						
166				41-50			6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	617	1687	3.37	YES						
167				51-60			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	512	1660	3.32	YES						
168	61-70	4'-6"		0'-6"			2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	463	1723	3.45	YES								



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-16)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→		DATE	→	
JOB NO.	→	AZ20170	CHECKER	→	July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																		US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.										
								Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column		Actual Force (kg)						
					[S1] (ft-in)	[S2] (ft-in)		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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)	
169				0-10	9'-0"		10'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	834	876	1.75	YES
170			11-20	10'-0"			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	789	1383	2.77	YES	
171			21-30	9'-6"			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	757	1841	3.68	YES	
172			31-40	7'-6"			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	599	1868	3.74	YES	
173			41-50	6'-0"			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	476	1828	3.65	YES	
174			51-60	5'-0"			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	399	1796	3.6	YES	
175			61-70	4'-6"			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	358	1868	3.73	YES	
176			0-10	9'-0"		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	821	785	1.57	YES	
177			11-20			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1306	2.61	YES	
178			21-30			9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1823	3.65	YES	
179			31-40			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	649	1850	3.7	YES	
180			41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	517	1810	3.62	YES	
181			51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	431	1782	3.56	YES	
182			61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	390	1850	3.7	YES	
183			0-10	9'-0"		8'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	848	694	1.39	YES	
184			11-20			8'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	848	1156	2.31	YES	
185			21-30			8'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	848	1619	3.24	YES	
186			31-40			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	748	1837	3.67	YES	
187			41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	599	1796	3.59	YES	
188			51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	499	1769	3.53	YES	
189			61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	449	1837	3.67	YES	
190	110	C	0-10	9'-0"		8'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	844	644	1.29	YES	
191			11-20			8'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	844	1070	2.14	YES	
192			21-30			8'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	844	1497	2.99	YES	
193			31-40			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	789	1805	3.61	YES	
194			41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	630	1764	3.53	YES	
195			51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	526	1737	3.47	YES	
196			61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	472	1800	3.61	YES	
197			25	0-10	9'-0"		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	857	595	1.19	YES
198				11-20			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	857	989	1.98	YES
199				21-30			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	857	1383	2.76	YES
200				31-40			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	857	1773	3.55	YES
201				41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	685	1732	3.47	YES
202				51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	571	1705	3.41	YES
203				61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	512	1773	3.55	YES
204	30	0-10	9'-0"		7'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	798	540	1.08	YES		
205		11-20			7'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	898	1.8	YES		
206		21-30			7'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	1256	2.51	YES		
207		31-40			7'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	1615	3.22	YES		
208		41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	685	1687	3.37	YES		
209		51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	571	1660	3.32	YES		
210		61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	512	1723	3.45	YES		

NOTE:

- Top Cap design to be provided by "K2 Systems". Average Force of top Cap = 1950 kg (4299 lbs).
- If Actual force is greater than Average force, Please contact "K2 Systems" For special engineering design of Top Cap.
- Top Cap is reviewed only for the uplift value provided in Report.
- Factor of Safety (FOS) = 1.2
- Uplift force of top cap = 1950 kg, uplift force of top cap with factor of safety = 1950 kg/1.2 = 1625 kg.
- Yield Strss of 3" dia pipe - Fy =



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-16)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→	DATE	→
JOB NO.	→	CHECKER	→
	AZ20170		July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																								US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size								Krinner Ground Screws G114x1600.				Actual Force (kg)										
								Front Column			Rear Column			Front Column				Rear Column				Front Column		Rear Column												
					[S1] (ft-in)	[S2] (ft-in)		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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)							
																										1950 1625										
211				0-10	9'-0"		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	839	790	1.58	YES						
212			11-20	9'-6"			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	839	1315	2.63	YES							
213			21-30	9'-6"			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	839	1841	3.68	YES							
214			31-40	7'-6"			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	662	1868	3.74	YES							
215			41-50	6'-0"			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	531	1828	3.65	YES							
216			51-60	5'-0"			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	440	1796	3.6	YES							
217			61-70	4'-6"			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	399	1868	3.73	YES							
218			0-10	9'-0"		8'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	812	703	1.4	YES							
219			11-20			8'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	812	1166	2.34	YES							
220			21-30			8'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	812	1633	3.27	YES							
221			31-40			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	717	1850	3.7	YES							
222			41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	571	1810	3.62	YES							
223			51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	476	1782	3.56	YES							
224			61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	431	1850	3.7	YES							
225			0-10	9'-0"		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	830	613	1.23	YES							
226			11-20			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	830	1020	2.04	YES							
227			21-30			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	830	1429	2.86	YES							
228			31-40			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	830	1837	3.67	YES							
229			41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	662	1796	3.59	YES							
230			51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	553	1769	3.53	YES							
231			61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	499	1837	3.67	YES							
232	115	C	0-10	9'-0"		7'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	816	563	1.13	YES							
233			11-20			7'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	816	939	1.87	YES							
234			21-30			7'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	816	1311	2.62	YES							
235			31-40			7'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	816	1683	3.37	YES							
236			41-50			6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	698	1764	3.53	YES							
237			51-60			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	580	1737	3.47	YES							
238			61-70			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	526	1800	3.61	YES							
239			25	0-10	9'-0"		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	816	517	1.03	YES						
240				11-20			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	816	858	1.71	YES						
241				21-30			6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	816	1197	2.39	YES						
242				31-40			6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	816	1537	3.07	YES						
243				41-50			6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	757	1732	3.47	YES						
244				51-60			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	630	1705	3.41	YES						
245				61-70			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	567	1773	3.55	YES						
246	30	0-10	9'-0"		6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	821	504	1	YES								
247		11-20			6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	821	835	1.67	YES								
248		21-30			6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	821	1166	2.33	YES								
249		31-40			6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	821	1497	2.99	YES								
250		41-50			6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	757	1687	3.37	YES								
251		51-60			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	630	1660	3.32	YES								
252		61-70			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	567	1723	3.45	YES								



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-16)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME JOB NO.	→	→	DATE CHECKER	→	→	July 5, 2024 SAM
	→	AZ20170		→		

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																					US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size						Kriner Ground Screws G114x1600.													
								Front Column			Rear Column			Front Column			Rear Column			Formt. Column		Rear Column		Actual Force (kg)									
					[S1] (ft-in)	[S2] (ft-in)		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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)				
																											1950 1625						
253	120	C	5	0-10	9'-0"	8'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	830	708	1.41	YES				
254				11-20			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	1179	2.35	YES				
255				21-30			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	1646	3.29	YES				
256				31-40			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	730	1868	3.74	YES				
257				41-50			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	585	1828	3.65	YES				
258				51-60			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	490	1796	3.6	YES				
259				61-70			0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	440	1868	3.73	YES				
260			10	0-10	9'-0"	8'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	844	662	1.32	YES				
261				11-20			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	844	1098	2.2	YES				
262				21-30			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	844	1537	3.07	YES				
263				31-40			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	789	1850	3.7	YES				
264				41-50			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	630	1810	3.62	YES				
265				51-60			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	526	1782	3.56	YES				
266				61-70			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	476	1850	3.7	YES				
267			15	0-10	9'-0"	7'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	853	571	1.15	YES				
268				11-20			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	853	953	1.9	YES				
269				21-30			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	853	1333	2.67	YES				
270				31-40			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	853	1714	3.43	YES				
271				41-50			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	730	1796	3.59	YES				
272				51-60			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	608	1769	3.53	YES				
273				61-70			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	549	1837	3.67	YES				
274			20	0-10	9'-0"	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	830	522	1.05	YES				
275				11-20			0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	871	1.74	YES				
276				21-30			0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	1215	2.44	YES				
277				31-40			0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	1565	3.13	YES				
278				41-50			0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	766	1764	3.53	YES				
279				51-60			0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	639	1737	3.47	YES				
280				61-70			0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	576	1800	3.61	YES				
281			25	0-10	9'-0"	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	830	476	0.95	YES				
282				11-20			0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	790	1.58	YES				
283				21-30			0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	1107	2.21	YES				
284				31-40			0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	1420	2.84	YES				
285				41-50			0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	1732	3.47	YES				
286				51-60			0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	694	1705	3.41	YES				
287				61-70			0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	621	1773	3.55	YES				
288			30	0-10	9'-0"	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	830	463	0.93	YES				
289				11-20			0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	771	1.54	YES				
290				21-30			0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	1075	2.15	YES				
291				31-40			0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	1383	2.76	YES				
292				41-50			0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	1687	3.37	YES				
293				51-60			0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	694	1660	3.32	YES				
294	61-70	0'-6"		2'-0"			2'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	626	1723	3.45	YES						



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-16)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME
JOB NO.

→
→

AZ20170

DATE
CHECKER

→
→

July 5, 2024
SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																		US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)		
								Pole Footing Size						US Helical Size										Krinner Ground Screws G114x1600.				Actual Force (kg)			
								Front Column			Rear Column			Front Column				Rear Column				Front Column		Rear Column							
					[S1] (ft-in)	[S2] (ft-in)		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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)		
																										1950 1625					
295	130	C	5	0-10	9'-0"		7'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	821	581	1.17	YES	
296				11-20			7'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	821	971	1.94	YES	
297				21-30			7'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	821	1356	2.71	YES	
298				31-40			7'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	821	1741	3.49	YES	
299				41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	703	1828	3.65	YES	
300				51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	585	1796	3.6	YES	
301				61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	526	1868	3.73	YES	
302				10			0-10	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	821	535	1.07	YES
303							11-20	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	821	894	1.78	YES
304							21-30	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	821	1247	2.49	YES
305			31-40		6'-6"		0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	821	1605	3.21	YES		
306			41-50		6'-0"		0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	757	1810	3.62	YES		
307			51-60		5'-0"		0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	630	1782	3.56	YES		
308			61-70		4'-6"		0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	567	1850	3.7	YES		
309			15		0-10		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	798	449	0.9	YES	
310					11-20		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	798	748	1.5	YES	
311					21-30		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	798	1048	2.1	YES	
312				31-40	5'-6"		0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	798	1347	2.69	YES		
313				41-50	5'-6"		0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	798	1646	3.29	YES		
314				51-60	5'-0"		0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	726	1769	3.53	YES		
315				61-70	4'-6"		0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	653	1837	3.67	YES		
316				0-10	5'-6"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	839	444	0.88	YES		
317				11-20	5'-6"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	839	735	1.47	YES		
318				21-30	5'-6"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	839	1029	2.06	YES		
319			20	31-40	5'-6"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	839	1324	2.64	YES		
320				41-50	5'-6"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	839	1615	3.23	YES		
321				51-60	5'-0"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	762	1737	3.47	YES		
322				61-70	4'-6"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	689	1800	3.61	YES		
323				0-10	5'-0"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	825	395	0.79	YES		
324				11-20	5'-0"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	825	658	1.32	YES		
325				21-30	5'-0"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	825	921	1.84	YES		
326				31-40	5'-0"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	825	1184	2.37	YES		
327				41-50	5'-0"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	825	1447	2.89	YES		
328				51-60	5'-0"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	825	1705	3.41	YES		
329			61-70	4'-6"	0'-6"		2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	744	1773	3.55	YES			
330			30	0-10	5'-0"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	825	386	0.77	YES		
331				11-20	5'-0"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	825	640	1.28	YES		
332				21-30	5'-0"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	825	898	1.79	YES		
333				31-40	5'-0"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	825	1152	2.3	YES		
334				41-50	5'-0"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	825	1406	2.81	YES		
335	51-60	5'-0"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	825	1660	3.32	YES					
336	61-70	4'-6"		0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	744	1723	3.45	YES					



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-16)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME
JOB NO.

AZ20170

DATE
CHECKERJuly 5, 2024
SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																								US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
								Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column		Uplift Force (kg)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									



5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→		DATE	→	July 5, 2024
JOB NO.	→	AZ20170	CHECKER	→	SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hange (ft-in)	Foundation																		US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.										
								Front Column			Rear Column			Front Column			Rear Column			Fornt Column		Rear Column		Actual Force (kg)						
					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)	Uplift Force	Downward	Horiz.	Average Uplift Force= 1950 kg (1625 lbf) w/ FOS			
[S1] (ft-in)	[S2] (ft-in)																													
379				0-10		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	803	418	0.83	YES	
380				11-20		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	803	694	1.38	YES	
381				21-30		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	803	970	1.94	YES	
382				31-40	9'-0"	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	803	1247	2.49	YES	
383				41-50		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	803	1524	3.04	YES	
384				51-60		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	803	1796	3.6	YES	
385				61-70		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	726	1868	3.73	YES	
386				0-10		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	780	372	0.74	YES	
387				11-20		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	780	616	1.23	YES	
388				21-30		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	780	866	1.73	YES	
389				31-40	9'-0"	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	780	1111	2.22	YES	
390				41-50		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	780	1356	2.71	YES	
391				51-60		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	780	1605	3.21	YES	
392				61-70		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	780	1850	3.7	YES	
393				0-10		4'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	794	327	0.65	YES	
394				11-20		4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	794	544	1.09	YES	
395				21-30		4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	794	762	1.52	YES	
396				31-40	9'-0"	4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	794	980	1.96	YES	
397				41-50		4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	794	1197	2.39	YES	
398				51-60		4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	794	1415	2.83	YES	
399				61-70		4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	794	1633	3.26	YES	
400	150	C		0-10		4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	834	322	0.64	YES	
401				11-20		4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	535	1.07	YES	
402				21-30		4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	749	1.5	YES	
403				31-40	9'-0"	4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	961	1.92	YES	
404				41-50		4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1175	2.35	YES	
405				51-60		4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1388	2.78	YES	
406				61-70		4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1601	3.21	YES	
407				0-10		3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	785	277	0.55	YES	
408				11-20		3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	785	463	0.92	YES	
409				21-30		3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	785	644	1.29	YES	
410				31-40	9'-0"	3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	785	830	1.66	YES	
411				41-50		3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	785	1011	2.02	YES	
412				51-60		3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	785	1197	2.39	YES	
413				61-70		3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	785	1379	2.76	YES	
414				0-10		3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	785	273	0.54	YES	
415				11-20		3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	785	449	0.9	YES	
416				21-30		3'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	785	626	1.26	YES	
417				31-40	9'-0"	3'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	785	807	1.61	YES	
418				41-50		3'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	785	984	1.97	YES	
419				51-60		3'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	785	1166	2.33	YES	
420				61-70		3'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	785	1342	2.68	YES	

- 1 Top Cap design to be verified by "K2 Systems". Average Force of top Cap = 1950 kg (4299 lbs).
- 2 If Actual force is greater than Average Force, Please contact "K2 Systems" For special engineering design of Top Cap.
- 3 Top Cap is reviewed only for the uplift value provided in Report.
- 4 Factor of Safety (FOS) = 1.2
- 5 Uplift force of top cap = 1950 kg, uplift force of top cap with factor of safety = $1950 \text{ kg}/1.2 = 1625 \text{ kg}$.
- 6 Yield Stress of 3" dia pipe - $F_y = 35 \text{ ksi}$ and $F_u = 58 \text{ ksi}$
- 7 Yield Stress of 2-7/8" dia US Helical pipe - $F_y = 60 \text{ ksi}$ (refer US Helical Chart)
- 8 Bracing not required.



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-16)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→		DATE	→	
JOB NO.	→	AZ20170	CHECKER	→	July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																								US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.																
								Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column		Actual Force (kg)												
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)						
421	160	C	5	0-10	9'-0"	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	830	376	0.75	YES							
422				11-20		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	622	1.25	YES							
423				21-30		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	871	1.75	YES							
424				31-40		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	1120	2.24	YES							
425				41-50		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	1370	2.74	YES							
426				51-60		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	1619	3.24	YES							
427				61-70		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	1868	3.73	YES							
428			10	0-10	9'-0"	4'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	794	331	0.66	YES							
429				11-20		4'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	794	549	1.1	YES							
430				21-30		4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	794	766	1.54	YES							
431				31-40		4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	794	989	1.97	YES							
432				41-50		4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	794	1206	2.41	YES							
433				51-60		4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	794	1424	2.85	YES							
434				61-70		4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	794	1646	3.29	YES							
435			15	0-10	9'-0"	3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	798	286	0.57	YES							
436				11-20		3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	476	0.95	YES							
437				21-30		3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	667	1.33	YES							
438				31-40		3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	857	1.71	YES							
439				41-50		3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	1048	2.1	YES							
440				51-60		3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	1238	2.47	YES							
441				61-70		3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	1429	2.85	YES							
442			20	0-10	9'-0"	3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	834	282	0.56	YES							
443				11-20		3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	467	0.94	YES							
444				21-30		3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	653	1.31	YES							
445				31-40		3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	844	1.68	YES							
446				41-50		3'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1029	2.06	YES							
447				51-60		3'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1215	2.43	YES							
448				61-70		3'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1401	2.8	YES							
449			25	0-10	9'-0"	3'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	771	236	0.48	YES							
450				11-20		3'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	395	0.79	YES							
451				21-30		3'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	553	1.11	YES							
452				31-40		3'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	707	1.42	YES							
453				41-50		3'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	867	1.73	YES							
454				51-60		3'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	1025	2.05	YES							
455				61-70		3'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	1184	2.36	YES							
456	30	0-10	9'-0"	3'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	771	231	0.46	YES									
457		11-20		3'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	385	0.77	YES									
458		21-30		3'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	540	1.07	YES									
459		31-40		3'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	389	1.38	YES									
460		41-50		3'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	844	1.69	YES									
461		51-60		3'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	998	2	YES									
462		61-70		3'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	1152	2.3	YES									



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Exposure C, ASCE 7-10, SCH 80- GM Chart for 5 Modules 90-160 Mph



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→	DATE	→
JOB NO.	→	CHECKER	→
AZ20170			July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																								US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size								Krinner Ground Screws G114x1600.				Actual Force (kg)										
								Front Column			Rear Column			Front Column				Rear Column				Fornt Column		Rear Column		Uplift Force			Downward			Horiz.				
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)						
1				0-10				17'-6"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	848	1456	2.91	YES					
2				11-20				13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	653	1868	3.74	YES					
3				21-30				9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	458	1841	3.68	YES					
4				31-40				7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	363	1868	3.74	YES					
5				41-50				6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	290	1828	3.65	YES					
6				51-60				5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	240	1796	3.6	YES					
7				61-70				4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	218	1868	3.73	YES					
8				0-10				16'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	844	1320	2.64	YES					
9				11-20				13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	712	1855	3.71	YES					
10				21-30				9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	503	1823	3.65	YES					
11				31-40				7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	395	1850	3.7	YES					
12				41-50				6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	317	1810	3.62	YES					
13				51-60				5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	263	1782	3.56	YES					
14				61-70				4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	236	1850	3.7	YES					
15				0-10				13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	839	1107	2.21	YES					
16				11-20				13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	839	1837	3.68	YES					
17				21-30				9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	590	1810	3.62	YES					
18				31-40				7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	467	1837	3.67	YES					
19				41-50				6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	372	1796	3.59	YES					
20				51-60				5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	308	1769	3.53	YES					
21				61-70				4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	281	1837	3.67	YES					
22				0-10				13'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	853	1048	2.1	YES					
23				11-20				13'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	853	1741	3.48	YES					
24				21-30				9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	626	1778	3.56	YES					
25				31-40				7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	494	1805	3.61	YES					
26				41-50				6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	395	1764	3.53	YES					
27				51-60				5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	327	1737	3.47	YES					
28				61-70				4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	295	1800	3.61	YES					
29				0-10				11'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	825	912	1.82	YES					
30				11-20				11'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	825	1515	3.03	YES					
31				21-30				9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	680	1751	3.5	YES					
32				31-40				7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	535	1773	3.55	YES					
33				41-50				6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	431	1732	3.47	YES					
34				51-60				5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	358	1705	3.41	YES					
35				61-70				4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	322	1773	3.55	YES					
36				0-10				11'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	825	889	1.78	YES					
37				11-20				11'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	825	1474	2.95	YES					
38				21-30				9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	685	1705	3.41	YES					
39				31-40				7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	540	1728	3.46	YES					
40				41-50				6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	431	1687	3.37	YES					
41				51-60				5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	358	1660	3.32	YES					
42				61-70				4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	322	1723	3.45	YES					

NOTE:

- Top Cap design to be provided by "K2 Systems". Average Force of top Cap = 1950 kg (4299 lbs).
- If Actual force is greater than Average force, Please contact "K2 Systems" For special engineering design of Top Cap.
- Top Cap is reviewed only for the uplift value provided in Report.
- Factor of Safety (FOS) = 1.2
- Uplift force of top cap = 1950 kg, uplift force of top cap with factor of safety = 1950 kg / 1.2 = 1625 kg.
- Yield Strss of 3" dia pipe - Fy = 35 ksi & Fu = 58 ksi
- Yield Strss of 2-7/8" dia US Helical pipe - Fy = 60 ksi (refer US Helical Chart)
- Bracing not required.



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME
JOB NO.

AZ20170

DATE
CHECKERJuly 5, 2024
SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																				US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size										Krinner Ground Screws G114x1600.								
								Front Column			Rear Column			Front Column				Rear Column				Front Column		Rear Column		Actual Force (kg)						
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)		
																												1625				
43				0-10	9'-0"	15'-0"	0'-6"	2'-0"	2'-0"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	834	1247	2.5	YES			
44			11-20	13'-6"		0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	753	1868	3.74	YES				
45			21-30	9'-6"		0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	531	1841	3.68	YES				
46			31-40	7'-6"		0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	417	1868	3.74	YES				
47			41-50	6'-0"		0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	336	1828	3.65	YES				
48			51-60	5'-0"		0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	277	1796	3.6	YES				
49			61-70	4'-6"		0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	249	1868	3.73	YES				
50			0-10	9'-0"	14'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	848	1156	2.31	YES				
51			11-20		13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	816	1855	3.71	YES				
52			21-30		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	576	1823	3.65	YES				
53			31-40		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	454	1850	3.7	YES				
54			41-50		6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	363	1810	3.62	YES				
55			51-60		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	304	1782	3.56	YES				
56			61-70		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	272	1850	3.7	YES				
57			0-10	9'-0"	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	853	985	1.96	YES				
58			11-20		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	853	1633	3.27	YES				
59			21-30		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	671	1810	3.62	YES				
60			31-40		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	531	1837	3.67	YES				
61			41-50		6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	426	1796	3.59	YES				
62			51-60		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	354	1769	3.53	YES				
63			61-70		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	317	1837	3.67	YES				
64	95	C	0-10	9'-0"	11'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	825	885	1.77	YES				
65			11-20		11'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	825	1474	2.94	YES				
66			21-30		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	712	1778	3.56	YES				
67			31-40		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	562	1805	3.61	YES				
68			41-50		6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	449	1764	3.53	YES				
69			51-60		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	376	1737	3.47	YES				
70			61-70		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	336	1800	3.61	YES				
71			25	0-10	9'-0"	10'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	857	830	1.66	YES			
72				11-20		10'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	857	1383	2.77	YES			
73				21-30		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	776	1751	3.5	YES			
74				31-40		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	612	1773	3.55	YES			
75				41-50		6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	490	1732	3.47	YES			
76	51-60	5'-0"		0'-6"		2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	408	1705	3.41	YES					
77	61-70	4'-6"		0'-6"		2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	367	1773	3.55	YES					
78	30	0-10	9'-0"	10'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	816	771	1.55	YES					
79		11-20		10'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	816	1283	2.57	YES					
80		21-30		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	776	1705	3.41	YES					
81		31-40		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	612	1728	3.46	YES					
82		41-50		6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	490	1687	3.37	YES					
83		51-60		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	408	1660	3.32	YES					
84		61-70		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	367	1723	3.45	YES					



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→	DATE	→
JOB NO.	→	CHECKER	→
	AZ20170		July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																								US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)																				
								Pole Footing Size						US Helical Size								Krinner Ground Screws G114x1600.																																	
								Front Column			Rear Column			Front Column				Rear Column				Fornt Column		Rear Column		Actual Force (kg)																													
					[S1] (ft-in)	[S2] (ft-in)		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)	Uplift Force	Downward	Horiz.																											
Average Uplift force= 1950 kg (1625 kg w/ FOS)																																																							
1950																																																							
1625																																																							
85	100	C	5	0-10	9'-0"	13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	853	1125	2.24	YES																										
86																														11-20	13'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	853	1868	3.74	YES	
87																														21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	599	1841	3.68	YES	
88																														31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	476	1868	3.74	YES	
89																														41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	381	1828	3.65	YES	
90																														51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	317	1796	3.6	YES	
91				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	286	1868	3.73	YES																											
92				10	0-10	9'-0"	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	825	989	1.98	YES																									
93																															11-20	12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	825	1646	3.29	YES
94																															21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	653	1823	3.65	YES
95																															31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	517	1850	3.7	YES
96																															41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	413	1810	3.62	YES
97			51-60																												5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	345	1782	3.56	YES	
98			61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	308	1850	3.7	YES																												
99			15	0-10	9'-0"	10'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	844	862	1.72	YES																										
100																														11-20	10'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	844	1429	2.86	YES	
101																														21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	762	1810	3.62	YES	
102																														31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	603	1837	3.67	YES	
103																														41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	481	1796	3.59	YES	
104																														51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	399	1769	3.53	YES	
105			61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	363	1837	3.67	YES																												
106			20	0-10	9'-0"	10'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	844	808	1.61	YES																										
107																														11-20	10'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	844	1338	2.68	YES	
108																														21-30	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	803	1778	3.56	YES	
109	31-40	7'-6"																												0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	635	1805	3.61	YES			
110	41-50	6'-0"																												0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	508	1764	3.53	YES			
111	51-60	5'-0"																												0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	422	1737	3.47	YES			
112	61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	381	1800	3.61	YES																														
113	25	0-10	9'-0"	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	825	712	1.43	YES																												
114																												11-20	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	825	1184	2.37	YES			
115																												21-30	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	825	1655	3.32	YES			
116																												31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	689	1773	3.55	YES			
117																												41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	549	1732	3.47	YES			
118																												51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	458	1705	3.41	YES			
119	61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	413	1773	3.55	YES																														
120	30	0-10	9'-0"	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	830	694	1.39	YES																												
121																												11-20	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	830	1156	2.31	YES			
122																												21-30	9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	830	1615	3.23	YES			
123																												31-40	7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	689	1728	3.46	YES			
124																												41-50	6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	553	1687	3.37	YES			
125																												51-60	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	458	1660	3.32	YES			
126	61-70	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	413	1723	3.45	YES																														



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→	DATE	→
JOB NO.	→	CHECKER	→
	AZ20170		July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)		
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.									
								Front Column			Rear Column			Front Column			Rear Column			Fornt Column		Rear Column		Actual Force (kg)					
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.
127				0-10		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	853	998	2	YES
128				11-20		12'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	853	1660	3.32	YES
129				21-30		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	676	1841	3.68	YES
130				31-40		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	535	1868	3.74	YES
131				41-50		6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	426	1828	3.65	YES
132				51-60		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	358	1796	3.6	YES
133				61-70		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	322	1868	3.73	YES
134				0-10		11'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	848	907	1.81	YES
135				11-20		11'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	848	1510	3.02	YES
136				21-30		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	735	1823	3.65	YES
137				31-40		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	580	1850	3.7	YES
138				41-50		6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	463	1810	3.62	YES
139				51-60		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	385	1782	3.56	YES
140				61-70		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	349	1850	3.7	YES
141				0-10		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	853	776	1.56	YES
142				11-20		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	853	1293	2.59	YES
143				21-30		9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	853	1810	3.62	YES
144				31-40		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	676	1837	3.67	YES
145				41-50		6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	540	1796	3.59	YES
146				51-60		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	449	1769	3.53	YES
147				61-70		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	404	1837	3.67	YES
148				0-10		9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	853	726	1.45	YES
149				11-20		9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	853	1206	2.41	YES
150				21-30		9'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	853	1687	3.37	YES
151				31-40		7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	712	1805	3.61	YES
152				41-50		6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	567	1764	3.53	YES
153				51-60		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	472	1737	3.47	YES
154				61-70		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	426	1800	3.61	YES
155				0-10		8'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	821	635	1.27	YES
156				11-20		8'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	821	1052	2.11	YES
157				21-30		8'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	821	1474	2.95	YES
158				31-40		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	771	1773	3.55	YES
159				41-50		6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	617	1732	3.47	YES
160				51-60		5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	512	1705	3.41	YES
161				61-70		4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	463	1773	3.55	YES
162				0-10		8'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	821	616.8	1.24	YES
163				11-20		8'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	821	1025	2.05	YES
164				21-30		8'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	821	1433	2.87	YES
165				31-40		7'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	771	1728	3.46	YES
166				41-50		6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	617	1687	3.37	YES
167				51-60		5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	512	1660	3.32	YES
168				61-70		4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	463	1723	3.45	YES

NOTE:

- Top Cap design to be provided by "K2 Systems". Average Force of top Cap = 1950 kg (4299 lbs).
- If Actual force is greater than Average force, Please contact "K2 Systems" For special engineering design of Top Cap.
- Top Cap is reviewed only for the uplift value provided in Report.
- Factor of Safety (FOS) = 1.2
- Uplift force of top cap = 1950 kg, uplift force of top cap with factor of safety = 1950 kg/1.2 = 1625 kg.
- Yield Strs of 3" dia pipe - Fy = 35 ksi & Fu = 58 ksi
- Yield Strs of 2-7/8" dia US Helical pipe - Fy = 60 ksi (refer US Helical Chart)
- Bracing not required.



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME
JOB NO. →
→
AZ20170DATE
CHECKER →
→July 5, 2024
SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																		US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.										
								Front Column			Rear Column			Front Column			Rear Column			Fornt Column		Rear Column		Actual Force (kg)						
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)
169				0-10	9'-0"	10'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	834	876	1.75	YES	
170			11-20	2'-0"				2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	789	1383	2.77	YES		
171			21-30	2'-0"				2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	757	1841	3.68	YES		
172			31-40	2'-0"				2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	599	1868	3.74	YES		
173			41-50	2'-0"				2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	476	1828	3.65	YES		
174			51-60	2'-0"				2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	399	1796	3.6	YES		
175			61-70	2'-0"				2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	358	1868	3.73	YES		
176				0-10	9'-0"	10'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	821	785	1.57	YES	
177			11-20	2'-0"				2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1306	2.61	YES		
178			21-30	2'-0"				2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1823	3.65	YES		
179			31-40	2'-0"				2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	649	1850	3.7	YES		
180			41-50	2'-0"				2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	517	1810	3.62	YES		
181			51-60	2'-0"				2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	431	1782	3.56	YES		
182			61-70	2'-0"				2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	390	1850	3.7	YES		
183				0-10	9'-0"	10'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	848	694	1.39	YES	
184			11-20	2'-0"				2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	848	1156	2.31	YES		
185			21-30	2'-0"				2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	848	1619	3.24	YES		
186			31-40	2'-0"				2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	748	1837	3.67	YES		
187			41-50	2'-0"				2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	599	1796	3.59	YES		
188			51-60	2'-0"				2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	499	1769	3.53	YES		
189			61-70	2'-0"				2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	449	1837	3.67	YES		
190				0-10	9'-0"	10'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	844	644	1.29	YES	
191			11-20	2'-0"				2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	844	1070	2.14	YES		
192			21-30	2'-0"				2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	844	1497	2.99	YES		
193			31-40	2'-0"				3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	789	1805	3.61	YES		
194			41-50	2'-0"				3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	630	1764	3.53	YES		
195			51-60	2'-0"				3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	526	1737	3.47	YES		
196			61-70	2'-0"				3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	472	1800	3.61	YES		
197				0-10	9'-0"	10'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	857	595	1.19	YES	
198			11-20	2'-0"				2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	857	989	1.98	YES		
199			21-30	2'-0"				2'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	857	1383	2.76	YES		
200			31-40	2'-0"				3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	857	1773	3.55	YES		
201			41-50	2'-0"				3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	685	1732	3.47	YES		
202			51-60	2'-0"				3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	571	1705	3.41	YES		
203			61-70	2'-0"				3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	512	1773	3.55	YES		
204				0-10	9'-0"	10'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	798	540	1.08	YES	
205			11-20	2'-0"				3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	898	1.8	YES		
206			21-30	2'-0"				3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	1256	2.51	YES		
207			31-40	2'-0"				3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	1615	3.22	YES		
208			41-50	2'-0"				3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	685	1687	3.37	YES		
209			51-60	2'-0"				3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	571	1660	3.32	YES		
210			61-70	2'-0"				3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	512	1723	3.45	YES		

NOTE:

- Top Cap design to be provided by "K2 Systems". Average Force of top Cap = 1950 kg (4299 lbs).
- If Actual force is greater than Average force, Please contact "K2 Systems" For special engineering design of Top Cap.
- Top Cap is reviewed only for the uplift value provided in Report.
- Factor of Safety (FOS) = 1.2
- Uplift force of top cap = 1950 kg, uplift force of top cap with factor of safety = 1950 kg/1.2 = 1625 kg.
- Yield Strs of 3" dia pipe - Fy = 35 ksi & Fu = 58 ksi
- Yield Strs of 2-7/8" dia US Helical pipe - Fy = 60 ksi (refer US Helical Chart)
- Bracing not required.



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→	DATE	→
JOB NO.	→	CHECKER	→
	AZ0170		July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)		
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.									
								Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column		Actual Force (kg)					
					[S1] (ft-in)	[S2] (ft-in)		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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)
																										1950 1625			
211				0-10	9'-0"	9'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	839	790	1.58	YES
212			11-20	9'-6"		0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	839	1315	2.63	YES	
213			21-30	9'-6"		0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	839	1841	3.68	YES	
214			31-40	7'-6"		0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	662	1868	3.74	YES	
215			41-50	6'-0"		0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	531	1828	3.65	YES	
216			51-60	5'-0"		0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	440	1796	3.6	YES	
217			61-70	4'-6"		0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	399	1868	3.73	YES	
218			0-10	8'-6"		0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	812	703	1.4	YES	
219			11-20	8'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	812	1166	2.34	YES		
220			21-30	8'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	812	1633	3.27	YES		
221			31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	717	1850	3.7	YES		
222			41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	571	1810	3.62	YES		
223			51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	476	1782	3.56	YES		
224			61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	431	1850	3.7	YES		
225			0-10	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	830	613	1.23	YES		
226			11-20	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	830	1020	2.04	YES		
227			21-30	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	830	1429	2.86	YES		
228			31-40	7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	830	1837	3.67	YES		
229			41-50	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	662	1796	3.59	YES		
230			51-60	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	553	1769	3.53	YES		
231			61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	499	1837	3.67	YES		
232			0-10	7'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	816	563	1.13	YES		
233			11-20	7'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	816	939	1.87	YES		
234			21-30	7'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	816	1311	2.62	YES		
235			31-40	7'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	816	1683	3.37	YES		
236			41-50	6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	698	1764	3.53	YES		
237			51-60	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	580	1737	3.47	YES		
238			61-70	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	526	1800	3.61	YES		
239			0-10	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	816	517	1.03	YES		
240			11-20	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	816	858	1.71	YES		
241			21-30	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	816	1197	2.39	YES		
242			31-40	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	816	1537	3.07	YES		
243			41-50	6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	757	1732	3.47	YES		
244			51-60	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	630	1705	3.41	YES		
245			61-70	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	567	1773	3.55	YES		
246			0-10	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	821	504	1	YES		
247			11-20	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	821	835	1.67	YES		
248			21-30	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	821	1166	2.33	YES		
249			31-40	6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	821	1497	2.99	YES		
250			41-50	6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	757	1687	3.37	YES		
251			51-60	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	630	1660	3.32	YES		
252			61-70	4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	567	1723	3.45	YES		

NOTE:

- Top Cap design to be provided by "K2 Systems". Average Force of top Cap = 1950 kg (4299 lbs).
- If Actual force is greater than Average force, Please contact "K2 Systems" For special engineering design of Top Cap.
- Top Cap is reviewed only for the uplift value provided in Report.
- Factor of Safety (FOS) = 1.2
- Uplift force of top cap = 1950 kg, uplift force of top cap with factor of safety = 1950 kg/1.2 = 1625 kg.
- Yield Strss of 3" dia pipe - Fy = 35 ksi & Fu = 58 ksi
- Yield Strss of 2-7/8" dia US Helical pipe - Fy = 60 ksi (refer US Helical Chart)
- Bracing not required.



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→	DATE	→
JOB NO.	→	CHECKER	→
	AZ20170		July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																								US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size								Krinner Ground Screws G114x1600.														
								Front Column			Rear Column			Front Column				Rear Column				Fornt Column		Rear Column		Actual Force (kg)										
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)						
253	120	C	5	0-10	9'-0"	9'-0"	8'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	830	708	1.41	YES						
254				11-20			8'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	830	1179	2.35	YES						
255				21-30			8'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	830	1646	3.29	YES						
256				31-40			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	730	1868	3.74	YES						
257				41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	585	1828	3.65	YES						
258				51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	490	1796	3.6	YES						
259				61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	440	1868	3.73	YES						
260			10	0-10	9'-0"	9'-0"	8'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	844	662	1.32	YES						
261				11-20			8'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	844	1098	2.2	YES						
262				21-30			8'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	844	1537	3.07	YES						
263				31-40			7'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	789	1850	3.7	YES						
264				41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	630	1810	3.62	YES						
265				51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	526	1782	3.56	YES						
266				61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	476	1850	3.7	YES						
267			15	0-10	9'-0"	9'-0"	7'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	853	571	1.15	YES						
268				11-20			7'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	853	953	1.9	YES						
269				21-30			7'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	853	1333	2.67	YES						
270				31-40			7'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	853	1714	3.43	YES						
271				41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	730	1796	3.59	YES						
272				51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	608	1769	3.53	YES						
273				61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	549	1837	3.67	YES						
274			20	0-10	9'-0"	9'-0"	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	830	522	1.05	YES						
275				11-20			6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	830	871	1.74	YES						
276				21-30			6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	830	1215	2.44	YES						
277				31-40			6'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	830	1565	3.13	YES						
278				41-50			6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	766	1764	3.53	YES						
279				51-60			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	639	1737	3.47	YES						
280				61-70			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	576	1800	3.61	YES						
281			25	0-10	9'-0"	9'-0"	6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	830	476	0.95	YES						
282				11-20			6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	830	790	1.58	YES						
283				21-30			6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	830	1107	2.21	YES						
284				31-40			6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	830	1420	2.84	YES						
285				41-50			6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	830	1732	3.47	YES						
286				51-60			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	694	1705	3.41	YES						
287				61-70			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	621	1773	3.55	YES						
288			30	0-10	9'-0"	9'-0"	6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	830	463	0.93	YES						
289				11-20			6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	830	771	1.54	YES						
290				21-30			6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	830	1075	2.15	YES						
291				31-40			6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	830	1383	2.76	YES						
292				41-50			6'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	830	1687	3.37	YES						
293				51-60			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	694	1660	3.32	YES						
294				61-70			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	626	1723	3.45	YES						

NOTE:

- Top Cap design to be provided by "K2 Systems". Average Force of Top Cap = 1950 kg (4299 lbs).
- If Actual force is greater than Average force, Please contact "K2 Systems" For special engineering design of Top Cap.
- Top Cap is reviewed only for the uplift value provided in Report.
- Factor of Safety (FOS) = 1.2
- Uplift force of top cap = 1950 kg, uplift force of top cap with factor of safety = 1950 kg/1.2 = 1625 kg.
- Yield Strss of 3" dia pipe - Fy = 35 ksi & Fu = 58 ksi
- Yield Strss of 2-7/8" dia US Helical pipe - Fy = 60 ksi (refer US Helical Chart)
- Bracing not required.



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→		DATE	→	
JOB NO.	→	AZ20170	CHECKER	→	July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																								US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size								Krinner Ground Screws G114x1600.							Average Uplift force= 1950 kg (1625 kg w/ FOS)							
								Front Column			Rear Column			Front Column				Rear Column				Fornt Column		Rear Column		Actual Force (kg)										
					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)	Uplift Force	Downward	Horiz.											
[S1] (ft-in)	[S2] (ft-in)																																			
																												1950	1625							
295	130	C	5	0-10	9'-0"	7'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	821	581	1.17	YES							
296				11-20		7'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	971	1.94	YES							
297				21-30		7'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1356	2.71	YES							
298				31-40		7'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1741	3.49	YES							
299				41-50		6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	703	1828	3.65	YES							
300				51-60		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	585	1796	3.6	YES							
301				61-70		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	526	1868	3.73	YES							
302			10	0-10	9'-0"	6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	821	535	1.07	YES							
303				11-20		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	894	1.78	YES							
304				21-30		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1247	2.49	YES							
305				31-40		6'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	821	1605	3.21	YES							
306				41-50		6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	757	1810	3.62	YES							
307				51-60		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	630	1782	3.56	YES							
308				61-70		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	567	1850	3.7	YES							
309			15	0-10	9'-0"	5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	798	449	0.9	YES							
310				11-20		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	748	1.5	YES							
311				21-30		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	1048	2.1	YES							
312				31-40		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	1347	2.69	YES							
313				41-50		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	1646	3.29	YES							
314				51-60		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	726	1769	3.53	YES							
315				61-70		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	653	1837	3.67	YES							
316			20	0-10	9'-0"	5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	839	444	0.88	YES							
317				11-20		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	735	1.47	YES							
318				21-30		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	1029	2.06	YES							
319				31-40		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	1324	2.64	YES							
320				41-50		5'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	839	1615	3.23	YES							
321				51-60		5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	762	1737	3.47	YES							
322				61-70		4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	689	1800	3.61	YES							
323			25	0-10	9'-0"	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	825	395	0.79	YES							
324				11-20		5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	825	658	1.32	YES							
325				21-30		5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	825	921	1.84	YES							
326				31-40		5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	825	1184	2.37	YES							
327				41-50		5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	825	1447	2.89	YES							
328				51-60		5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	825	1705	3.41	YES							
329				61-70		4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	744	1773	3.55	YES							
330			30	0-10	9'-0"	5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	825	386	0.77	YES							
331				11-20		5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	825	640	1.28	YES							
332				21-30		5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	825	898	1.79	YES							
333				31-40		5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	825	1152	2.3	YES							
334				41-50		5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	825	1406	2.81	YES							
335				51-60		5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	825	1660	3.32	YES							
336				61-70		4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	744	1723	3.45	YES							

NOTE:

- Top Cap design to be provided by "K2 Systems". Average Force of top Cap = 1950 kg (4299 lbs).
- If Actual force is greater than Average force, Please contact "K2 Systems" For special engineering design of Top Cap.
- Top Cap is reviewed only for the uplift value provided in Report.
- Factor of Safety (FOS) = 1.2
- Uplift force of top cap = 1950 kg, uplift force of top cap with factor of safety = 1950 kg/1.2 = 1625 kg.
- Yield Strss of 3" dia pipe - Fy = 35 ksi & Fu = 58 ksi
- Yield Strss of 2-7/8" dia US Helical pipe - Fy = 60 ksi (refer US Helical Chart)
- Bracing not required.



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME JOB NO.	→	→	DATE CHECKER	→	→	July 5, 2024 SAM
	→	AZ20170		→		

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation																				US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)	
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.												
								Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column		Uplift Force (kg)								
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)		
																																1950 1625
337	140	C	5	0-10	9'-0"		6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	830	499	1	YES		
338				11-20			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	830	1.66	YES		
339				21-30			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	1161	2.33	YES		
340				31-40			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	1492	2.99	YES		
341				41-50			6'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	1828	3.65	YES		
342				51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	689	1796	3.6	YES		
343				61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	621	1868	3.73	YES		
344			10	0-10	9'-0"		5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	816	454	0.91	YES		
345				11-20			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	816	753	1.51	YES		
346				21-30			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	816	1057	2.11	YES		
347				31-40			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	816	1356	2.72	YES		
348				41-50			5'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	816	1660	3.32	YES		
349				51-60			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	744	1782	3.56	YES		
350				61-70			4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	671	1850	3.7	YES		
351			15	0-10	9'-0"		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	857	408	0.82	YES		
352				11-20			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	857	680	1.36	YES		
353				21-30			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	857	952	1.9	YES		
354				31-40			5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	857	1224	2.45	YES		
355				41-50			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	857	1497	2.99	YES		
356				51-60			5'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	857	1769	3.53	YES		
357				61-70			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	1837	3.67	YES		
358			20	0-10	9'-0"		4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	807	363	0.73	YES		
359				11-20			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	807	603	1.21	YES		
360				21-30			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	807	844	1.69	YES		
361				31-40			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	807	1084	2.16	YES		
362				41-50			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	807	1324	2.64	YES		
363				51-60			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	807	1565	3.12	YES		
364				61-70			4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	807	1800	3.61	YES		
365			25	0-10	9'-0"		4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	776	318	0.63	YES		
366				11-20			4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	776	526	1.05	YES		
367				21-30			4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	776	735	1.47	YES		
368				31-40			4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	776	948	1.89	YES		
369				41-50			4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	776	1156	2.31	YES		
370				51-60			4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	776	1365	2.73	YES		
371				61-70			4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	776	1574	3.15	YES		
372			30	0-10	9'-0"		4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	776	308	0.62	YES		
373				11-20			4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	776	512	1.02	YES		
374				21-30			4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	776	716	1.43	YES		
375				31-40			4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	776	921	1.84	YES		
376				41-50			4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	776	1125	2.25	YES		
377				51-60			4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	776	1329	2.66	YES		
378				61-70			4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	776	1533	3.07	YES		



5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→		DATE	→	July 5, 2024
JOB NO.	→	AZ20170	CHECKER	→	SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hange (ft-in)	Foundation																			US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.										
					Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column		Actual Force (kg)									
					[S1] (ft-in)	[S2] (ft-in)			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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)
379				0-10		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	2'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	803	418	0.83	YES	
380				11-20		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	803	694	1.38	YES	
381				21-30		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	803	970	1.94	YES	
382				31-40	9'-0"	5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	803	1247	2.49	YES	
383				41-50		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	803	1524	3.04	YES	
384				51-60		5'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	803	1796	3.6	YES	
385				61-70		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	726	1868	3.73	YES	
386				0-10		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	780	372	0.74	YES	
387				11-20		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	780	616	1.23	YES	
388				21-30		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	780	866	1.73	YES	
389				31-40	9'-0"	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	780	1111	2.22	YES	
390				41-50		4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	780	1356	2.71	YES	
391				51-60		4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	780	1605	3.21	YES	
392				61-70		4'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	780	1850	3.7	YES	
393				0-10		4'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	794	327	0.65	YES	
394				11-20		4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	794	544	1.09	YES	
395				21-30		4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	794	762	1.52	YES	
396				31-40	9'-0"	4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	794	980	1.96	YES	
397				41-50		4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	794	1197	2.39	YES	
398				51-60		4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	794	1415	2.83	YES	
399				61-70		4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	794	1633	3.26	YES	
400				0-10		4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	834	322	0.64	YES	
401				11-20		4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	834	535	1.07	YES	
402				21-30		4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	834	749	1.5	YES	
403				31-40	9'-0"	4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	834	961	1.92	YES	
404				41-50		4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	834	1175	2.35	YES	
405				51-60		4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	834	1388	2.78	YES	
406				61-70		4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	834	1601	3.21	YES	
407				0-10		3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	785	277	0.55	YES	
408				11-20		3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	785	463	0.92	YES	
409				21-30		3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	785	644	1.29	YES	
410				31-40	9'-0"	3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	785	830	1.66	YES	
411				41-50		3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	785	1011	2.02	YES	
412				51-60		3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	785	1197	2.39	YES	
413				61-70		3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	785	1379	2.76	YES	
414				0-10		3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	1	10	9'	2'-7/8"	1	10	9'	4.5	63	4.5	63	785	273	0.54	YES	
415				11-20		3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	785	449	0.9	YES	
416				21-30		3'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	785	626	1.26	YES	
417				31-40	9'-0"	3'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	785	807	1.61	YES	
418				41-50		3'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	785	984	1.97	YES	
419				51-60		3'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	785	1166	2.33	YES	
420				61-70		3'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2'-7/8"	2	8	7'	2'-7/8"	2	8	7'	4.5	63	4.5	63	785	1342	2.68	YES	

- 1 Top Cap design to be provided by "K2 Systems". Average Force of top Cap = 1950 kg (4299 lbs).
- 2 If Actual force is greater than Average Force, Please contact "K2 Systems" For special engineering design of Top Cap.
- 3 Top Cap is reviewed only for the uplift value provided in Report.
- 4 Factor of Safety (FOS) = 1.2
- 5 Uplift force of top cap = 1950 kg, uplift force of top cap with factor of safety = $1950 \text{ kg}/1.2 = 1625 \text{ kg}$.
- 6 Yield Stress of 3" dia pipe - $F_y = 35 \text{ ksi}$ & $F_u = 58 \text{ ksi}$
- 7 Yield Stress of 2-7/8" dia US Helical pipe - $F_y = 60 \text{ ksi}$ (refer US Helical Chart)
- 8 Bracing not required.



STRUCTURAL ENGINEERS

Ground Mount Structure Spans (ASCE 7-10)

5 modules with max. area 28.125 sq-ft (90"x45") w/panel & 3" dia. SCH 80 Pipe.

JOB NAME	→	DATE	→
JOB NO.	→	CHECKER	→
AZ20170			
			July 5, 2024 SAM

SR- No's	Wind Speed (mph)	Expo-sure Catag-ory	Tilt Angle (Deg.)	Roof Snow Load (psf)	3" Pipe SCH 80 Column Spacing		Beam Pipe over- hang (ft-in)	Foundation															US Helicals Adapter (See note 1,2,3,4,5)			K2 Systems Top Cap (See note 1,2,3,4,5)			
								Pole Footing Size						US Helical Size						Krinner Ground Screws G114x1600.									
								Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column	Actual Force (kg)						
					[S1] (ft-in)	[S2] (ft-in)		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)	Uplift Force	Downward	Horiz.	Average Uplift force= 1950 kg (1625 kg w/ FOS)
																										1950 1625			
421	160	C	5	0-10	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	830	376	0.75	YES	
422				11-20	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	622	1.25	YES	
423				21-30	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	871	1.75	YES	
424				31-40	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	1120	2.24	YES	
425				41-50	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	1370	2.74	YES	
426				51-60	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	1619	3.24	YES	
427				61-70	4'-6"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	830	1868	3.73	YES	
428				10	0-10	4'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	794	331	0.66	YES
429					11-20	4'-0"	0'-6"	2'-0"	2'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	794	549	1.1	YES
430					21-30	4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	794	766	1.54	YES
431					31-40	4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	794	989	1.97	YES
432					41-50	4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	794	1206	2.41	YES
433					51-60	4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	794	1424	2.85	YES
434					61-70	4'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	794	1646	3.29	YES
435				15	0-10	3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	798	286	0.57	YES
436					11-20	3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	476	0.95	YES
437					21-30	3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	667	1.33	YES
438					31-40	3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	857	1.71	YES
439					41-50	3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	1048	2.1	YES
440					51-60	3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	1238	2.47	YES
441					61-70	3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	798	1429	2.85	YES
442				20	0-10	3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	834	282	0.56	YES
443					11-20	3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	467	0.94	YES
444					21-30	3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	653	1.31	YES
445					31-40	3'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	844	1.68	YES
446					41-50	3'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1029	2.06	YES
447					51-60	3'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1215	2.43	YES
448					61-70	3'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	834	1401	2.8	YES
449				25	0-10	3'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	771	236	0.48	YES
450					11-20	3'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	395	0.79	YES
451					21-30	3'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	553	1.11	YES
452					31-40	3'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	707	1.42	YES
453					41-50	3'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	867	1.73	YES
454					51-60	3'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	1025	2.05	YES
455					61-70	3'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	1184	2.36	YES
456				30	0-10	3'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-6"	8"	2-7/8"	1	10	9'	2-7/8"	1	10	9'	4.5	63	4.5	63	771	231	0.46	YES
457					11-20	3'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	385	0.77	YES
458					21-30	3'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	540	1.07	YES
459					31-40	3'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	389	1.38	YES
460					41-50	3'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	844	1.69	YES
461					51-60	3'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	998	2	YES
462					61-70	3'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-6"	8"	2-7/8"	2	8	7'	2-7/8"	2	8	7'	4.5	63	4.5	63	771	1152	2.3	YES