MT SOLAR GROUND MOUNT CALCULATOR [1]

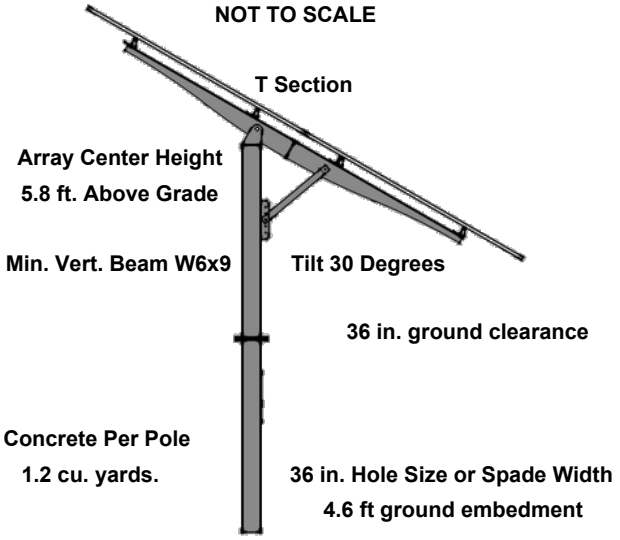
MT SOLAR LLC

PO Box 190, Charlo, Montana, 59824
Phone: 1-844-MTSOLAR (1-844-687-6527)
Email: sales@mtsolar.us
Website: www.mtsolar.us

SITE VARIABLES		*Qz=.00256*Kz*Kzt*Kd*V^2 F=Qh*G*Cf*As*
Module N/S Dimension (Round Up) (in.)	66.6	
Module E/W Dimension (Round Up) (in.)	40.0	
Number of Modules Per Section	22.0	3 Poles
Pole Spacing Desired (in.)	168	52 in. Cantilever
Desired Tilt Angle in Degrees	30	
Wind Speed	110	*V*
Exposure Category	B	
Ground Clearance front edge of array (in.)	36	
Snow Load (PSF)	40	
Hole Size or Spade Plate Width Desired (in.)	36	ROUND [2]
Site Soil Classification Code	3	Sandy Gravel
Vertical Beam Size	W6x9	**AUTO CALC**
Minimum T Section Size		*Defining Load SNOW*
Foundation Depth Required (ft.)	4.60	**Ft. DEEP**
Array Center Height Above Grade	5.78	**Ft.**

PROJECT INFORMATION		DATE:	1/30/2019
Customer:			
Email Address:			
Phone Number:			
Project Name:			
Project Address:			
City/State/ZIP:		SC	
Solar Module:	REC		
Solar Module Color:			

NOT TO SCALE



WIND FORCE CALCULATIONS (per Pole)			
Array N/S Dimensions (ft.)	11.10	ft	
Per Pole E/W Dimensions (ft.)	14.00	ft	*B*
Total Square Feet of Array per Pole	155.40	sq/ft	
Tilt Angle in Radians	0.52		
Effective Vert Dimension at Tilt Angle (ft.)	5.55	ft	*s*
Effective Horizontal Dimension at Tilt Angle (ft.)	9.61	ft	
Effective Squ Ft. at Tilt Angle	77.70	sq/ft	*As*
Total Array Height at Tilt Including Clearance (ft.)	8.55	ft	*h*
Simple Wind PSF	30.98	psf	
Simple Wind Force Total	2,406.84	lb/ft	
Height/Exposure Coefficient ASCE 7-10 29.3-1	0.57		*Kz*
Terrain Coefficient	1.00		*Kzt*
Wind Directionality Factor ASCE 7-10 26.6-1	0.85		*Kd*
Wind Force PSF (Qz)	15.01	lb/ft	*Qz*
Gust Factor ASCE 7-10 26.9.1	0.85		*G*
Ratio s/h	0.65	*Chart Row 0.51*	
Ratio B/s [6]	2.52	*Chart Column 2*	
Force Coefficient Cf ASCE 7-10 29.4-1 [7]	1.60		*Cf*
Effective Wind Load PSF [8]	20.41		
Effective Wind Total Force Per Pole (Case A)	1,585.91		*F*
Snow Load Total Vertical Force Per Pole (lbs.)	5,383.2		
TOTAL Force Per Pole Normal to Panels (lbs.)	5,455.0		

FOUNDATION DEPTH CALCULATIONS			
Force at Top of Pole	1,585.9	lbs.	*Pe*
Array Center Height Above Grade	5.8	ft	*H*
Site Soil Lateral Bearing Capacity [4]	400	psf	*Pba*
Site Soil Vertical Bearing Capacity [5]	3,000	psf	
Vertical Bearing Area of Hole	7.07	squ. ft.	
Max Vertical Bearing Capacity	21,195	lbs.	
Hole Dimension	3.00	ft.	*b*
Allowable Lateral Soil Pressure [9]	1,840.00		*S1*
Variable [10]	0.67		*A*
Foundation Depth Required (ft.) [11]	4.6	ft.	*L*

Calculations based on ASCE 7-10 and IBC 2012
All information for project estimation purposes only. [12]

[1] MT SOLAR FOUNDATION CALCULATOR NOTES:

[2] Use ROUND for driven piles with spade plates.

[3] SITE VARIABLES
Mount Duty Classification

[4] FOUNDATION DEPTH CALCULATIONS
Site Soil Lateral Bearing Capacity
Note; IBC 2012 Table Value x2 for pole foundations as per IBC 1806.3.4

[5] FOUNDATION DEPTH CALCULATIONS
Site Soil Vertical Bearing Capacity
Note: IBC 2012 Table Value

[6] WIND FORCE CALCULATIONS
Ratio B/s
Note: If Cell is Red Consider Condition C. Reference ASCE 7-10 29.4-1 Note 3

[7] WIND FORCE CALCULATIONS
Force Coefficient Cf ASCE 7-10 29.4-1
Note: See ASCE 7-10 29.4-1 Case A and Case B

[8] WIND FORCE CALCULATIONS
Effective Wind Load PSF
Note: Minimum loading is 16PSF applied to the whole area. Reference ASCE 7-10 29.8

[9] FOUNDATION DEPTH CALCULATIONS
Allowable Lateral Soil Pressure
Note: S1 = Pba*L/3 (allowable lateral soil pressure at 1/3 embedment depth)

[10] FOUNDATION DEPTH CALCULATIONS
Variable
Note: A = 2.34*Pe/(S1*b)

[11] FOUNDATION DEPTH CALCULATIONS
Foundation Depth Required (ft.)
Note: L = 0.5*A*(1+SQRT(1+(4.36*(H)/A))) (IBC 2012 Eqn. 18-1)

Calculations based on ASCE 7-10 and IBC 2012
All information for project estimation purposes only.