



6/4/2024

Freedom Forever LLC
43445 Buisness Park Dr., Suite 110
Temecula, CA 92590

Job Number: 415409
Project Name: Alhassan Fofanah
Project Address: 816 Southeast 111th Avenue
City: Portland
State: OR

Design Criteria:

Applicable Code= ASCE 7-16
Design Wind Speed = 100
Exposure = C
Ground Snow Load = 20

To whom it may concern,

The above mentioned residential rooftop solar project has been designed to the specifications shown above. The team at Freedom Forever LLC has visited the site to observe the roof and its framing as well as gather other required information for the project. During this observation they did not see any signs of damage or distress to the roof structure which would preclude solar from being installed. Based on that review and the information provided, the calculations on the following pages were completed to determine the adequacy of the roof framing as well as the allowable attachment spacing for the PV panels. The calculations show that the roof can support the proposed PV system.

Sincerely,

A handwritten signature in blue ink, appearing to read "Taqi", with a long horizontal flourish extending to the right.

Taqi Khawaja, PE
Freedom Forever LLC

[illegible]

[illegible]



Down Force

Mounting Plane	1		2		3		4		5	
Module Location	EM	IM	EM	IM	EM	IM	EM	IM	EM	IM
D+S (psf)	14.93	14.93	14.93	14.93	14.93	14.93				
D+06W (psf)	7.40	5.89	7.40	5.89	7.40	5.89				

Mounting Plane	6		7		8		9		10	
Module Location	EM	IM	EM	IM	EM	IM	EM	IM	EM	IM
D+S (psf)										
D+06W (psf)										

Lateral Parallel to Roof

Mounting Plane	1	2	3	4	5
D+S (psf)	4.85	4.85	4.85		

Mounting Plane	6	7	8	9	10
D+S (psf)					

Framing Check

Lumber Species: DF

PV Load = 3 psf

Mounting Plane	1	2	3	4	5
Framing Size	2x4	2x4	2x4		
Framing Spacing (in)	24	24	24		
Span (ft)	7	7	7		
Moment (lb-ft)	269	269	269		
Shear (lbs)	153	153	153		
% Stressed	59%	59%	59%		
Upgrade Size	NA	NA	NA		
New % Stressed	NA	NA	NA		

Mounting Plane	6	7	8	9	10
Framing Size					
Framing Spacing (in)					
Span (ft)					
Moment (lb-ft)					
Shear (lbs)					
% Stressed					
Upgrade Size					
New % Stressed					



Array Attachment Spacing

Module = JINKO SOLAR: JKM385M-6RL3-B

Mounting Plane	1	2	3	4	5
Attachment Type	Ecofasten RockIt Comp Slide	Ecofasten RockIt Comp Slide	Ecofasten RockIt Comp Slide		
Lag Count Per Attachment	1	1	1		
Min Lag Embedment (in)	2.5	2.5	2.5		
Landscape Max Spacing (in)	48	48	48		
Portrait Max Spacing (in)	48	48	48		

Mounting Plane	6	7	8	9	10
Attachment Type					
Lag Count Per Attachment					
Min Lag Embedment (in)					
Landscape Max Spacing (in)					
Portrait Max Spacing (in)					