



11/12/2024

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

Job Number: 498387
Project Name: Shataca Hicks
Project Address: 237 Beacon Hill Road
City: Lillington
State: NC

Design Criteria:

Applicable Code = ASCE 7-16
Design Wind Speed = 130 mph (3 Second Gust)
Exposure Category = C
Ground Snow Load = 15 psf
Module Type = Trina: TSM-410NE09RC.05
Module Quantity = 17

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

Down Force

Mounting Plane	1		2		3		4		5	
Module Location	EM	IM	EM	IM	EM	IM	EM	IM	EM	IM
D+S (psf)	10.43	10.43	10.43	10.43						
D+06W (psf)	16.42	11.86	16.42	11.86						

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)	4.43	4.43			

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			
Framing Spacing (in)	24	24			
Span (ft)	7	7			
Moment (lb-ft)	213	213			
Shear (lbs)	122	122			
% Stressed	47%	47%			
Upgrade Size	NA	NA			
New % Stressed	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 Model = Trina: TSM-410NE09RC.05

Module Quantity = 17

Mounting Plane	1	2	3	4	5
Attachment Type	Ecofasten RockIt Smart Slide	Ecofasten RockIt Smart Slide			
Lag Count Per Attachment	2	2			
Min Lag Embedment (in)	2	2			
Landscape Max Spacing (in)	#DIV/0!	#DIV/0!			
Portrait Max Spacing (in)	#DIV/0!	#DIV/0!			

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)					