



9/4/2024

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

Job Number: 495612
Project Name: Kaleb Johnson
Project Address: 173 Hawksmoore Lane , Lillington, NC

Design Criteria:

Applicable Code = ASCE 7-16
Design Wind Speed = 130 mph (3 Second Gust)
Exposure Category = B
Ground Snow Load = 15 psf 11.55 psf
Module Type = SILFAB SOLAR: SIL-430QD
Module Quantity = 16

To whom is 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 without structural modifications.

Mounting Plane	1	2	3	4	5	6	7	8	9	10
Roof Type	Comp Shingle									
Framing Type	Rafter									
Framing Size	2x6 @ 24									
Upgrade Size	NA									
Attachment Type	Ecofasten RockIt Smart Slide									
Lag Count	2									
Embedment Depth	2									

Sincerely,

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)	9.36	9.36								
D+06W (psf)	8.60	6.63								

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)	4.69				

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 Type	Rafter				
Framing Size	2x6				
Framing Spacing (in)	24				
Span (ft)	4.7				
Moment (lb-ft)	90				
Shear (lbs)	77				
Upgrade Size	NA				

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



Array Attachment Spacing

Module = SILFAB SOLAR: SIL-430QD

Mounting Plane	1	2	3	4	5
Roofing Material	Comp Shingle				
Attachment Type	Ecofasten RockIt Smart Slide				
Lag Count Per Attachment	2				
Min Lag Embedment (in)	2				
Landscape	72				
Portrait	48				

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