

Client Name: PowerHome Solar
 PFE Project Number: 204137
 Client Project Number: 15519GREE
 Project: Green Residence
 Address: 15519 Piedmont Street
 Detroit, MI 48223
 Description: Mounting Plane 1
 Calculations By: ADL
 Date: September 20, 2020

Roof Construction

2x6 Rafters at 16" on center

A=	8.25 in ²
Ix=	20.8 in ⁴
Sx=	7.56 in ³
Wood Species=	Doug-Fir Larch #2
Fb=	900 psi
Fv=	180 psi
E=	1600000 psi
Roof Slope=	30 °
Rafter Span=	13.86 ft
Ceiling Attached to Rafters?:	No

Design Criteria

Ground Snow (P _g):	20 psf
Design Wind Speed:	115 mph
Live Load:	20 psf
Dead Load:	4.7 psf
PV Modules:	3.46 psf

Wind Calculations

Directionality Factor (K _d):	0.85
Topographic Factor (K _{zt}):	1
Velocity Pressure Exposure Coefficient (K _e):	0.7
Importance Factor (I):	1
Velocity Pressure (q _z):	20.14 psf
Tributary Square Footage on Component:	10.83 ft ²
Component Roof Pressures:	21.69 / -27.66 psf

Snow Load Calculations

Exposure Factor (C _e):	1
Thermal Factor (C _t):	1
Importance Factor (I):	1
Flat Roof Snow Loads (P _f):	14 psf
Roof Slope Factor (C _s):	1
Sloped Snow Loads (P _s):	14 psf
Unbalanced Snow Load:	20 psf