DESIGN CONSIDERATIONS

Racking systems are available for two typical panel sizes: "60 Cell" & "72 Cell"

"60 Cell" Systems

A. **Module Height:** 1550 mm - 1700 mm
B. **Module Width:** 970 mm - 1050 mm
C. **Module Dead Load:** 1.75 psf - 3.00 psf

"72 Cell" Systems

A. **Module Height:** 1900 mm - 2000 mm
B. **Module Width:** 970 mm - 1050 mm
C. **Module Dead Load:** 1.75 psf - 3.00 psf

LOCAL DESIGN PARAMETERS

All PV Powersite systems comply with:

Building Code: ASCE 7-05 (IBC 2003, 2006, 2009), 7-10 (IBC 2012, 2015), or Equivalent

Risk/Importance Category: II or Better

Exposure Category: C or Better

Basic Wind Speed: 85 -130 mph (ASCE 7-05) or 110 - 160 mph (ASCE 7-10)

Snow Load: 0 - 60 psf

A. **Exposure Factor:** $C_E = 0.9$ (fully exposed roofs)
B. **Thermal Factor:** $C_T = 1.2$ (unheated and open air structures)
C. **Slope Factor:** C_S for cold roofs with $C_T \geq 1.2$ (ASCE 7, Chapter 7, Figure 7-2)

DESIGN ASSUMPTIONS

PV Powersite racking systems are designed under the following assumptions:

A. **Supports:** Sample calculations incorporate a two-span arrangement with no cantilever in order to provide the least favorable loading condition of any multi-span system. Design loads are applicable to other more favorable conditions. Equal spacing between supports is to be maintained.

DESIGN ASSUMPTIONS (Cont.)

B. Cantilevers: Shall not exceed 50% of the respective span.

C. Splices: Shall fall within 25% of the respective span, measured from an interior supports. Splices cannot be placed along the length of the cantilever.

D. Modules: Modules must be centered on array.

E. Maximum Lengths: Shall not exceed those provided by PV Powersite.

GROUND MOUNT SYSTEMS

The following are restrictions for FS, PvMax, PvMini and R1 Carport systems:

Ground Slope: Not to exceed 3° in any direction for the PvMax/PvMini Systems or 5° for all other systems.

Rammed Post: Geotechnical report required for rammed post systems.

Concrete Footings: Minimum 28 day compressive strength to be at least 3000 psi.

Separation: Minimum 6 inch separation is required between arrays.

ROOF MOUNT SYSTEMS

The following are restrictions for WindSafe mounting systems:

Roof Height: Not to exceed 40 ft.

Roof Slope: Not to exceed 3° for ballasted or 5° for penetrating systems.

Offsets: Height of racking system above roof not to exceed 10 inches. Distance from any edge of roof to be at least 3 ft or as required by the International Fire Code.

Seismic Offsets (Ballasted): Based on SEAOC PV1-2012, the minimum separation for $S_{DS} \leq 1.25$:

A. Between separate solar arrays of similar construction = 1.81 ft
B. Between a solar array and a fixed object on the roof or solar array of different construction = 3.61 ft
C. Between a solar array and a roof edge with a qualifying parapet = 3.61 ft
D. Between a solar array and a roof edge without a qualifying parapet = 5.42 ft

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SEISMIC DESIGN

When seismic designs are included, the following local site limitations must be taken into account:

Seismic Design Category: E or Better

Soil Site Class: D or Better

S_S: 2.50 or Better (1.875 or Better for ballasted roof systems)

S_1: 1.00 or Better

S_{DS}: 1.67 or Better (1.25 or Better for ballasted roof systems)

S_{D1}: 1.00 or Better