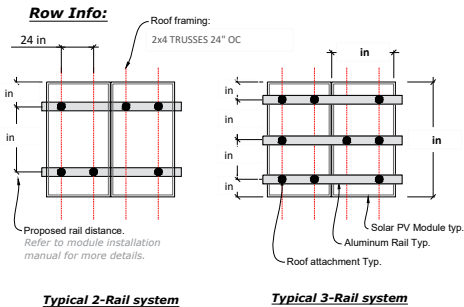


| EXISTING ROOF SPECS | |
|----------------------------------|-----------|
| Existing roof | |
| Total roof area | |
| Total photovoltaic area | |
| Mean roof height | |
| Roof Slope | |
| SOLAR PV STRUCTURAL SPECS | |
| Total number of modules | |
| Total roof mounts | |
| Solar PV module | |
| Solar PV Racking | UNIRAC SD |
| Points of connections per module | 4 |
| Aluminum rails per module | 2 |
| Pourable Sealant | |
| Base Sealant | |



ARRAY AND ROOF PLAN

STRUCTURAL NOTES

- Install mid clamps between modules and end clamps at the end of each row of modules.
- Cantilever length shall not exceed 33% of the allowable span distance and shall never be greater than 16 inch.
- Aluminum Rails should always be supported by more than one footing on both sides of the splice.
- For any electrical connections between PV components refer to E-2.
- All elements in Roof plan **will be NEW** unless specified as **"EXISTING"**
- Per 690.34 Junction boxes located behind modules or panels shall be installed in a way that the wiring contained in them can be rendered accessible directly or by displacement of a module(s) secured by removable fasteners and connected by a flexible wiring system.
- Electrical conduits could be installed inside the building by using flexible metal conduits or outside the building by using PVC SCH80 conduits unless otherwise specified in E-1.
- The Installation of the solar PV System on the existing roof will not adversely affect the building structure under normal conditions and during a hurricane event of the FBC 2023 specified intensity.
- Existing building structure will safely accommodate lateral and uplift wind forces, as well as equipment dead load.
- Project compliant with FBC 2023 (8th Edition)

WIND CALCULATIONS

| Wind Load Calculations | | |
|---|--|----------|
| Velocity Pressure (ASCE 7-16 (26.10.2)) | | |
| $Q_z = 0.00256 K_z K_{xt} K_d V^2 \text{ (lb/sq ft)}$ | | |
| Exposure category | | |
| Kz (Velocity pressure exposure) | | |
| Kxt (Topographic factor) | | |
| Kd (Wind directionality factor) | | |
| V (Wind Speed) | | |
| Mean height | | |
| Qz (Velocity pressure) | | |
| Applying ASD Design Load Factor (0.6) | | |
| Design Wind Pressures (ASCE 7-16 (29.4.4)) | | |
| $p = qh (GCp)(Fe)(Fa) \text{ (lb/ sq ft) (N/ sq-meter)}$ | | |
| | | |
| Effective wind area (ASCE 7-16 (26.2)) | | |
| Component | Area (sq-ft) | |
| Smaller Solar Array and Racking | | |
| Mounts | | |
| Array Edge Factor (Fe) (ASCE 7-16 (29.4.4)) | | |
| Exposed Array | | |
| Non-Exposed Array | | |
| Conditions of Array Edge Factor = 1.5 | | |
| Distance (d1) from roof edge > 0.5h | Distance (d1) to adjacent array > 4 ft. or Distance (d2) to next adjacent panel > 4 ft. | |
| Solar Array Pressure Equalization factor (Fa) (ASCE 7-16 (29.4.8)) | | |
| Effective Wind Area = 21. sqft | Fa= | 0.62 |
| External Pressure Coefficient (GCp) (ASCE 7-16 Figure 30.3 -2A to 2I) | | |
| | | |
| Solar array | | |
| Zones | Uplift | Downward |
| 1 | | |
| 2 | | |
| 3 | | |
| 0 | | |
| | | |
| Solar Attachments | | |
| Zones | Uplift | Downward |
| 1 | | |
| 2 | | |
| 3 | | |
| 0 | | |
| | | |

| Total Wind Load (psf) | | | | |
|--------------------------------------|-------------------|----------|---------------|----------|
| Solar array | | | | |
| Zones | Non-Exposed Array | | Exposed Array | |
| | Uplift | Downward | Uplift | Downward |
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 |
| Solar Attachments | | | | |
| Zones | Non-Exposed Array | | Exposed Array | |
| | Uplift | Downward | Uplift | Downward |
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 |
| Dead load of the critical row | | | | |
| Components | Weight/ Unit | | # | |
| Solar module | | | | |
| Micro-Inverters | | | | |
| Rails | | | | |
| Mounts | | | | |
| Total Weight | | | | |
| Total Area | | | | |
| Dead Load | | | | |
| Wind Load for Effective Area = 1 sqf | | | | |
| Total Design Load on Mounts | | | | |

| Mounts load calculations | |
|----------------------------------|--|
| Solar modules in critical row | |
| Total area | |
| Wind load | |
| Total wind load | |
| Total mounts in critical row | |
| Tension force per mount required | |

| Lag bolt out calculation | |
|--|--|
| Spruce, Pine, Fir | |
| 5/8 lag bolt 5/16 " thread depth | |
| Pull out strength per mount (2 lagbolt) | |
| Max. Pull out strength required per bolt | |

ATTACHMENT DETAIL

| REVISIONS: |
|------------|
| |
| |
| |

| | | |
|----------|----------|-------------------------|
| Project: | Address: | STRUCTURAL CALCULATIONS |
|----------|----------|-------------------------|

**American Solar Installation Company LLC.**
3241 NW 36th St, Miami, FL 33142.
PHONE: 786-292-3304
305.260.7000

| SEAL: |
|-------|
| |
| |
| |

ENGINEER OF RECORD:

EDUARDO RODRIGUEZ VELAZQUEZ P.E.
LICENSE #91287

13470 NW 8th St.
Miami, FL 33182.
TEL (786) 556-5574

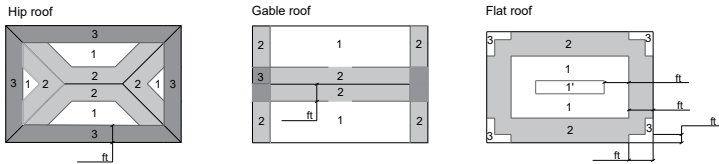
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| PAGE: S-1 |

WIND ZONES

| | |
|---|----|
| Width of Zones as per ASCE 7-16 FIGURE 30.3-2A to 2I: | |
| Least horizontal dimension | ft |
| 10% of the least horizontal dimension | ft |
| Building mean roof height | ft |
| 40% of the height of building | ft |
| Selected Zones width: | ft |
| Highest Pressure Zone Selected for Calculations | |

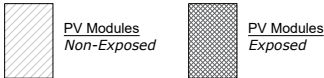
Design with multiple type of roofs (Gable, Hip, and/or Flat):

Calculations are based on the type of roof that yield the highest net External Pressure Coefficient (GCp)



Legend:

Module Exposure as per ASCE 7-16 29.4.4

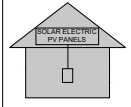


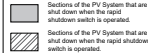
MARKING REQUIRED BY NFPA 1 (2021) section 11.12.2.1

11.12.2.1.1.1 Rapid Shutdown Marking.

EMERGENCY RESPONDER: THIS SOLAR PV SYSTEM IS EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUT DOWN ENTIRE PV SYSTEM





The label shall be reflective, with all letters capitalized and having a minimum height of 3/8 in., white on a red background. The rapid shutdown label shall be located on or no more than **3 ft (1m)** from the **service disconnecting means** to which the PV System are connected, and the label shall indicate the location of the rapid shutdown switch if it is not at the same location.