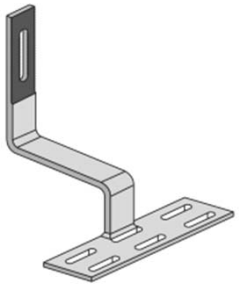
SOLARHOOK
STAINLESS STEEL

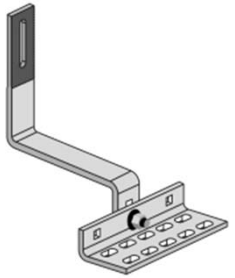
# INSTALLATION GUIDE



004AT1S
SOLARHOOK FLAT SIDE MT AT1



004CT1S
SOLARHOOK SPANISH SIDE MT CT1



004CT5S
SOLARHOOK UNIV SIDE MT CT5

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PUB2018JULY22

**ROOF HOOK CAPACITIES AND ENGINEERING**

Refer to engineering report tables for tested allowable loads. Refer to local AHJ to determine the correct code (ASCE 7-05 or 7-10), wind speed and snow load. It is the responsibility of the installer to ensure these mounting attachments are appropriate for the application. Please contact your 3rd party engineer for more information.

**ENGINEERING GUIDE LIMITATIONS**

- Flush roof installations only
- Roof slope must be 0-45 degrees (0/12 - 12/12 pitch)
- Surrounding ground area must not slope more than 10 degrees
- Location must fall into Exposure Category B or C

Please refer to the Solarmount Installation Manual for proper installation of the Solarmount system. Solarhooks are intended to replace L-feet in the system and the rail connection should be torqued to the appropriate Lfoot to rail torque specification from the Solarmount manual.

Please refer to www.unirac.com in the Technical Support section for the Solarmount D&E guide which should be used in installations that do not comply with the limitations above.

Follow all local and OSHA safety guidelines when installing.

**FIGURE 1:** Lag pull-out (withdrawal) capacities (lbs) in typical roof lumber (ASD)

| | Specific Gravity | Lag Screw Specifications 5/16" shaft,* per inch thread depth |
|---|---|---|
| Douglas Fir, Larch | 0.50 | 266 |
| Douglas Fir, South | 0.46 | 235 |
| Engelmann Spruce, Lodgepole Pine (MSR 1650f & higher) | 0.46 | 235 |
| Hem. Fir, Redwood (Close Grain) | 0.43 | 212 |
| Southern Pine | 0.55 | 307 |
| Spruce, Pine, Fir | 0.42 | 205 |
| Spruce, Pine, Fir (E of 2million PSI & higher grades of MSR & MEL) | 0.50 | 266 |

**SOURCES:** AMERICAN WOOD COUNCIL, NDS 2005, TABLE 1

Figure 1 (for reference only) Refer to latest AWC, NDS data to select a lag bolt embedment depth to satisfy your Uplift Point Load Force (lbs), requirements. It is the installer's responsibility to verify that the substructure and attachment method is strong enough to support the maximum point loads calculated.

NOTES:
(1) Thread must be embedded in the side grain of a rafter or other structural member integral with the building structure.
(2) Lag bolts must be located in the middle third of the structural member.
(3) This table does not include shear capacities. If necessary, contact a local engineer to specify lag bolt size with regard to shear forces.
(4) Install lag bolts with head and washer flush to surface (no gap). Do not over torque.
(5) Withdrawal design values for lag screw connections shall be multiplied by applicable adjustment factors if necessary. See table 10.3 in the American Wood Council NDS for Wood Construction

1



Remove tiles around installation area

2



Locate, identify, and mark the rafters.

3



Position hook, and using 3/16" bit, drill 2 pilot holes.

4



Clean debris and fill the holes with roofing sealant.

5



Reposition the hook and secure using included lag screws

6



Replace tiles and if necessary, notch with grinder to ensure proper fit.

**Required tools:**

- Drill, Impact driver
- 3/16" drill bit
- Sealant

**Optional Tools:**

- Rafter locater
- Chalk
- Grinder

# W TILE INSTALLATION



Fixed or Universal Hooks

1



Remove tiles around installation area

2



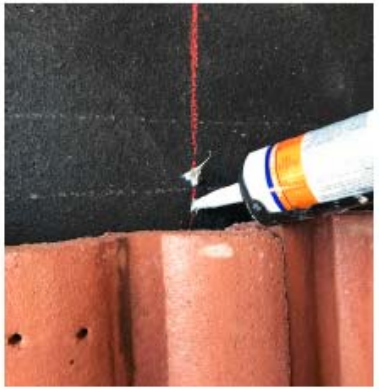
Locate, identify, and mark the rafters.

3



Position hook, and using 3/16" bit, drill 2 pilot holes.

4



Clean debris and fill the holes with roofing sealant.

5



Reposition the hook and secure using included lag screws

6



Replace tiles and if necessary, notch with grinder to ensure proper fit.

**Required tools:**

- Drill, Impact driver
- 3/16" drill bit
- Sealant

**Optional Tools:**

- Rafter locater
- Chalk
- Grinder

Fixed or Universal Hooks

1



Remove tiles around installation area

2



Locate, identify, and mark the rafters.

3



Position hook, adjust bolt position if needed. Using 3/16" bit, drill 2 pilot holes.

4



Clean debris and fill the holes with roofing sealant.

5



Reposition the hook and secure using included lag screws

6



Replace tiles and if necessary, notch with grinder to ensure proper fit.

**Height Adjustment:**

- If height ajdustment is required, M8-1.25 fastener should be torqued to 16 ft.lbs.

**Required tools:**

- Drill, Impact driver
- 3/16" drill bit
- Sealant

**Optional Tools:**

- Rafter locater
- Chalk
- Grinder

# SUB-FLASHING (IF APPLICABLE)



## MATERIALS REQUIRED:

- (Qty 1) 6 inch X 11 inch synthetic underlayment
- (Qty 2) 4 inch X 8 inch flexible flashing strip
- (Qty 2) 4 inch X 16 inch flexible flashing strip
- Stiff bristle brush
- Knife or scissors
- Roller (optional)

## NOTES:

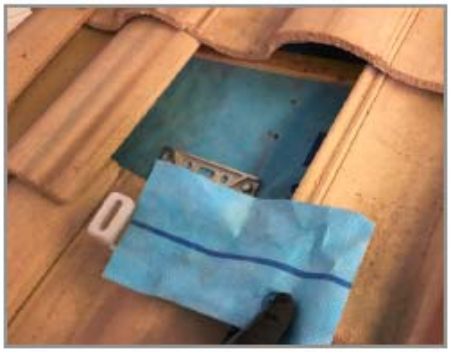
•Unirac recommends using an aluminum backed butyl flexible flashing tape.

• Refer flexible flashing manufacturer's instructions and technical data for surface compatibility, preparation, primer requirements, and environmental limitations.



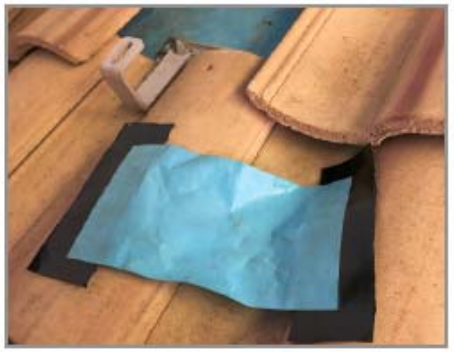
### CLEAN UNDERLAYMENT

Underlayment surface should be dry and free of dirt or other debris that would prevent adhesion of flexible flashing.



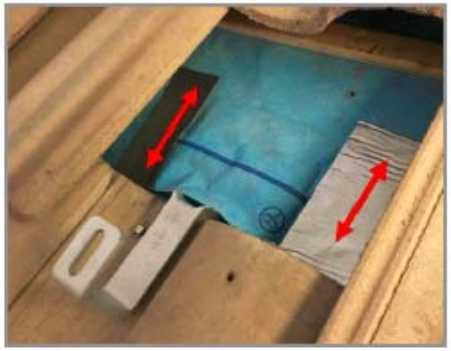
### PREPARE SYNTHETIC FLASHING

Cut a piece of synthetic underlayment to a 6 inch X 11 inch rectangle.



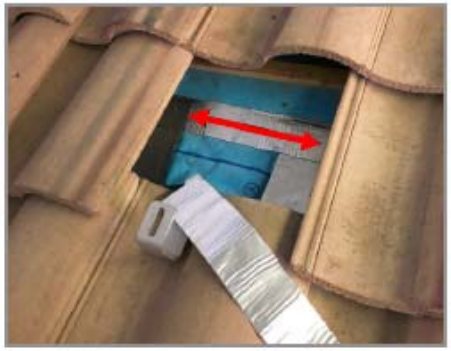
### PREPARE FLEXIBLE FLASHING STRIPS

Cut two 4 inch X 8 inch strips of flexible flashing. Apply strips along short edge of synthetic flashing with 50% of the flexible flashing strip exposed for attachment to the roof underlayment.



### APPLY FLASHING TO ROOF UNDERLAYMENT

Place the synthetic flashing over the entire tile hook base. Press or roll the flexible flashing strips onto the roof underlayment ensuring full contact and removal of any bubbles or wrinkles.



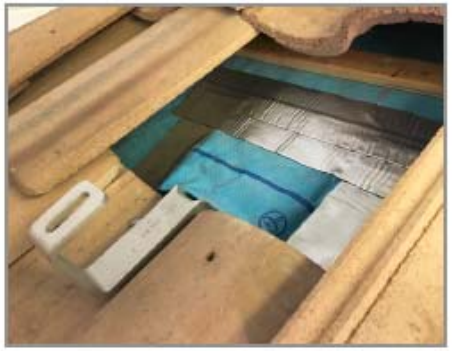
### APPLY UP-SLOPE FLASHING STRIPS

Prepare Up-Slope Flexible Flashing Strips. Cut two 4 inch X 16 inch strips of flexible flashing. Apply first upslope strip horizontally over the edge of the synthetic flashing. 50% of the flashing strip should be on the roof underlayment.



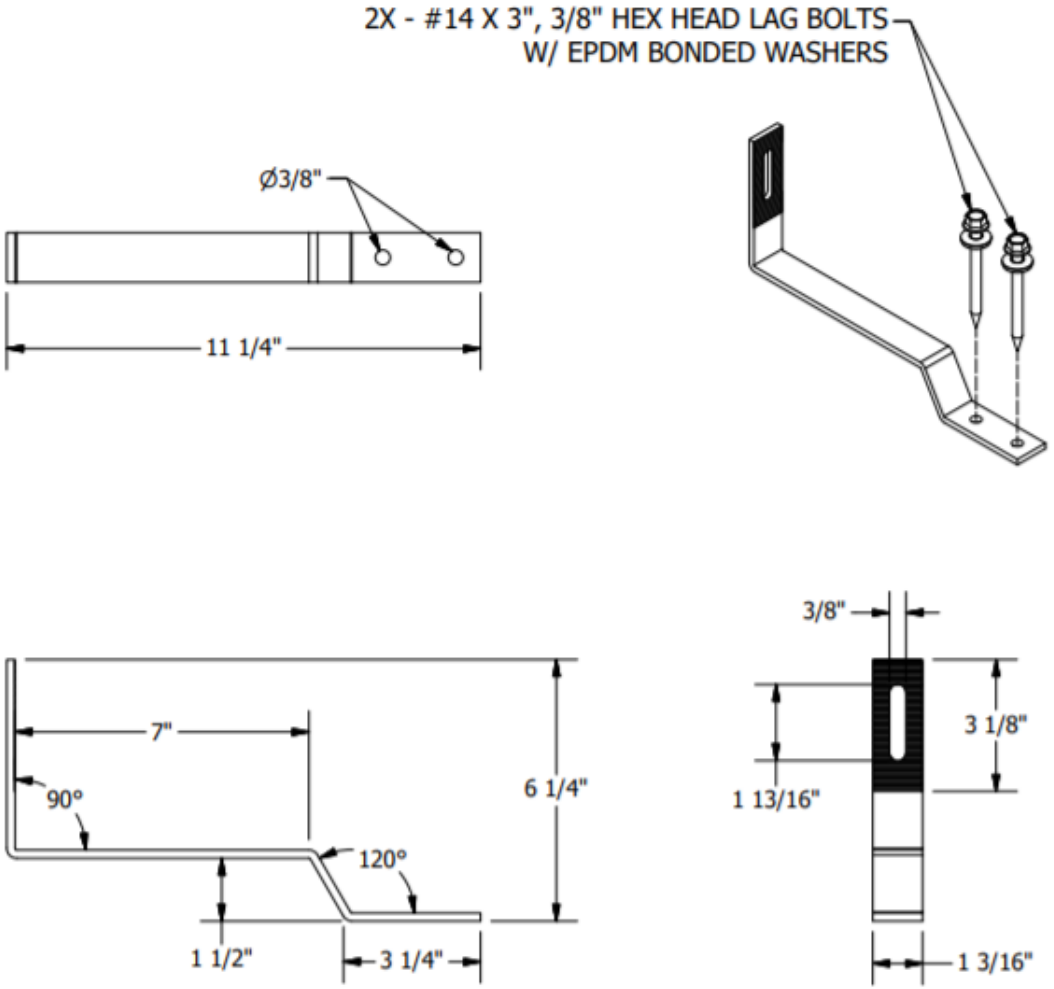
### APPLY UP-SLOPE FLASHING STRIPS & COMPLETE INSTALLATION

Apply second up-slope strip horizontally over the edge of the first up-slope strip. The second strip should overlap the first, with 50% of the flashing strip on the roof underlayment. Press or roll the flexible flashing strips onto the roof underlayment ensuring full contact and removal of any bubbles or wrinkles.



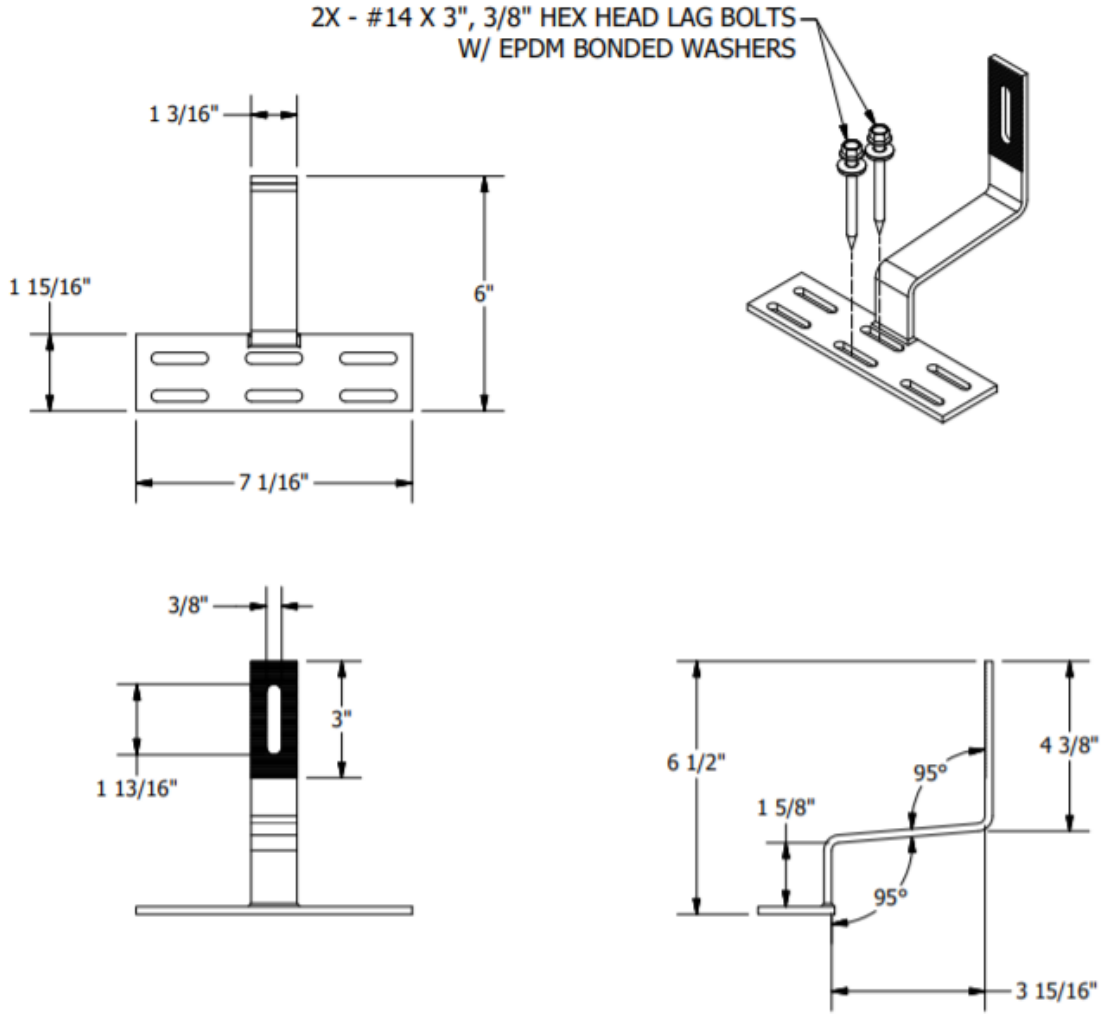
004AT1S

SOLAROOK FLAT SIDE MT AT1



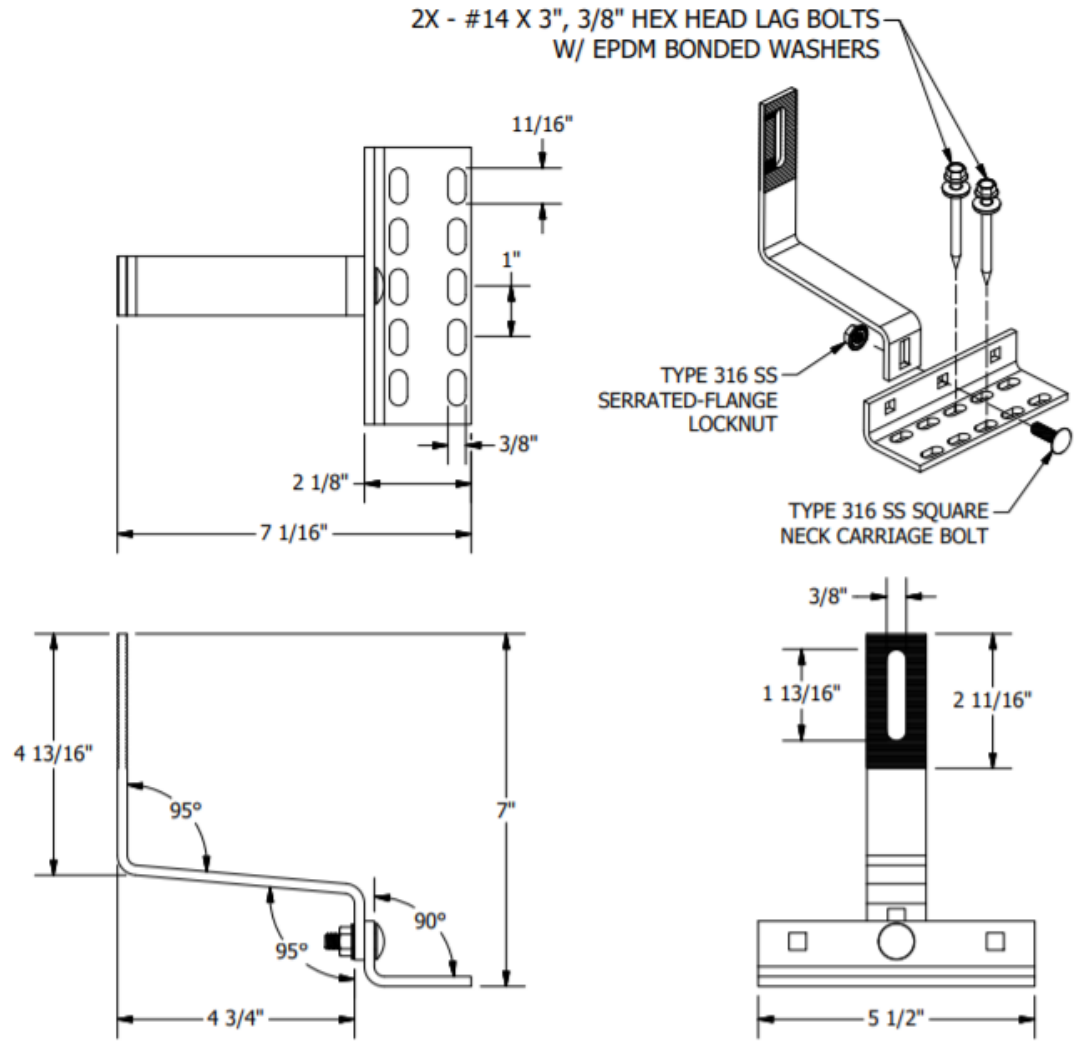
004CT1S

SOLARHOOK SPANISH SIDE MT CT1



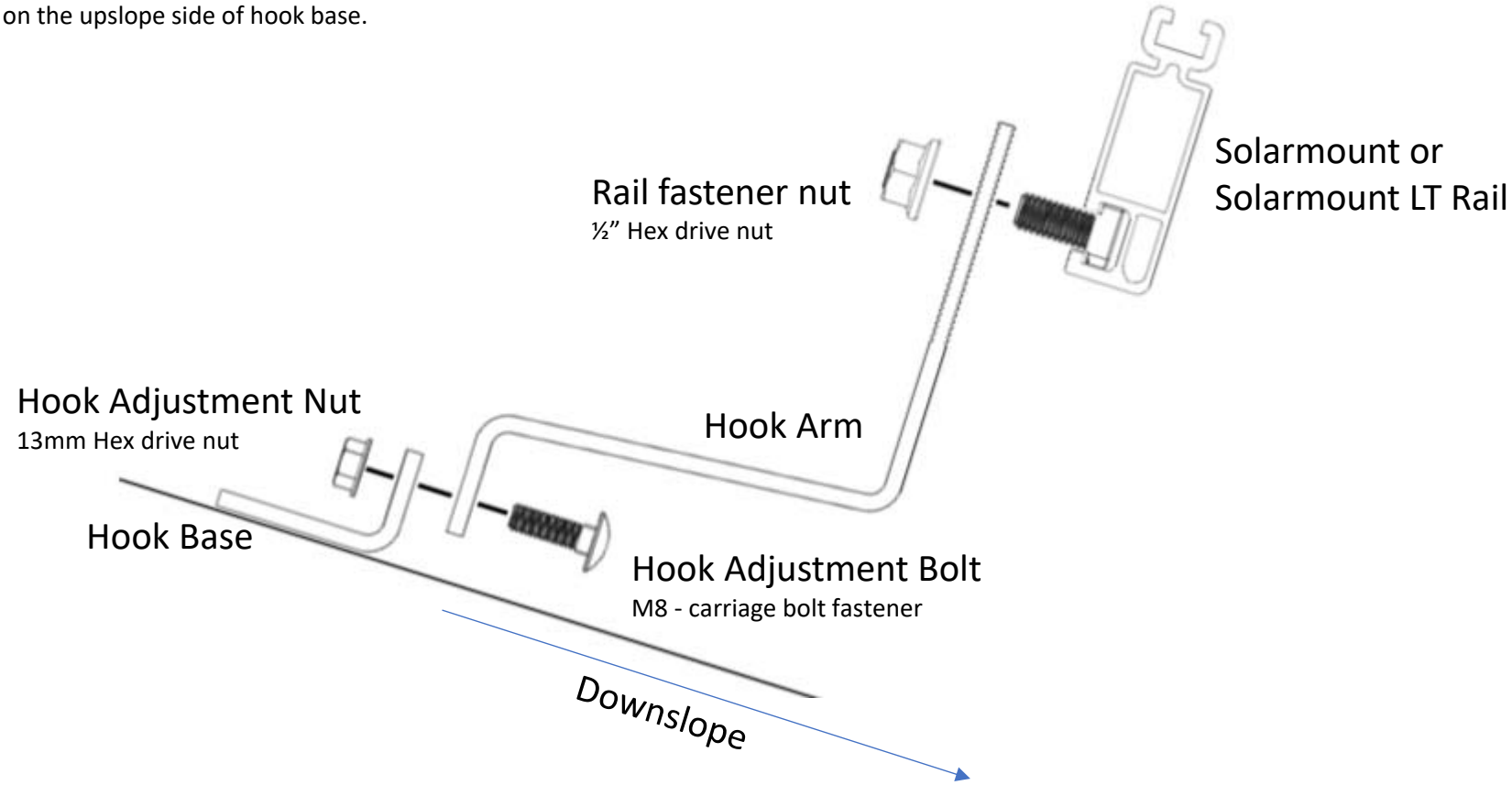
004CT5S

SOLARHOOK UNIV SIDE MT CT5



**004CT5S hook MUST be installed in this configuration:**

1. Rail on the downslope side of the hook arm
2. Rail fastener nut on the upslope side of hook arm
3. Hook arm mounted to the downslope face of the hook base
4. Hook adjustment bolt inserted thru the downslope side of the hook arm with nut on the upslope side of hook base.



| | Portrait Modules* | | | | | Landscape Modules* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Hook | CT1, CT5 | | AT1 | | All | CT1, CT5 | | AT1 | | All |
| Allowable Spans (in.) | Pressure Limits (psf) | | | | | Pressure Limits (psf) | | | | |
| | Up, Down | Downslope | Up, Down | Downslope | Lateral | Up, Down | Downslope | Up, Down | Downslope | Lateral |
| 72 | 8.8 | 5.0 | 6.8 | 4.4 | 2.7 | 14.5 | 8.3 | 11.2 | 7.3 | 4.5 |
| 60 | 10.6 | 6.0 | 8.1 | 5.3 | 3.2 | 17.4 | 9.9 | 13.4 | 8.8 | 5.4 |
| 48 | 13.2 | 7.5 | 10.2 | 6.6 | 4.1 | 21.8 | 12.4 | 16.8 | 11.0 | 6.7 |
| 36 | 17.6 | 10.0 | 13.5 | 8.9 | 5.4 | 29.0 | 16.5 | 22.3 | 14.6 | 8.9 |
| 24 | 26.4 | 15.0 | 20.3 | 13.3 | 8.1 | 43.6 | 24.8 | 33.5 | 21.9 | 13.4 |
| 12 | 52.8 | 30.1 | 40.6 | 26.6 | 16.2 | 87.1 | 49.6 | 67.0 | 43.9 | 26.8 |

Assumptions and Use Details:

- Pressure limits refer to Up, Down and Side PSF
- Pressure limits apply to all roof zones
- Solarhooks not recommended for use in hurricane zones
- See pressure table appendix for representative geographic pressures or refer to Unirac Pressure Tables for Flush Mounted Systems on unirac.com
- Allowable Loads:
    - 004CT1, 004CT5 Up 145 lbs per hook
    - 004CT1, 004CT5 Downslope 82 lbs per hook
    - 004AT1 Up 110 lbs per hook
    - 004AT1 Downslope 72 lbs per hook
    - 004AT1 Lateral 44 lbs per hook

* Pressure Limit Modification Guidelines:

- Portrait Module Height 65 inches
- Landscape Module Width 39.4 inches
- Pressure limits provided above were calculated utilizing a B module size of 39.4in wide x 65in long
- These pressure limits may be increased or decreased linearly.
- To modify pressure limits provided, follow these simple steps:
    1. 1. For landscape modules, multiply the given pressure limit by (65" / New Module Height)
    2. 2. For landscape modules, multiply the given pressure limit by (39.5" / New Module Height)

## Exposure Category B

| Roof Pitch | Bldg. Height = 15 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 30 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 60 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1:12 | -9.7 | -18.5 | -29.5 | 15.1 | -9.7 | -18.5 | -29.5 | 15.1 | -12.1 | -22.8 | -36.1 | 15.1 |
| 2:12 | -8.7 | -17.4 | -27.3 | 14.7 | -8.7 | -17.4 | -27.3 | 14.7 | -10.8 | -21.5 | -33.5 | 14.7 |
| 3:12 | -8.8 | -17.5 | -27.4 | 14.3 | -8.8 | -17.5 | -27.4 | 14.3 | -10.8 | -21.5 | -33.5 | 14.3 |
| 4:12 | -8.8 | -17.5 | -27.4 | 13.6 | -8.8 | -17.5 | -27.4 | 13.6 | -10.8 | -21.5 | -33.5 | 13.6 |
| 5:12 | -8.8 | -17.5 | -27.4 | 13.6 | -8.8 | -17.5 | -27.4 | 13.6 | -10.8 | -21.5 | -33.6 | 13.6 |
| 6:12 | -8.9 | -17.6 | -27.5 | 13.4 | -8.9 | -17.6 | -27.5 | 13.4 | -10.9 | -21.6 | -33.6 | 13.4 |
| 7:12 | -9.9 | -12.1 | -12.1 | 13.3 | -9.9 | -12.1 | -12.1 | 13.3 | -12.3 | -14.9 | -14.9 | 15.4 |
| 8:12 | -9.9 | -12.1 | -12.1 | 13.2 | -9.9 | -12.1 | -12.1 | 13.2 | -12.3 | -15.0 | -15.0 | 15.2 |
| 9:12 | -10.0 | -12.2 | -12.2 | 13.1 | -10.0 | -12.2 | -12.2 | 13.1 | -12.3 | -15.0 | -15.0 | 15.1 |
| 10:12 | -10.0 | -12.2 | -12.2 | 13.0 | -10.0 | -12.2 | -12.2 | 13.0 | -12.4 | -15.0 | -15.0 | 15.0 |
| 11:12 | -10.1 | -12.3 | -12.3 | 12.8 | -10.1 | -12.3 | -12.3 | 12.8 | -12.4 | -15.1 | -15.1 | 14.9 |
| 12:12 | -10.1 | -12.3 | -12.3 | 12.7 | -10.1 | -12.3 | -12.3 | 12.7 | -12.5 | -15.1 | -15.1 | 14.7 |

## Exposure Category C

| Roof Pitch | Bldg. Height = 15 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 30 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 60 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1:12 | -12.1 | -22.8 | -36.1 | 15.1 | -14.1 | -26.5 | -41.9 | 15.1 | -16.5 | -30.7 | -48.5 | 15.1 |
| 2:12 | -10.8 | -21.5 | -33.5 | 14.7 | -12.6 | -24.9 | -38.8 | 14.7 | -14.7 | -28.9 | -44.9 | 14.7 |
| 3:12 | -10.8 | -21.5 | -33.5 | 14.3 | -12.6 | -24.9 | -38.8 | 14.3 | -14.7 | -29.0 | -44.9 | 14.3 |
| 4:12 | -10.8 | -21.5 | -33.5 | 13.6 | -12.6 | -25.0 | -38.8 | 13.6 | -14.8 | -29.0 | -45.0 | 13.6 |
| 5:12 | -10.8 | -21.5 | -33.6 | 13.6 | -12.7 | -25.0 | -38.9 | 13.6 | -14.8 | -29.0 | -45.0 | 13.6 |
| 6:12 | -10.9 | -21.6 | -33.6 | 13.4 | -12.7 | -25.0 | -38.9 | 13.4 | -14.8 | -29.1 | -45.0 | 13.4 |
| 7:12 | -12.3 | -14.9 | -14.9 | 15.4 | -14.3 | -17.4 | -17.4 | 17.2 | -16.7 | -20.2 | -20.2 | 19.3 |
| 8:12 | -12.3 | -15.0 | -15.0 | 15.2 | -14.3 | -17.4 | -17.4 | 17.1 | -16.7 | -20.2 | -20.2 | 19.2 |
| 9:12 | -12.3 | -15.0 | -15.0 | 15.1 | -14.4 | -17.5 | -17.5 | 16.9 | -16.7 | -20.3 | -20.3 | 19.1 |
| 10:12 | -12.4 | -15.0 | -15.0 | 15.0 | -14.4 | -17.5 | -17.5 | 16.8 | -16.8 | -20.3 | -20.3 | 18.9 |
| 11:12 | -12.4 | -15.1 | -15.1 | 14.9 | -14.5 | -17.5 | -17.5 | 16.7 | -16.8 | -20.4 | -20.4 | 18.8 |
| 12:12 | -12.5 | -15.1 | -15.1 | 14.7 | -14.5 | -17.6 | -17.6 | 16.6 | -16.9 | -20.4 | -20.4 | 18.7 |

## Exposure Category D

| Roof Pitch | Bldg. Height = 15 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 30 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 60 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1:12 | -14.9 | -27.9 | -44.1 | 15.1 | -17.0 | -31.5 | -49.8 | 15.1 | -19.3 | -35.8 | -56.4 | 15.1 |
| 2:12 | -13.3 | -26.3 | -40.8 | 14.7 | -15.1 | -29.7 | -46.1 | 14.7 | -17.3 | -33.7 | -52.3 | 14.9 |
| 3:12 | -13.3 | -26.3 | -40.9 | 14.3 | -15.2 | -29.8 | -46.2 | 14.3 | -17.3 | -33.8 | -52.3 | 14.5 |
| 4:12 | -13.4 | -26.3 | -40.9 | 13.6 | -15.2 | -29.8 | -46.2 | 13.6 | -17.3 | -33.8 | -52.3 | 13.9 |
| 5:12 | -13.4 | -26.3 | -40.9 | 13.6 | -15.2 | -29.8 | -46.2 | 13.6 | -17.4 | -33.8 | -52.4 | 13.8 |
| 6:12 | -13.4 | -26.4 | -41.0 | 13.4 | -15.3 | -29.9 | -46.3 | 13.4 | -17.4 | -33.9 | -52.4 | 13.7 |
| 7:12 | -15.1 | -18.3 | -18.3 | 17.9 | -17.1 | -20.8 | -20.8 | 19.7 | -19.5 | -23.6 | -23.6 | 21.9 |
| 8:12 | -15.1 | -18.4 | -18.4 | 17.8 | -17.2 | -20.8 | -20.8 | 19.6 | -19.5 | -23.6 | -23.6 | 21.7 |
| 9:12 | -15.2 | -18.4 | -18.4 | 17.7 | -17.2 | -20.9 | -20.9 | 19.5 | -19.6 | -23.7 | -23.7 | 21.6 |
| 10:12 | -15.2 | -18.4 | -18.4 | 17.5 | -17.3 | -20.9 | -20.9 | 19.4 | -19.6 | -23.7 | -23.7 | 21.5 |
| 11:12 | -15.2 | -18.5 | -18.5 | 17.4 | -17.3 | -20.9 | -20.9 | 19.2 | -19.6 | -23.8 | -23.8 | 21.4 |
| 12:12 | -15.3 | -18.5 | -18.5 | 17.3 | -17.3 | -21.0 | -21.0 | 19.1 | -19.7 | -23.8 | -23.8 | 21.3 |

Up and Down (psf)

## Down Slope

| Roof Pitch | Ss = 0.0 | Ss = 0.1 | Ss = 0.2 | Ss = 0.3 | Ss = 0.4 | Ss = 0.5 | Ss = 1.0 | Ss = 1.25 | Ss = 1.5 | Ss = 2.0 | Ss = 2.5 | Ss = 3.1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1:12 | 0.7 | 0.8 | 1.0 | 1.1 | 1.3 | 1.4 | 1.9 | 2.1 | 2.5 | 3.2 | 4.0 | 4.8 |
| 2:12 | 1.4 | 1.4 | 1.6 | 1.7 | 1.9 | 2.0 | 2.4 | 2.6 | 2.9 | 3.6 | 4.3 | 5.2 |
| 3:12 | 1.9 | 1.9 | 2.0 | 2.2 | 2.4 | 2.5 | 2.9 | 3.1 | 3.4 | 3.9 | 4.6 | 5.5 |
| 4:12 | 2.0 | 2.0 | 2.2 | 2.4 | 2.5 | 2.6 | 3.1 | 3.2 | 3.5 | 4.2 | 4.9 | 5.8 |
| 5:12 | 2.4 | 2.4 | 2.5 | 2.7 | 2.8 | 2.9 | 3.4 | 3.5 | 3.8 | 4.4 | 5.1 | 6.0 |
| 6:12 | 2.7 | 2.7 | 2.8 | 2.9 | 3.1 | 3.2 | 3.6 | 3.8 | 4.0 | 4.6 | 5.3 | 6.2 |
| 7:12 | 2.9 | 2.9 | 3.0 | 3.1 | 3.3 | 3.4 | 3.8 | 4.0 | 4.2 | 4.8 | 5.5 | 6.3 |
| 8:12 | 3.0 | 3.0 | 3.1 | 3.3 | 3.4 | 3.5 | 4.0 | 4.1 | 4.4 | 4.9 | 5.6 | 6.5 |
| 9:12 | 3.2 | 3.2 | 3.3 | 3.4 | 3.6 | 3.7 | 4.1 | 4.2 | 4.5 | 5.0 | 5.7 | 6.5 |
| 10:12 | 3.3 | 3.3 | 3.4 | 3.5 | 3.7 | 3.8 | 4.2 | 4.3 | 4.6 | 5.1 | 5.8 | 6.6 |
| 11:12 | 3.3 | 3.3 | 3.5 | 3.6 | 3.7 | 3.8 | 4.2 | 4.4 | 4.6 | 5.2 | 5.9 | 6.6 |
| 12:12 | 3.4 | 3.4 | 3.5 | 3.7 | 3.8 | 3.9 | 4.3 | 4.4 | 4.7 | 5.3 | 5.9 | 6.7 |

Side Load (psf)

## Lateral

| Ss = 0.0 | Ss = 0.1 | Ss = 0.2 | Ss = 0.3 | Ss = 0.4 | Ss = 0.5 | Ss = 1.0 | Ss = 1.25 | Ss = 1.5 | Ss = 2.0 | Ss = 2.5 | Ss = 3.1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.2 | 0.5 | 0.7 | 0.9 | 1.0 | 1.6 | 1.8 | 2.2 | 2.9 | 3.6 | 4.5 |

**California***

**ASCE 7-05**

85 mph
Basic Wind Speed

5 psf
Ground Snow Load

* This table is not inclusive of all areas within the state or region. The local wind speeds and snow loads should be independantly verifed for the specific install location.

**Southwest***

**ASCE 7-05**

**90 mph**
Basic Wind Speed

**5 psf**
Ground Snow Load

* This table is not inclusive of all areas within the state or region. The local wind speeds and snow loads should be independantly verifed for the specific install location.

## Up and Down (psf)

### Exposure Category B

| Roof Pitch | Bldg. Height = 15 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 30 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 60 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1:12 | -11.1 | -20.9 | -33.3 | 15.1 | -11.1 | -20.9 | -33.3 | 15.1 | -13.7 | -25.7 | -40.7 | 15.1 |
| 2:12 | -9.8 | -19.7 | -30.8 | 14.7 | -9.8 | -19.7 | -30.8 | 14.7 | -12.2 | -24.2 | -37.7 | 14.7 |
| 3:12 | -9.9 | -19.7 | -30.8 | 14.3 | -9.9 | -19.7 | -30.8 | 14.3 | -12.2 | -24.2 | -37.7 | 14.3 |
| 4:12 | -9.9 | -19.8 | -30.9 | 13.6 | -9.9 | -19.8 | -30.9 | 13.6 | -12.3 | -24.3 | -37.7 | 13.6 |
| 5:12 | -9.9 | -19.8 | -30.9 | 13.6 | -9.9 | -19.8 | -30.9 | 13.6 | -12.3 | -24.3 | -37.8 | 13.6 |
| 6:12 | -10.0 | -19.8 | -30.9 | 13.4 | -10.0 | -19.8 | -30.9 | 13.4 | -12.3 | -24.3 | -37.8 | 13.4 |
| 7:12 | -11.2 | -13.7 | -13.7 | 14.4 | -11.2 | -13.7 | -13.7 | 14.4 | -13.9 | -16.9 | -16.9 | 16.8 |
| 8:12 | -11.3 | -13.7 | -13.7 | 14.3 | -11.3 | -13.7 | -13.7 | 14.3 | -13.9 | -16.9 | -16.9 | 16.7 |
| 9:12 | -11.3 | -13.8 | -13.8 | 14.2 | -11.3 | -13.8 | -13.8 | 14.2 | -14.0 | -17.0 | -17.0 | 16.6 |
| 10:12 | -11.4 | -13.8 | -13.8 | 14.1 | -11.4 | -13.8 | -13.8 | 14.1 | -14.0 | -17.0 | -17.0 | 16.4 |
| 11:12 | -11.4 | -13.9 | -13.9 | 13.9 | -11.4 | -13.9 | -13.9 | 13.9 | -14.0 | -17.0 | -17.0 | 16.3 |
| 12:12 | -11.4 | -13.9 | -13.9 | 13.8 | -11.4 | -13.9 | -13.9 | 13.8 | -14.1 | -17.1 | -17.1 | 16.2 |

### Exposure Category C

| Roof Pitch | Bldg. Height = 15 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 30 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 60 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1:12 | -13.7 | -25.7 | -40.7 | 15.1 | -16.0 | -29.8 | -47.1 | 15.1 | -18.6 | -34.6 | -54.5 | 15.1 |
| 2:12 | -12.2 | -24.2 | -37.7 | 14.7 | -14.3 | -28.1 | -43.6 | 14.7 | -16.7 | -32.6 | -50.5 | 14.7 |
| 3:12 | -12.2 | -24.2 | -37.7 | 14.3 | -14.3 | -28.1 | -43.7 | 14.3 | -16.7 | -32.6 | -50.5 | 14.3 |
| 4:12 | -12.3 | -24.3 | -37.7 | 13.6 | -14.3 | -28.1 | -43.7 | 13.6 | -16.7 | -32.6 | -50.6 | 13.6 |
| 5:12 | -12.3 | -24.3 | -37.8 | 13.6 | -14.4 | -28.2 | -43.7 | 13.6 | -16.7 | -32.7 | -50.6 | 13.6 |
| 6:12 | -12.3 | -24.3 | -37.8 | 13.4 | -14.4 | -28.2 | -43.8 | 13.4 | -16.8 | -32.7 | -50.6 | 13.4 |
| 7:12 | -13.9 | -16.9 | -16.9 | 16.8 | -16.2 | -19.6 | -19.6 | 18.9 | -18.8 | -22.8 | -22.8 | 21.2 |
| 8:12 | -13.9 | -16.9 | -16.9 | 16.7 | -16.2 | -19.7 | -19.7 | 18.7 | -18.8 | -22.8 | -22.8 | 21.1 |
| 9:12 | -14.0 | -17.0 | -17.0 | 16.6 | -16.2 | -19.7 | -19.7 | 18.6 | -18.9 | -22.9 | -22.9 | 21.0 |
| 10:12 | -14.0 | -17.0 | -17.0 | 16.4 | -16.3 | -19.7 | -19.7 | 18.5 | -18.9 | -22.9 | -22.9 | 20.9 |
| 11:12 | -14.0 | -17.0 | -17.0 | 16.3 | -16.3 | -19.8 | -19.8 | 18.4 | -19.0 | -23.0 | -23.0 | 20.8 |
| 12:12 | -14.1 | -17.1 | -17.1 | 16.2 | -16.4 | -19.8 | -19.8 | 18.3 | -19.0 | -23.0 | -23.0 | 20.6 |

### Exposure Category D

| Roof Pitch | Bldg. Height = 15 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 30 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 60 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1:12 | -16.9 | -31.4 | -49.6 | 15.1 | -19.2 | -35.5 | -56.0 | 15.1 | -21.8 | -40.3 | -63.4 | 15.1 |
| 2:12 | -15.1 | -29.6 | -45.9 | 14.7 | -17.1 | -33.5 | -51.9 | 14.9 | -19.5 | -38.0 | -58.8 | 15.9 |
| 3:12 | -15.1 | -29.6 | -46.0 | 14.3 | -17.2 | -33.5 | -51.9 | 14.4 | -19.5 | -38.0 | -58.8 | 15.4 |
| 4:12 | -15.1 | -29.6 | -46.0 | 13.6 | -17.2 | -33.5 | -51.9 | 13.9 | -19.6 | -38.0 | -58.8 | 15.2 |
| 5:12 | -15.2 | -29.7 | -46.0 | 13.6 | -17.2 | -33.6 | -52.0 | 13.8 | -19.6 | -38.1 | -58.8 | 15.1 |
| 6:12 | -15.2 | -29.7 | -46.1 | 13.4 | -17.3 | -33.6 | -52.0 | 13.7 | -19.6 | -38.1 | -58.9 | 15.0 |
| 7:12 | -17.0 | -20.7 | -20.7 | 19.7 | -19.3 | -23.4 | -23.4 | 21.7 | -22.0 | -26.6 | -26.6 | 24.1 |
| 8:12 | -17.1 | -20.7 | -20.7 | 19.5 | -19.4 | -23.5 | -23.5 | 21.6 | -22.0 | -26.6 | -26.6 | 24.0 |
| 9:12 | -17.1 | -20.8 | -20.8 | 19.4 | -19.4 | -23.5 | -23.5 | 21.5 | -22.1 | -26.7 | -26.7 | 23.9 |
| 10:12 | -17.2 | -20.8 | -20.8 | 19.3 | -19.5 | -23.5 | -23.5 | 21.4 | -22.1 | -26.7 | -26.7 | 23.7 |
| 11:12 | -17.2 | -20.8 | -20.8 | 19.2 | -19.5 | -23.6 | -23.6 | 21.2 | -22.1 | -26.8 | -26.8 | 23.6 |
| 12:12 | -17.2 | -20.9 | -20.9 | 19.1 | -19.5 | -23.6 | -23.6 | 21.1 | -22.2 | -26.8 | -26.8 | 23.5 |

## Side Load (psf)

### Down Slope

| Roof Pitch | Ss = 0.0 | Ss = 0.1 | Ss = 0.2 | Ss = 0.3 | Ss = 0.4 | Ss = 0.5 | Ss = 1.0 | Ss = 1.25 | Ss = 1.5 | Ss = 2.0 | Ss = 2.5 | Ss = 3.1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1:12 | 0.7 | 0.8 | 1.0 | 1.1 | 1.3 | 1.4 | 1.9 | 2.1 | 2.5 | 3.2 | 4.0 | 4.8 |
| 2:12 | 1.4 | 1.4 | 1.6 | 1.7 | 1.9 | 2.0 | 2.4 | 2.6 | 2.9 | 3.6 | 4.3 | 5.2 |
| 3:12 | 1.9 | 1.9 | 2.0 | 2.2 | 2.4 | 2.5 | 2.9 | 3.1 | 3.4 | 3.9 | 4.6 | 5.5 |
| 4:12 | 2.0 | 2.0 | 2.2 | 2.4 | 2.5 | 2.6 | 3.1 | 3.2 | 3.5 | 4.2 | 4.9 | 5.8 |
| 5:12 | 2.4 | 2.4 | 2.5 | 2.7 | 2.8 | 2.9 | 3.4 | 3.5 | 3.8 | 4.4 | 5.1 | 6.0 |
| 6:12 | 2.7 | 2.7 | 2.8 | 2.9 | 3.1 | 3.2 | 3.6 | 3.8 | 4.0 | 4.6 | 5.3 | 6.2 |
| 7:12 | 2.9 | 2.9 | 3.0 | 3.1 | 3.3 | 3.4 | 3.8 | 4.0 | 4.2 | 4.8 | 5.5 | 6.3 |
| 8:12 | 3.0 | 3.0 | 3.1 | 3.3 | 3.4 | 3.5 | 4.0 | 4.1 | 4.4 | 4.9 | 5.6 | 6.5 |
| 9:12 | 3.2 | 3.2 | 3.3 | 3.4 | 3.6 | 3.7 | 4.1 | 4.2 | 4.5 | 5.0 | 5.7 | 6.5 |
| 10:12 | 3.3 | 3.3 | 3.4 | 3.5 | 3.7 | 3.8 | 4.2 | 4.3 | 4.6 | 5.1 | 5.8 | 6.6 |
| 11:12 | 3.3 | 3.3 | 3.5 | 3.6 | 3.7 | 3.8 | 4.2 | 4.4 | 4.6 | 5.2 | 5.9 | 6.6 |
| 12:12 | 3.4 | 3.4 | 3.5 | 3.7 | 3.8 | 3.9 | 4.3 | 4.4 | 4.7 | 5.3 | 5.9 | 6.7 |

### Lateral

| Ss = 0.0 | Ss = 0.1 | Ss = 0.2 | Ss = 0.3 | Ss = 0.4 | Ss = 0.5 | Ss = 1.0 | Ss = 1.25 | Ss = 1.5 | Ss = 2.0 | Ss = 2.5 | Ss = 3.1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.2 | 0.5 | 0.7 | 0.9 | 1.0 | 1.6 | 1.8 | 2.2 | 2.9 | 3.6 | 4.5 |

## Exposure Category B

| Roof Pitch | Bldg. Height = 15 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 30 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 60 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1:12 | -17.2 | -31.9 | -50.3 | 18.8 | -17.2 | -31.9 | -50.3 | 18.8 | -21.1 | -39.0 | -61.4 | 18.8 |
| 2:12 | -15.3 | -30.1 | -46.7 | 18.1 | -15.3 | -30.1 | -46.7 | 18.1 | -18.9 | -36.8 | -56.9 | 19.0 |
| 3:12 | -15.3 | -30.1 | -46.7 | 17.3 | -15.3 | -30.1 | -46.7 | 17.3 | -18.9 | -36.8 | -56.9 | 18.2 |
| 4:12 | -15.4 | -30.1 | -46.7 | 14.9 | -15.4 | -30.1 | -46.7 | 14.9 | -18.9 | -36.8 | -57.0 | 15.8 |
| 5:12 | -15.4 | -30.1 | -46.7 | 14.3 | -15.4 | -30.1 | -46.7 | 14.3 | -19.0 | -36.9 | -57.0 | 15.2 |
| 6:12 | -15.4 | -30.2 | -46.8 | 13.7 | -15.4 | -30.2 | -46.8 | 13.7 | -19.0 | -36.9 | -57.0 | 14.6 |
| 7:12 | -17.3 | -21.0 | -21.0 | 19.9 | -17.3 | -21.0 | -21.0 | 19.9 | -21.3 | -25.7 | -25.7 | 23.5 |
| 8:12 | -17.4 | -21.0 | -21.0 | 19.8 | -17.4 | -21.0 | -21.0 | 19.8 | -21.3 | -25.8 | -25.8 | 23.3 |
| 9:12 | -17.4 | -21.1 | -21.1 | 19.7 | -17.4 | -21.1 | -21.1 | 19.7 | -21.4 | -25.8 | -25.8 | 23.2 |
| 10:12 | -17.4 | -21.1 | -21.1 | 19.5 | -17.4 | -21.1 | -21.1 | 19.5 | -21.4 | -25.9 | -25.9 | 23.1 |
| 11:12 | -17.5 | -21.2 | -21.2 | 19.4 | -17.5 | -21.2 | -21.2 | 19.4 | -21.4 | -25.9 | -25.9 | 23.0 |
| 12:12 | -17.5 | -21.2 | -21.2 | 19.3 | -17.5 | -21.2 | -21.2 | 19.3 | -21.5 | -25.9 | -25.9 | 22.9 |

## Exposure Category C

| Roof Pitch | Bldg. Height = 15 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 30 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 60 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1:12 | -21.1 | -39.0 | -61.4 | 18.8 | -24.5 | -45.2 | -71.0 | 18.8 | -28.5 | -52.3 | -82.0 | 18.8 |
| 2:12 | -18.9 | -36.8 | -56.9 | 19.0 | -22.0 | -42.6 | -65.8 | 20.3 | -25.5 | -49.3 | -76.1 | 21.7 |
| 3:12 | -18.9 | -36.8 | -56.9 | 18.2 | -22.0 | -42.6 | -65.8 | 19.5 | -25.5 | -49.3 | -76.1 | 21.0 |
| 4:12 | -18.9 | -36.8 | -57.0 | 15.8 | -22.0 | -42.6 | -65.9 | 17.1 | -25.6 | -49.4 | -76.1 | 18.6 |
| 5:12 | -19.0 | -36.9 | -57.0 | 15.2 | -22.0 | -42.7 | -65.9 | 16.5 | -25.6 | -49.4 | -76.2 | 18.4 |
| 6:12 | -19.0 | -36.9 | -57.0 | 14.6 | -22.1 | -42.7 | -65.9 | 16.3 | -25.6 | -49.4 | -76.2 | 18.3 |
| 7:12 | -21.3 | -25.7 | -25.7 | 23.5 | -24.7 | -29.9 | -29.9 | 26.5 | -28.6 | -34.6 | -34.6 | 30.1 |
| 8:12 | -21.3 | -25.8 | -25.8 | 23.3 | -24.7 | -29.9 | -29.9 | 26.4 | -28.7 | -34.6 | -34.6 | 30.0 |
| 9:12 | -21.4 | -25.8 | -25.8 | 23.2 | -24.8 | -29.9 | -29.9 | 26.3 | -28.7 | -34.7 | -34.7 | 29.9 |
| 10:12 | -21.4 | -25.9 | -25.9 | 23.1 | -24.8 | -30.0 | -30.0 | 26.2 | -28.8 | -34.7 | -34.7 | 29.7 |
| 11:12 | -21.4 | -25.9 | -25.9 | 23.0 | -24.9 | -30.0 | -30.0 | 26.1 | -28.8 | -34.8 | -34.8 | 29.6 |
| 12:12 | -21.5 | -25.9 | -25.9 | 22.9 | -24.9 | -30.1 | -30.1 | 25.9 | -28.8 | -34.8 | -34.8 | 29.5 |

## Exposure Category D

| Roof Pitch | Bldg. Height = 15 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 30 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 60 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1:12 | -25.8 | -47.5 | -74.7 | 18.8 | -29.3 | -53.7 | -84.2 | 18.8 | -33.2 | -60.8 | -95.3 | 19.0 |
| 2:12 | -23.1 | -44.8 | -69.2 | 20.8 | -26.2 | -50.7 | -78.1 | 22.0 | -29.8 | -57.4 | -88.4 | 23.5 |
| 3:12 | -23.2 | -44.9 | -69.3 | 20.0 | -26.2 | -50.7 | -78.2 | 21.3 | -29.8 | -57.4 | -88.4 | 22.7 |
| 4:12 | -23.2 | -44.9 | -69.3 | 17.2 | -26.3 | -50.7 | -78.2 | 18.9 | -29.8 | -57.4 | -88.5 | 20.9 |
| 5:12 | -23.2 | -44.9 | -69.3 | 17.1 | -26.3 | -50.7 | -78.2 | 18.8 | -29.9 | -57.5 | -88.5 | 20.8 |
| 6:12 | -23.3 | -45.0 | -69.4 | 17.0 | -26.3 | -50.8 | -78.3 | 18.7 | -29.9 | -57.5 | -88.5 | 20.7 |
| 7:12 | -26.0 | -31.4 | -31.4 | 27.7 | -29.4 | -35.5 | -35.5 | 30.8 | -33.4 | -40.3 | -40.3 | 34.4 |
| 8:12 | -26.1 | -31.5 | -31.5 | 27.6 | -29.5 | -35.6 | -35.6 | 30.7 | -33.4 | -40.3 | -40.3 | 34.2 |
| 9:12 | -26.1 | -31.5 | -31.5 | 27.5 | -29.5 | -35.6 | -35.6 | 30.6 | -33.5 | -40.4 | -40.4 | 34.1 |
| 10:12 | -26.1 | -31.6 | -31.6 | 27.4 | -29.6 | -35.7 | -35.7 | 30.4 | -33.5 | -40.4 | -40.4 | 34.0 |
| 11:12 | -26.2 | -31.6 | -31.6 | 27.2 | -29.6 | -35.7 | -35.7 | 30.3 | -33.5 | -40.4 | -40.4 | 33.9 |
| 12:12 | -26.2 | -31.6 | -31.6 | 27.1 | -29.6 | -35.7 | -35.7 | 30.2 | -33.6 | -40.5 | -40.5 | 33.8 |

## Down Slope

| Roof Pitch | Ss = 0.0 | Ss = 0.1 | Ss = 0.2 | Ss = 0.3 | Ss = 0.4 | Ss = 0.5 | Ss = 1.0 | Ss = 1.25 | Ss = 1.5 | Ss = 2.0 | Ss = 2.5 | Ss = 3.1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1:12 | 1.1 | 1.1 | 1.3 | 1.5 | 1.6 | 1.7 | 2.1 | 2.3 | 2.6 | 3.2 | 4.0 | 4.8 |
| 2:12 | 2.1 | 2.1 | 2.1 | 2.3 | 2.4 | 2.5 | 3.0 | 3.1 | 3.4 | 4.0 | 4.5 | 5.2 |
| 3:12 | 3.0 | 3.0 | 3.0 | 3.0 | 3.1 | 3.2 | 3.7 | 3.8 | 4.1 | 4.7 | 5.2 | 5.9 |
| 4:12 | 2.9 | 2.9 | 2.9 | 3.0 | 3.1 | 3.2 | 3.7 | 3.9 | 4.1 | 4.7 | 5.2 | 5.9 |
| 5:12 | 3.3 | 3.3 | 3.3 | 3.4 | 3.5 | 3.6 | 4.0 | 4.2 | 4.5 | 5.0 | 5.6 | 6.2 |
| 6:12 | 3.6 | 3.6 | 3.6 | 3.6 | 3.8 | 3.9 | 4.3 | 4.5 | 4.7 | 5.3 | 5.8 | 6.5 |
| 7:12 | 3.8 | 3.8 | 3.8 | 3.8 | 4.0 | 4.1 | 4.5 | 4.7 | 4.9 | 5.5 | 6.0 | 6.6 |
| 8:12 | 3.9 | 3.9 | 3.9 | 4.0 | 4.1 | 4.2 | 4.6 | 4.8 | 5.1 | 5.6 | 6.1 | 6.7 |
| 9:12 | 4.0 | 4.0 | 4.0 | 4.1 | 4.2 | 4.3 | 4.7 | 4.9 | 5.1 | 5.6 | 6.2 | 6.8 |
| 10:12 | 4.1 | 4.1 | 4.1 | 4.1 | 4.3 | 4.4 | 4.8 | 4.9 | 5.2 | 5.7 | 6.2 | 6.8 |
| 11:12 | 4.1 | 4.1 | 4.1 | 4.2 | 4.3 | 4.4 | 4.8 | 4.9 | 5.2 | 5.7 | 6.1 | 6.7 |
| 12:12 | 4.1 | 4.1 | 4.1 | 4.2 | 4.3 | 4.4 | 4.8 | 4.9 | 5.2 | 5.6 | 6.1 | 6.7 |

## Lateral

| Ss = 0.0 | Ss = 0.1 | Ss = 0.2 | Ss = 0.3 | Ss = 0.4 | Ss = 0.5 | Ss = 1.0 | Ss = 1.25 | Ss = 1.5 | Ss = 2.0 | Ss = 2.5 | Ss = 3.1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.2 | 0.5 | 0.7 | 0.9 | 1.0 | 1.6 | 1.8 | 2.2 | 2.9 | 3.6 | 4.5 |

Up and Down (psf)

Side Load (psf)

**East Coast (Low Snow)***

**ASCE 7-05**

**110 mph**
Basic Wind Speed

**10 psf**
Ground Snow Load

* This table is not inclusive of all areas within the state or region. The local wind speeds and snow loads should be independantly verifed for the specific install location.

**Exposure Category B**

| Roof Pitch | Bldg. Height = 15 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 30 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 60 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1:12 | -9.8 | -18.6 | -29.7 | 14.8 | -9.8 | -18.6 | -29.7 | 14.8 | -12.1 | -22.9 | -36.3 | 14.8 |
| 2:12 | -8.7 | -17.5 | -27.5 | 14.4 | -8.7 | -17.5 | -27.5 | 14.4 | -10.8 | -21.6 | -33.6 | 14.4 |
| 3:12 | -8.7 | -17.6 | -27.5 | 14.0 | -8.7 | -17.6 | -27.5 | 14.0 | -10.8 | -21.6 | -33.7 | 14.0 |
| 4:12 | -8.7 | -17.6 | -27.5 | 13.2 | -8.7 | -17.6 | -27.5 | 13.2 | -10.9 | -21.6 | -33.7 | 13.2 |
| 5:12 | -8.8 | -17.6 | -27.6 | 13.2 | -8.8 | -17.6 | -27.6 | 13.2 | -10.9 | -21.6 | -33.7 | 13.2 |
| 6:12 | -8.8 | -17.7 | -27.6 | 13.0 | -8.8 | -17.7 | -27.6 | 13.0 | -10.9 | -21.7 | -33.8 | 13.0 |
| 7:12 | -9.9 | -12.2 | -12.2 | 13.3 | -9.9 | -12.2 | -12.2 | 13.3 | -12.3 | -15.0 | -15.0 | 15.4 |
| 8:12 | -10.0 | -12.2 | -12.2 | 13.2 | -10.0 | -12.2 | -12.2 | 13.2 | -12.4 | -15.0 | -15.0 | 15.3 |
| 9:12 | -10.0 | -12.2 | -12.2 | 13.0 | -10.0 | -12.2 | -12.2 | 13.0 | -12.4 | -15.1 | -15.1 | 15.2 |
| 10:12 | -10.1 | -12.3 | -12.3 | 12.9 | -10.1 | -12.3 | -12.3 | 12.9 | -12.4 | -15.1 | -15.1 | 15.0 |
| 11:12 | -10.1 | -12.3 | -12.3 | 12.8 | -10.1 | -12.3 | -12.3 | 12.8 | -12.5 | -15.2 | -15.2 | 14.9 |
| 12:12 | -10.2 | -12.4 | -12.4 | 12.7 | -10.2 | -12.4 | -12.4 | 12.7 | -12.5 | -15.2 | -15.2 | 14.8 |

**Exposure Category C**

| Roof Pitch | Bldg. Height = 15 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 30 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 60 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1:12 | -12.1 | -22.9 | -36.3 | 14.8 | -14.2 | -26.6 | -42.1 | 14.8 | -16.6 | -30.9 | -48.7 | 14.8 |
| 2:12 | -10.8 | -21.6 | -33.6 | 14.4 | -12.7 | -25.1 | -39.0 | 14.4 | -14.8 | -29.1 | -45.1 | 14.4 |
| 3:12 | -10.8 | -21.6 | -33.7 | 14.0 | -12.7 | -25.1 | -39.0 | 14.0 | -14.8 | -29.1 | -45.2 | 14.0 |
| 4:12 | -10.9 | -21.6 | -33.7 | 13.2 | -12.7 | -25.1 | -39.0 | 13.2 | -14.8 | -29.1 | -45.2 | 13.2 |
| 5:12 | -10.9 | -21.6 | -33.7 | 13.2 | -12.7 | -25.1 | -39.1 | 13.2 | -14.9 | -29.2 | -45.2 | 13.2 |
| 6:12 | -10.9 | -21.7 | -33.8 | 13.0 | -12.8 | -25.2 | -39.1 | 13.0 | -14.9 | -29.2 | -45.3 | 13.0 |
| 7:12 | -12.3 | -15.0 | -15.0 | 15.4 | -14.4 | -17.5 | -17.5 | 17.3 | -16.7 | -20.3 | -20.3 | 19.4 |
| 8:12 | -12.4 | -15.0 | -15.0 | 15.3 | -14.4 | -17.5 | -17.5 | 17.1 | -16.8 | -20.4 | -20.4 | 19.3 |
| 9:12 | -12.4 | -15.1 | -15.1 | 15.2 | -14.5 | -17.6 | -17.6 | 17.0 | -16.8 | -20.4 | -20.4 | 19.1 |
| 10:12 | -12.4 | -15.1 | -15.1 | 15.0 | -14.5 | -17.6 | -17.6 | 16.9 | -16.9 | -20.4 | -20.4 | 19.0 |
| 11:12 | -12.5 | -15.2 | -15.2 | 14.9 | -14.5 | -17.6 | -17.6 | 16.8 | -16.9 | -20.5 | -20.5 | 18.9 |
| 12:12 | -12.5 | -15.2 | -15.2 | 14.8 | -14.6 | -17.7 | -17.7 | 16.7 | -16.9 | -20.5 | -20.5 | 18.8 |

**Exposure Category D**

| Roof Pitch | Bldg. Height = 15 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 30 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 60 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1:12 | -15.0 | -28.0 | -44.3 | 14.8 | -17.0 | -31.7 | -50.0 | 14.8 | -19.4 | -36.0 | -56.7 | 14.8 |
| 2:12 | -13.4 | -26.4 | -41.0 | 14.4 | -15.2 | -29.9 | -46.4 | 14.4 | -17.4 | -33.9 | -52.5 | 15.0 |
| 3:12 | -13.4 | -26.4 | -41.1 | 14.0 | -15.2 | -29.9 | -46.4 | 14.0 | -17.4 | -33.9 | -52.6 | 14.5 |
| 4:12 | -13.4 | -26.4 | -41.1 | 13.2 | -15.3 | -29.9 | -46.4 | 13.2 | -17.4 | -34.0 | -52.6 | 14.0 |
| 5:12 | -13.5 | -26.5 | -41.1 | 13.2 | -15.3 | -30.0 | -46.5 | 13.2 | -17.4 | -34.0 | -52.6 | 13.9 |
| 6:12 | -13.5 | -26.5 | -41.2 | 13.0 | -15.3 | -30.0 | -46.5 | 13.0 | -17.5 | -34.0 | -52.7 | 13.8 |
| 7:12 | -15.2 | -18.4 | -18.4 | 18.0 | -17.2 | -20.9 | -20.9 | 19.8 | -19.6 | -23.7 | -23.7 | 21.9 |
| 8:12 | -15.2 | -18.5 | -18.5 | 17.8 | -17.3 | -20.9 | -20.9 | 19.7 | -19.6 | -23.8 | -23.8 | 21.8 |
| 9:12 | -15.2 | -18.5 | -18.5 | 17.7 | -17.3 | -21.0 | -21.0 | 19.6 | -19.7 | -23.8 | -23.8 | 21.7 |
| 10:12 | -15.3 | -18.5 | -18.5 | 17.6 | -17.3 | -21.0 | -21.0 | 19.4 | -19.7 | -23.8 | -23.8 | 21.6 |
| 11:12 | -15.3 | -18.6 | -18.6 | 17.5 | -17.4 | -21.0 | -21.0 | 19.3 | -19.7 | -23.9 | -23.9 | 21.5 |
| 12:12 | -15.4 | -18.6 | -18.6 | 17.4 | -17.4 | -21.1 | -21.1 | 19.2 | -19.8 | -23.9 | -23.9 | 21.3 |

**Up and Down (psf)**

**Down Slope**

| Roof Pitch | Ss = 0.0 | Ss = 0.1 | Ss = 0.2 | Ss = 0.3 | Ss = 0.4 | Ss = 0.5 | Ss = 1.0 | Ss = 1.25 | Ss = 1.5 | Ss = 2.0 | Ss = 2.5 | Ss = 3.1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1:12 | 0.7 | 0.8 | 1.0 | 1.1 | 1.3 | 1.4 | 1.9 | 2.1 | 2.5 | 3.2 | 4.0 | 4.8 |
| 2:12 | 1.4 | 1.4 | 1.6 | 1.7 | 1.9 | 2.0 | 2.4 | 2.6 | 2.9 | 3.6 | 4.3 | 5.2 |
| 3:12 | 1.9 | 1.9 | 2.0 | 2.2 | 2.4 | 2.5 | 2.9 | 3.1 | 3.4 | 3.9 | 4.6 | 5.5 |
| 4:12 | 2.0 | 2.0 | 2.2 | 2.4 | 2.5 | 2.6 | 3.1 | 3.2 | 3.5 | 4.2 | 4.9 | 5.8 |
| 5:12 | 2.4 | 2.4 | 2.5 | 2.7 | 2.8 | 2.9 | 3.4 | 3.5 | 3.8 | 4.4 | 5.1 | 6.0 |
| 6:12 | 2.7 | 2.7 | 2.8 | 2.9 | 3.1 | 3.2 | 3.6 | 3.8 | 4.0 | 4.6 | 5.3 | 6.2 |
| 7:12 | 2.9 | 2.9 | 3.0 | 3.1 | 3.3 | 3.4 | 3.8 | 4.0 | 4.2 | 4.8 | 5.5 | 6.3 |
| 8:12 | 3.0 | 3.0 | 3.1 | 3.3 | 3.4 | 3.5 | 4.0 | 4.1 | 4.4 | 4.9 | 5.6 | 6.5 |
| 9:12 | 3.2 | 3.2 | 3.3 | 3.4 | 3.6 | 3.7 | 4.1 | 4.2 | 4.5 | 5.0 | 5.7 | 6.5 |
| 10:12 | 3.3 | 3.3 | 3.4 | 3.5 | 3.7 | 3.8 | 4.2 | 4.3 | 4.6 | 5.1 | 5.8 | 6.6 |
| 11:12 | 3.3 | 3.3 | 3.5 | 3.6 | 3.7 | 3.8 | 4.2 | 4.4 | 4.6 | 5.2 | 5.9 | 6.6 |
| 12:12 | 3.4 | 3.4 | 3.5 | 3.7 | 3.8 | 3.9 | 4.3 | 4.4 | 4.7 | 5.3 | 5.9 | 6.7 |

**Side Load (psf)**

| Ss = 0.0 | Ss = 0.1 | Ss = 0.2 | Ss = 0.3 | Ss = 0.4 | Ss = 0.5 | Ss = 1.0 | Ss = 1.25 | Ss = 1.5 | Ss = 2.0 | Ss = 2.5 | Ss = 3.1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.2 | 0.5 | 0.7 | 0.9 | 1.0 | 1.6 | 1.8 | 2.2 | 2.9 | 3.6 | 4.5 |

**Lateral**

**California***

**ASCE 7-10**

**110 mph**
Basic Wind Speed

**5 psf**
Ground Snow Load

* This table is not inclusive of all areas within the state or region. The local wind speeds and snow loads should be independantly verifed for the specific install location.

**Exposure Category B**

| Roof Pitch | Bldg. Height = 15 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 30 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 60 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1:12 | -10.8 | -20.5 | -32.6 | 14.8 | -10.8 | -20.5 | -32.6 | 14.8 | -13.4 | -25.1 | -39.8 | 14.8 |
| 2:12 | -9.6 | -19.3 | -30.2 | 14.4 | -9.6 | -19.3 | -30.2 | 14.4 | -11.9 | -23.7 | -36.9 | 14.4 |
| 3:12 | -9.6 | -19.3 | -30.2 | 14.0 | -9.6 | -19.3 | -30.2 | 14.0 | -12.0 | -23.7 | -36.9 | 14.0 |
| 4:12 | -9.7 | -19.3 | -30.2 | 13.2 | -9.7 | -19.3 | -30.2 | 13.2 | -12.0 | -23.7 | -36.9 | 13.2 |
| 5:12 | -9.7 | -19.4 | -30.2 | 13.2 | -9.7 | -19.4 | -30.2 | 13.2 | -12.0 | -23.8 | -37.0 | 13.2 |
| 6:12 | -9.7 | -19.4 | -30.3 | 13.0 | -9.7 | -19.4 | -30.3 | 13.0 | -12.1 | -23.8 | -37.0 | 13.0 |
| 7:12 | -11.0 | -13.4 | -13.4 | 14.2 | -11.0 | -13.4 | -13.4 | 14.2 | -13.6 | -16.5 | -16.5 | 16.5 |
| 8:12 | -11.0 | -13.4 | -13.4 | 14.1 | -11.0 | -13.4 | -13.4 | 14.1 | -13.6 | -16.5 | -16.5 | 16.4 |
| 9:12 | -11.1 | -13.5 | -13.5 | 14.0 | -11.1 | -13.5 | -13.5 | 14.0 | -13.6 | -16.6 | -16.6 | 16.3 |
| 10:12 | -11.1 | -13.5 | -13.5 | 13.8 | -11.1 | -13.5 | -13.5 | 13.8 | -13.7 | -16.6 | -16.6 | 16.2 |
| 11:12 | -11.1 | -13.6 | -13.6 | 13.7 | -11.1 | -13.6 | -13.6 | 13.7 | -13.7 | -16.7 | -16.7 | 16.0 |
| 12:12 | -11.2 | -13.6 | -13.6 | 13.6 | -11.2 | -13.6 | -13.6 | 13.6 | -13.8 | -16.7 | -16.7 | 15.9 |

**Exposure Category C**

| Roof Pitch | Bldg. Height = 15 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 30 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 60 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1:12 | -13.4 | -25.1 | -39.8 | 14.8 | -15.6 | -29.2 | -46.1 | 14.8 | -18.2 | -33.8 | -53.4 | 14.8 |
| 2:12 | -11.9 | -23.7 | -36.9 | 14.4 | -14.0 | -27.5 | -42.7 | 14.4 | -16.3 | -31.9 | -49.5 | 14.5 |
| 3:12 | -12.0 | -23.7 | -36.9 | 14.0 | -14.0 | -27.5 | -42.7 | 14.0 | -16.3 | -31.9 | -49.5 | 14.1 |
| 4:12 | -12.0 | -23.7 | -36.9 | 13.2 | -14.0 | -27.5 | -42.8 | 13.2 | -16.3 | -32.0 | -49.5 | 13.4 |
| 5:12 | -12.0 | -23.8 | -37.0 | 13.2 | -14.0 | -27.6 | -42.8 | 13.2 | -16.4 | -32.0 | -49.5 | 13.3 |
| 6:12 | -12.1 | -23.8 | -37.0 | 13.0 | -14.1 | -27.6 | -42.8 | 13.0 | -16.4 | -32.0 | -49.6 | 13.2 |
| 7:12 | -13.6 | -16.5 | -16.5 | 16.5 | -15.8 | -19.2 | -19.2 | 18.6 | -18.4 | -22.3 | -22.3 | 20.9 |
| 8:12 | -13.6 | -16.5 | -16.5 | 16.4 | -15.9 | -19.2 | -19.2 | 18.4 | -18.4 | -22.3 | -22.3 | 20.8 |
| 9:12 | -13.6 | -16.6 | -16.6 | 16.3 | -15.9 | -19.3 | -19.3 | 18.3 | -18.5 | -22.4 | -22.4 | 20.6 |
| 10:12 | -13.7 | -16.6 | -16.6 | 16.2 | -15.9 | -19.3 | -19.3 | 18.2 | -18.5 | -22.4 | -22.4 | 20.5 |
| 11:12 | -13.7 | -16.7 | -16.7 | 16.0 | -16.0 | -19.4 | -19.4 | 18.1 | -18.6 | -22.5 | -22.5 | 20.4 |
| 12:12 | -13.8 | -16.7 | -16.7 | 15.9 | -16.0 | -19.4 | -19.4 | 17.9 | -18.6 | -22.5 | -22.5 | 20.3 |

**Exposure Category D**

| Roof Pitch | Bldg. Height = 15 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 30 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 60 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1:12 | -16.5 | -30.7 | -48.5 | 14.8 | -18.7 | -34.8 | -54.8 | 14.8 | -21.3 | -39.4 | -62.1 | 14.8 |
| 2:12 | -14.7 | -29.0 | -45.0 | 14.4 | -16.8 | -32.8 | -50.8 | 14.7 | -19.1 | -37.2 | -57.5 | 15.7 |
| 3:12 | -14.8 | -29.0 | -45.0 | 14.0 | -16.8 | -32.8 | -50.8 | 14.3 | -19.1 | -37.2 | -57.6 | 15.3 |
| 4:12 | -14.8 | -29.0 | -45.0 | 13.2 | -16.8 | -32.8 | -50.9 | 13.7 | -19.1 | -37.2 | -57.6 | 15.0 |
| 5:12 | -14.8 | -29.0 | -45.1 | 13.2 | -16.8 | -32.9 | -50.9 | 13.6 | -19.2 | -37.3 | -57.6 | 14.9 |
| 6:12 | -14.9 | -29.1 | -45.1 | 13.0 | -16.9 | -32.9 | -50.9 | 13.5 | -19.2 | -37.3 | -57.7 | 14.8 |
| 7:12 | -16.7 | -20.2 | -20.2 | 19.3 | -18.9 | -22.9 | -22.9 | 21.3 | -21.5 | -26.0 | -26.0 | 23.7 |
| 8:12 | -16.7 | -20.3 | -20.3 | 19.2 | -19.0 | -23.0 | -23.0 | 21.2 | -21.6 | -26.1 | -26.1 | 23.6 |
| 9:12 | -16.8 | -20.3 | -20.3 | 19.1 | -19.0 | -23.0 | -23.0 | 21.1 | -21.6 | -26.1 | -26.1 | 23.4 |
| 10:12 | -16.8 | -20.4 | -20.4 | 19.0 | -19.0 | -23.0 | -23.0 | 21.0 | -21.6 | -26.2 | -26.2 | 23.3 |
| 11:12 | -16.8 | -20.4 | -20.4 | 18.8 | -19.1 | -23.1 | -23.1 | 20.9 | -21.7 | -26.2 | -26.2 | 23.2 |
| 12:12 | -16.9 | -20.4 | -20.4 | 18.7 | -19.1 | -23.1 | -23.1 | 20.7 | -21.7 | -26.2 | -26.2 | 23.1 |

**Up and Down (psf)**

| Roof Pitch | Ss = 0.0 | Ss = 0.1 | Ss = 0.2 | Ss = 0.3 | Ss = 0.4 | Ss = 0.5 | Ss = 1.0 | Ss = 1.25 | Ss = 1.5 | Ss = 2.0 | Ss = 2.5 | Ss = 3.1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1:12 | 0.7 | 0.8 | 1.0 | 1.1 | 1.3 | 1.4 | 1.9 | 2.1 | 2.5 | 3.2 | 4.0 | 4.8 |
| 2:12 | 1.4 | 1.4 | 1.6 | 1.7 | 1.9 | 2.0 | 2.4 | 2.6 | 2.9 | 3.6 | 4.3 | 5.2 |
| 3:12 | 1.9 | 1.9 | 2.0 | 2.2 | 2.4 | 2.5 | 2.9 | 3.1 | 3.4 | 3.9 | 4.6 | 5.5 |
| 4:12 | 2.0 | 2.0 | 2.2 | 2.4 | 2.5 | 2.6 | 3.1 | 3.2 | 3.5 | 4.2 | 4.9 | 5.8 |
| 5:12 | 2.4 | 2.4 | 2.5 | 2.7 | 2.8 | 2.9 | 3.4 | 3.5 | 3.8 | 4.4 | 5.1 | 6.0 |
| 6:12 | 2.7 | 2.7 | 2.8 | 2.9 | 3.1 | 3.2 | 3.6 | 3.8 | 4.0 | 4.6 | 5.3 | 6.2 |
| 7:12 | 2.9 | 2.9 | 3.0 | 3.1 | 3.3 | 3.4 | 3.8 | 4.0 | 4.2 | 4.8 | 5.5 | 6.3 |
| 8:12 | 3.0 | 3.0 | 3.1 | 3.3 | 3.4 | 3.5 | 4.0 | 4.1 | 4.4 | 4.9 | 5.6 | 6.5 |
| 9:12 | 3.2 | 3.2 | 3.3 | 3.4 | 3.6 | 3.7 | 4.1 | 4.2 | 4.5 | 5.0 | 5.7 | 6.5 |
| 10:12 | 3.3 | 3.3 | 3.4 | 3.5 | 3.7 | 3.8 | 4.2 | 4.3 | 4.6 | 5.1 | 5.8 | 6.6 |
| 11:12 | 3.3 | 3.3 | 3.5 | 3.6 | 3.7 | 3.8 | 4.2 | 4.4 | 4.6 | 5.2 | 5.9 | 6.6 |
| 12:12 | 3.4 | 3.4 | 3.5 | 3.7 | 3.8 | 3.9 | 4.3 | 4.4 | 4.7 | 5.3 | 5.9 | 6.7 |

**Down Slope**

**Side Load (psf)**

| Ss = 0.0 | Ss = 0.1 | Ss = 0.2 | Ss = 0.3 | Ss = 0.4 | Ss = 0.5 | Ss = 1.0 | Ss = 1.25 | Ss = 1.5 | Ss = 2.0 | Ss = 2.5 | Ss = 3.1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.2 | 0.5 | 0.7 | 0.9 | 1.0 | 1.6 | 1.8 | 2.2 | 2.9 | 3.6 | 4.5 |

**Lateral**

**Southwest***

**ASCE 7-10**

115 mph
Basic Wind Speed

5 psf
Ground Snow Load

* This table is not inclusive of all areas within the state or region. The local wind speeds and snow loads should be independantly verifed for the specific install location.

## Exposure Category B

| Roof Pitch | Bldg. Height = 15 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 30 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 60 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1:12 | -14.2 | -26.5 | -42.0 | 18.5 | -14.2 | -26.5 | -42.0 | 18.5 | -17.5 | -32.5 | -51.2 | 18.5 |
| 2:12 | -12.6 | -25.0 | -38.9 | 17.8 | -12.6 | -25.0 | -38.9 | 17.8 | -15.6 | -30.6 | -47.5 | 17.8 |
| 3:12 | -12.7 | -25.0 | -38.9 | 17.0 | -12.7 | -25.0 | -38.9 | 17.0 | -15.6 | -30.6 | -47.5 | 17.0 |
| 4:12 | -12.7 | -25.0 | -38.9 | 14.6 | -12.7 | -25.0 | -38.9 | 14.6 | -15.7 | -30.7 | -47.5 | 14.6 |
| 5:12 | -12.7 | -25.1 | -39.0 | 14.0 | -12.7 | -25.1 | -39.0 | 14.0 | -15.7 | -30.7 | -47.6 | 14.0 |
| 6:12 | -12.8 | -25.1 | -39.0 | 13.4 | -12.8 | -25.1 | -39.0 | 13.4 | -15.7 | -30.7 | -47.6 | 13.4 |
| 7:12 | -14.3 | -17.4 | -17.4 | 17.2 | -14.3 | -17.4 | -17.4 | 17.2 | -17.6 | -21.4 | -21.4 | 20.2 |
| 8:12 | -14.4 | -17.5 | -17.5 | 17.1 | -14.4 | -17.5 | -17.5 | 17.1 | -17.7 | -21.4 | -21.4 | 20.1 |
| 9:12 | -14.4 | -17.5 | -17.5 | 17.0 | -14.4 | -17.5 | -17.5 | 17.0 | -17.7 | -21.5 | -21.5 | 20.0 |
| 10:12 | -14.5 | -17.5 | -17.5 | 16.9 | -14.5 | -17.5 | -17.5 | 16.9 | -17.8 | -21.5 | -21.5 | 19.8 |
| 11:12 | -14.5 | -17.6 | -17.6 | 16.7 | -14.5 | -17.6 | -17.6 | 16.7 | -17.8 | -21.6 | -21.6 | 19.7 |
| 12:12 | -14.5 | -17.6 | -17.6 | 16.6 | -14.5 | -17.6 | -17.6 | 16.6 | -17.8 | -21.6 | -21.6 | 19.6 |

## Exposure Category C

| Roof Pitch | Bldg. Height = 15 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 30 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 60 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1:12 | -17.5 | -32.5 | -51.2 | 18.5 | -20.3 | -37.6 | -59.3 | 18.5 | -23.7 | -43.6 | -68.5 | 18.5 |
| 2:12 | -15.6 | -30.6 | -47.5 | 17.8 | -18.2 | -35.5 | -55.0 | 18.7 | -21.2 | -41.1 | -63.6 | 19.9 |
| 3:12 | -15.6 | -30.6 | -47.5 | 17.0 | -18.2 | -35.5 | -55.0 | 17.9 | -21.2 | -41.1 | -63.6 | 19.2 |
| 4:12 | -15.7 | -30.7 | -47.5 | 14.6 | -18.2 | -35.5 | -55.0 | 15.5 | -21.2 | -41.2 | -63.6 | 16.7 |
| 5:12 | -15.7 | -30.7 | -47.6 | 14.0 | -18.3 | -35.6 | -55.0 | 14.9 | -21.3 | -41.2 | -63.6 | 16.2 |
| 6:12 | -15.7 | -30.7 | -47.6 | 13.4 | -18.3 | -35.6 | -55.1 | 14.4 | -21.3 | -41.2 | -63.7 | 15.9 |
| 7:12 | -17.6 | -21.4 | -21.4 | 20.2 | -20.5 | -24.8 | -24.8 | 22.8 | -23.8 | -28.8 | -28.8 | 25.8 |
| 8:12 | -17.7 | -21.4 | -21.4 | 20.1 | -20.6 | -24.9 | -24.9 | 22.7 | -23.9 | -28.9 | -28.9 | 25.6 |
| 9:12 | -17.7 | -21.5 | -21.5 | 20.0 | -20.6 | -24.9 | -24.9 | 22.5 | -23.9 | -28.9 | -28.9 | 25.5 |
| 10:12 | -17.8 | -21.5 | -21.5 | 19.8 | -20.6 | -25.0 | -25.0 | 22.4 | -23.9 | -28.9 | -28.9 | 25.4 |
| 11:12 | -17.8 | -21.6 | -21.6 | 19.7 | -20.7 | -25.0 | -25.0 | 22.3 | -24.0 | -29.0 | -29.0 | 25.3 |
| 12:12 | -17.8 | -21.6 | -21.6 | 19.6 | -20.7 | -25.0 | -25.0 | 22.2 | -24.0 | -29.0 | -29.0 | 25.2 |

## Exposure Category D

| Roof Pitch | Bldg. Height = 15 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 30 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) | Bldg. Height = 60 ft. Up Pressures (psf) Zone 1 | Zone 2 | Zone 3 | Down (psf) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1:12 | -21.4 | -39.6 | -62.4 | 18.5 | -24.3 | -44.8 | -70.4 | 18.5 | -27.6 | -50.7 | -79.7 | 18.5 |
| 2:12 | -19.2 | -37.4 | -57.8 | 19.1 | -21.8 | -42.2 | -65.3 | 20.2 | -24.7 | -47.9 | -73.9 | 21.4 |
| 3:12 | -19.2 | -37.4 | -57.8 | 18.3 | -21.8 | -42.3 | -65.3 | 19.4 | -24.8 | -47.9 | -73.9 | 20.6 |
| 4:12 | -19.2 | -37.4 | -57.9 | 15.5 | -21.8 | -42.3 | -65.3 | 16.6 | -24.8 | -47.9 | -73.9 | 18.1 |
| 5:12 | -19.3 | -37.4 | -57.9 | 15.0 | -21.9 | -42.3 | -65.4 | 16.3 | -24.8 | -48.0 | -74.0 | 18.0 |
| 6:12 | -19.3 | -37.5 | -57.9 | 14.8 | -21.9 | -42.4 | -65.4 | 16.2 | -24.9 | -48.0 | -74.0 | 17.9 |
| 7:12 | -21.6 | -26.2 | -26.2 | 23.8 | -24.5 | -29.6 | -29.6 | 26.4 | -27.8 | -33.6 | -33.6 | 29.3 |
| 8:12 | -21.7 | -26.2 | -26.2 | 23.7 | -24.5 | -29.6 | -29.6 | 26.2 | -27.8 | -33.6 | -33.6 | 29.2 |
| 9:12 | -21.7 | -26.2 | -26.2 | 23.5 | -24.6 | -29.7 | -29.7 | 26.1 | -27.9 | -33.7 | -33.7 | 29.1 |
| 10:12 | -21.7 | -26.3 | -26.3 | 23.4 | -24.6 | -29.7 | -29.7 | 26.0 | -27.9 | -33.7 | -33.7 | 29.0 |
| 11:12 | -21.8 | -26.3 | -26.3 | 23.3 | -24.6 | -29.8 | -29.8 | 25.9 | -28.0 | -33.7 | -33.7 | 28.9 |
| 12:12 | -21.8 | -26.4 | -26.4 | 23.2 | -24.7 | -29.8 | -29.8 | 25.8 | -28.0 | -33.8 | -33.8 | 28.7 |

## Down Slope

| Roof Pitch | Ss = 0.0 | Ss = 0.1 | Ss = 0.2 | Ss = 0.3 | Ss = 0.4 | Ss = 0.5 | Ss = 1.0 | Ss = 1.25 | Ss = 1.5 | Ss = 2.0 | Ss = 2.5 | Ss = 3.1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1:12 | 1.1 | 1.1 | 1.3 | 1.5 | 1.6 | 1.7 | 2.1 | 2.3 | 2.6 | 3.2 | 4.0 | 4.8 |
| 2:12 | 2.1 | 2.1 | 2.1 | 2.3 | 2.4 | 2.5 | 3.0 | 3.1 | 3.4 | 4.0 | 4.5 | 5.2 |
| 3:12 | 3.0 | 3.0 | 3.0 | 3.0 | 3.1 | 3.2 | 3.7 | 3.8 | 4.1 | 4.7 | 5.2 | 5.9 |
| 4:12 | 2.9 | 2.9 | 2.9 | 3.0 | 3.1 | 3.2 | 3.7 | 3.9 | 4.1 | 4.7 | 5.2 | 5.9 |
| 5:12 | 3.3 | 3.3 | 3.3 | 3.4 | 3.5 | 3.6 | 4.0 | 4.2 | 4.5 | 5.0 | 5.6 | 6.2 |
| 6:12 | 3.6 | 3.6 | 3.6 | 3.6 | 3.8 | 3.9 | 4.3 | 4.5 | 4.7 | 5.3 | 5.8 | 6.5 |
| 7:12 | 3.8 | 3.8 | 3.8 | 3.8 | 4.0 | 4.1 | 4.5 | 4.7 | 4.9 | 5.5 | 6.0 | 6.6 |
| 8:12 | 3.9 | 3.9 | 3.9 | 4.0 | 4.1 | 4.2 | 4.6 | 4.8 | 5.1 | 5.6 | 6.1 | 6.7 |
| 9:12 | 4.0 | 4.0 | 4.0 | 4.1 | 4.2 | 4.3 | 4.7 | 4.9 | 5.1 | 5.6 | 6.2 | 6.8 |
| 10:12 | 4.1 | 4.1 | 4.1 | 4.1 | 4.3 | 4.4 | 4.8 | 4.9 | 5.2 | 5.7 | 6.2 | 6.8 |
| 11:12 | 4.1 | 4.1 | 4.1 | 4.2 | 4.3 | 4.4 | 4.8 | 4.9 | 5.2 | 5.7 | 6.1 | 6.7 |
| 12:12 | 4.1 | 4.1 | 4.1 | 4.2 | 4.3 | 4.4 | 4.8 | 4.9 | 5.2 | 5.6 | 6.1 | 6.7 |

## Lateral

| Ss = 0.0 | Ss = 0.1 | Ss = 0.2 | Ss = 0.3 | Ss = 0.4 | Ss = 0.5 | Ss = 1.0 | Ss = 1.25 | Ss = 1.5 | Ss = 2.0 | Ss = 2.5 | Ss = 3.1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.2 | 0.5 | 0.7 | 0.9 | 1.0 | 1.6 | 1.8 | 2.2 | 2.9 | 3.6 | 4.5 |

Up and Down (psf)

Side Load (psf)

**East Coast (Low Snow)***

ASCE 7-10

130 mph
Basic Wind Speed

10 psf
Ground Snow Load

* This table is not inclusive of all areas within the state or region. The local wind speeds and snow loads should be independantly verifed for the specific install location.