

**SOLARHOOK FLAT TILE**  
004AT1H

**SOLARHOOK UNIVERSAL**  
W/ ADJUSTABLE BASE  
004CT5H

**SOLARHOOK SPANISH**  
7" FIXED BASE  
004CT1H

**SOLARHOOK SPANISH**  
9" FIXED BASE  
004CT2H

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#### 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, 7-10 or 7-16) and environmental loads. It is the responsibility of the installer to ensure these mounting attachments are appropriate for the application. Please contact your 3<sup>rd</sup> 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](http://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.

#### RECOMMENDED TOOLS FOR HOOK INSTALL

- Drill, Impact Driver
- 3/16" drill bit
- Sealant
- Marking crayon/ chalk
- Rafter locator

#### RECOMMENDED TOOLS FOR OPTIONAL 3-COURSE FLASHING

- Roof cement
- Roof repair fabric
- Margin trowel
- Scrub brush
- Scissors

**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

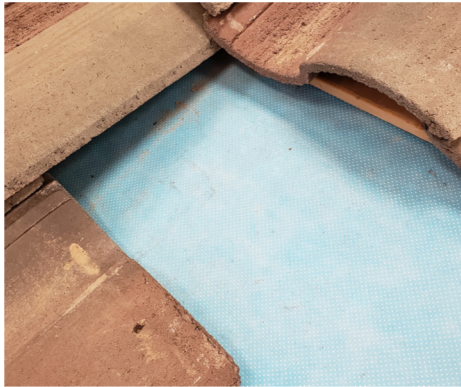
**SOURCES:** AMERICAN WOOD COUNCIL, NDS 2005, TABLE 1

#### 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

#### FIGURE 1 AND ASSOCIATED NOTES (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.



1. Remove tiles around installation area.



2. Locate and mark rafters.



3. Position hook, adjusting arm-base bolt position as needed. Use 3/16" bit to drill 2 pilot holes.

Torque arm-base nut to 16 ft. lbs.



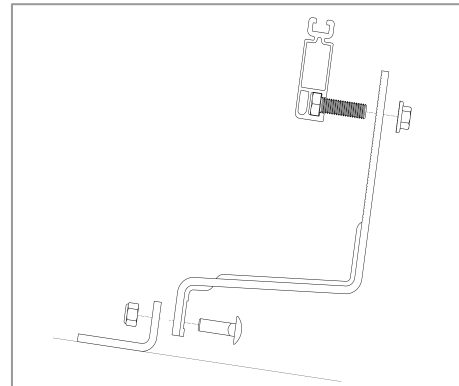
4. Remove hook, clean debris and fill pilot holes with roofing sealant



5. Reposition hook, secure with included lag screws.



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



Install components as shown above.

**NOTE: SOLARHOOK UNIVERSAL is compatible with all tile profiles.**

Installation process is the same for all profiles.





1. Remove tiles around installation area.



2. Locate and mark rafters.



3. Position hook. Use 3/16" bit to drill 2 pilot holes.



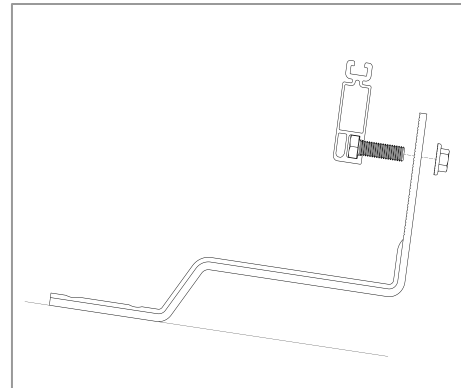
4. Remove hook, clean debris, then fill pilot holes and rib on back of hook with roofing sealant.



5. Reposition hook, secure with included lag screws.



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

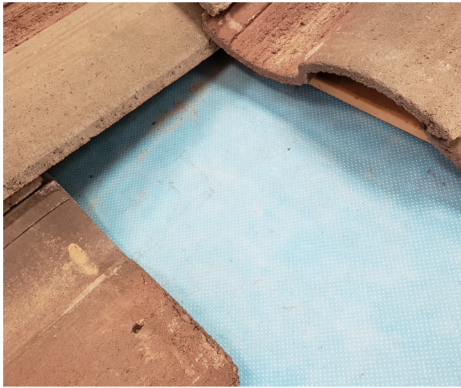


Install components as shown above.

**RECOMMENDED TOOLS**

- Drill, Impact Driver
- 3/16" drill bit
- Sealant
- Marking crayon/ chalk
- Rafter locator





1. Remove tiles around installation area.



2. Locate and mark rafters.



3. Position hook. Use 3/16" bit to drill 2 pilot holes.



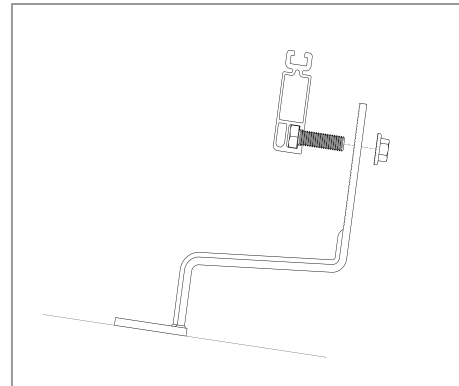
4. Remove hook, clean debris and fill pilot holes with roofing sealant



5. Reposition hook, secure with included lag screws.



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



Install components as shown above.

NOTE: SOLARHOOK SPANISH CT1 and CT2 are compatible with W and S tile profiles.

Installation process is the same for both tile profiles and hook models.

#### ASSUMPTIONS AND USE DETAILS

- Pressure limits refer to Up, Down, Downslope, and Lateral 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](http://unirac.com)
- Allowable Loads:

HOOK TYPE	UP/DOWN	DownSLOPE	LATERAL
AT1	218	120	210
CT5	270	93	39
CT1	270	120	210
CT2	228	120	210

#### 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. For portrait modules, multiply the given pressure limit by (65" / New Module Length)
  2. For landscape modules, multiply the given pressure limit by (39.5" / New Module Width)

Allowable Spans (in.)	AT1 Allowable Pressure (psf)					
	UP		DownSlope		Lateral	
	Portrait Modules	Landscape Modules	Portrait Modules	Landscape Modules	Portrait Modules	Landscape Modules
72	13.4	22.1	12.2	12.2	12.9	21.3
60	16.1	26.6	8.9	14.6	15.5	25.6
48	20.1	33.2	11.1	18.3	19.4	32.0
36	26.8	44.3	14.8	24.4	25.8	42.6
24	40.2	66.4	22.2	36.5	38.8	64.0
12	80.5	132.8	44.3	73.1	77.5	127.9

Allowable Spans (in.)	CT1 Allowable Pressure (psf)					
	UP		DownSlope		Lateral	
	Portrait Modules	Landscape Modules	Portrait Modules	Landscape Modules	Portrait Modules	Landscape Modules
72	16.6	27.4	7.4	12.2	12.9	21.3
60	19.9	32.9	8.9	14.6	15.5	25.6
48	24.9	41.1	11.1	18.3	19.4	32.0
36	33.2	54.8	14.8	24.4	25.8	42.6
24	49.8	82.2	22.2	36.5	38.8	64.0
12	99.7	164.5	44.3	73.1	77.5	127.9

Allowable Spans (in.)	CT2 Allowable Pressure (psf)					
	UP		DownSlope		Lateral	
	Portrait Modules	Landscape Modules	Portrait Modules	Landscape Modules	Portrait Modules	Landscape Modules
72	14.0	23.1	7.4	12.2	12.9	21.3
60	16.8	27.8	8.9	14.6	15.5	25.6
48	21.0	34.7	11.1	18.3	19.4	32.0
36	28.1	46.3	14.8	24.4	25.8	42.6
24	42.1	69.4	22.2	36.5	38.8	64.0
12	84.2	138.9	44.3	73.1	77.5	127.9

Allowable Spans (in.)	CT5 Allowable Pressure (psf)					
	UP		DownSlope		Lateral	
	Portrait Modules	Landscape Modules	Portrait Modules	Landscape Modules	Portrait Modules	Landscape Modules
72	16.6	27.4	5.7	9.4	2.4	4.0
60	19.9	32.9	6.9	11.3	2.9	4.8
48	24.9	41.1	8.6	14.2	3.6	5.9
36	33.2	54.8	11.4	18.9	4.8	7.9
24	49.8	82.2	17.2	28.3	7.2	11.9
12	99.7	164.5	34.3	56.6	14.4	23.8



Roof Pitch	Bldg. Height = 15 ft.						Bldg. Height = 30 ft.						Bldg. Height = 60 ft.											
	Up Pressures (psf)			Down (psf)			Up Pressures (psf)			Down (psf)			Up Pressures (psf)			Down (psf)								
	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3						
Exposure Category B																								
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	-12.1	-22.8	-36.1	15.1	-12.1	-22.8	-36.1					
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	-10.8	-21.5	-33.5	14.7	-10.8	-21.5	-33.5					
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	-10.8	-21.5	-33.5	14.3	-10.8	-21.5	-33.5					
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	-10.8	-21.5	-33.5	13.6	-10.8	-21.5	-33.5					
5:12	-8.8	-17.5	-27.4	13.6	-8.8	-17.5	-27.4	13.6	-10.8	-21.5	-33.5	13.6	-10.8	-21.5	-33.5	13.6	-10.8	-21.5	-33.5					
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	-10.9	-21.6	-33.6	13.4	-10.9	-21.6	-33.6					
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	-12.3	-14.9	-14.9	15.4	-12.3	-14.9	-14.9					
8:12	-9.9	-12.1	-12.1	13.2	-9.9	-12.1	-12.1	13.2	-12.3	-14.9	-14.9	15.2	-12.3	-14.9	-14.9	15.2	-12.3	-14.9	-14.9					
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	-12.3	-15.0	-15.0	15.1	-12.3	-15.0	-15.0					
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	-12.4	-15.0	-15.0	15.0	-12.4	-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	-12.4	-15.1	-15.1	14.9	-12.4	-15.1	-15.1					
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	-12.5	-15.1	-15.1	14.7	-12.5	-15.1	-15.1					
Exposure Category C																								
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	-16.5	-30.7	-48.5	15.1	-16.5	-30.7	-48.5					
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	-14.7	-28.9	-44.9	14.7	-14.7	-28.9	-44.9					
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	-14.7	-29.0	-44.9	14.3	-14.7	-29.0	-44.9					
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	-14.8	-29.0	-45.0	13.6	-14.8	-29.0	-45.0					
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	-14.8	-29.0	-45.0	13.6	-14.8	-29.0	-45.0					
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	-14.8	-29.1	-45.0	13.4	-14.8	-29.1	-45.0					
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	-16.7	-20.2	-20.2	19.3	-16.7	-20.2	-20.2					
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	-16.7	-20.2	-20.2	19.2	-16.7	-20.2	-20.2					
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	-16.7	-20.3	-20.3	19.1	-16.7	-20.3	-20.3					
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	-16.8	-20.3	-20.3	18.9	-16.8	-20.3	-20.3					
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	-16.8	-20.4	-20.4	18.8	-16.8	-20.4	-20.4					
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	-16.9	-20.4	-20.4	18.7	-16.9	-20.4	-20.4					
Exposure Category D																								
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	-19.3	-35.8	-56.4	15.1	-19.3	-35.8	-56.4					
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	-17.3	-33.7	-52.3	14.9	-17.3	-33.7	-52.3					
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	-17.3	-33.8	-52.3	14.5	-17.3	-33.8	-52.3					
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	-17.3	-33.8	-52.3	13.9	-17.3	-33.8	-52.3					
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	-17.4	-33.8	-52.4	13.8	-17.4	-33.8	-52.4					
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	-17.4	-33.9	-52.4	13.7	-17.4	-33.9	-52.4					
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	-19.5	-23.6	-23.6	21.9	-19.5	-23.6	-23.6					
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	-19.5	-23.6	-23.6	21.7	-19.5	-23.6	-23.6					
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	-19.6	-23.7	-23.7	21.6	-19.6	-23.7	-23.7					
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	-19.6	-23.7	-23.7	21.5	-19.6	-23.7	-23.7					
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	-19.6	-23.8	-23.8	21.4	-19.6	-23.8	-23.8					
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	-19.7	-23.8	-23.8	21.3	-19.7	-23.8	-23.8					
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	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	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	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	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	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	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	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	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	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	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	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	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	3.4	3.4	3.5	3.7	3.8	3.9	4.3	4.4	4.7	5.3	5.9	6.7
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	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	0.0	0.2	0.5	0.7	0.9	1.0	1.6	1.8	2.2	2.9	3.6	4.5	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 independently verified for the specific install location.

Up and Down (psf)

Side Load (psf)

Lateral





Roof Pitch	Bldg. Height = 15 ft.						Bldg. Height = 30 ft.						Bldg. Height = 60 ft.																																									
	Up Pressures (psf)			Down (psf)			Up Pressures (psf)			Down (psf)			Up Pressures (psf)			Down (psf)																																						
	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3																																				
Exposure Category B																																																						
1:12	-11.1	-20.9	-33.3	15.1	-11.1	-20.9	-33.3	15.1	-11.1	-20.9	-33.3	15.1	-13.7	-25.7	-40.7	15.1	-13.7	-25.7	-40.7																																			
2:12	-9.8	-19.7	-30.8	14.7	-9.8	-19.7	-30.8	14.7	-9.8	-19.7	-30.8	14.7	-12.2	-24.2	-37.7	14.7	-12.2	-24.2	-37.7																																			
3:12	-9.9	-19.7	-30.8	14.3	-9.9	-19.7	-30.8	14.3	-9.9	-19.7	-30.8	14.3	-12.2	-24.2	-37.7	14.3	-12.2	-24.2	-37.7																																			
4:12	-9.9	-19.8	-30.9	13.6	-9.9	-19.8	-30.9	13.6	-9.9	-19.8	-30.9	13.6	-12.3	-24.3	-37.7	13.6	-12.3	-24.3	-37.7																																			
5:12	-9.9	-19.8	-30.9	13.6	-9.9	-19.8	-30.9	13.6	-9.9	-19.8	-30.9	13.6	-12.3	-24.3	-37.8	13.6	-12.3	-24.3	-37.8																																			
6:12	-10.0	-19.8	-30.9	13.4	-10.0	-19.8	-30.9	13.4	-10.0	-19.8	-30.9	13.4	-12.3	-24.3	-37.8	13.4	-12.3	-24.3	-37.8																																			
7:12	-11.2	-13.7	-13.7	14.4	-11.2	-13.7	-13.7	14.4	-11.2	-13.7	-13.7	14.4	-13.9	-16.9	-16.9	16.8	-13.9	-16.9	-16.9																																			
8:12	-11.3	-13.7	-13.7	14.3	-11.3	-13.7	-13.7	14.3	-11.3	-13.7	-13.7	14.3	-13.9	-16.9	-16.9	16.7	-13.9	-16.9	-16.9																																			
9:12	-11.3	-13.8	-13.8	14.2	-11.3	-13.8	-13.8	14.2	-11.3	-13.8	-13.8	14.2	-14.0	-17.0	-17.0	16.6	-14.0	-17.0	-17.0																																			
10:12	-11.4	-13.8	-13.8	14.1	-11.4	-13.8	-13.8	14.1	-11.4	-13.8	-13.8	14.1	-14.0	-17.0	-17.0	16.4	-14.0	-17.0	-17.0																																			
11:12	-11.4	-13.9	-13.9	13.9	-11.4	-13.9	-13.9	13.9	-11.4	-13.9	-13.9	13.9	-14.0	-17.0	-17.0	16.3	-14.0	-17.0	-17.0																																			
12:12	-11.4	-13.9	-13.9	13.8	-11.4	-13.9	-13.9	13.8	-11.4	-13.9	-13.9	13.8	-14.1	-17.1	-17.1	16.2	-14.1	-17.1	-17.1																																			
Exposure Category C																																																						
1:12	-13.7	-25.7	-40.7	15.1	-16.0	-29.8	-47.1	15.1	-16.0	-29.8	-47.1	15.1	-18.6	-34.6	-54.5	15.1	-18.6	-34.6	-54.5																																			
2:12	-12.2	-24.2	-37.7	14.7	-14.3	-28.1	-43.6	14.7	-14.3	-28.1	-43.6	14.7	-16.7	-32.6	-50.5	14.7	-16.7	-32.6	-50.5																																			
3:12	-12.2	-24.2	-37.7	14.3	-14.3	-28.1	-43.7	14.3	-14.3	-28.1	-43.7	14.3	-16.7	-32.6	-50.5	14.3	-16.7	-32.6	-50.5																																			
4:12	-12.3	-24.3	-37.7	13.6	-14.3	-28.1	-43.7	13.6	-14.3	-28.1	-43.7	13.6	-16.7	-32.6	-50.6	13.6	-16.7	-32.6	-50.6																																			
5:12	-12.3	-24.3	-37.8	13.6	-14.4	-28.2	-43.7	13.6	-14.4	-28.2	-43.7	13.6	-16.7	-32.7	-50.6	13.6	-16.7	-32.7	-50.6																																			
6:12	-12.3	-24.3	-37.8	13.4	-14.4	-28.2	-43.8	13.4	-14.4	-28.2	-43.8	13.4	-16.8	-32.7	-50.6	13.4	-16.8	-32.7	-50.6																																			
7:12	-13.9	-16.9	-16.9	16.8	-16.2	-19.6	-19.6	18.9	-16.2	-19.6	-19.6	18.9	-18.8	-22.8	-22.8	21.2	-18.8	-22.8	-22.8																																			
8:12	-13.9	-16.9	-16.9	16.7	-16.2	-19.7	-19.7	18.7	-16.2	-19.7	-19.7	18.7	-18.8	-22.8	-22.8	21.1	-18.8	-22.8	-22.8																																			
9:12	-14.0	-17.0	-17.0	16.6	-16.2	-19.7	-19.7	18.6	-16.2	-19.7	-19.7	18.6	-18.9	-22.9	-22.9	21.0	-18.9	-22.9	-22.9																																			
10:12	-14.0	-17.0	-17.0	16.4	-16.3	-19.7	-19.7	18.5	-16.3	-19.7	-19.7	18.5	-18.9	-22.9	-22.9	20.9	-18.9	-22.9	-22.9																																			
11:12	-14.0	-17.0	-17.0	16.3	-16.3	-19.8	-19.8	18.4	-16.3	-19.8	-19.8	18.4	-19.0	-23.0	-23.0	20.8	-19.0	-23.0	-23.0																																			
12:12	-14.1	-17.1	-17.1	16.2	-16.4	-19.8	-19.8	18.3	-16.4	-19.8	-19.8	18.3	-19.0	-23.0	-23.0	20.6	-19.0	-23.0	-23.0																																			
Exposure Category D																																																						
1:12	-16.9	-31.4	-49.6	15.1	-19.2	-35.5	-56.0	15.1	-19.2	-35.5	-56.0	15.1	-21.8	-40.3	-63.4	15.1	-21.8	-40.3	-63.4																																			
2:12	-15.1	-29.6	-45.9	14.7	-17.1	-33.5	-51.9	14.9	-17.1	-33.5	-51.9	14.9	-19.5	-38.0	-58.8	15.9	-19.5	-38.0	-58.8																																			
3:12	-15.1	-29.6	-46.0	14.3	-17.2	-33.5	-51.9	14.4	-17.2	-33.5	-51.9	14.4	-19.5	-38.0	-58.8	15.4	-19.5	-38.0	-58.8																																			
4:12	-15.1	-29.6	-46.0	13.6	-17.2	-33.5	-51.9	13.9	-17.2	-33.5	-51.9	13.9	-19.6	-38.0	-58.8	15.2	-19.6	-38.0	-58.8																																			
5:12	-15.2	-29.7	-46.0	13.6	-17.2	-33.6	-52.0	13.8	-17.2	-33.6	-52.0	13.8	-19.6	-38.1	-58.8	15.1	-19.6	-38.1	-58.8																																			
6:12	-15.2	-29.7	-46.1	13.4	-17.3	-33.6	-52.0	13.7	-17.3	-33.6	-52.0	13.7	-19.6	-38.1	-58.9	15.0	-19.6	-38.1	-58.9																																			
7:12	-17.0	-20.7	-20.7	19.7	-19.3	-23.4	-23.4	21.7	-19.3	-23.4	-23.4	21.7	-22.0	-26.6	-26.6	24.1	-22.0	-26.6	-26.6																																			
8:12	-17.1	-20.7	-20.7	19.5	-19.4	-23.5	-23.5	21.6	-19.4	-23.5	-23.5	21.6	-22.0	-26.6	-26.6	24.0	-22.0	-26.6	-26.6																																			
9:12	-17.1	-20.8	-20.8	19.4	-19.4	-23.5	-23.5	21.5	-19.4	-23.5	-23.5	21.5	-22.1	-26.7	-26.7	23.9	-22.1	-26.7	-26.7																																			
10:12	-17.2	-20.8	-20.8	19.3	-19.5	-23.5	-23.5	21.4	-19.5	-23.5	-23.5	21.4	-22.1	-26.7	-26.7	23.7	-22.1	-26.7	-26.7																																			
11:12	-17.2	-20.8	-20.8	19.2	-19.5	-23.6	-23.6	21.2	-19.5	-23.6	-23.6	21.2	-22.1	-26.8	-26.8	23.6	-22.1	-26.8	-26.8																																			
12:12	-17.2	-20.9	-20.9	19.1	-19.5	-23.6	-23.6	21.1	-19.5	-23.6	-23.6	21.1	-22.2	-26.8	-26.8	23.5	-22.2	-26.8	-26.8																																			
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	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																																										
<table border="1"> <tr> <td>Ss = 0.0</td> <td>Ss = 0.1</td> <td>Ss = 0.2</td> <td>Ss = 0.3</td> <td>Ss = 0.4</td> <td>Ss = 0.5</td> <td>Ss = 1.0</td> <td>Ss = 1.25</td> <td>Ss = 1.5</td> <td>Ss = 2.0</td> <td>Ss = 2.5</td> <td>Ss = 3.1</td> <td colspan="6"></td> </tr> <tr> <td>0.0</td> <td>0.2</td> <td>0.5</td> <td>0.7</td> <td>0.9</td> <td>1.0</td> <td>1.6</td> <td>1.8</td> <td>2.2</td> <td>2.9</td> <td>3.6</td> <td>4.5</td> <td colspan="6"></td> </tr> </table>																			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						
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)

Lateral

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 independently verified for the specific install location.



Roof Pitch	Bldg. Height = 15 ft.						Bldg. Height = 30 ft.						Bldg. Height = 60 ft.						
	Up Pressures (psf)			Down (psf)			Up Pressures (psf)			Down (psf)			Up Pressures (psf)			Down (psf)			
	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	
Exposure Category B																			
1:12	-17.2	-31.9	-50.3	18.8	-17.2	-31.9	-50.3	18.8	-17.2	-31.9	-50.3	18.8	-21.1	-39.0	-61.4	18.8	-21.1	-39.0	-61.4
2:12	-15.3	-30.1	-46.7	18.1	-15.3	-30.1	-46.7	18.1	-15.3	-30.1	-46.7	18.1	-18.9	-36.8	-56.9	19.0	-18.9	-36.8	-56.9
3:12	-15.3	-30.1	-46.7	17.3	-15.3	-30.1	-46.7	17.3	-15.3	-30.1	-46.7	17.3	-18.9	-36.8	-56.9	18.2	-18.9	-36.8	-56.9
4:12	-15.4	-30.1	-46.7	14.9	-15.4	-30.1	-46.7	14.9	-15.4	-30.1	-46.7	14.9	-18.9	-36.8	-57.0	15.8	-18.9	-36.8	-57.0
5:12	-15.4	-30.1	-46.7	14.3	-15.4	-30.1	-46.7	14.3	-15.4	-30.1	-46.7	14.3	-19.0	-36.9	-57.0	15.2	-19.0	-36.9	-57.0
6:12	-15.4	-30.2	-46.8	13.7	-15.4	-30.2	-46.8	13.7	-15.4	-30.2	-46.8	13.7	-19.0	-36.9	-57.0	14.6	-19.0	-36.9	-57.0
7:12	-17.3	-21.0	-21.0	19.9	-17.3	-21.0	-21.0	19.9	-17.3	-21.0	-21.0	19.9	-21.3	-25.7	-25.7	23.5	-21.3	-25.7	-25.7
8:12	-17.4	-21.0	-21.0	19.8	-17.4	-21.0	-21.0	19.8	-17.4	-21.0	-21.0	19.8	-21.3	-25.8	-25.8	23.3	-21.3	-25.8	-25.8
9:12	-17.4	-21.1	-21.1	19.7	-17.4	-21.1	-21.1	19.7	-17.4	-21.1	-21.1	19.7	-21.4	-25.8	-25.8	23.2	-21.4	-25.8	-25.8
10:12	-17.4	-21.1	-21.1	19.5	-17.4	-21.1	-21.1	19.5	-17.4	-21.1	-21.1	19.5	-21.4	-25.9	-25.9	23.1	-21.4	-25.9	-25.9
11:12	-17.5	-21.2	-21.2	19.4	-17.5	-21.2	-21.2	19.4	-17.5	-21.2	-21.2	19.4	-21.4	-25.9	-25.9	23.0	-21.4	-25.9	-25.9
12:12	-17.5	-21.2	-21.2	19.3	-17.5	-21.2	-21.2	19.3	-17.5	-21.2	-21.2	19.3	-21.5	-25.9	-25.9	22.9	-21.5	-25.9	-25.9
Exposure Category C																			
1:12	-21.1	-39.0	-61.4	18.8	-24.5	-45.2	-71.0	18.8	-24.5	-45.2	-71.0	18.8	-28.5	-52.3	-82.0	18.8	-28.5	-52.3	-82.0
2:12	-18.9	-36.8	-56.9	19.0	-22.0	-42.6	-65.8	20.3	-22.0	-42.6	-65.8	20.3	-25.5	-49.3	-76.1	21.7	-25.5	-49.3	-76.1
3:12	-18.9	-36.8	-56.9	18.2	-22.0	-42.6	-65.8	19.5	-22.0	-42.6	-65.8	19.5	-25.5	-49.3	-76.1	21.0	-25.5	-49.3	-76.1
4:12	-18.9	-36.8	-57.0	15.8	-22.0	-42.6	-65.9	17.1	-22.0	-42.6	-65.9	17.1	-25.6	-49.4	-76.1	18.6	-25.6	-49.4	-76.1
5:12	-19.0	-36.9	-57.0	15.2	-22.0	-42.7	-65.9	16.5	-22.0	-42.7	-65.9	16.5	-25.6	-49.4	-76.2	18.4	-25.6	-49.4	-76.2
6:12	-19.0	-36.9	-57.0	14.6	-22.1	-42.7	-65.9	16.3	-22.1	-42.7	-65.9	16.3	-25.6	-49.4	-76.2	18.3	-25.6	-49.4	-76.2
7:12	-21.3	-25.7	-25.7	23.5	-24.7	-29.9	-29.9	26.5	-24.7	-29.9	-29.9	26.5	-28.6	-34.6	-34.6	30.1	-28.6	-34.6	-34.6
8:12	-21.3	-25.8	-25.8	23.3	-24.7	-29.9	-29.9	26.4	-24.7	-29.9	-29.9	26.4	-28.7	-34.6	-34.6	30.0	-28.7	-34.6	-34.6
9:12	-21.4	-25.8	-25.8	23.2	-24.8	-29.9	-29.9	26.3	-24.8	-29.9	-29.9	26.3	-28.7	-34.7	-34.7	29.9	-28.7	-34.7	-34.7
10:12	-21.4	-25.9	-25.9	23.1	-24.8	-30.0	-30.0	26.2	-24.8	-30.0	-30.0	26.2	-28.8	-34.7	-34.7	29.7	-28.8	-34.7	-34.7
11:12	-21.4	-25.9	-25.9	23.0	-24.9	-30.0	-30.0	26.1	-24.9	-30.0	-30.0	26.1	-28.8	-34.8	-34.8	29.6	-28.8	-34.8	-34.8
12:12	-21.5	-25.9	-25.9	22.9	-24.9	-30.1	-30.1	25.9	-24.9	-30.1	-30.1	25.9	-28.8	-34.8	-34.8	29.5	-28.8	-34.8	-34.8
Exposure Category D																			
1:12	-25.8	-47.5	-74.7	18.8	-29.3	-53.7	-84.2	18.8	-29.3	-53.7	-84.2	18.8	-33.2	-60.8	-95.3	19.0	-33.2	-60.8	-95.3
2:12	-23.1	-44.8	-69.2	20.8	-26.2	-50.7	-78.1	22.0	-26.2	-50.7	-78.1	22.0	-29.8	-57.4	-88.4	23.5	-29.8	-57.4	-88.4
3:12	-23.2	-44.9	-69.3	20.0	-26.2	-50.7	-78.2	21.3	-26.2	-50.7	-78.2	21.3	-29.8	-57.4	-88.4	22.7	-29.8	-57.4	-88.4
4:12	-23.2	-44.9	-69.3	17.2	-26.3	-50.7	-78.2	18.9	-26.3	-50.7	-78.2	18.9	-29.8	-57.4	-88.5	20.9	-29.8	-57.4	-88.5
5:12	-23.2	-44.9	-69.3	17.1	-26.3	-50.7	-78.2	18.8	-26.3	-50.7	-78.2	18.8	-29.9	-57.5	-88.5	20.8	-29.9	-57.5	-88.5
6:12	-23.3	-45.0	-69.4	17.0	-26.3	-50.8	-78.3	18.7	-26.3	-50.8	-78.3	18.7	-29.9	-57.5	-88.5	20.7	-29.9	-57.5	-88.5
7:12	-26.0	-31.4	-31.4	27.7	-29.4	-35.5	-35.5	30.8	-29.4	-35.5	-35.5	30.8	-33.4	-40.3	-40.3	34.4	-33.4	-40.3	-40.3
8:12	-26.1	-31.5	-31.5	27.6	-29.5	-35.6	-35.6	30.7	-29.5	-35.6	-35.6	30.7	-33.4	-40.3	-40.3	34.2	-33.4	-40.3	-40.3
9:12	-26.1	-31.5	-31.5	27.5	-29.5	-35.6	-35.6	30.6	-29.5	-35.6	-35.6	30.6	-33.5	-40.4	-40.4	34.1	-33.5	-40.4	-40.4
10:12	-26.1	-31.6	-31.6	27.4	-29.6	-35.7	-35.7	30.4	-29.6	-35.7	-35.7	30.4	-33.5	-40.4	-40.4	34.0	-33.5	-40.4	-40.4
11:12	-26.2	-31.6	-31.6	27.2	-29.6	-35.7	-35.7	30.3	-29.6	-35.7	-35.7	30.3	-33.5	-40.4	-40.4	33.9	-33.5	-40.4	-40.4
12:12	-26.2	-31.6	-31.6	27.1	-29.6	-35.7	-35.7	30.2	-29.6	-35.7	-35.7	30.2	-33.6	-40.5	-40.5	33.8	-33.6	-40.5	-40.5
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							
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																			

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 independently verified for the specific install location.

Up and Down (psf)

Side Load (psf)

Lateral



Roof Pitch	Bldg. Height = 15 ft.						Bldg. Height = 30 ft.						Bldg. Height = 60 ft.						
	Up Pressures (psf)			Down (psf)			Up Pressures (psf)			Down (psf)			Up Pressures (psf)			Down (psf)			
	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	
Exposure Category B																			
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	-12.1	-22.9	-36.3	14.8	-12.1	-22.9	-36.3
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	-10.8	-21.6	-33.6	14.4	-10.8	-21.6	-33.6
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	-10.8	-21.6	-33.7	14.0	-10.8	-21.6	-33.7
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	-10.9	-21.6	-33.7	13.2	-10.9	-21.6	-33.7
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	-10.9	-21.6	-33.7	13.2	-10.9	-21.6	-33.7
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	-10.9	-21.7	-33.8	13.0	-10.9	-21.7	-33.8
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	-12.3	-15.0	-15.0	15.4	-12.3	-15.0	-15.0
8:12	10.0	-12.2	-12.2	13.2	10.0	-12.2	-12.2	13.2	-12.4	-15.1	-15.1	15.3	-12.4	-15.1	-15.1	15.2	-12.4	-15.1	-15.1
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	-12.4	-15.1	-15.1	15.0	-12.4	-15.1	-15.1
10:12	10.1	-12.3	-12.3	12.9	10.1	-12.3	-12.3	12.9	-12.4	-15.1	-15.1	14.9	-12.4	-15.1	-15.1	14.9	-12.4	-15.1	-15.1
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	-12.5	-15.2	-15.2	14.9	-12.5	-15.2	-15.2
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	-12.5	-15.2	-15.2	14.8	-12.5	-15.2	-15.2
Exposure Category C																			
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	-16.6	-30.9	-48.7	14.8	-16.6	-30.9	-48.7
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	-14.8	-29.1	-45.1	14.4	-14.8	-29.1	-45.1
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	-14.8	-29.1	-45.2	14.0	-14.8	-29.1	-45.2
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	-14.8	-29.1	-45.2	13.2	-14.8	-29.1	-45.2
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	-14.9	-29.2	-45.2	13.2	-14.9	-29.2	-45.2
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	-14.9	-29.2	-45.3	13.0	-14.9	-29.2	-45.3
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	-16.7	-20.3	-20.3	19.4	-16.7	-20.3	-20.3
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	-16.8	-20.4	-20.4	19.3	-16.8	-20.4	-20.4
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	-16.8	-20.4	-20.4	19.1	-16.8	-20.4	-20.4
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	-16.9	-20.4	-20.4	19.0	-16.9	-20.4	-20.4
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	-16.9	-20.5	-20.5	18.9	-16.9	-20.5	-20.5
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	-16.9	-20.5	-20.5	18.8	-16.9	-20.5	-20.5
Exposure Category D																			
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	-19.4	-36.0	-56.7	14.8	-19.4	-36.0	-56.7
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	-17.4	-33.9	-52.5	15.0	-17.4	-33.9	-52.5
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	-17.4	-33.9	-52.6	14.5	-17.4	-33.9	-52.6
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	-17.4	-34.0	-52.6	14.0	-17.4	-34.0	-52.6
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	-17.4	-34.0	-52.6	13.9	-17.4	-34.0	-52.6
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	-17.5	-34.0	-52.7	13.8	-17.5	-34.0	-52.7
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	-19.6	-23.7	-23.7	21.9	-19.6	-23.7	-23.7
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	-19.6	-23.8	-23.8	21.8	-19.6	-23.8	-23.8
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	-19.7	-23.8	-23.8	21.7	-19.7	-23.8	-23.8
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	-19.7	-23.8	-23.8	21.6	-19.7	-23.8	-23.8
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	-19.7	-23.9	-23.9	21.5	-19.7	-23.9	-23.9
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	-19.8	-23.9	-23.9	21.3	-19.8	-23.9	-23.9
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	Ss = 0.0	Ss = 0.1	Ss = 0.2	Ss = 0.3	Ss = 0.4	Ss = 0.5	Ss = 1.0
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	0.0	0.0	0.2	0.5	0.7	0.9	1.0
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	0.0	0.0	0.2	0.5	0.7	0.9	1.0
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	0.0	0.0	0.2	0.5	0.7	0.9	1.0
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	0.0	0.0	0.2	0.5	0.7	0.9	1.0
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	0.0	0.0	0.2	0.5	0.7	0.9	1.0
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	0.0	0.0	0.2	0.5	0.7	0.9	1.0
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	0.0	0.0	0.2	0.5	0.7	0.9	1.0
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	0.0	0.0	0.2	0.5	0.7	0.9	1.0
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	0.0	0.0	0.2	0.5	0.7	0.9	1.0
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	0.0	0.0	0.2	0.5	0.7	0.9	1.0
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	0.0	0.0	0.2	0.5	0.7	0.9	1.0
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	0.0	0.0	0.2	0.5	0.7	0.9	1.0

Up and Down (psf) | Side Load (psf) | 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 independently verified for the specific install location.





Roof Pitch	Bldg. Height = 15 ft.						Bldg. Height = 30 ft.						Bldg. Height = 60 ft.					
	Up Pressures (psf)			Down (psf)			Up Pressures (psf)			Down (psf)			Up Pressures (psf)			Down (psf)		
	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3
Exposure Category B																		
Exposure Category C																		
Exposure Category D																		
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							

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 independently verified for the specific install location.

Up and Down (psf)

Side Load (psf)

Lateral



Roof Pitch	Bldg. Height = 15 ft.						Bldg. Height = 30 ft.						Bldg. Height = 60 ft.											
	Up Pressures (psf)			Down (psf)			Up Pressures (psf)			Down (psf)			Up Pressures (psf)			Down (psf)								
	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3						
Exposure Category B																								
1:12	-14.2	-26.5	-42.0	18.5	-14.2	-26.5	-42.0	18.5	-14.2	-26.5	-42.0	18.5	-17.5	-32.5	-51.2	18.5	-17.5	-32.5	-51.2					
2:12	-12.6	-25.0	-38.9	17.8	-12.6	-25.0	-38.9	17.8	-12.6	-25.0	-38.9	17.8	-15.6	-30.6	-47.5	17.8	-15.6	-30.6	-47.5					
3:12	-12.7	-25.0	-38.9	17.0	-12.7	-25.0	-38.9	17.0	-12.7	-25.0	-38.9	17.0	-15.6	-30.6	-47.5	17.0	-15.6	-30.6	-47.5					
4:12	-12.7	-25.0	-38.9	14.6	-12.7	-25.0	-38.9	14.6	-12.7	-25.0	-38.9	14.6	-15.7	-30.7	-47.5	14.6	-15.7	-30.7	-47.5					
5:12	-12.7	-25.1	-39.0	14.0	-12.7	-25.1	-39.0	14.0	-12.7	-25.1	-39.0	14.0	-15.7	-30.7	-47.6	14.0	-15.7	-30.7	-47.6					
6:12	-12.8	-25.1	-39.0	13.4	-12.8	-25.1	-39.0	13.4	-12.8	-25.1	-39.0	13.4	-15.7	-30.7	-47.6	13.4	-15.7	-30.7	-47.6					
7:12	-14.3	-17.4	-17.4	17.2	-14.3	-17.4	-17.4	17.2	-14.3	-17.4	-17.4	17.2	-17.6	-21.4	-21.4	20.2	-17.6	-21.4	-21.4					
8:12	-14.4	-17.5	-17.5	17.1	-14.4	-17.5	-17.5	17.1	-14.4	-17.5	-17.5	17.1	-17.7	-21.4	-21.4	20.1	-17.7	-21.4	-21.4					
9:12	-14.4	-17.5	-17.5	17.0	-14.4	-17.5	-17.5	17.0	-14.4	-17.5	-17.5	17.0	-17.7	-21.5	-21.5	20.0	-17.7	-21.5	-21.5					
10:12	-14.5	-17.5	-17.5	16.9	-14.5	-17.5	-17.5	16.9	-14.5	-17.5	-17.5	16.9	-17.8	-21.5	-21.5	19.8	-17.8	-21.5	-21.5					
11:12	-14.5	-17.6	-17.6	16.7	-14.5	-17.6	-17.6	16.7	-14.5	-17.6	-17.6	16.7	-17.8	-21.6	-21.6	19.7	-17.8	-21.6	-21.6					
12:12	-14.5	-17.6	-17.6	16.6	-14.5	-17.6	-17.6	16.6	-14.5	-17.6	-17.6	16.6	-17.8	-21.6	-21.6	19.6	-17.8	-21.6	-21.6					
Exposure Category C																								
1:12	-17.5	-32.5	-51.2	18.5	-20.3	-37.6	-59.3	18.5	-20.3	-37.6	-59.3	18.5	-23.7	-43.6	-68.5	18.5	-23.7	-43.6	-68.5					
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	-21.2	-41.1	-63.6	19.9	-21.2	-41.1	-63.6					
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	-21.2	-41.1	-63.6	19.2	-21.2	-41.1	-63.6					
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	-21.2	-41.2	-63.6	16.7	-21.2	-41.2	-63.6					
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	-21.3	-41.2	-63.6	16.2	-21.3	-41.2	-63.6					
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	-21.3	-41.2	-63.7	15.9	-21.3	-41.2	-63.7					
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	-23.8	-28.8	-28.8	25.8	-23.8	-28.8	-28.8					
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	-23.9	-28.9	-28.9	25.6	-23.9	-28.9	-28.9					
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	-23.9	-28.9	-28.9	25.5	-23.9	-28.9	-28.9					
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	-23.9	-28.9	-28.9	25.4	-23.9	-28.9	-28.9					
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	-24.0	-29.0	-29.0	25.3	-24.0	-29.0	-29.0					
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	-24.0	-29.0	-29.0	25.2	-24.0	-29.0	-29.0					
Exposure Category D																								
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	-27.6	-50.7	-79.7	18.5	-27.6	-50.7	-79.7					
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	-24.7	-47.9	-73.9	21.4	-24.7	-47.9	-73.9					
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	-24.8	-47.9	-73.9	20.6	-24.8	-47.9	-73.9					
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	-24.8	-47.9	-73.9	18.1	-24.8	-47.9	-73.9					
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	-24.8	-48.0	-74.0	18.0	-24.8	-48.0	-74.0					
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	-24.9	-48.0	-74.0	17.9	-24.9	-48.0	-74.0					
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	-27.8	-33.6	-33.6	29.3	-27.8	-33.6	-33.6					
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	-27.8	-33.6	-33.6	29.2	-27.8	-33.6	-33.6					
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	-27.9	-33.7	-33.7	29.1	-27.9	-33.7	-33.7					
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	-27.9	-33.7	-33.7	29.0	-27.9	-33.7	-33.7					
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	-28.0	-33.7	-33.7	28.9	-28.0	-33.7	-33.7					
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	-28.0	-33.8	-33.8	28.7	-28.0	-33.8	-33.8					
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	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	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	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	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	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	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	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	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	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	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	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	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	4.1	4.1	4.1	4.2	4.3	4.4	4.8	4.9	5.2	5.6	6.1	6.7
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	0.0	0.2	0.5	0.7	0.9	1.0	1.6	1.8	2.2	2.9	3.6	4.5

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 independently verified for the specific install location.

Up and Down (psf)

Side Load (psf)

Lateral