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Roof Tech, Inc.  
10620 Treena Street, Suite 230  
San Diego, CA 92131

June 9, 2022

page 1 of 57

Attn: Mr. Yoichi Shimokobe, CEO

**Subject: Roof Tech RT-APEX – Structural Analysis**

SML Job No.: 471-22

Dear Mr. Shimokobe:

We have analyzed the Roof Tech RT-APEX photovoltaic (PV) panel roof mount system and determined that, for the configurations and criteria described below, it is in compliance with the applicable sections of the following Reference Documents:

Codes: ASCE/SEI 7-10 Min. Design Loads for Buildings & Other Structures  
International Building Code 2012 & 2015 Editions  
International Residential Building Code 2012, 2015 & 2018 Editions  
Other: Aluminum Design Manual, 2010 & 2015 Editions

The Roof Tech RT-APEX photovoltaic (PV) panel roof mount system is comprised of a 6000 series aluminum extrusions. The aluminum extrusions from the bottom up are, Base, Pillar, U-D Bracket, and End or Mid Clamps. **Note: The U-D Splice Bracket, End Splice Clamp, and Mid Splice Clamp are longer versions of their standard length counterpart, and may be used instead of the standard parts with the same minimum spacing.** A 6.0 mm stainless steel set screw SHCS attaches the Base to the Pillar with an installation torque of 9.0 ft-lb. A 12.0 mm stainless steel hex screw stud attaches the Pillar to the U-D Bracket, and is field adjustable up and down. A 8.0 mm stainless steel SHCS and conical stainless steel star washer attaches either the End or Mid Clamp to the U-D Bracket with the higher of either a minimum installation torque of 12.0 ft-lb or the minimum installation torque indicated in the Roof Tech Installation manual for the specific PV panel being installed. The RT-APEX installation must be with the Base's long direction parallel to the roof framing (down slope) and in accordance with Roof Tech's Installation Manual. The system is attached to the roof wood substrate with 5.0 mm x 60 mm long stainless steel wood screws.

Three wood substrates were tested with the fasteners also passing through two layers of composite asphalt roof shingles and 2 layers of building paper. The first tested wood substrate consisted of 15/32" thick sheathing over a 2x4 DF-L #2 rafter (2x truss top chord OK by inspection), the second tested wood substrate consisted of 7/16" thick OSB only, and the third

tested wood substrate consisted of 15/32" thick plywood only. See Exhibit 'A' – attached. **Note: Two wood screws are required at the rafter installations and five wood screws are required at the OSB and plywood only installations. Where an asterisk (\*) and two values are shown in a single cell in the span tables below, the second value with the asterisk requires the installation of a #6 Self-Drilling Self-Tapping (SDST) screw installed through the Pillar, into the Base, across from the set screw SHCS.**

The testing data provided by Institute of Building Technology (IBT) report no.: 2426-19006 project no.: 31772, dated May 22, 2019, shows that the critical failure occurs in one of two ways; aluminum or stainless steel failure or wood failure. Maximum allowable values for these failure conditions were derived using a safety factor of 2.0 on the ultimate loads resulting in aluminum or stainless steel failure and a safety factor of 3.0 on the loads resulting in wood failure. The testing was performed in general accordance with IAPMO Uniform Evaluation Services *Evaluation Criteria for Joist Hangers and Miscellaneous Connectors*, EC002 adopted June 2007, revised January 2016 and ASTM D1761-2012, *Standard Test Methods for Mechanical Fasteners in Wood*.

The results of the above testing are presented below:

The maximum allowable uplift and shear force (w/out and with \*SDST screw) for 15/32" thick sheathing over a 2x4 DF #2 rafter is 520 lb and 87 lb/\*117 lb respectively. The maximum allowable uplift, down force, and shear force (w/out and with SDST screw) for 7/16" thick OSB only is 182 lb, 181 lb, and 82 lb/\*107 lb respectively. The maximum allowable uplift, down force, and shear force (w/out and with SDST screw) for 15/32" thick plywood only is 156 lb, 206 lb, and 79 lb/\*108 lb respectively.

The attached tables below show the maximum spacing of the RT-APEX for the combined loading criteria of wind speed, roof slope, and snow loads which produce reaction loads less than the allowable loads listed above. The effect of seismic loads (for all design categories A-F) have been determined to be less than the effect due to wind loads in all load conditions and combinations. The assumed topography is flat with a  $K_{zt} = 1.0$ . Therefore, the maximum allowable spacing for common load cases due to dead, wind and snow loads are the controlling load cases.

**Instructions on how to combine rafter and decking only installations (See Exhibit B):**

For any given set of design criteria pull the value from the rafter and decking only (Plywood or OSB Only) tables. Add the given rafter spacing to the given decking only spacing and divide by 2. RtoR = rafter-to-rafter spacing, while DtoD = deck-to-deck spacing.

If RtoR = 6 feet and DtoD = 4 feet, the rafter-to-deck spacing shall be defined by the following equation. 
$$[(RtoR)+(DtoD)]/2 = [6 \text{ ft} + 4 \text{ ft}]/2 = 5 \text{ ft}$$

Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Rafter - Portrait (60 Cell) - Maximum Mount Spacing in Inches																																		
Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170								
					Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3								
0	B	0	0.0		96	96	77	96	96	69	96	96	63	96	86	53	96	73	46	96	63	39	96	55	34	91	48	30	80	43	27			
		1	4.8		96	96	73 /*74	96	96	67 /*68	96	96	61 /*62	96	82 /*83	52	96	70 /*71	44 /*45	96	61	39	96	53 /*54	34	87 /*88	47	30	77 /*78	42	26 /*27			
		2	9.5		96	96	76 /*78	96	96	70 /*71	96	96	64 /*65	96	83 /*85	54 /*55	96	72 /*73	47	96	62 /*64	41	96	55 /*56	36	92 /*95	49	32	82 /*84	43 /*44	28			
		3	14.0		96	96	73 /*75	96	96	67 /*69	96	93 /*96	62 /*63	96	80 /*82	53 /*54	96	69 /*71	46	96	60 /*62	40	96	53 /*54	35 /*36	88 /*91	47 /*48	31	79 /*81	42 /*43	28			
		4	18.4		96	96	70 /*73	96	96	65 /*67	96	89 /*93	60 /*62	96	77 /*80	51 /*53	96	67 /*69	45 /*46	96	59 /*61	39 /*40	94 /*96	52 /*53	34 /*35	84 /*88	46 /*47	31	76 /*79	41 /*42	27 /*28			
		5	22.6		96	96	68 /*71	96	96	63 /*66	96	85 /*90	58 /*60	96	74 /*78	50 /*52	96	65 /*68	44 /*45	96	57 /*59	38 /*39	90 /*95	51 /*52	34 /*35	81 /*85	45 /*47	30 /*31	73 /*77	41 /*42	27			
		6	26.6		96	95 /*96	66 /*70	96	96	88 /*94	61 /*64	96	82 /*88	57 /*59	96	72 /*76	49 /*51	96	63 /*66	43 /*44	96	56 /*58	38 /*39	86 /*92	49 /*51	33 /*34	78 /*83	44 /*46	30	71 /*75	40 /*41	27		
		8	33.7		96	96	96	96	96	96	96	96	96	96	89 /*96	89 /*96	96	92 /*96	80 /*86	80 /*86	82 /*89	71 /*76	71 /*76	74 /*80	64 /*68	67 /*72	58 /*61	58 /*61	61 /*65	53 /*55	53 /*55	53 /*55		
		10	39.8		96	96	96	96	96	95 /*96	95 /*96	96	95 /*96	95 /*96	96	85 /*93	85 /*93	96	85 /*93	87 /*96	76 /*83	78 /*86	68 /*74	71 /*77	62 /*66	65 /*70	56 /*59	56 /*59	59 /*63	51 /*54	51 /*54	51 /*54		
		12	45.0		96	96	96	96	96	95 /*96	95 /*96	96	90 /*96	90 /*96	96	90 /*96	90 /*96	92 /*96	81 /*90	83 /*92	73 /*80	75 /*83	66 /*72	69 /*75	60 /*64	63 /*68	54 /*58	54 /*58	57 /*62	50 /*53	50 /*53	50 /*53		
0	C	0	0.0		96	86	53	96	78	48	96	71	44	96	60	37	96	51	32	83	44	28	72	38	24	63	34	21	56	30	19			
		1	4.8		96	82 /*83	52	96	75	47	96	68 /*69	43	96	58	37	92 /*93	50	31	79 /*80	43	27	69 /*70	38	24	61	33	21	54	29 /*30	19			
		2	9.5		96	83 /*85	54 /*55	96	76 /*78	49 /*50	96	70 /*71	45 /*46	96	59 /*60	39	96	51 /*52	33 /*34	84 /*86	44 /*45	29	74 /*76	39	25	66 /*67	34 /*35	22 /*23	58 /*59	31	20			
		3	14.0		96	79 /*82	53 /*54	96	73 /*75	48 /*49	96	67 /*69	44 /*45	96	57 /*59	38	92 /*96	50 /*51	33	81 /*83	43 /*44	28 /*29	71 /*73	38 /*39	25	63 /*65	34	22	57 /*58	30 /*31	20			
		4	18.4		96	76 /*80	51 /*53	96	70 /*73	47 /*48	96	65 /*67	43 /*44	96	56 /*58	37 /*38	88 /*92	48 /*50	32 /*33	78 /*81	42 /*43	28	69 /*71	37 /*38	25	61 /*63	33 /*34	22	55 /*57	30	19 /*20			
		5	22.6		96	74 /*77	50 /*52	96	68 /*69	46 /*47	96	62 /*64	42 /*43	96	54 /*56	36 /*37	84 /*89	47 /*49	32	75 /*79	42 /*43	28	67 /*70	37 /*38	24	60 /*62	32 /*33	21	54 /*55	29	19 /*20			
		6	26.6		96	71 /*75	49 /*51	96	66 /*64	42 /*43	96	61 /*64	40 /*41	96	55 /*57	36 /*37	80 /*85	46 /*47	31	70 /*74	40 /*41	26 /*27	62 /*66	35 /*36	23 /*24	56 /*58	31 /*32	20 /*21	50 /*52	27 /*28	18	45 /*46	25	16
		8	33.7		96	89 /*96	89 /*96	96	83 /*90	83 /*90	96	80 /*84	78 /*84	96	79 /*86	68 /*73	96	70 /*75	60 /*64	60 /*64	63 /*67	54 /*57	54 /*57	56 /*59	48 /*50	48 /*50	51 /*53	43 /*45	43 /*45	46 /*48	39 /*40	39 /*40	39 /*40	
		10	39.8		96	84 /*93	84 /*93	96	90 /*96	90 /*96	96	85 /*93	85 /*93	96	79 /*86	79 /*86	96	74 /*81	66 /*71	67 /*73	58 /*62	58 /*62	52 /*55	54 /*58	47 /*49	47 /*49	49 /*52	42 /*44	42 /*44	45 /*47	38 /*40	38 /*40	38 /*40	
		12	45.0		91 /*96	81 /*90	81 /*90	96	86 /*96	86 /*96	96	76 /*84	76 /*84	96	71 /*78	71 /*78	96	63 /*68	63 /*68	64 /*69	56 /*60	56 /*60	57 /*61	51 /*54	51 /*54	53 /*56	46 /*48	46 /*48	48 /*51	41 /*43	41 /*43	44 /*46	37 /*39	37 /*39
10	B	0	0.0		96	96	77	96	96	69	96	96	63	96	86	53	96	73	4															

Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Rafter - Portrait (60 Cell) - Maximum Mount Spacing in Inches																															
Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170					
					Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3					
20	B	0	0.0		96	96	77	96	96	69	96	96	63	96	86	53	96	73	46	96	63	39	96	55	34	91	48	30	80	43	27
		1	4.8		96	96	73/*74	96	96	67/*68	96	96	61/*62	96	82/*83	52	96	70/*71	44/*45	96	61	39	96	53/*54	34	87/*88	47	30	77/*78	42	26/*27
		2	9.5		94/*96	94/*96	76/*78	94/*96	94/*96	70/*71	94/*96	94/*96	64/*65	94/*96	83/*85	54/*55	94/*96	72/*73	47	94/*96	62/*64	41	94/*96	55/*56	36	92/*95	49	32	82/*84	43/*44	28
		3	14.0		64/*87	64/*87	64/*75	64/*87	64/*87	64/*69	64/*87	64/*87	62/*63	64/*87	64/*82	53/*54	64/*87	64/*71	46	64/*87	60/*62	40	64/*87	53/*54	35/*36	64/*87	47/*48	31	64/*81	42/*43	28
		4	18.4		53/*71	53/*71	53/*71	53/*71	53/*71	53/*67	53/*71	53/*71	53/*62	53/*71	53/*71	53/*69	45/*46	53/*71	53/*61	39/*40	53/*71	52/*71	34/*35	53/*71	46/*47	31	53/*71	41/*42	27/*28		
		5	22.6		48/*64	48/*64	48/*64	48/*64	48/*64	48/*64	48/*64	48/*64	48/*60	48/*64	48/*64	48/*52	48/*64	48/*64	48/*45	48/*64	48/*59	38/*39	48/*64	48/*52	34/*35	48/*64	45/*47	30/*31	48/*64	41/*42	27
		6	26.6		45/*61	45/*61	45/*61	45/*61	45/*61	45/*61	45/*61	45/*61	45/*59	45/*61	45/*61	45/*51	45/*61	45/*61	43/*44	45/*61	45/*58	38/*39	45/*61	33/*34	45/*61	44/*46	30	45/*61	40/*41	27	
		8	33.7		44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*55	44/*55	44/*55
		10	39.8		46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	
		12	45.0		49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	
25	C	0	0.0		96	86	53	96	65	40	96	59	37	94	50	31	80	43	27	69	37	23	60	32	20	53	28	18	47	25	16
		1	4.8		96	69	43/*44	96	63	40	96	57/*58	36	90/*91	48/*49	31	77/*78	42	26	66/*67	36	23	58	32	20	51/*52	28	18	45/*46	25	16
		2	9.5		94/*96	83/*85	54/*55	94/*96	64/*65	42	94/*96	59/*60	38/*39	94/*96	50/*51	33	82/*84	43/*44	28	71/*73	37/*38	24	63/*64	33	21	55/*56	29	19	49/*50	26	17
		3	14.0		64/*87	64/*87	45	64/*87	62/*64	41/*42	64/*87	57/*58	37/*38	64/*87	50/*51	33	64/*83	43/*44	28/*29	64/*73	38/*39	25	63/*65	34	22	57/*58	30/*31	20			
		4	18.4		53/*71	53/*71	51/*53	53/*71	53/*71	47/*48	53/*71	53/*67	43/*44	53/*71	53/*58	37/*38	53/*71	42/*43	28	53/*71	37/*38	25	53/*63	33/*34	22	53/*57	30	19/*20			
		5	22.6		48/*64	48/*64	48/*52	48/*64	48/*64	48/*64	48/*64	48/*64	48/*64	48/*64	48/*56	36/*37	45/*61	45/*48	31/*32	45/*61	41/*42	27/*28	45/*61	36/*37	24/*25	45/*61	32/*33	21/*22	45/*55	29/*30	19
		6	26.6		45/*61	45/*61	45/*51	45/*61	45/*61	45/*61	45/*61	45/*61	45/*61	45/*61	45/*61	45/*55	36/*37	45/*61	45/*48	31/*32	45/*61	41/*42	27/*28	45/*61	36/*37	24/*25	45/*61	32/*33	21/*22	45/*55	29/*30
		8	33.7		44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59
		10	39.8		46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	46/*62	
		12	45.0		49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	49/*67	
25	D	0	0.0		96	96	77	96	96	69	96	96	63	96	86	53	96	73	46	96	63	39	96	55	34	91	48	30	80	43	27
		1	4.8		96	96	73/*74	96	96	67/*68	96	96	61/*62	96	82/*83	52	96	70/*71	44/*												

Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Rafter - Portrait (60 Cell) - Maximum Mount Spacing in Inches																															
Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180		
					Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3		
30	B	0	0.0		96	96	77	96	96	69	96	96	63	96	86	53	96	73	46	96	63	39	96	55	34	91	48	30	80	43	27
		1	4.8		96	96	73/*74	96	96	67/*68	96	96	61/*62	96	82/*83	52	96	70/*71	44/*45	96	61	39	96	53/*54	34	87/*88	47	30	77/*78	42	26/*27
		2	9.5		77/*96	77/*96	76/*78	77/*96	77/*96	70/*71	77/*96	76/*65	77/*96	77/*85	54/*55	77/*96	72/*73	47	77/*96	62/*64	41	77/*96	55/*56	36	77/*95	49	32	77/*84	43/*44	28	
		3	14.0		53/*71	53/*71	53/*71	53/*71	53/*71	53/*69	53/*71	53/*63	53/*71	53/*71	53/*54	53/*71	53/*71	46	53/*71	53/*62	40	53/*71	53/*54	35/*36	53/*71	47/*48	31	53/*71	42/*43	28	
		4	18.4		44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*46	44/*59	44/*59	39/*40	44/*59	44/*53	34/*35	44/*59	44/*47	31	44/*59	41/*42	27/*28	
		5	22.6		39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*45	39/*53	39/*53	38/*39	39/*53	39/*52	34/*35	39/*53	39/*47	30/*31	39/*53	39/*42	27		
		6	26.6		37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*44	37/*50	37/*50	37/*50	37/*50	37/*50	33/*34	37/*50	37/*46	30	37/*50	37/*41	27		
		8	33.7		37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50		
		10	39.8		39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52		
		12	45.0		43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57		
35	C	0	0.0		96	86	53	96	65	40	96	59	37	94	50	31	80	43	27	69	37	23	60	32	20	53	28	18	47	25	16
		1	4.8		96	69	43/*44	96	63	40	96	57/*58	36	90/*91	48/*49	31	77/*78	42	26	66/*67	36	23	58	32	20	51/*52	28	18	45/*46	25	16
		2	9.5		77/*96	77/*85	54/*55	77/*96	76/*78	49/*50	77/*96	70/*71	45/*46	77/*96	59/*60	39	77/*96	51/*52	33/*34	77/*86	44/*45	29	74/*76	39	25	66/*67	34/*35	22/*23	58/*59	31	20
		3	14.0		53/*71	53/*71	53/*54	53/*71	53/*71	48/*49	53/*71	53/*69	44/*45	53/*71	53/*59	38	53/*71	50/*51	33	53/*71	43/*44	28/*29	53/*71	38/*39	25	53/*65	34	22	53/*58	30/*31	20
		4	18.4		44/*59	44/*59	44/*53	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	44/*59	42/*43	28	44/*59	37/*38	25	44/*59	33/*34	22	44/*57	30	19/*20	
		5	22.6		39/*53	39/*53	39/*52	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	36/*37	39/*53	39/*49	32	39/*53	39/*43	28	39/*53	37/*38	25	39/*53	39/*40	19/*20		
		6	26.6		37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50		
		8	33.7		37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50		
		10	39.8		39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52	39/*52		
		12	45.0		43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57	43/*57		
35	D	0	0.0		96	96	77	96	96	69	96	96	63	96	86	53	96	73	46	96	63	39	96	55	34	91	48	30	80	43	27
		1	4.8		96	96	73/*74	96	96	67/*68	96	96	61/*62	96	82/*83	52	96	70/*71	44/*45	96	61	39	96	53/*54	34	87/*88	47	3			

Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Rafter - Portrait (60 Cell) - Maximum Mount Spacing in Inches																															
Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180		
					Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3		
40	B	0	0.0		96	96	77	96	96	69	96	96	63	96	86	53	96	73	46	96	63	39	96	55	34	91	48	30	80	43	27
		1	4.8		96	96	73/*74	96	96	67/*68	96	96	61/*62	96	82/*83	52	96	70/*71	44/*45	96	61	39	96	53/*54	34	87/*88	47	30	77/*78	42	26/*27
		2	9.5		60/*81	60/*81	60/*78	60/*81	60/*81	60/*71	60/*81	60/*81	60/*65	60/*81	60/*81	54/*55	60/*81	60/*73	47	60/*81	60/*64	41	60/*81	55/*56	36	60/*81	49	32	60/*81	43/*44	28
		3	14.0		41/*55	41/*55	41/*55	41/*55	41/*55	41/*55	41/*55	41/*55	41/*55	41/*55	41/*55	41/*55	41/*55	41/*55	41/*55	41/*55	41/*55	41/*55	41/*55	41/*55	41/*55	41/*55	41/*55	41/*55	41/*55	28	
		4	18.4		34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	27/*28	
		5	22.6		31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	27		
		6	26.6		29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	27		
		8	33.7		29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39		
		10	39.8		31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42		
		12	45.0		35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47		
50	C	0	0.0		96	86	53	96	65	40	96	59	37	94	50	31	80	43	27	69	37	23	60	32	20	53	28	18	47	25	16
		1	4.8		96	69	43/*44	96	63	40	96	57/*58	36	90/*91	48/*49	31	77/*78	42	26	66/*67	36	23	58	32	20	51/*52	28	18	45/*46	25	16
		2	9.5		60/*81	60/*81	46	60/*81	60/*65	42	60/*81	59/*60	38/*39	60/*81	50/*51	33	60/*81	51/*52	33/*34	60/*81	44/*45	29	60/*76	39	25	60/*67	34/*35	22/*23	58/*59	31	20
		3	14.0		41/*55	41/*55	41/*54	41/*55	41/*55	41/*42	41/*55	41/*55	41/*50	38	41/*55	41/*51	33	41/*55	41/*44	28/*29	41/*55	38/*39	25	41/*55	34	22	41/*55	30/*31	20		
		4	18.4		34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	19/*20		
		5	22.6		31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41		
		6	26.6		29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	19	
		8	33.7		29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	29/*39	
		10	39.8		31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	
		12	45.0		35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	
50	D	0	0.0		96	96	77	96	96	69	96	96	63	96	86	53	96	73	46	96	63	39	96	55	34	91	48	30	80	43	27
		1	4.8		96	96	73/*74	96	96	67/*68	96	96	61/*62	96	82/*83	52	96	70/*71	44/*45	96	61										

Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Rafter - Portrait (60 Cell) - Maximum Mount Spacing in Inches																																		
Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180					
					Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3					
60	B	0	0.0		96	96	77	96	96	69	96	96	63	96	73	46	96	63	39	96	55	34	91	48	30	80	43	27						
		1	4.8		81/*96	81/*96	73/*74	81/*96	81/*96	67/*68	81/*96	81/*96	61/*62	81/*96	81/*83	52	81/*96	70/*71	44/*45	81/*96	61	39	81/*96	53/*54	34	81/*88	47	30	77/*78	42	26/*27			
		2	9.5		41/*56	41/*56	41/*56	41/*56	41/*56	41/*56	41/*56	41/*56	41/*56	41/*56	41/*56	41/*56	41/*56	41/*56	41/*47	41/*56	41/*56	41/*56	41/*56	41/*56	36	41/*56	41/*49	32	41/*56	41/*44	28			
		3	14.0		28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28				
		4	18.4		23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*28			
		5	22.6		21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*27			
		6	26.6		20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27			
		8	33.7		20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28			
		10	39.8		22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30			
		12	45.0		25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34				
	C	0	0.0		96	86	53	96	71	44	96	65	40	96	59	37	94	50	31	80	43	27	69	37	23	60	32	20	53	28	18	47	25	16
		1	4.8		81/*96	81/*83	52	81/*96	75	47	81/*96	68/*69	43	81/*96	58	37	81/*93	50	31	79/*80	43	27	69/*70	38	24	61	33	21	54	29/*30	19			
		2	9.5		41/*56	41/*56	41/*55	41/*56	41/*56	41/*50	41/*56	41/*56	41/*46	41/*56	41/*56	41/*56	41/*56	41/*52	33/*34	41/*56	41/*45	29	41/*56	39	25	41/*56	34/*35	22/*23	41/*56	31	20			
		3	14.0		28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38			
		4	18.4		23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	23/*32	19/*20			
		5	22.6		21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	19/*20			
		6	26.6		20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	19			
		8	33.7		20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28			
		10	39.8		22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30			
		12	45.0		25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34			
70	B	0	0.0		96	96	77	96	96	69	96	96	63	96	73	46	96	63	39	96	55	34</												

Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Rafter - Portrait (60 Cell) - Maximum Mount Spacing in Inches																																		
Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180					
					Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3					
80	B	0	0.0		96	96	77	96	96	69	96	96	63	96	86	53	96	73	46	96	63	39	96	55	34	91	48	30	80	43	27			
		1	4.8		62/*84	62/*84	62/*74	62/*84	62/*84	62/*68	62/*84	62/*84	61/*62	62/*84	62/*83	52	62/*84	62/*71	44/*45	62/*84	61	39	62/*84	53/*54	34	62/*84	47	30	62/*78	42	26/*27			
		2	9.5		31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	28				
		3	14.0		21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*28				
		4	18.4		18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24					
		5	22.6		16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22					
		6	26.6		16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21					
		8	33.7		16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21					
		10	39.8		17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23					
		12	45.0		20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27						
	C	0	0.0		96	86	53	96	78	44	96	65	40	96	59	37	94	50	31	80	43	27	69	37	23	60	32	20	53	28	18	47	25	16
		1	4.8		62/*84	62/*84	52	62/*84	62/*75	47	62/*84	62/*69	43	62/*84	58	37	62/*84	50	31	62/*80	43	27	62/*70	38	24	61	33	21	54	29/*30	19			
		2	9.5		31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	31/*42	20				
		3	14.0		21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29	21/*29					
		4	18.4		18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24					
		5	22.6		16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16/*22	16				
		6	26.6		16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*19				
		8	33.7		16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21	16/*21				
		10	39.8		17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23	17/*23					
		12	45.0		20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27	20/*27					
	D	0	0.0		96	96	77	96	96	69	96	96	63	96	86	53	96	73	46	96	63	39	96	55	34	91	48	30	80	43	27			
		1	4.8		55/*75	55/*75	55/*																											

Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Rafter - Portrait (72 Cell) - Maximum Mount Spacing in Inches																															
Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180		
					Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3		
0	B	0	0.0		96	96	67	96	96	61	96	90	56	96	76	47	96	64	40	96	55	34	91	48	30	80	42	26	70	37	23
		1	4.8		96	96	64/*65	96	93/*95	59	96	85/*87	54	96	72/*73	45/*46	96	62	39	96	53/*54	34	86/*88	47	30	76/*77	41	26	67/*68	37	23
		2	9.5		96	96	67/*68	96	94/*96	61/*62	96	86/*88	56/*57	96	73/*75	48	96	63/*64	41/*42	96	55/*56	36	91/*94	48/*49	31/*32	81/*83	43	28	72/*74	38	25
		3	14.0		96	96	64/*66	96	88/*92	59/*60	96	82/*85	54/*56	96	70/*72	46/*47	96	61/*62	40/*41	96	53/*54	35	86/*90	47/*48	31	77/*80	41/*42	27/*28	69/*71	37/*38	24
		4	18.4		96	91/*96	62/*64	96	84/*89	57/*59	96	78/*82	52/*54	96	67/*70	45/*46	96	59/*61	39/*40	92/*96	51/*53	34/*35	82/*87	45/*47	30/*31	74/*77	40/*41	27	66/*69	36/*37	24
		5	22.6		96	87/*93	60/*63	96	80/*86	55/*57	96	75/*79	51/*53	96	65/*68	44/*45	96	57/*59	38/*39	88/*94	50/*52	34	79/*84	44/*46	30	71/*75	40/*41	26/*27	64/*67	35/*36	24
		6	26.6		96	83/*90	58/*61	96	77/*83	54/*56	96	72/*77	50/*52	96	63/*66	43/*45	94/*96	55/*58	37/*39	84/*91	49/*51	33/*34	76/*81	43/*45	29/*30	68/*73	39/*40	27/*28	62/*65	35/*36	23/*24
		8	33.7		96	96	96	96	94/*96	94/*96	96	88/*96	88/*96	96	83/*92	83/*92	94/*94	74/*82	76/*84	66/*72	69/*75	60/*65	60/*65	62/*68	54/*58	57/*61	49/*52	52/*55	45/*47	45/*47	
		10	39.8		96	93/*96	93/*96	96	88/*96	88/*96	96	83/*92	83/*92	94/*94	74/*82	76/*84	66/*72	69/*75	60/*65	60/*65	62/*68	54/*58	57/*61	49/*52	52/*55	45/*47	45/*47				
		12	45.0		96	88/*96	88/*96	94/*96	84/*94	84/*94	89/*96	79/*89	79/*89	80/*90	71/*79	73/*81	64/*70	66/*73	58/*63	60/*66	52/*56	52/*56	55/*59	48/*51	50/*54	43/*46	43/*46	43/*46	43/*46		
0	C	0	0.0		96	75	47	96	68	42	96	62	39	96	52	33	84	45	28	73	39	24	63	34	21	55	30	19	49	26	16
		1	4.8		96	72/*73	45/*46	96	65/*66	41/*42	96	60	38	94/*95	51	32	80/*81	43/*44	27/*28	69/*70	38	24	61	33	21	53/*54	29	18	47/*48	26	16
		2	9.5		96	73/*74	47/*48	96	67/*68	43/*44	96	61/*62	40	96	52/*53	34	85/*87	45	29	74/*76	39	25	65/*66	34/*35	22	57/*59	30	20	51/*52	27	17
		3	14.0		96	70/*72	46/*47	96	64/*66	42/*43	96	59/*61	39/*40	93/*96	50/*52	33/*34	81/*84	44	29	71/*73	38/*39	25	62/*64	33/*34	22	56/*57	30	19	50/*51	26/*27	17
		4	18.4		96	67/*70	45/*46	96	62/*64	41/*42	96	57/*59	38/*39	88/*93	49/*50	32/*33	77/*81	42/*44	28/*29	68/*71	37/*38	25	60/*63	33/*34	22	54/*56	29/*30	19	48/*50	26	17
		5	22.6		96	65/*68	44/*45	96	60/*62	40/*42	96	55/*58	37/*38	84/*90	48/*49	32/*33	74/*78	41/*43	28	66/*69	36/*37	24	58/*61	32/*33	21	52/*54	29	19	47/*49	26	17
		6	26.6		96	63/*66	43/*44	96	58/*61	39/*41	96	54/*56	36/*38	81/*87	47/*48	31/*32	71/*76	41/*42	27/*28	63/*67	36/*37	24	57/*60	32/*33	21	51/*53	28/*29	19	46/*48	25/*26	17
		8	33.7		89/*96	78/*85	78/*85	84/*92	73/*79	73/*79	79/*86	68/*74	68/*74	69/*75	60/*64	62/*66	53/*56	53/*56	55/*58	47/*50	47/*50	49/*52	42/*44	42/*44	44/*47	38/*39	38/*39	40/*42	34/*35	34/*35	43/*35
		10	39.8		84/*94	74/*81	74/*81	79/*88	69/*76	69/*76	74/*82	65/*71	65/*71	66/*72	57/*62	59/*64	51/*54	51/*54	53/*57	46/*48	46/*48	48/*51	41/*43	41/*43	43/*45	37/*39	37/*39	39/*41	33/*35	33/*35	33/*35
		12	45.0		80/*90	71/*78	71/*78	76/*84	67/*73	67/*73	63/*79	63/*68	63/*68	66/*70	56/*60	57/*62	50/*53	50/*53	51/*55	44/*47	44/*47	46/*49	40/*42	40/*42	42/*45	36/*38	36/*38	38/*40	33/*34	33/*34	33/*34
10	D	0	0.0		96	96	67	96	96	61	96	90	56	96	76	47	96	64	40	96	55	34	91	48	30	80	42	26	70	37	23
		1	4.8		96	96	64/*65	96	93/*95	59	96	85/*87	54	96	72/*73	45/*46	96	62	39	96	53/*54	34	86/*88	47	30	76/*77	41	26	67/*68	37	23

Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Rafter - Portrait (72 Cell) - Maximum Mount Spacing in Inches																															
Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180		
					Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3		
20	B	0	0.0		96	96	67	96	96	61	96	90	56	96	76	47	96	64	40	96	55	34	91	48	30	80	42	26	70	37	23
		1	4.8		96	96	64/*65	96	93/*95	59	96	85/*87	54	96	72/*73	45/*46	96	62	39	96	53/*54	34	86/*88	47	30	76/*77	41	26	67/*68	37	23
		2	9.5		82/*96	82/*96	67/*68	82/*96	82/*96	61/*62	82/*88	56/*57	82/*96	73/*75	48	82/*96	63/*64	41/*42	82/*96	55/*56	36	82/*94	48/*49	31/*32	81/*83	43	28	72/*74	38	25	
		3	14.0		56/*76	56/*76	56/*66	56/*76	56/*76	56/*60	56/*76	56/*76	54/*56	56/*76	56/*72	46/*47	56/*76	56/*62	40/*41	56/*76	53/*54	35	56/*76	47/*48	31	56/*76	41/*42	27/*28	56/*71	37/*38	24
		4	18.4		46/*63	46/*63	46/*63	46/*63	46/*59	46/*63	46/*63	46/*54	46/*63	46/*63	45/*46	46/*63	46/*61	39/*40	46/*63	46/*53	34/*35	46/*63	45/*47	30/*31	46/*63	40/*41	27	46/*63	36/*37	24	
		5	22.6		42/*56	42/*56	42/*56	42/*56	42/*56	42/*56	42/*56	42/*56	42/*56	42/*56	42/*56	42/*56	42/*56	42/*56	42/*56	42/*56	34	42/*56	42/*52	34	42/*56	40/*41	26/*27	42/*56	35/*36	24	
		6	26.6		39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	29/*30	39/*53	39/*40	26/*27	39/*53	35/*36	23/*24
		8	33.7		38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*48	38/*48	38/*48	
		10	39.8		40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*47	40/*47	40/*47		
		12	45.0		43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*54	43/*54	43/*46	43/*46	
25	C	0	0.0		96	75	47	96	68	42	96	62	39	83	44	27	70	37	23	60	32	20	53	28	18	46	25	16	41	22	14
		1	4.8		96	60/*61	38	96	55	35	93/*94	50/*51	32	79/*80	42/*43	27	67/*68	36/*37	23	58/*59	32	20	51	28	17/*18	45	24	15	40	22	14
		2	9.5		82/*96	61/*63	40/*41	82/*96	56/*57	37	82/*96	52/*53	34	82/*86	44	28/*29	72/*73	38	24/*25	62/*64	33	21	55/*56	29	19	48/*49	25/*26	16/*17	43/*44	23	15
		3	14.0		56/*76	56/*61	39/*40	56/*76	56/*66	36	56/*76	50/*51	33	56/*76	50/*52	33/*34	56/*76	44	29	56/*73	38/*39	25	56/*64	33/*34	22	56/*57	30	19	50/*51	26/*27	17
		4	18.4		46/*63	46/*63	45/*46	46/*63	46/*63	41/*42	46/*59	38/*39	46/*63	46/*50	32/*33	46/*63	42/*44	28/*29	46/*63	37/*38	25	46/*63	33/*34	22	46/*56	29/*30	19	46/*50	26	17	
		5	22.6		42/*56	42/*56	42/*45	42/*56	42/*56	42/*45	42/*56	42/*56	42/*56	42/*56	42/*56	42/*56	42/*56	42/*56	42/*56	42/*56	42/*56	42/*56	42/*56	42/*56	42/*54	42/*49	26	17			
		6	26.6		39/*53	39/*53	39/*44	39/*53	39/*53	39/*41	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*53	39/*48	39/*48	39/*48	39/*48	39/*48
		8	33.7		38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*44	38/*44	38/*44	38/*44	38/*44	38/*39
		10	39.8		40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*48	40/*48	40/*48	40/*48	40/*48	40/*35	
		12	45.0		43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	
25	D	0	0.0		96	96	67	96	96	61	96	90	56	96	76	47	96	64	40	96	55	34	91	48	30	80	42	26	70	37	23
		1	4.8		96	96	64/*65	96	93/*95	59	96	85/*87	54	96																	

Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Rafter - Portrait (72 Cell) - Maximum Mount Spacing in Inches																															
Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180		
					Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3		
30	B	0	0.0		96	96	67	96	96	61	96	90	56	96	76	47	96	64	40	96	55	34	91	48	30	80	42	26	70	37	23
		1	4.8		96	96	64/*65	96	93/*95	59	96	85/*87	54	96	72/*73	45/*46	96	62	39	96	53/*54	34	86/*88	47	30	76/*77	41	26	67/*68	37	23
		2	9.5		68/*91	68/*91	67/*68	68/*91	68/*91	61/*62	68/*88	56/*57	68/*91	68/*75	48	68/*91	63/*64	41/*42	68/*91	55/*56	36	68/*91	48/*49	31/*32	68/*83	43	28	68/*74	38	25	
		3	14.0		46/*63	46/*63	46/*63	46/*63	46/*63	46/*60	46/*63	46/*63	46/*56	46/*63	46/*63	46/*47	46/*63	46/*62	40/*41	46/*63	46/*54	35	46/*63	46/*48	31	46/*63	41/*42	27/*28	46/*63	37/*38	24
		4	18.4		38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*46	38/*52	38/*52	38/*40	38/*52	38/*52	34/*35	38/*52	38/*47	30/*31	38/*52	38/*41	27	38/*52	36/*37	24
		5	22.6		34/*47	34/*47	34/*47	34/*47	34/*47	34/*47	34/*47	34/*47	34/*47	34/*47	34/*47	34/*47	34/*47	34/*47	34/*47	34/*47	34/*47	34/*47	34/*47	34/*46	30	34/*47	34/*41	26/*27	34/*47	34/*36	24
		6	26.6		33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	29/*30	33/*44	33/*40	26/*27	33/*44	33/*36	23/*24
		8	33.7		32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	
		10	39.8		34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46		
		12	45.0		37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50		
35	C	0	0.0		96	75	47	96	68	42	96	62	39	96	52	33	84	45	28	73	39	24	63	34	21	55	30	19	49	26	16
		1	4.8		96	60/*61	38	96	55	35	93/*94	50/*51	32	79/*80	42/*43	27	67/*68	36/*37	23	58/*59	32	20	51	28	17/*18	45	24	15	40	22	14
		2	9.5		68/*91	68/*74	47/*48	68/*91	67/*68	43/*44	68/*91	61/*62	40	68/*91	52/*53	34	68/*87	45	29	68/*76	39	25	65/*66	34/*35	22	57/*59	30	20	51/*52	27	17
		3	14.0		46/*63	46/*63	46/*47	46/*63	46/*63	42/*43	46/*63	46/*61	39/*40	46/*63	46/*52	33/*34	46/*63	44	29	46/*63	38/*39	25	46/*63	33/*34	22	46/*57	30	19	46/*51	26/*27	17
		4	18.4		38/*52	38/*52	38/*46	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52		
		5	22.6		34/*47	34/*47	34/*45	34/*47	34/*47	34/*47	34/*47	34/*47	34/*47	34/*47	34/*47	34/*47	34/*47	34/*47	34/*47	34/*47	34/*47	34/*47	34/*47	34/*47	34/*47	34/*47	34/*47	34/*47	34/*47		
		6	26.6		33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44	33/*44		
		8	33.7		32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43	32/*43		
		10	39.8		34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46		
		12	45.0		37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50			
35	D	0	0.0		96	96	67	96	96	61	96	90	56	96	76	47	96	64	40	96	55	34	91	48	30	80	42	26	70	37	23
		1	4.8		96	96	64/*65	96	93/*95	59	96	85/*87	54	96	72/*73	45/*46	96	62	39												

Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Rafter - Portrait (72 Cell) - Maximum Mount Spacing in Inches																																		
Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180					
					Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3					
40	B	0	0.0		96	96	67	96	96	61	96	90	56	96	76	47	96	64	40	96	55	34	91	48	30	80	42	26	70	37	23			
		1	4.8		96	96	64/*65	96	93/*95	59	96	85/*87	54	96	72/*73	45/*46	96	62	39	96	53/*54	34	86/*88	47	30	76/*77	41	26	67/*68	37	23			
		2	9.5		52/*71	52/*71	52/*68	52/*71	52/*71	52/*62	52/*71	52/*57	52/*71	52/*71	52/*71	52/*42	52/*71	52/*56	36	52/*71	48/*36	31/*32	52/*71	43	28	52/*71	38	25						
		3	14.0		36/*48	36/*48	36/*48	36/*48	36/*48	36/*48	36/*48	36/*48	36/*48	36/*48	36/*48	36/*47	36/*48	36/*41	36/*48	36/*48	35	36/*48	36/*48	31	36/*48	36/*42	27/*28	36/*48	36/*38	24				
		4	18.4		30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	24			
		5	22.6		27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	24				
		6	26.6		26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	23/*24				
		8	33.7		25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34	25/*34			
		10	39.8		27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37			
		12	45.0		30/*41	30/*41	30/*41	30/*41	30/*41	30/*41	30/*41	30/*41	30/*41	30/*41	30/*41	30/*41	30/*41	30/*41	30/*41	30/*41	30/*41	30/*41	30/*41	30/*41	30/*41	30/*41	30/*41	30/*41	30/*41	30/*41				
50	B	0	0.0		96	96	67	96	96	61	96	90	56	96	76	47	96	64	40	96	55	34	91	48	30	80	42	26	70	37	23			
		1	4.8		84/*96	84/*96	64/*65	84/*96	84/*95	59	84/*96	84/*87	54	84/*96	72/*73	45/*46	84/*96	62	39	84/*96	53/*54	34	84/*88	47	30	76/*77	41	26	67/*68	37	23			
		2	9.5		43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	38	25			
		3	14.0		29/*40	29/*40	29/*40	29/*40	29/*40	29/*40	29/*40	29/*40	29/*40	29/*40	29/*40	29/*40	29/*40	29/*40	29/*40	29/*40	29/*40	29/*40	29/*40	29/*40	29/*40	29/*40	29/*40	29/*40	29/*40	29/*40	24/*15			
		4	18.4		24/*33	24/*33	24/*33	24/*33	24/*33	24/*33	24/*33	24/*33	24/*33	24/*33	24/*33	24/*33	24/*33	24/*33	24/*33	24/*33	24/*33	24/*33	24/*33	24/*33	24/*33	24/*33	24/*33	24/*33	24/*33	24/*33	24/*33	24/*33		
		5	22.6		22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30		
		6	26.6		21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28			
		8	33.7		21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28	21/*28				
		10	39.8		23/*31	23/*31	23/*31	23/*31	23/*31	23/*31	23/*31	23/*31	23/*31	23/*31	23/*31	23/*31	23/*31	23/*31	23/*31	23/*31	23/*31	23/*31	23/*31	23/*31	23/*31	23/*31	23/*31	23/*31	23/*31	23/*31	23/*31			
		12	45.0		26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35	26/*35				
50	C	0	0.0		96	96	67	96	96	61	96	90</																						

Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Rafter - Portrait (72 Cell) - Maximum Mount Spacing in Inches																															
Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180		
					Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3		
60	B	0	0.0		96	96	67	96	96	61	96	90	56	96	76	47	96	64	40	96	55	34	91	48	30	80	42	26	70	37	23
		1	4.8		71/*96	71/*96	64/*65	71/*96	71/*95	59	71/*96	71/*87	54	71/*96	71/*73	45/*46	71/*96	62	39	71/*96	53/*54	34	71/*88	47	30	71/*77	41	26	67/*68	37	23
		2	9.5		36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	31/*32	36/*49	36/*43	28	36/*49	36/*38	25		
		3	14.0		25/*33	25/*33	25/*33	25/*33	25/*33	25/*33	25/*33	25/*33	25/*33	25/*33	25/*33	25/*33	25/*33	25/*33	25/*33	25/*33	25/*33	25/*33	25/*33	25/*31	25/*33	25/*33	25/*28	25/*33	25/*33	24	
		4	18.4		20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*24	
		5	22.6		19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*24	
		6	26.6		18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	
		8	33.7		18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	
		10	39.8		19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	
		12	45.0		22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	
	C	0	0.0		96	75	47	96	68	42	96	62	39	96	52	33	84	45	28	73	39	24	63	34	21	55	30	19	49	26	16
		1	4.8		71/*96	71/*73	45/*46	71/*96	65/*66	41/*42	71/*96	60	38	71/*95	51	32	71/*81	43/*44	27/*28	69/*70	38	24	61	33	21	53/*54	29	18	47/*48	26	16
		2	9.5		36/*49	36/*49	36/*48	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	30	20	36/*49	27	17			
		3	14.0		25/*33	25/*33	25/*33	25/*33	25/*33	25/*33	25/*33	25/*33	25/*33	25/*33	25/*33	25/*33	25/*33	25/*33	25/*33	25/*33	25/*33	25/*33	25/*33	22/*30	19	25/*33	25/*27	17			
		4	18.4		20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28	20/*28		
		5	22.6		19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	19/*25	
		6	26.6		18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	
		8	33.7		18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	18/*24	
		10	39.8		19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	19/*26	
		12	45.0		22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	22/*30	
70	B	0	0.0		96	96	67	96	96	61	96	90	56	96	76	47	96	64	40	96	55	34	91	48	30	80	42	26	70	37	23
		1	4.8		62/*83	62/*83	62/*65	62/*83	62/*83	59	62/*83	62/*73	45/*46	62/*83</td																	

**Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Rafter - Portrait (72 Cell) - Maximum Mount Spacing in Inches**

Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Plywood Only - Portrait (60 Cell) - Maximum Mount Spacing in Inches																																	
Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180				
					Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3				
0	B	0	0.0		64	37	23	64	34	20	61	31	19	50	25	16	42	22	13	36	19	11	31	16	10	27	14	9	24	12	8		
		1	4.8		60 / *61	36 / *37	22	60 / *61	33	20	59	30	18	49	25	16	41	21	13	35	18	11	30 / *31	16	10	27	14	9	23	12	8		
		2	9.5		57 / *58	38	24	57 / *58	34 / *35	22	57 / *58	31 / *32	20	53 / *54	26	17	45 / *46	22 / *23	14	39	19	12	33 / *34	17	11	29 / *30	15	9	26	13	8		
		3	14.0		54 / *56	37 / *38	23 / *24	54 / *56	34	21 / *22	54 / *56	31	19 / *20	51 / *53	26	16 / *17	44 / *45	22	14	38	19	12	33	17	11	29	15	9	25 / *26	13	8		
		4	18.4		52 / *55	36 / *37	23	52 / *55	33 / *34	21	52 / *55	30 / *31	19	50 / *51	25 / *26	16	43 / *44	22	14	37 / *38	19	12	32 / *33	16 / *17	10 / *11	28 / *29	14 / *15	9	25	13	8		
		5	22.6		50 / *53	35 / *36	23	50 / *53	32 / *33	21	50 / *53	30	19	48 / *50	25 / *26	16	41 / *43	21 / *22	14	36 / *37	19	12	31 / *32	16	10	10 / *11	28	14	9	25	13	8	
		6	26.6		48 / *52	35 / *36	22 / *23	48 / *52	32 / *33	21	48 / *52	29 / *30	19	47 / *49	25	16	41 / *42	21 / *22	14	35 / *36	18 / *19	12	31 / *32	16	10	27 / *28	14	9	24 / *25	13	8		
		8	33.7		45 / *49	45 / *49	45 / *49	43 / *47	43 / *45	43 / *45	41 / *44	40 / *41	40 / *41	37 / *40	34 / *35	34 / *35	34 / *36	29 / *30	29 / *30	31 / *32	26	26	27 / *28	22 / *23	22 / *23	24 / *25	20	20	21 / *22	18	18		
		10	39.8		44 / *48	44 / *48	44 / *48	42 / *46	42 / *44	42 / *44	40 / *44	38 / *40	38 / *40	36 / *39	33 / *34	33 / *34	33 / *36	29 / *30	29 / *30	30 / *31	25 / *26	25 / *26	26 / *27	22 / *23	22 / *23	23 / *24	20	20	21 / *22	17 / *18	17 / *18		
		12	45.0		43 / *47	43 / *47	43 / *47	41 / *45	40 / *43	40 / *43	39 / *43	37 / *39	37 / *39	36 / *39	32 / *34	33 / *35	28 / *29	28 / *29	29 / *30	25	25	26 / *27	22	22	23 / *24	19 / *20	19 / *20	21	17 / *18	17 / *18			
0	C	0	0.0		50	25	16	45	23	14	41	21	13	34	18	11	29	15	9	24	13	8	21	11	7	19	10	6	16	9	5		
		1	4.8		48 / *49	25	15	44	23	14	40	21	13	33	17	11	28	15	9	24	13	8	21	11	7	18	10	6	16	9	5		
		2	9.5		53 / *54	26	17	48 / *49	24	15	43 / *44	22	14	36 / *37	18	12	31	16	10	27	13	8 / *9	23	12	7	20	10	6	18	9	6		
		3	14.0		51 / *52	26	16 / *17	46 / *47	23 / *24	15	42 / *43	21 / *22	14	36	18	11 / *12	30 / *31	15 / *16	10	26	13	8	23	12	7	20	10	6	18	9	6		
		4	18.4		50 / *51	25 / *26	16	45 / *46	23	15	41 / *42	21	13 / *14	35 / *36	18	11	30	15	10	26	13	8	22 / *23	12	7	20	10	6	18	9	6		
		5	22.6		48 / *50	25	16	44 / *45	23	15	40 / *41	21	13 / *14	34 / *35	18	11	29 / *30	15	10	25 / *26	13	8	22 / *23	11 / *12	7	20	10	6	17 / *18	9	6		
		6	26.6		47 / *49	25	16	43 / *45	22 / *23	14 / *15	39 / *41	21	13	33 / *34	17 / *18	11	29	15	10	25 / *26	13	8	22	11	7	19 / *20	10	6	17	9	6		
		8	33.7		37 / *40	34 / *35	34 / *35	35 / *38	31 / *32	31 / *32	33 / *35	28 / *29	28 / *29	29 / *30	24 / *25	24 / *25	25 / *26	21	21	22	18 / *19	18 / *19	19 / *20	16	16	17	14	14	15	13	13		
		10	39.8		36 / *39	33 / *34	33 / *34	34 / *37	30 / *31	30 / *31	33 / *35	28 / *29	28 / *29	28 / *29	24 / *25	24 / *25	25 / *26	21 / *22	21	21	21	18	18	19	16	16	17	14	14	15	12 / *13	12 / *13	
		12	45.0		36 / *39	32 / *34	32 / *34	34 / *37	30 / *31	30 / *31	35 / *36	28 / *29	28 / *29	28 / *29	23 / *24	23 / *24	24 / *25	20 / *21	20	20	21	17 / *18	17 / *18	18 / *19	15	15	16	13	13	14	12	12	13
0	D	0	0.0		41	21	13	37	19	12	33	17	11	28	15	9	24	12	8	20	11	7	18	9	6	15	8	5	14	7	4		
		1	4.8		40	21	13	36	19	12	33	17	11	27 / *28	14	9	23	12	8	20	11	7	17	9	6	15	8	5	14	7	4		
		2	9.5		44	22	14	40	20	13	36	18	11 / *12	30 / *31	15	10	26	13	8	22</td													

Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Plywood Only - Portrait (60 Cell) - Maximum Mount Spacing in Inches																																	
Ground Snow Load (psf)	Exposure Category	Roof Pitch	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180				
					X:12	Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3						
20	B	0	0.0		33	33	23	33	33	20	33	31	19	33	25	16	33	22	13	33	19	11	31	16	10	27	14	9	24	12	8		
		1	4.8		28/*29	28/*29	22	28/*29	28/*29	20	28/*29	28/*29	18	28/*29	25	16	28/*29	21	13	28/*29	18	11	28/*29	16	10	27	14	9	23	12	8		
		2	9.5		25/*27	25/*27	24	25/*27	25/*27	22	25/*27	25/*27	20	25/*27	25/*26	17	25/*27	22/*23	14	25/*27	19	12	24/*26	17	11	23/*25	15	9	23/*24	13	8		
		3	14.0		23/*25	23/*25	23/*24	23/*25	23/*25	21/*22	23/*25	19/*20	23/*25	23/*25	16/*17	23/*25	22	14	23/*25	19	12	22/*24	17	11	22/*23	15	9	21/*23	13	8			
		4	18.4		22/*25	22/*25	22/*23	22/*25	22/*25	21	22/*25	22/*25	19	22/*25	22/*25	16	22/*25	22	14	22/*25	19	12	22/*24	16/*17	10/*11	21/*23	14/*15	9	20/*22	13	8		
		5	22.6		22/*25	22/*25	22/*23	22/*25	22/*25	21	22/*25	22/*25	19	22/*25	22/*25	16	22/*25	21/*22	14	22/*25	19	12	22/*24	16	10/*11	21/*24	14	9	20/*23	13	8		
		6	26.6		23/*26	23/*26	23/*23	23/*26	23/*26	21	23/*26	23/*26	19	23/*26	23/*25	16	23/*26	21/*22	14	23/*26	18	12	22/*25	16	10	21/*24	14	9	21/*23	13	8		
		8	33.7		24/*28	24/*28	24/*28	24/*27	24/*27	24/*27	23/*27	23/*27	23/*27	22/*25	22/*25	22	22/*25	21/*24	21/*24	21/*24	21/*24	20/*23	20/*23	19/*22	19/*22	19/*21	19/*20	19/*20	18/*20	18/*20	18		
		10	39.8		26/*31	26/*31	26/*31	26/*30	26/*30	26/*30	25/*29	25/*29	25/*29	24/*28	24/*28	24/*28	23/*26	23/*26	22/*25	22/*25	21/*24	21/*24	21/*23	21/*23	20/*22	20/*22	20	19/*21	17/*18	17/*18			
		12	45.0		29/*34	29/*34	29/*34	28/*33	28/*33	28/*33	27/*32	27/*32	27/*32	26/*30	26/*30	26/*30	25/*28	25/*28	25/*28	23/*27	23/*25	22/*25	22	22	21/*24	19/*20	19/*20	20/*21	17/*18	17/*18			
25	C	0	0.0		33	25	16	33	23	14	33	21	13	33	18	11	29	15	9	24	13	8	21	11	7	19	10	6	16	9	5		
		1	4.8		28/*29	25	15	28/*29	23	14	28/*29	21	13	28/*29	17	11	28	15	9	24	13	8	21	11	7	18	10	6	16	9	5		
		2	9.5		25/*27	25/*26	17	25/*27	24	15	25/*27	22	14	25/*26	18	12	24/*25	16	10	23/*24	13	8/*9	22/*23	12	7	20	10	6	18	9	6		
		3	14.0		23/*25	23/*25	16/*17	23/*25	23/*24	15	23/*25	21/*22	14	23/*25	18	11	22/*24	15	10	21/*23	13	8	20/*22	10	6	18	9	6					
		4	18.4		22/*25	22/*25	16	22/*25	22/*23	14	22/*25	22/*23	15	22/*25	21/*24	10	21/*23	13	8	20/*22	12	7	19/*20	10	6	17/*18	9	6					
		5	22.6		22/*25	22/*25	16	22/*25	22/*25	19	22/*25	22/*25	17	22/*25	22/*25	15	21/*24	13	8	20/*22	11	7	19	10	6	17	9	5					
		6	26.6		23/*26	23/*26	16	23/*26	23/*26	19	22/*25	22/*25	17	21/*24	21/*24	15	21/*24	20	10	20/*23	18	7	18/*19	10	6	16	8	5	14/*15	7	5		
		8	33.7		22/*25	22/*25	22/*25	22/*25	22/*25	21	22/*25	22/*25	20	22/*25	22/*25	19	21/*21	19/*21	17/*18	17/*18	17/*18	18/*19	18/*19	17/*19	16	16	16	16	16	16	16	16	16
		10	39.8		23/*26	23/*26	23/*26	23/*26	23/*26	21	22/*25	22/*25	20	21/*24	21/*24	19	21/*21	20/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	
		12	45.0		25/*28	25/*28	25/*28	25/*29	25/*29	25/*29	24/*28	24/*28	24/*28	23/*26	23/*26	23/*24	21/*24	20/*21	20/*21	20/*21	20/*21	20/*21	20/*21	20/*21	20/*21	20/*21	20/*21	20/*21	20/*21	20/*21	20/*21	20/*21	
30	D	0	0.0		32	32	23	32	32	20	32	31	19	32	25	16	32	22	13	32	19	11	31	16	10	27	14	9	24	12	8		
		1	4.8		28/*29	28/*29	22	28/*29	28/*29	20	28/*29	28/*29	18	28/*29	25	16	28/*29	21	13	28/*29	18	11	28/*29	16	10	27	14	9	23	12	8		
		2	9.5		24/*26	24/*26	24	24/*26	24/*26	22	24/*26	24/*26	20	24/*26	24/*26	17	24/*26	22/*23	14	24/*26	19	12	23/*25	17	11</								

Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Plywood Only - Portrait (60 Cell) - Maximum Mount Spacing in Inches																																		
Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180					
					Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3								
30	B	0	0.0		28	28	23	28	28	20	28	28	19	28	25	16	28	22	13	28	19	11	28	16	10	27	14	9	24	12	8			
		1	4.8		24/*25	24/*25	22	24/*25	24/*25	20	24/*25	24/*25	18	24/*25	24/*25	16	24/*25	21	13	24/*25	18	11	24/*25	16	10	24/*25	14	9	23	12	8			
		2	9.5		21/*23	21/*23	21	21/*23	21/*23	21	21/*23	21/*23	20	21/*23	21/*23	17	21/*23	21/*23	14	21/*23	19	12	21/*22	17	11	20/*22	15	9	20/*21	13	8			
		3	14.0		19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	16/*17	19/*21	19/*21	14	19/*21	19	12	19/*21	17	11	19/*20	15	9	18/*20	13	8		
		4	18.4		18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	14	18/*21	18/*19	12	18/*21	16/*17	10/*11	18/*20	14/*15	9	18/*20	13	8		
		5	22.6		18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	14	18/*21	18/*19	12	18/*21	16/*11	10/*11	18/*21	14	9	18/*20	13	8		
		6	26.6		19/*22	19/*22	19/*22	19/*22	19/*22	19/*22	19/*22	19/*22	19/*22	19/*22	19/*22	19/*22	19/*22	19/*22	19/*22	14	19/*22	19/*22	19/*22	19/*22	19/*22	19/*22	19/*22	19/*22	19/*22	19/*22	19/*22	19/*22		
		8	33.7		20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	16	20/*23	18/*20	17/*19	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	
		10	39.8		22/*25	22/*25	22/*25	22/*25	22/*25	22/*25	22/*25	22/*25	22/*25	22/*25	22/*25	22/*25	22/*25	22/*25	22/*25	21	22/*25	21/*24	21/*24	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23
		12	45.0		24/*27	24/*27	24/*27	24/*27	24/*27	24/*27	24/*27	24/*27	24/*27	24/*27	24/*27	24/*27	24/*27	24/*27	24/*27	23	24/*27	23/*27	23/*27	22/*26	22/*26	22/*26	22/*26	22/*26	22/*26	22/*26	22/*26	22/*26	22/*26	22/*26
		0	0.0		28	21	13	28	19	12	28	17	11	28	15	9	24	12	8	21	11	7	19	10	6	16	9	5	14	7	4			
		1	4.8		24/*25	24/*25	21	13	24/*25	19	12	24/*25	17	11	24/*25	14	9	23	12	8	20	11	7	17	9	6	15	8	5	14	7	4		
		2	9.5		21/*23	21/*23	21	14	21/*23	20	13	21/*23	18	11/*12	20/*22	15	10	20/*21	13	8	19/*20	12	7	18/*20	10	6	18	9	6	15	8	5		
		3	14.0		19/*21	19/*21	14	19/*21	19/*21	15	19/*21	19/*21	14	19/*21	18	11/*12	19/*21	15/*16	10	18/*20	13	8	18/*19	12	7	17/*19	10	6	16/*18	9	6			
		4	18.4		18/*21	18/*21	16	18/*21	18/*21	15	18/*21	18/*21	13/*14	18/*21	18/*21	18/*21	18/*21	18/*21	15	18/*20	13	10	18/*20	12	7	17/*18	10	6	16/*18	9	6			
		5	22.6		18/*21	18/*21	18/*14	18/*21	18/*19	12	18/*21	18/*19	11	18/*21	15	9/*10	18/*20	13	8	17/*19	11	7	17/*18	10	6	16/*17	9	5	15	7	5			
		6	26.6		19/*22	19/*22	13/*14	19/*22	19/*22	19	19/*22	19/*22	17/*18	11	19/*21	15	10	18/*21	13	8	17/*20	11	7	17/*19	10	6	16	8	5	14/*15	7	5		
		8	33.7		19/*22	19/*22	19/*22	19/*22	19/*22	19/*22	19/*22	19/*22	19/*22	19/*22	19/*22	19/*22	19/*22	19/*22	19/*22	16	19/*22	18/*21	17/*19	16/*18	16/*18	15/*17	15/*16	14	14	14/*15	13	13		
		10	39.8		20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	21	20/*24	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23		
		12	45.0		22/*26	22/*26	22/*26	22/*26	22/*26	22/*26	22/*26	22/*26	22/*26	22/*26	22/*26	22/*26	22/*26	22/*26	22/*26	21	22/*26	21/*25	21/*25	21/*25	21/*25	21/*25	21/*25	21/*25	21/*25	21/*25	21/*25	21/*25		
35	B	0	0.0		26	26	23	26	26	20	26	26	19	26	25	16	26	22	13	26	19	11	26	16	10	26	14	9	24	12	8			
		1	4.8		21/*22	21/*22	21/*22	21/*22	21/*22	20	21/*22	21/*22	18	21/*22	21/*22	16	21/*22	21	13	21														

## **Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Plywood Only - Portrait (60 Cell) - Maximum Mount Spacing in Inches**

Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180				
				Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3		
40	B	0	0.0		23	23	23	23	23	20	23	23	19	23	23	16	23	22	13	23	19	11	23	16	10	23	14	9	23	12	8		
		1	4.8		19/*20	19/*20	19/*20	19/*20	19/*20	19/*20	19/*20	19/*20	18	19/*20	19/*20	16	19/*20	19/*20	13	19/*20	18	11	19/*20	16	10	19/*20	14	9	19/*20	12	8		
		2	9.5		16/*18	16/*18	16/*18	16/*18	16/*18	16/*18	16/*18	16/*18	16/*18	16/*18	16/*18	16/*17	16/*18	16/*18	14	16/*18	16/*18	12	16/*18	16/*17	11	16/*18	15	9	16/*17	13	8		
		3	14.0		14/*16	14/*16	14/*16	14/*16	14/*16	14/*16	14/*16	14/*16	14/*16	14/*16	14/*16	14/*16	14/*16	14/*16	14/*16	14	14/*16	14/*16	12	14/*16	14/*16	11	14/*16	14/*15	9	14/*16	13	8	
		4	18.4		14/*16	14/*16	14/*16	14/*16	14/*16	14/*16	14/*16	14/*16	14/*16	14/*16	14/*16	14/*16	14/*16	14/*16	14/*16	14	14/*16	14/*16	12	14/*16	14/*16	10/*11	14/*16	14/*15	9	14/*16	13	8	
		5	22.6		14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14	14/*17	14/*17	12	14/*17	14/*17	10/*11	14/*17	14/*16	9	14/*17	13	8	
		6	26.6		15/*18	15/*18	15/*18	15/*18	15/*18	15/*18	15/*18	15/*18	15/*18	15/*18	15/*18	15/*18	15/*18	15/*18	15/*18	14	15/*18	15/*18	12	15/*18	15/*18	10	15/*18	14	9	15/*17	13	8	
		8	33.7		17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	16	16/*19	16/*19	15/*18	15/*18	15/*17	15/*17	15/*17	14/*16	14/*16	14/*16	14/*16	14/*16	14/*16
		10	39.8		19/*23	19/*23	19/*23	19/*23	19/*23	19/*23	19/*23	19/*23	19/*23	19/*23	19/*23	19/*23	19/*23	19/*23	19/*23	18	18/*22	18/*22	17/*22	17/*22	17/*22	17/*22	17/*22	16/*19	16/*18	16/*18	16/*18	16/*18	16/*18
		12	45.0		22/*26	22/*26	22/*26	22/*26	22/*26	21/*25	21/*24	21/*24	21/*24	21/*24	21/*24	21/*24	21/*24	21/*24	20	20/*23	20/*23	19/*22	19/*22	19/*22	19/*22	19/*22	18/*21	18/*21	18/*21	17/*20	17/*20	17/*19	
	C	0	0.0		23	23	16	23	23	14	23	21	13	23	18	11	23	15	9	23	13	8	21	11	7	19	10	6	16	9	5		
		1	4.8		19/*20	19/*20	15	19/*20	19/*20	14	19/*20	19/*20	13	19/*20	17	11	19/*20	15	9	19/*20	13	8	19/*20	11	7	18	10	6	16	9	5		
		2	9.5		16/*18	16/*18	16	16/*18	16/*18	15	16/*18	16/*18	14	16/*18	16/*18	12	16/*18	16	10	16/*18	13	8/*9	16/*17	12	7	15/*16	10	6	15/*16	9	6		
		3	14.0		14/*16	14/*16	14/*16	14/*16	14/*16	14/*15	14/*16	14/*16	14/*16	14/*16	14/*16	14/*16	11/*12	14/*16	14/*16	10	14/*16	11/*12	14/*16	13	8	14/*15	9	6					
		4	18.4		14/*16	14/*16	14/*16	14/*16	14/*16	14/*15	14/*16	14/*16	14/*16	14/*16	14/*16	14/*16	13/*14	14/*16	14/*16	10	14/*16	13/*14	14/*16	12	7	14/*15	10	6	13/*15	9	6		
		5	22.6		14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14	14/*17	14/*17	13	14/*17	14/*17	11	14/*17	14/*16	9	14/*17	13	8	
		6	26.6		15/*18	15/*18	15/*18	15/*18	15/*18	15/*18	15/*18	15/*18	15/*18	15/*18	15/*18	15/*18	15/*18	15/*18	15/*18	14	15/*18	15/*18	13	15/*18	15/*18	11	15/*18	14	9	15/*17	13	8	
		8	33.7		16/*18	16/*18	16/*18	16/*18	16/*18	16/*17	16/*18	16/*18	16/*18	16/*18	16/*18	16/*18	16/*17	16/*18	16/*18	15	16/*18	16/*18	14	16/*18	16/*18	12	16/*18	14	11	16/*18	13	11	
		10	39.8		18/*21	18/*21	18/*21	18/*21	18/*21	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	16/*18	16/*18	16/*18	16/*18	16/*18	16/*18	
		12	45.0		21/*24	21/*24	21/*24	21/*24	21/*24	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	19	20/*22	19/*22	19/*22	19/*22	19/*22	19/*22	19/*22	18/*20	18/*20	18/*20	17/*19	17/*19	17/*19	
	D	0	0.0		23	21	13	23	19	12	23	17	11	23	15	9	23	12	8	20	11	7	18	9	6	15	8	5	14	7	4		
		1	4.8		19/*20	19/*20	13	19/*20	19/*20	12	19/*20	17	11	19/*20	14	9	19/*20	12	8	19/*20	11	7	17	9	6	15	8	5	14	7	4		
		2	9.5		16/*18	16/*18	14	16/*18	16/*18	13	16/*18	16/*18	11	16/*18	15	10	16/*17	13	8	16/*17	11	7	15/*16	10	6	15/*16	9	5	14/*15	8	5		
		3	14.0		14/*16	14/*16	14	14/*16	14/*16	14	14/*16	14/*16	11	14/*16	14/*15	10	14/*16	13	8	14/*16	11	7	14/*15	10	6	14/*15	9	5	13/*14	8	5		
		4	18.4		14/*16	14/*16	14	14/*16	14/*16	14	14/*16	14/*16	11	14/*16	14/*15	10	14/*16	13	8	14/*16	11	7	14/*15	10	6	13/*15	8	5	13/*14	7	5		
		5	22.6		14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14	14/*17	14/*17	13	14/*17	14/*17	11	14/*17	14/*16	9	14/*17	13	5		
		6	26.6		15/*18	15/*18	13/*14	15/*18	15/*18	12	15/*18	15/*18	11	15/*18	15	9	15/*17	13	8	15/*17	11	7	14/*16	10	6	14/*15	8	5	13/*15	7	5		
		8	33.7		16/*18	16/*18	16/*18	16/*18	16/*18	16/*17	16/*18	16/*18	16/*18	16/*18	16/*18	16/*17	16/*18	16/*18	15	16/*18	16/*18	14	16/*18	16/*18	12	16/*18	14	11	16/*18	13	11		

## **Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Plywood Only - Portrait (60 Cell) - Maximum Mount Spacing in Inches**

## Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Plywood Only - Portrait (60 Cell) - Maximum Mount Spacing in Inches

Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180			
					Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
80	B	0	0.0		12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	12	12	10	12	12	9	12	12	8			
		1	4.8		10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	8				
		2	9.5		8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9			
		3	14.0		7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8			
		4	18.4		7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8			
		5	22.6		7/*9	7/*9	7/*9	7/*9	7/*9	7/*9	7/*9	7/*9	7/*9	7/*9	7/*9	7/*9	7/*9	7/*9	7/*9	7/*9	7/*9	7/*9	7/*9	7/*9	7/*9	7/*9	7/*9	7/*9	7/*9			
		6	26.6		8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9			
		8	33.7		9/*11	9/*11	9/*11	9/*11	9/*11	9/*11	9/*11	9/*11	9/*11	9/*11	9/*11	9/*11	9/*11	9/*11	9/*11	9/*11	9/*11	9/*11	9/*11	9/*11	9/*11	9/*11	9/*11	9/*11	9/*11			
		10	39.8		11/*13	11/*13	11/*13	11/*13	11/*13	11/*13	11/*13	11/*13	11/*13	11/*13	11/*13	11/*13	11/*13	11/*13	11/*13	11/*13	11/*13	11/*13	11/*13	11/*13	11/*13	11/*13	11/*13	11/*13				
		12	45.0		13/*16	13/*16	13/*16	13/*16	13/*16	13/*16	13/*16	13/*16	13/*16	13/*16	13/*16	13/*16	13/*16	13/*16	13/*16	13/*16	13/*15	13/*15	12/*15	12/*15	12/*14	12/*14	12/*14	12/*14				
	C	0	0.0		12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	9	12	12	8	12	11	7	12	10	6	12	9	5
		1	4.8		10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	8	10	10	7	10	10	6	10	9	5
90	B	0	0.0		10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	8	
		1	4.8		9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	
		2	9.5		7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8		
		3	14.0		7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7		
		4	18.4		6/*7	6/*7	6/*7	6/*7	6/*7	6/*7	6/*7	6/*7	6/*7	6/*7	6/*7	6/*7	6/*7	6/*7	6/*7	6/*7	6/*7	6/*7	6/*7	6/*7	6/*7	6/*7	6/*7	6/*7	6/*7	6/*7		
		5	22.6		7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8			
		6	26.6		7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8			
		8	33.7		8/*10	8/*10	8/*10	8/*10	8/*10	8/*10	8/*10	8/*10	8/*10	8/*10	8/*10	8/*10	8/*10	8/*10	8/*10	8/*10	9/*10	9/*10	8/*10	8/*10	8/*10	8/*10	8/*10	8/*10	8/*10	8/*10	8/*10	
		10	39.8		9/*12	9/*12	9/*12	9/*12	9/*12	9/*12	9/*12	9/*12	9/*12	9/*12	9/*12	9/*12	9/*12	9/*12	9/*12	9/*12	9/*12	9/*12	9/*12	9/*12	9/*12	9/*12	9/*12	9/*12	9/*12	9/*12		
		12	45.0		12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14			
	C	0	0.0		10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10		
		1	4.8		9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	
100	B	0	0.0		7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8		
		1	4.8		9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9		
		2</																														

Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Plywood Only - Portrait (72 Cell) - Maximum Mount Spacing in Inches																															
Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180		
					Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3		
0	B	0	0.0		56	33	20	56	29	18	53	27	16	44	22	14	37	19	12	31	16	10	27	14	9	24	12	8	21	11	7
		1	4.8		52 / 53	32	19 / *20	52 / 53	29	18	51 / *52	26	16	43	22	14	36	19	12	31	16	10	27	14	9	23	12	8	20 / *21	11	7
		2	9.5		50 / *51	33 / *34	21	50 / *51	30	19	50 / *51	27 / *28	17	47	23	15	39 / *40	20	12	34	17	11	29 / *30	15	9	26	13	8	23	11	7
		3	14.0		47 / *49	32 / *33	21	47 / *49	29 / *30	19	47 / *49	27	17	45 / *46	23	14	38 / *39	19	12	33 / *34	17	11	29	15	9	25	13	8	22 / *23	11	7
		4	18.4		45 / *48	32	20 / *21	45 / *48	29	18 / *19	45 / *48	26 / *27	17	44 / *45	22 / *23	14	37 / *38	19	12	32 / *33	16 / *17	10 / *11	28 / *29	14 / *15	9	25	13	8	22	11	7
		5	22.6		44 / *47	31 / *32	20	44 / *47	28 / *29	18	44 / *47	26	17	42 / *44	22	14	36 / *38	19	12	31 / *32	16	10 / *11	28	14	9	24 / *25	13	8	22	11	7
		6	26.6		42 / *46	30 / *31	20	42 / *46	28 / *29	18	42 / *46	25 / *26	16 / *17	41 / *43	22	14	35 / *37	19	12	31 / *32	16	10	27 / *28	14	9	24	12 / *13	8	21 / *22	11	7
		8	33.7		40 / *43	40 / *43	40 / *43	38 / *41	38 / *40	38 / *40	36 / *39	35 / *36	35 / *36	33 / *35	30 / *31	30 / *31	30 / *32	26 / *27	26 / *27	27 / *28	22 / *23	22 / *23	24	20	20	21	17 / *18	17 / *18	19	16	16
		10	39.8		38 / *42	38 / *42	38 / *42	37 / *40	36 / *38	36 / *38	35 / *38	34 / *35	34 / *35	32 / *35	29 / *30	29 / *31	25 / *26	25 / *26	26 / *27	22 / *23	22 / *23	23 / *24	19 / *20	19 / *20	20 / *21	17 / *18	17 / *18	18 / *19	15 / *16	15 / *16	
		12	45.0		37 / *42	37 / *41	37 / *41	36 / *40	35 / *37	35 / *37	34 / *38	33 / *35	33 / *35	31 / *34	28 / *30	28 / *30	29 / *31	25 / *26	25 / *26	26 / *27	21 / *22	21 / *22	23	19 / *20	19 / *20	20 / *21	17	17	18 / *19	15	15
10	B	0	0.0		44	22	14	39	20	12	36	18	11	30	15	9	25	13	8	21	11	7	19	10	6	16	9	5	14	8	5
		1	4.8		42 / *43	22	13 / *14	38 / *39	20	12	35	18	11	29	15	9	25	13	8	21	11	7	18	10	6	16	8	5	14	7	5
		2	9.5		46 / *47	23	14 / *15	42 / *43	21	13	38 / *39	19	12	32	16	10	27	14	9	23	12	7	20	10	6	18	9	6	16	8	5
		3	14.0		45 / *46	23	14	41 / *42	20 / *21	13	37 / *38	19	12	31 / *32	16	10	27	13 / *14	9	23	12	7	20	10	6	18	9	6	16	8	5
		4	18.4		43 / *45	22 / *23	14	40 / *41	20	13	36 / *37	18 / *19	12	30 / *31	16	10	26 / *27	13	8 / *9	23	12	7	20	10	6	17 / *18	9	6	15 / *16	8	5
		5	22.6		42 / *44	22	14	38 / *40	20	13	35 / *36	18	12	30 / *31	15 / *16	10	26	13	8	22 / *23	11 / *12	7	19 / *20	10	6	17	9	6	15	8	5
		6	26.6		41 / *43	21 / *22	14	38 / *39	20	13	34 / *36	18	12	29 / *30	15	10	25 / *26	13	8	22	11	7	19 / *20	10	6	17	9	6	15	8	5
		8	33.7		33 / *35	30 / *31	30 / *31	31 / *33	27 / *28	27 / *28	29 / *31	25 / *26	25 / *26	21 / *22	22 / *23	18 / *19	18 / *19	19 / *20	16	16	17	14	14	15	12 / *13	12 / *13	13	11	11		
		10	39.8		32 / *34	29 / *30	29 / *30	30 / *32	26 / *27	26 / *27	26 / *27	24 / *25	24 / *25	21 / *22	22 / *23	18	18	19	16	16	17	14	14	15	12	12	13	11	11	11	
		12	45.0		31 / *34	28 / *29	28 / *29	30 / *32	26 / *27	26 / *27	26 / *27	24 / *25	24 / *25	20 / *21	21 / *22	18	18	19	15 / *16	15 / *16	16 / *17	14	14	14	12	12	13	11	11	11	
10	C	0	0.0		36	18	11	32	17	10	29	15	9	24	13	8	21	11	7	18	9	6	15	8	5	13	7	4	12	6	4
		1	4.8		35	18	11	32	16 / *17	10	29	15	9	24	13	8	20	11	7	18	9	6	15	8	5	13	7	4	12	6	4
		2	9.5		38 / *39	19	12	35	17	11	32	16	10	26 / *27	13	8	23	11	7	19 / *20	10	6	17	8 / *9	5	15	7	5	13	7	4
		3	14.0		37 / *38	19	12	34	17	11																					

Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Plywood Only - Portrait (72 Cell) - Maximum Mount Spacing in Inches																																
Ground Snow Load (psf)	Exposure Category	Roof Pitch	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180			
					X:12	Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3					
20	B	0	0.0		29	29	20	29	29	18	29	27	16	29	22	14	29	19	12	29	16	10	27	14	9	24	12	8	21	11	7	
		1	4.8		25/*26	25/*26	19/*20	25/*26	25/*26	18	25/*26	25/*26	16	25/*26	22	14	25/*26	19	12	25/*26	16	10	25/*26	14	9	23	12	8	20/*21	11	7	
		2	9.5		22/*24	22/*24	21	22/*24	22/*24	19	22/*24	22/*24	17	22/*24	22/*23	15	22/*24	20	12	22/*23	17	11	21/*23	15	9	20/*22	13	8	20/*21	11	7	
		3	14.0		20/*22	20/*22	20/*21	20/*22	20/*22	19	20/*22	20/*22	17	20/*22	20/*22	14	20/*22	19	12	20/*22	17	11	19/*21	15	9	19/*20	13	8	18/*20	11	7	
		4	18.4		19/*22	19/*22	19/*21	19/*22	19/*22	18	19/*22	19/*22	17	19/*22	19/*22	14	19/*22	19	12	19/*22	16	11/*17	10/*11	19/*21	14/*15	9	18/*20	13	8	18/*20	11	7
		5	22.6		19/*22	19/*22	19/*20	19/*22	19/*22	18	19/*22	19/*22	17	19/*22	19/*22	14	19/*22	19	12	19/*22	16	10/*11	19/*21	14	9	18/*21	13	8	18/*20	11	7	
		6	26.6		20/*23	20/*23	20	20/*23	20/*23	18	20/*23	20/*23	16	20/*23	20/*23	14	20/*23	19	12	20/*23	16	10	19/*22	14	9	19/*21	12/*13	8	18/*20	11	7	
		8	33.7		21/*25	21/*25	21/*25	21/*24	21/*24	21	21/*24	21/*24	20	21/*23	20/*23	19	21/*22	19	12	21/*22	18	11/*20	17/*19	17/*19	17/*19	16/*18	16/*18	15/*17	15/*16	15/*16	15/*16	
		10	39.8		23/*27	23/*27	23/*27	22/*26	22/*26	22	22/*26	22/*26	20	22/*26	22/*26	18	22/*25	20/*23	19	22/*22	19	12/*20	18/*21	18/*20	18/*20	17/*19	17/*18	16/*18	16/*17	16/*16	15/*16	
		12	45.0		25/*29	25/*29	25/*29	24/*29	24/*29	24	24/*28	24/*28	23	24/*26	23/*26	22	24/*25	22/*23	21	24/*22	19	12/*20	19/*20	19/*20	18/*21	17	17	18/*19	15	15	15	
		0	0.0		29	22	14	29	20	12	29	18	11	29	15	9	25	13	8	21	11	7	19	10	6	16	9	5	14	8	5	
		1	4.8		25/*26	22	13/*14	25/*26	20	12	25/*26	18	11	25/*26	15	9	25	13	8	21	11	7	18	10	6	16	8	5	14	7	5	
		2	9.5		22/*24	22/*23	14/*15	22/*24	21	13	22/*24	19	12	22/*23	16	10	21/*22	14	9	20/*21	12	7	19/*20	10	6	18	9	6	16	8	5	
		3	14.0		20/*22	20/*22	14	20/*22	20/*21	13	20/*22	19	12	20/*22	16	10	19/*21	13	9	18/*20	12	7	18/*19	10	6	17/*18	9	6	16	8	5	
		4	18.4		19/*22	19/*22	14	19/*22	19/*21	11	19/*22	18/*19	13	19/*21	16	10	18/*20	13	8	18/*20	12	7	17/*19	10	6	17/*18	9	6	15/*16	8	5	
		5	22.6		19/*22	18/*19	12	19/*22	17	11	19/*22	15	10	18/*21	13	8	18/*20	11	7	17/*19	10	6	16/*17	8	5	14/*15	7	5	13	6/*7	4	
		6	26.6		20/*23	18	12	20/*23	17	11	20/*22	15	10	19/*21	13	8	18/*20	11	7	17/*19	10	6	16/*17	8	5	14/*15	7	5	13	6	4	
		8	33.7		19/*22	19/*22	19/*22	18/*21	18/*21	18	18/*21	18/*21	17	18/*20	18/*20	16	18/*19	15/*16	15/*16	15/*16	13/*14	13/*14	14	12	12	12	12/*13	10	10	11	11	11
		10	39.8		20/*23	20/*23	20/*23	19/*22	19/*22	19	19/*21	19/*21	18	19/*20	18/*20	17	18/*19	16/*18	15/*16	15/*16	13/*14	13/*14	14	12	12	12	12/*13	10	10	11	9	9
		12	45.0		21/*25	21/*25	21/*25	21/*24	21/*24	21	21/*23	20/*23	20	21/*22	20/*21	19	21/*19	17/*18	17/*18	17/*18	15/*19	15/*19	15	13	13	14	14/*15	12	12	13	11	9
25	B	0	0.0		28	28	20	28	28	18	28	27	16	28	22	14	28	19	12	28	16	10	27	14	9	24	12	8	21	11	7	
		1	4.8		24/*25	24/*25	19/*20	24/*25	24/*25	18	24/*25	24/*25	16	24/*25	22	14	24/*25	19	12	24/*25	16	10	24/*25	14	9	23	12	8	20/*21	11	7	
		2	9.5		21/*23	21/*23	21	21/*23	21/*23	19	21/*23	21/*23	17	21/*23	21/*23	15	21/*23	20	12	21/*23	17	11	21/*22	15	9	20/*21	13	8	19/*20	11	7	

## Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Plywood Only - Portrait (72 Cell) - Maximum Mount Spacing in Inches

Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180						
					Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3			
30	B	0	0.0		25	25	20	25	25	18	25	25	16	25	22	14	25	19	12	25	16	10	25	14	9	24	12	8	21	11	7				
		1	4.8		21/*22	21/*22	19/*20	21/*22	21/*22	18	21/*22	21/*22	16	21/*22	21/*22	14	21/*22	19	12	21/*22	16	10	21/*22	14	9	21/*22	12	8	20/*21	11	7				
		2	9.5		18/*20	18/*20	18/*20	18/*20	18/*20	18/*19	18/*20	18/*20	17	18/*20	18/*20	15	18/*20	18/*20	12	18/*20	17	11	18/*20	15	9	18/*19	13	8	17/*18	11	7				
		3	14.0		16/*18	16/*18	16/*18	16/*18	16/*18	16/*18	16/*18	16/*18	16/*17	16/*18	16/*18	14	16/*18	16/*18	12	16/*18	16/*18	11	16/*18	15	9	16/*18	13	8	16/*17	11	7				
		4	18.4		16/*18	16/*18	16/*18	16/*18	16/*18	16/*18	16/*18	16/*18	16/*17	16/*18	16/*18	14	16/*18	16/*18	12	16/*18	16/*18	10	16/*18	16/*17	9	16/*18	13	8	15/*17	11	7				
		5	22.6		16/*19	16/*19	16/*19	16/*19	16/*19	16/*19	16/*19	16/*19	16/*19	16/*19	16/*19	14	16/*19	16/*19	12	16/*19	16/*19	10	16/*11	16/*18	14	9	16/*18	13	8	16/*17	11	7			
		6	26.6		17/*20	17/*20	17/*20	17/*20	17/*20	17/*18	17/*20	17/*20	17/*20	17/*19	17/*20	17/*19	14	17/*20	17/*19	12	17/*20	17/*19	10	17/*19	14	9	16/*19	12/*13	8	16/*18	11	7			
		8	33.7		18/*22	18/*22	18/*22	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	17/*20	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	15/*17	15/*17	14/*16	14/*16	14/*16
		10	39.8		20/*24	20/*24	20/*24	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	20/*23	19/*22	19/*22	18/*20	18/*20	18/*20	17/*19	17/*19	15/*17	15/*17	15/*16	
		12	45.0		23/*27	23/*27	23/*27	22/*26	22/*26	22/*26	22/*25	22/*25	22/*25	22/*25	21/*24	21/*24	21/*24	20/*23	20/*23	20/*23	19/*22	19/*22	18/*20	18/*20	18/*20	17/*19	17	17	16/*18	15	15				
35	C	0	0.0		25	22	14	25	20	12	25	18	11	25	15	9	25	13	8	21	11	7	19	10	6	16	9	5	14	8	5				
		1	4.8		21/*22	21	13/*14	21/*22	21	12	21/*22	20	12	21/*22	18	11	21/*22	15	9	21/*22	13	8	21	11	7	18	10	6	16	8	5	14	7	5	
		2	9.5		18/*20	18/*20	14/*15	18/*20	18/*20	17	18/*20	18	11	18/*20	18	8	18/*20	13	7	18/*20	12	10	18	10	6	16	8	5	16/*17	9	6	16	8	5	
		3	14.0		16/*18	16/*18	12	16/*18	16/*17	11	16/*18	16	10	16/*18	13	8	16/*17	11	7	15/*17	10	6	15/*16	8	5	14/*16	9	6	14/*16	8	5				
		4	18.4		16/*18	16/*18	12	16/*18	16/*17	11	16/*18	15	10	16/*18	13	8	15/*17	11	7	15/*16	10	6	14/*16	8	5	14/*15	7	5	13	7	4				
		5	22.6		16/*19	16/*19	12	16/*19	16/*17	11	16/*19	15	10	16/*19	13	8	16/*17	11	7	15/*17	10	6	14/*16	8	5	14/*15	7	5	13	7	4				
		6	26.6		17/*20	17/*18	12	17/*20	17	11	17/*19	15	10	16/*19	13	8	16/*18	11	7	15/*17	9/*10	6	15/*16	8	5	14	7	5	13	6	4				
		8	33.7		16/*19	16/*19	16/*19	16/*19	16/*19	16/*19	16/*19	16/*19	16/*18	16/*18	16/*18	15/*17	15/*17	15/*17	14/*16	14/*16	14/*16	13/*14	13/*14	12/*14	12/*14	12	12	12	12/*13	10/*11	10/*11				
		10	39.8		19/*22	19/*22	19/*22	18/*22	18/*22	18/*21	18/*21	18/*21	17/*20	17/*20	17/*19	17/*19	17/*19	16/*18	16/*18	16/*18	15/*17	15/*17	15/*17	15/*17	15/*17	14/*16	14/*16	14/*16	14/*16	14/*16	14/*16				
		12	45.0		21/*25	21/*25	21/*25	21/*24	21/*24	20/*24	20/*24	19/*23	19/*23	19/*23	18/*21	18/*21	17/*20	17/*20	16/*19	16/*18	16/*18	15/*16	15/*17	14	14	12	12	12	10	11	9	9	9		
40	D	0	0.0		22	22	20	22	22	18	22	22	16	22	22	14	22	19	12	22	16	10	22	14	9	22	12	8	21	11	7				
		1	4.8		18/*19	18/*19	18/*19	18/*19	18/*19	18	18/*19	18/*19	16	18/*19	18/*19	14	18/*19	18/*19	12	18/*19	14	9	18/*19	12	8	18/*19	11	7							
		2	9.5		16/*17	16/*17	16/*17	16/*17	16/*17	16	16/*17	16/*17	16	16/*17	16/*17	15	16/*17	16/*17	12	16/*17	15	9	16/*17	13	8</td										

## Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Plywood Only - Portrait (72 Cell) - Maximum Mount Spacing in Inches

Ground Snow Load (psf)	Exposure Category	Roof Pitch	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180			
					X:12	Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3		
40	B	0	0.0		20	20	20	20	20	18	20	20	16	20	20	14	20	19	12	20	16	10	20	14	9	20	12	8	20	11	7	
		1	4.8		16/*17	16/*17	16/*17	16/*17	16/*17	16/*17	16/*17	16/*17	16/*17	16/*17	16/*17	14	16/*17	16/*17	12	16/*17	16	10	16/*17	14	9	16/*17	12	8	16/*17	11	7	
		2	9.5		14/*15	14/*15	14/*15	14/*15	14/*15	14/*15	14/*15	14/*15	14/*15	14/*15	14/*15	14/*15	14/*15	14/*15	14/*15	12	14/*15	14/*15	11	14/*15	14/*15	9	14/*15	13	8	14/*15	11	7
		3	14.0		13/*14	13/*14	13/*14	13/*14	13/*14	13/*14	13/*14	13/*14	13/*14	13/*14	13/*14	13/*14	13/*14	13/*14	13/*14	12	13/*14	13/*14	11	13/*14	13/*14	9	13/*14	13	8	13/*14	11	7
		4	18.4		12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12	12/*14	12/*14	10/*11	12/*14	12/*14	9	12/*14	12	8	12/*14	11	7
		5	22.6		12/*15	12/*15	12/*15	12/*15	12/*15	12/*15	12/*15	12/*15	12/*15	12/*15	12/*15	12/*15	12/*15	12/*15	12/*15	12	12/*15	12/*15	10/*11	12/*15	12/*15	9	12/*15	12	8	12/*15	11	7
		6	26.6		13/*15	13/*15	13/*15	13/*15	13/*15	13/*15	13/*15	13/*15	13/*15	13/*15	13/*15	13/*15	13/*15	13/*15	13/*15	12	13/*15	13/*15	10	13/*15	13/*15	9	13/*15	12	8	13/*15	11	7
		8	33.7		14/*18	14/*18	14/*18	14/*18	14/*18	14/*18	14/*18	14/*18	14/*18	14/*18	14/*18	14/*18	14/*18	14/*18	14/*18	14	14/*18	14/*18	14/*16	14/*18	14/*18	13	14/*18	13	14	14/*18	12	14/*18
		10	39.8		17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17	17/*20	17/*20	17/*19	17/*20	17/*20	16	17/*20	14	16	14/*16	13	15/*15
		12	45.0		19/*23	19/*23	19/*23	19/*23	19/*23	19/*23	19/*23	19/*23	19/*23	19/*23	19/*23	19/*23	19/*23	19/*23	19/*23	18	19/*21	18/*21	17/*20	17/*20	17/*19	16	18/*18	15	17	15/*17	15	17
		0	0.0		20	20	14	20	20	12	20	18	11	20	15	9	20	13	8	20	11	7	19	10	6	16	9	5	14	8	5	
		1	4.8		16/*17	16/*17	13/*14	16/*17	16/*17	12	16/*17	16/*17	11	16/*17	15	9	16/*17	13	8	16/*17	11	7	16/*17	10	6	16	8	5	14	7	5	
		2	9.5		14/*15	14/*15	14/*15	14/*15	14/*15	13	14/*15	14/*15	12	14/*15	14/*15	10	14/*15	14	9	14/*15	12	7	14/*15	10	6	13/*14	9	6	13/*14	8	5	
		3	14.0		13/*14	13/*14	13/*14	13/*14	13/*14	13	13/*14	13/*14	12	13/*14	13/*14	10	13/*14	13	9	13/*14	12	7	13/*14	10	6	12/*14	9	6	12/*13	8	5	
		4	18.4		12/*14	12/*14	12	12/*14	12/*14	11	12/*14	12/*14	10	12/*14	12/*13	8	12/*14	11	7	12/*14	10	6	12/*13	9	6	12/*13	8	5				
		5	22.6		12/*15	12/*15	12	12/*15	12/*15	11	12/*15	12/*15	10	12/*15	12/*13	8	12/*15	11	7	12/*15	10	6	12/*14	9	6	12/*13	8	5				
		6	26.6		13/*15	13/*15	13	13/*15	13/*15	11	13/*15	13/*15	10	13/*15	13	8	13/*15	11	7	13/*15	10	6	13/*14	9	6	12/*14	8	5				
		8	33.7		14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	12	14/*17	14/*17	12/*13	12/*13	12/*13	11	14/*17	11	13	11/*13	11	13
		10	39.8		16/*19	16/*19	15/*18	16/*19	16/*19	15/*18	16/*19	16/*19	15/*18	16/*19	16/*19	15/*18	16/*19	15/*17	15	16/*19	16/*19	15/*18	15/*17	14/*17	14/*17	14	16/*16	14	16	13/*15	13	15/*15
		12	45.0		17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17	17/*20	17/*20	17/*19	17/*20	17/*20	16	18/*19	15	17	15/*17	15	17	
		0	0.0		16	16	16	16	16	16	16	16	16	16	16	16	14	16	16	12	16	16	10	16	14	9	16	12	8	16	11	7
		1	4.8		13/*14	13/*14	13/*14	13/*14	13/*14	13/*14	13/*14	13/*14	13/*14	13/*14	13/*14	13/*14	13/*14	13/*14	13/*14	12	13/*14	13/*14	10	13/*14	13/*14	9	13/*14	12	8	13/*14	11	7
		2	9.5		11/*12	11/*12	11/*12	11/*12	11/*12	11/*12	11/*12	11/*12	11/*12	11/*12	11/*12	11/*12	11/*12	11/*12	11/*12	11	11/*12	11/*12	11	11/*12	11/*12	9	11/*12	11	8	11/*12	11</td	

## **Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Plywood Only - Portrait (72 Cell) - Maximum Mount Spacing in Inches**

## **Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Plywood Only - Portrait (72 Cell) - Maximum Mount Spacing in Inches**

Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - OSB Only - Portrait (60 Cell) - Maximum Mount Spacing in Inches																																	
Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180				
					Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3				
0	B	0	0.0		56	43	26	56	39	24	56	36	22	56	30	18	49	25	16	42	22	13	36	19	12	32	17	10	28	15	9		
		1	4.8		53 / 54	42 / *43	26	53 / 54	38 / *39	24	53 / 54	35	22	53 / 54	29	18	48	25	15 / *16	41	21 / *22	13	35 / *36	19	12	31	16	10	27	14 / *15	9		
		2	9.5		51 / *52	44 / *45	28	51 / *52	40	25	51 / *52	36 / *37	23	51 / *52	31	19 / *20	51 / *52	26	17	45	23	14	39	20	12 / *13	34	17	11	30	15	10		
		3	14.0		49 / *50	43 / *44	27 / *28	49 / *50	39 / *40	25	49 / *50	36	23	49 / *50	30	19	49 / *50	26	16 / *17	44	22	14	38 / *39	19 / *20	12	33 / *34	17	11	30	15	10		
		4	18.4		47 / *49	42 / *43	27	47 / *49	38 / *39	24 / *25	47 / *49	35 / *36	22 / *23	47 / *49	30	19	47 / *49	25 / *26	16	42 / *43	22	14	37 / *38	19	12	33	17	11	29 / *30	15	10		
		5	22.6		45 / *48	41 / *42	26 / *27	45 / *48	37 / *38	24 / *25	45 / *48	34 / *35	22	45 / *48	29 / *30	19	45 / *48	25	16	41 / *43	22	14	36 / *37	19	12	32 / *33	17	11	29	15	10		
		6	26.6		44 / *47	40 / *41	26 / *27	44 / *47	37 / *38	24	44 / *47	34	22	44 / *47	29	19	44 / *47	25	16	41 / *42	21 / *22	14	36 / *37	19	12	32	17	11	28 / *29	15	9 / *10		
		8	33.7		42 / *44	42 / *44	42 / *44	40 / *42	40 / *42	40 / *42	38 / *40	38 / *40	34 / *36	34 / *36	31 / *33	31 / *33	31 / *33	31 / *33	28 / *29	28 / *29	26 / *27	26 / *27	23 / *24	23 / *24	21 / *22	21	21	21	21	21	21		
		10	39.8		41 / *44	41 / *44	41 / *44	39 / *41	39 / *41	39 / *41	37 / *39	37 / *39	33 / *35	33 / *35	30 / *32	30 / *32	30 / *32	30 / *32	28 / *29	28 / *29	25 / *26	25 / *26	23 / *24	23 / *24	21 / *22	20 / *21	20 / *21	20 / *21	20 / *21	20 / *21			
		12	45.0		40 / *43	40 / *43	40 / *43	38 / *41	38 / *41	38 / *41	36 / *39	36 / *39	33 / *35	33 / *35	30 / *32	30 / *32	30 / *32	30 / *32	27 / *29	27 / *29	25 / *26	25 / *26	23 / *24	23 / *24	22 / *23	22 / *23	21 / *22	20	20				
10	C	0	0.0		56	30	18	52	27	17	47	24	15	39	21	13	33	17	11	29	15	9	25	13	8	22	11	7	19	10	6		
		1	4.8		53 / 54	29	18	51	26 / *27	16	46	24	15	39	20	13	33	17	11	28	15	9	24 / *25	13	8	21 / *22	11	7	19	10	6		
		2	9.5		51 / *52	30 / *31	19	51 / *52	28	18	50 / *51	25	16	42 / *43	21	14	36	18	12	31	16	10	27	14	9	24	12	8	21	11	7		
		3	14.0		49 / *50	30	19	49 / *50	27 / *28	17 / *18	49 / *50	25	16	41 / *42	21	13	35 / *36	18	11 / *12	30 / *31	16	10	27	14	9	23 / *24	12	8	21	11	7		
		4	18.4		47 / *49	29 / *30	19	47 / *49	27	17	47 / *49	25	16	40 / *41	21	13	34 / *35	18	11	30	15 / *16	10	26	13 / *14	9	23	12	8	20 / *21	11	7		
		5	22.6		45 / *48	29 / *25	16	45 / *48	26 / *27	17	45 / *48	24 / *25	16	39 / *40	21	13	34 / *35	18	11	29 / *30	15	10	26	13	8	22	12	7	20	10 / *11	7		
		6	26.6		44 / *47	28 / *29	18 / *19	44 / *47	26 / *27	17	44 / *47	24	15	16 / *16	39 / *40	20	13	33 / *34	17 / *18	11	29 / *30	15	10	25 / *26	13	9	22 / *23	12	7	7 / *8	20	10	7
		8	33.7		34 / *36	34 / *36	34 / *36	32 / *34	32 / *34	32 / *34	30 / *32	30 / *32	27 / *28	27 / *28	24 / *25	24 / *25	24 / *25	24 / *25	22 / *23	21 / *22	20	19	19	18	18	16 / *17	16 / *17	15	15	15	15		
		10	39.8		33 / *35	33 / *35	33 / *35	31 / *33	31 / *33	31 / *33	30 / *31	30 / *31	27 / *28	27 / *28	24 / *25	24 / *25	24 / *25	24 / *25	21 / *22	20 / *21	19	19	19	18	18	16 / *17	16 / *17	15	15	15	15		
		12	45.0		33 / *35	33 / *35	33 / *35	31 / *33	31 / *33	31 / *33	29 / *31	29 / *31	26 / *28	26 / *28	23 / *24	23 / *24	23 / *24	23 / *24	21 / *22	20	19	19	17 / *18	17 / *18	15 / *16	15 / *16	14	14	14	14	14	14	
20	D	0	0.0		48	25	15	43	22	14	39	20	13	33	17	11	28	15	9	24	13	8	21	11	7	18	10	6	16	8	5		
		1	4.8		46 / *47	24	15	42	22	14	38	20	13	32	17	11	27	14	9	23 / *24	12	8	20	11	7	18	10	6	16	8	5		
		2	9.5		51</td																												

Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - OSB Only - Portrait (60 Cell) - Maximum Mount Spacing in Inches																																
Ground Snow Load (psf)	Exposure Category	Roof Pitch	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170						
					X:12	Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3					
20	B	0	0.0		29	29	26	29	29	24	29	29	22	29	29	18	29	25	16	29	22	13	29	19	12	29	17	10	28	15	9	
		1	4.8		25/*26	25/*26	25/*26	25/*26	25/*26	24	25/*26	25/*26	22	25/*26	25/*26	18	25/*26	25	15/*16	25/*26	21/*22	13	25/*26	19	12	25/*26	16	10	25/*26	14/*15	9	
		2	9.5		23/*24	23/*24	23/*24	23/*24	23/*24	23	23/*24	23/*24	23	23/*24	23/*24	19/*20	23/*24	23/*24	17	23/*24	23	14	22/*23	20	12/*13	21/*22	17	11	21	15	10	
		3	14.0		21/*23	21/*23	21/*23	21/*23	21/*23	21	21/*23	21/*23	21	21/*23	21/*23	19	21/*23	21/*23	16/*17	21/*23	21/*22	14	20/*22	19/*20	12	20/*21	17	11	19/*20	15	10	
		4	18.4		21/*23	21/*23	21/*23	21/*23	21/*23	21	21/*23	21/*23	21	21/*23	21/*23	21	21/*23	21/*23	16	21/*22	21/*22	14	20/*22	19	12	19/*21	17	11	19/*20	15	10	
		5	22.6		21/*23	21/*23	21/*23	21/*23	21/*23	21	21/*23	21/*23	21	21/*23	21/*23	19	21/*23	21/*23	16	21/*22	21/*22	14	20/*22	19	12	20/*21	17	11	19/*21	15	10	
		6	26.6		22/*24	22/*24	22/*24	22/*24	22/*24	22	22/*24	22/*24	22	22/*24	22/*24	19	22/*24	22/*24	16	21/*24	21/*22	14	21/*23	19	12	20/*22	17	11	19/*21	15	9/*10	
		8	33.7		23/*26	23/*26	23/*26	23/*26	23/*26	23	22/*25	22/*25	22	22/*25	22/*25	23	23/*25	23/*25	22	22/*24	22/*24	19	21/*23	21/*23	19	19/*21	17	11	19/*21	15	10/*18	
		10	39.8		25/*28	25/*28	25/*28	25/*28	25/*28	24	24/*28	24/*28	24	24/*28	24/*28	24	24/*27	24/*27	23	23/*25	23/*25	22	22/*24	22/*24	21	21/*23	21/*23	20	20/*22	18/*20	18/*19	
		12	45.0		27/*31	27/*31	27/*31	27/*31	27/*31	27	27/*30	27/*30	27	27/*30	27/*30	26	26/*29	25/*28	23	23/*26	23/*26	22	22/*24	21/*23	21	21/*23	20	20/*22	19/*20	19/*20		
		0	0.0		29	29	18	29	27	17	29	24	15	29	21	13	29	17	11	29	15	9	25	13	8	22	11	7	19	10	6	
25	C	0	0.0		29	29	18	29	27	17	29	24	15	29	21	13	29	17	11	29	15	9	24/*25	13	8	21/*22	11	7	19	10	6	
		1	4.8		25/*26	25/*26	18	25/*26	25/*26	16	25/*26	25/*26	24	25/*26	20	13	25/*26	17	11	25/*26	15	9	24/*25	13	8	21/*22	11	7	19	10	6	
		2	9.5		23/*24	23/*24	19	23/*24	23/*24	18	23/*24	23/*24	16	22/*24	21	14	22/*23	18	12	21/*22	16	10	20/*21	14	9	19/*20	12	8	18/*19	11	7	
		3	14.0		21/*23	21/*23	19	21/*23	21/*23	17	21/*23	21/*23	16	21/*22	21	13	13/*14	20/*21	18	11/*12	19/*21	16	10	19/*20	14	9	18/*19	12	8	17/*18	11	7
		4	18.4		21/*23	21/*23	19	21/*23	21/*23	17	21/*23	21/*23	16	20/*22	20/*21	13	20/*21	20/*21	18	19/*20	15/*16	10	18/*20	13/*14	9	18/*19	12	8	17/*18	11	7	
		5	22.6		21/*23	21/*23	19	21/*23	21/*23	17	21/*23	21/*23	16	21/*23	21	13	20/*22	20/*21	18	19/*21	15	10	18/*20	13/*14	9	18/*19	12	8	16/*17	9	6	
		6	26.6		22/*24	22/*24	16	21/*24	21/*24	14	21/*24	21/*24	13	20/*22	20/*21	11	20/*22	20/*21	17	19/*20	15/*16	10	18/*20	13/*14	9	18/*19	12	8	16/*17	9	6	
		8	33.7		21/*23	21/*23	19	20/*23	20/*23	17	20/*22	20/*22	19	20/*21	19/*21	17	19/*21	17/*19	15	17/*18	16/*18	13	17/*17	16/*17	13	15/*16	14/*15	10	14/*15	14/*15	10/*15	
		10	39.8		23/*25	23/*25	23/*25	23/*25	23/*25	22	22/*25	22/*25	22	22/*25	22/*25	21	21/*24	21/*24	20	20/*22	20/*22	19	19/*21	19/*21	17	17/*18	16/*17	13	16/*17	15/*16	14/*15	
		12	45.0		25/*28	25/*28	25/*28	25/*28	25/*28	24	24/*27	24/*27	24	24/*27	24/*27	23	23/*26	23/*26	22	22/*24	22/*24	21	21/*23	21/*23	20	20/*22	19/*20	18/*20				
		0	0.0		28	28	26	28	28	24	28	28	22	28	28	18	28	25	16	28	22	13	28	19	12	28	17	10	28	15	9	
25	D	0	0.0		28	28	26	28	28	24	28	28	22	28	28	18	28	25	16	28	22	13	28	19	12	28	17</td					

## **Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - OSB Only - Portrait (60 Cell) - Maximum Mount Spacing in Inches**

#### **Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - OSB Only - Portrait (60 Cell) - Maximum Mount Spacing in Inches**

## **Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - OSB Only - Portrait (60 Cell) - Maximum Mount Spacing in Inches**

## **Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - OSB Only - Portrait (60 Cell) - Maximum Mount Spacing in Inches**

Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - OSB Only - Portrait (72 Cell) - Maximum Mount Spacing in Inches																																			
Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180						
					Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3						
0	B	0	0.0		49	38	23	49	34	21	49	31	19	49	26	16	43	22	14	37	19	12	32	17	10	28	14	9	24	13	8				
		1	4.8		46 / 47	37	23	46 / 47	34	21	46 / 47	31	19	46 / 47	26	16	42	22	14	36	19	12	31	16	10	27	14	9	24	13	8				
		2	9.5		44 / 45	39	24	44 / 45	35	22	44 / 45	32	20	44 / 45	27	17	44 / 45	23	14 / 15	39 / 40	20	13	34	17	11	30	15	10	26 / 27	13	8				
		3	14.0		43 / 44	38	24	43 / 44	34 / 35	22	43 / 44	31 / 32	20	43 / 44	26 / 27	17	43 / 44	22 / 23	14	38 / 39	19 / 20	12	33 / 34	17	11	29 / 30	15	9 / 10	26	13	8				
		4	18.4		41 / 43	37	23 / 24	41 / 43	33 / 34	21 / 22	41 / 43	31	20	41 / 43	26	17	41 / 43	22	14	37 / 38	19	12	33	17	11	29	15	9	25 / 26	13	8				
		5	22.6		40 / 42	36 / 37	23 / 24	40 / 42	33	21	40 / 42	30 / 31	19 / 20	40 / 42	25 / 26	16 / 17	40 / 42	22	14	36 / 37	19	12	32 / 33	17	11	28 / 29	15	9	25	13	8				
		6	26.6		39 / 41	35 / 36	23	39 / 41	32 / 33	21	39 / 41	29 / 30	19	39 / 41	25 / 26	16	39 / 41	22	14	36 / 37	19	12	31 / 32	16 / 17	11	28	14 / 15	9	25	13	8				
		8	33.7		36 / 39	36 / 39	36 / 39	35 / 37	35 / 37	35 / 37	33 / 35	33 / 35	33 / 35	30 / 32	30 / 32	30 / 32	27 / 28	27 / 28	27 / 28	25 / 26	25 / 26	22 / 23	22 / 23	21	20 / 21	20 / 21	19	18	18	18	18	18			
		10	39.8		35 / 38	35 / 38	35 / 38	34 / 36	34 / 36	32 / 34	32 / 34	29 / 31	29 / 31	27 / 28	27 / 28	27 / 28	24 / 25	24 / 25	24 / 25	22 / 23	22 / 23	22 / 23	20 / 21	20	20	19	18	18	18	18	18	18			
		12	45.0		35 / 38	35 / 38	35 / 38	33 / 36	33 / 36	32 / 34	32 / 34	29 / 31	29 / 31	26 / 28	26 / 28	26 / 28	24 / 25	24 / 25	24 / 25	22 / 23	22 / 23	22 / 23	20 / 21	20	20	18 / 19	17 / 18	17 / 18	17 / 18	17 / 18	17 / 18				
		0	0.0		49	26	16	46	24	15	42	21	13	35	18	11	29	15	9	25	13	8	22	11	7	19	10	6	17	9	5				
		1	4.8		46 / 47	26	16	45	23	14	40 / 41	21	13	34	18	11	29	15	9	25	13	8	21	11	7	19	10	6	17	9	5				
		2	9.5		44 / 45	27	17	44 / 45	24	15	44 / 45	22	14	37	19	12	32	16	10	27	14	9	24	12	8	21	10	7	18	9	6				
		3	14.0		43 / 44	26 / 27	17	43 / 44	24	15	43 / 44	22	14	36 / 37	18 / 19	12	31	16	10	27	14	9	23	12	8	20 / 21	10	7	18	9	6				
		4	18.4		41 / 43	26	17	41 / 43	23 / 24	15	41 / 43	21 / 22	14	35 / 36	18	12	30	15	10	26 / 27	13 / 14	9	23	12	8	20	10	7	18	9	6				
		5	22.6		40 / 42	25 / 26	16 / 17	40 / 42	23	15	40 / 42	21	14	34 / 35	18	12	30	15	10	26	13	8	23	12	7	20	10	7	18	9	6				
		6	26.6		39 / 41	25	16	39 / 41	23	15	39 / 41	21	14	34 / 35	18	11	29	15	10	25 / 26	13 / 14	9	23	12	7	20	10	7	17 / 18	9	6				
		8	33.7		30 / 31	30 / 31	30 / 31	28 / 30	28 / 30	28 / 30	27 / 28	27 / 28	27 / 28	24 / 25	24 / 25	24 / 25	21 / 22	21 / 22	21 / 22	19 / 20	19 / 20	19 / 20	16 / 17	16 / 17	16 / 17	16 / 17	16 / 17	16 / 17	16 / 17	16 / 17	16 / 17	16 / 17			
		10	39.8		29 / 31	29 / 31	29 / 31	28 / 30	28 / 30	28 / 30	27 / 28	27 / 28	27 / 28	26 / 27	26 / 27	26 / 27	23 / 24	23 / 24	23 / 24	21 / 22	21 / 22	21 / 22	19 / 20	19 / 20	19 / 20	17 / 18	17 / 18	17 / 18	17 / 18	17 / 18	17 / 18	17 / 18	17 / 18	17 / 18	17 / 18
		0	0.0		42	22	13	38	20	12	34	18	11	29	15	9	24	13	8	21	11	7	18	10	6	16	8	5	14	7	5				
		1	4.8		41	21	13	37	19	12	33 / 34	18	11	28	15	9	24	13	8	21	11	7	18	9	6	16	8	5	14	7	4				
		2	9.5		44 / 45	22	14	40 / 41	20	13	37	18 / 19	12	31	16	10	26	13	8	23	11 / 12	7	20	10	6	17	9	6	15	8	5				
		3	14.0		43 / 44	22	14	39 / 40	20	13	36	18	12	30 / 31	15 / 16	10	26	13	8	22 / 23	11	7	19 / 2												

Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - OSB Only - Portrait (72 Cell) - Maximum Mount Spacing in Inches																																		
Ground Snow Load (psf)	Exposure Category	Roof Pitch	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180					
					X:12	Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3							
20	B	0	0.0		25	25	23	25	25	21	25	25	19	25	25	16	25	22	14	25	19	12	25	17	10	25	14	9	24	13	8			
		1	4.8		22/*23	22/*23	22/*23	22/*23	22/*23	21	22/*23	22/*23	19	22/*23	22/*23	16	22/*23	22	14	22/*23	19	12	22/*23	16	10	22/*23	14	9	22/*23	13	8			
		2	9.5		20/*21	20/*21	20/*21	20/*21	20/*21	20	20/*21	20/*21	20	20/*21	20/*21	17	20/*21	20/*21	14/*15	20/*21	20	13	19/*20	17	11	19	15	10	18/*19	13	8			
		3	14.0		19/*20	19/*20	19/*20	19/*20	19/*20	19	19/*20	19/*20	19	19/*20	19/*20	19	19/*20	19/*20	14	18/*20	18/*20	12	19/*20	19/*20	14	18/*19	17	11	17/*18	15	9/*10	17/*18	13	8
		4	18.4		18/*20	18/*20	18/*20	18/*20	18/*20	18	18/*20	18/*20	18	18/*20	18/*20	18	18/*20	18/*20	14	18/*20	18/*20	12	18/*19	17	11	17/*18	15	9	16/*18	13	8			
		5	22.6		18/*20	18/*20	18/*20	18/*20	18/*20	18	18/*20	18/*20	18	18/*20	18/*20	18	18/*20	18/*20	14	18/*20	18/*20	12	18/*19	17	11	17/*19	15	9	17/*18	13	8			
		6	26.6		19/*21	19/*21	19/*21	19/*21	19/*21	19	19/*21	19/*21	19	19/*21	19/*21	19	19/*21	19/*21	14	19/*21	19/*21	19	12	18/*20	16/*17	11	17/*19	14	9	17/*19	13	8		
		8	33.7		20/*23	20/*23	20/*23	20/*23	20/*22	20	20/*22	20/*22	20	20/*22	20/*22	20	20/*22	20/*22	19/*21	19/*21	19/*21	18/*20	18/*20	17/*19	17/*19	16/*17	15/*17	15/*17	14/*16	14/*16	14/*16			
		10	39.8		22/*25	22/*25	22/*25	22/*25	21/*24	21	21/*24	21/*24	21	21/*24	21/*24	21	21/*24	21/*24	19/*21	19/*21	19/*21	18/*20	18/*20	17/*19	17/*19	16/*18	15/*17	15/*17	14/*17	15/*17	15/*17			
		12	45.0		24/*27	24/*27	24/*27	24/*27	23/*26	23	23/*26	23/*26	23	23/*26	23/*26	23	23/*26	23/*26	22/*24	22/*24	20/*23	19/*21	19/*21	18/*20	18/*20	17/*19	17/*19	16/*18	15/*18	16/*18	15/*18			
		0	0.0		25	25	16	25	24	15	25	21	13	25	18	11	25	15	9	25	13	8	22	11	7	19	10	6	17	9	5			
		1	4.8		22/*23	22/*23	16	22/*23	22/*23	14	22/*23	22/*23	21	13	22/*23	18	11	22/*23	15	9	22/*23	13	8	21	11	7	19	10	6	17	9	5		
		2	9.5		20/*21	20/*21	17	20/*21	20/*21	15	20/*21	20/*21	14	20/*21	20/*21	19	12	19/*20	16	10	18/*19	13	8	17/*18	11/*12	7	16/*17	10	6	16	9	5		
		3	14.0		19/*20	19/*20	14	18/*20	18/*20	13	18/*19	18	12	17/*19	15/*16	10	17/*18	13	8	16/*19	14	9	17/*18	12	8	16/*17	10	7	15/*16	9	6			
		4	18.4		18/*20	18/*20	14	18/*20	18/*20	13	18/*19	18	12	17/*19	15	10	16/*18	13	8	16/*17	12	7	15/*16	10	7	15/*16	9	6						
		5	22.6		18/*20	18/*20	14	18/*20	18/*20	13	18/*20	18/*20	18	11/*12	17/*19	15	10	17/*18	13	8	16/*17	11	7	15/*16	10	6	15/*16	9	5					
		6	26.6		19/*21	19/*21	14	19/*21	19/*21	12	19/*20	19/*20	18	11/*12	18/*19	15	10	17/*19	13	8	16/*18	11	7	16/*17	10	6	15/*16	9	5					
		8	33.7		17/*19	17/*19	17/*19	17/*19	17/*19	17	17/*19	17/*19	17	17/*19	17/*19	17	17/*19	17/*19	15/*17	15/*17	15/*17	14/*16	14/*16	14/*16	14/*15	14/*15	14/*15	13/*14	13/*14	12/*13	12/*13	12/*13		
		10	39.8		19/*21	19/*21	19/*21	19/*21	19/*21	19	19/*21	19/*21	19	19/*21	19/*21	19	19/*21	19/*21	18/*19	18/*19	18/*19	17/*18	17/*18	17/*18	16/*17	16/*17	16/*17	15/*16	15/*16	15/*16	13/*14	13/*14	12/*13	
		12	45.0		20/*23	20/*23	20/*23	20/*23	20/*22	20	20/*22	20/*22	20	20/*22	20/*22	20	20/*22	20/*22	19/*21	19/*21	19/*21	18/*20	18/*20	17/*19	17/*19	16/*18	15/*16	15/*16	14/*15	13/*14	13/*14	12/*13		
25	B	0	0.0		24	24	23	24	24	21	24	24	19	24	24	16	24	22	14	24	19	12	24	17	10	24	14	9	24	13	8			
		1	4.8		22	22	22	22	22	21	22	22	19	22	22	16	22	22	14	22	19	12	22	16	10	22	14	9	22	13	8			
		2	9.5		20/*21	20/*21	20/*21	20/*21	20/*21	20	20/*21	20/*21	20	20/*21	20/*21	17																		



#### **Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - OSB Only - Portrait (72 Cell) - Maximum Mount Spacing in Inches**

Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - OSB Only - Portrait (72 Cell) - Maximum Mount Spacing in Inches																																
Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180			
					Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3			
60	B	0	0.0		12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	10	12	12	9	12	12	8			
		1	4.8		10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	8			
		2	9.5		9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8			
		3	14.0		8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8			
		4	18.4		8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8			
		5	22.6		8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8			
		6	26.6		9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	8			
		8	33.7		10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	9/*10			
		10	39.8		12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	12/*14	10/*12	10/*12	10/*12	10/*11	10/*11	10/*11			
		12	45.0		14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	14/*17	12/*14	12/*14	12/*14	12/*13	11/*13	11/*13	11/*13		
		0	0.0		12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	10	12	12	9	12	12	8		
		1	4.8		10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	5		
		2	9.5		9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	6			
		3	14.0		8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	6			
		4	18.4		8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	6			
		5	22.6		8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	8/*9	5			
		6	26.6		9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	9/*10	5			
		8	33.7		10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11	7/*8			
		10	39.8		12/*13	12/*13	12/*13	12/*13	12/*13	12/*13	12/*13	12/*13	12/*13	12/*13	12/*13	12/*13	12/*13	12/*13	12/*13	12/*13	12/*13	12/*13	12/*13	10/*12	10/*12	10/*12	10/*11	10/*11	10/*11	10/*11	10/*11	10/*11
		12	45.0		13/*15	13/*15	13/*15	13/*15	13/*15	13/*15	13/*15	13/*15	13/*15	13/*15	13/*15	13/*15	13/*15	13/*15	13/*15	13/*15	13/*15	13/*15	13/*15	11/*12	11/*12	11/*12	10/*11	10/*11	10/*11	9/*10	9/*10	9/*10
70	B	0	0.0		10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	8			
		1	4.8		9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8			
		2	9.5		8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8			
		3	14.0		7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7			
		4	18.4		7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8	7/*8			
		5	22.6		7/*8	7/*8	7/*8																									

#### **Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - OSB Only - Portrait (72 Cell) - Maximum Mount Spacing in Inches**

Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Rafter - Landscape (60 & 72 Cell) - Maximum Mount Spacing in Inches																																	
Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180				
					Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3				
0	B	0	0.0		96	96	96	96	96	96	96	96	96	91	96	96	78	96	96	67	96	94	59	96	82	52	96	73	46				
		1	4.8		96	96	96	96	96	96	96	96	96	88 /*89	96	96	76	96	96	66	96	91 /*92	58	96	80 /*81	51	96	71 /*72	45				
		2	9.5		96	96	96	96	96	96	96	96	96	93 /*94	96	96	80 /*81	96	96	69 /*70	96	94 /*95	61 /*62	96	83 /*84	54	96	74 /*75	48				
		3	14.0		96	96	96	96	96	96	96	96	96	90 /*92	96	96	78 /*79	96	96	68 /*69	96	91 /*93	60 /*61	96	81 /*82	53 /*54	96	72 /*73	47 /*48				
		4	18.4		96	96	96	96	96	96	96	96	96	88 /*90	96	96	76 /*78	96	96	67 /*68	96	89 /*91	59 /*60	96	79 /*81	52 /*53	96	71 /*72	47				
		5	22.6		96	96	96	96	96	96	96	96	96	86 /*88	96	96	75 /*77	96	96	65 /*67	96	86 /*89	58 /*59	96	77 /*79	51 /*53	96	69 /*71	46 /*47				
		6	26.6		96	96	96	96	96	96	96	96	96	84 /*87	96	96	73 /*76	96	96	95 /*96	64 /*66	96	84 /*88	57 /*58	96	76 /*78	51 /*52	96	68 /*70	46			
		8	33.7		96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	90 /*94	93 /*96	95 /*96	96	87 /*92	87 /*92			
		10	39.8		96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	95 /*96	95 /*96	95 /*96	96	87 /*92	87 /*92			
		12	45.0		96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	93 /*96	93 /*96	93 /*96	96	85 /*90	85 /*90			
	C	0	0.0		96	96	91	96	83	96	96	75	96	96	64	96	87	55	96	75	47	96	66	41	96	58	36	95	51	32			
		1	4.8		96	96	88 /*89	96	96	80 /*81	96	96	74	96	96	62 /*63	96	85	54	96	73 /*74	47	96	64 /*65	41	96	57	36	92 /*93	50 /*51	32		
		2	9.5		96	96	92 /*94	96	96	84 /*86	96	96	77 /*78	96	96	66 /*67	96	87 /*88	57	96	76 /*77	49 /*50	96	67	43 /*44	96	59 /*60	38 /*39	96	53	34		
		3	14.0		96	96	90 /*92	96	96	82 /*84	96	96	76 /*77	96	96	65 /*66	96	85 /*87	56 /*57	96	74 /*75	49	96	65 /*66	43	96	58 /*59	38	96	52	34		
		4	18.4		96	96	87 /*90	96	96	80 /*82	96	96	74 /*76	96	96	63 /*65	96	83 /*85	55 /*56	96	72 /*74	48 /*49	96	64 /*65	42 /*43	96	57 /*58	37 /*38	94 /*96	51 /*52	33 /*34		
		5	22.6		96	96	85 /*88	96	96	78 /*81	96	96	72 /*75	96	96	62 /*64	96	81 /*83	54 /*55	96	71 /*73	47 /*48	96	63 /*64	42	96	56 /*57	37 /*38	91 /*95	50 /*51	33 /*34		
		6	26.6		96	96	83 /*87	96	96	77 /*80	96	96	71 /*73	96	96	61 /*63	96	79 /*82	53 /*55	96	70 /*72	47 /*48	96	62 /*64	41 /*42	96	55 /*57	37	89 /*93	49 /*51	33		
		8	33.7		96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	82 /*86	82 /*86	87 /*91	74 /*77	74 /*77	78 /*82	67 /*69	67 /*69	
		10	39.8		96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	89 /*94	89 /*94	89 /*94	93 /*96	93 /*96	93 /*96	96	85 /*90	85 /*90
		12	45.0		96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	86 /*92	86 /*92	86 /*92	78 /*82	78 /*82	78 /*82	70 /*74	74 /*78	64 /*67
	D	0	0.0		96	96	76	96	69	96	96	63	96	85	53	96	73	46	96	63	40	96	55	35	90	48	31	80	43	27			
		1	4.8		96	96	74 /*75	96	96	68	96	96	62	96	83	53	96	71	45	96	62	39	96	54	34	87 /*88	48	30	78	42 /*43	27		
		2	9.5		96	96	78 /*79	96	96	71 /*72	96	96	65 /*66	96	85 /*87	56	96	74	48	96	64 /*65	42	96	56 /*57	37	94 /*96	50	32 /*33	84 /*85	44 /*45	29		
		3	14.0		96	96	76 /*78	96	96	70 /*71	96	96	64 /*65	96	83 /*85	55	96	72 /*73	47 /*48	96	63 /*64	41 /*42	96	55 /*56	36	92 /*							

Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Rafter - Landscape (60 & 72 Cell) - Maximum Mount Spacing in Inches																															
Ground Snow Load (psf)	Exposure Category	Roof Pitch	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180		
					X:12	Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3				
20	B	0	0.0		96	96	96	96	96	96	96	96	91	96	96	78	96	67	96	94	59	96	82	52	96	73	46				
		1	4.8		96	96	96	96	96	96	96	96	88/*89	96	96	76	96	66	96	91/*92	58	96	80/*81	51	96	71/*72	45				
		2	9.5		96	96	96	96	96	96	96	96	93/*94	96	96	80/*81	96	96	69/*70	96	94/*95	61/*62	96	83/*84	54	96	74/*75	48			
		3	14.0		96	96	96	96	96	96	96	96	90/*92	96	96	78/*79	96	96	68/*69	96	91/*93	60/*61	96	81/*82	53/*54	96	72/*73	47/*48			
		4	18.4		90/*96	90/*96	90/*96	90/*96	90/*96	90/*96	90/*96	90/*96	88/*89	90/*96	90/*96	76/*78	90/*96	67/*68	90/*96	89/*91	59/*60	90/*96	79/*81	52/*53	90/*96	71/*72	47				
		5	22.6		81/*96	81/*96	81/*96	81/*96	81/*96	81/*96	81/*96	81/*96	81/*88	81/*96	81/*96	75/*77	81/*96	65/*67	81/*96	81/*89	58/*59	81/*96	77/*79	51/*53	81/*96	69/*71	46/*47				
		6	26.6		77/*96	77/*96	77/*96	77/*96	77/*96	77/*96	77/*96	77/*96	77/*87	77/*96	77/*96	73/*76	77/*96	64/*66	77/*96	77/*88	57/*58	77/*96	76/*78	51/*52	77/*96	68/*70	46				
		8	33.7		75/*96	75/*96	75/*96	75/*96	75/*96	75/*96	75/*96	75/*96	75/*96	75/*96	75/*96	75/*96	75/*96	75/*96	75/*96	75/*96	75/*96	75/*96	75/*96	75/*96	75/*96	75/*94	75/*94				
		10	39.8		78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*92	78/*92					
		12	45.0		84/*96	84/*96	84/*96	84/*96	84/*96	84/*96	84/*96	84/*96	84/*96	84/*96	84/*96	84/*96	84/*96	84/*96	84/*96	84/*96	84/*96	84/*96	84/*96	84/*96	84/*96	84/*90	84/*90				
25	C	0	0.0		96	96	91	96	96	96	96	96	96	91	96	96	78	96	67	96	94	59	96	82	52	96	73	46			
		1	4.8		96	96	96	96	96	96	96	96	88/*89	96	96	76	96	66	96	91/*92	58	96	80/*81	51	96	71/*72	45				
		2	9.5		96	96	96	96	96	96	96	96	93/*94	96	96	80/*81	96	96	69/*70	96	94/*95	61/*62	96	83/*84	54	96	74/*75	48			
		3	14.0		96	96	96	96	96	96	96	96	90/*92	96	96	78/*79	96	96	68/*69	96	91/*93	60/*61	96	81/*82	53/*54	96	72/*73	47/*48			
		4	18.4		87/*96	87/*96	87/*96	87/*96	87/*96	87/*96	87/*96	87/*96	87/*96	87/*96	87/*96	87/*96	87/*96	87/*96	87/*96	87/*96	87/*96	87/*96	87/*96	87/*96	87/*96	87/*96	87/*96				
		5	22.6		78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*96	78/*96				
		6	26.6		74/*96	74/*96	74/*96	74/*96	74/*96	74/*96	74/*96	74/*96	74/*96	74/*96	74/*96	74/*96	74/*96	74/*96	74/*96	74/*96	74/*96	74/*96	74/*96	74/*96	74/*96	74/*96	74/*96				
		8	33.7		72/*96	72/*96	72/*96	72/*96	72/*96	72/*96	72/*96	72/*96	72/*96	72/*96	72/*96	72/*96	72/*96	72/*96	72/*96	72/*96	72/*96	72/*96	72/*96	72/*96	72/*96	72/*96	72/*96				
		10	39.8		76/*96	76/*96	76/*96	76/*96	76/*96	76/*96	76/*96	76/*96	76/*96	76/*96	76/*96	76/*96	76/*96	76/*96	76/*96	76/*96	76/*96	76/*96	76/*96	76/*96	76/*96	76/*96	76/*96				
		12	45.0		82/*96	82/*96	82/*96	82/*96	82/*96	82/*96	82/*96	82/*96	82/*96	82/*96	82/*96	82/*96	82/*96	82/*96	82/*96	82/*96	82/*96	82/*96	82/*96	82/*96	82/*96	82/*90	82/*90				
25	D	0	0.0		96	96	91	96	96	96	96	96	96	91	96	96	75	96	64	96	87	55	96	75	47	96	55	32			
		1	4.8		96	96	88/*89	96	96	80/*81	96	96	74	96	96	62	96	85	54	96	73/*74	47	96	64/*65	41	96	57	36			
		2	9.5		96	96	92/*94	96	96	84/*86	96	96	77/*78	96	96	66/*67	96	96	87/*88	57	96	76/*77	44/*45	37	96	53	34				
		3	14.0		96	96	96	96	96	96	96	96	70/*71	96	96	64/*65	96	96	72/*73	96	94/*95	42/*43	96	50/*51	33/*34						
		4	18.4		90/*96	90/*96	90/*96	90/*96	90/*96	90/*96	90/*96	90/*96	88/*89	90/*96	90/*96	70/*72	90/*96	64/*65	90/*96	84/*85	42/*43										

Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Rafter - Landscape (60 & 72 Cell) - Maximum Mount Spacing in Inches																															
Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180		
					Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3		
30	B	0	0.0		96	96	96	96	96	96	96	96	91	96	96	78	96	96	67	96	94	59	96	82	52	96	73	46			
		1	4.8		96	96	96	96	96	96	96	96	88/*89	96	96	76	96	96	66	96	91/*92	58	96	80/*81	51	96	71/*72	45			
		2	9.5		96	96	96	96	96	96	96	96	93/*94	96	96	80/*81	96	96	69/*70	96	94/*95	61/*62	96	83/*84	54	96	74/*75	48			
		3	14.0		90/*96	90/*96	90/*96	90/*96	90/*96	90/*96	90/*96	90/*96	90/*92	90/*96	90/*96	78/*79	90/*96	90/*96	68/*69	90/*96	60/*61	90/*96	81/*82	53/*54	90/*96	72/*73	47/*48				
		4	18.4		74/*96	74/*96	74/*96	74/*96	74/*96	74/*96	74/*96	74/*96	74/*90	74/*96	74/*96	74/*78	74/*96	74/*96	67/*68	74/*96	74/*91	59/*60	74/*96	74/*81	52/*53	74/*96	71/*72	47			
		5	22.6		67/*91	67/*91	67/*91	67/*91	67/*91	67/*91	67/*91	67/*91	67/*88	67/*91	67/*91	67/*77	67/*91	65/*67	67/*91	67/*89	58/*59	67/*91	67/*79	51/*53	67/*91	46/*47					
		6	26.6		64/*86	64/*86	64/*86	64/*86	64/*86	64/*86	64/*86	64/*86	64/*86	64/*86	64/*86	64/*76	64/*86	64/*86	64/*86	64/*86	64/*86	64/*86	64/*86	57/*58	64/*86	64/*78	51/*52	64/*86	64/*70	46	
		8	33.7		63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	
		10	39.8		66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	
		12	45.0		73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	
	C	0	0.0		96	96	91	96	96	83	96	96	75	96	96	64	96	87	55	96	75	47	96	66	41	96	58	36	95	51	32
		1	4.8		96	96	74/*75	96	96	68	96	96	62	96	96	83	96	96	54	96	73/*74	47	96	64/*65	41	96	57	36	92/*93	50/*51	32
		2	9.5		96	96	78/*79	96	96	71/*72	96	96	65/*66	96	85/*87	56	96	76/*77	49/*50	96	67	43/*44	96	59/*60	38/*39	96	53	34			
		3	14.0		90/*96	90/*96	90/*92	90/*96	90/*96	82/*84	90/*96	90/*96	76/*77	90/*96	90/*96	65/*66	90/*96	85/*87	56/*57	90/*96	74/*75	49	90/*96	65/*66	43	90/*96	58/*59	38	90/*96	52	34
		4	18.4		74/*96	74/*96	74/*96	74/*96	74/*96	74/*96	74/*96	74/*96	74/*96	74/*96	74/*96	74/*96	74/*96	74/*96	72/*74	48/*49	74/*96	64/*65	42/*43	74/*96	57/*58	37/*38	74/*96	51/*52	33/*34		
		5	22.6		67/*91	67/*91	67/*91	67/*91	67/*91	67/*91	67/*91	67/*91	67/*91	67/*91	67/*91	67/*91	67/*91	67/*91	67/*91	67/*91	67/*91	67/*91	67/*91	67/*91	67/*91	67/*91	67/*91	67/*91	67/*91	67/*91	
		6	26.6		64/*86	64/*86	64/*86	64/*86	64/*86	64/*86	64/*86	64/*86	64/*86	64/*86	64/*86	64/*86	64/*86	64/*86	64/*86	64/*86	64/*86	64/*86	64/*86	64/*86	64/*86	64/*86	64/*86	64/*86	64/*86	64/*86	64/*86
		8	33.7		63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85	63/*85
		10	39.8		66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89	66/*89
		12	45.0		73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96	73/*96
	D	0	0.0		96	96	76	96	96	69	96	96	63	96	85	53	96	73	46	96	63	40	96	55	35	90	48	31	80	43	27
		1	4.8		96	96	74/*75	96	96	68	96	96	62	96	96	83	96	96	54	96	62	39	96	54	34	87/*88	48	30	78	42/*43	27
		2	9.5		96	96	78/*79	96	96	71/*72	96	9																			

## **Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Rafter - Landscape (60 & 72 Cell) - Maximum Mount Spacing in Inches**

## **Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Rafter - Landscape (60 & 72 Cell) - Maximum Mount Spacing in Inches**

Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180		
				Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
60	B	0	0.0		96	96	96	96	96	96	96	96	96	96	91	96	96	78	96	96	67	96	94	59	96	82	52	96	73	46	
		1	4.8		96	96	96	96	96	96	96	96	96	96	88/*89	96	96	76	96	96	66	96	91/*92	58	96	80/*81	51	96	71/*72	45	
		2	9.5		70/*95	70/*95	70/*95	70/*95	70/*95	70/*95	70/*95	70/*95	70/*95	70/*95	70/*95	70/*95	70/*95	70/*95	70/*95	70/*95	69/*70	70/*95	70/*95	61/*62	70/*95	70/*84	54	70/*95	70/*75	48	
		3	14.0		48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*61	48/*65	48/*54	48/*65	48/*65	47/*48	
		4	18.4		40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*53	40/*54	40/*54	40/*47			
		5	22.6		36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*47			
		6	26.6		35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*46			
		8	33.7		35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47			
		10	39.8		38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52			
		12	45.0		43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58			
		0	0.0		96	96	91	96	96	83	96	96	75	96	96	64	96	87	55	96	75	47	96	66	41	96	58	36	95	51	32
		1	4.8		96	96	88/*89	96	96	80/*81	96	96	74	96	96	62/*63	96	85	54	96	73/*74	47	96	64/*65	41	96	57	36	92/*93	50/*51	32
		2	9.5		70/*95	70/*95	70/*94	70/*95	70/*95	70/*86	70/*95	70/*95	70/*78	70/*95	70/*95	66/*67	70/*95	70/*88	57	70/*95	70/*77	49/*50	70/*95	67	43/*44	70/*95	59/*60	38/*39	70/*95	53	34
		3	14.0		48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*59	48/*59	38	48/*65	48/*52	34	
		4	18.4		40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*52	33/*34		
		5	22.6		36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	33/*34		
		6	26.6		35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	33		
		8	33.7		35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47		
		10	39.8		38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52	38/*52		
		12	45.0		43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58	43/*58		
		0	0.0		96	96	76	96	96	69	96	96	63	96	85	53	96	73	46	96	63	40	96	55	35	90	48	31	80	43	27
		1	4.8		96	96	74/*75	96	96	68	96	96	62	96	83	53	96	71	45	96	62	39	96	54	34	87/*88	48	30	78	42/*43	27
		2	9.5		70/*95	70/*95	70/*79	70/*95	70/*95	70/*72	70/*95	70/*95	65/*66	70/*95	70/*87	56	70/*95	70/*74	48	70/*95	64/*65	42	70/*95	56/*57	37	70/*95	50	32/*33	70/*85	44/*45	29
		3	14.0		48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*65	48/*50	32	48/*65	44	29		
		4	18.4		40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*54	40/*44	28/*29		
		5	22.6		36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	36/*49	28		
		6	26.6		35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	28		
		8	33.7		35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47	35/*47		
		10	39.8		38/*52	38/*5																									

Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Rafter - Landscape (60 & 72 Cell) - Maximum Mount Spacing in Inches																															
Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180		
					Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3		
80	B	0	0.0		96	96	96	96	96	96	96	96	91	96	96	78	96	96	67	96	94	59	96	82	52	96	73	46			
		1	4.8		96	96	96	96	96	96	96	96	88/*89	96	96	76	96	96	66	96	91/*92	58	96	80/*81	51	96	71/*72	45			
		2	9.5		54/*72	54/*72	54/*72	54/*72	54/*72	54/*72	54/*72	54/*72	54/*72	54/*72	54/*72	54/*72	54/*72	54/*72	54/*72	54/*72	54/*72	54/*62	54/*72	54/*72	54	54/*72	54/*72	48			
		3	14.0		37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*48			
		4	18.4		31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41			
		5	22.6		28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38			
		6	26.6		27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36			
		8	33.7		27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37			
		10	39.8		30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40			
		12	45.0		34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46			
		0	0.0		96	96	91	96	96	96	96	96	96	96	96	75	96	96	47	96	66	41	96	58	36	95	51	32			
		1	4.8		96	96	74/*75	96	96	68	96	96	62/*63	96	85	54	96	73/*74	47	96	64/*65	41	96	57	36	92/*93	50/*51	32			
		2	9.5		54/*72	54/*72	54/*72	54/*72	54/*72	54/*72	54/*72	54/*72	54/*72	54/*72	54/*72	54/*72	49/*50	54/*72	54/*67	43/*44	54/*72	54/*60	38/*39	54/*72	53	34					
		3	14.0		37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50	37/*50			
		4	18.4		31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41	31/*41			
		5	22.6		28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38	28/*38			
		6	26.6		27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36	27/*36			
		8	33.7		27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37	27/*37			
		10	39.8		30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40	30/*40			
		12	45.0		34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46	34/*46			
		0	0.0		96	96	76	96	96	69	96	96	63	96	85	53	96	73	46	96	63	40	96	55	35	90	48	31	80	43	27
		1	4.8		96	96	74/*75	96	96	68	96	96	62	96	83	53	96	71	45	96	62	39	96	54	34	87/*88	48	30	78	42/*43	27
		2	9.5		54/*72	54/*72	54/*72	54/*72	54/*72	54/*72	54/*72	54/*72	54/*72	54/*72	54/*72	54/*72	48/*52	54/*72	54/*65	32/*33	54/*72	44/*45	29								
		3	14.0		3																										

Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Plywood Only - Landscape (60 & 72 Cell) - Maximum Mount Spacing in Inches																															
Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180		
					Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3		
0	B	0	0.0		96	64	39	96	57	35	96	52	32	86	44	27	72	37	23	61	32	20	53	28	17	46	24	15	41	22	13
		1	4.8		96	62 / 63	38	96	56 / 57	35	96	51	32	83 / 84	43	27	70	37	23	60	32	20	52	27 / 28	17	45 / 46	24	15	40	21	13
		2	9.5		96	65 / 66	41	96	59	37	96	53 / 54	34	91 / 92	45	29	77 / 78	38 / 39	24 / 25	66 / 67	33	21	57 / 58	29	18 / 19	50 / 51	25 / 26	16	44 / 45	23	14
		3	14.0		92 / 96	63 / 64	40 / 41	92 / 96	57 / 58	37	92 / 96	52 / 53	33 / 34	88 / 90	44 / 45	28 / 29	75 / 76	38	24	64 / 65	33	21	56 / 57	29	18	49 / 50	25	16	44	22	14
		4	18.4		88 / 93	62 / 63	40	88 / 93	56 / 57	36 / 37	88 / 93	51 / 52	33	85 / 88	44	28	73 / 75	37 / 38	24	63 / 64	32 / 33	21	55 / 56	28 / 29	18	48 / 49	25	16	43 / 44	22	14
		5	22.6		85 / 91	60 / 62	39 / 40	85 / 91	55 / 57	36	85 / 91	51 / 52	33	83 / 86	43 / 44	28	71 / 73	37	24	61 / 63	32	21	54 / 55	28	18	48 / 49	25	16	42 / 43	22	14
		6	26.6		83 / 89	59 / 61	39	83 / 89	54 / 56	35 / 36	83 / 89	50 / 51	32 / 33	80 / 84	42 / 43	27 / 28	69 / 72	36 / 37	24	60 / 62	32	21	53 / 54	28	18	47 / 48	25	16	42 / 43	22	14
		8	33.7		77 / 84	77 / 84	77 / 84	74 / 80	74 / 77	74 / 77	70 / 76	68 / 71	64 / 69	58 / 60	58 / 62	50 / 52	52 / 54	44 / 45	44 / 45	46 / 48	39 / 40	39 / 40	41 / 42	34 / 35	34 / 35	37	31	31	31	31	31
		10	39.8		75 / 82	75 / 82	75 / 82	71 / 78	71 / 75	71 / 75	68 / 74	66 / 69	66 / 69	62 / 67	56 / 59	56 / 59	57 / 61	49 / 51	51 / 53	43 / 44	43 / 44	45 / 47	38 / 39	38 / 39	40 / 41	34	34	36 / 37	30 / 31	30 / 31	30 / 31
		12	45.0		73 / 81	73 / 80	73 / 80	70 / 77	69 / 73	69 / 73	64 / 67	61 / 67	55 / 58	56 / 60	48 / 50	50 / 52	42 / 44	42 / 44	44 / 46	37 / 38	37 / 38	39 / 41	33 / 34	33 / 34	35 / 36	30	30	33 / 34	33 / 34	35 / 36	30
0	C	0	0.0		85	43	27	77	39	24	69	36	22	58	30	19	49	26	16	42	22	14	36	19	12	32	17	11	28	15	9
		1	4.8		83	43	27	75	39	24	68	35 / 36	22	57	30	19	48	25 / 26	16	41	22	14	36	19	12	32	17	11	28	15	9
		2	9.5		90 / 92	45	28 / 29	82 / 83	41	26	74 / 75	37	24	62 / 63	31 / 32	20	53	27	17	46	23	15	40	20	13	35	18	11	31	16	10
		3	14.0		87 / 90	44 / 45	28	79 / 81	40 / 41	26	72 / 74	37	23 / 24	61 / 62	31	20	52 / 53	27	17	45	23	15	39 / 40	20	13	34 / 35	18	11	31	16	10
		4	18.4		85 / 87	43 / 44	28	77 / 79	40	25 / 26	70 / 72	36 / 37	23	59 / 61	31	20	51 / 52	26 / 27	17	44 / 45	23	15	39	20	13	34 / 35	18	11	30 / 31	16	10
		5	22.6		82 / 85	43 / 44	28	75 / 78	39 / 40	25	69 / 71	36	23	58 / 60	30 / 31	20	50 / 51	26	17	43 / 44	23	15	38 / 39	20	13	34	17 / 18	11	30	15 / 16	10
		6	26.6		80 / 84	42 / 43	27 / 28	73 / 76	38 / 39	25	67 / 70	35 / 36	23	57 / 59	30	19 / 20	49 / 50	26	17	43 / 44	22 / 23	14 / 15	38	20	13	33 / 34	17	11	30	15 / 16	10
		8	33.7		64 / 68	58 / 60	58 / 60	60 / 64	53 / 55	53 / 55	57 / 61	49 / 50	49 / 50	50 / 52	42 / 43	42 / 43	43 / 44	36 / 37	36 / 37	38 / 39	31 / 32	31 / 32	33 / 34	28	28	29 / 30	24 / 25	24 / 25	26 / 27	22	22
		10	39.8		62 / 67	56 / 59	56 / 59	59 / 63	52 / 54	52 / 54	56 / 67	48 / 49	48 / 49	49 / 50	41 / 42	42 / 44	35 / 36	35 / 36	37 / 38	31 / 32	31 / 32	33 / 34	27 / 28	27 / 28	29 / 30	24 / 25	24 / 25	26	22	22	
		12	45.0		61 / 66	55 / 57	55 / 57	58 / 63	51 / 53	51 / 53	55 / 58	47 / 49	47 / 49	48 / 50	40 / 41	41 / 43	35 / 36	35 / 36	36 / 37	30 / 31	30 / 31	32 / 33	27	27	29	24	25 / 26	21 / 22	21 / 22		
10	D	0	0.0		70	36	22	63	33	20	57	30	19	48	25	16	41	21	13	35	19	12	30	16	10	27	14	9	24	13	8
		1	4.8		68 / 69	36	22	62	32 / 33	20	56	30	18 / 19	47	25	16	40	21	13	34 / 35	18	12	30								

**Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Plywood Only - Landscape (60 & 72 Cell) - Maximum Mount Spacing in Inches**

Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180			
					Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
20	B	0	0.0		56	56	39	56	56	35	56	52	32	56	44	27	56	37	23	56	32	20	53	28	17	46	24	15	41	22	13	
		1	4.8		49/*50	49/*50	38	49/*50	49/*50	35	49/*50	49/*50	32	49/*50	43	27	49/*50	37	23	49/*50	32	20	49/*50	27/*28	17	45/*46	24	15	40	21	13	
		2	9.5		43/*46	43/*46	41	43/*46	43/*46	37	43/*46	43/*46	34	43/*46	43/*45	29	43/*46	38/*39	24/*25	43/*46	33	21	41/*44	29	18/*19	40/*43	25/*26	16	39/*41	23	14	
		3	14.0		39/*43	39/*43	39/*41	39/*43	39/*43	37	39/*43	39/*43	33/*34	39/*43	39/*43	28/*29	39/*43	38	24	39/*43	33	21	38/*41	29	18	37/*40	25	16	36/*39	22	14	
		4	18.4		38/*43	38/*43	38/*40	38/*43	38/*43	36/*37	38/*43	38/*43	33	38/*43	38/*43	28	38/*43	37/*38	24	38/*42	32/*33	21	37/*41	28/*29	18	36/*40	25	16	35/*39	22	14	
		5	22.6		38/*44	38/*44	38/*40	38/*44	38/*44	36	38/*44	38/*44	33	38/*44	38/*44	28	38/*44	37	24	38/*43	32	21	37/*42	28	18	36/*40	25	16	35/*39	22	14	
		6	26.6		39/*45	39/*45	39	39/*45	39/*45	35/*36	39/*45	39/*45	32/*33	39/*45	39/*43	27/*28	39/*45	36/*37	24	39/*44	32	21	38/*43	28	18	37/*41	25	16	36/*40	22	14	
		8	33.7		41/*48	41/*48	41/*48	41/*47	41/*47	40/*46	40/*46	40/*46	40/*46	40/*46	40/*46	38/*44	38/*44	37/*42	37/*42	37/*42	35/*40	35/*40	33/*38	33/*38	32/*36	32/*35	30/*31	30/*31	30/*31	30/*31	30/*31	30
		10	39.8		45/*52	45/*52	45/*52	44/*51	44/*51	43/*50	43/*50	43/*50	41/*47	41/*47	41/*47	39/*45	39/*45	37	37/*43	37/*43	36/*40	36/*39	36/*39	34/*38	34	32/*36	30/*31	30/*31	30/*31	30/*31	30	
		12	45.0		49/*57	49/*57	49/*57	48/*56	48/*56	47/*54	47/*54	45/*51	45/*51	42/*49	42/*49	40/*46	40/*46	40/*46	38/*43	37/*38	37/*38	36/*41	33/*34	33/*34	34/*36	34/*36	30	30	30	30		
25	C	0	0.0		56	43	27	56	39	24	56	36	22	56	30	19	49	26	16	42	22	14	36	19	12	32	17	11	28	15	9	
		1	4.8		49/*50	43	27	49/*50	39	24	49/*50	35/*36	22	49/*50	30	19	48	25/*26	16	41	22	14	36	19	12	32	17	11	28	15	9	
		2	9.5		43/*46	43/*45	28/*29	43/*46	41	26	43/*46	37	24	42/*45	31/*32	20	41/*43	27	17	39/*42	23	15	38/*40	20	13	35	18	11	31	16	10	
		3	14.0		39/*43	39/*43	28	39/*43	39/*41	26	39/*43	37	23/*24	39/*42	31	20	37/*41	27	17	36/*39	23	15	35/*38	20	13	33/*35	18	11	31	16	10	
		4	18.4		38/*43	38/*43	28	38/*43	38/*40	25/*26	38/*43	36/*37	23	38/*42	36/*42	21	38/*42	31	20	36/*40	26/*27	17	35/*39	23	15	34/*37	20	13	30/*31	16	10	
		5	22.6		38/*44	38/*44	28	38/*44	38/*40	25	38/*44	36/*42	21	38/*44	36/*42	20	36/*41	26/*26	16/*17	35/*39	22	14	34/*37	19	12	34/*38	20	13	25	13	8	
		6	26.6		39/*45	36	23	39/*44	32/*33	21	38/*44	30	19	37/*42	25/*26	16	35/*40	22	14	34/*37	19	12	32	17	11	28	15	9	25	13	8	
		8	33.7		36/*41	36/*41	36/*41	35/*40	35/*40	35	34/*39	34/*39	32/*36	32/*36	30/*34	30/*31	29/*32	26/*27	27/*28	23/*24	23/*24	25	21	21	22	18/*19	18/*19	18/*19	18/*19	18/*19	18/*19	
		10	39.8		39/*45	39/*45	39/*45	38/*43	38/*43	37/*42	37/*42	37/*42	34/*39	34/*39	32/*36	32/*36	30/*31	30/*31	29/*32	26/*27	26/*27	28	23	23	24/*25	20/*21	20/*21	22	18	18	18	
		12	45.0		42/*48	42/*48	42/*48	41/*46	41/*45	41/*45	39/*45	37/*41	34/*35	34/*36	30	30	31/*32	26	26	27/*28	23	23	24/*25	20/*21	20/*21	22	18	18	18	18	18	
30	D	0	0.0		56	36	22	56	33	20	56	30	19	48	25	16	41	21	13	35	19	12	30	16	10	27	14	9	24	13	8	
		1	4.8		49/*50	36	22	49/*50	32/*33	20	49/*50	30	18/*19	47	25	16	40	21	13	34/*35	18	12	30	16	10	26	14	9	23	12/*13	8	
		2	9.5		43/*46	37/*38	24	43/*46	34	22	42/*45	31	20	40/*43	26	17	39/*41	22/*23	14	37/*38	19	12	33	17	11	29	15	9/*10	26	13	8	
		3	14.0		39/*43	37	24	39																								

## **Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Plywood Only - Landscape (60 & 72 Cell) - Maximum Mount Spacing in Inches**

Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180					
				Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3			
30	B	0	0.0		49	49	39	49	49	35	49	49	32	49	44	27	49	37	23	49	32	20	49	28	17	46	24	15	41	22	13			
		1	4.8		41/*44	41/*44	38	41/*44	41/*44	35	41/*44	41/*44	32	41/*44	41/*43	27	41/*44	37	23	41/*44	32	20	41/*44	27/*28	17	41/*44	24	15	40	21	13			
		2	9.5		36/*39	36/*39	36/*39	36/*39	36/*39	36/*37	36/*39	36/*39	34	36/*39	36/*39	29	36/*39	36/*39	24/*25	36/*39	33	21	36/*38	29	18/*19	35/*37	25/*26	16	34/*36	23	14			
		3	14.0		32/*36	32/*36	32/*36	32/*36	32/*36	32/*36	32/*34	32/*36	32/*36	32/*34	32/*36	32/*36	28/*29	32/*36	32/*36	24	32/*36	32/*33	21	32/*36	29	18	32/*35	25	16	31/*34	22	14		
		4	18.4		31/*36	31/*36	31/*36	31/*36	31/*36	31/*36	31/*33	31/*36	31/*36	31/*33	31/*36	31/*36	28	31/*36	31/*36	24	31/*36	31/*33	21	31/*36	28/*29	18	31/*35	25	16	30/*34	22	14		
		5	22.6		32/*37	32/*37	32/*37	32/*37	32/*37	32/*37	32/*33	32/*37	32/*37	32/*33	32/*37	32/*37	28	32/*37	32/*37	24	32/*37	32	21	32/*36	28	18	31/*35	25	16	31/*34	22	14		
		6	26.6		33/*38	33/*38	33/*38	33/*38	33/*38	33/*38	33/*38	33/*38	33/*38	32/*33	33/*38	33/*38	27/*28	33/*38	33/*38	24	33/*38	32	21	33/*37	28	18	32/*36	25	16	31/*35	22	14		
		8	33.7		36/*42	36/*42	36/*42	36/*41	36/*41	35/*41	35/*41	35/*41	34/*39	34/*39	34/*39	33/*37	33/*37	33/*37	31/*36	31/*36	31/*36	30/*34	30/*34	30/*34	29/*32	29/*32	29/*32	28/*31	28/*31	28/*31	28/*31	28/*31	28/*31	
		10	39.8		40/*47	40/*47	40/*47	39/*46	39/*46	39/*46	38/*45	38/*45	38/*45	37/*43	37/*43	37/*43	35/*41	35/*41	35/*41	34/*39	34/*39	34/*39	32/*42	32/*42	32/*42	30/*40	30/*40	30/*40	28/*38	28/*38	28/*38	33/*34	33/*34	33/*34
		12	45.0		44/*52	44/*52	44/*52	43/*51	43/*51	42/*50	42/*50	42/*50	41/*47	41/*47	41/*47	39/*45	39/*45	39/*45	37/*42	37/*42	37/*42	35/*40	35/*40	35/*40	33/*38	33/*38	33/*38	32/*36	32/*36	32/*36	30	30	30	
	C	0	0.0		49	43	27	49	39	24	49	36	22	49	30	19	49	26	16	42	22	14	36	19	12	32	17	11	28	15	9			
		1	4.8		41/*44	41/*43	27	41/*44	39	24	41/*44	35/*36	22	41/*44	30	19	41/*44	25/*26	16	41	22	14	36	19	12	32	17	11	28	15	9			
		2	9.5		36/*39	36/*39	28/*29	36/*39	36/*39	26	36/*39	36/*37	24	36/*39	31/*32	20	35/*38	27	17	34/*36	23	15	33/*35	20	13	32/*34	18	11	31	16	10			
		3	14.0		32/*36	32/*36	28	32/*36	32/*36	26	32/*36	32/*36	23/*24	32/*36	31	20	32/*35	27	17	31/*34	23	15	30/*33	20	13	29/*32	18	11	28/*31	16	10			
		4	18.4		31/*36	31/*36	28	31/*36	31/*36	25/*26	31/*36	31/*36	23	31/*36	31	20	31/*35	26/*27	17	31/*34	23	15	30/*33	20	13	29/*32	18	11	28/*30	16	10			
		5	22.6		32/*37	32/*37	28	32/*37	32/*37	25	32/*37	32/*36	23	32/*37	30/*31	20	32/*36	26	17	31/*35	23	15	30/*33	20	13	29/*32	17/*18	11	28/*30	15/*16	10			
		6	26.6		33/*38	33/*38	27	33/*38	33/*38	25	33/*38	33/*38	23	33/*38	30/*20	19	32/*37	26	17	31/*36	22/*23	14/*15	30/*34	20	13	29/*33	17	11	28/*30	15/*16	10			
		8	33.7		34/*39	34/*39	34/*39	33/*38	33/*38	32/*37	32/*37	32/*37	31/*35	31/*35	31/*35	30/*31	31/*35	29/*33	28/*31	28/*31	28/*31	28/*31	28/*31	27/*30	27/*30	27/*30	27/*28	27/*28	25/*28	24/*25	24/*25	24/*26	22/*22	22
		10	39.8		37/*43	37/*43	37/*43	36/*42	36/*42	36/*42	35/*41	35/*41	35/*41	34/*40	34/*40	34/*40	33/*38	33/*38	33/*38	32/*36	32/*36	32/*36	30/*32	30/*32	30/*32	28/*31	28/*31	28/*31	27/*30	27/*30	27/*30	25/*29	25/*29	26/*29
		12	45.0		41/*47	41/*47	41/*47	40/*47	40/*47	40/*47	39/*46	39/*46	39/*46	38/*44	38/*44	38/*44	36/*42	36/*42	36/*42	35/*40	35/*40	35/*40	33/*38	33/*38	33/*38	32/*36	32/*36	32/*36	30/*34	30/*34	30/*34	30	30	30
	D	0	0.0		49	36	22	49	33	20	49	30	19	48	25	16	41	21	13	35	19	12	30	16	10	27	14	9	24	13	8			
		1	4.8		41/*44	36	22	41/*44	32	20	41/*44	30	18/*19	41/*44	25	16	40	21	13	34/*35	18	12	30	16	10	26	14	9	23	12/*13	8			
		2	9.5		36/*39	36/*38	24	36/*39	34	22	36/*39	31	20	35/*37	26	17	34/*36	22/*23	14	33/*35	19	12	31/*33	17	11	29	15	9/*10	26	13	8			
		3	14.0		32/*36	32/*36	24	32/*36	32	22	32/*36	31	20	32/*35	26	17	31/*34	22	14	30/*33	19	12	29/*31	17	11	28/*29	15	9	26	13	8			
		4	18.4		31/*36	31/*36	23/*24	31/*36	31	21	31/*36	30/*31	20	31/*35	26	17	30/*34	22/*27	17	29/*32	19	12	28/*31	17	11	27/*29	15	9	25/*26	13	8			
		5	22.6		32/*37	32/*37	23	32/*37	32	21	32/*37	30/*37	20	32/*36	25/*26	16/*17	31/*34	22	14	29/*33	19	12	28/*32	17	11	27/*29	15	9	25	13	8			
		6	26.6		33/*38	33/*36	23	33/*38	32	21	33/*38	30/*38	20	32/*37	25	16	31/*35	26	17	30/*34	19	12	29/*32	17	11	28	15	9	25	13	8			
		8	33.7		32/*37	32/*37	32	32/*36	32	31	32/*36	31/*35	31	29/*33	29/*33	28/*31	28/*31	28/*31	26/*29	26/*29	26/*27	25/*27	25/*24	23/*24	23/*25	21	21	22	18/*19	18/*19	18/*19			

**Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Plywood Only - Landscape (60 & 72 Cell) - Maximum Mount Spacing in Inches**

Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180		
					Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2
40	B	0	0.0		39	39	39	39	39	35	39	32	39	39	27	39	37	23	39	32	20	39	28	17	39	24	15	39	22	13	
		1	4.8		32 /*34	32 /*34	32 /*34	32 /*34	32 /*34	32 /*34	32 /*34	32 /*34	32 /*34	27	32 /*34	32 /*34	23	32 /*34	32	20	32 /*34	27 /*28	17	32 /*34	24	15	32 /*34	21	13		
		2	9.5		28 /*30	28 /*30	28 /*30	28 /*30	28 /*30	28 /*30	28 /*30	28 /*30	28 /*30	28 /*30	28 /*30	28 /*30	28 /*30	24 /*25	28 /*30	28 /*30	21	28 /*30	28 /*29	18 /*19	28 /*30	25 /*26	16	28 /*30	23	14	
		3	14.0		25 /*28	25 /*28	25 /*28	25 /*28	25 /*28	25 /*28	25 /*28	25 /*28	25 /*28	25 /*28	25 /*28	25 /*28	25 /*28	25 /*28	24	25 /*28	25 /*28	21	25 /*28	25 /*28	18	25 /*28	25	16	25 /*28	22	14
		4	18.4		24 /*28	24 /*28	24 /*28	24 /*28	24 /*28	24 /*28	24 /*28	24 /*28	24 /*28	24 /*28	24 /*28	24 /*28	24 /*28	24 /*28	24	24 /*28	24 /*28	21	24 /*28	24 /*28	18	24 /*28	24	16	24 /*28	22	14
		5	22.6		25 /*29	25 /*29	25 /*29	25 /*29	25 /*29	25 /*29	25 /*29	25 /*29	25 /*29	25 /*29	25 /*29	25 /*29	25 /*29	25 /*29	24	25 /*29	25 /*29	21	25 /*29	25 /*29	18	25 /*29	25	16	25 /*29	22	14
		6	26.6		25 /*30	25 /*30	25 /*30	25 /*30	25 /*30	25 /*30	25 /*30	25 /*30	25 /*30	25 /*30	25 /*30	25 /*30	25 /*30	25 /*30	24	25 /*30	25 /*30	21	25 /*30	25 /*30	18	25 /*30	25	16	25 /*30	22	14
		8	33.7		28 /*34	28 /*34	28 /*34	28 /*34	28 /*34	28 /*34	28 /*34	28 /*34	28 /*34	28 /*34	28 /*34	28 /*34	28 /*34	28 /*34	27	28 /*34	28 /*34	27	28 /*34	28 /*34	26	28 /*34	25	24	28 /*34	24	22
		10	39.8		33 /*40	33 /*40	33 /*40	33 /*40	33 /*40	33 /*40	33 /*40	33 /*40	33 /*40	33 /*40	33 /*40	33 /*40	33 /*40	33 /*40	29	33 /*40	33 /*40	28	33 /*40	33 /*40	27	33 /*40	27	31	33 /*40	26	30
		12	45.0		38 /*45	38 /*45	38 /*45	38 /*45	38 /*45	38 /*45	38 /*45	38 /*45	38 /*45	38 /*45	38 /*45	38 /*45	38 /*45	38 /*45	37	38 /*45	38 /*45	35	38 /*45	38 /*45	34	38 /*45	34	30	38 /*45	30	34
50	B	0	0.0		39	36	22	39	33	20	39	30	19	39	25	16	39	21	13	35	19	12	30	16	10	27	14	9	24	13	8
		1	4.8		32 /*34	32 /*34	22	32 /*34	32 /*33	20	32 /*34	30	18 /*19	32 /*34	25	16	32 /*34	21	13	32 /*34	18	12	30	16	10	26	14	9	23	12 /*13	8
		2	9.5		28 /*30	28 /*30	24	28 /*30	28 /*30	22	28 /*30	20	28 /*30	26	17	28 /*30	22 /*23	14	27 /*29	19	12	26 /*28	17	11	25 /*27	15	9 /*10	25 /*26	13	8	
		3	14.0		25 /*28	25 /*28	24	25 /*28	25 /*28	22	25 /*28	25 /*28	20	25 /*28	25 /*26	17	25 /*28	22	14	25 /*27	19	12	24 /*26	17	11	23 /*25	15	9	23 /*25	13	8
		4	18.4		24 /*28	24 /*28	23 /*24	24 /*28	24 /*28	21 /*22	24 /*28	24 /*28	20	24 /*28	24 /*26	17	24 /*28	22	14	24 /*27	19	12	24 /*26	17	11	23 /*25	15	9	22 /*24	13	8
		5	22.6		25 /*29	25 /*29	23	25 /*29	25 /*29	21	25 /*29	25 /*29	19 /*20	25 /*29	25 /*26	16 /*17	25 /*29	22	14	25 /*28	19	12	24 /*27	17	11	23 /*26	15	9	22 /*25	13	8
		6	26.6		25 /*30	25 /*30	23	25 /*30	25 /*30	21	25 /*30	25 /*30	19	25 /*30	25 /*26	16	25 /*30	22	14	25 /*29	19	12	24 /*28	17	11	23 /*25	15	9	23 /*25	13	8
		8	33.7		27 /*32	27 /*32	27 /*32	27 /*31	27 /*31	27 /*31	26 /*30	26 /*30	26 /*30	25 /*29	24 /*27	24 /*27	23	26 /*26	23 /*26	22	26 /*24	22 /*24	21	26 /*23	21	21	26 /*22	18 /*19	18 /*19	18 /*19	
		10	39.8		30 /*35	30 /*35	30 /*35	30 /*34	30 /*34	30 /*34	29 /*33	29 /*33	29 /*33	28 /*31	28 /*31	28 /*31	26 /*30	26 /*30	26 /*30	25 /*28	25 /*27	23	26 /*26	23	23	26 /*25	20 /*21	20 /*21	18 /*18		
		12	45.0		34 /*39	34 /*39	34 /*39	33 /*38	33 /*38	33 /*38	32 /*37	32 /*37	32 /*37	30 /*35	30 /*35	30 /*35	29 /*30	29 /*30	29 /*30	27	26 /*28	23	23	24 /*25	20 /*21	20 /*21	22	18	18	18	
50	C	0	0.0		32	32	32	32	32	32	32	27	32	32	23	32	32	20	32	28	17	32	24	15	32	22	13				
		1	4.8		26 /*28	26 /*28	26 /*28	26 /*28	26 /*28	26 /*28	26 /*28	26 /*27	26 /*28	26 /*28	26 /*28	26 /*28	26 /*28	26 /*28	20	26 /*28	26 /*28	17	26 /*28	24	15	26 /*28</					

**Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Plywood Only - Landscape (60 & 72 Cell) - Maximum Mount Spacing in Inches**

Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180											
					Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3								
60	B	0	0.0		27	27	27	27	27	27	27	27	27	27	23	27	27	20	27	27	17	27	24	15	27	22	13													
		1	4.8		22/*23	22/*23	22/*23	22/*23	22/*23	22/*23	22/*23	22/*23	22/*23	22/*23	22/*23	22/*23	22/*23	20	22/*23	22/*23	17	22/*23	22/*23	15	22/*23	21	13													
		2	9.5		19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	16	19/*21	19/*21	14											
		3	14.0		17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	14													
		4	18.4		17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	16	17/*19	17/*19	14											
		5	22.6		17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	14														
		6	26.6		18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18	18/*21	18/*21	14											
		8	33.7		20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	19/*22	19/*22	19/*22	19/*22	19/*22	19/*22									
		10	39.8		24/*29	24/*29	24/*29	24/*29	24/*29	24/*29	24/*29	24/*29	24/*29	24/*29	24/*29	24/*29	24/*29	24/*29	23/*27	23/*27	23/*26	23/*26	23/*26	22/*25	22/*25	21/*24	21/*24	21/*24	21/*24	21/*24	21/*24									
		12	45.0		28/*35	28/*35	28/*35	28/*35	28/*35	28/*35	28/*35	28/*35	28/*35	28/*35	28/*35	28/*35	28/*35	28/*35	27/*32	27/*32	26/*31	26/*31	26/*30	26/*30	25/*29	25/*29	24/*27	24/*27	24/*27	24/*27	24/*27	24/*27								
	C	0	0.0		27	27	27	27	27	27	27	27	27	27	26	16	27	22	14	27	19	12	27	17	11	27	15	9												
		1	4.8		22/*23	22/*23	22	22/*23	22/*23	20	22/*23	18/*19	22/*23	22/*23	16	22/*23	21	13	22/*23	18	12	22/*23	16	10	22/*23	14	9	22/*23	12/*13	8										
		2	9.5		19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	19/*21	17	19/*21	19/*21	14	19/*21	19/*21	11	19/*21	15	9/*10	19/*20	13	8									
		3	14.0		17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17	17/*19	17/*19	12	17/*19	17	11	17/*19	15	9	17/*19	13	8									
		4	18.4		17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17/*19	17	17/*19	17/*19	14	17/*19	17/*19	11	17/*19	13	10	17/*19	13	8									
		5	22.6		17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17/*20	17	17/*20	17/*20	15	17/*20	17/*20	13	17/*20	15	9	17/*20	13	8									
		6	26.6		18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	18/*21	17	18/*21	18/*21	14	18/*21	18/*21	12	18/*21	15	9	18/*20	13	8									
		8	33.7		20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20/*24	20	20/*23	20/*23	19	20/*23	19/*22	17	20/*23	17	11	17/*19	16/*18	16/*18									
		10	39.8		24/*29	24/*29	24/*29	24/*29	24/*29	24/*29	24/*29	24/*29	24/*29	24/*29	24/*29	24/*29	24/*29	24/*29	23	23/*27	23/*27	21	23/*26	21/*25	19	23/*25	19/*22	17	23/*24	17	11	17/*19	16/*18	16/*18						
		12	45.0		28/*33	28/*33	28/*33	28/*33	28/*33	28/*33	28/*33	28/*33	28/*33	28/*33	28/*33	28/*33	28/*33	28/*33	27	27/*32	27/*32	26	27/*31	25/*29	25/*29	24	27/*28	24/*28	23	27/*27	23/*26	22	27/*25	22/*24	21	27/*24	20/*23	19/*22		
	D	0	0.0		27	27	22	27	27	20	27	25	16	27	21	13	27	19	12	27	16	10	27	14	9	24	13	8												
		1	4.8		22/*23	22/*23	22	22/*23	22/*23	20	22/*23	18/*19	22/*23	22/*23	16	22/*23	21	13	22/*23	18	12	22/*23																		

#### **Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - Plywood Only - Landscape (60 & 72 Cell) - Maximum Mount Spacing in Inches**

## Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - OSB Only - Landscape (60 & 72 Cell) - Maximum Mount Spacing in Inches

Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180			
					1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
0	B	0	0.0		95	74	45	95	67	41	95	61	38	95	51	32	84	43	27	72	37	23	62	32	20	54	29	18	48	25	16	
		1	4.8		91/*92	72/*73	45	91/*92	66	41	91/*92	60	37	91/*92	50	31	82	43	27	70	37	23	61	32	20	53	28	18	47	25	16	
		2	9.5		86/*88	75/*76	48	86/*88	68/*69	43/*44	86/*88	62/*63	40	86/*88	52/*53	33/*34	86/*88	45	29	76/*77	39	25	66/*67	34	22	58/*59	30	19	52	26	17	
		3	14.0		83/*86	73/*74	47	83/*86	67/*68	43	83/*86	61/*62	39	83/*86	51/*52	33	83/*86	44	28	74/*76	38	24	24/*25	65/*66	33/*34	21/*22	57/*58	29/*30	19	51	26	17
		4	18.4		80/*83	71/*73	46/*47	80/*83	65/*66	42/*43	80/*83	60/*61	38/*39	80/*83	51	33	80/*83	43/*44	28	73/*74	38	24	63/*65	33	21	56/*57	29	19	50/*51	26	17	
		5	22.6		78/*81	70/*72	45/*46	78/*81	64/*65	41/*42	78/*81	58/*60	38	78/*81	50/*51	32/*33	78/*81	43	28	71/*73	37/*38	24	62/*64	33	21	55/*56	29	19	49/*50	26	17	
		6	26.6		76/*80	68/*70	45/*46	76/*80	62/*64	41/*42	76/*80	57/*59	38	76/*80	49/*50	32	76/*80	42/*43	27/*28	69/*71	37	24	61/*63	32/*33	21	54/*55	29	19	48/*49	25/*26	16/*17	
		8	33.7		71/*76	71/*76	71/*76	68/*72	68/*72	64/*68	64/*68	58/*62	58/*62	53/*56	53/*56	48/*50	48/*50	48/*50	44/*46	44/*46	40/*42	40	37/*38	35/*36	35/*36							
		10	39.8		69/*75	69/*75	69/*75	66/*71	66/*71	63/*67	63/*67	57/*61	57/*61	52/*55	52/*55	47/*50	47/*50	47/*50	43/*45	43/*45	40/*41	39/*40	39/*40	36/*38	35/*36	35/*36						
		12	45.0		68/*74	68/*74	68/*74	65/*70	65/*70	62/*66	62/*66	56/*60	56/*60	51/*54	51/*54	47/*49	47/*49	47/*49	43/*45	43/*44	43/*44	39/*41	38/*39	38/*39	36/*38	34/*35	34/*35					
10	B	0	0.0		95	51	31	89	46	29	81	42	26	67	35	22	57	30	19	49	26	16	43	23	14	37	20	12	33	18	11	
		1	4.8		91/*92	50	31	87	45/*46	28	79	41/*42	26	66	35	22	56	30	19	48	26	16	42	22	14	37	20	12	33	17/*18	11	
		2	9.5		86/*88	52/*53	33	86/*88	47/*48	30	86/*87	43/*44	28	72/*73	37	23	62	31	20	53	27	17	46/*47	24	15	41	21	13	36	18/*19	12	
		3	14.0		83/*86	51/*52	33	83/*86	47	30	83/*85	43	27/*28	70/*72	36	23	60/*61	31	20	52/*53	27	17	45/*46	23/*24	15	40	21	13	36	18	12	
		4	18.4		80/*83	50/*51	32/*33	80/*83	46/*47	30	80/*83	42/*43	27	69/*70	36	23	59/*60	31	20	51/*52	27	17	45	23	15	39/*40	20/*21	13	35	18	12	
		5	22.6		78/*81	49/*50	32/*33	78/*81	45/*46	29/*30	78/*81	41/*42	27	67/*69	35/*36	23	58/*59	30	20	50/*51	26/*27	17	44/*45	23	15	39/*40	20/*21	13	35	18	12	
		6	26.6		76/*80	49/*50	32	76/*80	45	29	76/*80	41/*42	27	66/*68	35	23	57/*58	30	19/*20	50/*51	26	17	43/*44	23	15	39	20	13	34/*35	18	12	
		8	33.7		58/*61	58/*61	58/*61	55/*58	55/*58	55/*58	52/*54	52/*54	46/*49	46/*49	46/*49	42/*43	42/*43	42/*43	38/*39	36/*37	36/*37	34/*35	32/*33	32/*33	31/*32	28/*29	28/*29	28/*29	25/*26	25/*26		
		10	39.8		57/*60	57/*60	57/*60	54/*57	54/*57	54/*57	51/*54	51/*54	46/*48	46/*48	46/*48	41/*43	41/*42	41/*42	37/*39	36/*37	36/*37	34/*35	31/*32	31/*32	30/*31	28	28	28/*29	25	25		
		12	45.0		56/*60	56/*60	56/*60	53/*56	53/*56	53/*56	50/*53	50/*53	45/*48	45/*48	45/*48	40/*41	40/*41	40/*41	37/*38	35/*36	35/*36	33/*35	31/*32	31/*32	30/*31	28	28	25	25	25		
10	C	0	0.0		82	42	26	74	38	24	67	35	22	56	29	18	47	25	16	41	22	14	35	19	12	31	17	10	28	15	9	
		1	4.8		79/*80	42	26	72	38	24	65/*66	35	22	55	29	18	47	25	16	40	22	13/*14	35	19	12	31	17	10	27	15	9	
		2	9.5		86/*88	44	28	79/*80	40	25	72	36	23	60/*61	31	20	51/*52	26	17	44/*45	23	15	39	20	13	34	17	11	30	15/*16	10	
		3	14.0		83/*86	43	28	76/*78	39	25	70/*71	36	23	59/*60	30	20	50/*51	26	17													

**Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - OSB Only - Landscape (60 & 72 Cell) - Maximum Mount Spacing in Inches**

Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180				
				Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3		
20	B	0	0.0		49	49	45	49	49	41	49	49	38	49	49	32	49	43	27	49	37	23	49	32	20	49	29	18	48	25	16		
		1	4.8		44 / *45	44 / *45	44 / *45	44 / *45	44 / *45	41	44 / *45	44 / *45	37	44 / *45	44 / *45	31	44 / *45	43	27	44 / *45	37	23	44 / *45	32	20	44 / *45	28	18	44 / *45	25	16		
		2	9.5		40 / *42	40 / *42	40 / *42	40 / *42	40 / *42	40 / *42	40 / *42	40 / *42	40 / *42	40 / *42	40 / *42	40 / *42	33 / *34	40 / *42	40 / *42	29	39 / *41	39	25	38 / *40	34	22	36 / *38	30	19	35 / *37	26	17	
		3	14.0		36 / *39	36 / *39	36 / *39	36 / *39	36 / *39	36 / *39	36 / *39	36 / *39	36 / *39	36 / *39	36 / *39	36 / *39	33	36 / *39	36 / *39	28	36 / *39	36 / *38	24 / *25	35 / *37	33 / *34	21 / *22	34 / *36	29 / *30	19	33 / *35	26	17	
		4	18.4		36 / *39	36 / *39	36 / *39	36 / *39	36 / *39	36 / *39	36 / *39	36 / *39	36 / *39	36 / *39	36 / *39	36 / *39	33	36 / *39	36 / *39	28	35 / *38	35 / *38	24	34 / *37	33	21	33 / *36	29	19	32 / *35	26	17	
		5	22.6		36 / *40	36 / *40	36 / *40	36 / *40	36 / *40	36 / *40	36 / *40	36 / *40	36 / *40	36 / *40	36 / *40	36 / *40	32 / *33	36 / *40	36 / *40	28	36 / *39	36 / *38	24	35 / *38	33	21	34 / *37	29	19	33 / *36	26	17	
		6	26.6		37 / *41	37 / *41	37 / *41	37 / *41	37 / *41	37 / *41	37 / *41	37 / *41	37 / *41	37 / *41	37 / *41	37 / *41	32	37 / *41	37 / *41	27	37 / *28	37 / *40	37	24	35 / *39	32 / *33	21	34 / *38	29	19	33 / *37	25 / *26	16 / *17
		8	33.7		39 / *44	39 / *44	39 / *44	39 / *44	39 / *44	39 / *44	39 / *44	39 / *44	39 / *44	39 / *44	39 / *44	39 / *44	33	39 / *44	39 / *44	33	36 / *36	33 / *36	31	31 / *34	31 / *34	31	30 / *32	30 / *32	28 / *31	28 / *31	28 / *31	28 / *31	28 / *31
		10	39.8		43 / *49	43 / *49	43 / *49	42 / *47	42 / *47	42 / *47	41 / *46	41 / *46	41 / *46	39 / *44	39 / *44	37 / *41	35 / *39	35 / *39	33	35 / *39	35 / *39	33	33 / *37	33 / *37	33	32 / *35	32 / *35	30 / *33	30 / *33	30 / *33	30 / *33	30 / *33	
		12	45.0		47 / *53	47 / *53	47 / *53	46 / *52	46 / *52	46 / *52	45 / *50	45 / *50	45 / *50	42 / *47	42 / *47	42 / *47	40 / *45	40 / *45	38 / *42	38 / *42	38 / *42	36 / *39	36 / *39	36 / *39	34 / *37	34 / *37	34 / *37	32 / *35	32 / *35	32 / *35			
25	B	0	0.0		49	49	31	49	46	29	49	42	26	49	35	22	49	30	19	49	26	16	43	23	14	37	20	12	33	18	11		
		1	4.8		44 / *45	44 / *45	31	44 / *45	44 / *45	28	44 / *45	41 / *42	26	44 / *45	35	22	44 / *45	30	19	44 / *45	26	16	42	22	14	37	20	12	33	17 / *18	11		
		2	9.5		40 / *42	40 / *42	33	40 / *42	40 / *42	30	40 / *42	40 / *42	28	38 / *40	37	23	37 / *39	31	20	36 / *37	27	17	34 / *36	24	15	33 / *34	21	13	31 / *33	18 / *19	12		
		3	14.0		36 / *39	36 / *39	33	36 / *39	36 / *39	30	36 / *39	36 / *39	27	36 / *38	36	23	34 / *37	31	20	33 / *35	27	17	32 / *34	23	15	31 / *32	21	13	29 / *31	18	12		
		4	18.4		36 / *39	36 / *39	32 / *33	36 / *39	36 / *39	30	36 / *39	36 / *39	27	35 / *38	35 / *36	23	34 / *37	31	20	33 / *35	27	17	31 / *34	23	15	30 / *32	20 / *21	13	29 / *31	18	12		
		5	22.6		36 / *40	36 / *40	32 / *33	36 / *40	36 / *40	29	36 / *40	36 / *40	27	35 / *39	35 / *36	23	34 / *37	30	20	30 / *31	27	17	29 / *30	23 / *24	15	31 / *32	20 / *21	13	30 / *32	18	12		
		6	26.6		37 / *41	37 / *41	27	37 / *41	37 / *38	25	36 / *40	35	22	36 / *23	35 / *38	29	33 / *36	35 / *26	16 / *17	32 / *35	22	14	32 / *34	23	15	30 / *32	20 / *21	13	27 / *29	15	10		
		8	33.7		34 / *38	34 / *38	34 / *38	33 / *37	33 / *37	33	34 / *37	33 / *37	32	32 / *35	32 / *35	30	30 / *33	30 / *33	28 / *31	28 / *31	27	27 / *29	27 / *29	25	25 / *27	25 / *27	24	24 / *26	24 / *26	24 / *26			
		10	39.8		37 / *41	37 / *41	37 / *41	36 / *39	36 / *39	36	36 / *39	36 / *39	34	34 / *38	34 / *38	32	32 / *35	32 / *35	30	30 / *33	30	28 / *30	28 / *30	26	26 / *27	26 / *27	25	25 / *26	25	25			
		12	45.0		40 / *44	40 / *44	40 / *44	38 / *42	38 / *42	38	38 / *42	38 / *42	37	37 / *41	37 / *41	34	34 / *38	34 / *38	32	32 / *35	32 / *35	30	30 / *31	30	28 / *30	28 / *30	26	26 / *27	26 / *27	25	25 / *24	25	25
30	C	0	0.0		48	48	45	48	48	41	48	48	38	48	43	27	48	37	23	48	32	20	48	29	18	48	25	16					
		1	4.8		42 / *44	42 / *44	42 / *44	42 / *44	42 / *44	41	42 / *44	42 / *44	37	42 / *44	42 / *44	31																	

**Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - OSB Only - Landscape (60 & 72 Cell) - Maximum Mount Spacing in Inches**

Ground Snow Load (psf)	Exposure Category	Roof Pitch X:12	Roof Angle (Degrees)	Wind Speed (mph)	110			115			120			130			140			150			160			170			180				
					Roof Area	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
30	B	0	0.0		43	43	43	43	43	41	43	38	43	43	32	43	43	27	43	37	23	43	32	20	43	29	18	43	25	16			
		1	4.8		37/*39	37/*39	37/*39	37/*39	37/*39	37/*39	37/*39	37/*39	37/*39	37/*39	31	37/*39	37/*39	27	37/*39	37	23	37/*39	32	20	37/*39	28	18	37/*39	25	16			
		2	9.5		33/*35	33/*35	33/*35	33/*35	33/*35	33/*35	33/*35	33/*35	33/*35	33/*35	33/*35	33/*34	33/*35	33/*35	29	33/*35	33/*35	25	33/*34	33/*34	22	32/*33	30	19	31/*32	26	17		
		3	14.0		30/*33	30/*33	30/*33	30/*33	30/*33	30/*33	30/*33	30/*33	30/*33	30/*33	30/*33	30/*33	30/*33	30/*33	28	30/*33	30/*33	24	34/*25	30/*32	21	29/*22	29/*30	19	29/*31	26	17		
		4	18.4		29/*33	29/*33	29/*33	29/*33	29/*33	29/*33	29/*33	29/*33	29/*33	29/*33	29/*33	29/*33	29/*33	29/*33	29	29/*33	29/*33	24	29/*32	29/*32	21	29/*31	29	19	28/*31	26	17		
		5	22.6		30/*34	30/*34	30/*34	30/*34	30/*34	30/*34	30/*34	30/*34	30/*34	30/*34	30/*34	30/*34	30/*34	30/*34	28	30/*34	30/*34	24	30/*33	30/*33	21	29/*32	29	19	29/*31	26	17		
		6	26.6		31/*36	31/*36	31/*36	31/*36	31/*36	31/*36	31/*36	31/*36	31/*36	31/*36	31/*36	31/*36	31/*36	31/*36	31	31/*35	31/*35	24	31/*34	31/*33	21	30/*33	29	19	29/*32	25/*26	16/*17		
		8	33.7		35/*39	35/*39	35/*39	34/*38	34/*38	34/*38	33/*37	33/*37	33/*37	32/*36	32/*36	31/*34	31/*34	31/*34	29	29/*33	29/*33	28	29/*31	28/*31	27	27/*30	27	27/*30	26/*28	26/*28			
		10	39.8		38/*43	38/*43	38/*43	38/*42	38/*42	38/*42	37/*41	37/*41	37/*41	35/*39	35/*39	34/*38	34/*38	34/*38	32	32/*36	32/*36	31	31/*34	31/*34	29	29/*32	29	29/*32	28/*30	28/*30			
		12	45.0		42/*48	42/*48	42/*48	42/*47	42/*47	42/*47	41/*46	41/*46	41/*46	39/*44	39/*44	37/*41	37/*41	35/*39	35/*39	35/*39	33/*37	33/*37	33/*37	32/*35	32/*35	30/*33	30/*33	30/*33	30/*33				
35	C	0	0.0		43	43	31	43	43	29	43	42	26	43	35	22	43	30	19	43	26	16	43	23	14	37	20	12	33	18	11		
		1	4.8		37/*39	37/*39	31	37/*39	37/*39	28	37/*39	37/*39	26	37/*39	35	22	37/*39	30	19	37/*39	26	16	37/*39	22	14	36/*37	20	12	33	17/*18	11		
		2	9.5		33/*35	33/*35	33	33/*35	33/*35	30	33/*35	33/*35	28	33/*35	33/*35	23	32/*34	31	20	31/*33	27	17	30/*31	24	15	29/*30	21	13	28/*29	18/*19	12		
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		5	22.6		30/*34	30/*34	30/*34	30/*34	30/*34	30	30/*34	30/*34	27	30/*34	30/*34	23	30/*33	30/*31	20	29/*31	26/*27	17	28/*30	23	15	27/*29	20	12	26/*28	18	12		
		6	26.6		31/*36	31/*36	31/*36	31/*36	31/*36	31	31/*36	31/*36	27	31/*36	31/*36	25	31/*35	31/*35	20	29/*32	25/*26	17	28/*31	22	14	27/*30	23	15	27/*29	20	12		
		8	33.7		32/*36	32/*36	32/*36	32/*36	32/*36	32	31/*35	31/*35	27	31/*35	31/*35	23	29/*32	29/*32	20	28/*30	26/*28	17	26/*28	25/*27	15	25/*29	22	14	22/*24	22/*24	12		
		10	39.8		35/*39	35/*39	35/*39	35/*39	35/*39	35	34/*38	34/*38	32	34/*38	34/*38	30	34/*37	34/*37	31	31/*35	31/*35	30	30/*33	29/*32	29	29/*32	27/*30	25	26/*29	26/*29	25	26/*29	26/*29
		12	45.0		39/*43	39/*43	39/*43	39/*43	39/*43	36	38/*41	38/*41	35	38/*41	38/*41	33	38/*39	38/*39	34	34/*38	34/*38	32	32/*35	32/*35	30	30/*33	28/*31	28/*31	26/*28	26/*28	25	24/*24	24/*24
35	D	0	0.0		43	42	26	43	38	24	43	35	22	43	29	18	43	25	16	41	22	14	35	19	12	31	17	10	28	15	9		
		1	4.8		37/*39	37/*39	26	37/*39	37/*38	24	37/*39	35	22	37/*39	29	18	37/*39	25	16	37/*38	22	13	14/*14	35	19	12	31	17	10	27	15	9	
		2	9.5		33/*35	33/*35	28	33/*35	33/*35	25	33/*35	33/*35	23	32/*34	31	20	31/*32	26	17	30/*31													

## **Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - OSB Only - Landscape (60 & 72 Cell) - Maximum Mount Spacing in Inches**

## **Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - OSB Only - Landscape (60 & 72 Cell) - Maximum Mount Spacing in Inches**

## **Roof Tech - APEX - ASCE 7-10 - Flush-Mount - 0 to 30 Foot Mean Roof Height - OSB Only - Landscape (60 & 72 Cell) - Maximum Mount Spacing in Inches**

Table Notes for Tables RT1 to RT9 – Tabulated values are based on the following criteria:

1. ASCE 7-10.
2. Building mean roof height = 30 ft maximum.
3. Risk Category = II.
4. Solar panel maximum width = 40 in for Landscape, 68 in for Portrait 60 Cell & 77.5 in for Portrait 72 Cell.
5. Solar panel & rail dead load = approximately 4.0 psf.
6. OSB shall be 24/16 APA rated sheathing minimum (7/16" thick).
7. Plywood shall be 32/16 APA rated sheathing minimum (15/32" thick).
8. Sheathing shall be free of defects including, but not limited to water damage and delamination and must be evaluated by the project Engineer of Record (EOR).
9. Roof rafters or trusses spaced at 24" on center maximum, and must be evaluated by the project EOR for structural integrity and capacity as required by the governing jurisdiction.
10. PV panels must be supported per the manufacturer's required orientation, location and/or spacing. Verification of PV module capacity to support the loads associated with the given array shall be the responsibility of the Contractor or Owner and not Roof Tech or Starling Madison Lofquist, Inc.
11. The mounts may be installed through a maximum of 2 layers of composite asphalt roof shingles or maximum 20 gage metal decking provided the metal is predrilled as wood screws are not designed to penetrate the metal decking.

Our analysis assumes that the connections and associated hardware are installed in a workmanlike manner in accordance with the RT-APEX Installation Manual and generally accepted standards of construction practice. It is the responsibility of the contractor to verify that the strength of the roof framing meets the minimum properties used in the tests and can safely support the maximum imposed loads stated within this document. Starling Madison Lofquist, Inc. and Roof Tech assume no liability beyond what is specifically shown in this letter. Additional information is available at the Roof Tech web site, <http://www.roof-tech.us/>.

Please feel free to contact me at your convenience if you have any questions.

Respectfully yours,



Exp. 2-24-2025

Andrew Huseman, P.E.  
Licensed Professional Engineer

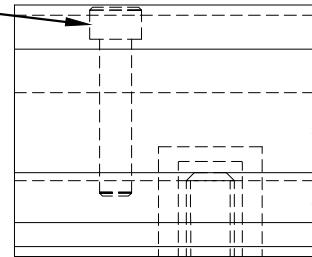
Jesse Light, S.E., P.E.  
Principal (VP) / Sr. Structural Engineer

10mm SS SHCS W/ CONICAL WASHER  
(INSTALLED WITH THE HIGHER OF  
EITHER A MIN. INSTALLATION TORQUE  
OF 12 FT-LB OR THE MIN. INSTALLATION  
TORQUE INDICATED IN THE ROOF TECH  
INSTALLATION MANUAL FOR THE  
SPECIFIC PV PANEL BEING INSTALLED)

16mm SS SET SCREW FOR  
VERTICAL ADJUSTMENT

8mm SS SHCS SET SCREW  
(9 FT-LB MIN. TORQUE)

(2) LAYERS MAX. OF COMPOSITE  
ASPHALT SHINGLES & BUILDING  
PAPER



**NOTE:**  
PV PANEL NOT SHOWN  
BY OTHERS

RT-APEX END OR MID CLAMPS

RT-APEX U-D BRACKET

RT-APEX PILLAR

4mm SS SDST SCREW  
WHERE REQ'D. PER TABLES FOR  
ADDITIONAL LATERAL CAPACITY

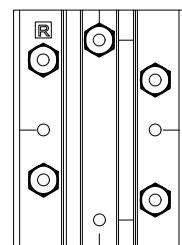
RT-APEX BASE

BUTYL SPACER (WATER PROOFING)

APA RATED SHEATHING

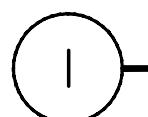
(5) SS304 5.0mmx60mm  
WOOD SCREWS

DOWN SLOPE



SCREW PATTERN PLAN

OSB/ PLYWOOD/  
ONLY CONNECTION



## RT-APEX AT OSB/ PLYWOOD CONNECTION

SCALE: 1/4"=1'-0"

DRAWN BY:  
DESIGNED BY:

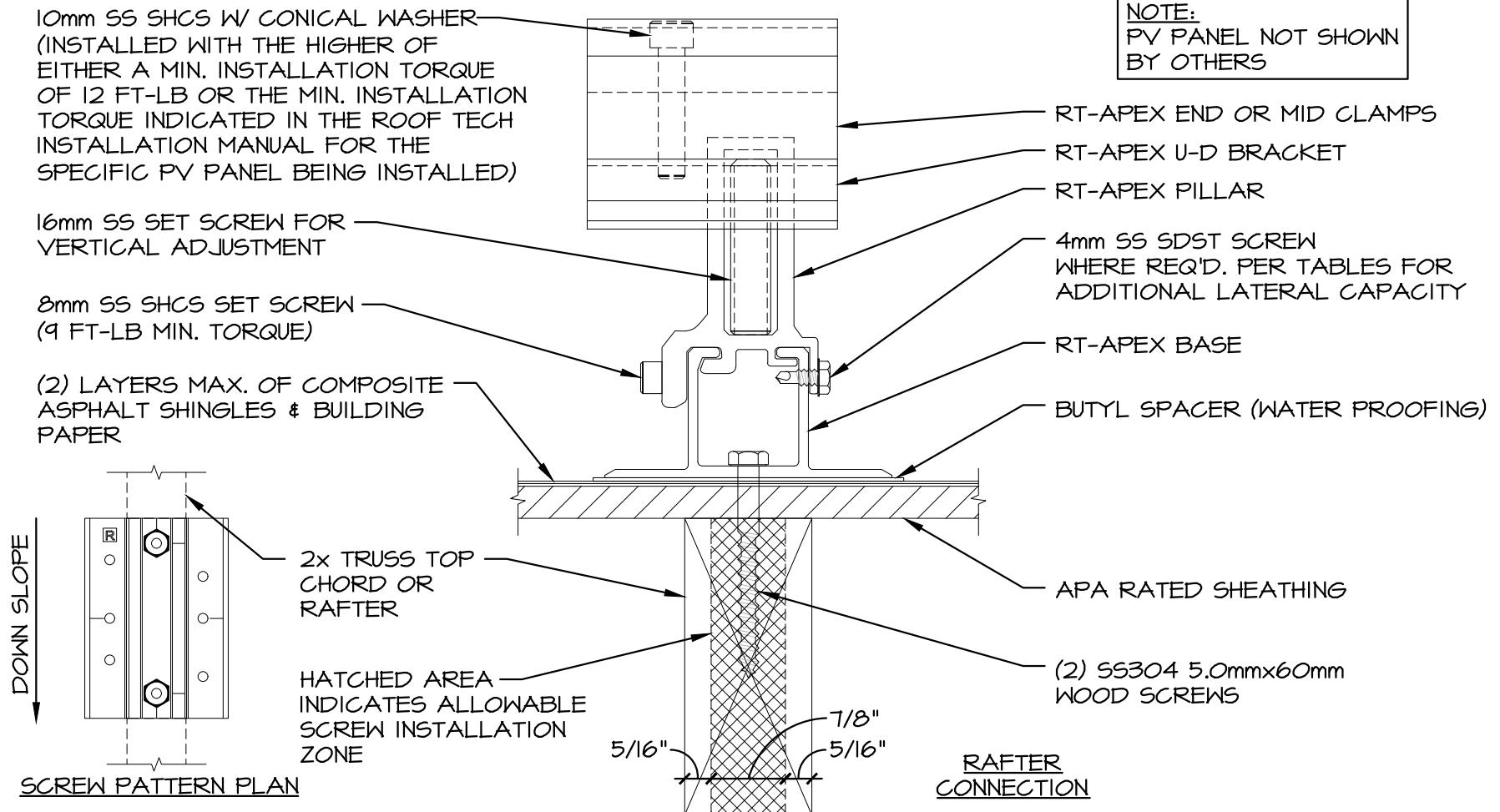
J.S.  
J.L.

DATE:  
JOB NO:

6-9-22  
471-22

ROOF TECH  
RT-APEX MOUNT  
STRUCTURAL ANALYSIS

ROOF TECH, INC.  
10620 TREENA ST., SUITE 230  
SAN DIEGO, CA 92131

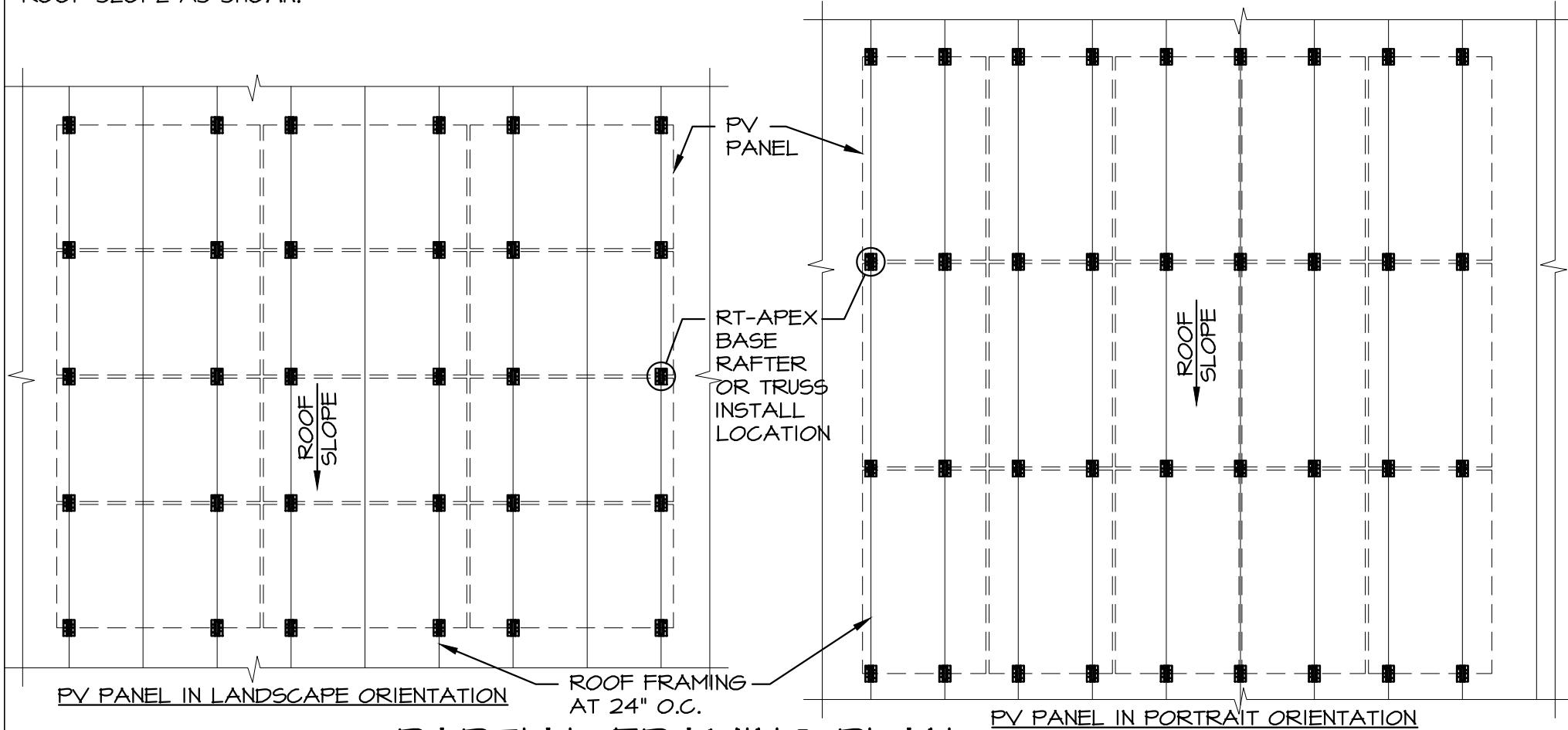


2

## RT-APEX AT RAFTER CONNECTION

SCALE: 1/4"=1'-0"

NOTE: RT-APEX BASE TO BE ORIENTED WITH LONG DIRECTION DOWN  
ROOF SLOPE AS SHOWN.



DRAWN BY:  
DESIGNED BY:

J.S.  
J.L.

DATE:  
JOB NO:

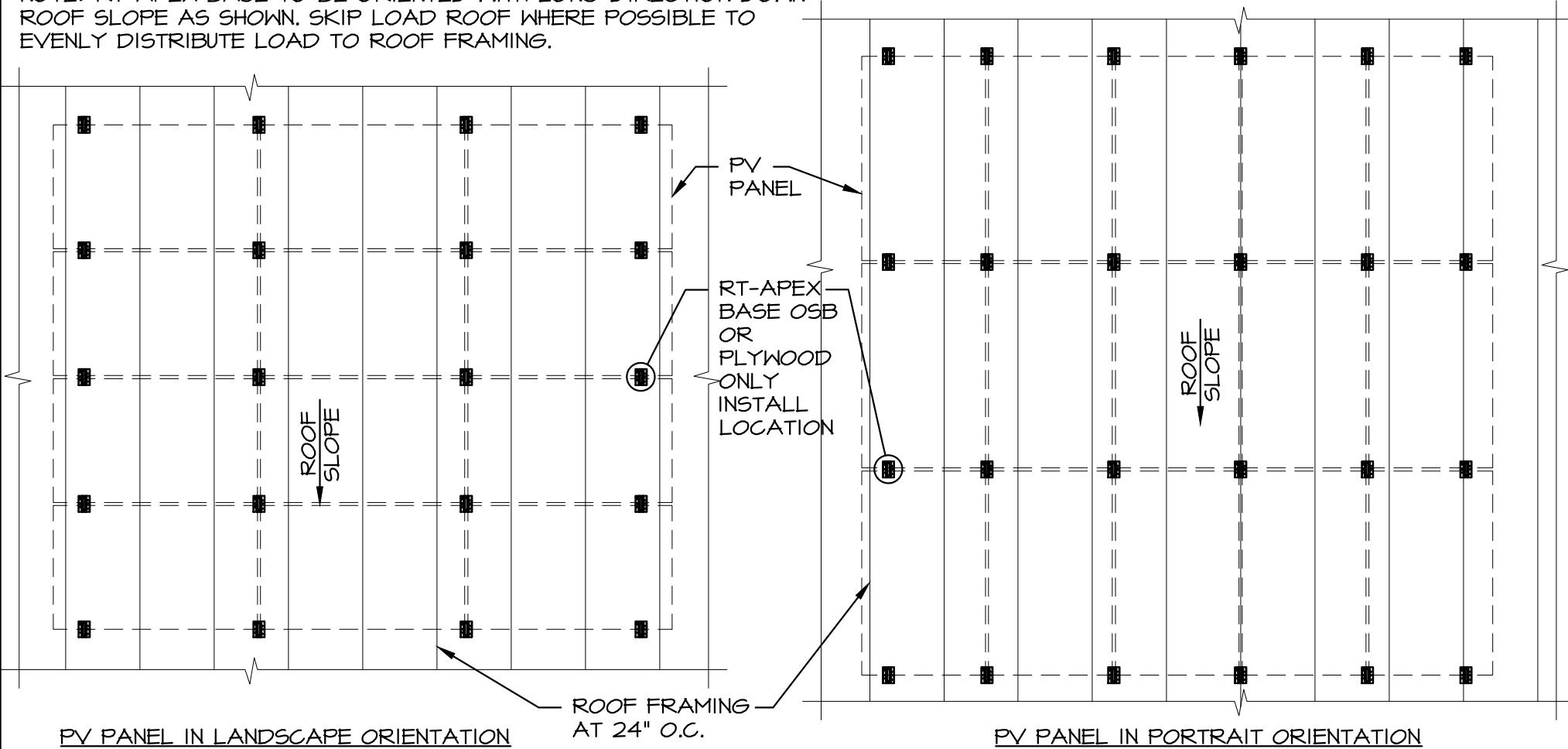
6-9-22  
471-22

ROOF TECH  
RT-APEX MOUNT  
STRUCTURAL ANALYSIS

ROOF TECH, INC.  
10620 TREENA ST., SUITE 230  
SAN DIEGO, CA 92131

**EXHIBIT A  
3 OF 4**

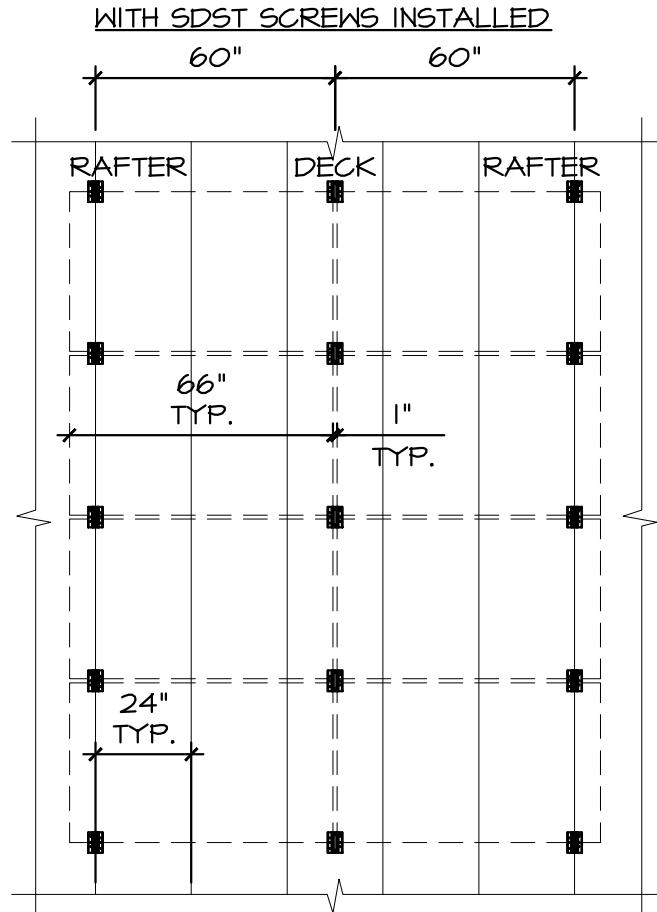
NOTE: RT-APEX BASE TO BE ORIENTED WITH LONG DIRECTION DOWN  
ROOF SLOPE AS SHOWN. SKIP LOAD ROOF WHERE POSSIBLE TO  
EVENLY DISTRIBUTE LOAD TO ROOF FRAMING.



## PARTIAL FRAMING PLAN (OSB/PLYWOOD ONLY INSTALLATION)

4

SCALE: 1/4"=1'-0"



## LANDSCAPE EXAMPLE:

### DESIGN CRITERIA:

- ASCE 7-10

- 20 PSF GROUND SNOW LOAD

- 110 MPH WIND SPEED

- 7-27 DEGREE ROOF ANGLE

- WIND EXPOSURE 'C'

- ROOF ZONE 2

- RAFTER AND OSB DECKING ONLY COMBINED INSTALLATION

NOTE: SIMILAR PROCEDURE FOR PLYWOOD DECKING ONLY

RAFTER-TO-RAFTER (RtoR) = 77/\*96 (in)

DECKING-TO-DECKING (DtoD) = 36/\*39 (in)

(\* INDICATES WITH SDST SCREWS; WHILE NO \* INDICATES  
NO SDST SCREWS INSTALLED)

$$RtoD = \text{RAFTER-TO-DECKING} = [(RtoR)+(DtoD)]/2$$

FOR NO SDST SCREWS INSTALLED RtoD = [77in+36in]/2=56.5in MAX.

FOR WITH SDST SCREWS INSTALLED RtoD = [96in+39in]/2=67.5in MAX.

PLEASE NOTE: CHECK WITH PV PANEL MANUFACTURER FOR ALLOWABLE SUPPORT LOCATIONS FOR THE PROJECT SPECIFIC DESIGN LOADS. SUPPORT LOCATIONS SHOWN MAY NOT BE ALLOWED FOR ALL PV PANELS.

## PARTIAL FRAMING PLAN AND EXAMPLE CALCULATION (COMBINED RAFTER-TO-DECKING ONLY LANDSCAPE INSTALLATION)

SCALE: 1/4"=1'-0"

## PORTRAIT EXAMPLE:

### DESIGN CRITERIA:

- ASCE 7-10
  - 20 PSF GROUND SNOW LOAD
  - 120 MPH WIND SPEED
  - 7-21 DEGREE ROOF ANGLE
  - WIND EXPOSURE 'C'
  - ROOF ZONE I
  - 60 CELL PV PANELS
  - RAFTER AND OSB DECKING ONLY COMBINED INSTALLATION
- NOTE: SIMILAR PROCEDURE FOR PLYWOOD DECKING ONLY

RAFTER-TO-RAFTER (R<sub>to</sub>R) = 45/\*61 (in)

DECKING-TO-DECKING (D<sub>to</sub>D) = 21/\*23 (in)

(\* INDICATES WITH SDST SCREWS; WHILE NO \* INDICATES NO SDST SCREWS INSTALLED)

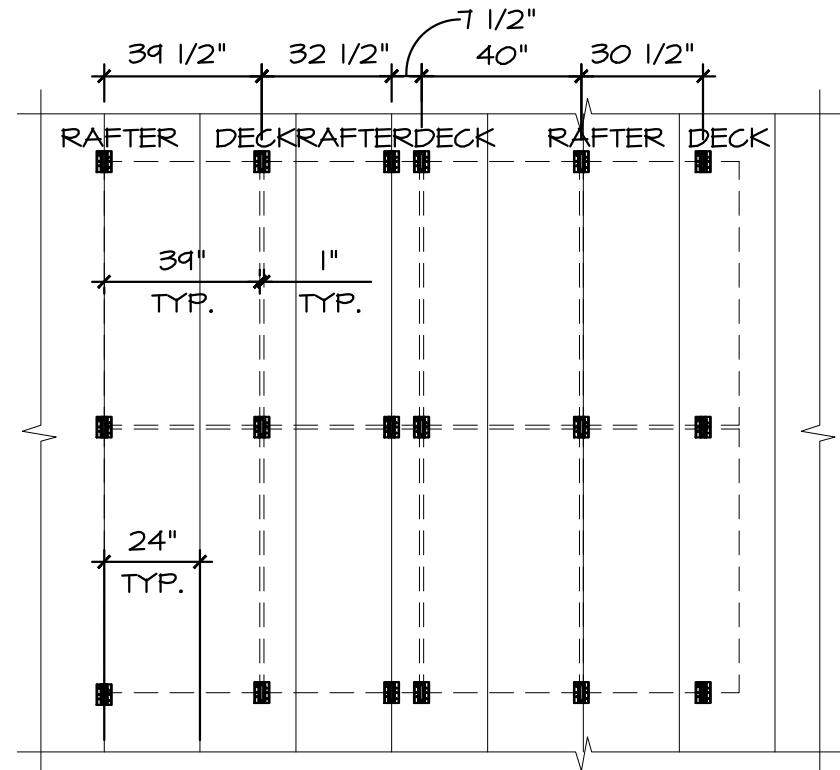
$$R_{to}D = \text{RAFTER-TO-DECKING} = [(R_{to}R) + (D_{to}D)]/2$$

FOR NO SDST SCREWS INSTALLED R<sub>to</sub>D = [45in+21in]/2=33in MAX.

FOR WITH SDST SCREWS INSTALLED R<sub>to</sub>D = [61in+23in]/2=42in MAX.

PLEASE NOTE: CHECK WITH PV PANEL MANUFACTURER FOR ALLOWABLE SUPPORT LOCATIONS FOR THE PROJECT SPECIFIC DESIGN LOADS. SUPPORT LOCATIONS SHOWN MAY NOT BE ALLOWED FOR ALL PV PANELS.

WITH SDST SCREWS INSTALLED



## PARTIAL FRAMING PLAN AND EXAMPLE CALCULATION (COMBINED RAFTER-TO-DECKING ONLY PORTRAIT INSTALLATION)

2

SCALE: 1/4"=1'-0"