



ICC-ES Evaluation Report

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DIVISION: 05 00 00—METALS Section: 05 05 23—Metal Fastenings Section: 05 10 00—Structural Metal Framing

REPORT HOLDER:

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EVALUATION SUBJECT:

UNIRAC SOLARMOUNT™ (E)VOLUTION FLUSH MOUNT MODULAR FRAMING SYSTEM

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2009 and 2006 International Building Code (IBC)
- 2009 and 2006 International Residential Code (IRC)

Property evaluated:

Structural

2.0 USES

The Unirac SolarMount[™] (E)volution Flush Mount Modular Framing System is intended for use as a means to support and secure photovoltaic modules to a roof under codeprescribed loading conditions. The flush mount system will be oriented so that the modules are parallel to, and elevated above, the roof surface on which they are mounted. The flush mount modular framing system is designed to be installed with a photovoltaic module that is composed of a 6063-T5 or better type aluminum frame, having a depth of 0.95 to 2.0 inches (24.13 to 51 mm), and a minimum thickness of 0.060 inch (1.52 mm).

3.0 DESCRIPTION

3.1 General:

The Unirac SolarMount[™] (E)volution Flush Mount Modular Framing System is composed of extruded aluminum beams, clips, clamps, attachments, and fasteners which are used to attach an array of photovoltaic panels to a roof structure.

3.2 Materials:

3.2.1 Beams: Beams are used to support the PV modules and are provided in lengths of up to 20 feet

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(6.1 m) and may be cut to other lengths based on the limitations provided in this report. Beams are formed from either 6005A-T61, 6351-T5, or 6061-T6 extruded aluminum. See the figure within Table 3 for a description of the beam.

3.2.2 Flange Attachment: The flange attachment, shown in Figure 1 of this report, is a bracket used to connect the beam to the roof structure. The flange attachment is composed of the flange bracket and the seismic clip. Both of the flange attachment components are made from 6005A-T61, 6351-T5, or 6061-T6 extruded aluminum.

3.2.3 Retainer: The retainer, shown in Figure 1, is used to secure the beam to the flange attachment and is also used at beam splices. The retainer is made from 5052-H32 aluminum. Four stainless steel self-drilling screws having a $1/_4$ -inch (6.35 mm) diameter are used to connect each retainer to the web of the beam.

3.2.4 End Clamp: The end clamp, shown in Figure 1, is a two-component clamp used to connect the end PV module of an array of PV modules to the beam. The top component of the clamp is made from 300 series stainless steel. The bottom component of the clamp is made from either 6005A-T61, 6351-T5, or 6061-T6 extruded aluminum. A $\frac{5}{16}$ -inch-diameter (7.94 mm) stainless steel bolt is used with each end clamp to fasten the top component of the clamp to the bottom component.

3.2.5 Mid Clamp: The mid clamp, shown in Figure 1, is used to connect two adjacent PV modules to the beam. The top component of the clamp is made from 300 series stainless steel. The bottom component of the clamp is made from either 6005A-T61, 6351-T5, or 6061-T6 extruded aluminum. A $\frac{5}{16}$ -inch-diameter (7.94 mm) stainless steel bolt is used with each mid clamp to fasten the top component of the clamp to the bottom component.

3.2.6 Beam End Stop: The beam end stop, shown in Figure 1, is used to limit the movement of the PV module along the beam length. The beam end stop is made from either 6005A-T61, 6351-T5, or 6061-T6 extruded aluminum. Each beam end stop is attached to the top flange of the beam by using two 1/4-inch-diameter (6.35 mm) stainless steel self-drilling screws.

3.2.7 Bolts and nuts: Stainless steel nuts and bolts used with the end and mid clamps are $5/_{16}$ -inch diameter 300 series stainless steel with a minimum tensile strength of 85 ksi (586 MPa), and have serrations on the underside of the bolt head and on the face of the nuts to provide resistance to loosening.

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3.2.8 Self-tapping Screws: Self-tapping screws are $1/_4$ -inch (6.35 mm), 20-thread-per-inch, austenitic stainless steel screws, and have minimum ultimate tensile and shear strengths of 4124 pounds and 2860 pounds (18.3 and 12.7 kN), respectively.

4.0 DESIGN AND INSTALLATION

4.1 Design:

The attachment of the flush mount modular framing system to the supporting roof structure must be designed in accordance with the applicable code to resist the applied forces. The design of the flush mount modular framing system may be based on one of the design methods shown in Sections 4.1.1 and 4.1.2, below, both of which are based on Allowable Stress Design. Regardless of which method is selected, the installation conditions shown in Figure 1 must be followed.

4.1.1 Design Method 1, Analytical: Allowable load capacity for connectors and beam section properties are provided in Tables 2 and 3. Allowable load capacities shown in Table 2 are based on a PV module with an aluminum frame, as described in Section 2.0 of this report, being installed with the components described in Table 2. The design forces determined in accordance with the applicable code must not exceed the allowable load capacities of the connectors and beam. The section properties indicated in Table 3 of this report must be used in the design of the beam in accordance with the 2005 Aluminum Design Manual (ADM). Design of the beam must consider axial forces, which in turn are caused by loads acting parallel to the beam and bending forces, which are caused by loads acting perpendicular to the beam. The allowable axial load must be determined using Section 3.4.7 of the ADM. Unbraced length of the beam must be considered as the spacing between points of attachment. Consideration must be given to both X-axis and Y-axis buckling of the beam due to axial forces. Design of the beam must also consider bending forces applied to the beam in both the X-axis direction (loads perpendicular to the surface of the PV module) and Y-axis direction (loads parallel to the surface of the PV module). Allowable bending stresses must be determined using Section 3.4.14 of the ADM. Unbraced length of the beam must be considered as the spacing between the attachment points. Shear stresses in the beam due to forces applied to the beam in both the X-axis (loads perpendicular to the surface of the PV module) and Y-axis (loads parallel to the surface of the PV module) directions must be considered. The allowable shear stress is 12 ksi (82.7 MPa). Consideration must also be given to torsional forces caused by loads parallel to the surface of the PV module and perpendicular to the beam. The maximum load applied to the beam must not exceed the web crippling reactions shown in Table 3. Combined stresses must be considered in the determination of the beam capacity in accordance with Section 4 of the ADM. Applied loads must be determined in accordance with the applicable code and the ICC-ES Acceptance Criteria for Modular Framing Systems Used to Support Photovoltaic (PV) Modules (AC428). Where code applied design loads are modified and/or clarified by AC428, the more stringent design load must be used. Applied loads must be considered as loads acting parallel to the surface of the PV modules and perpendicular to the surface of the PV modules.

4.1.2 Design Method 2, Prescriptive: Allowable spacing of flange attachments, retainer spacing and reaction loads at attachment points for use in designing the roof and connection of the system to the roof are provided in Tables 4 through 16, subject to the conditions listed in this section.

For alternate installation conditions, the allowable spacing shown in Tables 4 through 15 may be adjusted in accordance with the provisions shown in Table 17 of this report.

The allowable spacings shown in Tables 4 to 16 are based on the following conditions:

- 1. The building has either a monoslope roof with a slope less than 3 degrees, a gable roof with a slope less than or equal to 45 degrees, or a hip roof with a slope less than or equal to 27 degrees.
- 2. The roof has a minimum slope of 1.2 degrees.
- 3. Installations are limited to site conditions where the topographic factor, K_{zt} , is equal to one.
- 4. Values in Tables 4 through 16 are for installations in Wind Exposure Category B or C.
- 5. Values in Tables 4 through 16 are valid for building heights less than or equal to 30 feet (9.1 m).
- Values in Tables 4 through 16 are for a PV module array located in roof zone 1, as indicated in Figures 11-B through 11-D of ASCE 7-05.
- The maximum allowable cantilever of the beam is 40 percent of the adjacent span of the beam flange attachment spacings shown in Tables 4 through 16.
- Values in the tables are for roof installations only with PV modules parallel to and less than 10 inches above the roof surface.
- In regions with ground snow loads less than 20 psf but not zero, the roof angle in degrees must be greater than the horizontal distance from eave to ridge in feet divided by 50 (horizontal distance from eave to ridge in meters divided by 15.2).
- System dead load, including PV modules and mounting hardware, must be between 1.6 and 6.2 psf (7.8 and 30.3 kg/m²).
- 11. Importance factors are equal to 1.0 in Tables 4 through 16.
- 12. The values shown in Tables 4 through 17 are based on uniform loading conditions. Unbalanced, drifting, and sliding snow load conditions have not been considered.
- 13. Installations must be in seismic site class A, B, C, or D, as defined in ASCE 7-05.
- 14. Spectral response acceleration, S_S , is less than or equal to 1.2 in Tables 4 through 16.
- 15. Reaction forces shown in Tables 4 through 16 may be reduced linearly if the installed distance between attachments is less than the distance between attachments shown in the Tables 4 through 15. For example, if the spacing is half the amount shown in the tables, then the reaction force may also be reduced by half.
- 16. The force on the retainer is 160 pounds (711 N) at the maximum retainer spacing specified in Table 16. The force on the retainer may be reduced linearly if the distance between attachments is less than shown in Tables 4 through 15. For example, if the distance between attachments is half the value shown in the tables, then the force on the retainer will be 80 pounds (356 N).
- 17. The longest continuous run of spliced beams is 20 feet (6.1 m). A beam positive stop must be installed at the lowest end of any run of beams installed perpendicular to the roof ridgeline.

- 18. The maximum width of the PV module, which is the PV module dimension parallel to the beam, must be equal to or less than the module length along beam shown in Table 16.
- 19. Adjustment factors provided in Table 17 must be applied to the allowable spacing values shown in Tables 4 through 15. Adjustment factors for a specific condition must not be combined with an adjustment factor for another condition. The most conservative adjustment factor must be considered when multiple conditions exist.

4.2 Installation:

Installation procedures must be in accordance with Unirac published installation instructions and as noted in Figure 1 and applicable provisions shown in Section 5.0 of this report. Locations must be in accordance with the approved plans and specifications.

4.3 Special Inspection:

Periodic special inspections as indicated in Item 2 of IBC Section 1707.7 must be required during installation of mid clamps and end-clamps in Seismic Design Categories E and F. The role of the special inspector is to verify that the connectors and connecting material and installation are in accordance with this evaluation report and Unirac's published installation instructions.

5.0 CONDITIONS OF USE

The Unirac SolarMount[™] (E)volution Flush Mount Modular Framing Systems described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- **5.1** The methods of securing the modular framing system to the roof structure must be designed by a registered design professional where required by the statutes of the local jurisdiction.
- **5.2** The capacity of the PV module to resist the structural loads cited in this report must be demonstrated to the satisfaction of the code official. The PV module must be compatible for support and restraint with the flush mount modular framing system.
- **5.3** Modular framing systems subject to vibratory loading are outside the scope of this report.
- **5.4** Electrical safety, grounding provisions and grounding continuity are outside the scope of this report.
- **5.5** Roof penetrations must be flashed in accordance with accepted flashing practices to the satisfaction of the code official.

- **5.6** The location of the PV modules and support framing on a roof must be established by the local jurisdiction, based on consideration of access by fire personnel, roof vents, and other roof features.
- **5.7** The roof live load must be determined by the local jurisdiction.
- **5.8** The framing system must be installed in accordance with the installation instructions of the PV module manufacturer, Unirac's published installation instructions and as described in this report. A copy of the applicable installation instructions must be available for review at the jobsite. Where a conflict between this report and the installation instructions occurs, the more restrictive governs.
- **5.9** For the analytical design approach described in Section 4.1.1 of this report, the design forces calculated in accordance with the code must not exceed the allowable connector capacities shown in Table 2 and the allowable beam capacity calculated in accordance with the provisions of Section 4.1.1 and Table 3.
- **5.10** For the prescriptive design approach described in Section 4.1.2, the design assumptions shown in Section 4.1.2 must be considered for prescriptive installation of the modular framing system, as shown in Tables 4 through 17.
- **5.11** The distance between the bottom of the PV module and the roof must be between 2 and 10 inches (51 and 254 mm).
- **5.12** A registered design professional must verify that the structure supporting the PV array will adequately support the anticipated applied loads.
- **5.13** Special inspections must be conducted in accordance with Section 4.3.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Modular Framing Systems Used to Support Photovoltaic (PV) Modules (AC428) dated November 2010.

7.0 IDENTIFICATION

The beams and connector components are identified on the packaging by a label with the manufacturer's name (Unirac), the words "SolarMount (E)volution" and the evaluation report number (ICC-ES ESR-3083). The clamps have the name "Unirac" embossed in a location visible after installation.

Table 1: Bolt lengths for mid	and end clamps		For SI: 1 pound = 4.48 New tons
Bolt Length (inches)	Module Height Range (Inches)		1 inch = 25.4 millimeters
1.25	0.95 TO 1.60		1 psf = 0.0478 kiloPascals
1.75	1.45 TO 2.00		1 mph = 1.61 kilometers/hr
Table 2: Allowable loads for c	components (Allowable Stress Desig	n, ASD)	
		Allowable	Tension
Component	Load Direction	Load	
		(pounds)	Transverse
End Clamp to beam	Tension	958	
	Transverse to beam (as friction clip)	315	
	Parallel to beam	204	Parallel
Note - Forces appied to the clamp	os shall be orthogonal to the beam		
Mid Clamp to beam	Tension	1061	▲ Tension
	Transverse to beam (as friction clip)	636	Transverse
	Parallel to beam	244	Transverse
			Parallel
Note - Forces appied to the clamp	os shall be orthogonal to the beam		
Module Positive Stop	Transverse to beam	711	
(2 per module)			
Beam to flange attachment	Tension	744	Transverse
	Compression	1183	Fixed
	Transverse, fixed side	243	
	Transverse, flex side	134	Transvorse
			Flex
Deem and aton	Choor	1071	•
Beamend stop	Silear	1071	
			Shear
Retainer	Axial to beam	429	
		420	Axiai
			20 00
			r Ko

Table 3: Beam section properties

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Properties	Units	Value	Y
Gross area	in ²	0.537	504-1
Section Modulus, X-axis	in ³	0.3359	
Section Modulus, Y-axis	in ³	0.1309	
Moment of inertia, X-axis	in⁴	0.3695	
Moment of inertia, Y-axis	in⁴	0.0659	
Radius of gyration, X-axis	in	0.8295	
Radius of gyration, Y-axis	in	0.3504	
Torsional Constant (J)	in⁴	0.113	
Minimum thickness of element (tb)	in	0.062	1.100
Mean Area of inner and outer boundaries (A_m)	in ²	1.53	
Allow able Web Crippling Reaction X-Axis (R_{WCx})	lbs	1592	
Allow able Web Crippling Reaction Y-Axis (R_{WCy})	lbs	3541	1.007

Notes - Local buckling of Flanges and webs does not control flexural design of beam.

- Reactions to the beam are limited to those show n in Table 2 above.

Notes for tables 4 through 15:

1. The top row of each cell contains the maximum distance betw een flange attachments (inches)

2. The bottom row of each cell contains reaction forces on the attachment:

up force perpendicular to the module (pounds)/ dow n force perpendicular to the module (pounds).

3. Beam positive stops are required for installations with the beam perpendicular to the roof ridgeline.

4. Module positive stops are required for installations with the beam parallel to the roof ridgeline.

5. The reaction forces up/dow n are used to design the connection betw een the attachment and supporting structure.

Up Down Flange

Table 4: All	owable dis	stance betw	een attach	<u>ments, rea</u>	ction loads	<u>up/down</u>	<u>85 mph wi</u>	nd speed,	exposure o	category B
Module Length	0	Ground Snow	Load in pst (oi	r Roof Live Lo:	ad, whichever is	s greater)	30	40	50	60
- Bean (III)	109	105	100	95	89	88	84	73	67	63
¥2	124/247	121/259	118/295	111/329	105/361	104/367	100/393	91/436	85/490	80/542
44	97	93	87	81	76	75	71	63	59	55
	154/305	147/320	139/365	131/407	124/446	123/454	119/486	106/525	99/591	94/652
65	79	76	71	66	62	61	58	53	46	39
67	78	75	70	65	61	60	57	52	123/738	38
01	195/397	191/416	180/475	170/530	162/581	161/591	155/631	135/669	125/751	117/826
68	78	75	70	65	60	60	57	52	44	37
	196/399	192/419	181/478	172/533	164/585	162/595	156/635	136/674	126/757	118/832
72	76	13	68	63	59	58	55	49	41	Special Eng.
78	73	198/434 70	66	61	57	56	53	40/697	Special Eng	Special Eng
	209/430	205/451	194/514	183/573	175/629	173/640	167/684	146/729	Required	Required
85	70	68	63	59	55	54	51	Special Eng.	Special Eng.	Special Eng.
	219/449	215/471	202/540	192/603	183/661	182/673	175/719	Required	Required	Required
Table 5: All	owable dis	stance betw	<u>een attach</u>	ments, rea	ction loads	s (up/down	<u>90 mph wi</u>	nd speed,	exposure o	category B
Module Length		Ground Snow	Load in pst (or	r Root Live Lo	ad, whichever i	s greater)				
-Beam (in)	0 407	5	10 100	15	20	25	30	40	50	60
32	138/250	135/259	132/295	94 125/329	88 118/361	87 117/367	83 113/303	73 102/436	67 95/490	03 90/542
44	95	92	87	80	75	74	71	63	59	55
	171/310	165/320	155/365	147/407	140/446	139/454	134/486	119/525	112/591	106/652
65	78	75	71	66	61	61	58	53	46	39
67	217/391	2 13/4 10	201/468	190/522	181/572	180/582	173/622	150/657	139/738	130/812
67	220/397	74 216/416	70 204/475	00 193/530	184/581	182/591	57 176/631	52 153/669	44 14.1/751	30 132/826
68	76	73	69	64	60	59	56	52	44	37
	222/399	2 18/4 19	205/478	195/533	185/585	184/595	177/635	154/674	143/757	134/832
72	74	72	67	62	58	58	55	49	41	Special Eng.
70	229/413	224/434	211/494	200/550	191/603	189/614	182/655	159/697	14 // /81 Special Eng	Required
10	237/430	232/451	2 19/514	208/573	198/629	196/640	190/684	43	Required	Required
85	69	67	63	58	54	54	51	Special Eng.	Special Eng.	Special Eng.
	248/449	243/471	229/540	218/603	208/661	206/673	199/719	Required	Required	Required
Table 6: All	owable dis	tance betw	een attach	ments, rea	ction loads	(up/down	100 mph w	ind speed	. exposure	category B
Module Length	_	Ground Snow	Load in pst (or	r Root Live Lo	ad, whichever i	s greater)				
Module Length ⊥Beam (in)	0	Ground Snow 5	Load in pst (or 10	r Root Live Los 15	ad, whichever is 20	s greater) 25	30	40	50	60 60
Module Length ⊥Beam (in) <mark>32</mark>	0 103 171/276	Ground Snow 5 100 167/276	2Load in pst (or 10 98 159/295	r Roof Live Los 15 93 153/329	ad, whichever is 20 87 145/361	s greater) 25 86 144/367	30 82 138/393	40 72 126/436	50 67 118/490	60 63
Module Length ⊥Beam (in) 32 44	0 103 171/276 92	Ground Snow 5 100 167/276 89	7 Load in pst (or 10 98 159/295 85	r Root Live Los 15 93 153/329 79	ad, whichever is 20 87 145/361 74	s greater) 25 86 144/367 73	30 82 138/393 70	40 72 126/436 62	50 67 118/490 58	60 63 111/542 55
Module Length ⊥Beam (in) 32 44	0 103 171/276 92 213/341	Ground Snow 5 100 167/276 89 208/334	rLoad in pst (or 10 98 159/295 85 195/365	r Root Live Los 15 93 153/329 79 185/407	ad, whichever is 20 87 145/361 74 176/446	25 86 144/367 73 175/454	30 82 138/393 70 169/486	40 72 126/436 62 150/525	50 67 118/490 58 139/591	60 63 111/542 55 131/652
Module Length ⊥Beam (in) 32 44 65	0 103 171/276 92 213/341 75	Ground Snow 5 100 167/276 89 208/334 73	rLoad in pst (or 10 98 159/295 85 195/365 69	r Root Live Los 15 93 153/329 79 185/407 64	ad, whichever is 20 87 145/361 74 176/446 60	25 86 144/367 73 175/454 60	30 82 138/393 70 169/486 57	40 72 126/436 62 150/525 52	50 67 118/490 58 139/591 46	60 63 111/542 55 13//652 39
Module Length → Beam (in) 32 44 65	0 103 171/276 92 213/341 75 273/420	Ground Snow 5 100 167/276 89 208/334 73 267/410 72	Load in pst (oi 10 98 159/295 85 195/365 69 252/468 69	Root Live Lo. 15 93 153/329 79 185/407 64 239/522 62	ad, whichever is 20 87 145/361 74 176/446 60 227/572 50	s greater) 25 86 144/367 73 175/454 60 226/582 50	30 82 138/393 70 169/486 57 217/622 56	40 72 126/436 62 150/525 52 188/657	50 67 118/490 58 139/591 46 174/738	60 63 111/542 55 13/1652 39 163/812 28
Module Length →Beam (in) 32 44 65 67	0 103 171/276 92 213/341 75 273/420 74 277/426	Ground Snow 5 100 167/276 89 208/334 73 267/410 72 271/416	Load in pst (oi 10 98 159/295 85 195/365 69 252/468 68 256/475	Root Live Lo. 15 93 153/329 79 185/407 64 239/522 63 242/530	ad, whichever is 20 87 145/361 74 176/446 60 227/572 59 231/581	s greater) 25 86 144/367 73 175/454 60 226/582 59 229/591	30 82 138/393 70 169/486 57 217/622 56 221/631	40 72 126/436 62 150/525 52 188/657 51 192/669	50 67 118/490 58 139/591 46 174/738 44 178/751	60 63 111/542 55 13/652 39 163/812 38 166/826
Module Length →Beam (in) 32 44 65 67 68	0 103 171/276 92 213/341 75 273/420 74 277/426 74	Ground Snow 5 100 167/276 89 208/334 73 267/410 72 271/416 71	Load in pst (or 98 159/295 85 195/365 69 252/468 68 256/475 68	Root Live Lo. 15 93 153/329 79 185/407 64 239/522 63 242/530 63	ad, whichever i 20 87 145/361 74 176/446 60 227/572 59 231/581 59	s greater) 25 86 144/367 73 175/454 60 226/582 59 229/591 58	30 82 138/393 70 169/486 57 217/622 56 227631 56	40 72 126/436 62 150/525 52 188/657 51 192/669 51	50 67 118/490 58 139/591 46 174/738 44 178/751 44	60 63 111/542 55 13 //652 39 163/812 38 166/826 37
Module Length →Beam (in) 32 44 65 67 68	0 103 171/276 92 213/341 75 273/420 74 277/426 74 279/429	Ground Snow 5 100 167/276 89 208/334 73 267/410 72 271/416 71 273/419	Load in pst (or 98 159/295 85 195/365 69 252/468 68 256/475 68 258/478	Root Live Lo. 15 93 153/329 79 185/407 64 239/522 63 242/530 63 244/533	ad, whichever i 20 87 145/361 74 176/446 60 227/572 59 231/581 59 233/585	25 86 144/367 73 175/454 60 226/582 59 229/591 58 231/595	30 82 138/393 70 169/486 57 217/622 56 222/631 56 222/635	40 72 126/436 62 150/525 52 188/657 51 192/669 51 193/674	50 67 118/490 58 139/591 46 174/738 44 178/751 44 179/757	60 63 111/542 55 131/652 39 163/812 38 166/826 37 168/832
Module Length →Beam (in) 32 44 65 67 68 72	0 103 171/276 92 213/341 75 273/420 74 277/426 74 279/429 72	Ground Snow 5 100 167/276 89 208/334 73 267/410 72 271/416 71 273/419 69	Load in pst (or 98 159/295 85 195/365 69 252/468 68 256/475 68 258/478 66	Root Live Lo. 15 93 153/329 79 185/407 64 239/522 63 242/530 63 244/533 61	ad, whichever i 20 87 145/361 74 176/446 60 227/572 59 231/581 59 233/585 57	25 86 144/367 73 175/454 60 226/582 59 229/591 58 231/595 57	30 82 138/393 70 169/486 57 217/622 56 221/631 56 222/635 54	40 72 126/436 62 150/525 52 188/657 51 192/669 51 193/674 49	50 67 118/490 58 139/591 46 174/738 44 178/751 44 179/757 41	60 63 111/542 55 131/652 39 163/812 38 166/826 37 168/832 Special Eng.
Module Length →Beam (in) 32 44 65 67 68 72 78	0 103 171/276 92 213/341 75 273/420 74 277/426 74 279/429 72 287/441 69	Ground Snow 5 100 167/276 89 208/334 73 267/410 72 271/416 71 273/419 69 281/434 67	Load in pst (or 98 159/295 85 195/365 69 252/468 68 256/475 68 258/478 66 265/494 64	Root Live Lo. 15 93 153/329 79 185/407 64 239/522 63 242/530 63 244/533 61 251/550 50	ad, whichever i 20 87 145/361 74 176/446 60 227/572 59 231/581 59 233/585 57 233/585 57 239/603 56	25 86 144/367 73 175/454 60 226/582 59 229/591 58 231/595 57 237/614 55	30 82 138/393 70 169/486 57 217/622 56 221/631 56 222/635 54 229/655 52	40 72 126/436 62 150/525 52 188/657 51 192/669 51 193/674 49 199/697 45	50 67 118/490 58 139/591 46 174/738 44 178/751 44 179/757 41 184/781 Special Eng	60 63 111/542 55 131/652 39 163/812 38 166/826 37 168/832 Special Eng. Required Special Eng.
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Module Length →Beam (in) 32 44 65 67 68 72 78 85 Table 7: All Module Length →Beam (in) 32 44 65 67 68	0 103 171/276 92 213/341 75 273/420 74 277/426 74 279/429 72 287/441 69 298/459 67 311/479 0 0 99 210/303 89 261/375 72 327/464 71 332/471 71	Ground Snow 5 100 167/276 89 208/334 73 267/410 72 271/416 71 273/419 69 281/434 67 291/451 65 305/471 stance betw Ground Snow 97 205/303 86 255/370 70 322/4455 69	Load in pst (or 10 98 159/295 85 195/365 69 252/468 68 256/475 68 258/478 66 265/494 64 275/514 61 288/540 / een attach Load in pst (or 10 95 192/305 82 239/365 67 309/468 66 313/475 66	Root Live Lo. 15 93 153/329 79 185/407 64 239/522 63 242/530 63 244/533 61 251/550 59 261/573 57 273/603 ments, rea real 182/329 77 226/407 63 292/522 62 297/530 62	ad, whichever i 20 87 145/361 74 176/446 60 227/572 59 233/585 57 239/603 56 249/629 53 261/661 action loads ad, whichever i 20 85 174/361 73 216/446 59 279/572 58 283/581 58	s greater) 25 86 144/367 73 175/454 60 226/582 59 229/591 58 231/595 57 237/614 55 246/640 53 258/673 5 (Up/down s greater) 25 84 172/367 72 214/454 59 276/582 58 280/591 57	30 82 138/393 70 169/486 57 217/622 56 221/631 56 222/635 54 229/655 52 238/684 50 249/719 2110 mph w 30 81 167/393 69 207/486 56 266/622 55 270/631 55	40 72 126/436 62 150/525 52 188/657 51 192/669 51 193/674 49 199/697 45 208/729 Special Eng. Required 71 152/436 61 183/525 52 233/657 51 235/669 50	50 67 118/490 58 139/591 46 174/738 44 178/751 41 184/781 Special Eng. Required Special Eng. Required 50 66 142/490 57 171/591 46 214/738 44 217/751 44	60 63 111/542 55 131/652 39 163/812 38 166/826 37 168/832 Special Eng. Required Special Eng. Special Eng. Required Special Eng. Special E
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Module Length →Beam (in) 32 44 65 67 68 72 78 85 Table 7: All Module Length →Beam (in) 32 44 65 67 68 72 44 65 67 68 72	0 103 171/276 92 213/341 75 273/420 74 277/426 74 279/429 72 287/441 69 298/459 67 311/479 0 0 99 210/303 89 261/375 72 327/464 71 332/471 71 334/474 69 10 10 10 10 10 10 10 10 10 10	Ground Snow 5 100 167/276 89 208/334 73 267/410 72 271/416 71 273/419 69 281/434 67 291/451 65 305/471 :tance betw Ground Snow 5 97 205/303 86 255/370 70 327/448 69 332/455 69 334/458 67 2455	Load in pst (or 10 98 159/295 85 195/365 69 252/468 68 256/475 68 258/478 66 265/494 64 275/514 61 288/540 7 een attach Load in pst (or 10 95 192/305 82 239/365 67 309/468 66 313/475 66 313/475 66 316/478 64 205/478 66 316/478 66 316/478 64 205/478 66 316/478 67 309/468 316/478 67 316/478	Root Live Lo. 15 93 153/329 79 185/407 64 239/522 63 242/530 63 244/533 61 251/550 59 261/573 57 273/603 ments, rea 15 91 182/329 77 226/407 63 292/522 62 297/530 62 299/533 60 200/575	ad, whichever is 20 87 145/361 74 176/446 60 227/572 59 233/585 57 239/603 56 249/629 53 261/661 action loads ad, whichever is 20 85 174/361 73 216/446 59 279/572 58 283/585 56 245/585 58 285/585 56 200/655 58 285/585 56 200/655 58 285/585 56 200/655 58 285/585 56 200/655 58 285/585 56 200/655 58 285/585 56 200/655 58 285/585 56 285/585 58 285/585 56 29/575 200/655	s greater) 25 86 144/367 73 175/454 60 226/582 59 229/591 58 231/595 57 237/64 55 246/640 53 258/673 5 (up/down s greater) 25 84 172/367 72 214/454 59 276/582 58 280/591 57 282/595 56 282/595 57 282/595 57 214/454 59 276/582 58 280/591	30 82 138/393 70 169/486 57 217/622 56 221/631 56 222/635 54 229/655 52 238/684 50 249/719 2110 mph v 30 81 167/393 69 207/486 56 266/622 55 270/631 55 270/635 53 209/55	40 72 126/436 62 150/525 52 188/657 51 192/669 51 193/674 49 199/697 45 208/729 Special Eng. Required 71 152/436 61 183/525 52 231/657 51 235/669 50 237/674 49	50 67 118/490 58 139/591 46 174/738 44 178/751 41 184/781 Special Eng. Required Special Eng. Required 50 66 142/490 57 171/591 46 214/738 44 219/757 41	60 63 111/542 55 131/652 39 163/812 38 166/826 37 168/832 Special Eng. Required Special Eng. Required Special Eng. Required Cate gory B 60 62 134/542 54 160/652 39 200/812 38 204/826 37 205/832 Special Eng.
Module Length →Beam (in) 32 44 65 67 68 72 78 85 Table 7: All Module Length →Beam (in) 32 44 65 67 68 72 78 85	0 103 171/276 92 213/341 75 273/420 74 277/426 74 279/429 72 287/441 69 298/459 67 311/479 0 0 99 210/303 89 261/375 72 327/464 71 332/471 71 334/474 69 344/488 67	Ground Snow 5 100 167/276 89 208/334 73 267/410 72 271/416 71 273/419 69 281/434 67 291/451 65 305/471 5 305/471 5 305/471 5 305/303 86 255/370 70 327/448 69 332/455 69 334/458 67 34/472 65	Load in pst (or 10 98 159/295 85 195/365 69 252/468 68 256/475 68 258/478 66 265/494 64 275/514 61 288/540 7 een attach Load in pst (or 10 95 192/305 82 239/365 67 309/468 66 313/475 66 313/475 66 313/475 66 316/478 64 325/494 62	Root Live Lo. 93 153/329 79 185/407 64 239/522 63 242/530 63 244/533 61 251/550 59 261/573 57 273/603 ments, rea rRoot Live Loa 15 91 182/329 77 226/407 63 292/522 62 297/530 62 299/533 60 308/550	ad, whichever i 20 87 145/361 74 176/446 60 227/572 59 233/585 57 239/603 56 249/629 53 261/661 action loads ad, whichever i 20 85 174/361 73 216/446 59 279/572 58 283/585 56 293/603 55	s greater) 25 86 144/367 73 175/454 60 226/582 59 229/591 58 231/595 57 237/64 55 246/640 53 258/673 5 (up/down s greater) 25 84 172/367 72 214/454 59 276/582 58 280/591 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 57 291/614 57 214/454 59 276/582 58 280/591 57 214/454 59 276/582 58 280/591 57 291/614 59 201/614 59 25 84 172/367 72 214/454 59 276/582 58 280/591 57 282/595 56 291/614 57 25 57 29 29 57 57 28 57 28 28 59 57 57 28 28 57 57 28 28 59 57 57 28 57 57 28 57 57 28 57 57 28 57 57 56 29 56 29 57 56 29 57 56 29 57 56 29 57 56 29 57 56 29 57 56 29 57 56 29 57 56 29 57 56 29 57 56 29 57 56 29 57 56 29 57 56 29 57 57 57 56 29 57 56 29 57 56 29 57 56 29 57 56 29 57 56 29 57 56 29 57 56 29 57 57 57 57 57 57 57 57 57 57	30 82 138/393 70 169/486 57 217/622 56 221/631 56 222/635 54 229/655 52 238/684 50 249/719 2110 mph v 30 81 167/393 69 207/486 56 266/622 55 270/631 55 270/635 53 280/655 54	40 72 126/436 62 150/525 52 188/657 51 192/669 193/674 49 199/697 45 208/729 Special Eng. Required 71 152/436 61 183/525 52 231/657 51 235/669 50 237/674 49 244/697 45	50 67 118/490 58 139/591 46 174/738 44 178/751 44 179/757 41 184/781 Special Eng. Required 50 66 142/490 57 171/591 46 214/738 44 219/757 41 226/781 Special Eng.	60 63 111/542 55 131/652 39 163/812 38 166/826 37 168/832 Special Eng. Required Special Eng. Required Special Eng. Required 60 62 134/542 54 160/652 39 200/812 38 204/826 37 205/832 Special Eng. Required SA 205/832 Special Eng. Required 37 205/832 Special Eng. Required 37 205/832 Special Eng. Required 37 205/832 Special Eng. Required 37 205/832 Special Eng. Required 37 205/832 Special Eng. Required 37 205/832 Special Eng. Required 37 205/832 Special Eng. Required 37 205/832 Special Eng. Required 37 205/832 Special Eng. 37 205/832 Special Eng. 37 205/832 37 205/832 205/
Module Length →Beam (in) 32 44 65 67 68 72 78 85 Table 7: All Module Length →Beam (in) 32 44 65 67 68 72 78 85	0 103 171/276 92 213/341 75 273/420 74 277/426 74 279/429 72 287/441 69 298/459 67 311/479 0 0 99 210/303 89 261/375 72 327/464 71 332/471 71 334/474 69 344/488 67 357/507	Ground Snow 100 167/276 89 208/334 73 267/410 72 271/416 71 273/419 69 281/434 67 305/471 65 305/471 65 305/471 50 305/471 50 305/471 65 305/471 65 305/471 65 305/471 65 305/471 69 327/448 69 332/455 69 334/458 67 344/472 65 657/494 65	Load in pst (or 10 98 159/295 85 195/365 69 252/468 68 256/475 68 258/478 66 265/494 64 275/514 61 288/540 7 een attach Load in pst (or 10 95 192/305 82 239/365 67 309/468 66 313/475 66 316/478 64 325/494 62 337/514	Root Live Lo. 15 93 153/329 79 185/407 64 239/522 63 242/530 63 244/533 61 251/550 59 261/573 57 273/603 ments, rea rRoot Live Lo. 15 91 182/329 77 226/407 63 292/522 62 297/530 62 299/533 60 308/550 58 319/573	ad, whichever i 20 87 145/361 74 176/446 60 227/572 59 233/585 57 239/603 56 249/629 53 261/661 action loads ad, whichever i 20 85 174/361 73 216/446 59 279/572 58 283/581 58 285/585 56 293/603 55 304/629	s greater) 25 86 144/367 73 175/454 60 226/582 59 229/591 58 231/595 57 237/614 55 246/640 53 258/673 5 (UP/down s greater) 25 84 172/367 72 214/454 59 276/582 58 280/591 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 26/582 58 280/591 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 57 282/595 57 282/595 57 282/595 57 282/591 57 282/595 57 29/614 57 25 57 25 84 25 57 25 57 25 57 21 21 57 25 57 25 25 25 57 25 25 57 25 57 25 57 25 25 57 25 26 25 26 25 26 26 26 26 26 26 26 26 26 26	30 82 138/393 70 169/486 57 217/622 56 221/631 56 222/635 54 229/655 52 238/684 50 249/719 2110 mph v 30 81 167/393 69 207/486 56 266/622 55 270/631 55 272/635 53 280/655 51 29/684	40 72 126/436 62 150/525 52 188/657 51 192/669 51 193/674 49 199/697 45 208/729 Special Eng. Required 40 71 152/436 61 183/525 52 231/657 51 235/669 50 237/674 49 244/697 45 254/729	50 67 118/490 58 139/591 46 174/738 44 178/751 41 184/781 Special Eng. Required 5pecial Eng. Required 50 66 142/490 57 171/591 46 214/738 44 219/757 41 226/781 Special Eng. Required	60 63 111/542 55 131/652 39 163/812 38 166/826 37 168/832 Special Eng. Required Special Eng. Required Special Eng. Required 54 160/652 39 200/812 38 204/826 37 205/832 Special Eng. Required Special Eng. Special Eng. Required
Module Length →Beam (in) 32 44 65 67 68 72 78 85 Table 7: All Module Length →Beam (in) 32 44 65 67 68 72 78 85	0 103 171/276 92 213/341 75 273/420 74 277/426 74 279/429 72 287/441 69 298/459 67 311/479 0 0 99 210/303 89 261/375 72 327/464 71 332/471 71 332/471 71 334/474 69 344/488 67 357/507 64	Ground Snow 100 167/276 89 208/334 73 267/410 72 271/416 71 273/419 69 281/434 67 69 281/434 67 305/471 itance betw Ground Snow 5 97 205/303 86 255/370 70 322/455 69 334/458 67 344/472 65 357/494	Load in pst (or 10 98 159/295 85 195/365 69 252/468 68 256/475 68 258/478 66 265/494 64 275/514 61 288/540 7 een attach Load in pst (or 10 95 192/305 82 239/365 67 309/468 66 313/475 66 313/475 66 316/478 64 325/494 62 337/514 60	Root Live Lo. 93 153/329 79 185/407 64 239/522 63 242/530 63 244/533 61 251/550 59 261/573 57 273/603 ments, rea rRoot Live Loa 15 91 182/329 77 226/407 63 297/530 62 299/533 60 308/550 58 319/573 56	ad, whichever i 20 87 145/361 74 176/446 60 227/572 59 233/585 57 239/603 56 249/629 53 261/661 action loads ad, whichever i 20 85 174/361 73 216/446 59 279/572 58 283/581 58 283/585 56 293/603 55 304/629 52	s greater) 25 86 144/367 73 175/454 60 226/582 59 229/591 58 231/595 57 237/614 55 246/640 53 258/673 5 (UP/down s greater) 25 84 172/367 72 214/454 59 276/582 58 280/591 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 57 282/595 57 282/591 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 54 302/640 52	30 82 138/393 70 169/486 57 217/622 56 221/631 56 222/635 54 229/655 52 238/684 50 249/719 2110 mph v 30 81 167/393 69 207/486 56 266/622 55 270/631 55 272/635 53 280/655 51 291/684 49	40 72 126/436 62 150/525 52 188/657 51 192/669 51 193/674 49 199/697 45 208/729 Special Eng. Required 40 71 152/436 61 183/525 52 231/657 51 235/669 50 237/674 49 244/697 45 254/729 Special Eng.	50 67 118/490 58 139/591 46 174/738 44 179/757 41 184/781 Special Eng. Required 5pecial Eng. Required 50 66 142/490 57 171/591 46 214/738 44 219/757 41 226/781 Special Eng. Required Special Eng.	60 63 111/542 55 131/652 39 163/812 38 166/826 37 168/832 Special Eng. Required Special Eng. Required Special Eng. Required 54 160/652 39 200/812 38 204/826 37 205/832 Special Eng. Required Special Eng. Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Special Eng. Speci
Module Length →Beam (in) 32 44 65 67 68 72 78 85 Table 7: All Module Length →Beam (in) 32 44 65 67 68 72 78 85	0 103 171/276 92 213/341 75 273/420 74 277/426 74 279/429 72 287/441 69 298/459 67 311/479 0 0 99 210/303 89 261/375 72 327/464 71 332/471 71 332/471 71 334/474 69 344/488 67 357/507 64 374/529	Ground Snow 100 167/276 89 208/334 73 267/410 72 271/416 71 273/419 69 281/434 67 305/471 itance betw Ground Snow 97 205/303 86 255/370 70 327/448 69 334/458 67 344/472 65 357/494 62 373/517	Load in pst (or 10 98 159/295 85 195/365 69 252/468 68 256/475 68 258/478 66 265/494 64 275/514 61 288/540 7 een attach Load in pst (or 10 95 192/305 82 239/365 67 309/468 66 313/475 66 316/478 60 316/478 60 316/2549 60 316/2549 60 316/2549 60 316/2549 60 316/2549 60 316/2549 60 316/2549 60 316/2549 60 316/2549 60 316/2549 60 316/2549 60 316/2549 60 315/2540 60 315/2540 60 315/2540 60 315/2540 60 315/2540 60 315/2540 60 315/2540 60 315/2540 60 315/2540 60 316/2540 80 80 80 80 80 80 80 80 80 8	Root Live Lo. 15 93 153/329 79 185/407 64 239/522 63 242/530 63 244/533 61 251/550 59 261/573 57 273/603 ments, rea rRoot Live Lo. 15 91 182/329 77 226/407 63 292/522 62 297/530 62 299/533 60 308/550 58 319/573 56 334/603	ad, whichever i 20 87 145/361 74 176/446 60 227/572 59 233/585 57 239/603 56 249/629 53 261/661 action loads ad, whichever i 20 85 174/361 73 216/446 59 279/572 58 283/585 56 293/603 55 304/629 52 319/661	s greater) 25 86 144/367 73 175/454 60 226/582 59 229/591 58 231/595 57 237/614 55 246/640 53 258/673 5 (UP/down s greater) 25 84 172/367 72 214/454 59 276/582 58 280/591 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 57 214/454 59 276/582 58 280/591 57 282/595 56 291/614 57 216/400 57 216/400 57 216/400 57 216/400 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 52 316/673	30 82 138/393 70 169/486 57 217/622 56 222/635 54 229/655 52 238/684 50 249/719 2110 mph v 30 81 167/393 69 207/486 56 266/622 55 270/631 55 272/635 53 280/655 51 29/684 49 305/719	40 72 126/436 62 150/525 52 188/657 51 192/669 51 193/674 49 199/697 45 208/729 Special Eng. Required 40 71 152/436 61 183/525 52 231/657 51 235/669 50 237/674 49 244/697 45 254/729 Special Eng. Required	50 67 118/490 58 139/591 46 174/738 44 179/757 41 184/781 Special Eng. Required 5pecial Eng. Required 50 66 142/490 57 171/591 46 214/738 44 219/757 41 226/781 Special Eng. Required Special Eng. Required Special Eng. Required	60 63 111/542 55 131/652 39 163/812 38 166/826 37 168/832 Special Eng. Required Special Eng. Required Special Eng. Required 54 160/652 39 200/812 38 204/826 37 205/832 Special Eng. Required Special Eng. Required
Module Length →Beam (in) 32 44 65 67 68 72 78 85 Table 7: All Module Length →Beam (in) 32 44 65 67 68 72 78 85 72 78 85 85 85	0 103 171/276 92 213/341 75 273/420 74 277/426 74 279/429 72 287/441 69 298/459 67 311/479 0 0 99 210/303 89 261/375 72 327/464 71 332/471 71 332/471 71 334/474 69 344/488 67 357/507 64 374/529 Maximum dista	Ground Snow 100 167/276 89 208/334 73 267/410 72 271/416 71 273/419 69 281/434 67 305/471 itance betw Ground Snow 97 205/303 86 255/370 70 327/448 69 334/458 67 344/472 65 357/494 62 373/517	Load in pst (or 10 98 159/295 85 195/365 69 252/468 68 256/475 68 258/478 66 265/494 64 275/514 61 288/540 (cen attach 10 95 192/305 82 239/365 67 309/468 66 313/475 66 313/475 66 316/478 64 325/494 62 337/514 60 352/540 ge attachments, b	Root Live Lo. 15 93 153/329 79 185/407 64 239/522 63 242/530 63 244/533 61 251/550 59 261/573 57 273/603 ments, rea rRoot Live Loc 15 91 182/329 77 226/407 63 292/522 62 297/530 62 299/533 60 308/550 58 319/573 56 334/603	ad, whichever i 20 87 145/361 74 176/446 60 227/572 59 233/585 57 239/603 56 249/629 53 261/661 action loads ad, whichever i 20 85 174/361 73 216/446 59 279/572 58 283/585 56 293/603 55 304/629 52 319/661	25 86 144/367 73 175/454 60 226/582 59 229/591 58 231/595 57 237/614 55 246/640 53 258/673 5 (up/down 5 3 (up/down 5 3 258/673 5 8 4 172/367 72 214/454 59 276/582 58 280/591 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595 56 291/614 57 282/595	30 82 138/393 70 169/486 57 217/622 56 221/631 56 222/635 54 229/655 52 238/684 50 249/719 2110 mph v 30 81 167/393 69 207/486 56 266/622 55 270/631 55 272/635 53 280/655 51 291/684 49 305/719	40 72 126/436 62 150/525 52 188/657 51 192/669 51 193/674 49 199/697 45 208/729 Special Eng. Required 40 71 152/436 61 183/525 52 231/657 51 235/669 50 237/674 49 244/697 45 254/729 Special Eng. Required	50 67 118/490 58 139/591 46 174/738 44 179/757 41 184/781 Special Eng. Required 50 66 142/490 57 171/591 46 214/738 44 219/757 41 226/781 Special Eng. Required Special Eng. Required 55 219/757 41 226/781 Special Eng. Required	60 63 111/542 55 131/652 39 163/812 38 166/826 37 168/832 Special Eng. Required Special Eng. Required Special Eng. Required 54 160/652 39 200/812 38 204/826 37 205/832 Special Eng. Required Special Eng. Required

Table 8: All	owable dis	tance betw	een attach	ments, rea	iction loads	s (up/down	<u>120 mpn w</u>	/ind speed	, exposure	category B
Wodule Length ⊥Beam (in)	0	Ground Snow	Load in pst (or 10	r Roof Live Lo: 15	ad, whichever is 20	s greater)	30	40	50	60
- Deam (III) 32	94	94	93	89	84	83	79	70	65	62
	253/331	247/331	231/329	219/343	209/365	207/372	200/397	183/436	169/490	159/542
44	85	83	79	75	71	70	67	60	57	53
65	306/409	306/408 68	287/391 65	272/413 62	260/452	258/459	249/491	220/525 51	205/591	192/652 30
60	372/509	372/493	371/479	351/522	335/572	332/582	320/622	277/657	257/738	240/812
67	69	67	64	61	57	57	54	50	44	38
	377/517	377/500	376/486	357/531	340/581	337/591	325/631	282/669	261/751	245/826
68	68	66	63	60	57	56	54	50	44	37
72	67	65	62	59	55	55	52	48	41	Special Eng.
	392/535	392/520	390/504	370/551	352/603	349/614	336/655	293/697	271/781	Required
78	64	62	60	57	53	53	51	45	Special Eng.	Special Eng.
95	406/557	406/543	404/522	383/576	366/629	362/640	350/684	305/729 Special Eng	Required	Required
00	425/581	425/569	423/545	401/603	383/661	379/673	49 366/719	Required	Required	Required
Table 9. All	owable dis	tance betw	veen attach	monts ros	ction loads	(un/down	150 mph w	ind speed	exposure	category B
Module Length		Ground Snow	Load in pst (or	Roof Live Lo	ad, whichever is	s greater)	<u>150 mpn w</u>	ind speed	, exposure	category D
⊥Beam (in)	0	5	10	15	20	25	30	40	50	60
32	84	84	84	82	79	78	75	67	63	59
	354/422	354/422	354/422	348/416	333/423	330/424	319/433	292/469	270/503	254/542
44	4 17/522	4 17/522	417/506	416/488	412/498	409/505	395/535	351/562	326/604	306/652
65	62	61	59	57	55	54	52	48	46	39
	507/651	507/635	507/612	506/590	505/621	505/628	504/656	440/693	408/740	382/812
67	61	60	58	56	54	53	51	48	44	38
68	61	514/645	514/620	55	53	53	512/000	440/704	44 44	309/020
	518/666	518/649	518/625	517/603	516/635	516/642	516/671	452/709	4 18/757	392/832
72	59	58	56	54	52	52	50	46	41	Special Eng.
70	534/684	534/669	534/644	533/621	532/653	532/661	530/691	465/729	431/781	Required
10	554/712	554/698	554/672	553/647	552/682	552/689	40 552/720	45	Required	Required
85	55	54	52	50	48	48	46	Special Eng.	Special Eng.	Special Eng.
	579/743	579/731	579/703	579/677	579/713	579/721	579/754	Required	Required	Required
Table 10: Al	lowable di	stance bet	ween attac	hments, re	action load	ls (up/dow	<u>85 mph wi</u>	ind speed,	exposure o	category C
ModuloLongth		Cround Crow	l o ad in pet (or	Rootlivelo	ad whichovor i	a graatar)				
	•	Ground Show	Luau III psi (ui	INCOLLIVE LOS		s greater)	~~			
→Beam (in)	0 103	5 100	10	15 92	20 87	25	30	40	50	<mark>60</mark>
Heam (in) 32	0 103 173/278	5 100 169/278	10 97 161/295	15 92 154/329	20 87 147/361	25 86 145/367	30 82 140/393	40 72 127/436	<mark>50</mark> 67 119/490	60 63 112/542
→Beam (in) 32 44	0 103 173/278 92	5 100 169/278 89	10 97 161/295 84	15 92 154/329 79	20 87 147/361 74	8 greater) 25 86 145/367 73	30 82 140/393 70	40 72 127/436 62	50 67 119/490 58	60 63 112/542 55
→Beam (in) 32 44	0 103 173/278 92 216/343	5 100 169/278 89 211/336	10 97 161/295 84 197/365	15 92 154/329 79 187/407	20 87 147/361 74 178/446	25 86 145/367 73 177/454	30 82 140/393 70 171/486	40 72 127/436 62 151/525	50 67 119/490 58 141/591	60 63 112/542 55 132/652
→Beam (in) 32 44 65	0 103 173/278 92 216/343 75 276/422	5 100 169/278 89 211/336 73	10 97 161/295 84 197/365 69 255/468	15 92 154/329 79 187/407 64	20 87 147/361 74 178/446 60 230/572	25 86 145/367 73 177/454 60	30 82 140/393 70 171/486 57 230/633	40 72 127/436 62 151/525 52 101/657	50 67 119/490 58 141/591 46 177728	60 63 112/542 55 132/652 39
→Beam (in) 32 44 65 67	0 103 173/278 92 216/343 75 276/423 74	5 100 169/278 89 211/336 73 270/410 71	10 97 161/295 84 197/365 69 255/468 68	15 92 154/329 79 187/407 64 242/522 63	20 87 147/361 74 178/446 60 230/572 59	25 86 145/367 73 177/454 60 228/582 59	30 82 140/393 70 171/486 57 220/622 56	40 72 127/436 62 151/525 52 19/657 51	50 67 119/490 58 141/591 46 177/738 44	60 63 112/542 55 132/652 39 165/812 38
→Beam (in) 32 44 65 67	0 103 173/278 92 216/343 75 276/423 74 280/429	5 100 169/278 89 211/336 73 270/410 71 274/416	10 97 161/295 84 197/365 69 255/468 68 259/475	15 92 154/329 79 187/407 64 242/522 63 245/530	20 87 147/361 74 178/446 60 230/572 59 234/581	25 86 145/367 73 177/454 60 228/582 59 232/591	30 82 140/393 70 171/486 57 220/622 56 223/631	40 72 127/436 62 151/525 52 191/657 51 194/669	50 67 119/490 58 14/591 46 177/738 44 180/751	60 63 112/542 55 132/652 39 165/812 38 168/826
→Beam (in) 32 44 65 67 68	0 103 173/278 92 216/343 75 276/423 74 280/429 73	5 100 169/278 89 211/336 73 270/410 71 274/416 71	10 97 161/295 84 197/365 69 255/468 68 259/475 67	15 92 154/329 79 187/407 64 242/522 63 245/530 63	20 87 147/361 74 178/446 60 230/572 59 234/581 59	25 86 145/367 73 177/454 60 228/582 59 232/591 58	30 82 140/393 70 171/486 57 220/622 56 223/631 56	40 72 127/436 62 151/525 52 191/657 51 194/669 51	50 67 119/490 58 14/591 46 177/738 44 180/751 44	60 63 112/542 55 132/652 39 165/812 38 168/826 37
→Beam (in) 32 44 65 67 68 72	0 103 173/278 92 216/343 75 276/423 74 280/429 73 282/432 72	5 100 169/278 89 211/336 73 270/410 71 274/416 71 276/419 69	10 97 161/295 84 197/365 69 255/468 68 259/475 67 261/478 66	15 92 154/329 79 187/407 64 242/522 63 245/530 63 245/530 63 247/533 61	20 87 147/361 74 178/446 60 230/572 59 234/581 59 235/585 57	25 86 145/367 73 177/454 60 228/582 59 232/591 58 233/595 57	30 82 140/393 70 171/486 57 220/622 56 223/631 56 225/635 54	40 72 127/436 62 151/525 52 191/657 51 194/669 51 196/674	50 67 119/490 58 14/591 46 177/738 44 180/751 44 18/757 41	60 63 112/542 55 132/652 39 165/812 38 168/826 37 170/832 Special Eng
→Beam (in) 32 44 65 67 68 72	0 103 173/278 92 216/343 75 276/423 74 280/429 73 282/432 72 29/1444	5 100 169/278 89 211/336 73 270/410 71 274/416 71 276/419 69 285/434	10 97 161/295 84 197/365 69 255/468 68 259/475 67 261/478 66 269/494	15 92 154/329 79 187/407 64 242/522 63 245/530 63 247/533 61 254/550	20 87 147/361 74 178/446 60 230/572 59 234/581 59 235/585 57 242/603	25 86 145/367 73 177/454 60 228/582 59 232/591 58 233/595 57 240/614	30 82 140/393 70 171/486 57 220/622 56 223/631 56 225/635 54 231/655	40 72 127/436 62 151/525 52 191/657 51 194/669 51 196/674 49 202/697	50 67 119/490 58 14/591 46 177/738 44 180/751 44 18/757 41 187/781	60 63 112/542 55 132/652 39 165/812 38 168/826 37 170/832 Special Eng. Required
→Beam (in) →Beam (in) 32 44 65 67 68 72 78	0 103 173/278 92 216/343 75 276/423 74 280/429 73 282/432 72 291/444 69	5 100 169/278 89 211/336 73 270/410 71 274/416 71 276/419 69 285/434 67	10 10 16 1/295 84 197/365 69 255/468 68 259/475 67 26 1/478 66 26 9/494 64	15 92 154/329 79 187/407 64 242/522 63 245/530 63 247/533 61 254/550 59	20 87 147/361 74 178/446 60 230/572 59 234/581 59 235/585 57 242/603 55	25 86 145/367 73 177/454 60 228/582 59 232/591 58 233/595 57 240/614 55	30 82 140/393 70 171/486 57 220/622 56 223/631 56 225/635 54 231/655 52	40 72 127/436 62 151/525 52 19/657 51 194/669 51 196/674 49 202/697 45	50 67 119/490 58 14/591 46 177/738 44 180/751 44 18/757 41 187/781 Special Eng.	60 63 112/542 55 132/652 39 165/812 38 168/826 37 170/832 Special Eng. Required Special Eng.
→Beam (in) →Beam (in) 32 44 65 67 68 72 78 25	0 103 173/278 92 216/343 75 276/423 74 280/429 73 282/432 72 291/444 69 301/462	5 100 169/278 89 211/336 73 270/410 71 274/416 71 276/419 69 285/434 67 295/451	10 10 16 1/295 84 197/365 69 255/468 68 259/475 67 26 1/478 66 269/494 64 278/514	15 92 154/329 79 187/407 64 242/522 63 245/530 63 247/533 61 254/550 59 264/573	20 87 147/361 74 178/446 60 230/572 59 234/581 59 235/585 57 242/603 55 252/629	25 86 145/367 73 177/454 60 228/582 59 232/591 58 233/595 57 240/614 55 249/640	30 82 140/393 70 17/1/486 57 220/622 56 223/631 56 225/635 54 231/655 52 241/684	40 72 127/436 62 151/525 52 191/657 51 194/669 51 196/674 49 202/697 45 210/729	50 67 119/490 58 14/591 46 177/738 44 180/751 44 18/757 41 187/781 Special Eng. Required	60 63 112/542 55 132/652 39 165/812 38 168/826 37 170/832 Special Eng. Required Special Eng. Required
→Beam (in) →Beam (in) 32 44 65 67 68 72 78 85	0 103 173/278 92 216/343 75 276/423 74 280/429 73 282/432 72 291/444 69 301/462 66 315/482	5 100 169/278 89 211/336 73 270/410 71 274/416 71 276/419 69 285/434 67 295/451 65 309/471	10 10 16 1/295 84 197/365 69 255/468 68 259/475 67 26 1/478 66 269/494 64 278/514 61 29 1/510	15 92 154/329 79 187/407 64 242/522 63 245/530 63 247/533 61 254/550 59 264/573 57 276/603	20 87 147/361 74 178/446 60 230/572 59 234/581 59 235/585 57 242/603 55 252/629 53 264/661	25 86 145/367 73 177/454 60 228/582 59 232/591 58 233/595 57 240/614 55 249/640 53 261/673	30 82 140/393 70 17/1/486 57 220/622 56 223/631 56 225/635 54 231/655 52 241/684 50 265/770	40 72 127/436 62 151/525 52 191/657 51 194/669 51 196/674 49 202/697 45 210/729 Special Eng. Percuired	50 67 119/490 58 141/591 46 177/738 44 180/751 44 181/757 41 187/781 Special Eng. Required Special Eng. Percuired	60 63 112/542 55 132/652 39 165/812 38 168/826 37 170/832 Special Eng. Required Special Eng. Required Special Eng. Required
→Beam (in) →Beam (in) 32 44 65 67 68 72 78 85 Table 11 0	0 103 173/278 92 216/343 75 276/423 74 280/429 73 282/432 72 291/444 69 301/462 66 315/482	5 100 169/278 89 211/336 73 270/410 71 276/419 69 285/434 67 295/451 65 309/471	10 97 161/295 84 197/365 69 255/468 68 259/475 67 261/478 66 269/494 64 278/514 61 291/540	15 92 154/329 79 187/407 64 242/522 63 245/530 63 247/533 61 254/550 59 264/573 57 276/603	20 87 147/361 74 178/446 60 230/572 59 234/581 59 235/585 57 242/603 55 252/629 53 264/661	25 86 145/367 73 177/454 60 228/582 59 232/591 58 233/595 57 240/614 55 249/640 53 261/673	30 82 140/393 70 17/\486 57 220/622 56 223/631 56 225/635 54 231/655 52 241/684 50 252/719	40 72 127/436 62 151/525 52 191/657 51 194/669 51 196/674 49 202/697 45 210/729 Special Eng. Required	50 67 119/490 58 141/591 46 177/738 44 180/751 44 181/757 41 187/781 Special Eng. Required Special Eng. Required	60 63 112/542 55 132/652 39 165/812 38 168/826 37 170/832 Special Eng. Required Special Eng. Required
Hodule Length → Beam (in) 32 44 65 67 68 72 78 85 Table 11: A	0 103 173/278 92 216/343 75 276/423 74 280/429 73 282/432 72 291/444 69 301/462 66 315/482 Ilow able di	5 100 169/278 89 211/336 73 270/410 71 274/416 71 276/419 69 285/434 67 295/451 65 309/471 stance bet	10 97 16 1/295 84 197/365 69 255/468 68 259/475 67 26 1/478 66 269/494 64 278/514 61 29 1/540 ween attacc	15 92 154/329 79 187/407 64 242/522 63 245/530 63 247/533 61 254/550 59 264/573 57 276/603 hments, re	20 87 147/361 74 178/446 60 230/572 59 234/581 59 235/585 57 242/603 55 252/629 53 264/661 264/661	25 86 145/367 73 177/454 60 228/582 59 232/591 58 233/595 57 240/614 55 249/640 53 261/673 Is (up/dow I) 5 greater)	30 82 140/393 70 17/\.486 57 220/622 56 223/631 56 225/635 54 231/655 52 241/684 50 252/719 90 mph wi	40 72 127/436 62 151/525 52 191/657 51 194/669 51 196/674 49 202/697 45 210/729 Special Eng. Required	50 67 119/490 58 141/591 46 177/738 44 180/751 44 181/757 41 187/781 Special Eng. Required Special Eng. Required exposure of	60 63 112/542 55 132/652 39 165/812 38 168/826 37 170/832 Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required
	0 103 173/278 92 216/343 75 276/423 74 280/429 73 282/432 72 291/444 69 301/462 66 315/482 Ilow able di 0	5 100 169/278 89 211/336 73 270/410 71 274/416 71 276/419 69 285/434 67 295/451 65 309/471 stance bet Ground Snow	10 97 16 1/295 84 197/365 69 255/468 68 259/475 67 26 1/478 66 269/494 64 278/514 61 29 1/540 w een attac Load in pst (or 10	15 92 154/329 79 187/407 64 242/522 63 245/530 63 247/533 61 254/550 59 264/573 57 276/603 hments, re TRoot Live Los 15	20 87 147/361 74 178/446 60 230/572 59 234/581 59 235/585 57 242/603 55 252/629 53 264/661 264/661 264/661 20	25 86 145/367 73 177/454 60 228/582 59 232/591 58 233/595 57 240/614 55 249/640 53 261/673 Is (up/down) s greater) 25	30 82 140/393 70 17/1486 57 220/622 56 223/631 56 225/635 54 231/655 52 241/684 50 252/719 90 mph wi 30	40 72 127/436 62 151/525 52 191/657 51 194/669 51 196/674 49 202/697 45 210/729 Special Eng. Required ind speed,	50 67 119/490 58 141/591 46 177/738 44 180/751 44 181/757 41 187/781 Special Eng. Required Special Eng. Required expos ure o 50	60 63 112/542 55 132/652 39 165/812 38 168/826 37 170/832 Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required
	0 103 173/278 92 216/343 75 276/423 74 280/429 73 282/432 72 291/444 69 301/462 66 315/482 Ilow able di 0 100	5 100 169/278 89 211/336 73 270/410 71 276/419 69 285/434 67 295/451 65 309/471 stance bet 99	10 97 161/295 84 197/365 69 255/468 68 259/475 67 269/494 64 278/514 61 291/540 w een attac 'Load in pst (or 96	15 92 15/4/329 79 787/407 64 242/522 63 245/530 63 247/533 61 254/550 59 264/573 57 276/603 hments, references 15 91	20 87 147/361 74 178/446 60 230/572 59 234/581 59 235/585 57 242/603 55 252/629 53 264/661 eaction load ad, whichever is 20 86	25 86 145/367 73 177/454 60 228/582 59 232/591 58 233/595 57 240/614 55 249/640 53 261/673 Is (up/dow) s greater) 25 85	30 82 140/393 70 17/1486 57 220/622 56 223/631 56 225/635 54 231/655 52 241/684 50 252/719 90 m ph wi 30 81	40 72 127/436 62 151/525 52 191/657 51 194/669 51 196/674 49 202/697 45 210/729 Special Eng. Required ind speed,	50 67 119/490 58 14/591 46 177/738 44 180/751 44 181/757 41 187/781 Special Eng. Required Special Eng. Required exposure o 66	60 63 112/542 55 132/652 39 165/812 38 168/826 37 170/832 Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required
	0 103 173/278 92 216/343 75 276/423 74 280/429 73 282/432 72 291/444 69 301/462 66 315/482 Ilow able di 0 100 196/293	Site Site <t< td=""><td>10 97 16 1/295 84 197/365 69 255/468 68 259/475 67 26 1/478 66 269/494 64 278/514 61 29 1/540 w een attac Load in pst (or 10 96 179/297</td><td>15 92 15/4/329 79 187/407 64 242/522 63 245/530 63 247/533 61 254/550 59 264/573 57 276/603 59 17/1329 91 17/1329 12</td><td>20 87 147/361 74 178/446 60 230/572 59 234/581 59 235/585 57 242/603 55 252/629 53 264/661 264/661 20 86 164/361</td><td>25 86 145/367 73 177/454 60 228/582 59 232/591 58 233/595 57 240/614 55 249/640 53 261/673 (up/dow) s greater) 25 85 162/367</td><td>30 82 140/393 70 17/1486 57 220/622 56 223/631 56 225/635 54 231/655 52 241/684 50 252/719 90 m ph wi 30 81 156/393</td><td>40 72 127/436 62 151/525 52 191/657 51 194/669 51 196/674 49 202/697 45 210/729 Special Eng. Required ind speed, 40 72 142/436</td><td>50 67 119/490 58 14/591 46 177/738 44 180/751 41 187/781 Special Eng. Required Special Eng. Required exposure o 66 133/490</td><td>60 63 112/542 55 132/652 39 165/812 38 168/826 37 170/832 Special Eng. Required Special Special Special</td></t<>	10 97 16 1/295 84 197/365 69 255/468 68 259/475 67 26 1/478 66 269/494 64 278/514 61 29 1/540 w een attac Load in pst (or 10 96 179/297	15 92 15/4/329 79 187/407 64 242/522 63 245/530 63 247/533 61 254/550 59 264/573 57 276/603 59 17/1329 91 17/1329 12	20 87 147/361 74 178/446 60 230/572 59 234/581 59 235/585 57 242/603 55 252/629 53 264/661 264/661 20 86 164/361	25 86 145/367 73 177/454 60 228/582 59 232/591 58 233/595 57 240/614 55 249/640 53 261/673 (up/dow) s greater) 25 85 162/367	30 82 140/393 70 17/1486 57 220/622 56 223/631 56 225/635 54 231/655 52 241/684 50 252/719 90 m ph wi 30 81 156/393	40 72 127/436 62 151/525 52 191/657 51 194/669 51 196/674 49 202/697 45 210/729 Special Eng. Required ind speed, 40 72 142/436	50 67 119/490 58 14/591 46 177/738 44 180/751 41 187/781 Special Eng. Required Special Eng. Required exposure o 66 133/490	60 63 112/542 55 132/652 39 165/812 38 168/826 37 170/832 Special Eng. Required Special Special
Hodule Length → Beam (in) 32 44 65 67 68 72 78 85 Table 11: A Module Length → Beam (in) 32 44	0 103 173/278 92 216/343 75 276/423 74 280/429 73 282/432 72 291/444 69 301/462 66 315/482 Ilow able di 0 100 196/293 90 244/352	5 100 169/278 89 211/336 73 270/410 71 276/419 69 285/434 67 295/451 65 309/471 stance bet 99 191/293 87 238/357	10 97 161/295 84 197/365 69 255/468 68 259/475 67 261/478 66 269/494 64 278/514 61 291/540 ween attac Load in pst (or 96 179/297 83 223/365	15 92 15/4/329 79 78/407 64 242/522 63 245/530 63 247/533 61 254/550 59 264/573 57 276/603 59 15 91 17/329 78 211/407 78	20 87 147/361 74 178/446 60 230/572 59 234/581 59 235/585 57 242/603 55 252/629 53 264/661 eaction load ad, whichever is 20 86 164/361 73 202/445	25 86 145/367 73 177/454 60 228/582 59 232/591 58 233/595 57 240/614 55 249/640 53 261/673 8 (up/down s greater) 25 85 162/367 72 200/454	30 82 140/393 70 17/1486 57 220/622 56 223/631 56 225/635 54 231/655 52 241/684 50 252/719 90 mph wi 30 81 156/393 69 193/486	40 72 127/436 62 151/525 52 191/657 51 194/669 51 196/674 49 202/697 45 210/729 Special Eng. Required nd speed, 142/436 62 17/4525	50 67 119/490 58 14/591 46 177/738 44 180/751 44 181/757 41 187/781 Special Eng. Required Special Eng. Required 50 66 133/490 58 150/651	60 63 112/542 55 132/652 39 165/812 38 168/826 37 170/832 Special Eng. Required Special Eng. Special
Hodule Length → Beam (in) 32 44 65 67 68 72 78 85 <u>Table 11: AI Module Length → Beam (in) 32 44 65 </u>	0 103 173/278 92 216/343 75 276/423 74 280/429 73 282/432 72 291/444 69 301/462 66 315/482 Ilow able di 0 100 196/293 90 244/363 73	5 100 169/278 89 211/336 73 270/410 71 276/419 69 285/434 67 295/451 65 309/471 stance bet 69 191/293 87 238/357 71	10 97 161/295 84 197/365 69 255/468 68 259/475 67 261/478 66 269/494 64 278/514 61 291/540 w een attac Load in pst (of 96 179/297 83 223/365 68	15 92 154/329 79 187/407 64 242/522 63 245/530 63 247/533 61 254/550 59 264/573 57 276/603 hments, re TRoot Live Loc 15 91 17//329 78 21//407 64	20 87 147/361 74 178/446 60 230/572 59 234/581 59 235/585 57 242/603 55 252/629 53 264/661 eaction load ad, whichever 20 86 164/361 73 202/446 60	25 86 145/367 73 177/454 60 228/582 59 232/591 58 233/595 57 240/614 55 249/640 53 261/673 Is (up/dow) s greater) 25 85 162/367 72 200/454 59	30 82 140/393 70 17/1486 57 220/622 56 223/631 56 225/635 54 231/655 52 241/684 50 252/719 90 mph wi 30 81 156/393 69 193/486 56	40 72 127/436 62 151/525 52 191/657 51 194/669 51 196/674 49 202/697 45 210/729 Special Eng. Required ind speed, 72 142/436 62 171/525 52	50 67 119/490 58 14/591 46 177/738 44 180/751 44 187/751 41 187/781 Special Eng. Required Special Eng. Required 50 66 133/490 58 159/591 46	60 63 112/542 55 132/652 39 165/812 38 168/826 37 170/832 Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required Special Special Eng. Required Special Eng. Required Special Eng. Required Special Special
	0 103 173/278 92 216/343 75 276/423 74 280/429 73 282/432 72 291/444 69 301/462 66 315/482 Ilow able di 0 100 196/293 90 244/363 73 311/449	Site Site 100 169/278 89 211/336 73 270/410 71 274/416 71 276/419 69 285/434 67 295/451 65 309/471 stance bet Ground Snow 99 191/293 87 238/357 71 305/432	10 97 161/295 84 197/365 69 255/468 68 259/475 67 261/478 66 269/494 64 278/514 61 291/540 w een attac Load in pst (or 96 179/297 83 223/365 68 288/468	15 92 154/329 79 187/407 64 242/522 63 245/530 63 247/533 61 254/550 59 264/573 57 276/603 hments, ref 78 211/407 64 273/522	20 87 147/361 74 178/446 60 230/572 59 234/581 59 235/585 57 242/603 55 252/629 53 264/661 eaction load ad, whichever i 20 86 164/361 73 202/446 60 260/572	25 86 145/367 73 177/454 60 228/582 59 232/591 58 233/595 57 240/614 55 249/640 53 261/673 15 (up/down 5 greater) 25 85 162/367 72 200/454 59 258/582	30 82 140/393 70 17/1486 57 220/622 56 223/631 56 225/635 54 231/655 52 241/684 50 252/719 90 m ph w i 30 81 156/393 69 193/486 56 249/622	40 72 127/436 62 151/525 52 191/657 51 194/669 51 196/674 49 202/697 45 210/729 Special Eng. Required ind speed, 72 142/436 62 171/525 52 215/657	50 67 119/490 58 14/591 46 177/738 44 180/751 44 187/781 Special Eng. Required Special Eng. Required 50 66 133/490 58 159/591 46 200/738	60 63 112/542 55 132/652 39 165/812 38 168/826 37 170/832 Special Eng. Required Special Eng. Special
	0 103 173/278 92 216/343 75 276/423 74 280/429 73 282/432 72 291/444 69 301/462 66 315/482 Ilow able di 0 100 196/293 90 244/363 73 311/449 72 201/27	S S 100 169/278 89 211/336 73 270/410 71 274/416 71 276/419 69 285/434 67 295/451 65 309/471 stance bet Ground Snow 99 191/293 87 238/357 71 305/432 70 200/200	10 97 161/295 84 197/365 69 255/468 68 259/475 67 261/478 66 269/494 64 278/514 61 291/540 w een attac Load in pst (or 96 179/297 83 223/365 68 288/468 67 2001/27	15 92 154/329 79 187/407 64 242/522 63 245/530 63 247/533 61 254/550 59 264/573 57 276/603 hments, re *Root Live Loc 15 91 17/1/329 78 211/407 64 273/522 63 375/22	20 87 147/361 74 178/446 60 230/572 59 234/581 59 235/585 57 242/603 55 252/629 53 264/661 eaction load ad, whichever 20 86 164/361 73 202/446 60 260/572 59	25 86 145/367 73 177/454 60 228/582 59 232/591 58 233/595 57 240/614 55 249/640 53 261/673 15 (up/down s greater) 25 85 162/367 72 200/454 59 258/582 58 200/454	30 82 140/393 70 17/1486 57 220/622 56 223/631 56 225/635 54 231/655 52 241/684 50 252/719 90 mph wi 30 81 156/393 69 193/486 56 249/622 55	40 72 127/436 62 151/525 52 191/657 51 194/669 51 196/674 49 202/697 45 210/729 Special Eng. Required ind speed, 40 72 142/436 62 171/525 52 215/657 51	50 67 119/490 58 14/591 46 177/738 44 180/751 44 187/781 Special Eng. Required Special Eng. Required 50 66 133/490 58 159/591 46 200/738 44	60 63 112/542 55 132/652 39 165/812 38 168/826 37 170/832 Special Eng. Required Special Eng. Special Eng. Required Special Eng. Special Eng. Spe
	0 103 173/278 92 216/343 75 276/423 74 280/429 73 282/432 72 291/444 69 301/462 66 315/482 100 able di 100 196/293 90 244/363 73 311/449 72 316/455 72	Site Site 100 169/278 89 211/336 73 270/410 71 274/416 71 276/419 69 285/434 67 295/451 65 309/471 stance bet Ground Snow 99 191/293 87 238/357 71 305/432 70 310/439 69 60	10 97 161/295 84 197/365 69 255/468 68 259/475 67 261/478 66 269/494 64 278/514 61 291/540 ween attac 10 96 179/297 83 223/365 68 288/468 67 293/475 66	15 92 154/329 79 187/407 64 242/522 63 245/530 63 247/533 61 254/550 59 264/573 57 276/603 hments, re rRoot Live Loi 15 91 17/329 78 211/407 64 273/522 63 277/530 62	20 87 147/361 74 178/446 60 230/572 59 234/581 59 235/585 57 242/603 55 252/629 53 264/661 20 86 164/361 73 202/446 60 260/572 59 264/581 58	25 86 145/367 73 177/454 60 228/582 59 232/591 58 233/595 57 240/614 55 249/640 53 261/673 15 (up/down s greater) 25 85 162/367 72 200/454 59 258/582 58 262/591 58	30 82 140/393 70 17/1486 57 220/622 56 223/631 56 225/635 54 231/655 52 241/684 50 252/719 90 mph wi 30 81 156/393 69 193/486 56 249/622 55 252/631	40 72 127/436 62 151/525 52 191/657 51 194/669 51 196/674 49 202/697 45 210/729 Special Eng. Required ind speed, 40 72 142/436 62 171/525 52 215/657 51 219/669 51	50 67 119/490 58 14/591 46 177/738 44 180/751 44 187/781 Special Eng. Required Special Eng. Required 50 66 133/490 58 159/591 46 200/738 44 203/751	60 63 112/542 55 132/652 39 165/812 38 168/826 37 170/832 Special Eng. Required Special Eng. Special Eng. Spe
Hodule Length Heam (in) 32 44 65 67 68 72 78 85 Table 11: A Module Length Heam (in) 32 44 65 67 68	0 103 173/278 92 216/343 75 276/423 74 280/429 73 282/432 72 291/444 69 301/462 66 315/482 100 able di 100 196/293 90 244/363 73 311/449 72 318/458	Similar Similar 100 169/278 89 211/336 73 270/410 71 274/416 71 276/419 69 285/434 67 295/451 65 309/471 stance bet Ground Snow 5 99 191/293 87 238/357 71 305/432 70 310/439 69 312/442	10 97 161/295 84 197/365 69 255/468 68 259/475 67 261/478 66 269/494 64 278/514 61 291/540 ween attac 10 96 179/297 83 223/365 68 288/468 67 293/475 66 295/478	15 92 154/329 79 187/407 64 242/522 63 245/530 63 247/533 61 254/550 59 264/573 57 276/603 hments, re 7Root Live Los 15 91 17//329 78 211/407 64 273/522 63 277/530 62 279/533	20 87 147/361 74 178/446 60 230/572 59 234/581 59 235/585 57 242/603 55 252/629 53 264/661 20 86 164/361 73 202/446 60 260/572 59 264/581 58 266/585	25 86 145/367 73 177/454 60 228/582 59 232/591 58 233/595 57 240/614 55 249/640 53 261/673 15 (up/down) 85 162/367 72 200/454 59 258/582 58 262/591 58 262/591	30 82 140/393 70 17/1486 57 220/622 56 223/631 56 225/635 54 231/655 52 241/684 50 252/719 90 mph wi 30 81 156/393 69 193/486 56 249/622 55 252/631 55 254/635	40 72 127/436 62 151/525 52 191/657 51 194/669 51 196/674 49 202/697 45 210/729 Special Eng. Required ind speed, 142/436 62 171/525 52 215/657 51 219/669 51 221/674	50 67 119/490 58 14/591 46 177/738 44 180/751 44 187/781 Special Eng. Required Special Eng. Required 50 66 133/490 58 159/591 46 200/738 44 203/751	60 63 112/542 55 132/652 39 165/812 38 168/826 37 170/832 Special Eng. Required Special Eng. Special Eng. Spe
Hodule Length Heam (in) 32 44 65 67 68 72 78 85 Table 11: AI Module Length Heam (in) 32 44 65 67 68 72	0 103 173/278 92 216/343 75 276/423 74 280/429 73 282/432 72 291/444 69 301/462 66 315/482 100 196/293 90 244/363 73 311/449 72 316/455 72 318/458 70	Site Site 100 169/278 89 211/336 73 270/410 71 274/416 71 276/419 69 285/434 67 295/451 65 309/471 stance bet Ground Snow 99 191/293 87 238/357 71 305/432 70 310/439 69 312/442	10 97 161/295 84 197/365 69 255/468 68 259/475 67 261/478 66 269/494 64 278/514 61 291/540 ween attacc Load in pst (or 96 179/297 83 223/365 68 288/468 67 293/475 66 295/478 65	15 92 154/329 79 187/407 64 242/522 63 245/530 63 247/533 61 254/550 59 264/573 57 276/603 hments, re 7Root Live Loc 15 91 17/329 78 21//407 64 273/522 63 277/530 62 279/533 60	20 87 147/361 74 178/446 60 230/572 59 234/581 59 235/585 57 242/603 55 252/629 53 264/661 264/661 73 202/446 60 260/572 59 264/581 58 266/585 57	25 86 145/367 73 177/454 60 228/582 59 232/591 58 233/595 57 240/614 55 249/640 53 261/673 15 (up/down s greater) 25 85 162/367 72 200/454 59 258/582 58 262/591 58 262/591 58 262/591 58 262/595 56	30 82 140/393 70 17/1486 57 220/622 56 223/631 56 225/635 54 231/655 52 241/684 50 252/719 90 mph wi 30 81 156/393 69 193/486 56 249/622 55 252/631 55 255/635 54	40 72 127/436 62 151/525 52 191/657 51 194/669 51 196/674 49 202/697 45 210/729 Special Eng. Required ind speed, 72 142/436 62 171/525 52 215/657 51 219/669 51 221/674 49	50 67 119/490 58 14/591 46 177/738 44 180/751 44 187/781 Special Eng. Required Special Eng. Required 50 66 133/490 58 159/591 46 200/738 44 203/751 44 205/757 41	60 63 112/542 55 132/652 39 165/812 38 168/826 37 170/832 Special Eng. Required Special Eng. Required Special Eng. Required Cate gory C 60 62 126/542 54 149/652 39 187/812 38 190/826 37 192/832 Special Eng.
Hodule Length Heam (in) 32 44 65 67 68 72 78 85 Table 11: AI Module Length Heam (in) 32 44 65 67 68 72 72 78 72 73 73 74 75	0 103 173/278 92 216/343 75 276/423 74 280/429 73 282/432 72 291/444 69 301/462 66 315/482 100 196/293 90 244/363 73 311/449 72 316/455 72 318/458 70 328/471	Site Site 100 169/278 89 211/336 73 270/410 71 274/416 71 276/419 69 285/434 67 295/451 65 309/471 Stance bet Ground Snow 99 191/293 87 238/357 71 305/432 70 310/439 69 312/442 68 321/456	10 97 161/295 84 197/365 69 255/468 68 259/475 67 261/478 66 269/494 64 278/514 61 291/540 ween attacc Load in pst (or 96 179/297 83 223/365 68 288/468 67 293/475 66 295/478 65 303/494	15 92 154/329 79 187/407 64 242/522 63 245/530 63 247/533 61 254/550 59 264/573 57 276/603 hments, re 78001 Live Loc 15 91 17/329 78 211/407 64 273/522 63 277/530 62 279/533 60 287/550	20 87 147/361 74 178/446 60 230/572 59 234/581 59 235/585 57 242/603 55 252/629 53 264/661 20 86 164/361 73 202/446 60 260/572 59 264/581 58 266/585 57 274/603	25 86 145/367 73 177/454 60 228/582 59 232/591 58 233/595 57 240/614 55 249/640 53 261/673 15 (up/down 5 85 162/367 72 200/454 59 258/582 58 262/591 58 262/591 58 262/591 58 264/595 56 271/61 58	30 82 140/393 70 17/1486 57 220/622 56 223/631 56 225/635 54 231/655 52 241/684 50 252/719 90 mph wi 30 81 156/393 69 193/486 56 249/622 55 252/631 55 252/631 55 254/635 54 261/655	40 72 127/436 62 151/525 52 191/657 51 194/669 51 196/674 49 202/697 45 210/729 Special Eng. Required ind speed, 72 142/436 62 171/525 52 215/657 51 219/669 51 221/674 49 228/697	50 67 119/490 58 14/591 46 177/738 44 180/751 44 187/781 Special Eng. Required Special Eng. Required 50 66 133/490 58 159/591 46 200/738 44 203/751 44 203/757 41 205/757 41 211/781	60 63 112/542 55 132/652 39 165/812 38 168/826 37 170/832 Special Eng. Required Special Eng. Required Special Eng. Required Category C 60 62 126/542 54 149/652 39 187/812 38 190/826 37 192/832 Special Eng. Required
Hodule Length Heam (in) 32 44 65 67 68 72 78 85 Table 11: AI Module Length Heam (in) 32 44 65 67 68 72 78	0 103 173/278 92 216/343 75 276/423 74 280/429 73 282/432 72 291/444 69 301/462 66 315/482 Ilow able di 0 100 196/293 90 244/363 73 311/449 72 316/455 72 318/458 70 328/471 68 340/490	S 100 169/278 89 211/336 73 270/410 71 274/416 71 276/419 69 285/434 67 295/451 65 309/471 stance bet Ground Snow 9 19/293 87 238/357 71 305/432 70 310/439 69 312/442 68 321/456 333/476	10 97 161/295 84 197/365 69 255/468 68 259/475 67 261/478 66 269/494 64 278/514 61 291/540 ween attacc Load in pst (or 96 179/297 83 223/365 68 288/468 67 293/475 66 295/478 65 303/494 62 314/514	15 92 154/329 79 187/407 64 242/522 63 245/530 63 247/533 61 254/550 59 264/573 57 276/603 hments, re 78001 Live Loc 15 91 17//329 78 211/407 64 273/522 63 277/530 62 279/533 60 287/550 58 298/573	20 87 147/361 74 178/446 60 230/572 59 234/581 59 235/585 57 242/603 55 252/629 53 264/661 20 86 164/361 73 202/446 60 260/572 59 264/581 58 266/585 57 274/603 55 274/603	25 86 145/367 73 177/454 60 228/582 59 232/591 58 233/595 57 240/614 55 249/640 53 261/673 15 (up/down 5 5 162/367 72 200/454 59 258/582 58 262/591 58 269/640 53 267 72 200/454 59 258/582 58 262/591 56 271/614 54 282/640	30 82 140/393 70 17/1486 57 220/622 56 223/631 56 225/635 54 231/655 52 241/684 50 252/719 90 mph wi 30 81 156/393 69 193/486 56 249/622 55 252/631 55 252/631 55 254/635 54 261/655 54 261/655	40 72 127/436 62 151/525 52 191/657 51 194/669 51 196/674 49 202/697 45 210/729 Special Eng. Required ind speed, 72 142/436 62 171/525 52 215/657 51 219/669 51 221/674 49 228/697 45 237/729	50 67 119/490 58 14/591 46 177/738 44 180/751 44 180/757 41 187/781 Special Eng. Required Special Eng. Required 66 133/490 58 159/591 46 200/738 44 203/751 46 200/738 44 205/757 41 211/781 Special Eng. Required 50 50 58 58 58 58 58 58 58 58 58 58	60 63 112/542 55 132/652 39 165/812 38 168/826 37 170/832 Special Eng. Required Special Eng. Required Special Eng. Required 60 62 126/542 54 149/652 39 187/812 38 190/826 37 192/832 Special Eng. Required Special Eng. Required
Hodule Length Heam (in) 32 44 65 67 68 72 78 85 Table 11: A Module Length Heam (in) 32 44 65 67 68 72 78 85	0 103 173/278 92 216/343 75 276/423 74 280/429 73 282/432 72 291/444 69 301/462 66 315/482 Ilow able di 0 100 196/293 90 244/363 73 311/449 72 316/455 72 318/458 70 328/471 68 340/490 65	S 100 169/278 89 211/336 73 270/410 71 274/416 71 276/419 69 285/434 67 295/451 65 309/471 stance bet Ground Snow 9 19/293 87 238/357 71 305/432 70 310/439 69 312/442 68 321456 66 333/476	10 97 161/295 84 197/365 69 255/468 68 259/475 67 261/478 66 269/494 64 278/514 61 291/540 Ween attacc Load in pst (or 96 179/297 83 223/365 68 288/468 67 293/475 66 295/478 65 303/494 62 314/514 60	15 92 154/329 79 187/407 64 242/522 63 245/530 63 247/533 61 254/550 59 264/573 57 276/603 hments,re 78 211/407 64 273/522 63 277/530 62 279/533 60 287/550 58 298/573 56	20 87 147/361 74 178/446 60 230/572 59 234/581 59 235/585 57 242/603 55 252/629 53 264/661 20 86 164/361 73 202/446 60 260/572 59 264/581 58 266/585 57 274/603 55 284/629 53	25 86 145/367 73 177/454 60 228/582 59 232/591 58 233/595 57 240/614 55 249/640 53 261/673 15 (up/down 5 (up	30 82 140/393 70 17/1486 57 220/622 56 223/631 56 225/635 54 231/655 52 241/684 50 252/719 90 mph wi 30 81 156/393 69 193/486 56 249/622 55 252/631 55 252/631 55 254/635 54 261/655 54 261/655 55 50	40 72 127/436 62 151/525 52 191/657 51 194/669 51 196/674 49 202/697 45 210/729 Special Eng. Required ind speed, 40 72 142/436 62 171/525 52 215/657 51 219/669 51 221/674 49 228/697 45 237/729 Special Eng.	50 67 119/490 58 14/591 46 177/738 44 180/751 44 18/757 41 Special Eng. Required Special Eng. Required 66 133/490 58 159/591 46 200/738 44 203/751 44 205/757 41 211/781 Special Eng. Required Special Eng.	60 63 112/542 55 132/652 39 165/812 38 168/826 37 170/832 Special Eng. Required Special Eng. Required Special Eng. Required 5 2126/542 54 149/652 39 187/812 38 190/826 37 192/832 Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required
Module Lengtin → Beam (in) 32 44 65 67 68 72 78 85 Table 11: AF Module Length → Beam (in) 32 44 65 67 68 72 78 85 67 68 72 78 85 72 78 78 85 72 78 85 85 72 78 85 85 72 78 85 85 72 78 85 85 72 78 85 85 72 78 85 72 78 85 72 78 85 72 78 85 72 78 85 72 78 85 85	0 103 173/278 92 216/343 75 276/423 74 280/429 73 282/432 72 291/444 69 301/462 66 315/482 100 196/293 90 244/363 73 311/449 72 316/455 72 318/458 70 328/471 68 340/490 65 356/512	S 100 169/278 89 211/336 73 270/410 71 274/416 71 276/419 69 285/434 67 295/451 65 309/471 stance bet Ground Snow 9 19/293 87 238/357 71 305/432 70 310/439 69 312/442 68 321/456 66 333/476	10 97 161/295 84 197/365 69 255/468 68 259/475 67 261/478 66 269/494 64 278/514 61 291/540 Ween attacc Load in pst (or 96 179/297 83 223/365 68 288/468 67 295/475 66 295/478 65 303/494 62 314/514 60 329/540	15 92 154/329 79 187/407 64 242/522 63 245/530 63 245/530 63 247/533 61 254/550 59 264/573 57 276/603 hm ents, re *Root Live Loc 15 91 17/v329 78 211/407 64 273/522 63 277/530 62 279/533 60 287/550 58 298/573 56 312/603	20 87 147/361 74 178/446 60 230/572 59 234/581 59 235/585 57 242/603 55 252/629 53 264/661 20 86 164/361 73 202/446 60 260/572 59 264/581 58 266/585 57 274/603 55 284/629 53 298/661	25 86 145/367 73 177/454 60 228/582 59 232/591 58 233/595 57 240/614 55 249/640 53 261/673 15 (up/down 53 261/673 15 (up/down 53 262/591 58 264/595 56 271/614 52 295/673 200/454 52 295/673 56 271/614 57 200/454 59 262/591 58 262/591 56 271/614 57 29 258/582 56 271/614 57 29 295/673 29 295/673	30 82 140/393 70 17/1486 57 220/622 56 223/631 56 225/635 54 231/655 52 241/684 50 252/719 90 m ph wi 30 81 156/393 69 193/486 56 249/622 55 252/631 55 252/631 55 254/635 54 261/655 54 261/655 55 272/684 50 285/719	40 72 127/436 62 151/525 52 191/657 51 194/669 51 196/674 49 202/697 45 210/729 Special Eng. Required 72 142/436 62 171/525 52 215/657 51 219/669 51 221/674 49 228/697 45 237/729 Special Eng. Required	50 67 119/490 58 14/591 46 177/738 44 180/751 44 18/757 41 187/781 Special Eng. Required Special Eng. Required 66 133/490 58 159/591 46 200/738 44 203/751 44 205/757 41 211/781 Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required	60 63 112/542 55 132/652 39 165/812 38 168/826 37 170/832 Special Eng. Required Special Eng. Required Special Eng. Required 60 62 126/542 54 149/652 39 187/812 38 190/826 37 192/832 Special Eng. Required Special Eng. Required Special Eng. Required
Hodule Length Heam (in) 32 44 65 67 68 72 78 85 Table 11: A Module Length Heam (in) 32 44 65 67 68 72 78 85 72 78 85	0 103 173/278 92 216/343 75 276/423 74 280/429 73 282/432 72 291/444 69 301/462 66 315/482 Ilow able di 0 100 196/293 90 244/363 73 311/449 72 316/455 72 318/458 70 328/471 68 340/490 65 356/512 Maximum distar	S 100 169/278 89 211/336 73 270/410 71 274/416 71 276/419 69 285/434 67 295/451 65 309/471 stance bet Ground Snow 9 19/293 87 238/357 71 305/432 70 310/439 69 312/442 68 321/456 66 333/476 63 349/500	10 97 161/295 84 197/365 69 255/468 68 259/475 67 261/478 66 269/494 64 278/514 61 291/540 ween attac Load in pst (or 96 179/297 83 223/365 68 288/468 67 295/475 66 295/475 66 295/478 65 303/494 62 314/514 60 329/540	15 92 154/329 79 187/407 64 242/522 63 245/530 63 247/533 61 254/550 59 264/573 57 276/603 hments, re 91 17/v329 78 211/407 64 273/522 63 279/533 60 287/550 58 298/573 56 312/603 eam span (inch)	20 87 147/361 74 178/446 60 230/572 59 234/581 59 235/585 57 242/603 55 252/629 53 264/661 20 86 164/361 73 202/446 60 260/572 59 264/585 57 274/603 55 266/585 57 274/603 55 284/629 53 298/661	25 86 145/367 73 177/454 60 228/582 59 232/591 58 233/595 57 240/614 55 249/640 53 261/673 15 (up/down 53 261/673 15 (up/down 55 162/367 72 200/454 59 258/582 58 262/591 54 225/562 56 271/614 54 282/640 52 295/673	30 82 140/393 70 17/1486 57 220/622 56 223/631 56 225/635 54 231/655 52 241/684 50 252/719 90 mph wi 30 81 156/393 69 193/486 56 249/622 55 252/631 55 252/635 54 261/655 52 252/635	40 72 127/436 62 151/525 52 191/657 51 194/669 51 196/674 49 202/697 45 210/729 Special Eng. Required 72 142/436 62 171/525 52 215/657 51 219/669 51 221/674 49 228/697 45 237/729 Special Eng. Required	50 67 119/490 58 14/591 46 177/738 44 180/751 44 18/757 41 187/781 Special Eng. Required Special Eng. Required 50 66 133/490 58 159/591 46 200/738 44 203/751 44 205/757 41 211/781 Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required	60 63 112/542 55 132/652 39 165/812 38 168/826 37 170/832 Special Eng. Required Special Eng. Required Special Eng. Required 60 62 126/542 54 149/652 39 187/812 38 190/826 37 192/832 Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required

Table 12: A	liowable di	stance bet	ween attac	<u>hments, re</u>	action load	ls (up/dow	<u>100 mph w</u>	ind speed.	<u>, exposure</u>	category C
Module Length	0	Ground Snow	Load in pst (or	Root Live Lo	ad, whichever is	s greater)	20	40	50	60
- Deam (IN)	95	ə 95	۳U Q4	61° 80	∠ ∪ 84	∠ ⊃ 83	30 80	4U 71	00 66	62
52	245/326	240/326	225/325	213/339	203/363	201/370	195/395	178/436	164/490	155/542
44	86	83	80	76	71	71	68	61	57	54
	300/404	298/401	279/386	264/410	252/449	250/457	242/488	214/525	199/591	187/652
65	70	68	65	62	58	58	55	51	46	39
67	69	67	64	61	57	57	54	50	44	38
	370/509	370/493	365/483	346/530	330/581	327/591	315/631	274/669	254/751	237/826
68	69	67	64	60	57	56	54	50	44	37
72	67	372/496	62	349/533 59	332/585	329/595	53	276/674	256/757 41	239/832 Special Eng
	384/527	384/511	379/501	359/550	342/603	339/614	326/655	284/697	263/781	Required
78	65	63	60	57	54	53	51	45	Special Eng.	Special Eng.
95	398/549	398/535	393/519	372/573	355/629	352/640	340/684	296/729	Required	Required
00	417/572	4 17/560	4 11/54 0	390/603	372/661	368/673	49 356/719	Required	Required	Required
Table 13: Al	llowable di	istance bet	ween attac	hments re	action load	s (up/dow	110 mph w	ind sneed	exposure	category C
Module Length		Ground Snow	Load in pst (or	Roof Live Lo	ad, whichever is	s greater)	110 1101	ind speed	cxposure	category
⊥Beam (in)	0	5	10	15	20	25	30	40	50	60
32	90	90	90	87	82	81	78	69	65	61
44	291/361	291/361 80	274/361	260/367	248/377	246/383	238/408	217/445	201/490	189/542
44	343/446	343/446	341/428	323/430	308/467	305/474	295/505	261/534	243/591	228/652
65	67	65	63	60	57	56	54	50	46	39
	4 17/557	4 17/540	4 17/ 517	416/542	396/581	393/589	379/622	328/658	304/738	285/812
67	66 424/565	64	62	59	56	56 200/507	53	49	44	38
68	66	64	61	59	402/590 56	55	53	49	44	37
	427/569	427/552	427/528	425/555	405/594	402/602	387/635	337/674	312/757	292/832
72	64	62	60	57	54	54	51	48	41	Special Eng.
78	440/585	440/569 60	440/544	438/5/2	4 17/6 12 52	413/620	398/655	347/697	321/781 Special Eng	Required Special Eng
	456/609	456/595	456/568	454/597	433/639	429/647	414/684	362/729	Required	Required
85	59	58	56	53	50	50	48	Special Eng.	Special Eng.	Special Eng.
	477/635	477/623	477/595	476/626	454/669	449/678	434/719	Required	Required	Required
Table 14: A	llowable di	istance bet	ween attac	hments, re	action load	ls (up/dow)	120 mph w	ind speed.	exposure	category C
		0		B						
Module Length →Beam (in)	0	Ground Snow	Load in pst (or 10	Roof Live Los	ad, whichever is	s greater)	30	40	50	60
Module Length →Beam (in) 32	<mark>0</mark> 86	Ground Snow 5 86	Load in pst (or <mark>10</mark> 86	Root Live Los 15 84	ad, whichever is <mark>20</mark> 80	s greater) 25 79	30 76	40 68	50 64	60 60
Module Length ⊥Beam (in) <mark>32</mark>	0 86 329/397	Ground Snow 5 86 329/397	Load in pst (or 10 86 329/397	Root Live Los 15 84 312/395	ad, whichever is 20 80 298/403	s greater) 25 79 295/405	30 76 285/423	40 68 260/459	50 64 241/494	60 60 227/542
Module Length ⊥Beam (in) 32 44	0 86 329/397 78	Ground Snow 5 86 329/397 76 007/101	Load in pst (or 10 86 329/397 74 0074	Root Live Los 15 84 312/395 71	ad, whichever is 20 80 298/403 68 200/405	s greater) 25 79 295/405 67	30 76 285/423 65	40 68 260/459 58	50 64 241/494 55	60 60 227/542 52
Module Length →Beam (in) 32 44 65	0 86 329/397 78 387/491 64	Ground Snow 5 86 329/397 76 387/491 63	Load in pst (or 10 86 329/397 74 387/474 60	Root Live Los 15 84 312/395 71 386/463 58	ad, whichever is 20 80 298/403 68 369/485 56	s greater) 25 79 295/405 67 366/492 55	30 76 285/423 65 354/523 53	40 68 260/459 58 313/550 4 9	50 64 241/494 55 291/593 46	60 60 227/542 52 273/652 39
Module Length → Beam (in) 32 44 65	0 86 329/397 78 387/491 64 471/613	Ground Snow 5 86 329/397 76 387/491 63 471/597	Load in pst (or 10 86 329/397 74 387/474 60 47//573	Root Live Lo. 15 84 312/395 71 386/463 58 470/567	ad, whichever is 20 80 298/403 68 369/485 56 469/605	25 79 295/405 67 366/492 55 469/612	30 76 285/423 65 354/523 53 454/641	40 68 260/459 58 313/550 49 393/678	50 64 241/494 55 291/593 46 364/738	60 60 227/542 52 273/652 39 34 1/8 12
Module Length →Beam (in) 32 44 65 67	0 86 329/397 78 387/491 64 471/613 63	Ground Snow 5 86 329/397 76 387/491 63 471/597 62	Load in pst (or 10 86 329/397 74 387/474 60 471/573 59	Root Live Lo. 15 84 312/395 71 386/463 58 470/567 57	ad, whichever is 20 80 298/403 68 369/485 56 469/605 55	s greater) 25 79 295/405 67 366/492 55 469/612 54	30 76 285/423 65 354/523 53 454/641 52	40 68 260/459 58 313/550 49 393/678 48	50 64 241/494 55 291/593 46 364/738 44	60 60 227/542 52 273/652 39 34 1/8 12 38
Module Length →Beam (in) 32 44 65 67 68	0 86 329/397 78 387/491 64 47//613 63 478/622 62	Ground Snow 5 86 329/397 76 387/491 63 471/597 62 478/605 64	Load in pst (or 10 86 329/397 74 387/474 60 471/573 59 478/581 50	Root Live Lo. 15 84 312/395 71 386/463 58 470/567 57 477/576 57	ad, whichever is 20 80 298/403 68 369/485 56 469/605 55 476/613 54	25 79 295/405 67 366/492 55 469/612 54 476/621	30 76 285/423 65 354/523 53 454/641 52 461/650	40 68 260/459 58 313/550 49 393/678 48 400/689	50 64 241/494 55 291/593 46 364/738 44 371/751	60 60 227/542 52 273/652 39 341/812 38 347/826 27
Module Length → Beam (in) 32 44 65 67 68	0 86 329/397 78 387/491 64 471/613 63 478/622 63 481/626	Ground Snow 5 86 329/397 76 387/491 63 471/597 62 478/605 61 48/610	Load in pst (or 10 86 329/397 74 387/474 60 471/573 59 478/581 59 481/585	Root Live Lo. 15 84 312/395 71 386/463 58 470/567 57 477/576 57 480/580	ad, whichever is 20 80 298/403 68 369/485 56 469/605 55 476/613 54 479/618	s greater) 25 79 295/405 67 366/492 55 469/612 54 476/621 54 479/625	30 76 285/423 65 354/523 53 454/641 52 461/650 52 464/655	40 68 260/459 58 313/550 49 393/678 48 400/689 48 403/694	50 64 241/494 55 291/593 46 364/738 44 371/751 44 374/757	60 60 227/542 52 273/652 39 341/812 38 347/826 37 350/832
Module Length → Beam (in) 32 44 65 67 68 72	0 86 329/397 78 387/491 64 471/613 63 478/622 63 481/626 61	Ground Snow 5 86 329/397 76 387/491 63 471/597 62 478/605 61 48/610 60	Load in pst (or 10 86 329/397 74 387/474 60 471/573 59 478/581 59 481/585 57	Root Live Lo. 15 84 312/395 71 386/463 58 470/567 57 477/576 57 480/580 55	ad, whichever is 20 80 298/403 68 369/485 56 469/605 55 476/613 54 479/618 53	s greater) 25 79 295/405 67 366/492 55 469/612 54 476/621 54 479/625 52	30 76 285/423 65 354/523 53 454/641 52 461/650 52 464/655 50	40 68 260/459 58 313/550 49 393/678 48 400/689 48 403/694 47	50 64 241/494 55 291/593 46 364/738 44 371/751 44 374/757 41	60 60 227/542 52 273/652 39 341/812 38 347/826 37 350/832 Special Eng.
Module Length → Beam (in) 32 44 65 67 68 72	0 86 329/397 78 387/491 64 471/613 63 478/622 63 478/622 63 481/626 61 496/644	Ground Snow 5 86 329/397 76 387/491 63 471/597 62 478/605 61 481/610 60 496/628	Load in pst (or 10 86 329/397 74 387/474 60 471/573 59 478/581 59 481/585 57 496/603	South Live Lo. 15 84 312/395 71 386/463 58 470/567 57 477/576 57 480/580 55 495/598	ad, whichever is 20 80 298/403 68 369/485 56 469/605 55 476/613 54 479/618 53 494/636	25 79 295/405 67 366/492 55 469/612 54 476/621 54 479/625 52 494/644	30 76 285/423 65 354/523 53 454/641 52 464/655 52 464/655 50 477/674	40 68 260/459 58 313/550 49 393/678 48 400/689 48 403/694 47 416/714	50 64 241/494 55 291/593 46 364/738 44 371/751 44 374/757 41 385/781	60 60 227/542 52 273/652 39 341/812 38 347/826 37 350/832 Special Eng. Required
Module Length → Beam (in) 32 44 65 67 68 72 78	0 86 329/397 78 387/491 64 471/613 63 478/622 63 481/626 61 496/644 59 514/670	Ground Snow 5 86 329/397 76 387/491 63 471/597 62 478/605 61 481/610 60 496/628 58 514/656	Load in pst (or 10 86 329/397 74 387/474 60 471/573 59 478/581 59 481/585 57 496/603 56 544/629	Root Live Lo. 15 84 312/395 71 386/463 58 470/567 57 480/580 55 495/598 54 513/624	ad, whichever is 20 80 298/403 68 369/485 56 469/605 55 476/613 54 479/618 53 494/636 51 513/664	25 79 295/405 67 366/492 55 469/612 54 476/621 54 479/625 52 494/644 51 513/672	30 76 285/423 65 354/523 53 454/641 52 464/650 52 464/655 50 477/674 49 496/704	40 68 260/459 58 313/550 49 393/678 48 400/689 48 400/689 48 403/694 47 416/714 45 433/742	50 64 241/494 55 291/593 46 364/738 44 371/751 44 374/757 41 385/781 Special Eng. Required	60 60 227/542 52 273/652 39 341/812 38 347/826 37 350/832 Special Eng. Required Special Eng. Required
Module Length → Beam (in) 32 44 65 67 68 72 78 85	0 86 329/397 78 387/491 64 471/613 63 478/622 63 481/626 61 496/644 59 514/670 57	Ground Snow 5 86 329/397 76 387/491 63 471/597 62 478/605 61 481/610 60 496/628 58 514/656 56	Load in pst (or 10 86 329/397 74 387/474 60 47\/573 59 47\/573 59 47\/573 59 48.\/581 57 496/603 56 514/629 54	Root Live Lo. 15 84 312/395 71 386/463 58 470/567 57 480/580 55 495/598 54 513/624 52	ad, whichever is 20 80 298/403 68 369/485 56 469/605 55 476/613 54 479/618 53 494/636 51 513/664 49	s greater) 25 79 295/405 67 366/492 55 469/612 54 476/621 54 479/625 52 494/644 51 513/672 49	30 76 285/423 65 354/523 53 454/641 52 464/655 52 464/655 50 477/674 49 496/704 47	40 68 260/459 58 313/550 49 393/678 48 400/689 48 400/689 48 403/694 47 416/714 45 433/742 Special Eng.	50 64 241/494 55 291/593 46 364/738 44 371/751 44 371/751 44 374/757 41 385/781 Special Eng. Required Special Eng.	60 60 227/542 52 273/652 39 34/882 347/826 37 350/832 Special Eng. Required Special Eng. Required Special Eng.
Module Length → Beam (in) 32 44 65 67 68 72 78 85	0 86 329/397 78 387/491 64 471/613 63 478/622 63 481/626 61 496/644 59 514/670 57 538/699	Ground Snow 5 86 329/397 76 387/491 63 471/597 62 478/605 61 481/610 60 496/628 58 514/656 56 538/687	Load in pst (or 10 86 329/397 74 387/474 60 471/573 59 478/581 59 481/585 57 496/603 56 541/629 54 538/659	Root Live Lo. 15 84 312/395 71 386/463 58 470/567 57 470/580 55 495/598 54 513/624 52 538/653	ad, whichever is 20 80 298/403 68 369/485 56 469/605 55 476/613 54 479/618 53 494/636 51 513/664 49 538/695	25 79 295/405 67 366/492 55 469/612 54 476/621 54 476/621 54 479/625 52 494/644 51 513/672 49 538/703	30 76 285/423 65 354/523 53 454/641 52 461/650 52 464/655 50 477/674 49 496/704 47 520/736	40 68 260/459 58 313/550 49 393/678 48 400/689 48 403/694 47 416/714 45 433/742 Special Eng. Required	50 64 241/494 55 291/593 46 364/738 44 371/751 44 371/757 41 385/781 Special Eng. Required Special Eng. Required	60 60 227/542 52 273/652 39 34 1/8 12 38 347/826 37 350/832 Special Eng. Required Special Eng. Required
Module Length →Beam (in) 32 44 65 67 68 72 78 85 Table 15: A	0 86 329/397 78 387/491 64 471/613 63 478/622 63 481/626 61 496/644 59 514/670 57 538/699 Ilow able di	Ground Snow 5 86 329/397 76 387/491 63 471/597 62 478/605 61 481/610 60 496/628 58 514/656 56 538/687 istance bet	Load in pst (or 10 86 329/397 74 387/474 60 47\/573 59 478/581 59 48\/585 57 496/603 56 54\/629 54 538/659 ween attac	Root Live Lo. 15 84 312/395 71 386/463 58 470/567 57 480/580 55 495/598 54 513/624 52 538/653	ad, whichever is 20 80 298/403 68 369/485 56 469/605 55 476/613 54 479/618 53 494/636 51 513/664 49 538/695 action load	s greater) 25 79 295/405 67 366/492 55 469/612 54 476/621 54 476/621 54 479/625 52 494/644 51 513/672 49 538/703 s (up/dow	30 76 285/423 65 354/523 53 454/641 52 464/650 52 464/655 50 477/674 49 496/704 47 520/736 150 m ph w	40 68 260/459 58 313/550 49 393/678 48 400/689 48 403/694 47 416/714 45 433/742 Special Eng. Required vind speed	50 64 241/494 55 291/593 46 364/738 44 371/751 44 371/751 44 374/757 41 385/781 Special Eng. Required Special Eng. Required Special Eng. Required	60 60 227/542 52 273/652 39 341/812 38 347/826 37 350/832 Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required
Module Length + Beam (in) 32 44 65 67 68 72 78 85 Table 15: Al Module Length	0 86 329/397 78 387/491 64 471/613 63 478/622 63 481/626 61 496/644 59 514/670 57 538/699 Ilow able di	Ground Snow 5 86 329/397 76 387/491 63 471/597 62 478/605 61 481/610 60 496/628 58 514/656 56 538/687 Ground Snow	Load in pst (or 10 86 329/397 74 387/474 60 471/573 59 478/581 59 481/585 57 496/603 56 514/629 54 538/659 ween attac	Root Live Lo. 15 84 312/395 71 386/463 58 470/567 57 470/567 57 480/580 55 495/598 54 513/624 52 538/653 hments, re	ad, whichever is 20 80 298/403 68 369/485 56 469/605 55 476/613 54 479/618 53 494/636 51 513/664 49 538/695 action load ad, whichever is	25 79 295/405 67 366/492 55 469/612 54 476/621 54 476/621 54 479/625 52 494/644 51 513/672 49 538/703 Is (up/dow	30 76 285/423 65 354/523 53 454/641 52 461/650 52 464/655 50 477/674 49 496/704 47 520/736 150 mph w	40 68 260/459 58 313/550 49 393/678 48 400/689 48 400/689 48 403/694 47 416/714 45 433/742 Special Eng. Required //ind speed	50 64 241/494 55 291/593 46 364/738 44 371/751 44 374/757 41 385/781 Special Eng. Required Special Eng. Required Special Eng. Required	60 60 227/542 52 273/652 39 34/1812 38 347/826 37 350/832 Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required
Module Length →Beam (in) 32 44 65 67 68 72 78 85 <u>Table 15: AI</u> Module Length →Beam (in)	0 86 329/397 78 387/491 64 471/613 63 478/622 63 481/626 61 496/644 59 514/670 57 538/699 Ilow able di 0 76	Ground Snow 5 86 329/397 76 387/491 63 471/597 62 478/605 61 481/610 60 496/628 58 514/656 538/687 istance betto Ground Snow 5 76 76 76 76 76 76 76 76 76 76	Load in pst (or 10 86 329/397 74 387/474 60 471/573 59 478/581 59 481/585 57 496/603 56 514/629 54 538/659 w een attac Load in pst (or 10 76	Root Live Lo. 15 84 312/395 71 386/463 58 470/567 57 477/576 57 480/580 55 495/598 54 513/624 52 538/653 hments, re 75	ad, whichever is 20 80 298/403 68 369/485 56 469/605 55 476/613 54 479/618 53 494/636 51 513/664 49 538/695 action load ad, whichever is 20 72	25 79 295/405 67 366/492 55 469/612 54 476/621 54 479/625 52 494/644 51 513/672 49 538/703 Is (up/dow) s greater) 25 72	30 76 285/423 65 354/523 53 454/641 52 461/650 52 464/655 50 477/674 49 496/704 47 520/736 150 mph w 30	40 68 260/459 58 313/550 49 393/678 48 400/689 48 400/689 48 403/694 47 416/714 45 433/742 Special Eng. Required /ind speed	50 64 241/494 55 291/593 46 364/738 44 371/751 44 374/757 41 385/781 Special Eng. Required Special Eng. Required Special Eng. Required 50	60 60 227/542 52 273/652 39 34/18/12 38 347/826 37 350/832 Special Eng. Required Special Eng. Special Eng. Sp
Module Length →Beam (in) 32 44 65 67 68 72 78 85 Table 15: AI Module Length →Beam (in) 32	0 86 329/397 78 387/491 64 471/613 63 478/622 63 481/626 61 496/644 59 514/670 57 538/699 Ilow able di 0 76 441/513	Ground Snow 5 86 329/397 76 387/491 63 471/597 62 478/605 61 481/610 60 496/628 58 514/656 56 538/687 Ground Snow 5 76 441/513	Load in pst (or 10 86 329/397 74 387/474 60 471/573 59 478/581 59 481/585 57 496/603 56 514/629 54 538/659 w een attac Load in pst (or 10 76 441/513	Root Live Lo. 15 84 312/395 71 386/463 58 470/567 57 470/576 57 480/580 55 495/598 54 513/624 52 538/653 hments, re 75 440/511	ad, whichever is 20 80 298/403 68 369/485 56 469/605 55 476/613 54 479/618 53 494/636 51 513/664 49 538/695 eaction load ad, whichever is 20 73 440/498	s greater) 25 79 295/405 67 366/492 55 469/612 54 476/621 54 479/625 52 494/644 51 513/672 49 538/703 Is (up/dow) s greater) 25 73 440/495	30 76 285/423 65 354/523 53 454/641 52 461/650 52 464/655 50 477/674 49 496/704 47 520/736 150 mph w 30 71 437/498	40 68 260/459 58 313/550 49 393/678 48 400/689 48 400/689 48 400/689 48 400/689 47 416/714 45 433/742 Special Eng. Required /ind speed 64 392/506	50 64 241/494 55 291/593 46 364/738 44 371/751 44 371/751 44 374/757 41 385/781 Special Eng. Required Special Eng. Required 50 60 381/538	60 60 227/542 52 273/652 39 34/1812 38 347/826 37 350/832 Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required Special Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Special Eng.
Module Length → Beam (in) 32 44 65 67 68 72 78 85 Table 15: A Module Length → Beam (in) 32 44	0 86 329/397 78 387/491 64 471/613 63 478/622 63 481/626 61 496/644 59 514/670 57 538/699 Ilow able di 0 76 441/513 68	Ground Snow 86 329/397 76 387/491 63 471/597 62 478/605 61 481/610 60 496/628 58 514/656 56 538/687 Ground Snow 5 76 441/513 67	Load in pst (or 10 86 329/397 74 387/474 60 471/573 59 478/581 59 478/581 59 481/585 57 496/603 56 514/629 54 538/659 w een attac Load in pst (or 10 76 441/513 66	Root Live Lo. 15 84 312/395 71 386/463 58 470/567 57 470/576 57 480/580 55 495/598 54 513/624 52 538/653 hments, re 75 440/511 64	ad, whichever is 20 80 298/403 68 369/485 55 469/605 55 476/613 54 479/618 53 494/636 51 513/664 49 538/695 action load ad, whichever is 20 73 440/498 62	s greater) 25 79 295/405 67 366/492 55 469/612 54 476/621 54 479/625 52 494/644 51 513/672 49 538/703 is (up/dow) s greater) 25 73 440/495 62	30 76 285/423 65 354/523 53 454/641 52 464/650 52 464/655 50 477/674 49 496/704 47 520/736 150 mph w 30 71 437/498 60	40 68 260/459 58 313/550 49 393/678 48 400/689 48 400/689 48 403/694 47 416/714 45 433/742 Special Eng. Required rind speed 64 392/506 55	50 64 241/494 55 291/593 46 364/738 44 371/751 44 374/757 41 385/781 Special Eng. Required Special Eng. Required Special Eng. Required 50 60 381/538 52	60 60 227/542 52 273/652 39 341/812 38 347/826 37 350/832 Special Eng. Required Special Eng. Special Eng. Spe
Module Length	0 86 329/397 78 387/491 64 471/613 63 478/622 63 481/626 61 496/644 59 514/670 57 538/699 Ilow able di 0 76 441/513 68 519/635	Ground Snow 5 86 329/397 76 387/491 63 471/597 62 478/605 61 481/610 60 496/628 58 514/656 56 538/687 Ground Snow 5 76 441/513 67 519/634	Load in pst (or 10 86 329/397 74 387/474 60 471/573 59 478/581 59 481/585 57 496/603 56 514/629 54 538/659 w een attac Load in pst (or 10 76 441/513 66 519/617	Root Live Lo. 15 84 312/395 71 386/463 58 470/567 57 470/576 57 480/580 55 495/598 54 513/624 52 538/653 hments, re 75 440/511 64 518/600	ad, whichever is 20 80 298/403 68 369/485 56 469/605 55 476/613 54 479/618 53 494/636 51 513/664 49 538/695 saction load ad, whichever is 20 73 440/498 62 518/583	s greater) 25 79 295/405 67 366/492 55 469/612 54 476/621 54 479/625 52 494/644 51 513/672 49 538/703 Is (up/down) s greater) 25 73 440/495 62 518/580	30 76 285/423 65 354/523 53 454/641 52 464/650 52 464/655 50 477/674 49 496/704 47 520/736 150 mph v 30 71 437/498 60 517/584	40 68 260/459 58 313/550 49 393/678 48 400/689 48 403/694 47 416/714 45 433/742 Special Eng. Required rind speed 40 64 392/506 55 470/606	50 64 241/494 55 291/593 46 364/738 44 371/751 44 374/757 41 385/781 Special Eng. Required Special Eng. Required Special Eng. Required 50 60 381/538 52 460/645	60 60 227/542 52 273/652 39 341/812 38 347/826 37 350/832 Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required Special Special Eng. Required Special Eng. Required Special Special Eng. Required Special Eng. Required Special Special Eng. Required Special Special Eng. Required Special Eng. Required Special Special Eng. Special Special Eng. Special Eng. Special Special Eng. Special E
Module Length	0 86 329/397 78 387/491 64 471/613 63 478/622 63 481/626 61 496/644 59 514/670 57 538/699 Ilow able di 0 76 441/513 68 519/635 56 630/786	Ground Snow 5 86 329/397 76 387/491 63 478/605 61 487610 60 496/628 58 514/656 56 538/687 Ground Snow 5 76 441/513 67 519/634 55 63/7771	Load in pst (or 10 86 329/397 74 387/474 60 471/573 59 478/581 59 481/585 57 496/603 56 514/629 54 538/659 w een attac Load in pst (or 10 76 441/513 66 519/617 54 630/747	Root Live Lo. 15 84 312/395 71 386/463 58 470/567 57 477/576 57 480/580 55 495/598 54 513/624 52 538/653 hments, ree Root Live Loc 15 75 440/511 64 518/600 52 629/725	ad, whichever is 20 80 298/403 68 369/485 56 469/605 55 476/613 54 479/618 53 494/636 51 513/664 49 538/695 action load ad, whichever is 20 73 440/498 62 518/583 51 629/705	s greater) 25 79 295/405 67 366/492 55 469/612 54 476/621 54 479/625 52 494/644 51 513/672 49 538/703 Is (up/dow) s greater) 25 73 440/495 62 518/580 51 629/701	30 76 285/423 65 354/523 53 454/641 52 461/650 52 464/655 50 477/674 49 496/704 47 520/736 150 mph w 30 71 437/498 60 517/584 49 628/744	40 68 260/459 58 313/550 49 393/678 48 400/689 48 403/694 47 416/714 45 433/742 Special Eng. Required rind speed 40 64 392/506 55 470/606 65 57 470/606 588/746	50 64 241/494 55 291/593 46 364/738 44 371/751 41 385/781 Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required 50 60 381/538 52 460/645 44 575/790	60 60 227/542 52 273/652 39 341/812 38 347/826 37 350/832 Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required Special Special Eng. Required Special Eng. Special Eng. Required Special Eng. Special Eng. Spe
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Module Length →Beam (in) 32 44 65 67 68 72 78 85 Table 15: Al Module Length →Beam (in) 32 44 65 67 68 72 78 85 72 78 85	0 86 329/397 78 387/491 64 471/613 63 478/622 63 481/626 61 496/644 59 514/670 57 538/699 Ilow able di 0 76 441/513 68 519/635 56 630/786 56 639/798 55 644/804 54	Ground Snow 5 86 329/397 76 387/491 63 471/597 62 478/605 61 48/610 60 496/628 58 514/656 56 538/687 istance betr Ground Snow 5 76 441/513 67 55 630/771 54 639/782 54 644/788 53	Load in pst (or 10 86 329/397 74 387/474 60 471/573 59 478/581 59 478/581 59 481/585 57 496/603 56 514/629 54 538/659 w een attac Load in pst (or 10 76 441/513 66 519/617 54 630/747 53 639/758 52 644/763 51	Root Live Lo. 15 84 312/395 71 386/463 58 470/567 57 477/576 57 480/580 55 495/598 54 513/624 52 538/653 hments, re Root Live Lo. 15 75 440/511 64 518/600 52 51 639/736 51 633/741 50	ad, whichevers 20 80 298/403 68 369/485 56 469/605 55 476/613 54 479/618 53 494/636 51 513/664 49 538/695 20 73 440/498 62 518/583 51 629/705 50 638/715 50 643/720 48	s greater) 25 79 295/405 67 366/492 55 469/612 54 476/621 54 479/625 52 494/644 51 513/672 49 538/703 Is (up/dow) s greater) 25 73 440/495 62 51 629/701 50 638/711 49 643/716 48	30 76 285/423 65 354/523 53 454/641 52 461/650 52 464/655 50 477/674 49 496/704 47 520/736 150 mph w 30 71 437/498 60 517/584 49 628/714 49 637/725 48 642/730 47	40 68 260/459 58 313/550 49 393/678 48 400/689 48 403/694 47 416/714 45 433/742 Special Eng. Required 40 64 392/506 55 470/606 46 558/758 45 603/764 44	50 64 241/494 55 291/593 46 364/738 44 371/751 44 374/757 41 385/781 Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required 50 60 381/538 52 460/645 44 575/790 43 585/803 43 589/809 41	60 60 227/542 52 273/652 39 341/812 38 347/826 37 350/832 Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required Special Eng. Required 57 359/570 50 433/679 39 540/832 38 549/845 37 553/851 Special Eng.
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Module Length → Beam (in) 32 44 65 67 68 72 78 85 Table 15: AI Module Length → Beam (in) 32 44 65 67 68 72 78 85	0 86 329/397 78 387/491 64 471/613 63 478/622 63 481/626 61 496/644 59 514/670 57 538/699 Ilow able di 0 76 441/513 68 519/635 56 630/786 55 6439/798 55 644/804 54 664/826 52 689/860 50 720/897	Ground Snow 5 86 329/397 76 387/491 63 471/597 62 478/605 61 481/610 60 496/628 58 514/656 538/687 56 538/687 56 538/687 56 538/687 56 538/687 56 539/782 54 639/782 54 644/788 53 664/811 51 689/846 49 720/886	Load in pst (or 10 86 329/397 74 387/474 60 471/573 59 478/581 59 481/585 57 496/603 56 54/629 54 538/659 w een attac Load in pst (or 10 76 441/513 66 519/617 54 630/747 53 639/758 52 644/763 51 664/786 49 689/819 48 720/857	Root Live Lo. 15 84 312/395 71 386/463 58 470/567 57 477/576 57 477/576 57 480/580 55 495/598 54 513/624 52 538/653 hm ents, re Root Live Lo. 15 75 440/511 64 518/600 52 629/725 51 639/736 51 643/741 50 663/762 48 688/795 46 720/831	ad, whichevers 20 80 298/403 68 369/485 56 469/605 55 476/613 54 479/618 53 494/636 51 513/664 49 538/695 action load ad, whichevers 20 73 440/498 62 518/583 51 629/705 50 638/715 50 643/720 48 662/741 47 687/772 45 720/807	s greater) 25 79 295/405 67 366/492 55 469/612 54 476/621 54 479/625 52 494/644 51 513/672 49 538/703 Is (up/dow) s greater) 25 73 440/495 62 518/580 51 629/701 50 638/711 49 643/716 48 662/737 46 687/768 45 720/803	30 76 285/423 65 354/523 53 454/641 52 461/650 52 464/655 50 477/674 49 496/704 47 520/736 150 mph w 30 71 437/498 60 517/584 49 628/714 49 637/725 48 642/730 47 660/751 45 687/783 44 720/8 18	40 68 260/459 58 313/550 49 393/678 48 400/689 48 403/694 47 416/714 45 433/742 Special Eng. Required 40 64 392/506 55 470/606 46 588/746 46 598/758 45 603/764 44 622/785 42 649/815 Special Eng. Required	50 64 241/494 55 291/593 46 364/738 44 371/751 41 385/781 Special Eng. Required 50 60 381/538 52 460/645 44 575/790 43 585/803 43 589/809 41 607/831 Special Eng. Required Special Eng. Required 585/803	60 60 227/542 52 273/652 39 341/812 38 347/826 37 350/832 Special Eng. Required Special Eng. Required Special Eng. Required 60 57 359/570 50 433/679 39 540/832 38 549/845 37 553/851 Special Eng. Required Special Eng. Required
Module Length	0 86 329/397 78 387/491 64 471/613 63 478/622 63 481/626 61 496/644 59 514/670 57 538/699 Ilow able di 0 76 441/513 68 519/635 56 630/786 55 639/798 55 644/804 54 664/826 52 689/860 50 720/897 Maximum dista	Ground Snow 5 86 329/397 76 387/491 63 471/597 62 478/605 61 481/610 60 496/628 58 514/656 538/687 56 538/687 56 538/687 56 538/687 56 538/687 56 538/687 56 538/687 56 57 67 519/634 55 630/771 54 639/782 54 644/788 53 664/811 51 689/846 49 720/886 mce between flaco	Load in pst (or 10 86 329/397 74 387/474 60 471/573 59 478/581 59 481/585 57 496/603 56 514/629 54 538/659 w een attac Load in pst (or 10 76 441/513 66 519/617 54 630/747 53 639/758 52 644/763 51 664/786 49 689/819 48 720/857 reattachments, b	Root Live Lo. 15 84 312/395 71 386/463 58 470/567 57 477/576 57 477/576 57 470/567 57 477/576 57 477/576 57 480/580 55 495/598 54 513/624 52 538/653 hments, re Root Live Lo 15 75 440/511 64 518/600 52 51 639/736 51 643/741 50 663/762 48 688/795 46 720/831 eam span (inch)	ad, whichever is 20 80 298/403 68 369/485 56 469/605 55 476/613 54 479/618 53 494/636 51 513/664 49 538/695 eaction load ad, whichever is 20 73 440/498 62 518/583 51 629/705 50 638/715 50 643/720 48 662/741 47 687/772 45 720/807	s greater) 25 79 295/405 67 366/492 55 469/612 54 476/621 54 479/625 52 494/644 51 513/672 49 538/703 Is (up/dow) s greater) 25 73 440/495 62 518/580 51 629/701 50 638/711 49 643/716 48 662/737 46 687/768 45 720/803	30 76 285/423 65 354/523 53 454/641 52 464/655 50 477/674 49 496/704 47 520/736 150 mph w 30 71 437/498 60 517/584 49 628/714 49 637/725 48 642/730 47 660/751 45 687/783 44 720/818	40 68 260/459 58 313/550 49 393/678 48 400/689 48 403/694 47 416/714 45 433/742 Special Eng. Required 40 64 392/506 55 470/606 46 588/746 46 598/758 45 603/764 44 622/785 42 649/815 Special Eng. Required	50 64 241/494 55 291/593 46 364/738 44 371/751 41 385/781 Special Eng. Required 50 60 381/538 52 460/645 44 575/790 43 585/803 43 585/803 43 589/809 41 607/831 Special Eng. Required 59 ceial Eng. Required 59 60 381/538	60 60 227/542 52 273/652 39 341/812 38 347/826 37 350/832 Special Eng. Required Special Eng. Required Special Eng. Required 60 57 359/570 50 433/679 39 540/832 38 549/845 37 553/851 Special Eng. Required Special Eng. Special Eng. Required Special Eng. Special Eng. Special Eng. Required Special Eng. Special Eng. Spec

Table 16: Limits for module length along beam, run of beams parallel to roof slope, and distance between retainers

Module Length		Ground Snow	/Load in psf (o	r Roof Live Lo	ad, whichever	is greater)				
⊥Beam (in)	0	5	10	15	20	25	30	40	50	60
32	85/240	85/240	85/240	85/240	85/240	85/240	85/240	85/240	85/240	85/240
	240/240	240/240	240/189	240/155	240/131	240/127	240/112	240/91	220/76	197/66
	75/43	88/42	110/40	126/38	140/36	143/36	154/34	170/64	187/67	203/70
44	85/240	85/240	85/240	85/240	85/240	85/240	85/240	85/240	84/240	73/240
	240/214	240/174	240/138	240/113	240/95	240/92	240/81	181/66	160/55	143/48
	91/53	107/52	129/48	147/46	164/43	167/43	180/42	197/77	219/81	239/84
65	85/240	85/240	85/240	85/240	85/240	85/240	84/240	68/240	57/240	49/216
	240/145	240/118	240/93	240/76	240/64	240/62	240/55	122/45	108/37	97/32
	110/68	129/66	156/62	178/58	198/56	202/55	217/53	243/96	243/100	243/105
67	85/240	85/240	85/240	85/240	85/240	85/240	82/240	66/240	55/240	48/210
	240/140	240/114	240/90	240/74	240/62	240/61	240/54	119/43	105/36	94/31
	111/69	131/67	158/63	180/59	200/57	204/56	220/54	243/98	243/102	243/107
68	85/240	85/240	85/240	85/240	85/240	85/240	80/240	65/240	55/240	47/207
	240/138	240/113	240/89	240/73	240/62	240/60	240/53	117/43	103/36	93/31
	112/69	132/68	159/63	181/60	202/57	206/56	222/54	243/98	243/103	243/107
72	85/240	85/240	85/240	85/240	85/240	85/240	76/240	61⁄240	52/227	On a side Fran
	229/131	229/107	229/84	229/69	229/58	229/56	229/50	110/40	98/34	Special Eng. Required
	116/72	137/70	164/65	187/62	208/59	212/58	229/56	243/102	243/106	Required
78	85/240	85/240	85/240	85/240	82/240	79/240	70/240	57/240	o	0
	212/121	212/98	212/78	212/64	212/54	212/52	212/46	102/37	Special Eng.	Special Eng.
	121/74	143/73	172/68	196/64	218/61	222/61	239/59	243/106	rtequireu	required
85	85/240	85/240	85/240	85/240	75/240	73/240	64/240			Crassiel Eng
	194/111	194/90	194/71	194/58	194/49	194/48	194/42	Special Eng.	Special Eng.	Special Eng.
	127/78	150/76	181/71	206/67	228/64	233/64	243/62	Nequireu	rtequireu	Required

key: M odule length along beam (in)/ M aximum continuous run of beam(s) (in)
 M aximum distance between retainers: beam parallel to ridge (in)/ beam perpendicular to ridge (in)
 Reaction on attachment leg opposite flange (lb)/ Reaction on attachment leg closest to flange (lb)
 Note: The maximum reaction force applied parallel to beam at attachments with retainers is 160 lbs.
 The reaction force applied parallel to beams at attachments without retainers is 0 lbs.



Table 17: Adjustment Factors to spans for tables 4 through 15 (note that factors are independent of Module Size)*

Basic Wind		Ground Snow Load in psf (or Roof Live Load, whichever is greater)								
Speed (mph)	0	5	10	15	20	25	30	40	50	60
85	-4.7%	-4.6%	-4.1%	-1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	-2.9%/-6.6%	-2.8%/-7.2%	-2.3%/-8%	-2.1%/-8.5%	-1.9%/-8.8%	-1.9%/-8.9%	-1.7%/-15%	-1.8%/-16.1%	-0.6%/-16.8%	0%/-17.3%
	0.8%/0.9%	1.8%/1.9%	0.3%/0%	0.1%/0%	1.6%/0%	1.9%/0%	3.5%/0%	7.6%/0%	8.8%/0%	9.6%/0%
	-3.4%	-2.8%	-2.2%	-1.6%	-1.4%	-1.3%	-1.2%	-1.0%	-0.8%	-0.7%
90	-6.1%	-6.0%	-5.6%	-3.0%	-0.7%	-0.2%	0.0%	0.0%	0.0%	0.0%
	-2.8%/-6.8	-2.7%/-7.4	-2.3%/-7.9	-2%/-8.5	-1.9%/-8.9	-1.8%/-8.9	-1.7%/-14.7	-1.8%/-16.1	-0.6%/-16.8	0%/-17.3
	2.2%/2.4%	3.2%/3.4%	0.5%/0.2%	0.5%/0.4%	2.3%/0.7%	2.7%/0.7%	4.2%/0.6%	7.6%/0%	8.8%/0%	9.6%/0%
	-3.5%	-3.1%	-2.5%	-1.8%	-1.6%	-1.6%	-1.4%	-1.1%	-1.0%	-0.8%
10 0	-8.6%	-8.5%	-8.4%	-6.1%	-3.7%	-3.3%	-1.6%	0.0%	0.0%	0.0%
	-2.9%/-7	-2.5%/-7.6	-2.2%/-8	-2%/-8.7	-1.8%/-9	-1.8%/-9	-1.7%/-13.4	-1.8%/-16.1	-0.6%/-16.8	0%/-17.3
	5.8%/5.9%	6.3%/6.5%	2.6%/2.3%	2.5%/2.4%	4.1%/2.5%	4.5%/2.4%	5.8%/2.1%	9%/1.3%	9.3%/0.4%	9.6%/0%
	-4.6%	-3.6%	-3.1%	-2.1%	-1.9%	-1.8%	-1.7%	-1.4%	-1.2%	-1.0%
110	-11.0%	-10.6%	-10.2%	-8.9%	-6.5%	-6.1%	-4.3%	-1.4%	0.0%	0.0%
	-2.7%/-6.9	-2.4%/-7.9	-2.1%/-8.3	-1.9%/-8.8	-1.8%/-9	-1.8%/-9.1	-1.7%/-13.2	-1.7%/-16.1	-0.6%/-16.8	0%/-17.3
	9.8%/10.5%	9.6%/9.8%	4.8%/4.5%	4.7%/4.6%	6.1%/4.3%	6.4%/4.2%	7.5%/3.8%	10.4%/2.6%	10.5%/1.6%	10.7%/1%
	-4.9%	-4.0%	-3.6%	-2.8%	-2.2%	-2.1%	-1.9%	-1.6%	-1.4%	-1.2%
12 0	-14.8%	-13.1%	-11.8%	-10.8%	-9.0%	-8.6%	-6.9%	-3.9%	-1.5%	0.0%
	-2.2%/-7.1	-2.3%/-8.1	-2%/-8.4	-1.9%/-8.7	-1.7%/-9.1	-1.7%/-9.2	-1.6%/-13.1	-1.7%/-16.1	-0.6%/-16.8	0%/-17.3
	8.2%/9.4%	10.9%/8.9%	7.4%/6.3%	7%/6.2%	8.2%/5.7%	8.4%/5.6%	9.4%/5%	11.9%/3.6%	11.8%/2.8%	11.9%/2.1%
	-5.0%	-5.0%	-4.0%	-3.2%	-2.5%	-2.4%	-2.2%	-1.9%	-1.6%	-1.4%
15 0	-38.3%	-37.3%	-35.5%	-33.5%	-31.6%	-31.2%	-29.5%	-24.9%	-14.3%	-5.8%
	-1.4%/-16.7	-1.9%/-15.5	-1.7%/-12.9	-1.7%/-10.3	-1.6%/-9.3	-1.6%/-9.3	-1.5%/-13	-1.6%/-16.1	-0.6%/-16.8	0%/-17.3
	4.6%/6.9%	6.7%/6.3%	9.7%/6.2%	12.5%/5.8%	14.4%/5.5%	14.7%/5.4%	15.5%/5.3%	16.9%/5.4%	16.4%/4.5%	16%/4.4%
	-10.4%	-9.1%	-6.4%	-4.7%	-3.9%	-3.7%	-3.4%	-2.6%	-2.3%	-2.0%

key:	Zone 2
	Seismic Ss=15 / Importance factor 125
	Roof angle 1°to 79 Roof angle 8°to 27°
	60 foot Building Height

* Example: 67"x42" module, 90 mph basic wind Category C, 5 psf snow, Roof pitch 6/12 (27°). Max. beam span = 70" (from table 11) x (1+0.034) = 72"



