28357 Industrial Blvd.
Hayward, CA 94545
1-800-227-9523
IronRidge.com

Attn: Sean McDonald, CEO, IronRidge Inc.
Date: October 8th 2024

Re: Report #7.16 XR1000: Engineering Certification and Span Tables for the IronRidge XR1000 Rail Flush Mount System, for Gable and Hip roofs.

This letter certifies the loading criteria and design basis used for the structural analysis of the IronRidge XR System as shown in Report # 7.16 XR1000 "Engineering Certification and Span Tables for the IronRidge XR1000 Rail Flush Mount System, for Gable and Hip roofs Rev B". All information, data, and analysis therein are based on, and comply with, the following building codes and typical specifications. The Span Tables provided in the referenced report may be used when all conditions of the design criteria provided therein are met. Requirements for loading conditions that are not certified in this letter can be determined by using the online Design Assistant at IronRidge.com.

Building Codes:

1. ASCE/SEI 7-16, Minimum Design Loads for Buildings and Other Structures, by American Society of Civil Engineers
2. 2018 International Building Code
3. AC428, Acceptance Criteria for Modular Framing Systems Used to Support Photovoltaic (PV) Panels, November 1, 2012 by ICC-ES
4. Aluminum Design Manual 2015, by The Aluminum Association, Inc.
5. SEAOC (Structural Engineers Association of California) report PV2-2017 Wind Design for Solar Arrays

Please note our evaluation only applies to IronRidge products and excludes the structural adequacy of the chosen roof attachments, PV modules, or underlying roof supporting members. It shall be the responsibility of the installer or system designer to verify the structural capacity and adequacy of the referenced system components with respect to the applied or resultant loads of the chosen array configuration.

Sincerely,

Matthew S Kuzila, P.E.

Digitally Sealed 10.08.2024

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Re: Report #7.16 XR1000: Engineering Certification and Span Tables for the IronRidge XR1000 Rail Flush Mount System, for Gable and Hip Roofs, Rev B.

This report addresses the structural performance and code compliance of IronRidge's XR Rail Flush Mount System. The contents of the report shall be reviewed in its entirety before application to any project design. The XR Rail Flush Mount System is a proprietary rooftop mounting system used to support photovoltaic (PV) modules installed in portrait or landscape orientation and set parallel to the underlying roof surface. PV modules are supported by extruded aluminum XR Rails and secured to the rails with IronRidge mounting clamps. The XR Rails are side mounted to a roof attachment with 3/8" stainless steel bonding hardware and the attachment is secured directly to the underlying roof structure. Assembly details of a typical XR Rail Flush Mount System installation and its core components are shown in Exhibit EX-0015.

The IronRidge XR Rail Flush Mount System is designed and certified to the structural requirements of the reference standards listed below, for the load conditions and configurations tabulated in the attached span tables.

- Minimum Design Loads for Buildings and Other Structures, ASCE/SEI 7-16
- SEAOC (Structural Engineers Association of California) report PV2-2017 Wind Design for Solar Arrays
- AC428, Acceptance Criteria for Modular Framing Systems Used to Support Photovoltaic (PV) Panels, November 1, 2012 by ICC-ES
- Aluminum Design Manual (ADM) 2015/2020, by the Aluminum Association, Inc.

The span tables provided in this report are certified based on the structural performance of IronRidge XR Rails only with no consideration of the structural adequacy of the chosen roof attachments, PV modules, or the underlying roof supporting members. It is the responsibility of the installer or system designer to verify the structural capacity and adequacy of the aforementioned system components in regards to the applied or resultant loads of any chosen array configuration. This report certifies the IronRidge products referenced within this document and provides no determination of the project specific conditions including site loads, building profile, & roof zones, which remain the responsibility of the installer or system designer.

The span tables included in this report provide the maximum allowable spans of XR Rail Flush Mount System for the respective loads and configurations listed, covering wind exposure categories B, C, & D, roof zones provided in ASCE 7 for enclosed and partially enclosed gable & hip roof profiles with roof slopes of 8° to 60°.

The tabulated spans are applicable when the following conditions are met:

A. *Span* is the distance between two adjacent attachment points and is to be measured with respect to the center of the attachment fastener.

B. Each module shall be supported by 2 rails (2 rail system) or 3 rails (3 rail system). Spans are calculated based on 2 rail systems and are conservatively deemed applicable for 3 rail systems.

C. The underlying roof slope, measured between the roof surface and horizontal plane, is 8º to 60º.

D. The *mean roof height*, defined as the average of the roof eave height and the roof ridge height measured from grade for roofs with pitches above 10 degrees and defined as the eave height for roofs with pitches less than or equal to 10 degrees, does not exceed 30 feet.

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E. A clearance from the underside of the array to the roof surface of 2" minimum shall be provided and the height of the array, the distance from the module top surface to the roof surface (defined as h_2), shall not exceed 10".

F. Module length and area shall not exceed the maximum values listed on the respective span tables. The maximum module length within the scope of this report is 98.5 inches. The maximum module length specified within ASCE 7-16 is 80.4 inches. Wind pressure loads used to generate the span tables for modules with lengths above this value are based on the wind tunnel study "Wind Loads on photovoltaic arrays mounted on sloped roofs of low-rise building, parallel to the roof surface." referenced in ASCE 7 Section C29.4.4.

G. All Flush Mount components shall be installed in a professional workmanlike manner per IronRidge's *Flush Mount Installation Manual* and other applicable standards for the general roof construction.

The parameters and adjustments allowed in the span tables are defined as the following:

1. The Flush Mount System is designed as a Risk Category II structure as defined by ASCE 7-16 Table 1.5-1.

2. Wind speed shall conform to ASCE 7-16 Fig. 26.5-1B (for Risk Category II) and applicable state & local county/city amendments to the IBC. No special wind topographic features are included and both topographic coefficient (K_{zt}) and wind ground elevation factor (K_e) are taken as 1.0.

3. Snow load used in the span tables is the *ground snow* and shall conform to ASCE 7-16 Fig. 7.2-1 and applicable state & local county/city amendments to the IBC. If the local jurisdiction specified snow load is in the format of a *flat roof snow*, it shall first be converted to a *ground snow* following the local building code/ amendments before the application of the attached span tables.

4. No special snow conditions are considered including unbalanced, drifting, sliding, retention, or ponding snow. No rain-on-snow surcharge load is considered. The span tables do not apply to buildings which are intentionally kept below freezing, kept just above freezing, or unheated without first converting the snow load based on the difference in Thermal Factor and snow sliding. The Thermal Factor, Ct, is assumed to be 1.0, the roof exposure factor is assumed to be 1.0, and the Sliding Factor is based on ASCE 7-16 Figure 7.4-1 for a warm roof with unobstructed slippery surfaces.

5. The span tables reflect the ASCE 7 prescribed earthquake loads with the maximum magnitudes being:
   a) For ground snow no greater than 42psf: $S_S \leq 2.0g$ for Site Class A, B, C, & D.
   b) For ground snow greater than 65psf: $S_S \leq 1.0g$ for Site Class A, B, C, & D.
   c) For ground snow between 42 and 65psf: $S_S \leq 1.5g$ for Site Class A, B, C, & D.

6. Roof zones are defined by ASCE 7-16 Figure 30.3-2B to Figure 30.3-2I and are organized into three *groups* in which the zones are assumed to share the same External Pressure Coefficients (GC_p). Roof zones comprising each group along with each roof zone's size and location to be used with the spans in this report are depicted in Figures 2 and 3 below each span table.

7. The maximum rail cantilever length, measured from the rail end to the nearest attachment point, shall be the lesser of the following two conditions: 40% of the allowable span provided for the respective load & configuration condition from the span tables, or 36".

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8. Allowable span length in the charts may be multiplied by a factor of 1.08 if the rails are continuous over a minimum of three spans. This factor may not be used in determining maximum cantilever length.

9. No splices are allowed in the rail cantilever. For each XR splice type install per the following requirements:
   a) XR Bonded Splice cannot be installed in the center 1/3 of interior spans, or the outer 2/3 of end spans.
   b) BOSS Splice can be installed at any location within a span.

10. Shaded cells of the span tables indicate conditions in which UFO Mid Clamp connection capacity is exceeded if such conditions are encountered contact *techsupport@ironridge.com*.

11. Systems using CAMO module clamps shall be installed with the following guidance:
    a) For single module installations (orphan modules), CAMO clamps shall not be installed in regions that experience ground snow loads in exceedance of what is listed in the following table. Such scenarios are shown by asterisks in the applicable span tables.

Maximum Ground Snow load for Orphan Modules using CAMO per ASCE 7-16				
Module Area	21.7 ft^2	23.5 ft^2	28.0 ft^2	30.5 ft^2
Ground Snow	60 psf	55 psf	40 psf	40 psf

    b) CAMO will function within a module's design load ratings. Be sure the specific module being used with CAMO meets the dimensional requirements shown in the figure below and that the module selected is suitable for the environmental conditions of a particular project.

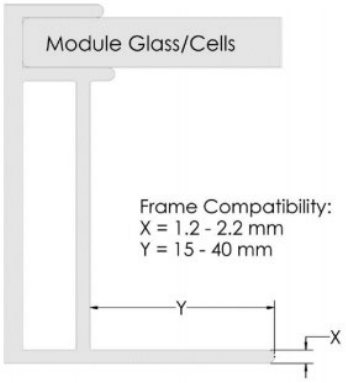

Figure 1: CAMO Module Frame Dimensional Requirements

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Spans for Exposed and Edge Modules

Span values for Exposed and Edge module conditions, as defined below, are included in the attached span tables and shall be used when each condition exists.

- A module is defined as Exposed (per Section 29.4.4 of ASCE 7) if the distance from any of its free edges (an edge with no connectivity to other modules) to its facing roof edge (such as eave, ridge, rake, or hip) is greater than 0.5*h* (*h* is ASCE defined building height) AND if the distance from the same free edge to any other adjacent array or panel is greater than 4 feet.
- A module is defined as an Edge Module when its distance from any side of the module to its facing perimeter roof edge (such as eave, ridge, rake, or hip) is less than 2 times the height of the array ($2h_2$) where h_2 is measured from the roof surface to the top surface of the module.

The maximum allowable span for Exposed or Edge modules shall be the lesser of the following two:

1. The span value for the Exposed or Edge module condition.
2. The span value determined by site wind speed and ground snow load.

The allowable spans and cantilever shall only be applied to the portion of rail directly under Exposed or Edge Modules. Additionally, the shaded cells for the Exposed and Edge module conditions indicate conditions in which UFO Mid Clamp connection capacity is exceeded. If such conditions are encountered, contact techsupport@ironridge.com.

Prepared By:
Matthew S Kuzila, PE & Nancy E Schubert, PE

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Rail: XR1000

Gable Roof Flush Mount System Span Table (inches) - Portrait or Landscape Installation
Max Module Length: 69.5", Max Module SF: 21.7 SF
Exposure B

Wind Speed (mph)	Roof Slope (deg.)	Ground Snow: 0 psf			10 psf			20 psf			30 psf			40 psf			50 psf			60 psf*			70 psf*			80 psf*			90 psf*			100 psf*			110 psf*			120 psf*			Exposed Mod.			Edge Mod.		
		Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
90 mph	8-20	167	167	167	142	142	142	117	117	117	115	115	115	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	167	167	167	130	115
	21-27	165	165	165	149	149	149	129	129	129	115	115	115	103	103	103	94	94	94	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	165	165	165	164	142	137
	28-60	159	159	159	149	149	149	131	131	131	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	159	159	151	134
95 mph	8-20	167	167	167	142	142	142	117	117	117	115	115	115	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	167	167	167	120	107
	21-27	165	165	165	149	149	149	129	129	129	115	115	115	103	103	103	94	94	94	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	165	165	165	162	132	125
	28-60	159	159	159	149	149	149	131	131	131	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	159	159	142	125
100 mph	8-20	167	167	167	142	142	142	117	117	117	115	115	115	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	167	167	167	112	100
	21-27	165	165	165	149	149	149	129	129	129	115	115	115	103	103	103	94	94	94	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	165	165	165	152	123	116
	28-60	159	159	159	149	149	149	131	131	131	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	159	159	133	118
105 mph	8-20	167	167	167	142	142	142	117	117	117	115	115	115	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	167	165	167	104	92
	21-27	165	165	165	149	149	149	129	129	129	115	115	115	103	103	103	94	94	94	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	165	165	165	143	115	108
	28-60	159	159	159	149	149	149	131	131	131	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	159	149	126	111
110 mph	8-20	167	167	167	142	142	142	117	117	117	115	115	115	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	167	142	142	99	80
	21-27	165	165	165	149	149	149	129	129	129	115	115	115	103	103	103	94	94	94	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	165	165	165	135	108	101
	28-60	159	159	159	149	149	149	131	131	131	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	159	139	119	105
115 mph	8-20	167	167	167	142	142	142	117	117	117	115	115	115	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	157	126	122	90	71
	21-27	165	165	165	149	149	149	129	129	129	115	115	115	103	103	103	94	94	94	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	165	165	161	127	103	96
	28-60	159	159	159	149	149	149	131	131	131	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	156	131	113	100
120 mph	8-20	167	167	167	142	142	142	117	117	117	115	115	115	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	139	113	110	80	63
	21-27	165	165	165	149	149	149	129	129	129	115	115	115	103	103	103	94	94	94	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	165	163	151	121	98	86
	28-60	159	159	159	149	149	149	131	131	131	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	143	123	107	95
130 mph	8-20	167	167	159	142	142	142	117	117	117	115	115	115	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	114	98	96	65	51
	21-27	165	165	165	149	149	149	129	129	129	115	115	115	103	103	103	94	94	94	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	165	133	122	110	81	68
	28-60	159	159	159	149	149	149	131	131	131	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	149	123	110	98	80
140 mph	8-20	167	160	127	142	142	127	117	117	117	115	115	115	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	100	73	76	53	42
	21-27	165	165	162	149	149	149	129	129	129	115	115	115	103	103	103	94	94	94	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	161	114	103	100	67	55
	28-60	159	159	158	149	149	149	131	131	131	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	130	108	100	87	66
150 mph	8-20	167	132	108	142	132	108	117	117	108	115	115	107	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	79	55	66	44	36
	21-27	165	154	146	149	149	146	129	129	129	115	115	115	103	103	103	94	94	94	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	139	101	87	90	56	45
	28-60	159	159	138	149	149	138	131	131	131	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	150	115	98	91	73	55
160 mph	8-20	167	113	97	142	113	97	117	113	97	115	110	97	102	102	96	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	61	43	58	38	32
	21-27	165	132	121	149	132	121	129	127	120	115	115	110	103	103	103	94	94	94	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	122	86	65	78	47	38
	28-60	159	147	122	149	147	122	131	131	122	117	117	114	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	127	103	83	75	62	47
170 mph	8-20	167	101	76	142	101	76	117	101	76	115	101	76	102	98	76	92	92	76	85	85	76	79	79	76	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	80	49	37	51	34	28
	21-27	164	116	104	149	116	104	129	116	104	115	109	103	103	103	98	94	94	94	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	109	68	51	68	40	32
	28-60	159	132	109	149	132	109	131	128	109	116	116	107	105	105	102	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	110	95	66	63	53	40
175 mph	8-20	167	97	67	142	97	67	117	97	67	115	97	67	102	96	67	92	92	67	85	85	67	79	79	67	74	74	67	70	70	67	67	67	67	64	64	64	61	61	61	74	44	35	48	32	26
	21-27	154	109	100	149	109	100	129	109	100	115	106	100	103	100	96	94	94	92	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	104	61	45	64	38	30
	28-60	159	125	104	149	125	104	129	124	104	114	114	104	104	104	99	96	96	95	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	103	88	60	58	49	37
180 mph	8-20	167	86	60	142	86	60	117	86	60	115	86	60	102	86	60	92	86	60	85	85	60	79	79	60	74	74	60	70	70	60	67	67	60	64	64	60	61	61	60	68	40	33	45	30	25
	21-27	145	103	96	145	103	96	129	103	96	115	103	96	103	98	93	94	94	90	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	100	55	41	61	36	28
	28-60	157	119	100	149	119	100	128	119	100	113	112	100	103	103	97	96	96	93	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	100	80	54	54	46	35

= min 72" span = min 64" span = min 48" span

REV 07/24/2024

= Shaded cells indicate conditions in which UFO Mid Clamp connection capacity is exceeded. If such conditions are encountered contact techsupport@ironridge.com.

* = Note: additional installation requirement for CAMO module clamp. See Note 11 on Page 3 for details

Grouping of ASCE 7-16 Roof Zones (Gable)

Roof Slope	8° - 27°			28° - 60°		
Group	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
ASCE 7-16 Roof Zones	1 2e	2n 2r 3e	3r	1 2e 2r	2n 3r	3e

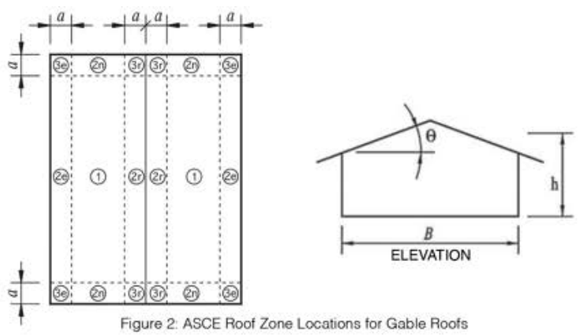

Figure 2: ASCE Roof Zone Locations for Gable Roofs

Notation

a = 10% of least horizontal dimension or 0.4h, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m). If an overhang exists, the edge distance shall be measured from the outside edge of the overhang. The horizontal dimensions used to compute the edge distance shall not include any overhang distances.

B = Horizontal dimension of building measured normal to wind direction, in ft (m).

h = Mean roof height, in ft (m), except that eave height shall be used for $\theta \leq 10°$.

θ = Angle of plane of roof from horizontal, in degrees.

Rail: XR1000

Gable Roof Flush Mount System Span Table (inches) - Portrait or Landscape Installation

Max Module Length: 69.5", Max Module SF: 21.7 SF

Exposure C

Wind Speed (mph)	Roof Slope (deg.)	Ground Snow: 0 psf			10 psf			20 psf			30 psf			40 psf			50 psf			60 psf*			70 psf*			80 psf*			90 psf*			100 psf*			110 psf*			120 psf*			Exposed Mod.			Edge Mod.		
		Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
90 mph	8-20	167	167	167	142	142	142	117	117	117	115	115	115	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	167	156	167	103	88
	21-27	165	165	165	149	149	149	129	129	129	115	115	115	103	103	103	94	94	94	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	165	165	165	140	113	106
	28-60	159	159	159	149	149	149	131	131	131	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	159	146	123	109
95 mph	8-20	167	167	167	142	142	142	117	117	117	115	115	115	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	167	133	130	96	75
	21-27	165	165	165	149	149	149	129	129	129	115	115	115	103	103	103	94	94	94	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	165	165	165	131	105	99
	28-60	159	159	159	149	149	149	131	131	131	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	159	135	116	102
100 mph	8-20	167	167	167	142	142	142	117	117	117	115	115	115	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	144	117	113	83	65
	21-27	165	165	165	149	149	149	129	129	129	115	115	115	103	103	103	94	94	94	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	165	165	154	123	99	89
	28-60	159	159	159	149	149	149	131	131	131	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	147	125	109	97
105 mph	8-20	167	167	167	142	142	142	117	117	117	115	115	115	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	127	104	102	73	57
	21-27	165	165	165	149	149	149	129	129	129	115	115	115	103	103	103	94	94	94	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	165	148	139	116	92	77
	28-60	159	159	159	149	149	149	131	131	131	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	134	117	103	89
110 mph	8-20	167	167	158	142	142	142	117	117	117	115	115	115	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	114	98	95	64	50
	21-27	165	165	165	149	149	149	129	129	129	115	115	115	103	103	103	94	94	94	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	165	133	122	109	81	67
	28-60	159	159	159	149	149	149	131	131	131	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	148	123	110	98	79
115 mph	8-20	167	167	137	142	142	137	117	117	117	115	115	115	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	103	82	81	57	45
	21-27	165	165	165	149	149	149	129	129	129	115	115	115	103	103	103	94	94	94	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	165	121	109	104	72	59
	28-60	159	159	159	149	149	149	131	131	131	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	137	113	103	93	71
120 mph	8-20	167	153	123	142	142	123	117	117	117	115	115	115	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	98	69	74	51	40
	21-27	165	165	159	149	149	149	129	129	129	115	115	115	103	103	103	94	94	94	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	155	110	100	99	64	53
	28-60	159	159	153	149	149	149	131	131	131	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	126	105	98	83	63
130 mph	8-20	167	124	103	142	124	103	117	117	103	115	115	103	102	102	99	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	71	50	63	41	34
	21-27	165	144	135	149	144	135	129	129	127	115	115	115	103	103	103	94	94	94	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	132	97	77	84	52	42
	28-60	159	159	131	149	149	131	131	131	128	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	139	109	95	84	68	52
140 mph	8-20	167	104	84	142	104	84	117	104	84	115	104	84	102	100	84	92	92	84	85	85	84	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	94	53	39	54	35	29
	21-27	165	122	110	149	122	110	129	121	110	115	112	106	103	103	100	94	94	94	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	115	74	56	72	43	35
	28-60	159	138	114	149	138	114	131	131	114	116	116	110	106	106	104	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	116	98	73	68	56	43
150 mph	8-20	167	91	63	142	91	63	117	91	63	115	91	63	102	91	63	92	91	63	85	85	63	79	79	63	74	74	63	70	70	63	67	67	63	64	64	63	61	61	61	71	41	34	47	31	25
	21-27	149	106	98	149	106	98	129	106	98	115	104	98	103	99	94	94	94	91	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	102	57	43	63	37	29
	28-60	159	122	102	149	122	102	128	122	102	114	114	102	104	104	98	96	96	94	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	101	84	57	56	48	36
160 mph	8-20	167	70	49	142	70	49	117	70	49	110	70	49	102	70	49	92	70	49	85	70	49	79	70	49	74	70	49	70	70	49	67	67	49	64	64	49	61	61	49	60	36	30	41	27	22
	21-27	131	97	76	131	97	76	126	97	76	115	97	76	103	94	76	94	90	76	86	86	76	80	80	76	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	90	45	35	55	32	24
	28-60	138	109	94	138	109	94	125	109	94	111	107	94	102	101	93	95	95	90	89	89	87	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	91	66	45	47	41	31
170 mph	8-20	103	55	40	97	55	40	97	55	40	97	55	40	96	55	40	92	55	40	85	55	40	79	55	40	74	55	40	70	55	40	67	55	40	64	55	40	61	55	40	51	32	26	36	24	20
	21-27	116	77	58	116	77	58	116	77	58	110	77	58	103	77	58	94	77	58	86	77	58	80	77	58	75	75	58	71	71	58	68	68	58	65	65	58	62	62	58	75	38	30	48	29	21
	28-60	119	99	75	119	99	75	119	99	75	109	99	75	100	97	75	93	93	75	88	88	75	83	83	75	79	79	75	75	75	75	71	71	71	68	68	68	65	65	65	69	53	38	40	36	27
175 mph	8-20	81	49	38	81	49	38	81	49	38	81	49	38	81	49	38	81	49	38	81	49	38	79	49	38	74	49	38	70	49	38	67	49	38	64	49	38	61	49	38	47	30	25	34	22	18
	21-27	110	69	52	110	69	52	110	69	52	106	69	52	101	69	52	94	69	52	86	69	52	80	69	52	75	69	52	71	69	52	68	68	52	65	65	52	62	62	52	69	36	28	46	27	19
	28-60	111	96	67	111	96	67	111	96	67	107	96	67	99	94	67	92	91	67	87	87	67	82	82	67	79	79	67	75	75	67	71	71	67	68	68	67	65	65	65	61	48	35	38	34	25
180 mph	8-20	75	45	36	75	45	36	75	45	36	75	45	36	75	45	36	75	45	36	75	45	36	75	45	36	74	45	36	70	45	36	67	45	36	64	45	36	61	45	36	44	28	23	32	21	17
	21-27	105	62	46	105	62	46	105	62	46	103	62	46	99	62	46	94	62	46	86	62	46	80	62	46	75	62	46	71	62	46	68	62	46	65	62	46	62	62	46	64	34	26	43	25	18
	28-60	104	90	61	104	90	61	104	90	61	104	90	61	98	90	61	91	89	61	86	86	61	82	82	61	78	78	61	75	75	61	71	71	61	68	68	61	65	65	61	55	44	33	35	32	23

= min 72" span = min 64" span = min 48" span

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= Shaded cells indicate conditions in which UFO Mid Clamp connection capacity is exceeded. If such conditions are encountered contact techsupport@ironridge.com.

* = Note: additional installation requirement for CAMO module clamp. See Note 11 on Page 3 for details

Grouping of ASCE 7-16 Roof Zones (Gable)

Roof Slope	8° - 27°			28° - 60°		
Group	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
ASCE 7-16 Roof Zones	1 2e	2n 2r 3e	3r	1 2e 2r	2n 3r	3e

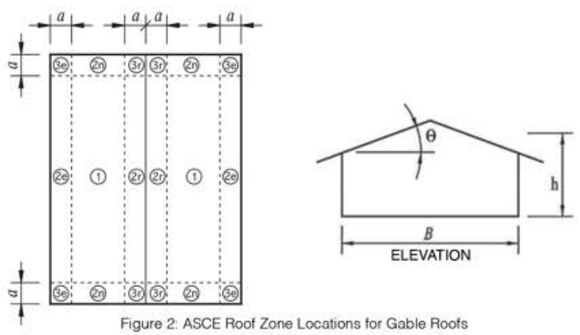

Figure 2: ASCE Roof Zone Locations for Gable Roofs

Notation

a = 10% of least horizontal dimension or 0.4h, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m). If an overhang exists, the edge distance shall be measured from the outside edge of the overhang. The horizontal dimensions used to compute the edge distance shall not include any overhang distances.

B = Horizontal dimension of building measured normal to wind direction, in ft (m).

h = Mean roof height, in ft (m), except that eave height shall be used for $\theta \leq 10°$.

θ = Angle of plane of roof from horizontal, in degrees.

Rail: XR1000

Gable Roof Flush Mount System Span Table (inches) - Portrait or Landscape Installation
Max Module Length: 69.5", Max Module SF: 21.7 SF
Exposure D

Wind Speed (mph)	Roof Slope (deg.)	Ground Snow: 0 psf			10 psf			20 psf			30 psf			40 psf			50 psf			60 psf*			70 psf*			80 psf*			90 psf*			100 psf*			110 psf*			120 psf*			Exposed Mod.			Edge Mod.		
		Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
90 mph	8-20	167	167	167	142	142	142	117	117	117	115	115	115	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	153	123	119	88	69
	21-27	165	165	165	149	149	149	129	129	129	115	115	115	103	103	103	94	94	94	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	165	165	159	126	102	95
	28-60	159	159	159	149	149	149	131	131	131	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	153	129	112	99
95 mph	8-20	167	167	167	142	142	142	117	117	117	115	115	115	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	132	108	105	76	60
	21-27	165	165	165	149	149	149	129	129	129	115	115	115	103	103	103	94	94	94	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	165	154	147	118	96	81
	28-60	159	159	159	149	149	149	131	131	131	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	138	120	105	93
100 mph	8-20	167	167	164	142	142	142	117	117	117	115	115	115	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	117	99	97	66	52
	21-27	165	165	165	149	149	149	129	129	129	115	115	115	103	103	103	94	94	94	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	165	136	125	111	83	70
	28-60	159	159	159	149	149	149	131	131	131	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	151	125	111	99	82
105 mph	8-20	167	167	140	142	142	140	117	117	117	115	115	115	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	105	85	82	58	46
	21-27	165	165	165	149	149	149	129	129	129	115	115	115	103	103	103	94	94	94	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	165	122	111	104	73	60
	28-60	159	159	159	149	149	149	131	131	131	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	138	115	104	94	72
110 mph	8-20	167	154	124	142	142	124	117	117	117	115	115	115	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	98	70	74	51	40
	21-27	165	165	159	149	149	149	129	129	129	115	115	115	103	103	103	94	94	94	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	156	111	101	99	65	53
	28-60	159	159	154	149	149	149	131	131	131	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	127	105	99	84	64
115 mph	8-20	167	136	111	142	136	111	117	117	111	115	115	109	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	83	58	68	46	37
	21-27	165	159	149	149	149	149	129	129	129	115	115	115	103	103	103	94	94	94	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	142	102	93	93	58	47
	28-60	159	159	141	149	149	141	131	131	131	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	155	117	99	94	75	57
120 mph	8-20	167	122	102	142	122	102	117	117	102	115	115	102	102	102	99	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	70	49	62	41	34
	21-27	165	143	133	149	143	133	129	129	126	115	115	115	103	103	103	94	94	94	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	131	97	76	84	51	42
	28-60	159	157	130	149	149	130	131	131	127	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	138	109	94	83	67	51
130 mph	8-20	167	103	81	142	103	81	117	103	81	115	103	81	102	100	81	92	92	81	85	85	81	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	86	51	39	53	35	29
	21-27	165	120	108	149	120	108	129	120	108	115	111	104	103	103	99	94	94	94	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	112	72	54	71	42	34
	28-60	159	136	112	149	136	112	131	130	112	116	116	109	105	105	103	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	114	97	70	66	55	42
140 mph	8-20	167	85	60	142	85	60	117	85	60	115	85	60	102	85	60	92	85	60	85	85	60	79	79	60	74	74	60	70	70	60	67	67	60	64	64	60	61	61	60	68	40	33	45	30	25
	21-27	144	103	96	144	103	96	129	103	96	115	102	96	103	98	93	94	94	90	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	100	54	41	61	36	28
	28-60	157	118	100	149	118	100	128	118	100	113	112	100	103	103	97	96	96	93	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	99	79	54	54	46	35
150 mph	8-20	167	65	46	142	65	46	106	65	46	106	65	46	100	65	46	92	65	46	85	65	46	79	65	46	74	65	46	70	65	46	67	65	46	64	64	46	61	61	46	57	35	29	39	26	21
	21-27	126	91	69	126	91	69	123	91	69	114	91	69	103	91	69	94	89	69	86	86	69	80	80	69	75	75	69	71	71	69	68	68	68	65	65	65	62	62	62	84	42	34	53	31	23
	28-60	131	105	88	131	105	88	124	105	88	110	104	88	101	100	88	94	94	88	89	89	85	84	84	83	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	83	62	42	44	39	29
160 mph	8-20	83	50	38	83	50	38	83	50	38	83	50	38	83	50	38	83	50	38	83	50	38	79	50	38	74	50	38	70	50	38	67	50	38	64	50	38	61	50	38	48	30	25	34	23	19
	21-27	111	70	53	111	70	53	111	70	53	107	70	53	102	70	53	94	70	53	86	70	53	80	70	53	75	70	53	71	70	53	68	68	53	65	65	53	62	62	53	70	37	28	46	27	19
	28-60	113	97	69	113	97	69	113	97	69	107	97	69	99	95	69	92	91	69	87	87	69	82	82	69	79	79	69	75	75	69	71	71	69	68	68	68	65	65	65	63	49	36	38	34	25
170 mph	8-20	70	41	34	70	41	34	70	41	34	70	41	34	70	41	34	70	41	34	70	41	34	70	41	34	70	41	34	70	41	34	67	41	34	64	41	34	61	41	34	41	27	22	30	20	16
	21-27	101	56	42	101	56	42	101	56	42	101	56	42	97	56	42	93	56	42	86	56	42	80	56	42	75	56	42	71	56	42	68	56	42	65	56	42	62	56	42	59	32	24	41	24	17
	28-60	101	82	55	101	82	55	101	82	55	101	82	55	97	82	55	90	82	55	85	82	55	81	81	55	77	77	55	74	74	55	71	71	55	68	68	55	65	65	55	49	40	31	34	30	22
175 mph	8-20	64	38	32	64	38	32	64	38	32	64	38	32	64	38	32	64	38	32	64	38	32	64	38	32	64	38	32	64	38	32	64	38	32	64	38	32	61	38	32	38	25	21	28	19	16
	21-27	97	50	38	97	50	38	97	50	38	97	50	38	94	50	38	91	50	38	86	50	38	80	50	38	75	50	38	71	50	38	68	50	38	65	50	38	62	50	38	55	30	22	38	23	16
	28-60	97	73	50	97	73	50	97	73	50	97	73	50	95	73	50	89	73	50	85	73	50	80	73	50	77	73	50	74	73	50	71	71	50	68	68	50	65	65	50	44	38	29	32	28	20
180 mph	8-20	60	36	30	60	36	30	60	36	30	60	36	30	60	36	30	60	36	30	60	36	30	60	36	30	60	36	30	60	36	30	60	36	30	60	36	30	60	36	30	36	24	20	27	18	15
	21-27	91	46	36	91	46	36	91	46	36	91	46	36	91	46	36	89	46	36	86	46	36	80	46	36	75	46	36	71	46	36	68	46	36	65	46	36	62	46	36	51	29	21	36	21	15
	28-60	92	66	45	92	66	45	92	66	45	92	66	45	92	66	45	89	66	45	84	66	45	80	66	45	76	66	45	73	66	45	70	66	45	68	66	45	65	65	45	40	36	27	30	27	19

= min 72" span = min 64" span = min 48" span

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= Shaded cells indicate conditions in which UFO Mid Clamp connection capacity is exceeded. If such conditions are encountered contact techsupport@ironridge.com.

* = Note: additional installation requirement for CAMO module clamp. See Note 11 on Page 3 for details

Grouping of ASCE 7-16 Roof Zones (Gable)

Roof Slope	8° - 27°			28° - 60°		
Group	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
ASCE 7-16 Roof Zones	1 2e	2n 2r 3e	3r	1 2e 2r	2n 3r	3e

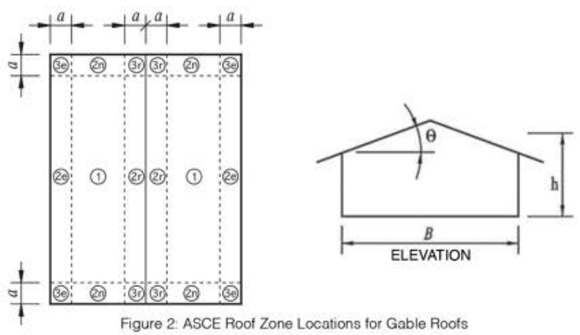

Figure 2: ASCE Roof Zone Locations for Gable Roofs

Notation

a = 10% of least horizontal dimension or $0.4h$, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m). If an overhang exists, the edge distance shall be measured from the outside edge of the overhang. The horizontal dimensions used to compute the edge distance shall not include any overhang distances.

B = Horizontal dimension of building measured normal to wind direction, in ft (m).

h = Mean roof height, in ft (m), except that eave height shall be used for $\theta \leq 10°$.

θ = Angle of plane of roof from horizontal, in degrees.

Rail: XR1000

Gable Roof Flush Mount System Span Table (inches) - Portrait or Landscape Installation

Max Module Length: 75.5", Max Module SF: 23.5 SF

Exposure B

Wind Speed (mph)	Roof Slope (deg.)	Ground Snow: 0 psf			10 psf			20 psf			30 psf			40 psf			50 psf			60 psf*			70 psf*			80 psf*			90 psf*			100 psf*			110 psf*			120 psf*			Exposed Mod.			Edge Mod.		
		Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
90 mph	8-20	161	161	161	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	161	161	161	122	109
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	158	158	158	134	128
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	153	153	143	127
95 mph	8-20	161	161	161	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	161	161	161	113	103
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	158	158	154	125	118
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	153	153	134	119
100 mph	8-20	161	161	161	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	161	161	161	107	97
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	158	158	144	117	110
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	153	150	127	112
105 mph	8-20	161	161	161	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	161	144	161	101	84
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	158	158	136	110	104
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	153	140	119	106
110 mph	8-20	161	161	161	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	159	127	124	94	74
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	158	158	128	104	98
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	153	131	113	101
115 mph	8-20	161	161	161	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	140	114	111	83	65
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	158	151	121	99	90
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	143	123	108	96
120 mph	8-20	161	161	161	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	125	107	105	74	58
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	146	137	115	93	79
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	132	116	103	90
130 mph	8-20	161	161	140	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	107	93	88	59	47
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	122	111	105	75	62
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	137	114	105	95	73
140 mph	8-20	161	142	115	136	136	115	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	97	67	70	49	38
	21-27	158	158	152	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	147	107	100	97	61	50
	28-60	153	153	144	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	120	103	97	80	60
150 mph	8-20	161	119	104	136	119	104	113	113	104	110	110	103	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	73	51	61	41	33
	21-27	158	139	129	143	139	129	123	123	122	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	128	98	80	83	51	42
	28-60	153	153	127	143	143	127	125	125	123	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	133	108	95	84	67	51
160 mph	8-20	161	107	91	136	107	91	113	107	91	110	105	91	98	98	91	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	56	40	53	35	29
	21-27	158	121	110	143	121	110	123	118	110	110	110	105	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	113	79	60	71	43	35
	28-60	153	136	113	143	136	113	125	125	113	112	112	108	102	102	102	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	114	100	76	69	57	43
170 mph	8-20	161	98	70	136	98	70	113	98	70	110	98	70	98	95	70	89	89	70	82	82	70	76	76	70	71	71	70	67	67	67	64	64	64	61	61	61	59	59	59	74	45	34	47	31	26
	21-27	150	108	101	143	108	101	123	108	101	110	104	100	99	99	95	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	105	62	47	63	37	30
	28-60	153	122	105	143	122	105	124	120	105	110	110	103	101	101	98	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	105	91	61	58	49	37
175 mph	8-20	161	90	62	136	90	62	113	90	62	110	90	62	98	90	62	89	89	62	82	82	62	76	76	62	71	71	62	67	67	62	64	64	62	61	61	61	59	59	59	68	40	32	44	29	24
	21-27	141	104	97	141	104	97	123	104	97	110	102	97	99	97	93	90	90	89	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	101	56	42	59	35	27
	28-60	151	116	101	143	116	101	123	116	101	109	109	100	100	100	96	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	101	81	55	54	45	34
180 mph	8-20	161	79	55	136	79	55	113	79	55	110	79	55	98	79	55	89	79	55	82	79	55	76	76	55	71	71	55	67	67	55	64	64	55	61	61	55	59	59	55	63	37	31	42	27	23
	21-27	133	100	89	133	100	89	123	100	89	110	99	89	99	95	89	90	90	87	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	105	91	61	58	49	37
	28-60	140	111	97	140	111	97	121	111	97	108	107	97	99	99	94	92	92	90	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	97	73	50	49	42	32

= min 72" span = min 64" span = min 48" span

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= Shaded cells indicate conditions in which UFO Mid Clamp connection capacity is exceeded. If such conditions are encountered contact techsupport@ironridge.com.

* = Note: additional installation requirement for CAMO module clamp. See Note 11 on Page 3 for details

Grouping of ASCE 7-16 Roof Zones (Gable)

Roof Slope	8° - 27°			28° - 60°		
Group	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
ASCE 7-16 Roof Zones	1 2e	2n 2r 3e	3r	1 2e 2r	2n 3r	3e

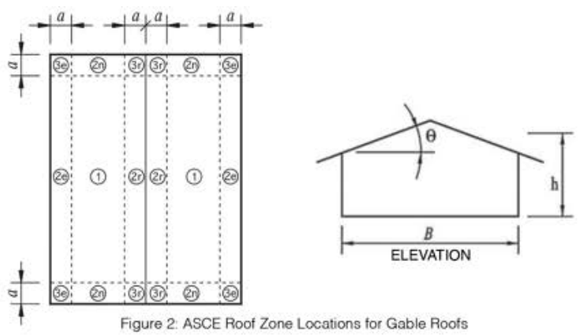

Figure 2: ASCE Roof Zone Locations for Gable Roofs

Notation

a = 10% of least horizontal dimension or 0.4h, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m). If an overhang exists, the edge distance shall be measured from the outside edge of the overhang. The horizontal dimensions used to compute the edge distance shall not include any overhang distances.

B = Horizontal dimension of building measured normal to wind direction, in ft (m).

h = Mean roof height, in ft (m), except that eave height shall be used for $\theta \leq 10°$.

θ = Angle of plane of roof from horizontal, in degrees.

Rail: XR1000

Gable Roof Flush Mount System Span Table (inches) - Portrait or Landscape Installation

Max Module Length: 75.5", Max Module SF: 23.5 SF

Exposure C

Wind Speed (mph)	Roof Slope (deg.)	Ground Snow: 0 psf			10 psf			20 psf			30 psf			40 psf			50 psf			60 psf*			70 psf*			80 psf*			90 psf*			100 psf*			110 psf*			120 psf*			Exposed Mod.			Edge Mod.		
		Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
90 mph	8-20	161	161	161	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	161	138	137	99	81
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	158	158	133	108	102
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	153	137	117	105
95 mph	8-20	161	161	161	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	149	120	116	89	69
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	158	156	125	102	96
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	149	127	110	99
100 mph	8-20	161	161	161	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	129	109	107	77	60
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	151	142	117	96	82
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	135	118	105	93
105 mph	8-20	161	161	161	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	115	101	100	67	53
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	134	123	110	84	71
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	149	123	111	99	82
110 mph	8-20	161	161	139	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	107	92	87	59	46
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	121	111	105	74	62
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	137	113	105	94	73
115 mph	8-20	161	154	123	136	136	123	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	101	76	74	52	41
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	156	111	104	100	66	55
	28-60	153	153	152	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	126	107	100	86	65
120 mph	8-20	161	136	112	136	136	112	113	113	112	110	110	109	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	92	63	68	47	37
	21-27	158	158	149	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	142	105	98	95	59	48
	28-60	153	153	140	143	143	140	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	117	101	95	77	58
130 mph	8-20	161	113	100	136	113	100	113	113	100	110	109	100	98	98	96	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	65	46	58	38	31
	21-27	158	131	120	143	131	120	123	123	118	110	110	109	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	122	93	71	78	48	39
	28-60	153	146	121	143	143	121	125	125	120	113	113	112	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	125	105	89	77	63	48
140 mph	8-20	161	101	78	136	101	78	113	101	78	110	101	78	98	97	78	89	89	78	82	82	78	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	87	49	36	49	32	27
	21-27	158	112	105	143	112	105	123	112	105	110	107	102	99	99	97	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	108	68	52	66	40	32
	28-60	153	127	108	143	127	108	125	124	108	111	111	105	102	102	100	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	108	95	67	62	52	39
150 mph	8-20	161	84	58	136	84	58	113	84	58	110	84	58	98	84	58	89	84	58	82	82	58	76	76	58	71	71	58	67	67	58	64	64	58	61	61	58	59	59	58	65	38	31	43	28	23
	21-27	137	102	95	137	102	95	123	102	95	110	100	95	99	96	92	90	90	88	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	99	53	39	58	34	26
	28-60	145	113	99	143	113	99	122	113	99	109	108	99	100	100	95	92	92	91	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	99	77	52	51	44	33
160 mph	8-20	161	64	45	136	64	45	107	64	45	105	64	45	98	64	45	89	64	45	82	64	45	76	64	45	71	64	45	67	64	45	64	64	45	61	61	45	59	59	45	55	33	27	37	25	20
	21-27	121	91	70	121	91	70	118	91	70	110	91	70	99	91	70	90	87	70	83	83	70	77	77	70	72	72	70	68	68	68	65	65	65	62	62	62	60	60	60	83	42	33	50	30	22
	28-60	124	104	87	124	104	87	119	104	87	106	103	87	98	98	87	91	91	87	86	86	84	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	84	61	42	43	37	28
170 mph	8-20	94	51	37	94	51	37	94	51	37	94	51	37	94	51	37	89	51	37	82	51	37	76	51	37	71	51	37	67	51	37	64	51	37	61	51	37	59	51	37	47	29	24	33	22	18
	21-27	109	71	54	109	71	54	109	71	54	105	71	54	99	71	54	90	71	54	83	71	54	77	71	54	72	71	54	68	68	54	65	65	54	62	62	54	60	60	54	69	35	28	44	26	19
	28-60	110	96	69	110	96	69	110	96	69	104	96	69	96	93	69	89	89	69	84	84	69	80	80	69	76	76	69	72	72	69	68	68	68	65	65	65	63	63	63	64	49	35	37	33	24
175 mph	8-20	75	45	35	75	45	35	75	45	35	75	45	35	75	45	35	75	45	35	75	45	35	75	45	35	71	45	35	67	45	35	64	45	35	61	45	35	59	45	35	43	28	23	31	20	17
	21-27	105	63	48	105	63	48	105	63	48	102	63	48	98	63	48	90	63	48	83	63	48	77	63	48	72	63	48	68	63	48	65	63	48	62	62	48	60	60	48	63	33	26	42	25	18
	28-60	105	93	62	105	93	62	105	93	62	103	93	62	95	91	62	89	88	62	84	84	62	79	79	62	76	76	62	72	72	62	68	68	62	65	65	62	63	63	62	56	44	32	35	31	23
180 mph	8-20	69	41	33	69	41	33	69	41	33	69	41	33	69	41	33	69	41	33	69	41	33	69	41	33	69	41	33	67	41	33	64	41	33	61	41	33	59	41	33	40	26	22	29	19	16
	21-27	101	57	43	101	57	43	101	57	43	100	57	43	96	57	43	90	57	43	83	57	43	77	57	43	72	57	43	68	57	43	65	57	43	62	57	43	60	57	43	59	31	24	39	23	16
	28-60	102	83	56	102	83	56	102	83	56	101	83	56	94	83	56	88	83	56	83	83	56	79	79	56	75	75	56	72	72	56	68	68	56	65	65	56	63	63	56	50	40	30	33	29	21

= min 72" span = min 64" span = min 48" span

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= Shaded cells indicate conditions in which UFO Mid Clamp connection capacity is exceeded. If such conditions are encountered contact techsupport@ironridge.com.

* = Note: additional installation requirement for CAMO module clamp. See Note 11 on Page 3 for details

Grouping of ASCE 7-16 Roof Zones (Gable)

Roof Slope	8° - 27°			28° - 60°		
Group	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
ASCE 7-16 Roof Zones	1 2e	2n 2r 3e	3r	1 2e 2r	2n 3r	3e

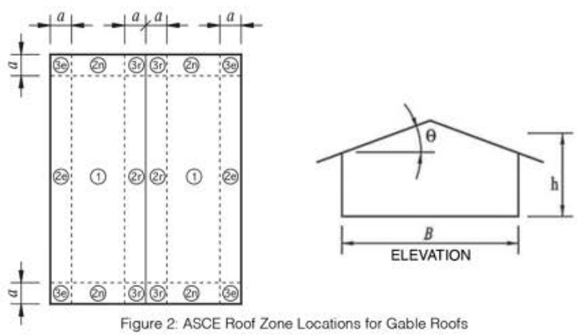

Figure 2: ASCE Roof Zone Locations for Gable Roofs

Notation

a = 10% of least horizontal dimension or 0.4h, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m). If an overhang exists, the edge distance shall be measured from the outside edge of the overhang. The horizontal dimensions used to compute the edge distance shall not include any overhang distances.

B = Horizontal dimension of building measured normal to wind direction, in ft (m).

h = Mean roof height, in ft (m), except that eave height shall be used for $\theta \leq 10°$.

θ = Angle of plane of roof from horizontal, in degrees.

Rail: XR1000

Gable Roof Flush Mount System Span Table (inches) - Portrait or Landscape Installation

Max Module Length: 75.5", Max Module SF: 23.5 SF

Exposure D

Wind Speed (mph)	Roof Slope (deg.)	Ground Snow: 0 psf			10 psf			20 psf			30 psf			40 psf			50 psf			60 psf*			70 psf*			80 psf*			90 psf*			100 psf*			110 psf*			120 psf*			Exposed Mod.			Edge Mod.		
		Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
90 mph	8-20	161	161	161	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	137	112	110	81	64
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	158	149	120	98	87
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	141	122	107	96
95 mph	8-20	161	161	161	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	119	104	102	70	55
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	139	129	112	88	74
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	127	113	101	86
100 mph	8-20	161	161	144	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	109	97	92	61	48
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	124	113	106	77	64
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	139	116	106	96	75
105 mph	8-20	161	157	125	136	136	125	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	102	78	75	53	42
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	112	105	101	67	56
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	128	108	101	87	66
110 mph	8-20	161	137	112	136	136	112	113	113	112	110	110	109	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	93	64	68	47	37
	21-27	158	158	150	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	143	106	98	96	59	49
	28-60	153	153	141	143	143	141	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	117	102	95	77	59
115 mph	8-20	161	123	105	136	123	105	113	113	105	110	110	104	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	77	54	62	42	34
	21-27	158	143	133	143	143	133	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	131	99	85	86	53	43
	28-60	153	153	130	143	143	130	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	137	110	96	87	69	52
120 mph	8-20	161	112	99	136	112	99	113	112	99	110	109	99	98	98	96	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	64	46	57	38	31
	21-27	158	130	119	143	130	119	123	123	117	110	110	109	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	121	91	70	77	47	38
	28-60	153	145	120	143	143	120	125	125	119	113	113	111	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	124	104	87	76	62	47
130 mph	8-20	161	100	74	136	100	74	113	100	74	110	100	74	98	96	74	89	89	74	82	82	74	76	76	74	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	79	47	35	48	32	26
	21-27	154	111	103	143	111	103	123	111	103	110	106	101	99	99	96	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	107	66	50	65	39	31
	28-60	153	125	107	143	125	107	125	122	107	111	111	104	101	101	99	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	107	94	64	61	51	38
140 mph	8-20	161	79	55	136	79	55	113	79	55	110	79	55	98	79	55	89	79	55	82	79	55	76	76	55	71	71	55	67	67	55	64	64	55	61	61	55	59	59	55	63	37	30	41	27	23
	21-27	133	100	88	133	100	88	123	100	88	110	99	88	99	95	88	90	90	87	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	97	50	37	56	33	25
	28-60	139	111	97	139	111	97	121	111	97	108	107	97	99	99	94	92	92	90	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	97	73	49	49	42	32
150 mph	8-20	161	59	42	103	59	42	103	59	42	103	59	42	98	59	42	89	59	42	82	59	42	76	59	42	71	59	42	67	59	42	64	59	42	61	59	42	59	59	42	52	32	26	36	24	20
	21-27	116	84	64	116	84	64	116	84	64	109	84	64	99	84	64	90	84	64	83	83	64	77	77	64	72	72	64	68	68	64	65	65	64	62	62	62	60	60	60	77	39	31	48	29	21
	28-60	118	102	81	118	102	81	118	102	81	106	101	81	97	97	81	91	91	81	85	85	81	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	77	57	39	41	36	27
160 mph	8-20	76	46	35	76	46	35	76	46	35	76	46	35	76	46	35	76	46	35	76	46	35	76	46	35	71	46	35	67	46	35	64	46	35	61	46	35	59	46	35	44	28	23	31	21	17
	21-27	106	65	49	106	65	49	106	65	49	103	65	49	98	65	49	90	65	49	83	65	49	77	65	49	72	65	49	68	65	49	65	65	49	62	62	49	60	60	49	64	34	26	42	25	18
	28-60	106	94	63	106	94	63	106	94	63	103	94	63	95	92	63	89	88	63	84	84	63	79	79	63	76	76	63	72	72	63	68	68	63	65	65	63	63	63	63	58	45	33	35	31	23
170 mph	8-20	64	37	31	64	37	31	64	37	31	64	37	31	64	37	31	64	37	31	64	37	31	64	37	31	64	37	31	64	37	31	64	37	31	61	37	31	59	37	31	37	25	20	28	18	15
	21-27	98	51	38	98	51	38	98	51	38	98	51	38	94	51	38	90	51	38	83	51	38	77	51	38	72	51	38	68	51	38	65	51	38	62	51	38	60	51	38	55	30	22	37	22	15
	28-60	98	75	51	98	75	51	98	75	51	98	75	51	93	75	51	87	75	51	82	75	51	78	75	51	74	74	51	71	71	51	68	68	51	65	65	51	63	63	51	45	37	28	31	28	20
175 mph	8-20	59	35	29	59	35	29	59	35	29	59	35	29	59	35	29	59	35	29	59	35	29	59	35	29	59	35	29	59	35	29	59	35	29	59	35	29	59	35	29	35	23	19	26	17	14
	21-27	93	46	35	93	46	35	93	46	35	93	46	35	91	46	35	88	46	35	83	46	35	77	46	35	72	46	35	68	46	35	65	46	35	62	46	35	60	46	35	51	28	21	35	21	14
	28-60	94	67	46	94	67	46	94	67	46	94	67	46	92	67	46	86	67	46	81	67	46	77	67	46	74	67	46	71	67	46	68	67	46	65	65	46	63	63	46	40	35	26	29	26	18
180 mph	8-20	55	33	28	55	33	28	55	33	28	55	33	28	55	33	28	55	33	28	55	33	28	55	33	28	55	33	28	55	33	28	55	33	28	55	33	28	55	33	28	33	22	18	25	16	13
	21-27	83	42	33	83	42	33	83	42	33	83	42	33	83	42	33	83	42	33	83	42	33	77	42	33	72	42	33	68	42	33	65	42	33	62	42	33	60	42	33	47	26	19	33	20	13
	28-60	84	61	42	84	61	42	84	61	42	84	61	42	84	61	42	84	61	42	81	61	42	77	61	42	73	61	42	70	61	42	68	61	42	65	61	42	63	61	42	37	33	25	27	25	17

= min 72" span = min 64" span = min 48" span

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= Shaded cells indicate conditions in which UFO Mid Clamp connection capacity is exceeded. If such conditions are encountered contact techsupport@ironridge.com.

* = Note: additional installation requirement for CAMO module clamp. See Note 11 on Page 3 for details

Grouping of ASCE 7-16 Roof Zones (Gable)

Roof Slope	8° - 27°			28° - 60°		
Group	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
ASCE 7-16 Roof Zones	1 2e	2n 2r 3e	3r	1 2e 2r	2n 3r	3e

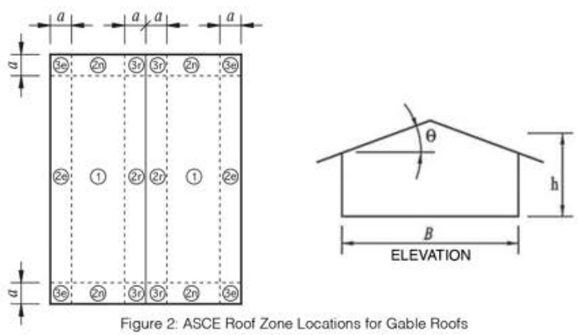

Figure 2: ASCE Roof Zone Locations for Gable Roofs

Notation

a = 10% of least horizontal dimension or $0.4h$, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m). If an overhang exists, the edge distance shall be measured from the outside edge of the overhang. The horizontal dimensions used to compute the edge distance shall not include any overhang distances.

B = Horizontal dimension of building measured normal to wind direction, in ft (m).

h = Mean roof height, in ft (m), except that eave height shall be used for $\theta \leq 10°$.

θ = Angle of plane of roof from horizontal, in degrees.

Rail: XR1000

Gable Roof Flush Mount System Span Table (inches) - Portrait or Landscape Installation
Max Module Length: 90", Max Module SF: 28 SF
Exposure B

Wind Speed (mph)	Roof Slope (deg.)	Ground Snow: 0 psf			10 psf			20 psf			30 psf			40 psf*			50 psf*			60 psf*			70 psf*			80 psf*			90 psf*			100 psf*			110 psf*			120 psf*			Exposed Mod.			Edge Mod.		
		Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
90 mph	8-20	147	147	147	124	124	124	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	147	147	147	147	107	97
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	145	145	145	140	116	111
	28-60	140	140	140	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	140	140	140	140	124	111
95 mph	8-20	147	147	147	124	124	124	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	147	147	134	133	100	84
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	145	145	145	131	109	104
	28-60	140	140	140	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	140	140	140	134	117	105
100 mph	8-20	147	147	147	124	124	124	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	147	145	124	123	93	73
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	145	145	145	124	103	98
	28-60	140	140	140	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	140	140	140	126	111	99
105 mph	8-20	147	147	147	124	124	124	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	147	130	116	114	81	63
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	145	145	139	118	97	88
	28-60	140	140	140	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	140	140	133	119	105	94
110 mph	8-20	147	147	147	124	124	124	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	147	122	108	106	71	55
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	145	133	127	112	89	76
	28-60	140	140	140	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	140	140	125	113	100	86
115 mph	8-20	147	147	138	124	124	124	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	147	114	102	100	62	49
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	145	125	119	106	79	67
	28-60	140	140	140	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	140	134	118	108	96	76
120 mph	8-20	147	147	128	124	124	124	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	147	108	95	89	55	44
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	145	118	112	102	70	59
	28-60	140	140	140	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	140	127	112	103	90	68
130 mph	8-20	147	128	114	124	124	114	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	147	96	65	63	45	35
	21-27	145	144	134	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	133	106	100	91	56	47
	28-60	140	140	131	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	136	115	102	94	73	55
140 mph	8-20	147	115	102	124	115	102	103	103	102	101	101	99	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	147	69	48	54	37	29
	21-27	145	127	120	131	127	120	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	120	96	78	75	46	38
	28-60	140	136	119	131	131	119	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	122	105	92	76	60	46
150 mph	8-20	147	105	86	124	105	86	103	103	86	101	101	86	90	90	86	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	103	52	37	47	31	25
	21-27	145	115	109	131	115	109	113	112	108	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	110	73	56	63	39	31
	28-60	140	124	109	131	124	109	115	115	109	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	112	97	70	62	51	38
160 mph	8-20	147	95	64	124	95	64	103	95	64	101	95	64	90	90	64	81	81	64	75	75	64	69	69	64	65	65	64	62	62	62	59	59	59	56	56	56	54	54	54	70	40	30	41	27	22
	21-27	132	105	99	131	105	99	113	105	99	101	99	95	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	101	56	43	55	33	26
	28-60	134	115	101	131	115	101	114	113	101	102	102	98	93	93	93	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	102	83	55	52	43	33
170 mph	8-20	147	72	50	119	72	50	103	72	50	101	72	50	90	72	50	81	72	50	75	72	50	69	69	50	65	65	50	62	62	50	59	59	50	56	56	50	54	54	50	55	32	26	36	24	20
	21-27	122	97	81	122	97	81	113	97	81	101	94	81	91	90	81	82	82	81	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	91	45	33	49	29	22
	28-60	124	106	94	124	106	94	112	106	94	100	100	93	92	92	89	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	94	65	44	44	37	28
175 mph	8-20	112	63	44	112	63	44	103	63	44	101	63	44	90	63	44	81	63	44	75	63	44	69	63	44	65	63	44	62	62	44	59	59	44	56	56	44	54	54	44	51	30	25	34	22	19
	21-27	117	90	70	117	90	70	113	90	70	101	90	70	91	88	70	82	82	70	76	76	70	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	81	40	30	46	27	21
	28-60	119	103	85	119	103	85	111	103	85	100	99	85	91	91	85	85	85	83	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	86	59	40	40	34	26
180 mph	8-20	107	56	40	107	56	40	103	56	40	101	56	40	90	56	40	81	56	40	75	56	40	69	56	40	65	56	40	62	56	40	59	56	40	56	56	40	54	54	40	47	28	24	32	21	17
	21-27	113	80	62	113	80	62	110	80	62	101	80	62	91	80	62	82	80	62	76	76	62	70	70	62	66	66	62	63	63	62	60	60	60	57	57	57	55	55	55	73	36	28	43	25	19
	28-60	115	99	76	115	99	76	110	99	76	99	97	76	90	90	76	84	84	76	79	79	76	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	74	53	36	37	32	24

= min 72" span = min 64" span = min 48" span

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= Shaded cells indicate conditions in which UFO Mid Clamp connection capacity is exceeded. If such conditions are encountered contact techsupport@ironridge.com.

* = Note: additional installation requirement for CAMO module clamp. See Note 11 on Page 3 for details

Grouping of ASCE 7-16 Roof Zones (Gable)

Roof Slope	8° - 27°			28° - 60°		
Group	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
ASCE 7-16 Roof Zones	1 2e	2n 2r 3e	3r	1 2e 2r	2n 3r	3e

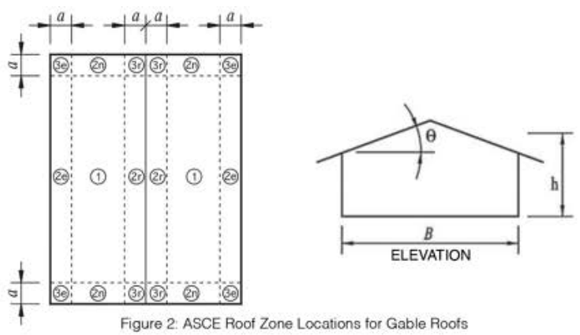

Figure 2: ASCE Roof Zone Locations for Gable Roofs

Notation

a = 10% of least horizontal dimension or $0.4h$, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m). If an overhang exists, the edge distance shall be measured from the outside edge of the overhang. The horizontal dimensions used to compute the edge distance shall not include any overhang distances.

B = Horizontal dimension of building measured normal to wind direction, in ft (m).

h = Mean roof height, in ft (m), except that eave height shall be used for $\theta \leq 10°$.

θ = Angle of plane of roof from horizontal, in degrees.

Rail: XR1000

Gable Roof Flush Mount System Span Table (inches) - Portrait or Landscape Installation

Max Module Length: 90", Max Module SF: 28 SF

Exposure C

Wind Speed (mph)	Roof Slope (deg.)	Ground Snow: 0 psf			10 psf			20 psf			30 psf			40 psf*			50 psf*			60 psf*			70 psf*			80 psf*			90 psf*			100 psf*			110 psf*			120 psf*			Exposed Mod.			Edge Mod.		
		Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
90 mph	8-20	147	147	147	124	124	124	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	147	128	113	112	77	60
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	145	143	134	116	96	84
	28-60	140	140	140	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	140	140	130	117	104	93
95 mph	8-20	147	147	147	124	124	124	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	147	118	105	103	66	52
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	145	129	123	109	83	71
	28-60	140	140	140	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	140	139	122	110	98	81
100 mph	8-20	147	147	131	124	124	124	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	147	110	97	95	58	45
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	145	121	114	103	72	61
	28-60	140	140	140	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	140	130	114	104	93	71
105 mph	8-20	147	139	122	124	124	122	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	147	102	80	75	50	40
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	144	113	107	98	63	53
	28-60	140	140	140	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	140	122	107	99	82	62
110 mph	8-20	147	128	114	124	124	114	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	147	96	65	63	44	35
	21-27	145	144	134	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	132	106	100	90	56	46
	28-60	140	140	130	131	131	130	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	135	115	101	93	73	55
115 mph	8-20	147	120	107	124	120	107	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	147	78	54	57	39	31
	21-27	145	131	125	131	131	125	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	125	100	90	81	50	41
	28-60	140	140	123	131	131	123	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	127	109	96	83	65	49
120 mph	8-20	147	113	100	124	113	100	103	103	100	101	101	98	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	114	65	45	52	35	29
	21-27	145	124	118	131	124	118	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	118	93	72	72	45	36
	28-60	140	133	117	131	131	117	115	115	114	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	120	103	87	73	58	44
130 mph	8-20	147	101	76	124	101	76	103	101	76	101	98	76	90	90	76	81	81	76	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	98	47	33	44	29	24
	21-27	141	111	105	131	111	105	113	109	105	101	101	99	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	106	66	50	60	36	29
	28-60	140	120	106	131	120	106	115	115	106	103	103	101	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	108	94	64	58	47	36
140 mph	8-20	147	80	55	124	80	55	103	80	55	101	80	55	90	80	55	81	80	55	75	75	55	69	69	55	65	65	55	62	62	55	59	59	55	56	56	55	54	54	54	59	35	28	38	25	21
	21-27	126	100	93	126	100	93	113	100	93	101	96	92	91	91	88	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	96	49	37	51	30	24
	28-60	128	110	97	128	110	97	113	109	97	101	101	95	93	93	90	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	97	72	48	47	39	30
150 mph	8-20	109	59	42	109	59	42	103	59	42	101	59	42	90	59	42	81	59	42	75	59	42	69	59	42	65	59	42	62	59	42	59	59	42	56	56	42	54	54	42	49	29	24	33	22	18
	21-27	115	85	66	115	85	66	112	85	66	101	85	66	91	85	66	82	82	66	76	76	66	70	70	66	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	76	38	29	44	26	20
	28-60	117	101	80	117	101	80	110	101	80	99	98	80	91	91	80	84	84	80	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	80	56	38	39	33	25
160 mph	8-20	97	46	33	97	46	33	97	46	33	96	46	33	90	46	33	81	46	33	75	46	33	69	46	33	65	46	33	62	46	33	59	46	33	56	46	33	54	46	33	41	26	21	29	19	16
	21-27	106	65	49	106	65	49	106	65	49	99	65	49	91	65	49	82	65	49	76	65	49	70	65	49	66	65	49	63	63	49	60	60	49	57	57	49	55	55	49	61	31	25	39	23	17
	28-60	107	93	62	107	93	62	107	93	62	97	92	62	89	88	62	83	83	62	78	78	62	74	74	62	69	69	62	66	66	62	62	62	62	60	60	60	57	57	57	59	44	31	32	29	21
170 mph	8-20	61	37	28	61	37	28	61	37	28	61	37	28	61	37	28	61	37	28	61	37	28	61	37	28	61	37	28	61	37	28	59	37	28	56	37	28	54	37	28	35	23	19	25	17	14
	21-27	98	51	38	98	51	38	98	51	38	95	51	38	90	51	38	82	51	38	76	51	38	70	51	38	66	51	38	63	51	38	60	51	38	57	51	38	55	51	38	52	27	21	34	20	14
	28-60	99	74	50	99	74	50	99	74	50	95	74	50	87	74	50	81	74	50	77	74	50	73	73	50	69	69	50	66	66	50	62	62	50	60	60	50	57	57	50	45	36	26	28	25	18
175 mph	8-20	56	33	27	56	33	27	56	33	27	56	33	27	56	33	27	56	33	27	56	33	27	56	33	27	56	33	27	56	33	27	56	33	27	56	33	27	54	33	27	33	21	18	24	16	13
	21-27	93	46	34	93	46	34	93	46	34	92	46	34	88	46	34	82	46	34	76	46	34	70	46	34	66	46	34	63	46	34	60	46	34	57	46	34	55	46	34	48	26	19	32	19	13
	28-60	95	67	45	95	67	45	95	67	45	93	67	45	86	67	45	81	67	45	76	67	45	72	67	45	69	67	45	66	66	45	62	62	45	60	60	45	57	57	45	40	33	25	27	24	17
180 mph	8-20	52	30	25	52	30	25	52	30	25	52	30	25	52	30	25	52	30	25	52	30	25	52	30	25	52	30	25	52	30	25	52	30	25	52	30	25	52	30	25	30	20	17	23	15	12
	21-27	83	41	31	83	41	31	83	41	31	83	41	31	83	41	31	82	41	31	76	41	31	70	41	31	66	41	31	63	41	31	60	41	31	57	41	31	55	41	31	44	24	18	30	18	12
	28-60	88	60	41	88	60	41	88	60	41	88	60	41	85	60	41	80	60	41	75	60	41	72	60	41	68	60	41	65	60	41	62	60	41	60	60	41	57	57	41	36	30	23	25	23	16

= min 72" span = min 64" span = min 48" span

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= Shaded cells indicate conditions in which UFO Mid Clamp connection capacity is exceeded. If such conditions are encountered contact techsupport@ironridge.com.

* = Note: additional installation requirement for CAMO module clamp. See Note 11 on Page 3 for details

Grouping of ASCE 7-16 Roof Zones (Gable)

Roof Slope	8° - 27°			28° - 60°		
Group	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
ASCE 7-16 Roof Zones	1 2e	2n 2r 3e	3r	1 2e 2r	2n 3r	3e

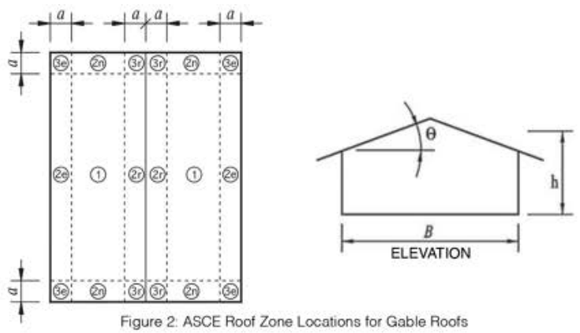

Figure 2: ASCE Roof Zone Locations for Gable Roofs

Notation

a = 10% of least horizontal dimension or 0.4h, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m). If an overhang exists, the edge distance shall be measured from the outside edge of the overhang. The horizontal dimensions used to compute the edge distance shall not include any overhang distances.

B = Horizontal dimension of building measured normal to wind direction, in ft (m).

h = Mean roof height, in ft (m), except that eave height shall be used for $\theta \leq 10°$.

θ = Angle of plane of roof from horizontal, in degrees.

Rail: XR1000

Gable Roof Flush Mount System Span Table (inches) - Portrait or Landscape Installation
Max Module Length: 90", Max Module SF: 28 SF
Exposure D

Wind Speed (mph)	Roof Slope (deg.)	Ground Snow: 0 psf			10 psf			20 psf			30 psf			40 psf*			50 psf*			60 psf*			70 psf*			80 psf*			90 psf*			100 psf*			110 psf*			120 psf*			Exposed Mod.			Edge Mod.		
		Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
90 mph	8-20	147	147	135	124	124	124	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	147	113	100	99	61	48
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	145	124	118	106	77	65
	28-60	140	140	140	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	140	133	117	107	95	75
95 mph	8-20	147	146	125	124	124	124	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	147	105	86	81	53	41
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	145	115	109	99	66	55
	28-60	140	140	140	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	140	124	110	100	85	65
100 mph	8-20	147	130	116	124	124	116	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	147	97	68	65	46	36
	21-27	145	145	138	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	134	107	101	93	58	48
	28-60	140	140	132	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	139	117	103	95	75	57
105 mph	8-20	147	121	108	124	121	108	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	147	80	55	58	40	32
	21-27	145	133	127	131	131	127	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	126	101	94	82	51	42
	28-60	140	140	125	131	131	125	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	128	110	97	85	66	50
110 mph	8-20	147	113	101	124	113	101	103	103	101	101	101	98	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	114	66	46	53	36	29
	21-27	145	124	118	131	124	118	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	118	94	73	73	45	37
	28-60	140	133	118	131	131	118	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	121	104	89	74	58	44
115 mph	8-20	147	106	91	124	106	91	103	103	91	101	101	91	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	105	55	39	48	32	26
	21-27	145	117	111	131	117	111	113	113	109	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	112	77	59	65	40	32
	28-60	140	126	111	131	126	111	115	115	110	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	114	98	74	65	52	40
120 mph	8-20	147	100	75	124	100	75	103	100	75	101	98	75	90	90	75	81	81	75	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	97	46	33	44	29	24
	21-27	140	110	104	131	110	104	113	109	104	101	101	98	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	106	65	49	59	36	29
	28-60	140	120	105	131	120	105	115	115	105	103	103	100	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	107	93	63	57	47	36
130 mph	8-20	147	77	53	123	77	53	103	77	53	101	77	53	90	77	53	81	77	53	75	75	53	69	69	53	65	65	53	62	62	53	59	59	53	56	56	53	54	54	53	58	34	27	37	25	20
	21-27	124	99	88	124	99	88	113	99	88	101	95	88	91	91	87	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	95	47	36	50	30	23
	28-60	126	109	95	126	109	95	113	109	95	101	101	94	92	92	90	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	96	69	47	45	38	29
140 mph	8-20	106	56	39	106	56	39	103	56	39	101	56	39	90	56	39	81	56	39	75	56	39	69	56	39	65	56	39	62	56	39	59	56	39	56	56	39	54	54	39	47	28	23	32	21	17
	21-27	113	79	61	113	79	61	110	79	61	101	79	61	91	79	61	82	79	61	76	76	61	70	70	61	66	66	61	63	63	61	60	60	60	57	57	57	55	55	55	72	36	28	43	25	19
	28-60	114	99	76	114	99	76	110	99	76	99	96	76	90	90	76	84	84	76	79	79	76	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	74	53	36	37	32	24
150 mph	8-20	94	43	31	94	43	31	94	43	31	94	43	31	89	43	31	81	43	31	75	43	31	69	43	31	65	43	31	62	43	31	59	43	31	56	43	31	54	43	31	39	25	20	28	18	15
	21-27	103	60	45	103	60	45	103	60	45	98	60	45	91	60	45	82	60	45	76	60	45	70	60	45	66	60	45	63	60	45	60	60	45	57	57	45	55	55	45	58	30	23	37	22	16
	28-60	104	88	58	104	88	58	104	88	58	96	88	58	88	87	58	82	82	58	78	78	58	73	73	58	69	69	58	66	66	58	62	62	58	60	60	58	57	57	57	54	41	29	31	28	20
160 mph	8-20	57	34	27	57	34	27	57	34	27	57	34	27	57	34	27	57	34	27	57	34	27	57	34	27	57	34	27	57	34	27	57	34	27	56	34	27	54	34	27	33	21	18	24	16	13
	21-27	95	47	35	95	47	35	95	47	35	93	47	35	88	47	35	82	47	35	76	47	35	70	47	35	66	47	35	63	47	35	60	47	35	57	47	35	55	47	35	48	26	20	33	19	13
	28-60	96	68	46	96	68	46	96	68	46	94	68	46	87	68	46	81	68	46	76	68	46	72	68	46	69	68	46	66	66	46	62	62	46	60	60	46	57	57	46	41	33	25	27	24	17
170 mph	8-20	48	29	24	48	29	24	48	29	24	48	29	24	48	29	24	48	29	24	48	29	24	48	29	24	48	29	24	48	29	24	48	29	24	48	29	24	48	29	24	29	19	16	21	14	12
	21-27	75	37	29	75	37	29	75	37	29	75	37	29	75	37	29	75	37	29	75	37	29	70	37	29	66	37	29	63	37	29	60	37	29	57	37	29	55	37	29	41	23	17	29	17	12
	28-60	77	54	37	77	54	37	77	54	37	77	54	37	77	54	37	77	54	37	75	54	37	71	54	37	68	54	37	65	54	37	62	54	37	60	54	37	57	54	37	32	29	21	24	21	15
175 mph	8-20	45	27	22	45	27	22	45	27	22	45	27	22	45	27	22	45	27	22	45	27	22	45	27	22	45	27	22	45	27	22	45	27	22	45	27	22	45	27	22	27	18	15	20	13	
	21-27	67	34	27	67	34	27	67	34	27	67	34	27	67	34	27	67	34	27	67	34	27	67	34	27	66	34	27	63	34	27	60	34	27	57	34	27	55	34	27	38	22	15	27	16	
	28-60	67	49	34	67	49	34	67	49	34	67	49	34	67	49	34	67	49	34	67	49	34	67	49	34	67	49	34	64	49	34	62	49	34	60	49	34	57	49	34	30	27	20	22	20	14
180 mph	8-20	41	26	21	41	26	21	41	26	21	41	26	21	41	26	21	41	26	21	41	26	21	41	26	21	41	26	21	41	26	21	41	26	21	41	26	21	41	26	21	26	17	14	19	12	
	21-27	61	31	25	61	31	25	61	31	25	61	31	25	61	31	25	61	31	25	61	31	25	61	31	25	61	31	25	61	31	25	60	31	25	57	31	25	55	31	25	35	20	14	26	15	
	28-60	59	44	31	59	44	31	59	44	31	59	44	31	59	44	31	59	44	31	59	44	31	59	44	31	59	44	31	59	44	31	59	44	31	59	44	31	57	44	31	28	26	19	21	19	13

= min 72" span = min 64" span = min 48" span

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= Shaded cells indicate conditions in which UFO Mid Clamp connection capacity is exceeded. If such conditions are encountered contact techsupport@ironridge.com.

= Contact techsupport@ironridge.com

* = Note: additional installation requirement for CAMO module clamp. See Note 11 on Page 3 for details.

Grouping of ASCE 7-16 Roof Zones (Gable)

Roof Slope	8° - 27°			28° - 60°		
Group	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
ASCE 7-16 Roof Zones	1 2e	2n 2r 3e	3r	1 2e 2r	2n 3r	3e

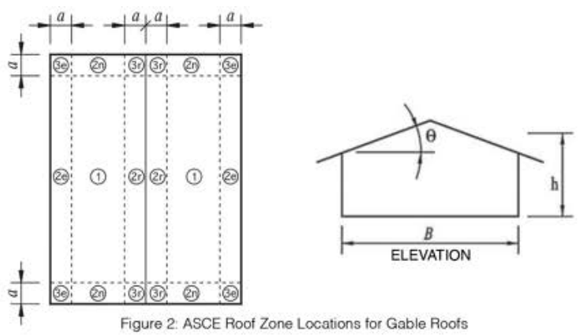

Figure 2: ASCE Roof Zone Locations for Gable Roofs

Notation

a = 10% of least horizontal dimension or $0.4h$, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m). If an overhang exists, the edge distance shall be measured from the outside edge of the overhang. The horizontal dimensions used to compute the edge distance shall not include any overhang distances.

B = Horizontal dimension of building measured normal to wind direction, in ft (m).

h = Mean roof height, in ft (m), except that eave height shall be used for $\theta \leq 10°$.

θ = Angle of plane of roof from horizontal, in degrees.

Rail: XR1000

Gable Roof Flush Mount System Span Table (inches) - Portrait or Landscape Installation
Max Module Length: 98.5", Max Module SF: 30.5 SF
Exposure B

Wind Speed (mph)	Roof Slope (deg.)	Ground Snow: 0 psf			10 psf			20 psf			30 psf			40 psf*			50 psf*			60 psf*			70 psf*			80 psf*			90 psf*			100 psf*			110 psf*			120 psf*			Exposed Mod.			Edge Mod.		
		Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
90 mph	8-20	141	141	141	119	119	119	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	141	141	135	136	99	82
	21-27	138	138	138	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	138	138	138	129	107	103
	28-60	134	134	134	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	134	134	134	132	115	103
95 mph	8-20	141	141	141	119	119	119	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	141	141	125	124	90	70
	21-27	138	138	138	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	138	138	138	122	101	96
	28-60	134	134	134	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	134	134	134	124	109	97
100 mph	8-20	141	141	141	119	119	119	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	141	130	116	114	77	60
	21-27	138	138	138	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	138	138	137	115	95	85
	28-60	134	134	134	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	134	134	131	117	103	92
105 mph	8-20	141	141	141	119	119	119	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	141	121	108	106	67	53
	21-27	138	138	138	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	138	132	127	109	84	73
	28-60	134	134	134	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	134	134	123	111	98	81
110 mph	8-20	141	141	136	119	119	119	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	141	113	101	99	59	46
	21-27	138	138	138	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	138	124	119	104	74	63
	28-60	134	134	134	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	134	132	117	105	93	72
115 mph	8-20	141	141	127	119	119	119	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	141	106	91	86	52	41
	21-27	138	138	138	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	138	117	111	99	66	55
	28-60	134	134	134	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	134	125	110	100	84	64
120 mph	8-20	141	134	119	119	119	119	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	141	100	74	70	46	36
	21-27	138	138	138	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	137	110	104	94	58	49
	28-60	134	134	134	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	134	119	105	95	75	57
130 mph	8-20	141	119	106	119	119	106	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	141	76	52	54	37	29
	21-27	138	130	125	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	123	99	89	76	47	39
	28-60	134	134	122	125	125	122	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	126	108	94	79	61	46
140 mph	8-20	141	107	94	119	107	94	99	99	94	96	96	93	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	109	55	39	46	31	25
	21-27	138	118	112	125	118	112	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	112	78	61	63	39	32
	28-60	134	126	111	125	125	111	110	110	109	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	114	98	74	63	51	38
150 mph	8-20	141	97	67	119	97	67	99	97	67	96	95	67	86	86	67	78	78	67	71	71	67	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	96	42	30	40	26	22
	21-27	133	107	101	125	107	101	108	105	101	96	96	95	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	102	58	44	54	32	26
	28-60	134	116	102	125	116	102	110	110	102	99	99	97	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	104	86	57	52	43	32
160 mph	8-20	126	74	51	119	74	51	99	74	51	96	74	51	86	74	51	78	74	51	71	71	51	66	66	51	62	62	51	59	59	51	56	56	51	54	54	51	51	51	51	55	33	26	35	23	19
	21-27	122	98	87	122	98	87	108	98	87	96	93	87	87	87	85	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	93	45	34	47	28	22
	28-60	125	107	94	125	107	94	109	106	94	97	97	92	89	89	87	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	95	66	45	43	36	27
170 mph	8-20	111	57	40	111	57	40	99	57	40	96	57	40	86	57	40	78	57	40	71	57	40	66	57	40	62	57	40	59	57	40	56	56	40	54	54	40	51	51	40	46	27	23	31	20	17
	21-27	113	81	63	113	81	63	108	81	63	96	81	63	87	81	63	78	78	63	72	72	63	67	67	63	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	73	36	27	41	24	19
	28-60	116	99	77	116	99	77	106	99	77	95	95	77	87	87	77	81	81	77	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	77	53	36	36	31	24
175 mph	8-20	105	51	36	105	51	36	99	51	36	96	51	36	86	51	36	78	51	36	71	51	36	66	51	36	62	51	36	59	51	36	56	51	36	54	51	36	51	51	36	43	26	21	29	19	16
	21-27	109	72	55	109	72	55	106	72	55	96	72	55	87	72	55	78	72	55	72	72	55	67	67	55	63	63	55	60	60	55	57	57	55	54	54	54	52	52	52	65	33	25	39	23	17
	28-60	111	96	68	111	96	68	105	96	68	94	93	68	87	87	68	81	81	68	75	75	68	70	70	68	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	67	48	33	33	29	22
180 mph	8-20	99	45	32	99	45	32	99	45	32	95	45	32	86	45	32	78	45	32	71	45	32	66	45	32	62	45	32	59	45	32	56	45	32	54	45	32	51	45	32	40	24	20	27	18	15
	21-27	105	64	49	105	64	49	104	64	49	96	64	49	87	64	49	78	64	49	72	64	49	67	64	49	63	63	49	60	60	49	57	57	49	54	54	49	52	52	49	59	30	24	37	22	16
	28-60	107	92	61	107	92	61	104	92	61	94	91	61	86	86	61	80	80	61	75	75	61	70	70	61	66	66	61	63	63	61	60	60	60	57	57	57	55	55	55	58	43	30	31	27	20

= min 72" span = min 64" span = min 48" span

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= Shaded cells indicate conditions in which UFO Mid Clamp connection capacity is exceeded. If such conditions are encountered contact techsupport@ironridge.com.

* = Note: additional installation requirement for CAMO module clamp. See Note 11 on Page 3 for details

Grouping of ASCE 7-16 Roof Zones (Gable)

Roof Slope	8° - 27°			28° - 60°		
Group	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
ASCE 7-16 Roof Zones	1 2e	2n 2r 3e	3r	1 2e 2r	2n 3r	3e

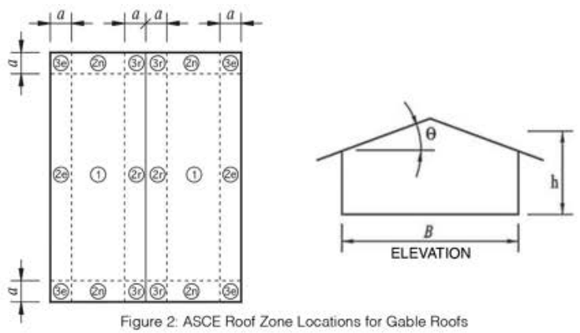

Figure 2: ASCE Roof Zone Locations for Gable Roofs

Notation

a = 10% of least horizontal dimension or $0.4h$, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m). If an overhang exists, the edge distance shall be measured from the outside edge of the overhang. The horizontal dimensions used to compute the edge distance shall not include any overhang distances.

B = Horizontal dimension of building measured normal to wind direction, in ft (m).

h = Mean roof height, in ft (m), except that eave height shall be used for $\theta \leq 10°$.

θ = Angle of plane of roof from horizontal, in degrees.

Rail: XR1000

Gable Roof Flush Mount System Span Table (inches) - Portrait or Landscape Installation
Max Module Length: 98.5", Max Module SF: 30.5 SF
Exposure C

Wind Speed (mph)	Roof Slope (deg.)	Ground Snow: 0 psf			10 psf			20 psf			30 psf			40 psf*			50 psf*			60 psf*			70 psf*			80 psf*			90 psf*			100 psf*			110 psf*			120 psf*			Exposed Mod.			Edge Mod.		
		Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
90 mph	8-20	141	141	141	119	119	119	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	141	119	105	104	64	50
	21-27	138	138	138	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	138	130	124	107	81	69
	28-60	134	134	134	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	134	134	121	109	96	78
95 mph	8-20	141	141	131	119	119	119	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	141	110	97	96	55	43
	21-27	138	138	138	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	138	120	115	101	70	59
	28-60	134	134	134	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	134	128	113	103	89	68
100 mph	8-20	141	137	122	119	119	119	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	141	102	79	74	48	38
	21-27	138	138	138	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	138	112	106	95	61	51
	28-60	134	134	134	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	134	121	106	97	78	59
105 mph	8-20	141	127	113	119	119	113	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	141	94	63	60	42	33
	21-27	138	138	134	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	131	105	99	86	53	44
	28-60	134	134	129	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	134	114	100	91	69	52
110 mph	8-20	141	119	106	119	119	106	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	127	75	51	54	37	29
	21-27	138	130	125	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	123	98	88	76	47	39
	28-60	134	134	122	125	125	122	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	126	107	94	79	61	46
115 mph	8-20	141	112	99	119	112	99	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	115	62	43	49	33	27
	21-27	138	122	117	125	122	117	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	116	89	69	68	42	34
	28-60	134	130	115	125	125	115	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	119	101	83	69	54	41
120 mph	8-20	141	105	87	119	105	87	99	99	87	96	96	87	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	106	52	36	45	30	24
	21-27	138	115	110	125	115	110	108	108	106	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	110	73	56	61	37	30
	28-60	134	124	109	125	124	109	110	110	107	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	112	96	70	61	49	37
130 mph	8-20	141	89	60	119	89	60	99	89	60	96	89	60	86	86	60	78	78	60	71	71	60	66	66	60	62	62	60	59	59	59	56	56	56	54	54	54	51	51	51	91	38	28	38	25	21
	21-27	129	103	98	125	103	98	108	102	98	96	96	93	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	99	53	40	51	30	24
	28-60	132	112	99	125	112	99	110	109	99	98	98	95	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	100	77	51	48	40	30
140 mph	8-20	117	63	44	117	63	44	99	63	44	96	63	44	86	63	44	78	63	44	71	63	44	66	63	44	62	62	44	59	59	44	56	56	44	54	54	44	51	51	44	50	29	24	32	21	18
	21-27	117	91	72	117	91	72	108	91	72	96	90	72	87	86	72	78	78	72	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	80	40	30	44	26	20
	28-60	120	102	85	120	102	85	107	102	85	96	96	85	88	88	85	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	88	58	39	39	33	25
150 mph	8-20	102	48	34	102	48	34	99	48	34	96	48	34	86	48	34	78	48	34	71	48	34	66	48	34	62	48	34	59	48	34	56	48	34	54	48	34	51	48	34	41	25	21	28	18	15
	21-27	107	67	51	107	67	51	105	67	51	96	67	51	87	67	51	78	67	51	72	67	51	67	67	51	63	63	51	60	60	51	57	57	51	54	54	51	52	52	51	62	31	24	38	22	17
	28-60	109	94	65	109	94	65	104	94	65	94	92	65	86	86	65	80	80	65	75	75	65	70	70	65	66	66	65	63	63	63	60	60	60	57	57	57	55	55	55	62	45	31	32	28	21
160 mph	8-20	91	37	27	91	37	27	91	37	27	90	37	27	85	37	27	78	37	27	71	37	27	66	37	27	62	37	27	59	37	27	56	37	27	54	37	27	51	37	27	35	22	18	25	16	13
	21-27	98	52	39	98	52	39	98	52	39	93	52	39	87	52	39	78	52	39	72	52	39	67	52	39	63	52	39	60	52	39	57	52	39	54	52	39	52	52	39	51	26	20	33	20	14
	28-60	100	76	50	100	76	50	100	76	50	92	76	50	85	76	50	79	76	50	74	74	50	70	70	50	66	66	50	63	63	50	60	60	50	57	57	50	55	55	50	46	36	26	27	25	18
170 mph	8-20	51	30	24	51	30	24	51	30	24	51	30	24	51	30	24	51	30	24	51	30	24	51	30	24	51	30	24	51	30	24	51	30	24	51	30	24	51	30	24	29	19	16	22	14	12
	21-27	83	41	31	83	41	31	83	41	31	83	41	31	83	41	31	78	41	31	72	41	31	67	41	31	63	41	31	60	41	31	57	41	31	54	41	31	52	41	31	43	23	17	29	17	12
	28-60	92	60	41	92	60	41	92	60	41	90	60	41	83	60	41	77	60	41	73	60	41	69	60	41	66	60	41	63	60	41	60	60	41	57	57	41	55	55	41	36	29	22	24	22	16
175 mph	8-20	47	28	23	47	28	23	47	28	23	47	28	23	47	28	23	47	28	23	47	28	23	47	28	23	47	28	23	47	28	23	47	28	23	47	28	23	47	28	23	28	18	15	20	13	
	21-27	74	37	28	74	37	28	74	37	28	74	37	28	74	37	28	74	37	28	72	37	28	67	37	28	63	37	28	60	37	28	57	37	28	54	37	28	52	37	28	40	22	16	28	16	
	28-60	79	54	37	79	54	37	79	54	37	79	54	37	79	54	37	77	54	37	72	54	37	69	54	37	65	54	37	63	54	37	60	54	37	57	54	37	55	54	37	32	27	21	23	20	14
180 mph	8-20	43	26	22	43	26	22	43	26	22	43	26	22	43	26	22	43	26	22	43	26	22	43	26	22	43	26	22	43	26	22	43	26	22	43	26	22	43	26	22	26	17	14	19	13	
	21-27	67	33	26	67	33	26	67	33	26	67	33	26	67	33	26	67	33	26	67	33	26	67	33	26	63	33	26	60	33	26	57	33	26	54	33	26	52	33	26	37	21	15	26	15	
	28-60	68	49	33	68	49	33	68	49	33	68	49	33	68	49	33	68	49	33	68	49	33	68	49	33	65	49	33	62	49	33	60	49	33	57	49	33	55	49	33	29	26	19	21	19	13

= min 72" span = min 64" span = min 48" span

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Group	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
ASCE 7-16 Roof Zones	1 2e	2n 2r 3e	3r	1 2e 2r	2n 3r	3e

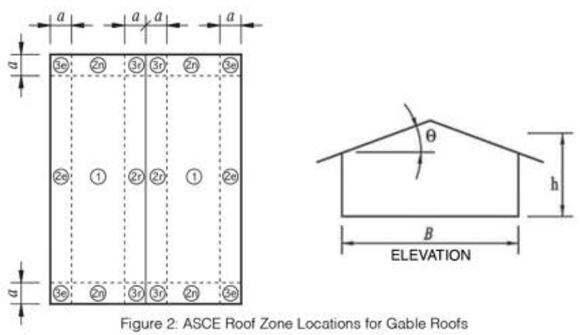

Figure 2: ASCE Roof Zone Locations for Gable Roofs

Notation

a = 10% of least horizontal dimension or $0.4h$, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m). If an overhang exists, the edge distance shall be measured from the outside edge of the overhang. The horizontal dimensions used to compute the edge distance shall not include any overhang distances.

B = Horizontal dimension of building measured normal to wind direction, in ft (m).

h = Mean roof height, in ft (m), except that eave height shall be used for $\theta \leq 10°$.

θ = Angle of plane of roof from horizontal, in degrees.

Rail: XR1000

Gable Roof Flush Mount System Span Table (inches) - Portrait or Landscape Installation

Max Module Length: 98.5", Max Module SF: 30.5 SF

Exposure D

Wind Speed (mph)	Roof Slope (deg.)	Ground Snow: 0 psf			10 psf			20 psf			30 psf			40 psf*			50 psf*			60 psf*			70 psf*			80 psf*			90 psf*			100 psf*			110 psf*			120 psf*			Exposed Mod.			Edge Mod.		
		Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
90 mph	8-20	141	141	125	119	119	119	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	141	105	88	82	51	40
	21-27	138	138	138	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	138	115	110	98	64	54
	28-60	134	134	134	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	134	124	109	99	83	63
95 mph	8-20	141	130	116	119	119	116	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	141	97	68	64	44	35
	21-27	138	138	137	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	134	107	101	89	55	46
	28-60	134	134	131	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	134	116	102	93	72	54
100 mph	8-20	141	121	107	119	119	107	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	141	79	54	55	38	30
	21-27	138	132	127	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	125	100	94	78	48	40
	28-60	134	134	123	125	125	123	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	128	109	96	82	63	48
105 mph	8-20	141	113	100	119	113	100	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	117	64	44	50	34	27
	21-27	138	123	118	125	123	118	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	117	92	72	69	42	35
	28-60	134	131	116	125	125	116	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	120	102	86	70	55	42
110 mph	8-20	141	105	89	119	105	89	99	99	89	96	96	89	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	107	52	37	45	30	24
	21-27	138	116	110	125	116	110	108	108	107	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	110	74	57	61	38	31
	28-60	134	124	109	125	124	109	110	110	108	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	112	97	71	61	49	37
115 mph	8-20	141	99	71	119	99	71	99	99	71	96	96	71	86	86	71	78	78	71	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	98	44	31	41	27	22
	21-27	136	109	103	125	109	103	108	106	102	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	104	62	47	55	34	27
	28-60	134	118	103	125	118	103	110	110	103	99	99	98	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	106	91	59	54	44	33
120 mph	8-20	141	87	59	119	87	59	99	87	59	96	87	59	86	86	59	78	78	59	71	71	59	66	66	59	62	62	59	59	59	59	56	56	56	54	54	54	51	51	51	91	37	28	38	25	20
	21-27	128	103	97	125	103	97	108	102	97	96	96	92	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	98	52	39	51	30	24
	28-60	131	112	98	125	112	98	110	109	98	98	98	94	89	89	89	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	100	76	51	47	39	30
130 mph	8-20	115	61	42	115	61	42	99	61	42	96	61	42	86	61	42	78	61	42	71	61	42	66	61	42	62	61	42	59	59	42	56	56	42	54	54	42	51	51	42	48	28	23	32	21	17
	21-27	115	87	68	115	87	68	108	87	68	96	87	68	87	85	68	78	78	68	72	72	68	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	77	38	29	43	25	19
	28-60	118	101	82	118	101	82	107	101	82	96	96	82	88	88	82	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	83	56	38	38	32	25
140 mph	8-20	99	45	32	99	45	32	99	45	32	95	45	32	86	45	32	78	45	32	71	45	32	66	45	32	62	45	32	59	45	32	56	45	32	54	45	32	51	45	32	39	24	20	27	18	15
	21-27	105	63	48	105	63	48	103	63	48	96	63	48	87	63	48	78	63	48	72	63	48	67	63	48	63	63	48	60	60	48	57	57	48	54	54	48	52	52	48	58	29	23	37	22	16
	28-60	107	92	61	107	92	61	104	92	61	94	90	61	86	86	61	80	80	61	75	75	61	70	70	61	66	66	61	63	63	61	60	60	60	57	57	57	55	55	55	58	43	29	31	27	20
150 mph	8-20	57	34	26	57	34	26	57	34	26	57	34	26	57	34	26	57	34	26	57	34	26	57	34	26	57	34	26	57	34	26	56	34	26	54	34	26	51	34	26	33	21	17	24	16	13
	21-27	96	48	36	96	48	36	96	48	36	92	48	36	87	48	36	78	48	36	72	48	36	67	48	36	63	48	36	60	48	36	57	48	36	54	48	36	52	48	36	48	25	19	32	19	13
	28-60	97	70	47	97	70	47	97	70	47	91	70	47	84	70	47	78	70	47	74	70	47	70	70	47	66	66	47	63	63	47	60	60	47	57	57	47	55	55	47	43	34	25	26	24	17
160 mph	8-20	48	28	23	48	28	23	48	28	23	48	28	23	48	28	23	48	28	23	48	28	23	48	28	23	48	28	23	48	28	23	48	28	23	48	28	23	48	28	23	28	18	15	21	14	
	21-27	76	38	28	76	38	28	76	38	28	76	38	28	76	38	28	76	38	28	72	38	28	67	38	28	63	38	28	60	38	28	57	38	28	54	38	28	52	38	28	40	22	16	28	16	
	28-60	81	55	37	81	55	37	81	55	37	81	55	37	81	55	37	77	55	37	72	55	37	69	55	37	65	55	37	63	55	37	60	55	37	57	55	37	55	55	37	33	28	21	23	21	15
170 mph	8-20	40	25	20	40	25	20	40	25	20	40	25	20	40	25	20	40	25	20	40	25	20	40	25	20	40	25	20	40	25	20	40	25	20	40	25	20	40	25	20	25	16	13	18	12	
	21-27	60	30	24	60	30	24	60	30	24	60	30	24	60	30	24	60	30	24	60	30	24	60	30	24	60	30	24	60	30	24	57	30	24	54	30	24	52	30	24	34	19	14	25	14	
	28-60	60	44	30	60	44	30	60	44	30	60	44	30	60	44	30	60	44	30	60	44	30	60	44	30	60	44	30	60	44	30	59	44	30	57	44	30	55	44	30	27	24	18	20	18	13
175 mph	8-20	37	23	19	37	23	19	37	23	19	37	23	19	37	23	19	37	23	19	37	23	19	37	23	19	37	23	19	37	23	19	37	23	19	37	23	19	37	23	19	23	15	13	17		
	21-27	55	28	22	55	28	22	55	28	22	55	28	22	55	28	22	55	28	22	55	28	22	55	28	22	55	28	22	55	28	22	55	28	22	54	28	22	52	28	22	32	18	13	23	14	
	28-60	53	40	28	53	40	28	53	40	28	53	40	28	53	40	28	53	40	28	53	40	28	53	40	28	53	40	28	53	40	28	53	40	28	53	40	28	53	40	28	26	23	17	19	17	12
180 mph	8-20	35	22	18	35	22	18	35	22	18	35	22	18	35	22	18	35	22	18	35	22	18	35	22	18	35	22	18	35	22	18	35	22	18	35	22	18	35	22	18	22	14	12	16		
	21-27	51	26	21	51	26	21	51	26	21	51	26	21	51	26	21	51	26	21	51	26	21	51	26	21	51	26	21	51	26	21	51	26	21	51	26	21	51	26	21	30	17	12	22	13	
	28-60	47	36	26	47	36	26	47	36	26	47	36	26	47	36	26	47	36	26	47	36	26	47	36	26	47	36	26	47	36	26	47	36	26	47	36	26	47	36	26	24	22	16	18	16	

= min 72" span = min 64" span = min 48" span

REV 07/24/2024

= Shaded cells indicate conditions in which UFO Mid Clamp connection capacity is exceeded. If such conditions are encountered contact techsupport@ironridge.com.

= Contact techsupport@ironridge.com

* = Note: additional installation requirement for CAMO module clamp. See Note 11 on Page 3 for details.

Grouping of ASCE 7-16 Roof Zones (Gable)

Roof Slope	8° - 27°			28° - 60°		
Group	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
ASCE 7-16 Roof Zones	1 2e	2n 2r 3e	3r	1 2e 2r	2n 3r	3e

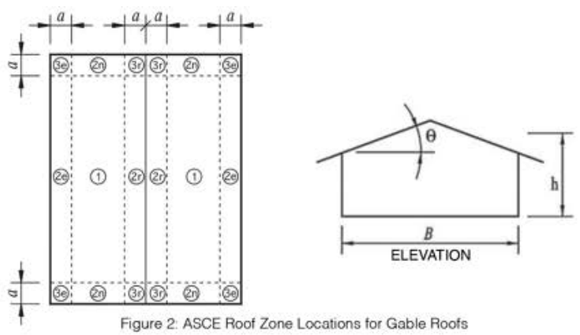

Figure 2: ASCE Roof Zone Locations for Gable Roofs

Notation

a = 10% of least horizontal dimension or $0.4h$, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m). If an overhang exists, the edge distance shall be measured from the outside edge of the overhang. The horizontal dimensions used to compute the edge distance shall not include any overhang distances.

B = Horizontal dimension of building measured normal to wind direction, in ft (m).

h = Mean roof height, in ft (m), except that eave height shall be used for $\theta \leq 10°$.

θ = Angle of plane of roof from horizontal, in degrees.

Rail: XR1000

Hip Roof Flush Mount System Span Table (inches) - Portrait or Landscape Installation
Max Module Length: 69.5", Max Module SF: 21.7 SF
Exposure B

Wind Speed (mph)	Roof Slope (deg.)	Ground Snow: 0 psf			10 psf			20 psf			30 psf			40 psf			50 psf			60 psf*			70 psf*			80 psf*			90 psf*			100 psf*			110 psf*			120 psf*			Exposed Mod.			Edge Mod.		
		Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
90 mph	8-20	167	167	167	141	141	141	117	117	117	114	114	114	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	167	167	167	140	134
	21-27	164	164	164	149	149	149	129	129	129	115	115	115	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	164	164	164	164	158	158
	28-60	159	159	159	149	149	149	130	130	130	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	159	159	159	158
95 mph	8-20	167	167	167	141	141	141	117	117	117	114	114	114	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	167	167	163	131	125
	21-27	164	164	164	149	149	149	129	129	129	115	115	115	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	164	164	164	164	148	148
	28-60	159	159	159	149	149	149	130	130	130	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	159	159	159	145
100 mph	8-20	167	167	167	141	141	141	117	117	117	114	114	114	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	167	167	149	123	117
	21-27	164	164	164	149	149	149	129	129	129	115	115	115	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	164	164	164	164	138	138
	28-60	159	159	159	149	149	149	130	130	130	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	159	159	159	135
105 mph	8-20	167	167	167	141	141	141	117	117	117	114	114	114	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	167	167	138	116	110
	21-27	164	164	164	149	149	149	129	129	129	115	115	115	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	164	164	164	164	130	130
	28-60	159	159	159	149	149	149	130	130	130	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	159	151	158	126
110 mph	8-20	167	167	167	141	141	141	117	117	117	114	114	114	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	167	167	128	109	104
	21-27	164	164	164	149	149	149	129	129	129	115	115	115	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	164	164	164	159	122	122
	28-60	159	159	159	149	149	149	130	130	130	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	159	142	148	117
115 mph	8-20	167	167	167	141	141	141	117	117	117	114	114	114	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	167	158	119	103	99
	21-27	164	164	164	149	149	149	129	129	129	115	115	115	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	164	164	164	149	116	116
	28-60	159	159	159	149	149	149	130	130	130	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	159	135	139	110
120 mph	8-20	167	167	167	141	141	141	117	117	117	114	114	114	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	157	144	112	98	91
	21-27	164	164	164	149	149	149	129	129	129	115	115	115	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	164	164	164	141	110	110
	28-60	159	159	159	149	149	149	130	130	130	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	159	128	131	104
130 mph	8-20	167	167	167	141	141	141	117	117	117	114	114	114	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	132	122	100	83	75
	21-27	164	164	164	149	149	149	129	129	129	115	115	115	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	164	161	161	127	100	100
	28-60	159	159	159	149	149	149	130	130	130	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	159	116	116	95
140 mph	8-20	167	167	160	141	141	141	117	117	117	114	114	114	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	160	114	106	86	69	62
	21-27	164	164	164	149	149	149	129	129	129	115	115	115	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	164	137	137	115	87	87
	28-60	159	159	159	149	149	149	130	130	130	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	131	106	104	78
150 mph	8-20	167	150	137	141	141	137	117	117	117	114	114	114	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	128	101	96	74	58	52
	21-27	164	164	164	149	149	149	129	129	129	115	115	115	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	164	119	119	105	73	73
	28-60	159	159	159	149	149	149	130	130	130	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	151	159	111	98	96	62
160 mph	8-20	167	130	121	141	130	121	117	117	117	114	114	114	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	108	87	76	64	49	45
	21-27	164	159	159	149	149	149	129	129	129	115	115	115	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	160	105	105	98	62	62
	28-60	159	159	158	149	149	149	130	130	130	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	133	141	99	89	81	50
170 mph	8-20	166	116	107	141	116	107	117	116	107	114	112	107	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	98	70	61	57	42	39
	21-27	164	139	139	149	139	139	129	129	129	115	115	115	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	138	97	97	86	53	53
	28-60	159	159	134	149	149	134	130	130	130	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	119	120	86	76	66	40
175 mph	8-20	148	110	102	141	110	102	117	110	102	114	108	102	102	102	99	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	88	63	55	53	40	37
	21-27	164	131	131	149	131	131	129	126	126	115	115	115	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	129	90	90	79	50	50
	28-60	159	159	124	149	149	124	130	130	124	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	113	111	75	70	60	37
180 mph	8-20	135	104	99	135	104	99	117	104	99	114	104	99	102	100	97	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	79	57	50	50	38	35
	21-27	164	124	124	149	124	124	129	122	122	115	113	113	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	122	80	80	74	46	46
	28-60	158	159	116	149	149	116	130	130	116	117	117	113	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	107	104	66	65	54	34

= min 72" span = min 64" span = min 48" span

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= Shaded cells indicate conditions in which UFO Mid Clamp connection capacity is exceeded. If such conditions are encountered contact techsupport@ironridge.com.

* = Note: additional installation requirement for CAMO module clamp. See Note 11 on Page 3 for details

Grouping of ASCE 7-16 Roof Zones (Hip)

Roof Slope	8° - 20°			21° - 27°			28° - 60°		
Group	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
ASCE 7-16 Roof Zones	1	2r	2e 3	1	2e 2r	3	1	2e	2r 3

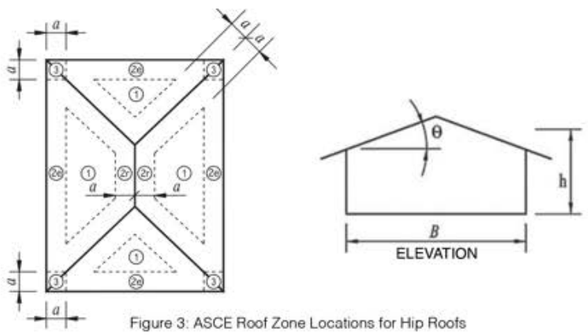

Figure 3: ASCE Roof Zone Locations for Hip Roofs

Notation

a = 10% of least horizontal dimension or 0.4*h*, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m). If an overhang exists, the edge distance shall be measured from the outside edge of the overhang. The horizontal dimensions used to compute the edge distance shall not include any overhang distances.

B = Horizontal dimension of building measured normal to wind direction, in ft (m).

h = Mean roof height, in ft (m), except that eave height shall be used for $\theta \leq 10°$.

θ = Angle of plane of roof from horizontal, in degrees.

Rail: XR1000	Hip Roof Flush Mount System Span Table (inches) - Portrait or Landscape Installation Max Module Length: 69.5", Max Module SF: 21.7 SF Exposure C																																						
Wind Speed (mph)	Roof Slope (deg.)	Ground Snow: 0 psf			10 psf			20 psf			30 psf			40 psf			50 psf			60 psf*			70 psf*			80 psf*			90 psf*			100 psf*			110 psf*			120 psf*			Exposed Mod.			Edge Mod.		
		Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
90 mph	8-20	167	167	167	141	141	141	117	117	117	114	114	114	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	167	167	134	113	108
	21-27	164	164	164	149	149	149	129	129	129	115	115	115	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	164	164	164	164	127	127
	28-60	159	159	159	149	149	149	130	130	130	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	159	148	155	123
95 mph	8-20	167	167	167	141	141	141	117	117	117	114	114	114	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	167	166	124	106	101
	21-27	164	164	164	149	149	149	129	129	129	115	115	115	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	164	164	164	154	119	119
	28-60	159	159	159	149	149	149	130	130	130	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	159	138	144	114
100 mph	8-20	167	167	167	141	141	141	117	117	117	114	114	114	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	162	148	114	100	95
	21-27	164	164	164	149	149	149	129	129	129	115	115	115	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	164	164	164	144	112	112
	28-60	159	159	159	149	149	149	130	130	130	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	159	130	134	106
105 mph	8-20	167	167	167	141	141	141	117	117	117	114	114	114	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	145	133	106	92	84
	21-27	164	164	164	149	149	149	129	129	129	115	115	115	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	164	164	164	135	105	105
	28-60	159	159	159	149	149	149	130	130	130	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	159	123	124	100
110 mph	8-20	167	167	167	141	141	141	117	117	117	114	114	114	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	131	121	100	82	74
	21-27	164	164	164	149	149	149	129	129	129	115	115	115	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	164	161	161	126	100	100
	28-60	159	159	159	149	149	149	130	130	130	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	159	116	115	95
115 mph	8-20	167	167	167	141	141	141	117	117	117	114	114	114	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	120	111	93	73	67
	21-27	164	164	164	149	149	149	129	129	129	115	115	115	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	164	145	145	119	94	94
	28-60	159	159	159	149	149	149	130	130	130	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	140	110	108	84
120 mph	8-20	167	167	155	141	141	141	117	117	117	114	114	114	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	151	111	103	82	66	60
	21-27	164	164	164	149	149	149	129	129	129	115	115	115	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	164	133	133	113	84	84
	28-60	159	159	159	149	149	149	130	130	130	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	126	104	102	74
130 mph	8-20	167	141	130	141	141	130	117	117	117	114	114	114	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	119	98	87	70	54	49
	21-27	164	164	164	149	149	149	129	129	129	115	115	115	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	164	113	113	102	68	68
	28-60	159	159	159	149	149	149	130	130	130	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	144	155	105	95	91	57
140 mph	8-20	167	122	113	141	122	113	117	117	113	114	114	110	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	101	77	67	60	45	41
	21-27	164	147	147	149	147	147	129	129	129	115	115	115	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	146	100	100	92	57	57
	28-60	159	159	143	149	149	143	130	130	130	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	125	128	94	81	72	44
150 mph	8-20	141	107	100	141	107	100	117	107	100	114	107	100	102	102	98	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	82	60	52	52	39	36
	21-27	164	127	127	149	127	127	129	124	124	115	115	115	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	125	85	85	76	48	48
	28-60	159	159	120	149	149	120	130	130	120	117	117	115	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	110	107	70	68	57	35
160 mph	8-20	117	97	85	117	97	85	117	97	85	112	97	85	102	96	85	92	92	85	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	69	48	42	45	34	31
	21-27	164	112	112	149	112	112	129	112	112	114	107	107	103	102	102	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	110	67	67	64	41	41
	28-60	142	153	104	142	149	104	130	130	104	117	117	104	107	107	102	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	100	97	48	57	46	29
170 mph	8-20	102	79	69	102	79	69	102	79	69	102	79	69	99	79	69	92	79	69	85	79	69	79	79	69	74	74	69	70	70	69	67	67	67	64	64	64	61	61	61	58	40	37	40	30	27
	21-27	149	101	101	149	101	101	129	101	101	112	101	101	102	97	97	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	99	54	54	55	36	36
	28-60	127	131	96	127	131	96	127	126	96	116	116	96	105	105	96	96	96	93	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	90	77	37	49	38	24
175 mph	8-20	98	71	62	98	71	62	98	71	62	98	71	62	97	71	62	92	71	62	85	71	62	79	71	62	74	71	62	70	70	62	67	67	62	64	64	62	61	61	61	54	38	35	38	28	26
	21-27	140	98	98	140	98	98	127	98	98	111	98	98	101	95	95	93	91	91	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	96	49	49	51	34	34
	28-60	120	121	88	120	121	88	120	121	88	115	112	88	104	104	88	96	96	88	89	89	88	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	80	65	34	46	35	22
180 mph	8-20	90	65	56	90	65	56	90	65	56	90	65	56	90	65	56	90	65	56	85	65	56	79	65	56	74	65	56	70	65	56	67	65	56	64	64	56	61	61	56	50	36	33	36	26	24
	21-27	131	91	91	131	91	91	126	91	91	110	91	91	100	91	91	93	89	89	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	86	44	44	47	32	32
	28-60	114	113	77	114	113	77	114	113	77	112	108	77	104	103	77	96	96	77	89	89	77	84	84	77	79	79	77	75	75	75	71	71	71	68	68	68	65	65	65	72	56	31	43	32	20

= min 72" span = min 64" span = min 48" span

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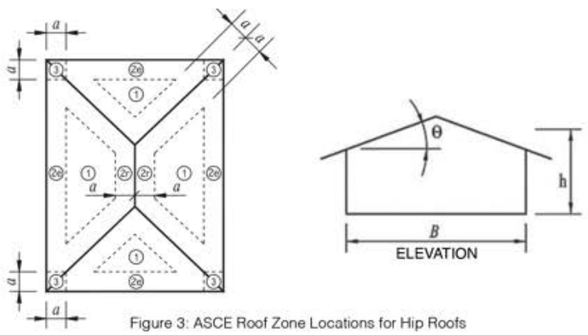
= Shaded cells indicate conditions in which UFO Mid Clamp connection capacity is exceeded. If such conditions are encountered contact techsupport@ironridge.com.

* = Note: additional installation requirement for CAMO module clamp. See Note 11 on Page 3 for details

Grouping of ASCE 7-16 Roof Zones (Hip)									
Roof Slope	8° - 20°			21° - 27°			28° - 60°		
Group	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
ASCE 7-16 Roof Zones	1	2r	2e 3	1	2e 2r	3	1	2e	2r 3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Rail: XR1000

Hip Roof Flush Mount System Span Table (inches) - Portrait or Landscape Installation
Max Module Length: 69.5", Max Module SF: 21.7 SF
Exposure D

Wind Speed (mph)	Roof Slope (deg.)	Ground Snow: 0 psf			10 psf			20 psf			30 psf			40 psf			50 psf			60 psf*			70 psf*			80 psf*			90 psf*			100 psf*			110 psf*			120 psf*			Exposed Mod.			Edge Mod.		
		Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
90 mph	8-20	167	167	167	141	141	141	117	117	117	114	114	114	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	167	155	118	102	98
	21-27	164	164	164	149	149	149	129	129	129	115	115	115	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	164	164	164	148	115	115
	28-60	159	159	159	149	149	149	130	130	130	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	159	134	138	109
95 mph	8-20	167	167	167	141	141	141	117	117	117	114	114	114	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	150	138	109	96	87
	21-27	164	164	164	149	149	149	129	129	129	115	115	115	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	164	164	164	137	107	107
	28-60	159	159	159	149	149	149	130	130	130	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	159	125	127	102
100 mph	8-20	167	167	167	141	141	141	117	117	117	114	114	114	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	134	124	102	85	76
	21-27	164	164	164	149	149	149	129	129	129	115	115	115	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	164	164	164	128	101	101
	28-60	159	159	159	149	149	149	130	130	130	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	159	117	117	96
105 mph	8-20	167	167	167	141	141	141	117	117	117	114	114	114	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	167	122	113	95	75	68
	21-27	164	164	164	149	149	149	129	129	129	115	115	115	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	164	147	147	120	95	95
	28-60	159	159	159	149	149	149	130	130	130	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	143	111	109	86
110 mph	8-20	167	167	156	141	141	141	117	117	117	114	114	114	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	153	111	104	83	67	60
	21-27	164	164	164	149	149	149	129	129	129	115	115	115	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	164	134	134	113	85	85
	28-60	159	159	159	149	149	149	130	130	130	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	159	159	127	105	102	75
115 mph	8-20	167	154	141	141	141	141	117	117	117	114	114	114	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	132	103	98	76	60	54
	21-27	164	164	164	149	149	149	129	129	129	115	115	115	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	164	122	122	107	75	75
	28-60	159	159	159	149	149	149	130	130	130	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	155	159	114	100	97	65
120 mph	8-20	167	140	129	141	140	129	117	117	117	114	114	114	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	118	97	86	69	54	49
	21-27	164	164	164	149	149	149	129	129	129	115	115	115	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	164	112	112	101	68	68
	28-60	159	159	159	149	149	149	130	130	130	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	143	154	104	95	90	56
130 mph	8-20	167	119	111	141	119	111	117	117	111	114	114	109	102	102	102	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	100	74	64	59	44	40
	21-27	164	144	144	149	144	144	129	129	129	115	115	115	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	143	99	99	89	55	55
	28-60	159	159	139	149	149	139	130	130	130	117	117	117	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	122	125	92	79	69	43
140 mph	8-20	135	104	99	135	104	99	117	104	99	114	104	99	102	100	97	92	92	92	85	85	85	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	79	57	50	50	37	34
	21-27	164	124	124	149	124	124	129	122	122	115	113	113	103	103	103	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	121	80	80	73	46	46
	28-60	157	159	116	149	149	116	130	130	116	117	117	113	107	107	107	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	107	103	65	65	54	33
150 mph	8-20	112	92	80	112	92	80	112	92	80	109	92	80	102	92	80	92	91	80	85	85	80	79	79	79	74	74	74	70	70	70	67	67	67	64	64	64	61	61	61	65	45	40	44	32	30
	21-27	164	108	108	149	108	108	129	108	108	114	105	105	103	100	100	93	93	93	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	106	62	62	61	39	39
	28-60	137	146	101	137	146	101	130	130	101	117	117	101	106	106	100	96	96	96	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	97	94	44	55	43	27
160 mph	8-20	99	73	63	99	73	63	99	73	63	99	73	63	97	73	63	92	73	63	85	73	63	79	73	63	74	73	63	70	70	63	67	67	63	64	64	63	61	61	61	55	38	35	38	28	26
	21-27	141	98	98	141	98	98	127	98	98	112	98	98	101	95	95	93	92	92	86	86	86	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	96	50	50	52	34	34
	28-60	121	123	90	121	123	90	121	122	90	115	113	90	105	105	90	96	96	90	89	89	89	84	84	84	79	79	79	75	75	75	71	71	71	68	68	68	65	65	65	82	67	35	46	36	22
170 mph	8-20	81	59	51	81	59	51	81	59	51	81	59	51	81	59	51	81	59	51	81	59	51	79	59	51	74	59	51	70	59	51	67	59	51	64	59	51	61	59	51	47	34	31	34	25	23
	21-27	124	83	83	124	83	83	122	83	83	109	83	83	99	83	83	92	83	83	86	83	83	80	80	80	75	75	75	71	71	71	68	68	68	65	65	65	62	62	62	77	41	41	44	30	30
	28-60	109	105	68	109	105	68	109	105	68	109	105	68	103	100	68	96	96	68	89	89	68	84	84	68	79	79	68	75	75	68	71	71	68	68	68	68	65	65	65	65	49	29	40	30	19
175 mph	8-20	74	53	47	74	53	47	74	53	47	74	53	47	74	53	47	74	53	47	74	53	47	74	53	47	74	53	47	70	53	47	67	53	47	64	53	47	61	53	47	43	32	29	32	24	22
	21-27	116	74	74	116	74	74	116	74	74	108	74	74	98	74	74	91	74	74	86	74	74	80	74	74	75	74	74	71	71	71	68	68	68	65	65	65	62	62	62	69	38	38	41	28	28
	28-60	103	101	57	103	101	57	103	101	57	103	101	57	102	98	57	95	94	57	89	89	57	84	84	57	79	79	57	75	75	57	71	71	57	68	68	57	65	65	57	59	43	26	38	27	17
180 mph	8-20	69	48	42	69	48	42	69	48	42	69	48	42	69	48	42	69	48	42	69	48	42	69	48	42	69	48	42	69	48	42	67	48	42	64	48	42	61	48	42	40	30	28	30	22	21
	21-27	110	67	67	110	67	67	110	67	67	106	67	67	97	67	67	91	67	67	85	67	67	80	67	67	75	67	67	71	67	67	68	67	67	65	65	65	62	62	62	62	36	36	39	27	27
	28-60	100	97	49	100	97	49	100	97	49	100	97	49	99	95	49	94	92	49	88	88	49	84	84	49	79	79	49	75	75	49	71	71	49	68	68	49	65	65	49	53	39	24	36	25	16

= min 72" span = min 64" span = min 48" span

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= Shaded cells indicate conditions in which UFO Mid Clamp connection capacity is exceeded. If such conditions are encountered contact techsupport@ironridge.com.

* = Note: additional installation requirement for CAMO module clamp. See Note 11 on Page 3 for details

Grouping of ASCE 7-16 Roof Zones (Hip)

Roof Slope	8° - 20°			21° - 27°			28° - 60°		
Group	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
ASCE 7-16 Roof Zones	1	2r	2e 3	1	2e 2r	3	1	2e	2r 3

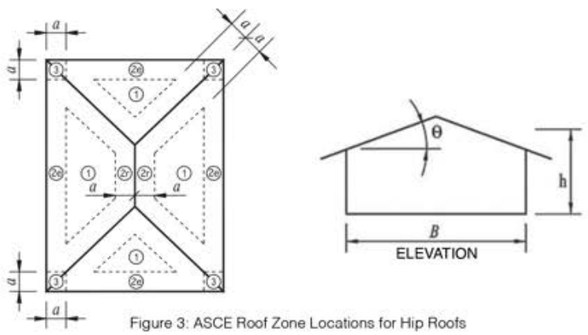

Figure 3: ASCE Roof Zone Locations for Hip Roofs

Notation

a = 10% of least horizontal dimension or $0.4h$, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m). If an overhang exists, the edge distance shall be measured from the outside edge of the overhang. The horizontal dimensions used to compute the edge distance shall not include any overhang distances.

B = Horizontal dimension of building measured normal to wind direction, in ft (m).

h = Mean roof height, in ft (m), except that eave height shall be used for $\theta \leq 10°$.

θ = Angle of plane of roof from horizontal, in degrees.

Rail: XR1000

Hip Roof Flush Mount System Span Table (inches) - Portrait or Landscape Installation
Max Module Length: 75.5", Max Module SF: 23.5 SF
Exposure B

Wind Speed (mph)	Roof Slope (deg.)	Ground Snow: 0 psf			10 psf			20 psf			30 psf			40 psf			50 psf			60 psf*			70 psf*			80 psf*			90 psf*			100 psf*			110 psf*			120 psf*			Exposed Mod.			Edge Mod.		
		Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
90 mph	8-20	161	161	161	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	161	161	161	133	127
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	158	158	158	150	150
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	153	153	153	148
95 mph	8-20	161	161	161	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	161	161	152	125	119
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	158	158	158	140	140
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	153	153	153	136
100 mph	8-20	161	161	161	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	161	161	140	117	111
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	158	158	158	131	131
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	153	151	153	127
105 mph	8-20	161	161	161	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	161	161	129	110	105
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	158	158	158	123	123
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	153	143	149	118
110 mph	8-20	161	161	161	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	161	160	120	105	100
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	158	158	150	116	116
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	153	135	140	111
115 mph	8-20	161	161	161	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	158	145	113	100	94
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	158	158	141	110	110
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	153	128	131	106
120 mph	8-20	161	161	161	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	143	132	107	93	84
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	158	158	134	105	105
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	153	122	123	101
130 mph	8-20	161	161	161	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	122	113	97	76	69
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	147	147	120	96	96
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	142	111	110	89
140 mph	8-20	161	160	146	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	139	108	102	79	63	57
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	126	126	110	80	80
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	118	102	100	72
150 mph	8-20	161	137	127	136	136	127	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	115	98	88	68	53	48
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	111	111	101	67	67
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	139	149	105	95	91	57
160 mph	8-20	161	121	112	136	121	112	113	113	112	110	110	109	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	104	80	69	59	45	41
	21-27	158	146	146	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	145	102	102	93	57	57
	28-60	153	153	140	143	143	140	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	123	126	97	82	74	46
170 mph	8-20	143	109	103	136	109	103	113	109	103	110	107	103	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	93	64	56	52	39	36
	21-27	158	128	128	143	128	128	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	126	92	92	79	49	49
	28-60	153	153	120	143	143	120	125	125	120	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	111	110	79	70	61	37
175 mph	8-20	131	105	100	131	105	100	113	105	100	110	104	100	98	98	96	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	81	58	51	49	37	34
	21-27	158	121	121	143	121	121	123	119	119	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	119	82	82	73	46	46
	28-60	153	153	113	143	143	113	125	125	113	113	113	110	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	107	105	69	65	55	34
180 mph	8-20	121	101	95	121	101	95	113	101	95	110	101	95	98	97	94	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	73	53	46	46	34	32
	21-27	158	115	115	143	115	115	123	115	115	110	108	108	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	112	74	74	68	42	42
	28-60	144	153	108	143	143	108	125	125	108	113	113	107	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	103	101	60	60	50	31

= min 72" span = min 64" span = min 48" span

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= Shaded cells indicate conditions in which UFO Mid Clamp connection capacity is exceeded. If such conditions are encountered contact techsupport@ironridge.com.

* = Note: additional installation requirement for CAMO module clamp. See Note 11 on Page 3 for details

Grouping of ASCE 7-16 Roof Zones (Hip)

Roof Slope	8° - 20°			21° - 27°			28° - 60°		
Group	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
ASCE 7-16 Roof Zones	1	2r	2e 3	1	2e 2r	3	1	2e	2r 3

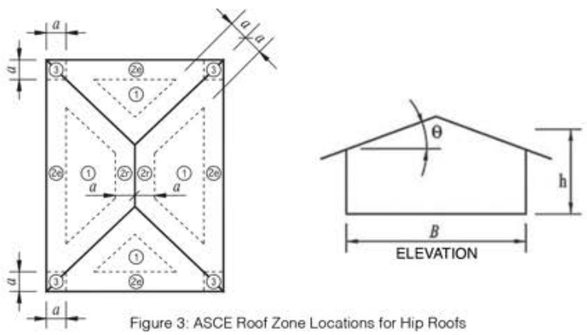

Figure 3: ASCE Roof Zone Locations for Hip Roofs

Notation

a = 10% of least horizontal dimension or 0.4*h*, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m). If an overhang exists, the edge distance shall be measured from the outside edge of the overhang. The horizontal dimensions used to compute the edge distance shall not include any overhang distances.

B = Horizontal dimension of building measured normal to wind direction, in ft (m).

h = Mean roof height, in ft (m), except that eave height shall be used for $\theta \leq 10°$.

θ = Angle of plane of roof from horizontal, in degrees.

Rail: XR1000

Hip Roof Flush Mount System Span Table (inches) - Portrait or Landscape Installation

Max Module Length: 75.5", Max Module SF: 23.5 SF

Exposure C

Wind Speed (mph)	Roof Slope (deg.)	Ground Snow: 0 psf			10 psf			20 psf			30 psf			40 psf			50 psf			60 psf*			70 psf*			80 psf*			90 psf*			100 psf*			110 psf*			120 psf*			Exposed Mod.			Edge Mod.		
		Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
90 mph	8-20	161	161	161	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	161	161	126	108	104
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	158	158	157	121	121
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	153	140	146	116
95 mph	8-20	161	161	161	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	161	152	116	102	98
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	158	158	146	113	113
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	153	131	136	108
100 mph	8-20	161	161	161	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	148	136	109	96	87
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	158	158	136	107	107
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	153	123	125	102
105 mph	8-20	161	161	161	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	133	123	103	85	77
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	158	158	127	101	101
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	153	116	116	97
110 mph	8-20	161	161	161	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	121	113	97	76	68
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	147	147	120	96	96
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	141	110	109	89
115 mph	8-20	161	161	156	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	153	112	106	86	68	61
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	133	133	113	86	86
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	126	105	104	78
120 mph	8-20	161	155	142	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	133	106	100	76	61	55
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	122	122	108	77	77
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	114	100	99	68
130 mph	8-20	161	130	120	136	130	120	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	110	93	80	64	50	45
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	107	107	98	63	63
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	132	140	102	90	83	52
140 mph	8-20	157	113	107	136	113	107	113	113	107	110	109	105	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	99	71	61	55	42	38
	21-27	158	135	135	143	135	135	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	133	97	97	84	52	52
	28-60	153	153	128	143	143	128	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	115	115	89	74	66	40
150 mph	8-20	125	103	98	125	103	98	113	103	98	110	103	98	98	98	95	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	76	55	48	48	35	33
	21-27	158	118	118	143	118	118	123	117	117	110	109	109	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	115	78	78	70	44	44
	28-60	148	153	110	143	143	110	125	125	110	113	113	109	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	105	103	65	62	52	32
160 mph	8-20	109	91	79	109	91	79	109	91	79	107	91	79	98	91	79	89	89	79	82	82	79	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	63	44	39	42	31	29
	21-27	157	107	107	143	107	107	123	107	107	109	103	103	99	98	98	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	105	61	61	59	37	37
	28-60	131	138	101	131	138	101	125	125	101	113	113	101	103	103	99	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	97	94	44	53	42	26
170 mph	8-20	100	73	63	100	73	63	100	73	63	100	73	63	96	73	63	89	73	63	82	73	63	76	73	63	71	71	63	67	67	63	64	64	63	61	61	61	59	59	59	54	37	34	37	27	25
	21-27	136	99	99	136	99	99	122	99	99	108	98	98	98	94	94	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	97	49	49	51	33	33
	28-60	117	117	93	117	117	93	117	117	93	111	109	93	101	101	93	92	92	91	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	82	71	34	45	35	22
175 mph	8-20	95	66	57	95	66	57	95	66	57	95	66	57	94	66	57	89	66	57	82	66	57	76	66	57	71	66	57	67	66	57	64	64	57	61	61	57	59	59	57	50	35	32	35	26	24
	21-27	128	94	94	128	94	94	121	94	94	107	94	94	97	92	92	90	88	88	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	89	45	45	47	31	31
	28-60	112	111	81	112	111	81	112	111	81	109	107	81	101	101	81	92	92	81	86	86	81	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	74	60	31	42	32	20
180 mph	8-20	83	59	52	83	59	52	83	59	52	83	59	52	83	59	52	83	59	52	82	59	52	76	59	52	71	59	52	67	59	52	64	59	52	61	59	52	59	59	52	46	33	30	33	24	22
	21-27	120	84	84	120	84	84	118	84	84	106	84	84	96	84	84	89	84	84	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	79	41	41	44	29	29
	28-60	108	106	71	108	106	71	108	106	71	107	104	71	100	100	71	92	92	71	86	86	71	80	80	71	76	76	71	72	72	71	68	68	68	65	65	65	63	63	63	66	51	29	39	30	19

= min 72" span = min 64" span = min 48" span

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= Shaded cells indicate conditions in which UFO Mid Clamp connection capacity is exceeded. If such conditions are encountered contact techsupport@ironridge.com.

* = Note: additional installation requirement for CAMO module clamp. See Note 11 on Page 3 for details

Grouping of ASCE 7-16 Roof Zones (Hip)

Roof Slope	8° - 20°			21° - 27°			28° - 60°		
Group	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
ASCE 7-16 Roof Zones	1	2r	2e 3	1	2e 2r	3	1	2e	2r 3

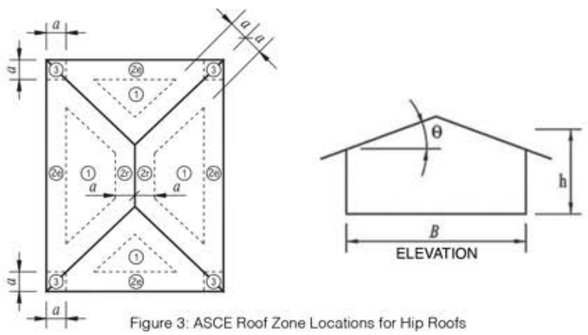

Figure 3: ASCE Roof Zone Locations for Hip Roofs

Notation

a = 10% of least horizontal dimension or $0.4h$, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m). If an overhang exists, the edge distance shall be measured from the outside edge of the overhang. The horizontal dimensions used to compute the edge distance shall not include any overhang distances.

B = Horizontal dimension of building measured normal to wind direction, in ft (m).

h = Mean roof height, in ft (m), except that eave height shall be used for $\theta \leq 10°$.

θ = Angle of plane of roof from horizontal, in degrees.

Rail: XR1000

Hip Roof Flush Mount System Span Table (inches) - Portrait or Landscape Installation
Max Module Length: 75.5", Max Module SF: 23.5 SF
Exposure D

Wind Speed (mph)	Roof Slope (deg.)	Ground Snow: 0 psf			10 psf			20 psf			30 psf			40 psf			50 psf			60 psf*			70 psf*			80 psf*			90 psf*			100 psf*			110 psf*			120 psf*			Exposed Mod.			Edge Mod.		
		Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
90 mph	8-20	161	161	161	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	155	142	112	99	92
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	158	158	140	109	109
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	153	127	129	105
95 mph	8-20	161	161	161	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	138	127	105	89	80
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	158	158	130	103	103
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	153	119	119	98
100 mph	8-20	161	161	161	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	161	124	115	98	78	70
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	150	150	122	97	97
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	145	112	111	92
105 mph	8-20	161	161	158	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	157	113	107	88	69	62
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	135	135	114	88	88
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	128	106	105	79
110 mph	8-20	161	156	143	136	136	136	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	134	106	101	76	61	55
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	123	123	108	78	78
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	153	153	115	101	99	69
115 mph	8-20	161	141	130	136	136	130	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	119	100	93	69	55	50
	21-27	158	158	158	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	158	113	113	103	69	69
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	142	153	107	96	94	60
120 mph	8-20	161	129	119	136	129	119	113	113	113	110	110	110	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	109	91	79	64	49	45
	21-27	158	157	157	143	143	143	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	157	107	107	98	62	62
	28-60	153	153	153	143	143	143	125	125	125	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	131	138	101	90	82	51
130 mph	8-20	151	111	106	136	111	106	113	111	106	110	108	105	98	98	98	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	97	68	59	54	41	37
	21-27	158	132	132	143	132	132	123	123	123	110	110	110	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	130	96	96	82	51	51
	28-60	153	153	125	143	143	125	125	125	123	113	113	113	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	113	112	85	73	64	39
140 mph	8-20	120	101	95	120	101	95	113	101	95	110	101	95	98	97	94	89	89	89	82	82	82	76	76	76	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	72	53	46	46	34	32
	21-27	158	114	114	143	114	114	123	114	114	110	108	108	99	99	99	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	112	74	74	67	42	42
	28-60	144	153	108	143	143	108	125	125	108	113	113	107	103	103	103	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	103	101	60	60	50	31
150 mph	8-20	106	85	73	106	85	73	106	85	73	105	85	73	98	85	73	89	85	73	82	82	73	76	76	73	71	71	71	67	67	67	64	64	64	61	61	61	59	59	59	60	42	37	40	30	27
	21-27	150	104	104	143	104	104	123	104	104	109	102	102	99	97	97	90	90	90	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	102	57	57	56	36	36
	28-60	126	131	99	126	131	99	124	123	99	112	112	99	102	102	97	92	92	92	86	86	86	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	94	87	40	50	40	25
160 mph	8-20	97	67	58	97	67	58	97	67	58	97	67	58	94	67	58	89	67	58	82	67	58	76	67	58	71	67	58	67	67	58	64	64	58	61	61	58	59	59	58	50	35	32	35	26	24
	21-27	129	96	96	129	96	96	121	96	96	107	96	96	97	92	92	90	89	89	83	83	83	77	77	77	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	91	46	46	48	31	31
	28-60	112	111	83	112	111	83	112	111	83	110	107	83	101	101	83	92	92	83	86	86	83	80	80	80	76	76	76	72	72	72	68	68	68	65	65	65	63	63	63	75	62	32	43	33	20
170 mph	8-20	74	54	47	74	54	47	74	54	47	74	54	47	74	54	47	74	54	47	74	54	47	74	54	47	71	54	47	67	54	47	64	54	47	61	54	47	59	54	47	43	31	29	31	23	21
	21-27	114	76	76	114	76	76	114	76	76	105	76	76	96	76	76	89	76	76	83	76	76	77	76	76	72	72	72	68	68	68	65	65	65	62	62	62	60	60	60	71	37	37	41	28	28
	28-60	104	102	63	104	102	63	104	102	63	104	102	63	99	97	63	92	92	63	86	86	63	80	80	63	76	76	63	72	72	63	68	68	63	65	65	63	63	63	63	60	45	26	37	27	17
175 mph	8-20	69	49	43	69	49	43	69	49	43	69	49	43	69	49	43	69	49	43	69	49	43	69	49	43	69	49	43	67	49	43	64	49	43	61	49	43	59	49	43	40	29	27	29	22	20
	21-27	109	68	68	109	68	68	109	68	68	104	68	68	95	68	68	88	68	68	82	68	68	77	68	68	72	68	68	68	68	68	65	65	65	62	62	62	60	60	60	64	35	35	38	26	26
	28-60	100	98	52	100	98	52	100	98	52	100	98	52	98	95	52	91	91	52	86	86	52	80	80	52	76	76	52	72	72	52	68	68	52	65	65	52	63	63	52	54	39	24	35	25	16
180 mph	8-20	63	45	39	63	45	39	63	45	39	63	45	39	63	45	39	63	45	39	63	45	39	63	45	39	63	45	39	63	45	39	63	45	39	61	45	39	59	45	39	37	28	25	28	20	19
	21-27	105	62	62	105	62	62	105	62	62	102	62	62	94	62	62	87	62	62	82	62	62	77	62	62	72	62	62	68	62	62	65	62	62	62	62	62	60	60	60	57	33	33	36	25	25
	28-60	97	95	45	97	95	45	97	95	45	97	95	45	96	93	45	91	89	45	85	85	45	80	80	45	76	76	45	72	72	45	68	68	45	65	65	45	63	63	45	49	35	22	33	23	15

= min 72" span = min 64" span = min 48" span

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= Shaded cells indicate conditions in which UFO Mid Clamp connection capacity is exceeded. If such conditions are encountered contact techsupport@ironridge.com.

* = Note: additional installation requirement for CAMO module clamp. See Note 11 on Page 3 for details

Grouping of ASCE 7-16 Roof Zones (Hip)

Roof Slope	8° - 20°			21° - 27°			28° - 60°		
Group	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
ASCE 7-16 Roof Zones	1	2r	2e 3	1	2e 2r	3	1	2e	2r 3

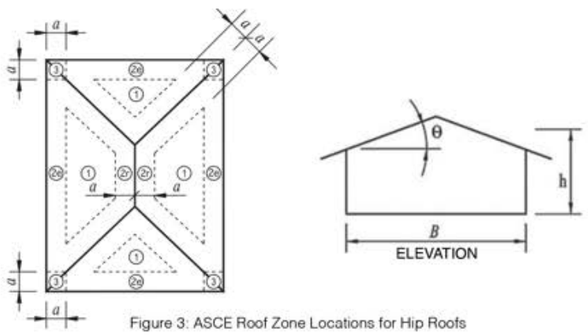

Figure 3: ASCE Roof Zone Locations for Hip Roofs

Notation

a = 10% of least horizontal dimension or 0.4*h*, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m). If an overhang exists, the edge distance shall be measured from the outside edge of the overhang. The horizontal dimensions used to compute the edge distance shall not include any overhang distances.

B = Horizontal dimension of building measured normal to wind direction, in ft (m).

h = Mean roof height, in ft (m), except that eave height shall be used for $\theta \leq 10°$.

θ = Angle of plane of roof from horizontal, in degrees.

Rail: XR1000

Hip Roof Flush Mount System Span Table (inches) - Portrait or Landscape Installation
Max Module Length: 90", Max Module SF: 28 SF
Exposure B

Wind Speed (mph)	Roof Slope (deg.)	Ground Snow: 0 psf			10 psf			20 psf			30 psf			40 psf*			50 psf*			60 psf*			70 psf*			80 psf*			90 psf*			100 psf*			110 psf*			120 psf*			Exposed Mod.			Edge Mod.		
		Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
90 mph	8-20	147	147	147	124	124	124	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	147	147	147	135	116	111
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	145	145	145	145	128	128
	28-60	140	140	140	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	140	140	140	140	140	124
95 mph	8-20	147	147	147	124	124	124	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	147	147	147	126	109	104
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	145	145	145	145	121	121
	28-60	140	140	140	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	140	140	140	137	140	117
100 mph	8-20	147	147	147	124	124	124	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	147	147	147	119	103	98
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	145	145	145	144	114	114
	28-60	140	140	140	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	140	140	140	130	133	110
105 mph	8-20	147	147	147	124	124	124	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	147	146	134	112	97	90
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	145	145	145	135	108	108
	28-60	140	140	140	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	140	140	140	123	126	104
110 mph	8-20	147	147	147	124	124	124	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	147	133	126	105	88	80
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	145	145	145	128	103	103
	28-60	140	140	140	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	140	140	140	117	119	99
115 mph	8-20	147	147	147	124	124	124	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	147	125	119	100	79	71
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	145	145	145	121	98	98
	28-60	140	140	140	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	140	140	137	112	113	94
120 mph	8-20	147	147	147	124	124	124	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	147	118	112	94	71	64
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	145	133	133	116	91	91
	28-60	140	140	140	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	140	140	128	107	107	85
130 mph	8-20	147	143	132	124	124	124	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	126	106	101	73	58	52
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	145	120	120	106	74	74
	28-60	140	140	140	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	140	140	115	98	98	66
140 mph	8-20	147	126	120	124	124	120	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	113	96	83	60	48	43
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	145	109	109	97	61	61
	28-60	140	140	139	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	127	130	104	88	83	53
150 mph	8-20	143	115	109	124	115	109	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	102	74	64	52	40	37
	21-27	145	130	130	131	130	130	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	129	99	99	83	51	51
	28-60	140	140	125	131	131	125	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	116	118	95	73	67	42
160 mph	8-20	126	105	100	124	105	100	103	103	100	101	101	98	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	86	58	51	46	34	31
	21-27	145	119	119	131	119	119	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	118	84	84	70	43	43
	28-60	140	140	114	131	131	114	115	115	113	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	107	108	73	62	55	33
170 mph	8-20	115	97	86	115	97	86	103	97	86	101	96	86	90	90	86	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	64	47	41	40	30	28
	21-27	145	110	110	131	110	110	113	108	108	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	109	66	66	59	37	37
	28-60	128	132	105	128	131	105	115	115	105	103	103	102	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	99	99	55	53	44	27
175 mph	8-20	110	89	77	110	89	77	103	89	77	101	89	77	90	89	77	81	81	77	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	59	43	37	38	28	26
	21-27	140	106	106	131	106	106	113	106	106	101	100	100	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	104	59	59	55	35	35
	28-60	124	127	101	124	127	101	115	115	101	103	103	100	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	96	95	47	49	40	25
180 mph	8-20	105	80	69	105	80	69	103	80	69	101	80	69	90	80	69	81	80	69	75	75	69	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	55	39	34	36	27	24
	21-27	132	102	102	131	102	102	113	102	102	101	97	97	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	100	54	54	51	32	32
	28-60	119	122	97	119	122	97	115	115	97	103	103	97	94	94	93	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	92	86	40	46	37	23

= min 72" span = min 64" span = min 48" span

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= Shaded cells indicate conditions in which UFO Mid Clamp connection capacity is exceeded. If such conditions are encountered contact techsupport@ironridge.com.

* = Note: additional installation requirement for CAMO module clamp. See Note 11 on Page 3 for details

Grouping of ASCE 7-16 Roof Zones (Hip)

Roof Slope	8° - 20°			21° - 27°			28° - 60°		
Group	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
ASCE 7-16 Roof Zones	1	2r	2e 3	1	2e 2r	3	1	2e	2r 3

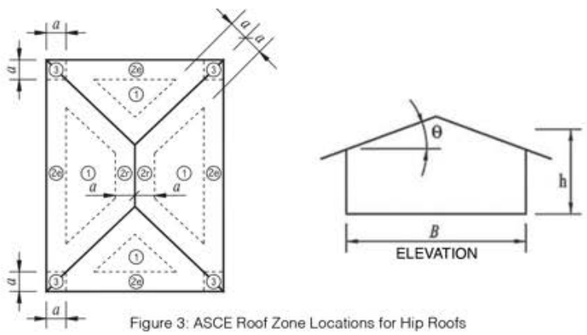

Figure 3: ASCE Roof Zone Locations for Hip Roofs

Notation

a = 10% of least horizontal dimension or $0.4h$, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m). If an overhang exists, the edge distance shall be measured from the outside edge of the overhang. The horizontal dimensions used to compute the edge distance shall not include any overhang distances.

B = Horizontal dimension of building measured normal to wind direction, in ft (m).

h = Mean roof height, in ft (m), except that eave height shall be used for $\theta \leq 10°$.

θ = Angle of plane of roof from horizontal, in degrees.

Rail: XR1000

Hip Roof Flush Mount System Span Table (inches) - Portrait or Landscape Installation
Max Module Length: 90", Max Module SF: 28 SF
Exposure C

Wind Speed (mph)	Roof Slope (deg.)	Ground Snow: 0 psf			10 psf			20 psf			30 psf			40 psf*			50 psf*			60 psf*			70 psf*			80 psf*			90 psf*			100 psf*			110 psf*			120 psf*			Exposed Mod.			Edge Mod.		
		Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
90 mph	8-20	147	147	147	124	124	124	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	147	141	132	110	96	86
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	145	145	145	132	106	106
	28-60	140	140	140	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	140	140	140	121	123	102
95 mph	8-20	147	147	147	124	124	124	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	147	129	122	103	83	75
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	145	145	145	124	100	100
	28-60	140	140	140	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	140	140	140	114	116	96
100 mph	8-20	147	147	147	124	124	124	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	147	120	114	96	73	66
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	145	137	137	117	94	94
	28-60	140	140	140	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	140	140	131	108	109	88
105 mph	8-20	147	147	144	124	124	124	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	136	113	107	84	64	58
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	145	127	127	111	83	83
	28-60	140	140	140	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	140	140	122	103	103	76
110 mph	8-20	147	142	132	124	124	124	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	126	106	100	73	57	52
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	145	120	120	105	73	73
	28-60	140	140	140	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	140	140	115	98	97	66
115 mph	8-20	147	131	124	124	124	124	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	118	100	92	64	51	46
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	145	113	113	100	65	65
	28-60	140	140	140	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	131	137	108	93	91	58
120 mph	8-20	147	124	117	124	124	117	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	111	91	78	58	46	42
	21-27	145	143	143	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	141	107	107	95	58	58
	28-60	140	140	134	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	124	128	102	84	80	51
130 mph	8-20	133	111	105	124	111	105	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	98	67	58	49	38	34
	21-27	145	125	125	131	125	125	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	124	96	96	78	48	48
	28-60	140	140	121	131	131	121	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	113	114	89	68	62	38
140 mph	8-20	119	101	95	119	101	95	103	101	95	101	98	95	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	72	51	45	42	32	29
	21-27	145	114	114	131	114	114	113	111	111	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	112	73	73	63	40	40
	28-60	132	139	109	131	131	109	115	115	109	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	103	103	62	56	48	30
150 mph	8-20	107	84	72	107	84	72	103	84	72	101	84	72	90	84	72	81	81	72	75	75	72	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	57	40	35	37	27	25
	21-27	135	104	104	131	104	104	113	104	104	101	98	98	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	102	56	56	53	33	33
	28-60	121	124	99	121	124	99	115	115	99	103	103	98	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	94	93	43	47	38	24
160 mph	8-20	98	66	57	98	66	57	98	66	57	96	66	57	90	66	57	81	66	57	75	66	57	69	66	57	65	65	57	62	62	57	59	59	57	56	56	56	54	54	54	48	33	30	32	24	22
	21-27	123	95	95	123	95	95	113	95	95	100	93	93	91	89	89	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	92	45	45	45	29	29
	28-60	112	113	87	112	113	87	112	111	87	103	103	87	94	94	87	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	75	66	31	40	31	20
170 mph	8-20	76	53	46	76	53	46	76	53	46	76	53	46	76	53	46	76	53	46	75	53	46	69	53	46	65	53	46	62	53	46	59	53	46	56	53	46	54	53	46	40	28	26	28	21	19
	21-27	114	76	76	114	76	76	110	76	76	98	76	76	89	76	76	82	76	76	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	71	36	36	38	25	25
	28-60	104	104	64	104	104	64	104	104	64	101	99	64	92	92	64	85	85	64	79	79	64	74	74	64	69	69	64	66	66	64	62	62	62	60	60	60	57	57	57	59	47	25	34	26	16
175 mph	8-20	66	48	42	66	48	42	66	48	42	66	48	42	66	48	42	66	48	42	66	48	42	66	48	42	65	48	42	62	48	42	59	48	42	56	48	42	54	48	42	37	27	25	27	20	18
	21-27	109	67	67	109	67	67	108	67	67	97	67	67	89	67	67	82	67	67	76	67	67	70	67	67	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	63	33	33	35	24	24
	28-60	100	100	56	100	100	56	100	100	56	99	97	56	92	92	56	85	85	56	79	79	56	74	74	56	69	69	56	66	66	56	62	62	56	60	60	56	57	57	56	53	41	23	32	24	15
180 mph	8-20	60	43	38	60	43	38	60	43	38	60	43	38	60	43	38	60	43	38	60	43	38	60	43	38	60	43	38	60	43	38	59	43	38	56	43	38	54	43	38	35	25	23	25	19	17
	21-27	105	61	61	105	61	61	105	61	61	96	61	61	88	61	61	81	61	61	76	61	61	70	61	61	66	61	61	63	61	61	60	60	60	57	57	57	55	55	55	57	30	30	33	23	23
	28-60	96	96	49	96	96	49	96	96	49	96	94	49	91	90	49	84	84	49	79	79	49	74	74	49	69	69	49	66	66	49	62	62	49	60	60	49	57	57	49	48	35	21	30	22	14

= min 72" span = min 64" span = min 48" span

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= Shaded cells indicate conditions in which UFO Mid Clamp connection capacity is exceeded. If such conditions are encountered contact techsupport@ironridge.com.

* = Note: additional installation requirement for CAMO module clamp. See Note 11 on Page 3 for details

Grouping of ASCE 7-16 Roof Zones (Hip)

Roof Slope	8° - 20°			21° - 27°			28° - 60°		
Group	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
ASCE 7-16 Roof Zones	1	2r	2e 3	1	2e 2r	3	1	2e	2r 3

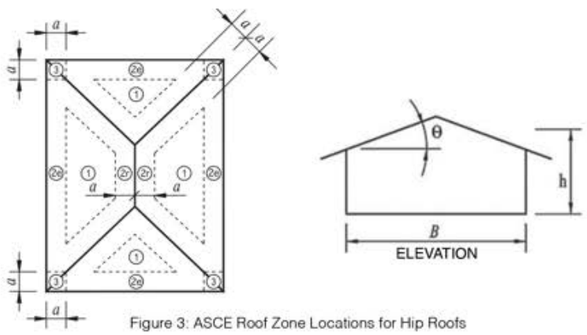

Figure 3: ASCE Roof Zone Locations for Hip Roofs

Notation

a = 10% of least horizontal dimension or 0.4*h*, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m). If an overhang exists, the edge distance shall be measured from the outside edge of the overhang. The horizontal dimensions used to compute the edge distance shall not include any overhang distances.

B = Horizontal dimension of building measured normal to wind direction, in ft (m).

h = Mean roof height, in ft (m), except that eave height shall be used for $\theta \leq 10°$.

θ = Angle of plane of roof from horizontal, in degrees.

Rail: XR1000

Hip Roof Flush Mount System Span Table (inches) - Portrait or Landscape Installation
Max Module Length: 90", Max Module SF: 28 SF
Exposure D

Wind Speed (mph)	Roof Slope (deg.)	Ground Snow: 0 psf			10 psf			20 psf			30 psf			40 psf*			50 psf*			60 psf*			70 psf*			80 psf*			90 psf*			100 psf*			110 psf*			120 psf*			Exposed Mod.			Edge Mod.		
		Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
90 mph	8-20	147	147	147	124	124	124	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	147	124	117	99	77	70
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	145	143	143	120	97	97
	28-60	140	140	140	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	140	140	134	111	112	93
95 mph	8-20	147	147	147	124	124	124	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	143	115	109	88	67	61
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	145	130	130	113	86	86
	28-60	140	140	140	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	140	140	125	105	105	80
100 mph	8-20	147	146	134	124	124	124	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	128	107	102	75	59	53
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	145	121	121	107	75	75
	28-60	140	140	140	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	140	140	117	99	99	68
105 mph	8-20	147	132	125	124	124	124	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	119	101	95	65	52	47
	21-27	145	145	145	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	145	114	114	101	66	66
	28-60	140	140	140	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	132	139	109	94	93	59
110 mph	8-20	147	124	118	124	124	118	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	111	92	79	59	46	42
	21-27	145	144	144	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	142	107	107	96	59	59
	28-60	140	140	135	131	131	131	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	125	128	102	85	80	51
115 mph	8-20	147	117	111	124	117	111	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	104	78	67	54	42	38
	21-27	145	132	132	131	131	131	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	131	101	101	86	53	53
	28-60	140	140	127	131	131	127	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	118	120	96	76	70	44
120 mph	8-20	132	110	105	124	110	105	103	103	103	101	101	101	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	98	66	57	49	37	34
	21-27	145	125	125	131	125	125	113	113	113	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	124	95	95	77	47	47
	28-60	140	140	120	131	131	120	115	115	115	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	112	113	87	68	61	38
130 mph	8-20	117	99	91	117	99	91	103	99	91	101	97	91	90	90	90	81	81	81	75	75	75	69	69	69	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	69	50	43	42	31	28
	21-27	145	112	112	131	112	112	113	110	110	101	101	101	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	111	70	70	62	39	39
	28-60	130	135	108	130	131	108	115	115	108	103	103	103	94	94	94	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	101	101	59	55	47	29
140 mph	8-20	105	79	68	105	79	68	103	79	68	101	79	68	90	79	68	81	79	68	75	75	68	69	69	68	65	65	65	62	62	62	59	59	59	56	56	56	54	54	54	54	38	34	36	26	24
	21-27	132	102	102	131	102	102	113	102	102	101	97	97	91	91	91	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	100	53	53	51	32	32
	28-60	119	121	97	119	121	97	115	115	97	103	103	97	94	94	93	85	85	85	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	92	85	39	45	37	23
150 mph	8-20	93	61	53	93	61	53	93	61	53	93	61	53	90	61	53	81	61	53	75	61	53	69	61	53	65	61	53	62	61	53	59	59	53	56	56	53	54	54	53	45	31	28	31	23	21
	21-27	120	89	89	120	89	89	112	89	89	99	89	89	90	87	87	82	82	82	76	76	76	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	84	42	42	42	28	28
	28-60	109	110	79	109	110	79	109	109	79	102	102	79	93	93	79	85	85	79	79	79	79	74	74	74	69	69	69	66	66	66	62	62	62	60	60	60	57	57	57	69	60	29	38	30	18
160 mph	8-20	68	49	42	68	49	42	68	49	42	68	49	42	68	49	42	68	49	42	68	49	42	68	49	42	68	49	42	65	49	42	62	49	42	59	49	42	56	49	42	54	49	42	38	27	25	27	20	18
	21-27	110	69	69	110	69	69	109	69	69	97	69	69	89	69	69	82	69	69	76	69	69	70	69	69	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	65	33	33	36	24	24
	28-60	101	100	58	101	100	58	101	100	58	99	97	58	92	92	58	85	85	58	79	79	58	74	74	58	69	69	58	66	66	58	62	62	58	60	60	58	57	57	57	54	42	23	32	24	15
170 mph	8-20	56	40	35	56	40	35	56	40	35	56	40	35	56	40	35	56	40	35	56	40	35	56	40	35	56	40	35	56	40	35	56	40	35	56	40	35	54	40	35	32	24	22	24	18	16
	21-27	101	55	55	101	55	55	101	55	55	95	55	55	87	55	55	81	55	55	76	55	55	70	55	55	66	55	55	63	55	55	60	55	55	57	55	55	55	55	55	51	29	29	31	21	21
	28-60	93	90	41	93	90	41	93	90	41	93	90	41	90	88	41	84	84	41	79	79	41	74	74	41	69	69	41	66	66	41	62	62	41	60	60	41	57	57	41	44	31	19	28	20	13
175 mph	8-20	51	36	31	51	36	31	51	36	31	51	36	31	51	36	31	51	36	31	51	36	31	51	36	31	51	36	31	51	36	31	51	36	31	51	36	31	51	36	31	30	22	21	22	17	15
	21-27	98	49	49	98	49	49	98	49	49	94	49	49	86	49	49	80	49	49	75	49	49	70	49	49	66	49	49	63	49	49	60	49	49	57	49	49	55	49	49	46	27	27	29	20	20
	28-60	84	76	35	84	76	35	84	76	35	84	76	35	84	76	35	83	76	35	78	76	35	74	74	35	69	69	35	66	66	35	62	62	35	60	60	35	57	57	35	39	29	18	27	19	12
180 mph	8-20	48	33	30	48	33	30	48	33	30	48	33	30	48	33	30	48	33	30	48	33	30	48	33	30	48	33	30	48	33	30	48	33	30	48	33	30	48	33	30	29	21	20	21	16	14
	21-27	92	45	45	92	45	45	92	45	45	92	45	45	86	45	45	80	45	45	75	45	45	70	45	45	66	45	45	63	45	45	60	45	45	57	45	45	55	45	45	41	26	26	27	19	19
	28-60	75	66	31	75	66	31	75	66	31	75	66	31	75	66	31	75	66	31	75	66	31	73	66	31	69	66	31	66	66	31	62	62	31	60	60	31	57	57	31	36	26	16	25	17	

= min 72" span = min 64" span = min 48" span

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= Shaded cells indicate conditions in which UFO Mid Clamp connection capacity is exceeded. If such conditions are encountered contact techsupport@ironridge.com.

= Contact techsupport@ironridge.com

* = Note: additional installation requirement for CAMO module clamp. See Note 11 on Page 3 for details.

Grouping of ASCE 7-16 Roof Zones (Hip)

Roof Slope	8° - 20°			21° - 27°			28° - 60°		
Group	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
ASCE 7-16 Roof Zones	1	2r	2e 3	1	2e 2r	3	1	2e	2r 3

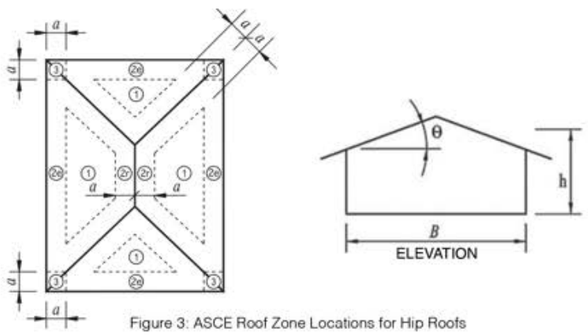

Figure 3: ASCE Roof Zone Locations for Hip Roofs

Notation

a = 10% of least horizontal dimension or 0.4h, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m). If an overhang exists, the edge distance shall be measured from the outside edge of the overhang. The horizontal dimensions used to compute the edge distance shall not include any overhang distances.

B = Horizontal dimension of building measured normal to wind direction, in ft (m).

h = Mean roof height, in ft (m), except that eave height shall be used for $\theta \leq 10°$.

θ = Angle of plane of roof from horizontal, in degrees.

Rail: XR1000

Hip Roof Flush Mount System Span Table (inches) - Portrait or Landscape Installation

Max Module Length: 98.5", Max Module SF: 30.5 SF

Exposure B

Wind Speed (mph)	Roof Slope (deg.)	Ground Snow: 0 psf			10 psf			20 psf			30 psf			40 psf*			50 psf*			60 psf*			70 psf*			80 psf*			90 psf*			100 psf*			110 psf*			120 psf*			Exposed Mod.			Edge Mod.		
		Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
90 mph	8-20	141	141	141	119	119	119	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	141	141	141	125	107	103
	21-27	138	138	138	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	138	138	138	138	119	119
	28-60	134	134	134	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	134	134	134	134	134	115
95 mph	8-20	141	141	141	119	119	119	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	141	141	141	117	101	97
	21-27	138	138	138	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	138	138	138	138	112	112
	28-60	134	134	134	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	134	134	134	127	131	109
100 mph	8-20	141	141	141	119	119	119	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	141	141	133	110	95	86
	21-27	138	138	138	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	138	138	138	132	106	106
	28-60	134	134	134	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	134	134	134	120	124	102
105 mph	8-20	141	141	141	119	119	119	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	141	132	125	103	84	75
	21-27	138	138	138	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	138	138	138	125	100	100
	28-60	134	134	134	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	134	134	134	114	117	97
110 mph	8-20	141	141	141	119	119	119	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	141	123	117	98	74	67
	21-27	138	138	138	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	138	138	138	118	95	95
	28-60	134	134	134	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	134	134	134	109	110	92
115 mph	8-20	141	141	141	119	119	119	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	141	116	110	88	66	60
	21-27	138	138	138	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	138	131	131	112	85	85
	28-60	134	134	134	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	134	134	127	104	105	80
120 mph	8-20	141	141	137	119	119	119	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	133	110	104	77	59	54
	21-27	138	138	138	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	138	124	124	107	76	76
	28-60	134	134	134	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	134	134	120	99	100	70
130 mph	8-20	141	130	123	119	119	119	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	118	98	89	61	48	44
	21-27	138	138	138	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	138	111	111	98	62	62
	28-60	134	134	134	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	129	134	107	90	88	55
140 mph	8-20	141	117	111	119	117	111	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	105	78	67	51	40	36
	21-27	138	132	132	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	132	101	101	84	51	51
	28-60	134	134	128	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	118	122	97	74	69	43
150 mph	8-20	129	107	101	119	107	101	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	94	60	52	45	34	31
	21-27	138	121	121	125	121	121	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	120	88	88	69	43	43
	28-60	134	134	117	125	125	117	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	108	110	79	61	55	34
160 mph	8-20	117	98	88	117	98	88	99	98	88	96	95	88	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	67	47	41	39	29	27
	21-27	138	111	111	125	111	111	108	107	107	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	110	67	67	58	36	36
	28-60	129	134	107	125	125	107	110	110	107	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	100	100	57	52	44	27
170 mph	8-20	107	80	69	107	80	69	99	80	69	96	80	69	86	80	69	78	78	69	71	71	69	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	53	38	34	34	26	23
	21-27	133	102	102	125	102	102	108	102	102	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	101	54	54	50	31	31
	28-60	119	123	98	119	123	98	110	110	98	99	99	96	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	92	92	42	44	36	23
175 mph	8-20	102	72	62	102	72	62	99	72	62	96	72	62	86	72	62	78	72	62	71	71	62	66	66	62	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	49	35	30	32	24	22
	21-27	128	98	98	125	98	98	108	98	98	96	93	93	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	97	48	48	46	29	29
	28-60	115	118	94	115	118	94	110	110	94	99	99	94	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	83	77	35	41	33	21
180 mph	8-20	98	64	56	98	64	56	98	64	56	95	64	56	86	64	56	78	64	56	71	64	56	66	64	56	62	62	56	59	59	56	56	56	56	54	54	54	51	51	51	46	32	28	31	23	21
	21-27	123	95	95	123	95	95	108	95	95	96	91	91	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	91	43	43	43	27	27
	28-60	111	113	88	111	113	88	109	109	88	99	99	88	90	90	88	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	74	66	30	38	30	19

= min 72" span = min 64" span = min 48" span

= Shaded cells indicate conditions in which UFO Mid Clamp connection capacity is exceeded. If such conditions are encountered contact techsupport@ironridge.com.

* = Note: additional installation requirement for CAMO module clamp. See Note 11 on Page 3 for details

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Grouping of ASCE 7-16 Roof Zones (Hip)

Roof Slope	8° - 20°			21° - 27°			28° - 60°		
Group	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
ASCE 7-16 Roof Zones	1	2r	2e 3	1	2e 2r	3	1	2e	2r 3

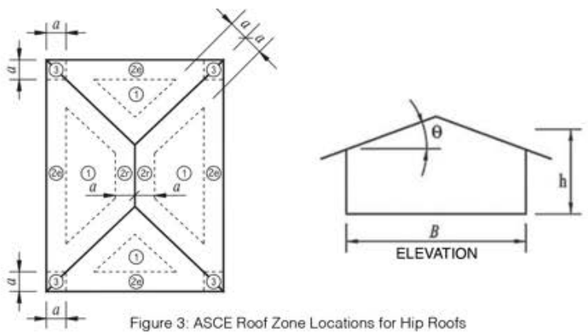

Figure 3: ASCE Roof Zone Locations for Hip Roofs

Notation

a = 10% of least horizontal dimension or $0.4h$, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m). If an overhang exists, the edge distance shall be measured from the outside edge of the overhang. The horizontal dimensions used to compute the edge distance shall not include any overhang distances.

B = Horizontal dimension of building measured normal to wind direction, in ft (m).

h = Mean roof height, in ft (m), except that eave height shall be used for $\theta \leq 10°$.

θ = Angle of plane of roof from horizontal, in degrees.

Rail: XR1000

Hip Roof Flush Mount System Span Table (inches) - Portrait or Landscape Installation

Max Module Length: 98.5", Max Module SF: 30.5 SF

Exposure C

Wind Speed (mph)	Roof Slope (deg.)	Ground Snow: 0 psf			10 psf			20 psf			30 psf			40 psf*			50 psf*			60 psf*			70 psf*			80 psf*			90 psf*			100 psf*			110 psf*			120 psf*			Exposed Mod.			Edge Mod.		
		Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
90 mph	8-20	141	141	141	119	119	119	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	141	129	122	102	80	73
	21-27	138	138	138	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	138	138	138	123	98	98
	28-60	134	134	134	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	134	134	134	113	115	95
95 mph	8-20	141	141	141	119	119	119	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	141	120	113	95	70	63
	21-27	138	138	138	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	138	135	135	115	91	91
	28-60	134	134	134	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	134	134	131	106	108	86
100 mph	8-20	141	141	140	119	119	119	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	136	112	106	81	61	55
	21-27	138	138	138	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	138	126	126	109	79	79
	28-60	134	134	134	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	134	134	122	101	101	73
105 mph	8-20	141	138	131	119	119	119	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	126	104	99	69	54	49
	21-27	138	138	138	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	138	118	118	103	69	69
	28-60	134	134	134	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	134	134	114	95	96	63
110 mph	8-20	141	129	123	119	119	119	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	117	98	89	60	48	44
	21-27	138	138	138	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	138	111	111	98	61	61
	28-60	134	134	134	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	129	134	107	89	87	55
115 mph	8-20	141	122	115	119	119	115	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	110	87	74	54	43	39
	21-27	138	138	138	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	137	105	105	91	55	55
	28-60	134	134	133	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	122	127	101	79	75	48
120 mph	8-20	140	115	109	119	115	109	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	103	73	63	50	39	35
	21-27	138	130	130	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	129	99	99	81	49	49
	28-60	134	134	125	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	116	119	95	71	65	41
130 mph	8-20	124	103	98	119	103	98	99	99	98	96	96	95	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	81	54	47	42	32	29
	21-27	138	117	117	125	117	117	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	115	79	79	65	40	40
	28-60	134	134	112	125	125	112	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	105	106	69	57	51	31
140 mph	8-20	111	89	76	111	89	76	99	89	76	96	89	76	86	86	76	78	78	76	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	57	42	36	36	27	25
	21-27	138	106	106	125	106	106	108	104	104	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	104	59	59	53	33	33
	28-60	123	128	102	123	125	102	110	110	102	99	99	98	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	95	96	49	47	39	24
150 mph	8-20	100	68	58	100	68	58	99	68	58	96	68	58	86	68	58	78	68	58	71	68	58	66	66	58	62	62	58	59	59	58	56	56	56	54	54	54	51	51	51	47	33	29	31	23	21
	21-27	125	96	96	125	96	96	108	96	96	96	92	92	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	95	46	46	44	28	28
	28-60	113	116	92	113	116	92	110	110	92	99	99	92	90	90	89	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	78	71	33	40	32	20
160 mph	8-20	79	53	46	79	53	46	79	53	46	79	53	46	79	53	46	78	53	46	71	53	46	66	53	46	62	53	46	59	53	46	56	53	46	54	53	46	51	51	46	40	27	25	27	20	19
	21-27	115	77	77	115	77	77	107	77	77	95	77	77	86	77	77	78	77	77	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	73	36	36	37	25	25
	28-60	104	105	67	104	105	67	104	104	67	98	98	67	89	89	67	81	81	67	75	75	67	70	70	67	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	60	51	25	34	26	16
170 mph	8-20	59	43	38	59	43	38	59	43	38	59	43	38	59	43	38	59	43	38	59	43	38	59	43	38	59	43	38	59	43	38	56	43	38	54	43	38	51	43	38	34	24	22	24	18	17
	21-27	106	61	61	106	61	61	104	61	61	93	61	61	85	61	61	78	61	61	72	61	61	67	61	61	63	61	61	60	60	60	57	57	57	54	54	54	52	52	52	57	30	30	32	22	22
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175 mph	8-20	54	39	34	54	39	34	54	39	34	54	39	34	54	39	34	54	39	34	54	39	34	54	39	34	54	39	34	54	39	34	54	39	34	54	39	34	51	39	34	31	23	21	23	17	16
	21-27	102	54	54	102	54	54	101	54	54	92	54	54	84	54	54	78	54	54	72	54	54	67	54	54	63	54	54	60	54	54	57	54	54	54	54	54	52	52	52	51	28	28	30	20	20
	28-60	93	93	43	93	93	43	93	93	43	93	91	43	87	87	43	81	81	43	75	75	43	70	70	43	66	66	43	63	63	43	60	60	43	57	57	43	55	55	43	43	32	19	27	20	12
180 mph	8-20	50	35	31	50	35	31	50	35	31	50	35	31	50	35	31	50	35	31	50	35	31	50	35	31	50	35	31	50	35	31	50	35	31	50	35	31	50	35	31	29	22	20	22	16	15
	21-27	98	49	49	98	49	49	98	49	49	92	49	49	84	49	49	77	49	49	72	49	49	67	49	49	63	49	49	60	49	49	57	49	49	54	49	49	52	49	49	46	26	26	28	19	19
	28-60	85	79	36	85	79	36	85	79	36	85	79	36	85	79	36	80	79	36	75	75	36	70	70	36	66	66	36	63	63	36	60	60	36	57	57	36	55	55	36	39	28	17	26	18	

= min 72" span = min 64" span = min 48" span

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= Shaded cells indicate conditions in which UFO Mid Clamp connection capacity is exceeded. If such conditions are encountered contact techsupport@ironridge.com.

= Contact techsupport@ironridge.com

* = Note: additional installation requirement for CAMO module clamp. See Note 11 on Page 3 for details.

Grouping of ASCE 7-16 Roof Zones (Hip)

Roof Slope	8° - 20°			21° - 27°			28° - 60°		
Group	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
ASCE 7-16 Roof Zones	1	2r	2e 3	1	2e 2r	3	1	2e	2r 3

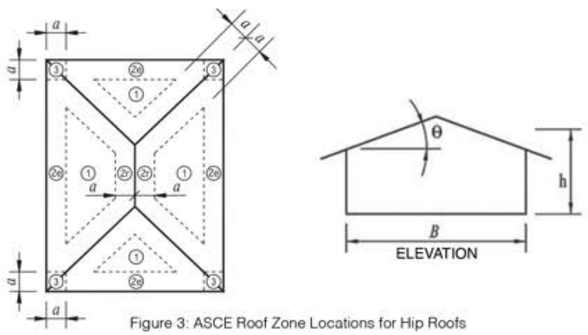

Figure 3: ASCE Roof Zone Locations for Hip Roofs

Notation

a = 10% of least horizontal dimension or $0.4h$, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m). If an overhang exists, the edge distance shall be measured from the outside edge of the overhang. The horizontal dimensions used to compute the edge distance shall not include any overhang distances.

B = Horizontal dimension of building measured normal to wind direction, in ft (m).

h = Mean roof height, in ft (m), except that eave height shall be used for $\theta \leq 10°$.

θ = Angle of plane of roof from horizontal, in degrees.

Rail: XR1000

Hip Roof Flush Mount System Span Table (inches) - Portrait or Landscape Installation

Max Module Length: 98.5", Max Module SF: 30.5 SF

Exposure D

Wind Speed (mph)	Roof Slope (deg.)	Ground Snow: 0 psf			10 psf			20 psf			30 psf			40 psf*			50 psf*			60 psf*			70 psf*			80 psf*			90 psf*			100 psf*			110 psf*			120 psf*			Exposed Mod.			Edge Mod.		
		Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
90 mph	8-20	141	141	141	119	119	119	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	140	115	109	86	65	59
	21-27	138	138	138	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	138	130	130	111	84	84
	28-60	134	134	134	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	134	134	126	103	104	78
95 mph	8-20	141	141	134	119	119	119	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	129	107	101	73	56	51
	21-27	138	138	138	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	138	121	121	105	72	72
	28-60	134	134	134	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	134	134	117	97	97	66
100 mph	8-20	141	131	124	119	119	119	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	119	100	93	63	50	45
	21-27	138	138	138	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	138	113	113	99	63	63
	28-60	134	134	134	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	131	134	109	92	90	57
105 mph	8-20	141	123	116	119	119	116	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	111	89	76	55	44	40
	21-27	138	138	138	125	125	125	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	138	106	106	93	56	56
	28-60	134	134	134	125	125	125	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	123	128	102	81	77	49
110 mph	8-20	141	115	109	119	115	109	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	103	74	64	50	39	35
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115 mph	8-20	131	108	103	119	108	103	99	99	99	96	96	96	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	97	63	54	46	35	32
	21-27	138	123	123	125	123	123	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	122	92	92	72	44	44
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120 mph	8-20	123	102	97	119	102	97	99	99	97	96	96	95	86	86	86	78	78	78	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	80	54	46	42	32	29
	21-27	138	116	116	125	116	116	108	108	108	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	115	77	77	64	40	40
	28-60	134	134	112	125	125	112	110	110	110	99	99	99	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	104	106	68	57	50	31
130 mph	8-20	109	85	73	109	85	73	99	85	73	96	85	73	86	85	73	78	78	73	71	71	71	66	66	66	62	62	62	59	59	59	56	56	56	54	54	54	51	51	51	56	40	35	35	26	24
	21-27	136	104	104	125	104	104	108	103	103	96	96	96	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	103	57	57	52	32	32
	28-60	122	126	100	122	125	100	110	110	100	99	99	97	90	90	90	81	81	81	75	75	75	70	70	70	66	66	66	63	63	63	60	60	60	57	57	57	55	55	55	94	94	46	46	38	24
140 mph	8-20	98	64	55	98	64	55	98	64	55	95	64	55	86	64	55	78	64	55	71	64	55	66	64	55	62	62	55	59	59	55	56	56	55	54	54	54	51	51	51	45	31	28	30	23	21
	21-27	123	94	94	123	94	94	108	94	94	96	91	91	87	87	87	78	78	78	72	72	72	67	67	67	63	63	63	60	60	60	57	57	57	54	54	54	52	52	52	91	43	43	43	27	27
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150 mph	8-20	72	50	43	72	50	43	72	50	43	72	50	43	72	50	43	72	50	43	71	50	43	66	50	43	62	50	43	59	50	43	56	50	43	54	50	43	51	50	43	38	26	24	26	20	18
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160 mph	8-20	55	40	35	55	40	35	55	40	35	55	40	35	55	40	35	55	40	35	55	40	35	55	40	35	55	40	35	55	40	35	55	40	35	54	40	35	51	40	35	32	23	21	23	17	16
	21-27	102	56	56	102	56	56	102	56	56	93	56	56	84	56	56	78	56	56	72	56	56	67	56	56	63	56	56	60	56	56	57	56	56	54	54	54	52	52	52	52	28	28	30	21	21
	28-60	94	94	45	94	94	45	94	94	45	93	91	45	87	87	45	81	81	45	75	75	45	70	70	45	66	66	45	63	63	45	60	60	45	57	57	45	55	55	45	44	32	19	27	20	13
170 mph	8-20	47	32	29	47	32	29	47	32	29	47	32	29	47	32	29	47	32	29	47	32	29	47	32	29	47	32	29	47	32	29	47	32	29	47	32	29	47	32	29	27	20	19	20	15	14
	21-27	94	45	45	94	45	45	94	45	45	91	45	45	83	45	45	77	45	45	72	45	45	67	45	45	63	45	45	60	45	45	57	45	45	54	45	45	52	45	45	41	25	25	26	18	18
	28-60	76	68	31	76	68	31	76	68	31	76	68	31	76	68	31	76	68	31	75	68	31	70	68	31	66	66	31	63	63	31	60	60	31	57	57	31	55	55	31	35	26	16	24	17	
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	21-27	83	40	40	83	40	40	83	40	40	83	40	40	82	40	40	76	40	40	71	40	40	67	40	40	63	40	40	60	40	40	57	40	40	54	40	40	52	40	40	37	23	23	25	17	17
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180 mph	8-20	40	28	25	40	28	25	40	28	25	40	28	25	40	28	25	40	28	25	40	28	25	40	28	25	40	28	25	40	28	25	40	28	25	40	28	25	40	28	25	24	18	17	18	13	12
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= min 72" span = min 64" span = min 48" span

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= Shaded cells indicate conditions in which UFO Mid Clamp connection capacity is exceeded. If such conditions are encountered contact techsupport@ironridge.com.

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* = Note: additional installation requirement for CAMO module clamp. See Note 11 on Page 3 for details.

Grouping of ASCE 7-16 Roof Zones (Hip)

Roof Slope	8° - 20°			21° - 27°			28° - 60°		
Group	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
ASCE 7-16 Roof Zones	1	2r	2e 3	1	2e 2r	3	1	2e	2r 3

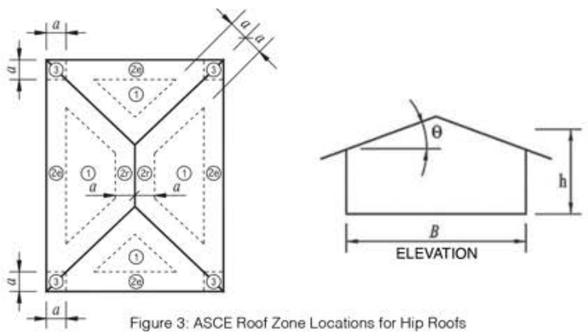

Figure 3: ASCE Roof Zone Locations for Hip Roofs

Notation

a = 10% of least horizontal dimension or $0.4h$, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m). If an overhang exists, the edge distance shall be measured from the outside edge of the overhang. The horizontal dimensions used to compute the edge distance shall not include any overhang distances.

B = Horizontal dimension of building measured normal to wind direction, in ft (m).

h = Mean roof height, in ft (m), except that eave height shall be used for $\theta \leq 10°$.

θ = Angle of plane of roof from horizontal, in degrees.

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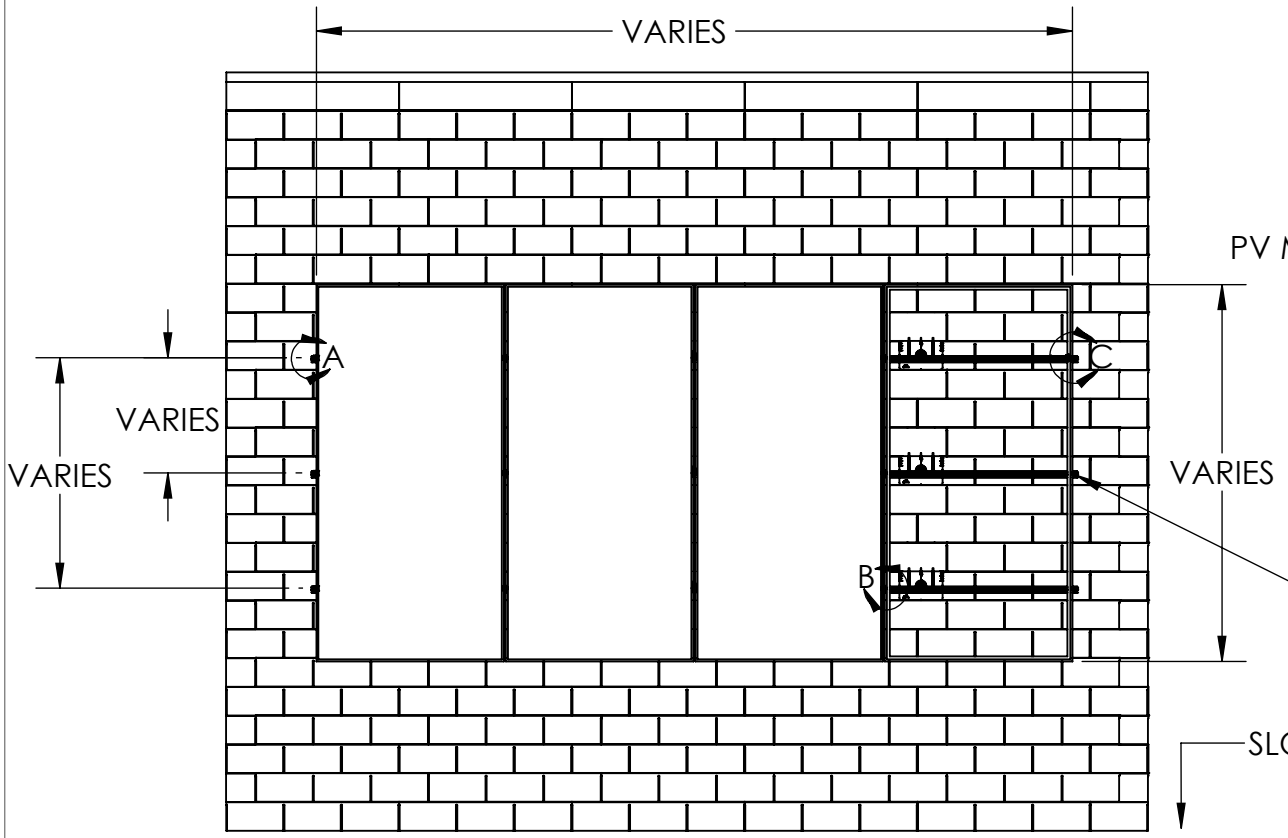
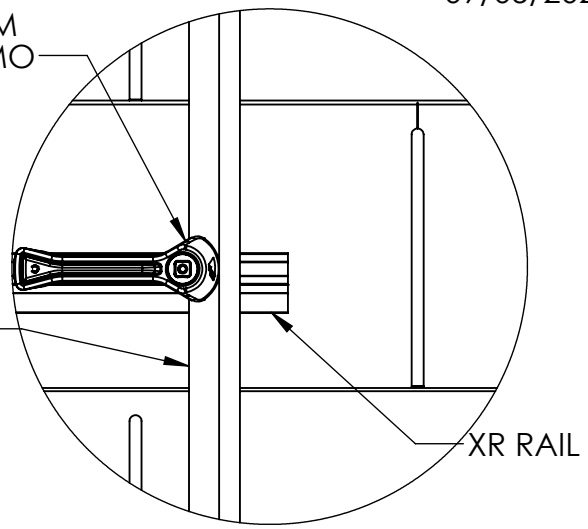
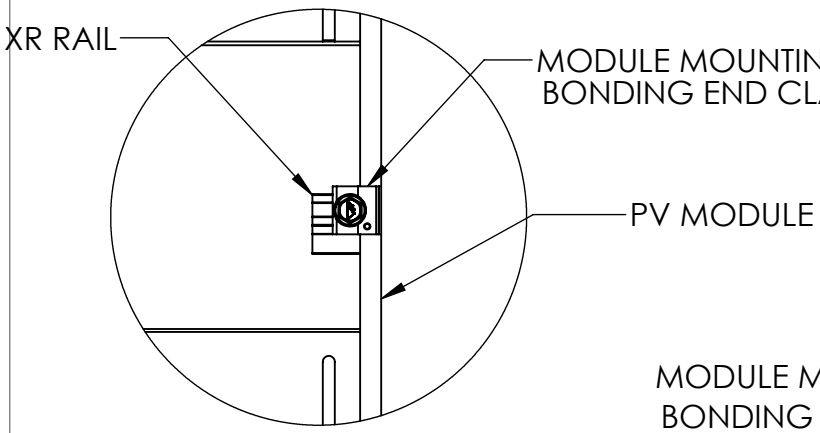
09/05/2024



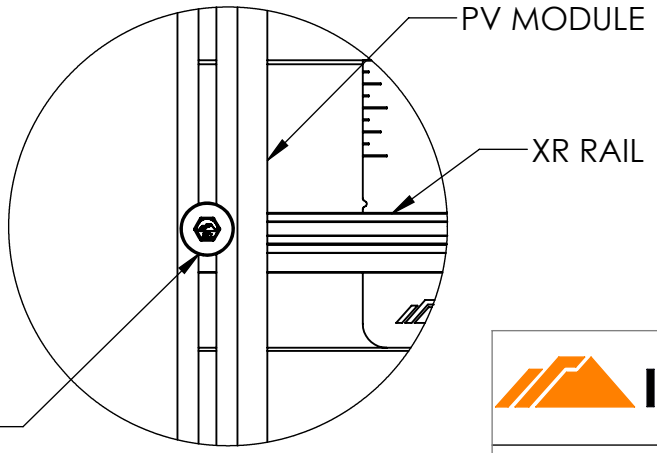
PLAN VIEW



DETAIL C
(MODULE GLASS REMOVED FOR CLARITY)



DETAIL A



DETAIL B
(MODULE GLASS REMOVED FOR CLARITY)

EXHIBIT: EX-0015 - page 1 of 2

IRONRIDGE

FLUSH MOUNT SYSTEM

SIZE	DWG. NO.	
--	EX-0015	
SCALE: NTS	WEIGHT: N/A	SHEET 1 OF 2

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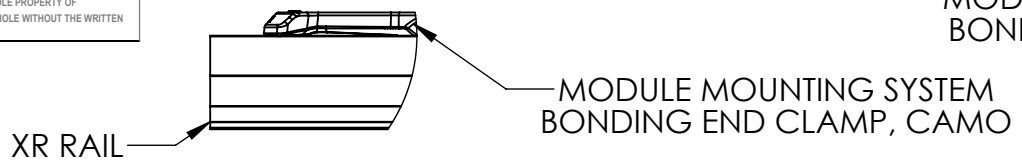
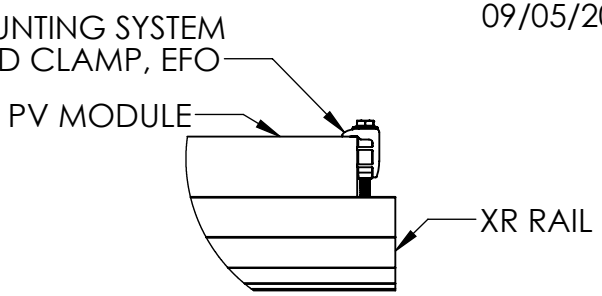
09/05/2024

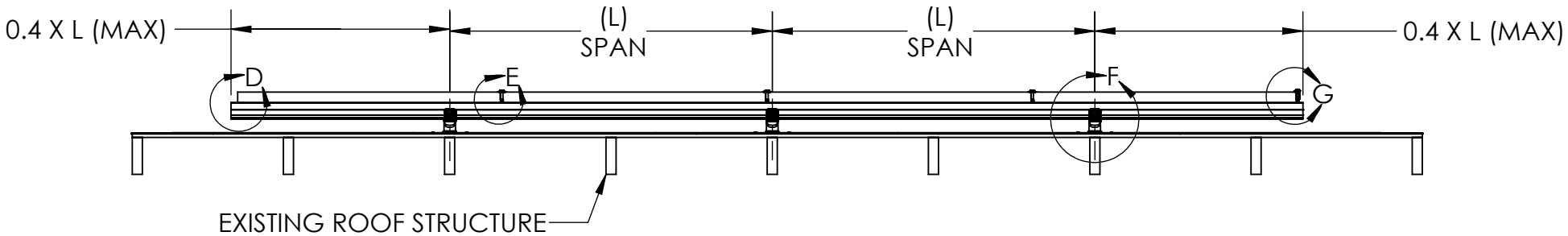


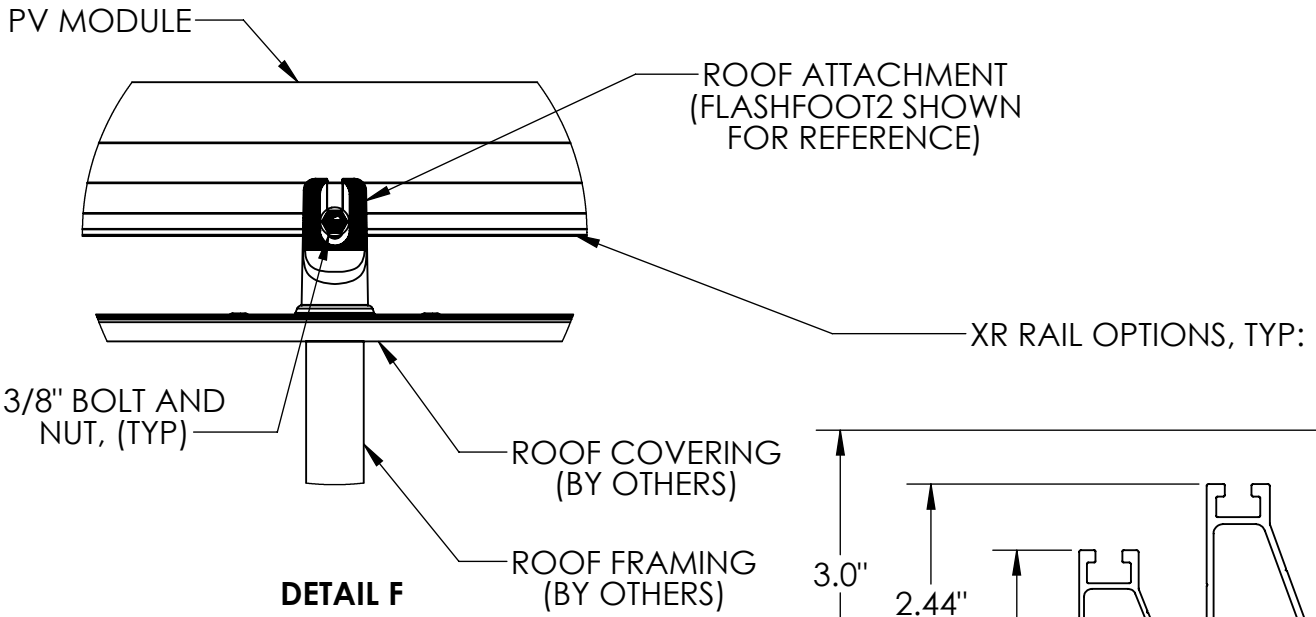
DETAIL D
(MODULE REMOVED FOR CLARITY)



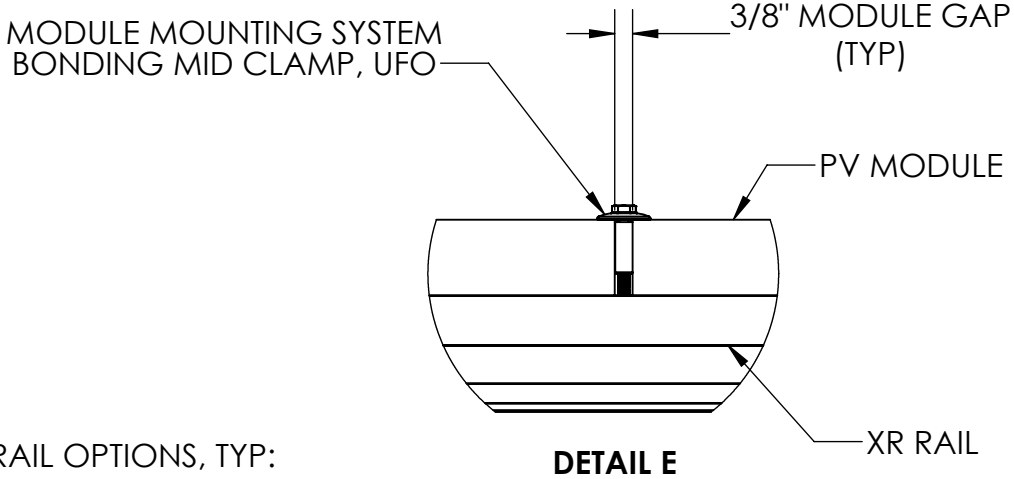
DETAIL G

PLAN VIEW

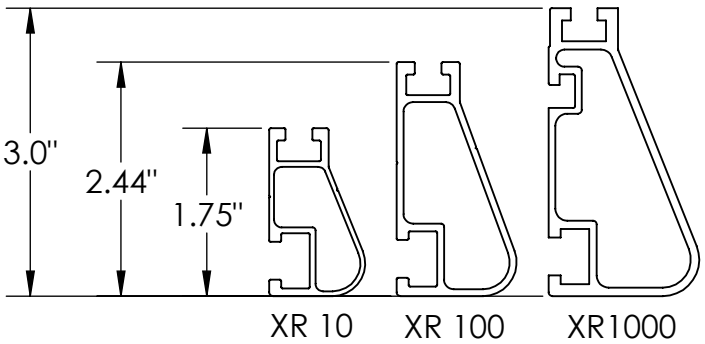




DETAIL F



DETAIL E



IRONRIDGE

FLUSH MOUNT SYSTEM

SIZE	DWG. NO.	
--	EX-0015	
SCALE: NTS	WEIGHT: N/A	SHEET 2 OF 2

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