November 2, 2020

Attn: Mr. Peter Abou Chacra
SunModo
14800 NE 65th St.
Vancouver, WA 98682

RE: SunModo – SMR200 System
PV Panel Racking System
State of Minnesota Certification Letter

SEI Project No.: 19498.00

Dear Mr. Abou Chacra:

Structural Enginuity Inc. (SEI) has completed its review of the SunModo – SMR200 Rail System for typical installations in the state of Minnesota. The SMR200 Rail is compliant with the sections of the following design references and codes when installed per the conditions and design criteria delineated herein.

Design References and Codes:

- ASCE 7-10 – Minimum Design Loads for Buildings and Other Structures
- 2015 Aluminum Design Manual, by the Aluminum Association
- Materials information and section and details provided by SunModo as appendages to this letter
- 2015 International Building Code and 2015 International Residential Code
- AC428, Acceptance Criteria for Modular Framing Systems Used to Support Photovoltaic (PV) Modules, November 2012 by ICC-ES

General Mounting System and Analysis Overview:

The SMR200 Rail consists of 6005-T5 (acceptable alternative materials include 6005A-T61 and 6061-T6) extruded aluminum per ASTM B221-08. The rails are used in pairs to support photovoltaic solar panels in order to span between points of attachment to the existing roof structure. The following tables and information summarize the structural analysis performed by SEI in order to certify the SMR200 Rail for the state noted above.

The analysis for certification included the following parameters for each rail system.

SMR200 Rail:

- Risk Category II
- Roof Slopes up to 45 degrees
- Portrait & Landscape orientation of photovoltaic panels
- Max Module Dimensions = Varies, see tables
- Max Mean Roof Height = Varies, see tables (If roof slope < 10°, use eave height)

- Wind Analysis:
  - Wind Category: B, C, and D
  - Roof Zones 1, 2, and 3
  - Wind Directionality Factor (Kd) = 0.85
  - Topographic Factor (Kzt) = 1
- Snow Analysis:
  - Snow Exposure Factor (Ce) = 1.0
  - Thermal Factor (Ct) = 1.0
  - Slope Factor (Cs) per ASCE 7-10, Figure 7-2a
  - Importance Factor (Is) = 1
- Seismic Analysis:
  - Seismic Design Category E or less (Sds = 2.0 max)
  - Importance Factor (Ip) = 1
  - Amplification Factor (ap) = 1.0 per ICC-AC428
  - Component Response Modification Factor (Rp) = 1.5 per ICC-AC 428

Applicable loading combinations consisting of dead, wind, snow, and seismic loads in accordance with the governing code requirements were used to determine allowable rail span lengths, based on bending stress capacity, shear capacity, axial capacity, and an assumption of a single-span condition with an allowable deflection of L/60. Design wind pressures were determined using Components and Cladding calculations per ASCE 7-10, Chapters 26-30 in conjunction with the loading parameters noted above. Applicable roof snow load shall be based on ground snow load maps, equations, and factors of ASCE 7-10, Chapter 7 and applicable sections of the 2015 International Building Code for the location of the project in combination with the loading parameters noted above.

It should be noted that the analysis was limited to the capacity of the SMR200 Rail. Attachments of the rail to the roof structure and analysis of the roof structure itself shall be the responsibility of the installer, and should be reviewed and approved by a registered design professional where required by the local authority having jurisdiction.

Installation Notes:

The SMR200 Rail shall be installed with the following guidelines to be in compliance with attached span tables:

- Tables noted below assume two support rails are being used per each row of photovoltaic modules in a roof solar array.
- Rails shall be continuous and not spliced over a minimum of 2 supports except for span lengths shaded with In these cases it is acceptable to use a minimum of 1 support per rail section as long as all supports are located at a maximum of 48” on center and the first and last rail sections have a minimum of 2 supports. Splices shall be made with SunModo’s structural splice.
- System shall be mounted parallel to roof surface with a 2” to 10” gap between roof surface and bottom of module.
- Installation over roof overhangs or within 10” of any roof edge is not recommended
- Maximum end cantilever of aluminum support rail shall not exceed 1/3 of allowable span in the roof wind pressure zone of the cantilever.

- Tables attached are limited to structural capability of the support rails only; therefore, observe all local jurisdiction requirements regarding roof setback requirements when laying out support rails and solar array.
- Actual span lengths used must be within capacity of roof attachment and structural capacity of roof member supporting solar array.

Conclusion and Certification Summary:

Based on the structural analysis performed by SEI in regard to the loading parameters specified above for SMR200 Rail, the following Span Tables for the SunModo SMR200 Rail System were determined. The various span information is controlled by the applicable wind and snow loads to the structure to which the array is being mounted on the roof and based on the roof zone to which the array is installed on the roof. The tables allow for multiple panel sizes and orientations as outlined un the table of contents and on the headers of each table.

This letter is to certify that the loading criteria and design basis used for the structural analysis of the SMR200 Rail System for the span tables attached is validated and performed in compliance with the 2015 International Building Code and 2015 International Residential Code.

Please contact our office if you have any further questions relating to this matter.

Sincerely,

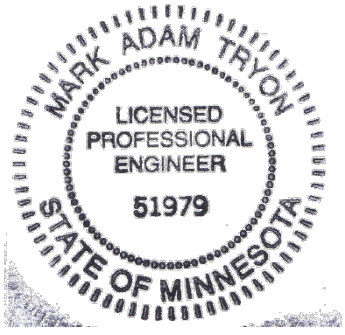
Peter Martin
Engineer III
pmartin@structuralenginuityinc.com

Mark A. Tryon, P.E.
Vice-President/Founder
mtryon@structuralenginuityinc.com

Structural Enginuity Inc.

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota
Print Name _____Mark A. Tryon_____

Signature_____
Date_____11/10/2020_____



11/10/2020

Structural ENGINUITY INC
Ingenuity in Engineering

Table of Contents

60 Cell Module (Portrait Orientation, Max Length 67.5”)_____C1-C18
- Mean Roof Height Less Than 15 Feet
  - -Gable Roof, Roof Slope Between 0 and 7 degrees_____C1-C3
  - -Gable Roof, Roof Slope Between 7 and 27 degrees_____C4-C6
  - -Gable Roof, Roof Slope Between 27 and 45 degrees_____C7-C9
- Mean Roof Height Between 15 and 30 Feet
  - -Gable Roof, Roof Slope Between 0 and 7 degrees_____C10-C12
  - -Gable Roof, Roof Slope Between 7 and 27 degrees_____C13-C15
  - -Gable Roof, Roof Slope Between 27 and 45 degrees_____C16-C18

Module in Landscape Orientation (Max Width 42”)_____C19-C36
- Mean Roof Height Less Than 15 Feet
  - -Gable Roof, Roof Slope Between 0 and 7 degrees_____C19-C21
  - -Gable Roof, Roof Slope Between 7 and 27 degrees_____C22-C24
  - -Gable Roof, Roof Slope Between 27 and 45 degrees_____C25-C27
- Mean Roof Height Between 15 and 30 Feet
  - -Gable Roof, Roof Slope Between 0 and 7 degrees_____C28-C30
  - -Gable Roof, Roof Slope Between 7 and 27 degrees_____C31-C33
  - -Gable Roof, Roof Slope Between 27 and 45 degrees_____C34-C36

72 Cell Module (Portrait Orientation, Max Length 82”)_____C37-C54
- Mean Roof Height Less Than 15 Feet
  - -Gable Roof, Roof Slope Between 0 and 7 degrees_____C37-C39
  - -Gable Roof, Roof Slope Between 7 and 27 degrees_____C40-C42
  - -Gable Roof, Roof Slope Between 27 and 45 degrees_____C43-C45
- Mean Roof Height Between 15 and 30 Feet
  - -Gable Roof, Roof Slope Between 0 and 7 degrees_____C46-C48
  - -Gable Roof, Roof Slope Between 7 and 27 degrees_____C49-C52
  - -Gable Roof, Roof Slope Between 27 and 45 degrees_____C53-C56

1815 W. Diehl Rd, Suite 100, Naperville, IL 60563
630-219-1997 (P)
www.structuralenginuityinc.com

Structural ENGINUITY INC
Ingenuity in Engineering

SUNMODO®

Max Rail Spans for SunModo SMR200 Rail System

Table 1

Mean Roof Height: h ≤ 15 ft
Roof Angle: 0 < θ ≤ 7 degrees
Exposure Category: B
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	119	119	119	119	119	117	111	105	100	95	93	90	85
	10	113	113	113	112	112	111	110	105	100	95	93	90	85
	20	89	89	89	89	89	89	89	89	89	89	89	89	85
	30	87	87	87	87	87	87	87	87	87	87	87	87	85
	40	77	77	77	77	77	77	77	77	77	77	77	77	77
	50	70	70	70	70	70	70	70	70	70	70	70	70	70
	60	64	64	64	64	64	64	64	64	64	64	64	64	64
	70	60	60	60	60	60	60	60	60	60	60	60	60	60
	80	56	56	56	56	56	56	56	56	56	56	56	56	56
	90	53	53	53	53	53	53	53	53	53	53	53	53	53
Zone 2	0	119	112	108	104	101	97	91	84	78	73	70	68	64
	10	113	112	108	104	101	97	91	84	78	73	70	68	64
	20	89	89	89	89	89	89	89	84	78	73	70	68	64
	30	87	87	87	87	87	87	87	84	78	73	70	68	64
	40	77	77	77	77	77	77	77	77	77	73	70	68	64
	50	70	70	70	70	70	70	70	70	70	70	70	68	64
	60	64	64	64	64	64	64	64	64	64	64	64	64	64
	70	60	60	60	60	60	60	60	60	60	60	60	60	60
	80	56	56	56	56	56	56	56	56	56	56	56	56	56
	90	53	53	53	53	53	53	53	53	53	53	53	53	53
Zone 3	0	105	97	93	89	84	80	73	67	62	57	55	53	50
	10	105	97	93	89	84	80	73	67	62	57	55	53	50
	20	89	89	89	89	84	80	73	67	62	57	55	53	50
	30	87	87	87	87	84	80	73	67	62	57	55	53	50
	40	77	77	77	77	77	77	73	67	62	57	55	53	50
	50	70	70	70	70	70	70	70	67	62	57	55	53	50
	60	64	64	64	64	64	64	64	64	62	57	55	53	50
	70	60	60	60	60	60	60	60	60	60	57	55	53	50
	80	56	56	56	56	56	56	56	56	56	56	55	53	50
	90	53	53	53	53	53	53	53	53	53	53	53	53	50

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

Structural ENGINUITY INC
Ingenuity in Engineering

SUNMODO®

Max Rail Spans for SunModo SMR200 Rail System

Table 2

Mean Roof Height: h ≤ 15 ft
Roof Angle: 0 < θ ≤ 7 degrees
Exposure Category: C
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	119	119	119	116	112	109	102	97	92	86	84	81	77
	10	113	112	112	111	110	109	102	97	92	86	84	81	77
	20	89	89	89	89	89	89	89	89	89	86	84	81	77
	30	87	87	87	87	87	87	87	87	87	86	84	81	77
	40	77	77	77	77	77	77	77	77	77	77	77	77	77
	50	70	70	70	70	70	70	70	70	70	70	70	70	70
	60	64	64	64	64	64	64	64	64	64	64	64	64	64
	70	60	60	60	60	60	60	60	60	60	60	60	60	60
	80	56	56	56	56	56	56	56	56	56	56	56	56	56
	90	53	53	53	53	53	53	53	53	53	53	53	53	53
Zone 2	0	112	103	100	96	93	89	81	75	70	65	63	61	57
	10	112	103	100	96	93	89	81	75	70	65	63	61	57
	20	89	89	89	89	89	89	81	75	70	65	63	61	57
	30	87	87	87	87	87	87	81	75	70	65	63	61	57
	40	77	77	77	77	77	77	77	75	70	65	63	61	57
	50	70	70	70	70	70	70	70	70	70	65	63	61	57
	60	64	64	64	64	64	64	64	64	64	64	63	61	57
	70	60	60	60	60	60	60	60	60	60	60	60	60	57
	80	56	56	56	56	56	56	56	56	56	56	56	56	56
	90	53	53	53	53	53	53	53	53	53	53	53	53	53
Zone 3	0	97	87	83	78	74	71	64	59	55	51	49	47	44
	10	97	87	83	78	74	71	64	59	55	51	49	47	44
	20	89	87	83	78	74	71	64	59	55	51	49	47	44
	30	87	87	83	78	74	71	64	59	55	51	49	47	44
	40	77	77	77	77	74	71	64	59	55	51	49	47	44
	50	70	70	70	70	70	70	64	59	55	51	49	47	44
	60	64	64	64	64	64	64	64	59	55	51	49	47	44
	70	60	60	60	60	60	60	60	59	55	51	49	47	44
	80	56	56	56	56	56	56	56	56	55	51	49	47	44
	90	53	53	53	53	53	53	53	53	53	51	49	47	44

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

Max Rail Spans for SunModo SMR200 Rail System

Table 3

Mean Roof Height: h ≤ 15 ft
Roof Angle: 0 < θ ≤ 7 degrees
Exposure Category: D
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	119	115	111	107	104	101	95	89	83	78	75	73	69
	10	112	111	110	107	104	101	95	89	83	78	75	73	69
	20	89	89	89	89	89	89	89	89	83	78	75	73	69
	30	87	87	87	87	87	87	87	87	83	78	75	73	69
	40	77	77	77	77	77	77	77	77	77	77	75	73	69
	50	70	70	70	70	70	70	70	70	70	70	70	70	69
	60	64	64	64	64	64	64	64	64	64	64	64	64	64
	70	60	60	60	60	60	60	60	60	60	60	60	60	60
	80	56	56	56	56	56	56	56	56	56	56	56	56	56
	90	53	53	53	53	53	53	53	53	53	53	53	53	53
Zone 2	0	103	95	92	87	83	79	73	67	62	58	56	54	51
	10	103	95	92	87	83	79	73	67	62	58	56	54	51
	20	89	89	89	87	83	79	73	67	62	58	56	54	51
	30	87	87	87	87	83	79	73	67	62	58	56	54	51
	40	77	77	77	77	77	77	73	67	62	58	56	54	51
	50	70	70	70	70	70	70	70	67	62	58	56	54	51
	60	64	64	64	64	64	64	64	64	62	58	56	54	51
	70	60	60	60	60	60	60	60	60	60	58	56	54	51
	80	56	56	56	56	56	56	56	56	56	56	56	54	51
	90	53	53	53	53	53	53	53	53	53	53	53	53	51
Zone 3	0	87	77	73	69	66	63	57	53	49	45	44	42	40
	10	87	77	73	69	66	63	57	53	49	45	44	42	40
	20	87	77	73	69	66	63	57	53	49	45	44	42	40
	30	87	77	73	69	66	63	57	53	49	45	44	42	40
	40	77	77	73	69	66	63	57	53	49	45	44	42	40
	50	70	70	70	69	66	63	57	53	49	45	44	42	40
	60	64	64	64	64	64	63	57	53	49	45	44	42	40
	70	60	60	60	60	60	60	57	53	49	45	44	42	40
	80	56	56	56	56	56	56	56	53	49	45	44	42	40
	90	53	53	53	53	53	53	53	53	49	45	44	42	40

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

Structural ENGINUITY INC
Ingenuity in Engineering

SUNMODO®

Max Rail Spans for SunModo SMR200 Rail System

Table 4

Mean Roof Height: h ≤ 15 ft
Roof Angle: 7 < θ ≤ 27 degrees
Exposure Category: B
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	119	119	119	119	119	119	115	109	103	99	97	94	88
	10	104	104	104	103	102	101	99	97	95	93	92	91	88
	20	80	80	80	80	80	80	80	80	79	78	77	76	75
	30	80	80	80	80	80	80	80	80	79	78	77	76	75
	40	70	70	70	70	70	70	70	70	70	70	70	70	69
	50	64	64	64	64	64	64	64	64	64	64	64	64	64
	60	59	59	59	59	59	59	59	59	59	59	59	59	59
	70	55	55	55	55	55	55	55	55	55	55	55	55	55
	80	51	51	51	51	51	51	51	51	51	51	51	51	51
	90	49	49	49	49	49	49	49	49	49	49	49	49	49
Zone 2	0	119	112	108	104	101	98	90	84	78	73	70	68	64
	10	104	104	104	103	101	98	90	84	78	73	70	68	64
	20	80	80	80	80	80	80	80	80	78	73	70	68	64
	30	80	80	80	80	80	80	80	80	78	73	70	68	64
	40	70	70	70	70	70	70	70	70	70	70	70	68	64
	50	64	64	64	64	64	64	64	64	64	64	64	64	64
	60	59	59	59	59	59	59	59	59	59	59	59	59	59
	70	55	55	55	55	55	55	55	55	55	55	55	55	55
	80	51	51	51	51	51	51	51	51	51	51	51	51	51
	90	49	49	49	49	49	49	49	49	49	49	49	49	49
Zone 3	0	101	92	88	84	80	77	71	66	61	57	56	54	51
	10	101	92	88	84	80	77	71	66	61	57	56	54	51
	20	80	80	80	80	80	77	71	66	61	57	56	54	51
	30	80	80	80	80	80	77	71	66	61	57	56	54	51
	40	70	70	70	70	70	70	70	66	61	57	56	54	51
	50	64	64	64	64	64	64	64	64	61	57	56	54	51
	60	59	59	59	59	59	59	59	59	59	57	56	54	51
	70	55	55	55	55	55	55	55	55	55	55	55	54	51
	80	51	51	51	51	51	51	51	51	51	51	51	51	51
	90	49	49	49	49	49	49	49	49	49	49	49	49	49

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

Structural ENGINUITY INC
Ingenuity in Engineering

SUNMODO®

Max Rail Spans for SunModo SMR200 Rail System

Table 5

Mean Roof Height: h ≤ 15 ft
Roof Angle: 7 < θ ≤ 27 degrees
Exposure Category: C
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	119	119	119	119	116	113	106	101	96	90	87	84	80
	10	104	103	102	101	99	98	96	94	92	90	87	84	80
	20	80	80	80	80	80	80	79	78	77	76	75	74	73
	30	80	80	80	80	80	80	79	78	77	76	75	74	73
	40	70	70	70	70	70	70	70	70	70	69	69	68	67
	50	64	64	64	64	64	64	64	64	64	64	64	63	62
	60	59	59	59	59	59	59	59	59	59	59	59	59	59
	70	55	55	55	55	55	55	55	55	55	55	55	55	55
	80	51	51	51	51	51	51	51	51	51	51	51	51	51
	90	49	49	49	49	49	49	49	49	49	49	49	49	49
Zone 2	0	112	103	100	96	92	88	81	75	70	65	63	61	58
	10	104	103	100	96	92	88	81	75	70	65	63	61	58
	20	80	80	80	80	80	80	79	75	70	65	63	61	58
	30	80	80	80	80	80	80	79	75	70	65	63	61	58
	40	70	70	70	70	70	70	70	70	70	65	63	61	58
	50	64	64	64	64	64	64	64	64	64	64	63	61	58
	60	59	59	59	59	59	59	59	59	59	59	59	59	58
	70	55	55	55	55	55	55	55	55	55	55	55	55	55
	80	51	51	51	51	51	51	51	51	51	51	51	51	51
	90	49	49	49	49	49	49	49	49	49	49	49	49	49
Zone 3	0	92	83	79	75	72	69	64	59	55	52	50	49	46
	10	92	83	79	75	72	69	64	59	55	52	50	49	46
	20	80	80	79	75	72	69	64	59	55	52	50	49	46
	30	80	80	79	75	72	69	64	59	55	52	50	49	46
	40	70	70	70	70	70	69	64	59	55	52	50	49	46
	50	64	64	64	64	64	64	64	59	55	52	50	49	46
	60	59	59	59	59	59	59	59	59	55	52	50	49	46
	70	55	55	55	55	55	55	55	55	55	52	50	49	46
	80	51	51	51	51	51	51	51	51	51	51	50	49	46
	90	49	49	49	49	49	49	49	49	49	49	49	49	46

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

Structural ENGINUITY INC
Ingenuity in Engineering

SUNMODO®

Max Rail Spans for SunModo SMR200 Rail System

Table 6

Mean Roof Height: h ≤ 15 ft
Roof Angle: 7 < θ ≤ 27 degrees
Exposure Category: D
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	119	119	115	111	108	105	99	93	86	81	79	76	72
	10	103	100	99	98	97	96	93	91	86	81	79	76	72
	20	80	80	80	80	80	79	78	76	75	73	73	72	70
	30	80	80	80	80	80	79	78	76	75	73	73	72	70
	40	70	70	70	70	70	70	70	70	69	67	67	66	65
	50	64	64	64	64	64	64	64	64	64	63	62	62	61
	60	59	59	59	59	59	59	59	59	59	59	59	58	57
	70	55	55	55	55	55	55	55	55	55	55	55	55	54
	80	51	51	51	51	51	51	51	51	51	51	51	51	51
	90	49	49	49	49	49	49	49	49	49	49	49	49	49
Zone 2	0	103	95	91	86	83	79	73	67	63	59	57	55	52
	10	103	95	91	86	83	79	73	67	63	59	57	55	52
	20	80	80	80	80	80	79	73	67	63	59	57	55	52
	30	80	80	80	80	80	79	73	67	63	59	57	55	52
	40	70	70	70	70	70	70	70	67	63	59	57	55	52
	50	64	64	64	64	64	64	64	64	63	59	57	55	52
	60	59	59	59	59	59	59	59	59	59	59	57	55	52
	70	55	55	55	55	55	55	55	55	55	55	55	55	52
	80	51	51	51	51	51	51	51	51	51	51	51	51	51
	90	49	49	49	49	49	49	49	49	49	49	49	49	49
Zone 3	0	83	75	71	68	65	62	57	53	50	47	45	44	41
	10	83	75	71	68	65	62	57	53	50	47	45	44	41
	20	80	75	71	68	65	62	57	53	50	47	45	44	41
	30	80	75	71	68	65	62	57	53	50	47	45	44	41
	40	70	70	70	68	65	62	57	53	50	47	45	44	41
	50	64	64	64	64	64	62	57	53	50	47	45	44	41
	60	59	59	59	59	59	59	57	53	50	47	45	44	41
	70	55	55	55	55	55	55	55	53	50	47	45	44	41
	80	51	51	51	51	51	51	51	51	50	47	45	44	41
	90	49	49	49	49	49	49	49	49	49	47	45	44	41

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

Structural ENGINUITY INC
Ingenuity in Engineering

SUNMODO®

Max Rail Spans for SunModo SMR200 Rail System

Table 7

Mean Roof Height: h ≤ 15 ft
Roof Angle: 27 < θ ≤ 45 degrees
Exposure Category: B
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	119	115	113	110	108	106	100	95	91	86	84	82	79
	10	111	107	105	103	102	100	96	93	90	86	84	82	79
	20	96	94	93	91	90	89	86	84	81	79	78	77	74
	30	86	84	84	83	82	81	79	77	75	73	72	71	69
	40	77	77	77	76	75	75	73	71	70	68	68	67	65
	50	70	70	70	70	70	70	68	67	66	64	64	63	62
	60	65	65	65	65	65	65	64	63	62	61	61	60	59
	70	60	60	60	60	60	60	60	60	59	58	58	57	56
	80	57	57	57	57	57	57	57	57	57	56	55	55	54
	90	54	54	54	54	54	54	54	54	54	54	53	53	52
Zone 2	0	119	115	113	110	108	106	100	95	90	84	82	80	75
	10	111	107	105	103	102	100	96	93	90	84	82	80	75
	20	96	94	93	91	90	89	86	84	81	79	78	77	74
	30	86	84	84	83	82	81	79	77	75	73	72	71	69
	40	77	77	77	76	75	75	73	71	70	68	68	67	65
	50	70	70	70	70	70	70	68	67	66	64	64	63	62
	60	65	65	65	65	65	65	64	63	62	61	61	60	59
	70	60	60	60	60	60	60	60	60	59	58	58	57	56
	80	57	57	57	57	57	57	57	57	57	56	55	55	54
	90	54	54	54	54	54	54	54	54	54	54	53	53	52
Zone 3	0	119	115	113	110	108	106	100	95	90	84	82	80	75
	10	111	107	105	103	102	100	96	93	90	84	82	80	75
	20	96	94	93	91	90	89	86	84	81	79	78	77	74
	30	86	84	84	83	82	81	79	77	75	73	72	71	69
	40	77	77	77	76	75	75	73	71	70	68	68	67	65
	50	70	70	70	70	70	70	68	67	66	64	64	63	62
	60	65	65	65	65	65	65	64	63	62	61	61	60	59
	70	60	60	60	60	60	60	60	60	59	58	58	57	56
	80	57	57	57	57	57	57	57	57	57	56	55	55	54
	90	54	54	54	54	54	54	54	54	54	54	53	53	52

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

Structural ENGINUITY INC
Ingenuity in Engineering

SUNMODO®

Max Rail Spans for SunModo SMR200 Rail System

Table 8

Mean Roof Height: h ≤ 15 ft
Roof Angle: 27 < θ ≤ 45 degrees
Exposure Category: C
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	115	110	107	104	101	99	93	88	84	80	78	76	72
	10	107	103	101	99	97	95	91	88	84	80	78	76	72
	20	94	91	90	88	87	85	83	80	77	75	74	73	70
	30	84	82	81	80	79	78	76	74	72	70	69	68	66
	40	77	76	75	74	73	72	71	69	67	66	65	64	62
	50	70	70	70	69	69	68	66	65	64	62	62	61	59
	60	65	65	65	65	65	64	63	62	60	59	59	58	57
	70	60	60	60	60	60	60	60	59	58	57	56	56	54
	80	57	57	57	57	57	57	57	56	55	54	54	53	52
	90	54	54	54	54	54	54	54	54	53	52	52	51	51
Zone 2	0	115	110	107	104	101	99	93	87	81	76	74	72	68
	10	107	103	101	99	97	95	91	87	81	76	74	72	68
	20	94	91	90	88	87	85	83	80	77	75	74	72	68
	30	84	82	81	80	79	78	76	74	72	70	69	68	66
	40	77	76	75	74	73	72	71	69	67	66	65	64	62
	50	70	70	70	69	69	68	66	65	64	62	62	61	59
	60	65	65	65	65	65	64	63	62	60	59	59	58	57
	70	60	60	60	60	60	60	60	59	58	57	56	56	54
	80	57	57	57	57	57	57	57	56	55	54	54	53	52
	90	54	54	54	54	54	54	54	54	53	52	52	51	51
Zone 3	0	115	110	107	104	101	99	93	87	81	76	74	72	68
	10	107	103	101	99	97	95	91	87	81	76	74	72	68
	20	94	91	90	88	87	85	83	80	77	75	74	72	68
	30	84	82	81	80	79	78	76	74	72	70	69	68	66
	40	77	76	75	74	73	72	71	69	67	66	65	64	62
	50	70	70	70	69	69	68	66	65	64	62	62	61	59
	60	65	65	65	65	65	64	63	62	60	59	59	58	57
	70	60	60	60	60	60	60	60	59	58	57	56	56	54
	80	57	57	57	57	57	57	57	56	55	54	54	53	52
	90	54	54	54	54	54	54	54	54	53	52	52	51	51

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

Max Rail Spans for SunModo SMR200 Rail System

Table 9

Mean Roof Height: h ≤ 15 ft
Roof Angle: 27 < θ ≤ 45 degrees
Exposure Category: D
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	110	104	101	97	94	92	86	82	77	73	72	70	67
	10	103	99	96	94	92	90	86	82	77	73	72	70	67
	20	91	88	86	85	83	82	79	76	73	71	70	68	66
	30	82	80	79	78	77	75	73	71	69	67	66	64	62
	40	76	74	73	72	71	70	68	67	65	63	62	61	59
	50	70	69	68	68	67	66	64	63	61	60	59	58	57
	60	65	65	64	64	63	63	61	60	58	57	56	56	55
	70	60	60	60	60	60	59	58	57	56	55	54	54	52
	80	57	57	57	57	57	57	56	55	54	53	52	52	51
	90	54	54	54	54	54	54	54	53	52	51	50	50	49
Zone 2	0	110	104	101	97	94	91	85	79	74	69	67	65	62
	10	103	99	96	94	92	90	85	79	74	69	67	65	62
	20	91	88	86	85	83	82	79	76	73	69	67	65	62
	30	82	80	79	78	77	75	73	71	69	67	66	64	62
	40	76	74	73	72	71	70	68	67	65	63	62	61	59
	50	70	69	68	68	67	66	64	63	61	60	59	58	57
	60	65	65	64	64	63	63	61	60	58	57	56	56	55
	70	60	60	60	60	60	59	58	57	56	55	54	54	52
	80	57	57	57	57	57	57	56	55	54	53	52	52	51
	90	54	54	54	54	54	54	54	53	52	51	50	50	49
Zone 3	0	110	104	101	97	94	91	85	79	74	69	67	65	62
	10	103	99	96	94	92	90	85	79	74	69	67	65	62
	20	91	88	86	85	83	82	79	76	73	69	67	65	62
	30	82	80	79	78	77	75	73	71	69	67	66	64	62
	40	76	74	73	72	71	70	68	67	65	63	62	61	59
	50	70	69	68	68	67	66	64	63	61	60	59	58	57
	60	65	65	64	64	63	63	61	60	58	57	56	56	55
	70	60	60	60	60	60	59	58	57	56	55	54	54	52
	80	57	57	57	57	57	57	56	55	54	53	52	52	51
	90	54	54	54	54	54	54	54	53	52	51	50	50	49

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

Structural ENGINUITY INC
Ingenuity in Engineering

SUNMODO®

Max Rail Spans for SunModo SMR200 Rail System

Table 10

Mean Roof Height: 15 < h ≤ 30 ft
Roof Angle: 0 < θ ≤ 7 degrees
Exposure Category: B
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	119	119	119	119	119	117	111	105	100	95	93	90	85
	10	113	113	113	112	112	111	110	105	100	95	93	90	85
	20	89	89	89	89	89	89	89	89	89	89	89	89	85
	30	87	87	87	87	87	87	87	87	87	87	87	87	85
	40	77	77	77	77	77	77	77	77	77	77	77	77	77
	50	70	70	70	70	70	70	70	70	70	70	70	70	70
	60	64	64	64	64	64	64	64	64	64	64	64	64	64
	70	60	60	60	60	60	60	60	60	60	60	60	60	60
	80	56	56	56	56	56	56	56	56	56	56	56	56	56
	90	53	53	53	53	53	53	53	53	53	53	53	53	53
Zone 2	0	119	112	108	104	101	97	91	84	78	73	70	68	64
	10	113	112	108	104	101	97	91	84	78	73	70	68	64
	20	89	89	89	89	89	89	89	84	78	73	70	68	64
	30	87	87	87	87	87	87	87	84	78	73	70	68	64
	40	77	77	77	77	77	77	77	77	77	73	70	68	64
	50	70	70	70	70	70	70	70	70	70	70	70	68	64
	60	64	64	64	64	64	64	64	64	64	64	64	64	64
	70	60	60	60	60	60	60	60	60	60	60	60	60	60
	80	56	56	56	56	56	56	56	56	56	56	56	56	56
	90	53	53	53	53	53	53	53	53	53	53	53	53	53
Zone 3	0	105	97	93	89	84	80	73	67	62	57	55	53	50
	10	105	97	93	89	84	80	73	67	62	57	55	53	50
	20	89	89	89	89	84	80	73	67	62	57	55	53	50
	30	87	87	87	87	84	80	73	67	62	57	55	53	50
	40	77	77	77	77	77	77	73	67	62	57	55	53	50
	50	70	70	70	70	70	70	70	67	62	57	55	53	50
	60	64	64	64	64	64	64	64	64	62	57	55	53	50
	70	60	60	60	60	60	60	60	60	60	57	55	53	50
	80	56	56	56	56	56	56	56	56	56	56	55	53	50
	90	53	53	53	53	53	53	53	53	53	53	53	53	50

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

Max Rail Spans for SunModo SMR200 Rail System

Table 11

Mean Roof Height: 15 < h ≤ 30 ft
Roof Angle: 0 < θ ≤ 7 degrees
Exposure Category: C
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	119	117	113	109	106	103	97	92	85	80	77	75	71
	10	113	111	111	109	106	103	97	92	85	80	77	75	71
	20	89	89	89	89	89	89	89	89	85	80	77	75	71
	30	87	87	87	87	87	87	87	87	85	80	77	75	71
	40	77	77	77	77	77	77	77	77	77	77	77	75	71
	50	70	70	70	70	70	70	70	70	70	70	70	70	70
	60	64	64	64	64	64	64	64	64	64	64	64	64	64
	70	60	60	60	60	60	60	60	60	60	60	60	60	60
	80	56	56	56	56	56	56	56	56	56	56	56	56	56
	90	53	53	53	53	53	53	53	53	53	53	53	53	53
Zone 2	0	105	97	94	90	86	82	75	69	64	60	58	56	53
	10	105	97	94	90	86	82	75	69	64	60	58	56	53
	20	89	89	89	89	86	82	75	69	64	60	58	56	53
	30	87	87	87	87	86	82	75	69	64	60	58	56	53
	40	77	77	77	77	77	77	75	69	64	60	58	56	53
	50	70	70	70	70	70	70	70	69	64	60	58	56	53
	60	64	64	64	64	64	64	64	64	64	60	58	56	53
	70	60	60	60	60	60	60	60	60	60	60	58	56	53
	80	56	56	56	56	56	56	56	56	56	56	56	56	53
	90	53	53	53	53	53	53	53	53	53	53	53	53	53
Zone 3	0	90	80	75	71	68	65	59	54	50	47	45	44	41
	10	90	80	75	71	68	65	59	54	50	47	45	44	41
	20	89	80	75	71	68	65	59	54	50	47	45	44	41
	30	87	80	75	71	68	65	59	54	50	47	45	44	41
	40	77	77	75	71	68	65	59	54	50	47	45	44	41
	50	70	70	70	70	68	65	59	54	50	47	45	44	41
	60	64	64	64	64	64	64	59	54	50	47	45	44	41
	70	60	60	60	60	60	60	59	54	50	47	45	44	41
	80	56	56	56	56	56	56	56	54	50	47	45	44	41
	90	53	53	53	53	53	53	53	53	50	47	45	44	41

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

Structural ENGINUITY INC
Ingenuity in Engineering

SUNMODO®

Max Rail Spans for SunModo SMR200 Rail System

Table 12

Mean Roof Height: 15 < h ≤ 30 ft
Roof Angle: 0 < θ ≤ 7 degrees
Exposure Category: D
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	118	110	106	102	99	96	90	84	78	73	71	69	65
	10	111	110	106	102	99	96	90	84	78	73	71	69	65
	20	89	89	89	89	89	89	89	84	78	73	71	69	65
	30	87	87	87	87	87	87	87	84	78	73	71	69	65
	40	77	77	77	77	77	77	77	77	77	73	71	69	65
	50	70	70	70	70	70	70	70	70	70	70	70	69	65
	60	64	64	64	64	64	64	64	64	64	64	64	64	64
	70	60	60	60	60	60	60	60	60	60	60	60	60	60
	80	56	56	56	56	56	56	56	56	56	56	56	56	56
	90	53	53	53	53	53	53	53	53	53	53	53	53	53
Zone 2	0	98	90	85	81	77	74	68	63	58	54	52	51	48
	10	98	90	85	81	77	74	68	63	58	54	52	51	48
	20	89	89	85	81	77	74	68	63	58	54	52	51	48
	30	87	87	85	81	77	74	68	63	58	54	52	51	48
	40	77	77	77	77	77	74	68	63	58	54	52	51	48
	50	70	70	70	70	70	70	68	63	58	54	52	51	48
	60	64	64	64	64	64	64	64	63	58	54	52	51	48
	70	60	60	60	60	60	60	60	60	58	54	52	51	48
	80	56	56	56	56	56	56	56	56	56	54	52	51	48
	90	53	53	53	53	53	53	53	53	53	53	52	51	48
Zone 3	0	81	72	68	64	61	58	53	49	45	42	41	40	38
	10	81	72	68	64	61	58	53	49	45	42	41	40	38
	20	81	72	68	64	61	58	53	49	45	42	41	40	38
	30	81	72	68	64	61	58	53	49	45	42	41	40	38
	40	77	72	68	64	61	58	53	49	45	42	41	40	38
	50	70	70	68	64	61	58	53	49	45	42	41	40	38
	60	64	64	64	64	61	58	53	49	45	42	41	40	38
	70	60	60	60	60	60	58	53	49	45	42	41	40	38
	80	56	56	56	56	56	56	53	49	45	42	41	40	38
	90	53	53	53	53	53	53	53	49	45	42	41	40	38

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

Structural ENGINUITY INC
Ingenuity in Engineering

SUNMODO®

Max Rail Spans for SunModo SMR200 Rail System

Table 13

Mean Roof Height: 15 < h ≤ 30 ft
Roof Angle: 7 < θ ≤ 27 degrees
Exposure Category: B
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	119	119	119	119	119	119	115	109	103	99	97	94	88
	10	104	104	104	103	102	101	99	97	95	93	92	91	88
	20	80	80	80	80	80	80	80	80	79	78	77	76	75
	30	80	80	80	80	80	80	80	80	79	78	77	76	75
	40	70	70	70	70	70	70	70	70	70	70	70	70	69
	50	64	64	64	64	64	64	64	64	64	64	64	64	64
	60	59	59	59	59	59	59	59	59	59	59	59	59	59
	70	55	55	55	55	55	55	55	55	55	55	55	55	55
	80	51	51	51	51	51	51	51	51	51	51	51	51	51
	90	49	49	49	49	49	49	49	49	49	49	49	49	49
Zone 2	0	119	112	108	104	101	98	90	84	78	73	70	68	64
	10	104	104	104	103	101	98	90	84	78	73	70	68	64
	20	80	80	80	80	80	80	80	80	78	73	70	68	64
	30	80	80	80	80	80	80	80	80	78	73	70	68	64
	40	70	70	70	70	70	70	70	70	70	70	70	68	64
	50	64	64	64	64	64	64	64	64	64	64	64	64	64
	60	59	59	59	59	59	59	59	59	59	59	59	59	59
	70	55	55	55	55	55	55	55	55	55	55	55	55	55
	80	51	51	51	51	51	51	51	51	51	51	51	51	51
	90	49	49	49	49	49	49	49	49	49	49	49	49	49
Zone 3	0	101	92	88	84	80	77	71	66	61	57	56	54	51
	10	101	92	88	84	80	77	71	66	61	57	56	54	51
	20	80	80	80	80	80	77	71	66	61	57	56	54	51
	30	80	80	80	80	80	77	71	66	61	57	56	54	51
	40	70	70	70	70	70	70	70	66	61	57	56	54	51
	50	64	64	64	64	64	64	64	64	61	57	56	54	51
	60	59	59	59	59	59	59	59	59	59	57	56	54	51
	70	55	55	55	55	55	55	55	55	55	55	55	54	51
	80	51	51	51	51	51	51	51	51	51	51	51	51	51
	90	49	49	49	49	49	49	49	49	49	49	49	49	49

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

Structural ENGINUITY INC
Ingenuity in Engineering

SUNMODO®

Max Rail Spans for SunModo SMR200 Rail System

Table 14

Mean Roof Height: 15 < h ≤ 30 ft
Roof Angle: 7 < θ ≤ 27 degrees
Exposure Category: C
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	119	119	117	114	110	107	101	95	89	83	81	78	74
	10	103	101	100	99	98	96	94	92	89	83	81	78	74
	20	80	80	80	80	80	79	78	77	75	74	73	72	71
	30	80	80	80	80	80	79	78	77	75	74	73	72	71
	40	70	70	70	70	70	70	70	70	69	68	67	67	66
	50	64	64	64	64	64	64	64	64	64	63	63	62	61
	60	59	59	59	59	59	59	59	59	59	59	59	58	58
	70	55	55	55	55	55	55	55	55	55	55	55	55	55
	80	51	51	51	51	51	51	51	51	51	51	51	51	51
	90	49	49	49	49	49	49	49	49	49	49	49	49	49
Zone 2	0	105	98	93	89	85	81	75	69	65	60	59	57	54
	10	103	98	93	89	85	81	75	69	65	60	59	57	54
	20	80	80	80	80	80	79	75	69	65	60	59	57	54
	30	80	80	80	80	80	79	75	69	65	60	59	57	54
	40	70	70	70	70	70	70	70	69	65	60	59	57	54
	50	64	64	64	64	64	64	64	64	64	60	59	57	54
	60	59	59	59	59	59	59	59	59	59	59	59	57	54
	70	55	55	55	55	55	55	55	55	55	55	55	55	54
	80	51	51	51	51	51	51	51	51	51	51	51	51	51
	90	49	49	49	49	49	49	49	49	49	49	49	49	49
Zone 3	0	85	77	73	70	67	64	59	55	51	48	46	45	42
	10	85	77	73	70	67	64	59	55	51	48	46	45	42
	20	80	77	73	70	67	64	59	55	51	48	46	45	42
	30	80	77	73	70	67	64	59	55	51	48	46	45	42
	40	70	70	70	70	67	64	59	55	51	48	46	45	42
	50	64	64	64	64	64	64	59	55	51	48	46	45	42
	60	59	59	59	59	59	59	59	55	51	48	46	45	42
	70	55	55	55	55	55	55	55	55	51	48	46	45	42
	80	51	51	51	51	51	51	51	51	51	48	46	45	42
	90	49	49	49	49	49	49	49	49	49	48	46	45	42

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

Max Rail Spans for SunModo SMR200 Rail System

Table 15

Mean Roof Height: 15 < h ≤ 30 ft
Roof Angle: 7 < θ ≤ 27 degrees
Exposure Category: D
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	119	114	110	106	103	100	94	87	81	76	74	72	68
	10	101	99	98	96	95	94	91	87	81	76	74	72	68
	20	80	80	80	79	79	78	76	75	73	72	71	70	68
	30	80	80	80	79	79	78	76	75	73	72	71	70	68
	40	70	70	70	70	70	70	70	69	67	66	66	65	64
	50	64	64	64	64	64	64	64	64	63	62	61	61	60
	60	59	59	59	59	59	59	59	59	59	58	58	57	56
	70	55	55	55	55	55	55	55	55	55	55	55	54	54
	80	51	51	51	51	51	51	51	51	51	51	51	51	51
	90	49	49	49	49	49	49	49	49	49	49	49	49	49
Zone 2	0	99	89	85	81	77	74	68	63	59	55	53	52	49
	10	99	89	85	81	77	74	68	63	59	55	53	52	49
	20	80	80	80	79	77	74	68	63	59	55	53	52	49
	30	80	80	80	79	77	74	68	63	59	55	53	52	49
	40	70	70	70	70	70	70	68	63	59	55	53	52	49
	50	64	64	64	64	64	64	64	63	59	55	53	52	49
	60	59	59	59	59	59	59	59	59	59	55	53	52	49
	70	55	55	55	55	55	55	55	55	55	55	53	52	49
	80	51	51	51	51	51	51	51	51	51	51	51	51	49
	90	49	49	49	49	49	49	49	49	49	49	49	49	49
Zone 3	0	77	70	67	64	61	58	54	50	47	44	42	41	39
	10	77	70	67	64	61	58	54	50	47	44	42	41	39
	20	77	70	67	64	61	58	54	50	47	44	42	41	39
	30	77	70	67	64	61	58	54	50	47	44	42	41	39
	40	70	70	67	64	61	58	54	50	47	44	42	41	39
	50	64	64	64	64	61	58	54	50	47	44	42	41	39
	60	59	59	59	59	59	58	54	50	47	44	42	41	39
	70	55	55	55	55	55	55	54	50	47	44	42	41	39
	80	51	51	51	51	51	51	51	50	47	44	42	41	39
	90	49	49	49	49	49	49	49	49	47	44	42	41	39

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

Max Rail Spans for SunModo SMR200 Rail System

Table 16

Mean Roof Height: 15 < h ≤ 30 ft
Roof Angle: 27 < θ ≤ 45 degrees
Exposure Category: B
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	119	115	113	110	108	106	100	95	91	86	84	82	79
	10	111	107	105	103	102	100	96	93	90	86	84	82	79
	20	96	94	93	91	90	89	86	84	81	79	78	77	74
	30	86	84	84	83	82	81	79	77	75	73	72	71	69
	40	77	77	77	76	75	75	73	71	70	68	68	67	65
	50	70	70	70	70	70	70	68	67	66	64	64	63	62
	60	65	65	65	65	65	65	64	63	62	61	61	60	59
	70	60	60	60	60	60	60	60	60	59	58	58	57	56
	80	57	57	57	57	57	57	57	57	57	56	55	55	54
	90	54	54	54	54	54	54	54	54	54	54	53	53	52
Zone 2	0	119	115	113	110	108	106	100	95	90	84	82	80	75
	10	111	107	105	103	102	100	96	93	90	84	82	80	75
	20	96	94	93	91	90	89	86	84	81	79	78	77	74
	30	86	84	84	83	82	81	79	77	75	73	72	71	69
	40	77	77	77	76	75	75	73	71	70	68	68	67	65
	50	70	70	70	70	70	70	68	67	66	64	64	63	62
	60	65	65	65	65	65	65	64	63	62	61	61	60	59
	70	60	60	60	60	60	60	60	60	59	58	58	57	56
	80	57	57	57	57	57	57	57	57	57	56	55	55	54
	90	54	54	54	54	54	54	54	54	54	54	53	53	52
Zone 3	0	119	115	113	110	108	106	100	95	90	84	82	80	75
	10	111	107	105	103	102	100	96	93	90	84	82	80	75
	20	96	94	93	91	90	89	86	84	81	79	78	77	74
	30	86	84	84	83	82	81	79	77	75	73	72	71	69
	40	77	77	77	76	75	75	73	71	70	68	68	67	65
	50	70	70	70	70	70	70	68	67	66	64	64	63	62
	60	65	65	65	65	65	65	64	63	62	61	61	60	59
	70	60	60	60	60	60	60	60	60	59	58	58	57	56
	80	57	57	57	57	57	57	57	57	57	56	55	55	54
	90	54	54	54	54	54	54	54	54	54	54	53	53	52

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

Structural ENGINUITY INC
Ingenuity in Engineering

SUNMODO®

Max Rail Spans for SunModo SMR200 Rail System

Table 17

Mean Roof Height: 15 < h ≤ 30 ft
Roof Angle: 27 < θ ≤ 45 degrees
Exposure Category: C
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	111	106	102	99	96	93	88	83	79	75	73	71	68
	10	104	100	98	96	94	92	88	83	79	75	73	71	68
	20	92	89	87	86	84	83	80	77	75	72	71	69	67
	30	83	81	80	78	77	76	74	72	70	67	66	65	63
	40	76	74	74	73	72	71	69	67	65	64	63	62	60
	50	70	70	69	68	67	67	65	64	62	60	60	59	58
	60	65	65	65	64	64	63	62	60	59	58	57	56	55
	70	60	60	60	60	60	60	59	58	56	55	55	54	53
	80	57	57	57	57	57	57	56	55	54	53	53	52	51
	90	54	54	54	54	54	54	54	53	52	51	51	50	49
Zone 2	0	111	106	102	99	96	93	87	81	76	71	69	67	63
	10	104	100	98	96	94	92	87	81	76	71	69	67	63
	20	92	89	87	86	84	83	80	77	75	71	69	67	63
	30	83	81	80	78	77	76	74	72	70	67	66	65	63
	40	76	74	74	73	72	71	69	67	65	64	63	62	60
	50	70	70	69	68	67	67	65	64	62	60	60	59	58
	60	65	65	65	64	64	63	62	60	59	58	57	56	55
	70	60	60	60	60	60	60	59	58	56	55	55	54	53
	80	57	57	57	57	57	57	56	55	54	53	53	52	51
	90	54	54	54	54	54	54	54	53	52	51	51	50	49
Zone 3	0	111	106	102	99	96	93	87	81	76	71	69	67	63
	10	104	100	98	96	94	92	87	81	76	71	69	67	63
	20	92	89	87	86	84	83	80	77	75	71	69	67	63
	30	83	81	80	78	77	76	74	72	70	67	66	65	63
	40	76	74	74	73	72	71	69	67	65	64	63	62	60
	50	70	70	69	68	67	67	65	64	62	60	60	59	58
	60	65	65	65	64	64	63	62	60	59	58	57	56	55
	70	60	60	60	60	60	60	59	58	56	55	55	54	53
	80	57	57	57	57	57	57	56	55	54	53	53	52	51
	90	54	54	54	54	54	54	54	53	52	51	51	50	49

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

Max Rail Spans for SunModo SMR200 Rail System

Table 18

Mean Roof Height: 15 < h ≤ 30 ft
Roof Angle: 27 < θ ≤ 45 degrees
Exposure Category: D
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	106	99	96	93	90	87	82	78	73	70	68	66	63
	10	100	96	93	91	89	87	82	78	73	70	68	66	63
	20	89	86	84	83	81	80	77	74	71	68	67	66	63
	30	81	78	77	76	75	74	71	69	67	64	63	62	60
	40	75	73	72	71	70	69	67	65	63	61	60	59	58
	50	70	68	67	66	66	65	63	61	60	58	57	57	55
	60	65	64	64	63	62	61	60	59	57	56	55	54	53
	70	60	60	60	60	59	59	57	56	55	54	53	52	51
	80	57	57	57	57	57	56	55	54	53	52	51	51	49
	90	54	54	54	54	54	54	53	52	51	50	49	49	48
Zone 2	0	106	99	96	93	89	86	80	74	69	65	63	61	58
	10	100	96	93	91	89	86	80	74	69	65	63	61	58
	20	89	86	84	83	81	80	77	74	69	65	63	61	58
	30	81	78	77	76	75	74	71	69	67	64	63	61	58
	40	75	73	72	71	70	69	67	65	63	61	60	59	58
	50	70	68	67	66	66	65	63	61	60	58	57	57	55
	60	65	64	64	63	62	61	60	59	57	56	55	54	53
	70	60	60	60	60	59	59	57	56	55	54	53	52	51
	80	57	57	57	57	57	56	55	54	53	52	51	51	49
	90	54	54	54	54	54	54	53	52	51	50	49	49	48
Zone 3	0	106	99	96	93	89	86	80	74	69	65	63	61	58
	10	100	96	93	91	89	86	80	74	69	65	63	61	58
	20	89	86	84	83	81	80	77	74	69	65	63	61	58
	30	81	78	77	76	75	74	71	69	67	64	63	61	58
	40	75	73	72	71	70	69	67	65	63	61	60	59	58
	50	70	68	67	66	66	65	63	61	60	58	57	57	55
	60	65	64	64	63	62	61	60	59	57	56	55	54	53
	70	60	60	60	60	59	59	57	56	55	54	53	52	51
	80	57	57	57	57	57	56	55	54	53	52	51	51	49
	90	54	54	54	54	54	54	53	52	51	50	49	49	48

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 67.5"

Max Rail Spans for SunModo SMR200 Rail System

Table 19

Mean Roof Height: h ≤ 15 ft
Roof Angle: 0 < θ ≤ 7 degrees
Exposure Category: B
Panel Orientation: Landscape

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	139	139	139	139	139	137	129	122	116	111	109	106	102
	10	132	132	132	131	131	130	128	122	116	111	109	106	102
	20	110	110	110	110	110	110	110	110	110	109	109	106	102
	30	109	109	109	109	109	109	109	109	109	108	108	106	102
	40	98	98	98	98	98	98	98	98	98	98	98	98	98
	50	89	89	89	89	89	89	89	89	89	89	89	89	89
	60	82	82	82	82	82	82	82	82	82	82	82	82	82
	70	76	76	76	76	76	76	76	76	76	76	76	76	76
	80	71	71	71	71	71	71	71	71	71	71	71	71	71
	90	68	68	68	68	68	68	68	68	68	68	68	68	68
Zone 2	0	139	128	123	119	115	112	105	100	95	90	87	84	79
	10	132	128	123	119	115	112	105	100	95	90	87	84	79
	20	110	110	110	110	110	110	105	100	95	90	87	84	79
	30	109	109	109	109	109	109	105	100	95	90	87	84	79
	40	98	98	98	98	98	98	98	98	95	90	87	84	79
	50	89	89	89	89	89	89	89	89	89	89	87	84	79
	60	82	82	82	82	82	82	82	82	82	82	82	82	79
	70	76	76	76	76	76	76	76	76	76	76	76	76	76
	80	71	71	71	71	71	71	71	71	71	71	71	71	71
	90	68	68	68	68	68	68	68	68	68	68	68	68	68
Zone 3	0	118	109	105	102	98	95	88	81	75	70	68	66	62
	10	118	109	105	102	98	95	88	81	75	70	68	66	62
	20	110	109	105	102	98	95	88	81	75	70	68	66	62
	30	109	109	105	102	98	95	88	81	75	70	68	66	62
	40	98	98	98	98	98	95	88	81	75	70	68	66	62
	50	89	89	89	89	89	89	88	81	75	70	68	66	62
	60	82	82	82	82	82	82	82	81	75	70	68	66	62
	70	76	76	76	76	76	76	76	76	75	70	68	66	62
	80	71	71	71	71	71	71	71	71	71	70	68	66	62
	90	68	68	68	68	68	68	68	68	68	68	68	66	62

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

Max Rail Spans for SunModo SMR200 Rail System

Table 20

Mean Roof Height: h ≤ 15 ft
Roof Angle: 0 < θ ≤ 7 degrees
Exposure Category: C
Panel Orientation: Landscape

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	139	139	139	135	131	127	119	113	108	103	101	99	95
	10	132	131	130	130	129	127	119	113	108	103	101	99	95
	20	110	110	110	110	110	110	110	110	108	103	101	99	95
	30	109	109	109	109	109	109	109	109	108	103	101	99	95
	40	98	98	98	98	98	98	98	98	98	98	98	98	95
	50	89	89	89	89	89	89	89	89	89	89	89	89	89
	60	82	82	82	82	82	82	82	82	82	82	82	82	82
	70	76	76	76	76	76	76	76	76	76	76	76	76	76
	80	71	71	71	71	71	71	71	71	71	71	71	71	71
	90	68	68	68	68	68	68	68	68	68	68	68	68	68
Zone 2	0	128	118	114	110	107	103	98	93	86	80	78	75	71
	10	128	118	114	110	107	103	98	93	86	80	78	75	71
	20	110	110	110	110	107	103	98	93	86	80	78	75	71
	30	109	109	109	109	107	103	98	93	86	80	78	75	71
	40	98	98	98	98	98	98	98	93	86	80	78	75	71
	50	89	89	89	89	89	89	89	89	86	80	78	75	71
	60	82	82	82	82	82	82	82	82	82	80	78	75	71
	70	76	76	76	76	76	76	76	76	76	76	76	75	71
	80	71	71	71	71	71	71	71	71	71	71	71	71	71
	90	68	68	68	68	68	68	68	68	68	68	68	68	68
Zone 3	0	109	101	97	94	90	86	78	72	67	63	61	59	56
	10	109	101	97	94	90	86	78	72	67	63	61	59	56
	20	109	101	97	94	90	86	78	72	67	63	61	59	56
	30	109	101	97	94	90	86	78	72	67	63	61	59	56
	40	98	98	97	94	90	86	78	72	67	63	61	59	56
	50	89	89	89	89	89	86	78	72	67	63	61	59	56
	60	82	82	82	82	82	82	78	72	67	63	61	59	56
	70	76	76	76	76	76	76	76	72	67	63	61	59	56
	80	71	71	71	71	71	71	71	71	67	63	61	59	56
	90	68	68	68	68	68	68	68	68	67	63	61	59	56

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

Structural ENGINUITY INC
Ingenuity in Engineering

SUNMODO®

Max Rail Spans for SunModo SMR200 Rail System

Table 21

Mean Roof Height: h ≤ 15 ft
Roof Angle: 0 < θ ≤ 7 degrees
Exposure Category: D
Panel Orientation: Landscape

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	139	134	129	125	121	117	111	106	101	96	94	92	87
	10	131	129	129	125	121	117	111	106	101	96	94	92	87
	20	110	110	110	110	110	110	109	106	101	96	94	92	87
	30	109	109	109	109	109	109	108	106	101	96	94	92	87
	40	98	98	98	98	98	98	98	98	98	96	94	92	87
	50	89	89	89	89	89	89	89	89	89	89	89	89	87
	60	82	82	82	82	82	82	82	82	82	82	82	82	82
	70	76	76	76	76	76	76	76	76	76	76	76	76	76
	80	71	71	71	71	71	71	71	71	71	71	71	71	71
	90	68	68	68	68	68	68	68	68	68	68	68	68	68
Zone 2	0	118	109	106	102	99	96	90	83	77	72	70	67	64
	10	118	109	106	102	99	96	90	83	77	72	70	67	64
	20	110	109	106	102	99	96	90	83	77	72	70	67	64
	30	109	109	106	102	99	96	90	83	77	72	70	67	64
	40	98	98	98	98	98	96	90	83	77	72	70	67	64
	50	89	89	89	89	89	89	89	83	77	72	70	67	64
	60	82	82	82	82	82	82	82	82	77	72	70	67	64
	70	76	76	76	76	76	76	76	76	76	72	70	67	64
	80	71	71	71	71	71	71	71	71	71	71	70	67	64
	90	68	68	68	68	68	68	68	68	68	68	68	67	64
Zone 3	0	101	93	89	84	80	76	70	65	61	57	55	54	51
	10	101	93	89	84	80	76	70	65	61	57	55	54	51
	20	101	93	89	84	80	76	70	65	61	57	55	54	51
	30	101	93	89	84	80	76	70	65	61	57	55	54	51
	40	98	93	89	84	80	76	70	65	61	57	55	54	51
	50	89	89	89	84	80	76	70	65	61	57	55	54	51
	60	82	82	82	82	80	76	70	65	61	57	55	54	51
	70	76	76	76	76	76	76	70	65	61	57	55	54	51
	80	71	71	71	71	71	71	70	65	61	57	55	54	51
	90	68	68	68	68	68	68	68	65	61	57	55	54	51

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

Structural ENGINUITY INC
Ingenuity in Engineering

SUNMODO®

Max Rail Spans for SunModo SMR200 Rail System

Table 22

Mean Roof Height: h ≤ 15 ft
Roof Angle: 7 < θ ≤ 27 degrees
Exposure Category: B
Panel Orientation: Landscape

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	139	139	139	139	139	139	134	127	121	115	113	110	106
	10	130	129	128	127	126	125	123	121	118	115	113	110	106
	20	101	101	101	101	101	101	101	101	99	98	97	96	95
	30	101	101	101	101	101	101	101	101	99	98	97	96	95
	40	89	89	89	89	89	89	89	89	89	89	89	88	87
	50	81	81	81	81	81	81	81	81	81	81	81	81	81
	60	75	75	75	75	75	75	75	75	75	75	75	75	75
	70	69	69	69	69	69	69	69	69	69	69	69	69	69
	80	65	65	65	65	65	65	65	65	65	65	65	65	65
	90	62	62	62	62	62	62	62	62	62	62	62	62	62
Zone 2	0	139	129	124	120	116	113	106	101	96	91	88	85	80
	10	130	129	124	120	116	113	106	101	96	91	88	85	80
	20	101	101	101	101	101	101	101	101	96	91	88	85	80
	30	101	101	101	101	101	101	101	101	96	91	88	85	80
	40	89	89	89	89	89	89	89	89	89	89	88	85	80
	50	81	81	81	81	81	81	81	81	81	81	81	81	80
	60	75	75	75	75	75	75	75	75	75	75	75	75	75
	70	69	69	69	69	69	69	69	69	69	69	69	69	69
	80	65	65	65	65	65	65	65	65	65	65	65	65	65
	90	62	62	62	62	62	62	62	62	62	62	62	62	62
Zone 3	0	116	108	105	101	98	96	89	82	77	72	70	68	64
	10	116	108	105	101	98	96	89	82	77	72	70	68	64
	20	101	101	101	101	98	96	89	82	77	72	70	68	64
	30	101	101	101	101	98	96	89	82	77	72	70	68	64
	40	89	89	89	89	89	89	89	82	77	72	70	68	64
	50	81	81	81	81	81	81	81	81	77	72	70	68	64
	60	75	75	75	75	75	75	75	75	75	72	70	68	64
	70	69	69	69	69	69	69	69	69	69	69	69	68	64
	80	65	65	65	65	65	65	65	65	65	65	65	65	64
	90	62	62	62	62	62	62	62	62	62	62	62	62	62

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

Max Rail Spans for SunModo SMR200 Rail System

Table 23

Mean Roof Height: h ≤ 15 ft
Roof Angle: 7 < θ ≤ 27 degrees
Exposure Category: C
Panel Orientation: Landscape

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	139	139	139	139	135	131	124	118	112	107	105	103	99
	10	129	126	125	124	123	122	120	117	112	107	105	103	99
	20	101	101	101	101	101	101	100	99	97	95	94	94	92
	30	101	101	101	101	101	101	100	99	97	95	94	94	92
	40	89	89	89	89	89	89	89	89	89	87	87	86	85
	50	81	81	81	81	81	81	81	81	81	81	81	80	79
	60	75	75	75	75	75	75	75	75	75	75	75	75	74
	70	69	69	69	69	69	69	69	69	69	69	69	69	69
	80	65	65	65	65	65	65	65	65	65	65	65	65	65
	90	62	62	62	62	62	62	62	62	62	62	62	62	62
Zone 2	0	128	119	115	111	108	105	99	94	87	82	79	77	72
	10	128	119	115	111	108	105	99	94	87	82	79	77	72
	20	101	101	101	101	101	101	99	94	87	82	79	77	72
	30	101	101	101	101	101	101	99	94	87	82	79	77	72
	40	89	89	89	89	89	89	89	89	87	82	79	77	72
	50	81	81	81	81	81	81	81	81	81	81	79	77	72
	60	75	75	75	75	75	75	75	75	75	75	75	75	72
	70	69	69	69	69	69	69	69	69	69	69	69	69	69
	80	65	65	65	65	65	65	65	65	65	65	65	65	65
	90	62	62	62	62	62	62	62	62	62	62	62	62	62
Zone 3	0	108	101	97	94	90	86	80	74	69	65	63	61	58
	10	108	101	97	94	90	86	80	74	69	65	63	61	58
	20	101	101	97	94	90	86	80	74	69	65	63	61	58
	30	101	101	97	94	90	86	80	74	69	65	63	61	58
	40	89	89	89	89	89	86	80	74	69	65	63	61	58
	50	81	81	81	81	81	81	80	74	69	65	63	61	58
	60	75	75	75	75	75	75	75	74	69	65	63	61	58
	70	69	69	69	69	69	69	69	69	69	65	63	61	58
	80	65	65	65	65	65	65	65	65	65	65	63	61	58
	90	62	62	62	62	62	62	62	62	62	62	62	61	58

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

Structural ENGINUITY INC
Ingenuity in Engineering

SUNMODO®

Max Rail Spans for SunModo SMR200 Rail System

Table 24

Mean Roof Height: h ≤ 15 ft
Roof Angle: 7 < θ ≤ 27 degrees
Exposure Category: D
Panel Orientation: Landscape

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	139	139	134	130	126	122	115	109	104	100	98	96	91
	10	126	124	123	121	120	119	115	109	104	100	98	96	91
	20	101	101	101	101	101	100	98	96	94	92	91	90	89
	30	101	101	101	101	101	100	98	96	94	92	91	90	89
	40	89	89	89	89	89	89	89	88	87	85	84	84	82
	50	81	81	81	81	81	81	81	81	80	79	79	78	77
	60	75	75	75	75	75	75	75	75	75	74	74	73	72
	70	69	69	69	69	69	69	69	69	69	69	69	69	69
	80	65	65	65	65	65	65	65	65	65	65	65	65	65
	90	62	62	62	62	62	62	62	62	62	62	62	62	62
Zone 2	0	119	110	107	103	100	97	91	84	78	73	71	69	65
	10	119	110	107	103	100	97	91	84	78	73	71	69	65
	20	101	101	101	101	100	97	91	84	78	73	71	69	65
	30	101	101	101	101	100	97	91	84	78	73	71	69	65
	40	89	89	89	89	89	89	89	84	78	73	71	69	65
	50	81	81	81	81	81	81	81	81	78	73	71	69	65
	60	75	75	75	75	75	75	75	75	75	73	71	69	65
	70	69	69	69	69	69	69	69	69	69	69	69	69	65
	80	65	65	65	65	65	65	65	65	65	65	65	65	65
	90	62	62	62	62	62	62	62	62	62	62	62	62	62
Zone 3	0	101	93	89	85	81	78	72	67	63	59	57	56	53
	10	101	93	89	85	81	78	72	67	63	59	57	56	53
	20	101	93	89	85	81	78	72	67	63	59	57	56	53
	30	101	93	89	85	81	78	72	67	63	59	57	56	53
	40	89	89	89	85	81	78	72	67	63	59	57	56	53
	50	81	81	81	81	81	78	72	67	63	59	57	56	53
	60	75	75	75	75	75	75	72	67	63	59	57	56	53
	70	69	69	69	69	69	69	69	67	63	59	57	56	53
	80	65	65	65	65	65	65	65	65	63	59	57	56	53
	90	62	62	62	62	62	62	62	62	62	59	57	56	53

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

Max Rail Spans for SunModo SMR200 Rail System

Table 25

Mean Roof Height: h ≤ 15 ft
Roof Angle: 27 < θ ≤ 45 degrees
Exposure Category: B
Panel Orientation: Landscape

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	139	135	132	129	126	123	119	114	110	106	104	103	99
	10	136	132	130	128	126	123	119	114	110	106	104	103	99
	20	122	119	117	116	114	112	109	106	103	100	98	97	94
	30	109	107	106	105	103	102	100	97	95	93	91	90	88
	40	98	98	97	96	95	94	93	91	89	87	86	85	83
	50	89	89	89	89	89	88	87	85	83	82	81	80	78
	60	82	82	82	82	82	82	82	80	79	78	77	76	75
	70	77	77	77	77	77	77	77	76	75	74	73	73	71
	80	72	72	72	72	72	72	72	72	72	71	70	70	69
	90	68	68	68	68	68	68	68	68	68	68	68	67	66
Zone 2	0	139	135	132	129	126	123	119	113	108	103	101	99	95
	10	136	132	130	128	126	123	119	113	108	103	101	99	95
	20	122	119	117	116	114	112	109	106	103	100	98	97	94
	30	109	107	106	105	103	102	100	97	95	93	91	90	88
	40	98	98	97	96	95	94	93	91	89	87	86	85	83
	50	89	89	89	89	89	88	87	85	83	82	81	80	78
	60	82	82	82	82	82	82	82	80	79	78	77	76	75
	70	77	77	77	77	77	77	77	76	75	74	73	73	71
	80	72	72	72	72	72	72	72	72	72	71	70	70	69
	90	68	68	68	68	68	68	68	68	68	68	68	67	66
Zone 3	0	139	135	132	129	126	123	119	113	108	103	101	99	95
	10	136	132	130	128	126	123	119	113	108	103	101	99	95
	20	122	119	117	116	114	112	109	106	103	100	98	97	94
	30	109	107	106	105	103	102	100	97	95	93	91	90	88
	40	98	98	97	96	95	94	93	91	89	87	86	85	83
	50	89	89	89	89	89	88	87	85	83	82	81	80	78
	60	82	82	82	82	82	82	82	80	79	78	77	76	75
	70	77	77	77	77	77	77	77	76	75	74	73	73	71
	80	72	72	72	72	72	72	72	72	72	71	70	70	69
	90	68	68	68	68	68	68	68	68	68	68	68	67	66

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

Max Rail Spans for SunModo SMR200 Rail System

Table 26

Mean Roof Height: h ≤ 15 ft
Roof Angle: 27 < θ ≤ 45 degrees
Exposure Category: C
Panel Orientation: Landscape

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	134	128	125	122	120	117	112	108	104	100	98	96	91
	10	132	127	125	122	120	117	112	108	104	100	98	96	91
	20	119	115	113	112	110	108	105	101	98	95	93	92	89
	30	107	104	103	102	100	99	96	94	91	88	87	86	84
	40	98	96	95	94	93	92	90	88	85	83	82	81	79
	50	89	89	89	88	87	86	84	82	81	79	78	77	75
	60	82	82	82	82	82	81	80	78	77	75	74	74	72
	70	77	77	77	77	77	77	76	75	73	72	71	70	69
	80	72	72	72	72	72	72	72	71	70	69	68	68	66
	90	68	68	68	68	68	68	68	68	67	66	66	65	64
Zone 2	0	134	128	125	122	120	117	111	105	101	96	93	91	86
	10	132	127	125	122	120	117	111	105	101	96	93	91	86
	20	119	115	113	112	110	108	105	101	98	95	93	91	86
	30	107	104	103	102	100	99	96	94	91	88	87	86	84
	40	98	96	95	94	93	92	90	88	85	83	82	81	79
	50	89	89	89	88	87	86	84	82	81	79	78	77	75
	60	82	82	82	82	82	81	80	78	77	75	74	74	72
	70	77	77	77	77	77	77	76	75	73	72	71	70	69
	80	72	72	72	72	72	72	72	71	70	69	68	68	66
	90	68	68	68	68	68	68	68	68	67	66	66	65	64
Zone 3	0	134	128	125	122	120	117	111	105	101	96	93	91	86
	10	132	127	125	122	120	117	111	105	101	96	93	91	86
	20	119	115	113	112	110	108	105	101	98	95	93	91	86
	30	107	104	103	102	100	99	96	94	91	88	87	86	84
	40	98	96	95	94	93	92	90	88	85	83	82	81	79
	50	89	89	89	88	87	86	84	82	81	79	78	77	75
	60	82	82	82	82	82	81	80	78	77	75	74	74	72
	70	77	77	77	77	77	77	76	75	73	72	71	70	69
	80	72	72	72	72	72	72	72	71	70	69	68	68	66
	90	68	68	68	68	68	68	68	68	67	66	66	65	64

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

Structural ENGINUITY INC
Ingenuity in Engineering

SUNMODO®

Max Rail Spans for SunModo SMR200 Rail System

Table 27

Mean Roof Height: h ≤ 15 ft
Roof Angle: 27 < θ ≤ 45 degrees
Exposure Category: D
Panel Orientation: Landscape

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	128	122	119	116	113	111	106	102	98	93	90	88	84
	10	127	122	119	116	113	111	106	102	98	93	90	88	84
	20	115	111	109	107	105	104	100	96	93	90	88	87	84
	30	104	101	100	98	97	96	93	90	87	84	83	82	79
	40	96	94	93	91	90	89	87	84	82	80	79	77	75
	50	89	88	87	86	85	84	82	80	78	76	75	74	72
	60	82	82	82	81	80	79	78	76	74	72	72	71	69
	70	77	77	77	77	76	75	74	72	71	69	69	68	66
	80	72	72	72	72	72	72	71	70	68	67	66	65	64
	90	68	68	68	68	68	68	68	67	66	64	64	63	62
Zone 2	0	128	122	119	116	112	109	103	98	93	87	84	82	78
	10	127	122	119	116	112	109	103	98	93	87	84	82	78
	20	115	111	109	107	105	104	100	96	93	87	84	82	78
	30	104	101	100	98	97	96	93	90	87	84	83	82	78
	40	96	94	93	91	90	89	87	84	82	80	79	77	75
	50	89	88	87	86	85	84	82	80	78	76	75	74	72
	60	82	82	82	81	80	79	78	76	74	72	72	71	69
	70	77	77	77	77	76	75	74	72	71	69	69	68	66
	80	72	72	72	72	72	72	71	70	68	67	66	65	64
	90	68	68	68	68	68	68	68	67	66	64	64	63	62
Zone 3	0	128	122	119	116	112	109	103	98	93	87	84	82	78
	10	127	122	119	116	112	109	103	98	93	87	84	82	78
	20	115	111	109	107	105	104	100	96	93	87	84	82	78
	30	104	101	100	98	97	96	93	90	87	84	83	82	78
	40	96	94	93	91	90	89	87	84	82	80	79	77	75
	50	89	88	87	86	85	84	82	80	78	76	75	74	72
	60	82	82	82	81	80	79	78	76	74	72	72	71	69
	70	77	77	77	77	76	75	74	72	71	69	69	68	66
	80	72	72	72	72	72	72	71	70	68	67	66	65	64
	90	68	68	68	68	68	68	68	67	66	64	64	63	62

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

Max Rail Spans for SunModo SMR200 Rail System

Table 28

Mean Roof Height: 15 < h ≤ 30 ft
Roof Angle: 0 < θ ≤ 7 degrees
Exposure Category: B
Panel Orientation: Landscape

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	139	139	139	139	139	137	129	122	116	111	109	106	102
	10	132	132	132	131	131	130	128	122	116	111	109	106	102
	20	110	110	110	110	110	110	110	110	110	109	109	106	102
	30	109	109	109	109	109	109	109	109	109	108	108	106	102
	40	98	98	98	98	98	98	98	98	98	98	98	98	98
	50	89	89	89	89	89	89	89	89	89	89	89	89	89
	60	82	82	82	82	82	82	82	82	82	82	82	82	82
	70	76	76	76	76	76	76	76	76	76	76	76	76	76
	80	71	71	71	71	71	71	71	71	71	71	71	71	71
	90	68	68	68	68	68	68	68	68	68	68	68	68	68
Zone 2	0	139	128	123	119	115	112	105	100	95	90	87	84	79
	10	132	128	123	119	115	112	105	100	95	90	87	84	79
	20	110	110	110	110	110	110	105	100	95	90	87	84	79
	30	109	109	109	109	109	109	105	100	95	90	87	84	79
	40	98	98	98	98	98	98	98	98	95	90	87	84	79
	50	89	89	89	89	89	89	89	89	89	89	87	84	79
	60	82	82	82	82	82	82	82	82	82	82	82	82	79
	70	76	76	76	76	76	76	76	76	76	76	76	76	76
	80	71	71	71	71	71	71	71	71	71	71	71	71	71
	90	68	68	68	68	68	68	68	68	68	68	68	68	68
Zone 3	0	118	109	105	102	98	95	88	81	75	70	68	66	62
	10	118	109	105	102	98	95	88	81	75	70	68	66	62
	20	110	109	105	102	98	95	88	81	75	70	68	66	62
	30	109	109	105	102	98	95	88	81	75	70	68	66	62
	40	98	98	98	98	98	95	88	81	75	70	68	66	62
	50	89	89	89	89	89	89	88	81	75	70	68	66	62
	60	82	82	82	82	82	82	82	81	75	70	68	66	62
	70	76	76	76	76	76	76	76	76	75	70	68	66	62
	80	71	71	71	71	71	71	71	71	71	70	68	66	62
	90	68	68	68	68	68	68	68	68	68	68	68	66	62

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

Max Rail Spans for SunModo SMR200 Rail System

Table 29

Mean Roof Height: 15 < h ≤ 30 ft
Roof Angle: 0 < θ ≤ 7 degrees
Exposure Category: C
Panel Orientation: Landscape

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	139	137	132	127	123	120	113	107	102	98	96	94	89
	10	132	130	129	127	123	120	113	107	102	98	96	94	89
	20	110	110	110	110	110	110	110	107	102	98	96	94	89
	30	109	109	109	109	109	109	109	107	102	98	96	94	89
	40	98	98	98	98	98	98	98	98	98	98	96	94	89
	50	89	89	89	89	89	89	89	89	89	89	89	89	89
	60	82	82	82	82	82	82	82	82	82	82	82	82	82
	70	76	76	76	76	76	76	76	76	76	76	76	76	76
	80	71	71	71	71	71	71	71	71	71	71	71	71	71
	90	68	68	68	68	68	68	68	68	68	68	68	68	68
Zone 2	0	120	111	108	104	101	98	93	85	79	74	72	69	65
	10	120	111	108	104	101	98	93	85	79	74	72	69	65
	20	110	110	108	104	101	98	93	85	79	74	72	69	65
	30	109	109	108	104	101	98	93	85	79	74	72	69	65
	40	98	98	98	98	98	98	93	85	79	74	72	69	65
	50	89	89	89	89	89	89	89	85	79	74	72	69	65
	60	82	82	82	82	82	82	82	82	79	74	72	69	65
	70	76	76	76	76	76	76	76	76	76	74	72	69	65
	80	71	71	71	71	71	71	71	71	71	71	71	69	65
	90	68	68	68	68	68	68	68	68	68	68	68	68	65
Zone 3	0	103	95	92	87	83	79	72	67	62	58	57	55	52
	10	103	95	92	87	83	79	72	67	62	58	57	55	52
	20	103	95	92	87	83	79	72	67	62	58	57	55	52
	30	103	95	92	87	83	79	72	67	62	58	57	55	52
	40	98	95	92	87	83	79	72	67	62	58	57	55	52
	50	89	89	89	87	83	79	72	67	62	58	57	55	52
	60	82	82	82	82	82	79	72	67	62	58	57	55	52
	70	76	76	76	76	76	76	72	67	62	58	57	55	52
	80	71	71	71	71	71	71	71	67	62	58	57	55	52
	90	68	68	68	68	68	68	68	67	62	58	57	55	52

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

Structural ENGINUITY INC
Ingenuity in Engineering

SUNMODO®

Max Rail Spans for SunModo SMR200 Rail System

Table 30

Mean Roof Height: 15 < h ≤ 30 ft
Roof Angle: 0 < θ ≤ 7 degrees
Exposure Category: D
Panel Orientation: Landscape

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	138	128	123	119	116	112	106	101	96	92	89	87	82
	10	130	128	123	119	116	112	106	101	96	92	89	87	82
	20	110	110	110	110	110	110	106	101	96	92	89	87	82
	30	109	109	109	109	109	108	106	101	96	92	89	87	82
	40	98	98	98	98	98	98	98	98	96	92	89	87	82
	50	89	89	89	89	89	89	89	89	89	89	89	87	82
	60	82	82	82	82	82	82	82	82	82	82	82	82	82
	70	76	76	76	76	76	76	76	76	76	76	76	76	76
	80	71	71	71	71	71	71	71	71	71	71	71	71	71
	90	68	68	68	68	68	68	68	68	68	68	68	68	68
Zone 2	0	112	104	101	98	95	91	84	78	72	67	65	63	60
	10	112	104	101	98	95	91	84	78	72	67	65	63	60
	20	110	104	101	98	95	91	84	78	72	67	65	63	60
	30	109	104	101	98	95	91	84	78	72	67	65	63	60
	40	98	98	98	98	95	91	84	78	72	67	65	63	60
	50	89	89	89	89	89	89	84	78	72	67	65	63	60
	60	82	82	82	82	82	82	82	78	72	67	65	63	60
	70	76	76	76	76	76	76	76	76	72	67	65	63	60
	80	71	71	71	71	71	71	71	71	71	67	65	63	60
	90	68	68	68	68	68	68	68	68	68	67	65	63	60
Zone 3	0	96	87	83	78	75	71	66	61	57	54	52	51	48
	10	96	87	83	78	75	71	66	61	57	54	52	51	48
	20	96	87	83	78	75	71	66	61	57	54	52	51	48
	30	96	87	83	78	75	71	66	61	57	54	52	51	48
	40	96	87	83	78	75	71	66	61	57	54	52	51	48
	50	89	87	83	78	75	71	66	61	57	54	52	51	48
	60	82	82	82	78	75	71	66	61	57	54	52	51	48
	70	76	76	76	76	75	71	66	61	57	54	52	51	48
	80	71	71	71	71	71	71	66	61	57	54	52	51	48
	90	68	68	68	68	68	68	66	61	57	54	52	51	48

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

Max Rail Spans for SunModo SMR200 Rail System

Table 31

Mean Roof Height: 15 < h ≤ 30 ft
Roof Angle: 7 < θ ≤ 27 degrees
Exposure Category: B
Panel Orientation: Landscape

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	139	139	139	139	139	139	134	127	121	115	113	110	106
	10	130	129	128	127	126	125	123	121	118	115	113	110	106
	20	101	101	101	101	101	101	101	101	99	98	97	96	95
	30	101	101	101	101	101	101	101	101	99	98	97	96	95
	40	89	89	89	89	89	89	89	89	89	89	89	88	87
	50	81	81	81	81	81	81	81	81	81	81	81	81	81
	60	75	75	75	75	75	75	75	75	75	75	75	75	75
	70	69	69	69	69	69	69	69	69	69	69	69	69	69
	80	65	65	65	65	65	65	65	65	65	65	65	65	65
	90	62	62	62	62	62	62	62	62	62	62	62	62	62
Zone 2	0	139	129	124	120	116	113	106	101	96	91	88	85	80
	10	130	129	124	120	116	113	106	101	96	91	88	85	80
	20	101	101	101	101	101	101	101	101	96	91	88	85	80
	30	101	101	101	101	101	101	101	101	96	91	88	85	80
	40	89	89	89	89	89	89	89	89	89	89	88	85	80
	50	81	81	81	81	81	81	81	81	81	81	81	81	80
	60	75	75	75	75	75	75	75	75	75	75	75	75	75
	70	69	69	69	69	69	69	69	69	69	69	69	69	69
	80	65	65	65	65	65	65	65	65	65	65	65	65	65
	90	62	62	62	62	62	62	62	62	62	62	62	62	62
Zone 3	0	116	108	105	101	98	96	89	82	77	72	70	68	64
	10	116	108	105	101	98	96	89	82	77	72	70	68	64
	20	101	101	101	101	98	96	89	82	77	72	70	68	64
	30	101	101	101	101	98	96	89	82	77	72	70	68	64
	40	89	89	89	89	89	89	89	82	77	72	70	68	64
	50	81	81	81	81	81	81	81	81	77	72	70	68	64
	60	75	75	75	75	75	75	75	75	75	72	70	68	64
	70	69	69	69	69	69	69	69	69	69	69	69	68	64
	80	65	65	65	65	65	65	65	65	65	65	65	65	64
	90	62	62	62	62	62	62	62	62	62	62	62	62	62

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

Max Rail Spans for SunModo SMR200 Rail System

Table 32

Mean Roof Height: 15 < h ≤ 30 ft
Roof Angle: 7 < θ ≤ 27 degrees
Exposure Category: C
Panel Orientation: Landscape

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	139	139	137	132	128	124	117	111	106	102	100	98	93
	10	127	125	123	122	121	120	117	111	106	102	100	98	93
	20	101	101	101	101	101	100	99	97	95	93	92	91	89
	30	101	101	101	101	101	100	99	97	95	93	92	91	89
	40	89	89	89	89	89	89	89	89	87	86	85	84	83
	50	81	81	81	81	81	81	81	81	81	80	79	79	77
	60	75	75	75	75	75	75	75	75	75	75	74	74	73
	70	69	69	69	69	69	69	69	69	69	69	69	69	69
	80	65	65	65	65	65	65	65	65	65	65	65	65	65
	90	62	62	62	62	62	62	62	62	62	62	62	62	62
Zone 2	0	121	113	109	105	102	99	93	87	81	75	73	71	67
	10	121	113	109	105	102	99	93	87	81	75	73	71	67
	20	101	101	101	101	101	99	93	87	81	75	73	71	67
	30	101	101	101	101	101	99	93	87	81	75	73	71	67
	40	89	89	89	89	89	89	89	87	81	75	73	71	67
	50	81	81	81	81	81	81	81	81	81	75	73	71	67
	60	75	75	75	75	75	75	75	75	75	75	73	71	67
	70	69	69	69	69	69	69	69	69	69	69	69	69	67
	80	65	65	65	65	65	65	65	65	65	65	65	65	65
	90	62	62	62	62	62	62	62	62	62	62	62	62	62
Zone 3	0	103	96	91	87	83	80	74	69	64	60	59	57	54
	10	103	96	91	87	83	80	74	69	64	60	59	57	54
	20	101	96	91	87	83	80	74	69	64	60	59	57	54
	30	101	96	91	87	83	80	74	69	64	60	59	57	54
	40	89	89	89	87	83	80	74	69	64	60	59	57	54
	50	81	81	81	81	81	80	74	69	64	60	59	57	54
	60	75	75	75	75	75	75	74	69	64	60	59	57	54
	70	69	69	69	69	69	69	69	69	64	60	59	57	54
	80	65	65	65	65	65	65	65	65	64	60	59	57	54
	90	62	62	62	62	62	62	62	62	62	60	59	57	54

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

Structural ENGINUITY INC
Ingenuity in Engineering

SUNMODO®

Max Rail Spans for SunModo SMR200 Rail System

Table 33

Mean Roof Height: 15 < h ≤ 30 ft
Roof Angle: 7 < θ ≤ 27 degrees
Exposure Category: D
Panel Orientation: Landscape

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	139	133	128	124	120	117	110	105	100	96	93	90	85
	10	125	122	121	120	118	117	110	105	100	96	93	90	85
	20	101	101	101	100	99	98	96	94	92	90	89	88	85
	30	101	101	101	100	99	98	96	94	92	90	89	88	85
	40	89	89	89	89	89	89	88	87	85	83	83	82	80
	50	81	81	81	81	81	81	81	81	79	78	77	77	75
	60	75	75	75	75	75	75	75	75	74	73	73	72	71
	70	69	69	69	69	69	69	69	69	69	69	69	69	68
	80	65	65	65	65	65	65	65	65	65	65	65	65	65
	90	62	62	62	62	62	62	62	62	62	62	62	62	62
Zone 2	0	114	106	102	99	96	92	85	79	74	69	67	65	61
	10	114	106	102	99	96	92	85	79	74	69	67	65	61
	20	101	101	101	99	96	92	85	79	74	69	67	65	61
	30	101	101	101	99	96	92	85	79	74	69	67	65	61
	40	89	89	89	89	89	89	85	79	74	69	67	65	61
	50	81	81	81	81	81	81	81	79	74	69	67	65	61
	60	75	75	75	75	75	75	75	75	74	69	67	65	61
	70	69	69	69	69	69	69	69	69	69	69	67	65	61
	80	65	65	65	65	65	65	65	65	65	65	65	65	61
	90	62	62	62	62	62	62	62	62	62	62	62	62	61
Zone 3	0	96	88	83	80	76	73	68	63	59	55	54	52	49
	10	96	88	83	80	76	73	68	63	59	55	54	52	49
	20	96	88	83	80	76	73	68	63	59	55	54	52	49
	30	96	88	83	80	76	73	68	63	59	55	54	52	49
	40	89	88	83	80	76	73	68	63	59	55	54	52	49
	50	81	81	81	80	76	73	68	63	59	55	54	52	49
	60	75	75	75	75	75	73	68	63	59	55	54	52	49
	70	69	69	69	69	69	69	68	63	59	55	54	52	49
	80	65	65	65	65	65	65	65	63	59	55	54	52	49
	90	62	62	62	62	62	62	62	62	59	55	54	52	49

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

Max Rail Spans for SunModo SMR200 Rail System

Table 34

Mean Roof Height: 15 < h ≤ 30 ft
Roof Angle: 27 < θ ≤ 45 degrees
Exposure Category: B
Panel Orientation: Landscape

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	139	135	132	129	126	123	119	114	110	106	104	103	99
	10	136	132	130	128	126	123	119	114	110	106	104	103	99
	20	122	119	117	116	114	112	109	106	103	100	98	97	94
	30	109	107	106	105	103	102	100	97	95	93	91	90	88
	40	98	98	97	96	95	94	93	91	89	87	86	85	83
	50	89	89	89	89	89	88	87	85	83	82	81	80	78
	60	82	82	82	82	82	82	82	80	79	78	77	76	75
	70	77	77	77	77	77	77	77	76	75	74	73	73	71
	80	72	72	72	72	72	72	72	72	72	71	70	70	69
	90	68	68	68	68	68	68	68	68	68	68	68	67	66
Zone 2	0	139	135	132	129	126	123	119	113	108	103	101	99	95
	10	136	132	130	128	126	123	119	113	108	103	101	99	95
	20	122	119	117	116	114	112	109	106	103	100	98	97	94
	30	109	107	106	105	103	102	100	97	95	93	91	90	88
	40	98	98	97	96	95	94	93	91	89	87	86	85	83
	50	89	89	89	89	89	88	87	85	83	82	81	80	78
	60	82	82	82	82	82	82	82	80	79	78	77	76	75
	70	77	77	77	77	77	77	77	76	75	74	73	73	71
	80	72	72	72	72	72	72	72	72	72	71	70	70	69
	90	68	68	68	68	68	68	68	68	68	68	68	67	66
Zone 3	0	139	135	132	129	126	123	119	113	108	103	101	99	95
	10	136	132	130	128	126	123	119	113	108	103	101	99	95
	20	122	119	117	116	114	112	109	106	103	100	98	97	94
	30	109	107	106	105	103	102	100	97	95	93	91	90	88
	40	98	98	97	96	95	94	93	91	89	87	86	85	83
	50	89	89	89	89	89	88	87	85	83	82	81	80	78
	60	82	82	82	82	82	82	82	80	79	78	77	76	75
	70	77	77	77	77	77	77	77	76	75	74	73	73	71
	80	72	72	72	72	72	72	72	72	72	71	70	70	69
	90	68	68	68	68	68	68	68	68	68	68	68	67	66

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

Max Rail Spans for SunModo SMR200 Rail System

Table 35

Mean Roof Height: 15 < h ≤ 30 ft
Roof Angle: 27 < θ ≤ 45 degrees
Exposure Category: C
Panel Orientation: Landscape

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	130	123	120	118	115	112	108	103	100	95	92	90	86
	10	128	123	120	118	115	112	108	103	100	95	92	90	86
	20	116	112	110	109	107	105	101	98	94	91	89	88	85
	30	105	102	101	99	98	96	94	91	88	85	84	83	80
	40	97	94	93	92	91	90	87	85	83	81	80	78	76
	50	89	88	87	86	85	84	82	80	79	77	76	75	73
	60	82	82	82	81	81	80	78	76	75	73	72	71	70
	70	77	77	77	77	77	76	74	73	72	70	69	69	67
	80	72	72	72	72	72	72	71	70	69	67	67	66	65
	90	68	68	68	68	68	68	68	67	66	65	64	64	63
Zone 2	0	130	123	120	118	114	111	105	100	95	89	87	84	80
	10	128	123	120	118	114	111	105	100	95	89	87	84	80
	20	116	112	110	109	107	105	101	98	94	89	87	84	80
	30	105	102	101	99	98	96	94	91	88	85	84	83	80
	40	97	94	93	92	91	90	87	85	83	81	80	78	76
	50	89	88	87	86	85	84	82	80	79	77	76	75	73
	60	82	82	82	81	81	80	78	76	75	73	72	71	70
	70	77	77	77	77	77	76	74	73	72	70	69	69	67
	80	72	72	72	72	72	72	71	70	69	67	67	66	65
	90	68	68	68	68	68	68	68	67	66	65	64	64	63
Zone 3	0	130	123	120	118	114	111	105	100	95	89	87	84	80
	10	128	123	120	118	114	111	105	100	95	89	87	84	80
	20	116	112	110	109	107	105	101	98	94	89	87	84	80
	30	105	102	101	99	98	96	94	91	88	85	84	83	80
	40	97	94	93	92	91	90	87	85	83	81	80	78	76
	50	89	88	87	86	85	84	82	80	79	77	76	75	73
	60	82	82	82	81	81	80	78	76	75	73	72	71	70
	70	77	77	77	77	77	76	74	73	72	70	69	69	67
	80	72	72	72	72	72	72	71	70	69	67	67	66	65
	90	68	68	68	68	68	68	68	67	66	65	64	64	63

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

Max Rail Spans for SunModo SMR200 Rail System

Table 36

Mean Roof Height: 15 < h ≤ 30 ft
Roof Angle: 27 < θ ≤ 45 degrees
Exposure Category: D
Panel Orientation: Landscape

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	124	118	115	112	110	107	103	98	93	88	86	84	80
	10	124	118	115	112	110	107	103	98	93	88	86	84	80
	20	113	109	107	105	103	101	97	93	90	86	85	83	80
	30	103	99	98	96	95	93	90	87	84	82	80	79	76
	40	95	92	91	90	88	87	85	82	80	77	76	75	73
	50	88	86	85	84	83	82	80	78	76	74	73	72	70
	60	82	81	81	80	79	78	76	74	72	71	70	69	67
	70	77	77	77	76	75	74	73	71	69	68	67	66	65
	80	72	72	72	72	72	71	70	68	67	65	65	64	63
	90	68	68	68	68	68	68	67	66	65	63	63	62	61
Zone 2	0	124	118	114	111	108	105	99	93	87	82	79	77	73
	10	124	118	114	111	108	105	99	93	87	82	79	77	73
	20	113	109	107	105	103	101	97	93	87	82	79	77	73
	30	103	99	98	96	95	93	90	87	84	82	79	77	73
	40	95	92	91	90	88	87	85	82	80	77	76	75	73
	50	88	86	85	84	83	82	80	78	76	74	73	72	70
	60	82	81	81	80	79	78	76	74	72	71	70	69	67
	70	77	77	77	76	75	74	73	71	69	68	67	66	65
	80	72	72	72	72	72	71	70	68	67	65	65	64	63
	90	68	68	68	68	68	68	67	66	65	63	63	62	61
Zone 3	0	124	118	114	111	108	105	99	93	87	82	79	77	73
	10	124	118	114	111	108	105	99	93	87	82	79	77	73
	20	113	109	107	105	103	101	97	93	87	82	79	77	73
	30	103	99	98	96	95	93	90	87	84	82	79	77	73
	40	95	92	91	90	88	87	85	82	80	77	76	75	73
	50	88	86	85	84	83	82	80	78	76	74	73	72	70
	60	82	81	81	80	79	78	76	74	72	71	70	69	67
	70	77	77	77	76	75	74	73	71	69	68	67	66	65
	80	72	72	72	72	72	71	70	68	67	65	65	64	63
	90	68	68	68	68	68	68	67	66	65	63	63	62	61

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in landscape orientation with a maximum width of 42"

Max Rail Spans for SunModo SMR200 Rail System

Table 37

Mean Roof Height: h ≤ 15 ft
Roof Angle: 0 < θ ≤ 7 degrees
Exposure Category: B
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	111	111	111	111	111	110	104	98	94	88	85	82	77
	10	104	104	104	104	104	104	103	98	94	88	85	82	77
	20	81	81	81	81	81	81	81	81	81	81	81	81	77
	30	79	79	79	79	79	79	79	79	79	79	79	79	77
	40	70	70	70	70	70	70	70	70	70	70	70	70	70
	50	63	63	63	63	63	63	63	63	63	63	63	63	63
	60	58	58	58	58	58	58	58	58	58	58	58	58	58
	70	54	54	54	54	54	54	54	54	54	54	54	54	54
	80	51	51	51	51	51	51	51	51	51	51	51	51	51
	90	48	48	48	48	48	48	48	48	48	48	48	48	48
Zone 2	0	111	106	102	99	95	92	84	77	71	66	64	62	58
	10	104	104	102	99	95	92	84	77	71	66	64	62	58
	20	81	81	81	81	81	81	81	77	71	66	64	62	58
	30	79	79	79	79	79	79	79	77	71	66	64	62	58
	40	70	70	70	70	70	70	70	70	70	66	64	62	58
	50	63	63	63	63	63	63	63	63	63	63	63	62	58
	60	58	58	58	58	58	58	58	58	58	58	58	58	58
	70	54	54	54	54	54	54	54	54	54	54	54	54	54
	80	51	51	51	51	51	51	51	51	51	51	51	51	51
	90	48	48	48	48	48	48	48	48	48	48	48	48	48
Zone 3	0	101	92	87	82	78	74	67	62	57	53	51	49	46
	10	101	92	87	82	78	74	67	62	57	53	51	49	46
	20	81	81	81	81	78	74	67	62	57	53	51	49	46
	30	79	79	79	79	78	74	67	62	57	53	51	49	46
	40	70	70	70	70	70	70	67	62	57	53	51	49	46
	50	63	63	63	63	63	63	63	62	57	53	51	49	46
	60	58	58	58	58	58	58	58	58	57	53	51	49	46
	70	54	54	54	54	54	54	54	54	54	53	51	49	46
	80	51	51	51	51	51	51	51	51	51	51	51	49	46
	90	48	48	48	48	48	48	48	48	48	48	48	48	46

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 82"

Max Rail Spans for SunModo SMR200 Rail System

Table 38

Mean Roof Height: h ≤ 15 ft
Roof Angle: 0 < θ ≤ 7 degrees
Exposure Category: C
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	111	111	111	109	105	102	96	90	84	79	76	74	70
	10	104	104	104	104	104	102	96	90	84	79	76	74	70
	20	81	81	81	81	81	81	81	81	81	79	76	74	70
	30	79	79	79	79	79	79	79	79	79	79	76	74	70
	40	70	70	70	70	70	70	70	70	70	70	70	70	70
	50	63	63	63	63	63	63	63	63	63	63	63	63	63
	60	58	58	58	58	58	58	58	58	58	58	58	58	58
	70	54	54	54	54	54	54	54	54	54	54	54	54	54
	80	51	51	51	51	51	51	51	51	51	51	51	51	51
	90	48	48	48	48	48	48	48	48	48	48	48	48	48
Zone 2	0	106	98	94	90	86	82	75	69	64	59	57	56	52
	10	104	98	94	90	86	82	75	69	64	59	57	56	52
	20	81	81	81	81	81	81	75	69	64	59	57	56	52
	30	79	79	79	79	79	79	75	69	64	59	57	56	52
	40	70	70	70	70	70	70	70	69	64	59	57	56	52
	50	63	63	63	63	63	63	63	63	63	59	57	56	52
	60	58	58	58	58	58	58	58	58	58	58	57	56	52
	70	54	54	54	54	54	54	54	54	54	54	54	54	52
	80	51	51	51	51	51	51	51	51	51	51	51	51	51
	90	48	48	48	48	48	48	48	48	48	48	48	48	48
Zone 3	0	92	81	76	72	69	65	59	55	50	47	45	44	41
	10	92	81	76	72	69	65	59	55	50	47	45	44	41
	20	81	81	76	72	69	65	59	55	50	47	45	44	41
	30	79	79	76	72	69	65	59	55	50	47	45	44	41
	40	70	70	70	70	69	65	59	55	50	47	45	44	41
	50	63	63	63	63	63	63	59	55	50	47	45	44	41
	60	58	58	58	58	58	58	58	55	50	47	45	44	41
	70	54	54	54	54	54	54	54	54	50	47	45	44	41
	80	51	51	51	51	51	51	51	51	50	47	45	44	41
	90	48	48	48	48	48	48	48	48	48	47	45	44	41

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 82"

Structural ENGINUITY INC
Ingenuity in Engineering

SUNMODO®

Max Rail Spans for SunModo SMR200 Rail System

Table 39

Mean Roof Height: h ≤ 15 ft
Roof Angle: 0 < θ ≤ 7 degrees
Exposure Category: D
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	111	108	104	101	98	95	88	81	76	71	69	66	63
	10	104	104	103	101	98	95	88	81	76	71	69	66	63
	20	81	81	81	81	81	81	81	80	76	71	69	66	63
	30	79	79	79	79	79	79	79	79	76	71	69	66	63
	40	70	70	70	70	70	70	70	70	70	70	69	66	63
	50	63	63	63	63	63	63	63	63	63	63	63	63	63
	60	58	58	58	58	58	58	58	58	58	58	58	58	58
	70	54	54	54	54	54	54	54	54	54	54	54	54	54
	80	51	51	51	51	51	51	51	51	51	51	51	51	51
	90	48	48	48	48	48	48	48	48	48	48	48	48	48
Zone 2	0	98	89	84	80	76	73	67	61	57	53	51	50	47
	10	98	89	84	80	76	73	67	61	57	53	51	50	47
	20	81	81	81	80	76	73	67	61	57	53	51	50	47
	30	79	79	79	79	76	73	67	61	57	53	51	50	47
	40	70	70	70	70	70	70	67	61	57	53	51	50	47
	50	63	63	63	63	63	63	63	61	57	53	51	50	47
	60	58	58	58	58	58	58	58	58	57	53	51	50	47
	70	54	54	54	54	54	54	54	54	54	53	51	50	47
	80	51	51	51	51	51	51	51	51	51	51	51	50	47
	90	48	48	48	48	48	48	48	48	48	48	48	48	47
Zone 3	0	81	71	68	64	61	58	53	49	45	42	40	39	37
	10	81	71	68	64	61	58	53	49	45	42	40	39	37
	20	81	71	68	64	61	58	53	49	45	42	40	39	37
	30	79	71	68	64	61	58	53	49	45	42	40	39	37
	40	70	70	68	64	61	58	53	49	45	42	40	39	37
	50	63	63	63	63	61	58	53	49	45	42	40	39	37
	60	58	58	58	58	58	58	53	49	45	42	40	39	37
	70	54	54	54	54	54	54	53	49	45	42	40	39	37
	80	51	51	51	51	51	51	51	49	45	42	40	39	37
	90	48	48	48	48	48	48	48	48	45	42	40	39	37

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 82"

Structural ENGINUITY INC
Ingenuity in Engineering

SUNMODO®

Max Rail Spans for SunModo SMR200 Rail System

Table 40

Mean Roof Height: h ≤ 15 ft
Roof Angle: 7 < θ ≤ 27 degrees
Exposure Category: B
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	111	111	111	111	111	111	108	102	97	91	88	85	80
	10	95	95	94	93	93	92	90	88	87	85	84	83	80
	20	72	72	72	72	72	72	72	72	72	71	70	69	68
	30	72	72	72	72	72	72	72	72	72	71	70	69	68
	40	64	64	64	64	64	64	64	64	64	64	64	63	63
	50	58	58	58	58	58	58	58	58	58	58	58	58	58
	60	53	53	53	53	53	53	53	53	53	53	53	53	53
	70	50	50	50	50	50	50	50	50	50	50	50	50	50
	80	48	48	48	48	48	48	48	48	48	48	48	48	48
	90	44	44	44	44	44	44	44	44	44	44	44	44	44
Zone 2	0	111	105	102	98	94	90	82	76	71	66	64	62	59
	10	95	95	94	93	93	90	82	76	71	66	64	62	59
	20	72	72	72	72	72	72	72	72	71	66	64	62	59
	30	72	72	72	72	72	72	72	72	71	66	64	62	59
	40	64	64	64	64	64	64	64	64	64	64	64	62	59
	50	58	58	58	58	58	58	58	58	58	58	58	58	58
	60	53	53	53	53	53	53	53	53	53	53	53	53	53
	70	50	50	50	50	50	50	50	50	50	50	50	50	50
	80	48	48	48	48	48	48	48	48	48	48	48	48	48
	90	44	44	44	44	44	44	44	44	44	44	44	44	44
Zone 3	0	93	84	80	76	73	70	64	60	56	52	51	49	46
	10	93	84	80	76	73	70	64	60	56	52	51	49	46
	20	72	72	72	72	72	70	64	60	56	52	51	49	46
	30	72	72	72	72	72	70	64	60	56	52	51	49	46
	40	64	64	64	64	64	64	64	60	56	52	51	49	46
	50	58	58	58	58	58	58	58	58	56	52	51	49	46
	60	53	53	53	53	53	53	53	53	53	52	51	49	46
	70	50	50	50	50	50	50	50	50	50	50	50	49	46
	80	48	48	48	48	48	48	48	48	48	48	48	47	46
	90	44	44	44	44	44	44	44	44	44	44	44	44	44

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 82"

Structural ENGINUITY INC
Ingenuity in Engineering

SUNMODO®

Max Rail Spans for SunModo SMR200 Rail System

Table 41

Mean Roof Height: h ≤ 15 ft
Roof Angle: 7 < θ ≤ 27 degrees
Exposure Category: C
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	111	111	111	111	109	106	100	93	87	82	79	77	73
	10	95	93	92	91	90	90	88	86	84	82	79	77	73
	20	72	72	72	72	72	72	72	71	70	69	68	68	66
	30	72	72	72	72	72	72	72	71	70	69	68	68	66
	40	64	64	64	64	64	64	64	64	64	63	62	62	61
	50	58	58	58	58	58	58	58	58	58	58	58	58	57
	60	53	53	53	53	53	53	53	53	53	53	53	53	53
	70	50	50	50	50	50	50	50	50	50	50	50	50	50
	80	48	48	48	48	48	48	48	48	48	48	48	48	48
	90	44	44	44	44	44	44	44	44	44	44	44	44	44
Zone 2	0	105	97	92	88	84	80	74	69	64	60	58	56	53
	10	95	93	92	88	84	80	74	69	64	60	58	56	53
	20	72	72	72	72	72	72	72	69	64	60	58	56	53
	30	72	72	72	72	72	72	72	69	64	60	58	56	53
	40	64	64	64	64	64	64	64	64	64	60	58	56	53
	50	58	58	58	58	58	58	58	58	58	58	58	56	53
	60	53	53	53	53	53	53	53	53	53	53	53	53	53
	70	50	50	50	50	50	50	50	50	50	50	50	50	50
	80	48	48	48	48	48	48	48	48	48	48	48	48	48
	90	44	44	44	44	44	44	44	44	44	44	44	44	44
Zone 3	0	84	75	72	69	66	63	58	54	50	47	46	44	42
	10	84	75	72	69	66	63	58	54	50	47	46	44	42
	20	72	72	72	69	66	63	58	54	50	47	46	44	42
	30	72	72	72	69	66	63	58	54	50	47	46	44	42
	40	64	64	64	64	64	63	58	54	50	47	46	44	42
	50	58	58	58	58	58	58	58	54	50	47	46	44	42
	60	53	53	53	53	53	53	53	53	50	47	46	44	42
	70	50	50	50	50	50	50	50	50	50	47	46	44	42
	80	48	48	48	48	48	48	48	48	48	47	46	44	42
	90	44	44	44	44	44	44	44	44	44	44	44	44	42

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 82"

Structural ENGINUITY INC
Ingenuity in Engineering

SUNMODO®

Max Rail Spans for SunModo SMR200 Rail System

Table 42

Mean Roof Height: h ≤ 15 ft
Roof Angle: 7 < θ ≤ 27 degrees
Exposure Category: D
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	111	111	108	105	101	98	91	84	79	74	71	69	66
	10	93	91	90	89	88	87	85	83	79	74	71	69	66
	20	72	72	72	72	72	72	71	69	68	67	66	65	64
	30	72	72	72	72	72	72	71	69	68	67	66	65	64
	40	64	64	64	64	64	64	64	63	62	61	61	60	59
	50	58	58	58	58	58	58	58	58	58	57	57	56	55
	60	53	53	53	53	53	53	53	53	53	53	53	53	52
	70	50	50	50	50	50	50	50	50	50	50	50	50	49
	80	48	48	48	48	48	48	48	48	48	48	48	48	47
	90	44	44	44	44	44	44	44	44	44	44	44	44	44
Zone 2	0	97	87	83	79	75	72	67	62	57	54	52	50	48
	10	93	87	83	79	75	72	67	62	57	54	52	50	48
	20	72	72	72	72	72	72	67	62	57	54	52	50	48
	30	72	72	72	72	72	72	67	62	57	54	52	50	48
	40	64	64	64	64	64	64	64	62	57	54	52	50	48
	50	58	58	58	58	58	58	58	58	57	54	52	50	48
	60	53	53	53	53	53	53	53	53	53	53	52	50	48
	70	50	50	50	50	50	50	50	50	50	50	50	50	48
	80	48	48	48	48	48	48	48	48	48	48	48	48	47
	90	44	44	44	44	44	44	44	44	44	44	44	44	44
Zone 3	0	75	68	65	62	59	57	52	49	45	42	41	40	38
	10	75	68	65	62	59	57	52	49	45	42	41	40	38
	20	72	68	65	62	59	57	52	49	45	42	41	40	38
	30	72	68	65	62	59	57	52	49	45	42	41	40	38
	40	64	64	64	62	59	57	52	49	45	42	41	40	38
	50	58	58	58	58	58	57	52	49	45	42	41	40	38
	60	53	53	53	53	53	53	52	49	45	42	41	40	38
	70	50	50	50	50	50	50	50	49	45	42	41	40	38
	80	48	48	48	48	48	48	48	47	45	42	41	40	38
	90	44	44	44	44	44	44	44	44	44	42	41	40	38

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 82"

Structural ENGINUITY INC
Ingenuity in Engineering

SUNMODO®

Max Rail Spans for SunModo SMR200 Rail System

Table 43

Mean Roof Height: h ≤ 15 ft
Roof Angle: 27 < θ ≤ 45 degrees
Exposure Category: B
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	111	107	104	101	99	96	91	87	82	78	77	75	72
	10	101	97	95	94	92	91	87	84	81	78	77	75	72
	20	87	85	84	83	82	81	78	76	74	72	71	70	68
	30	78	77	76	75	74	73	71	70	68	66	65	65	63
	40	70	70	70	69	68	68	66	65	63	62	61	61	59
	50	64	64	64	64	64	63	62	61	60	58	58	57	56
	60	59	59	59	59	59	59	58	57	56	55	55	54	53
	70	55	55	55	55	55	55	55	55	54	53	52	52	51
	80	52	52	52	52	52	52	52	52	51	51	50	50	49
	90	49	49	49	49	49	49	49	49	49	49	48	48	47
Zone 2	0	111	107	104	101	99	96	91	87	82	77	75	72	69
	10	101	97	95	94	92	91	87	84	81	77	75	72	69
	20	87	85	84	83	82	81	78	76	74	72	71	70	68
	30	78	77	76	75	74	73	71	70	68	66	65	65	63
	40	70	70	70	69	68	68	66	65	63	62	61	61	59
	50	64	64	64	64	64	63	62	61	60	58	58	57	56
	60	59	59	59	59	59	59	58	57	56	55	55	54	53
	70	55	55	55	55	55	55	55	55	54	53	52	52	51
	80	52	52	52	52	52	52	52	52	51	51	50	50	49
	90	49	49	49	49	49	49	49	49	49	49	48	48	47
Zone 3	0	111	107	104	101	99	96	91	87	82	77	75	72	69
	10	101	97	95	94	92	91	87	84	81	77	75	72	69
	20	87	85	84	83	82	81	78	76	74	72	71	70	68
	30	78	77	76	75	74	73	71	70	68	66	65	65	63
	40	70	70	70	69	68	68	66	65	63	62	61	61	59
	50	64	64	64	64	64	63	62	61	60	58	58	57	56
	60	59	59	59	59	59	59	58	57	56	55	55	54	53
	70	55	55	55	55	55	55	55	55	54	53	52	52	51
	80	52	52	52	52	52	52	52	52	51	51	50	50	49
	90	49	49	49	49	49	49	49	49	49	49	48	48	47

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 82"

Max Rail Spans for SunModo SMR200 Rail System

Table 44

Mean Roof Height: h ≤ 15 ft
Roof Angle: 27 < θ ≤ 45 degrees
Exposure Category: C
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	107	101	98	95	92	90	85	80	76	72	71	69	66
	10	97	93	92	90	88	86	83	80	76	72	71	69	66
	20	85	83	81	80	79	78	75	73	70	68	67	66	64
	30	77	75	74	73	72	71	69	67	65	63	63	62	60
	40	70	69	68	67	67	66	64	63	61	60	59	58	57
	50	64	64	63	63	62	62	60	59	58	56	56	55	54
	60	59	59	59	59	59	58	57	56	55	54	53	53	52
	70	55	55	55	55	55	55	54	53	52	51	51	50	49
	80	52	52	52	52	52	52	52	51	50	49	49	48	48
	90	49	49	49	49	49	49	49	49	48	47	47	47	46
Zone 2	0	107	101	98	95	92	90	85	79	74	70	67	66	62
	10	97	93	92	90	88	86	83	79	74	70	67	66	62
	20	85	83	81	80	79	78	75	73	70	68	67	66	62
	30	77	75	74	73	72	71	69	67	65	63	63	62	60
	40	70	69	68	67	67	66	64	63	61	60	59	58	57
	50	64	64	63	63	62	62	60	59	58	56	56	55	54
	60	59	59	59	59	59	58	57	56	55	54	53	53	52
	70	55	55	55	55	55	55	54	53	52	51	51	50	49
	80	52	52	52	52	52	52	52	51	50	49	49	48	48
	90	49	49	49	49	49	49	49	49	48	47	47	47	46
Zone 3	0	107	101	98	95	92	90	85	79	74	70	67	66	62
	10	97	93	92	90	88	86	83	79	74	70	67	66	62
	20	85	83	81	80	79	78	75	73	70	68	67	66	62
	30	77	75	74	73	72	71	69	67	65	63	63	62	60
	40	70	69	68	67	67	66	64	63	61	60	59	58	57
	50	64	64	63	63	62	62	60	59	58	56	56	55	54
	60	59	59	59	59	59	58	57	56	55	54	53	53	52
	70	55	55	55	55	55	55	54	53	52	51	51	50	49
	80	52	52	52	52	52	52	52	51	50	49	49	48	48
	90	49	49	49	49	49	49	49	49	48	47	47	47	46

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 82"

Max Rail Spans for SunModo SMR200 Rail System

Table 45

Mean Roof Height: h ≤ 15 ft
Roof Angle: 27 < θ ≤ 45 degrees
Exposure Category: D
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	101	94	91	89	86	83	79	74	70	67	65	63	60
	10	93	89	88	86	84	82	79	74	70	67	65	63	60
	20	83	80	78	77	76	74	72	69	67	64	63	62	60
	30	75	73	72	71	69	68	66	64	62	60	59	59	57
	40	69	67	66	65	65	64	62	60	59	57	56	56	54
	50	64	63	62	61	61	60	59	57	56	54	54	53	52
	60	59	59	58	58	57	57	56	54	53	52	51	51	49
	70	55	55	55	55	54	54	53	52	51	50	49	49	48
	80	52	52	52	52	52	52	51	50	49	48	47	47	46
	90	49	49	49	49	49	49	49	48	47	46	46	45	44
Zone 2	0	101	94	91	89	86	83	77	72	67	63	61	59	56
	10	93	89	88	86	84	82	77	72	67	63	61	59	56
	20	83	80	78	77	76	74	72	69	67	63	61	59	56
	30	75	73	72	71	69	68	66	64	62	60	59	59	56
	40	69	67	66	65	65	64	62	60	59	57	56	56	54
	50	64	63	62	61	61	60	59	57	56	54	54	53	52
	60	59	59	58	58	57	57	56	54	53	52	51	51	49
	70	55	55	55	55	54	54	53	52	51	50	49	49	48
	80	52	52	52	52	52	52	51	50	49	48	47	47	46
	90	49	49	49	49	49	49	49	48	47	46	46	45	44
Zone 3	0	101	94	91	89	86	83	77	72	67	63	61	59	56
	10	93	89	88	86	84	82	77	72	67	63	61	59	56
	20	83	80	78	77	76	74	72	69	67	63	61	59	56
	30	75	73	72	71	69	68	66	64	62	60	59	59	56
	40	69	67	66	65	65	64	62	60	59	57	56	56	54
	50	64	63	62	61	61	60	59	57	56	54	54	53	52
	60	59	59	58	58	57	57	56	54	53	52	51	51	49
	70	55	55	55	55	54	54	53	52	51	50	49	49	48
	80	52	52	52	52	52	52	51	50	49	48	47	47	46
	90	49	49	49	49	49	49	49	48	47	46	46	45	44

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 82"

Max Rail Spans for SunModo SMR200 Rail System

Table 46

Mean Roof Height: 15 < h ≤ 30 ft
Roof Angle: 0 < θ ≤ 7 degrees
Exposure Category: B
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	111	111	111	111	111	110	104	98	94	88	85	82	77
	10	104	104	104	104	104	104	103	98	94	88	85	82	77
	20	81	81	81	81	81	81	81	81	81	81	81	81	77
	30	79	79	79	79	79	79	79	79	79	79	79	79	77
	40	70	70	70	70	70	70	70	70	70	70	70	70	70
	50	63	63	63	63	63	63	63	63	63	63	63	63	63
	60	58	58	58	58	58	58	58	58	58	58	58	58	58
	70	54	54	54	54	54	54	54	54	54	54	54	54	54
	80	51	51	51	51	51	51	51	51	51	51	51	51	51
	90	48	48	48	48	48	48	48	48	48	48	48	48	48
Zone 2	0	111	106	102	99	95	92	84	77	71	66	64	62	58
	10	104	104	102	99	95	92	84	77	71	66	64	62	58
	20	81	81	81	81	81	81	81	77	71	66	64	62	58
	30	79	79	79	79	79	79	79	77	71	66	64	62	58
	40	70	70	70	70	70	70	70	70	70	66	64	62	58
	50	63	63	63	63	63	63	63	63	63	63	63	62	58
	60	58	58	58	58	58	58	58	58	58	58	58	58	58
	70	54	54	54	54	54	54	54	54	54	54	54	54	54
	80	51	51	51	51	51	51	51	51	51	51	51	51	51
	90	48	48	48	48	48	48	48	48	48	48	48	48	48
Zone 3	0	101	92	87	82	78	74	67	62	57	53	51	49	46
	10	101	92	87	82	78	74	67	62	57	53	51	49	46
	20	81	81	81	81	78	74	67	62	57	53	51	49	46
	30	79	79	79	79	78	74	67	62	57	53	51	49	46
	40	70	70	70	70	70	70	67	62	57	53	51	49	46
	50	63	63	63	63	63	63	63	62	57	53	51	49	46
	60	58	58	58	58	58	58	58	58	57	53	51	49	46
	70	54	54	54	54	54	54	54	54	54	53	51	49	46
	80	51	51	51	51	51	51	51	51	51	51	51	49	46
	90	48	48	48	48	48	48	48	48	48	48	48	48	46

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 82"

Max Rail Spans for SunModo SMR200 Rail System

Table 47

Mean Roof Height: 15 < h ≤ 30 ft
Roof Angle: 0 < θ ≤ 7 degrees
Exposure Category: C
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	111	110	106	103	99	96	90	83	78	73	70	68	64
	10	104	104	104	103	99	96	90	83	78	73	70	68	64
	20	81	81	81	81	81	81	81	81	78	73	70	68	64
	30	79	79	79	79	79	79	79	79	78	73	70	68	64
	40	70	70	70	70	70	70	70	70	70	70	70	68	64
	50	63	63	63	63	63	63	63	63	63	63	63	63	63
	60	58	58	58	58	58	58	58	58	58	58	58	58	58
	70	54	54	54	54	54	54	54	54	54	54	54	54	54
	80	51	51	51	51	51	51	51	51	51	51	51	51	51
	90	48	48	48	48	48	48	48	48	48	48	48	48	48
Zone 2	0	100	92	87	82	78	75	69	63	59	55	53	51	48
	10	100	92	87	82	78	75	69	63	59	55	53	51	48
	20	81	81	81	81	78	75	69	63	59	55	53	51	48
	30	79	79	79	79	78	75	69	63	59	55	53	51	48
	40	70	70	70	70	70	70	69	63	59	55	53	51	48
	50	63	63	63	63	63	63	63	63	59	55	53	51	48
	60	58	58	58	58	58	58	58	58	58	55	53	51	48
	70	54	54	54	54	54	54	54	54	54	54	53	51	48
	80	51	51	51	51	51	51	51	51	51	51	51	51	48
	90	48	48	48	48	48	48	48	48	48	48	48	48	48
Zone 3	0	84	74	70	66	63	60	54	50	46	43	42	40	38
	10	84	74	70	66	63	60	54	50	46	43	42	40	38
	20	81	74	70	66	63	60	54	50	46	43	42	40	38
	30	79	74	70	66	63	60	54	50	46	43	42	40	38
	40	70	70	70	66	63	60	54	50	46	43	42	40	38
	50	63	63	63	63	63	60	54	50	46	43	42	40	38
	60	58	58	58	58	58	58	54	50	46	43	42	40	38
	70	54	54	54	54	54	54	54	50	46	43	42	40	38
	80	51	51	51	51	51	51	51	50	46	43	42	40	38
	90	48	48	48	48	48	48	48	48	46	43	42	40	38

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 82"

Structural ENGINUITY INC
Ingenuity in Engineering

SUNMODO®

Max Rail Spans for SunModo SMR200 Rail System

Table 48

Mean Roof Height: 15 < h ≤ 30 ft
Roof Angle: 0 < θ ≤ 7 degrees
Exposure Category: D
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	111	103	99	96	93	89	82	76	71	66	64	62	59
	10	104	103	99	96	93	89	82	76	71	66	64	62	59
	20	81	81	81	81	81	81	81	76	71	66	64	62	59
	30	79	79	79	79	79	79	79	76	71	66	64	62	59
	40	70	70	70	70	70	70	70	70	70	66	64	62	59
	50	63	63	63	63	63	63	63	63	63	63	63	62	59
	60	58	58	58	58	58	58	58	58	58	58	58	58	58
	70	54	54	54	54	54	54	54	54	54	54	54	54	54
	80	51	51	51	51	51	51	51	51	51	51	51	51	51
	90	48	48	48	48	48	48	48	48	48	48	48	48	48
Zone 2	0	93	83	78	74	71	68	62	57	53	50	48	46	44
	10	93	83	78	74	71	68	62	57	53	50	48	46	44
	20	81	81	78	74	71	68	62	57	53	50	48	46	44
	30	79	79	78	74	71	68	62	57	53	50	48	46	44
	40	70	70	70	70	70	68	62	57	53	50	48	46	44
	50	63	63	63	63	63	63	62	57	53	50	48	46	44
	60	58	58	58	58	58	58	58	57	53	50	48	46	44
	70	54	54	54	54	54	54	54	54	53	50	48	46	44
	80	51	51	51	51	51	51	51	51	51	50	48	46	44
	90	48	48	48	48	48	48	48	48	48	48	48	46	44
Zone 3	0	75	66	63	59	56	54	49	45	42	39	38	36	34
	10	75	66	63	59	56	54	49	45	42	39	38	36	34
	20	75	66	63	59	56	54	49	45	42	39	38	36	34
	30	75	66	63	59	56	54	49	45	42	39	38	36	34
	40	70	66	63	59	56	54	49	45	42	39	38	36	34
	50	63	63	63	59	56	54	49	45	42	39	38	36	34
	60	58	58	58	58	56	54	49	45	42	39	38	36	34
	70	54	54	54	54	54	54	49	45	42	39	38	36	34
	80	51	51	51	51	51	51	49	45	42	39	38	36	34
	90	48	48	48	48	48	48	48	45	42	39	38	36	34

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 82"

Max Rail Spans for SunModo SMR200 Rail System

Table 49

Mean Roof Height: 15 < h ≤ 30 ft
Roof Angle: 7 < θ ≤ 27 degrees
Exposure Category: B
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	111	111	111	111	111	111	108	102	97	91	88	85	80
	10	95	95	94	93	93	92	90	88	87	85	84	83	80
	20	72	72	72	72	72	72	72	72	72	71	70	69	68
	30	72	72	72	72	72	72	72	72	72	71	70	69	68
	40	64	64	64	64	64	64	64	64	64	64	64	63	63
	50	58	58	58	58	58	58	58	58	58	58	58	58	58
	60	53	53	53	53	53	53	53	53	53	53	53	53	53
	70	50	50	50	50	50	50	50	50	50	50	50	50	50
	80	48	48	48	48	48	48	48	48	48	48	48	48	48
	90	44	44	44	44	44	44	44	44	44	44	44	44	44
Zone 2	0	111	105	102	98	94	90	82	76	71	66	64	62	59
	10	95	95	94	93	93	90	82	76	71	66	64	62	59
	20	72	72	72	72	72	72	72	72	71	66	64	62	59
	30	72	72	72	72	72	72	72	72	71	66	64	62	59
	40	64	64	64	64	64	64	64	64	64	64	64	62	59
	50	58	58	58	58	58	58	58	58	58	58	58	58	58
	60	53	53	53	53	53	53	53	53	53	53	53	53	53
	70	50	50	50	50	50	50	50	50	50	50	50	50	50
	80	48	48	48	48	48	48	48	48	48	48	48	48	48
	90	44	44	44	44	44	44	44	44	44	44	44	44	44
Zone 3	0	93	84	80	76	73	70	64	60	56	52	51	49	46
	10	93	84	80	76	73	70	64	60	56	52	51	49	46
	20	72	72	72	72	72	70	64	60	56	52	51	49	46
	30	72	72	72	72	72	70	64	60	56	52	51	49	46
	40	64	64	64	64	64	64	64	60	56	52	51	49	46
	50	58	58	58	58	58	58	58	58	56	52	51	49	46
	60	53	53	53	53	53	53	53	53	53	52	51	49	46
	70	50	50	50	50	50	50	50	50	50	50	50	49	46
	80	48	48	48	48	48	48	48	48	48	48	48	47	46
	90	44	44	44	44	44	44	44	44	44	44	44	44	44

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 82"

Structural ENGINUITY INC
Ingenuity in Engineering

SUNMODO®

Max Rail Spans for SunModo SMR200 Rail System

Table 50

Mean Roof Height: 15 < h ≤ 30 ft
Roof Angle: 7 < θ ≤ 27 degrees
Exposure Category: C
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	111	111	110	107	103	100	93	86	81	76	73	71	67
	10	94	92	91	90	89	88	86	84	81	76	73	71	67
	20	72	72	72	72	72	72	71	70	68	67	67	66	65
	30	72	72	72	72	72	72	71	70	68	67	67	66	65
	40	64	64	64	64	64	64	64	64	63	62	61	61	60
	50	58	58	58	58	58	58	58	58	58	57	57	57	56
	60	53	53	53	53	53	53	53	53	53	53	53	53	52
	70	50	50	50	50	50	50	50	50	50	50	50	50	50
	80	48	48	48	48	48	48	48	48	48	48	48	48	48
	90	44	44	44	44	44	44	44	44	44	44	44	44	44
Zone 2	0	99	90	85	81	78	74	68	63	59	55	53	52	49
	10	94	90	85	81	78	74	68	63	59	55	53	52	49
	20	72	72	72	72	72	72	68	63	59	55	53	52	49
	30	72	72	72	72	72	72	68	63	59	55	53	52	49
	40	64	64	64	64	64	64	64	63	59	55	53	52	49
	50	58	58	58	58	58	58	58	58	58	55	53	52	49
	60	53	53	53	53	53	53	53	53	53	53	53	52	49
	70	50	50	50	50	50	50	50	50	50	50	50	50	49
	80	48	48	48	48	48	48	48	48	48	48	48	48	47
	90	44	44	44	44	44	44	44	44	44	44	44	44	44
Zone 3	0	77	70	66	63	61	58	54	50	47	44	42	41	39
	10	77	70	66	63	61	58	54	50	47	44	42	41	39
	20	72	70	66	63	61	58	54	50	47	44	42	41	39
	30	72	70	66	63	61	58	54	50	47	44	42	41	39
	40	64	64	64	63	61	58	54	50	47	44	42	41	39
	50	58	58	58	58	58	58	54	50	47	44	42	41	39
	60	53	53	53	53	53	53	53	50	47	44	42	41	39
	70	50	50	50	50	50	50	50	50	47	44	42	41	39
	80	48	48	48	48	48	48	48	48	47	44	42	41	39
	90	44	44	44	44	44	44	44	44	44	44	42	41	39

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 82"

Max Rail Spans for SunModo SMR200 Rail System

Table 51

Mean Roof Height: 15 < h ≤ 30 ft
Roof Angle: 7 < θ ≤ 27 degrees
Exposure Category: D
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	111	107	103	100	96	92	85	79	74	69	67	65	62
	10	92	90	89	88	86	85	83	79	74	69	67	65	62
	20	72	72	72	72	71	71	69	68	67	65	65	64	62
	30	72	72	72	72	71	71	69	68	67	65	65	64	62
	40	64	64	64	64	64	64	63	62	61	60	60	59	58
	50	58	58	58	58	58	58	58	58	57	56	56	55	54
	60	53	53	53	53	53	53	53	53	53	53	52	52	51
	70	50	50	50	50	50	50	50	50	50	50	50	49	49
	80	48	48	48	48	48	48	48	48	48	48	48	47	46
	90	44	44	44	44	44	44	44	44	44	44	44	44	44
Zone 2	0	91	81	78	74	71	68	62	58	54	50	49	47	45
	10	91	81	78	74	71	68	62	58	54	50	49	47	45
	20	72	72	72	72	71	68	62	58	54	50	49	47	45
	30	72	72	72	72	71	68	62	58	54	50	49	47	45
	40	64	64	64	64	64	64	62	58	54	50	49	47	45
	50	58	58	58	58	58	58	58	58	54	50	49	47	45
	60	53	53	53	53	53	53	53	53	53	50	49	47	45
	70	50	50	50	50	50	50	50	50	50	50	49	47	45
	80	48	48	48	48	48	48	48	48	48	48	47	47	45
	90	44	44	44	44	44	44	44	44	44	44	44	44	44
Zone 3	0	71	64	61	58	55	53	49	46	42	40	39	37	35
	10	71	64	61	58	55	53	49	46	42	40	39	37	35
	20	71	64	61	58	55	53	49	46	42	40	39	37	35
	30	71	64	61	58	55	53	49	46	42	40	39	37	35
	40	64	64	61	58	55	53	49	46	42	40	39	37	35
	50	58	58	58	58	55	53	49	46	42	40	39	37	35
	60	53	53	53	53	53	53	49	46	42	40	39	37	35
	70	50	50	50	50	50	50	49	46	42	40	39	37	35
	80	48	48	48	48	48	48	47	46	42	40	39	37	35
	90	44	44	44	44	44	44	44	44	42	40	39	37	35

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 82"

Max Rail Spans for SunModo SMR200 Rail System

Table 52

Mean Roof Height: 15 < h ≤ 30 ft
Roof Angle: 27 < θ ≤ 45 degrees
Exposure Category: B
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	111	107	104	101	99	96	91	87	82	78	77	75	72
	10	101	97	95	94	92	91	87	84	81	78	77	75	72
	20	87	85	84	83	82	81	78	76	74	72	71	70	68
	30	78	77	76	75	74	73	71	70	68	66	65	65	63
	40	70	70	70	69	68	68	66	65	63	62	61	61	59
	50	64	64	64	64	64	63	62	61	60	58	58	57	56
	60	59	59	59	59	59	59	58	57	56	55	55	54	53
	70	55	55	55	55	55	55	55	55	54	53	52	52	51
	80	52	52	52	52	52	52	52	52	51	51	50	50	49
	90	49	49	49	49	49	49	49	49	49	49	48	48	47
Zone 2	0	111	107	104	101	99	96	91	87	82	77	75	72	69
	10	101	97	95	94	92	91	87	84	81	77	75	72	69
	20	87	85	84	83	82	81	78	76	74	72	71	70	68
	30	78	77	76	75	74	73	71	70	68	66	65	65	63
	40	70	70	70	69	68	68	66	65	63	62	61	61	59
	50	64	64	64	64	64	63	62	61	60	58	58	57	56
	60	59	59	59	59	59	59	58	57	56	55	55	54	53
	70	55	55	55	55	55	55	55	55	54	53	52	52	51
	80	52	52	52	52	52	52	52	52	51	51	50	50	49
	90	49	49	49	49	49	49	49	49	49	49	48	48	47
Zone 3	0	111	107	104	101	99	96	91	87	82	77	75	72	69
	10	101	97	95	94	92	91	87	84	81	77	75	72	69
	20	87	85	84	83	82	81	78	76	74	72	71	70	68
	30	78	77	76	75	74	73	71	70	68	66	65	65	63
	40	70	70	70	69	68	68	66	65	63	62	61	61	59
	50	64	64	64	64	64	63	62	61	60	58	58	57	56
	60	59	59	59	59	59	59	58	57	56	55	55	54	53
	70	55	55	55	55	55	55	55	55	54	53	52	52	51
	80	52	52	52	52	52	52	52	52	51	51	50	50	49
	90	49	49	49	49	49	49	49	49	49	49	48	48	47

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 82"

Structural ENGINUITY INC
Ingenuity in Engineering

SUNMODO®

Max Rail Spans for SunModo SMR200 Rail System

Table 53

Mean Roof Height: 15 < h ≤ 30 ft
Roof Angle: 27 < θ ≤ 45 degrees
Exposure Category: C
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	102	96	93	90	87	85	80	76	72	68	66	65	62
	10	94	91	89	87	85	83	80	76	72	68	66	65	62
	20	83	80	79	78	76	75	73	70	68	65	64	63	61
	30	75	73	72	71	70	69	67	65	63	61	60	59	58
	40	69	68	67	66	65	64	63	61	59	58	57	56	55
	50	64	63	62	62	61	60	59	58	56	55	54	54	52
	60	59	59	59	58	58	57	56	55	54	52	52	51	50
	70	55	55	55	55	55	54	53	52	51	50	50	49	48
	80	52	52	52	52	52	52	51	50	49	48	48	47	46
	90	49	49	49	49	49	49	49	48	47	46	46	46	45
Zone 2	0	102	96	93	90	87	85	79	74	69	65	63	61	58
	10	94	91	89	87	85	83	79	74	69	65	63	61	58
	20	83	80	79	78	76	75	73	70	68	65	63	61	58
	30	75	73	72	71	70	69	67	65	63	61	60	59	58
	40	69	68	67	66	65	64	63	61	59	58	57	56	55
	50	64	63	62	62	61	60	59	58	56	55	54	54	52
	60	59	59	59	58	58	57	56	55	54	52	52	51	50
	70	55	55	55	55	55	54	53	52	51	50	50	49	48
	80	52	52	52	52	52	52	51	50	49	48	48	47	46
	90	49	49	49	49	49	49	49	48	47	46	46	46	45
Zone 3	0	102	96	93	90	87	85	79	74	69	65	63	61	58
	10	94	91	89	87	85	83	79	74	69	65	63	61	58
	20	83	80	79	78	76	75	73	70	68	65	63	61	58
	30	75	73	72	71	70	69	67	65	63	61	60	59	58
	40	69	68	67	66	65	64	63	61	59	58	57	56	55
	50	64	63	62	62	61	60	59	58	56	55	54	54	52
	60	59	59	59	58	58	57	56	55	54	52	52	51	50
	70	55	55	55	55	55	54	53	52	51	50	50	49	48
	80	52	52	52	52	52	52	51	50	49	48	48	47	46
	90	49	49	49	49	49	49	49	48	47	46	46	46	45

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 82"

Max Rail Spans for SunModo SMR200 Rail System

Table 54

Mean Roof Height: 15 < h ≤ 30 ft
Roof Angle: 27 < θ ≤ 45 degrees
Exposure Category: D
Panel Orientation: Portrait

Roof Wind Zone	Ground Snow Load (psf)	Wind Speed (mph)												
		100	110	115	120	125	130	140	150	160	170	175	180	190
Zone 1	0	97	90	87	85	82	79	75	71	67	63	62	60	57
	10	91	87	85	83	81	79	75	71	67	63	62	60	57
	20	81	78	76	75	74	72	69	67	64	62	61	60	57
	30	73	71	70	69	68	67	65	62	60	58	57	57	55
	40	68	66	65	64	63	62	61	59	57	55	55	54	52
	50	63	62	61	60	60	59	57	56	54	53	52	51	50
	60	59	58	58	57	56	56	54	53	52	51	50	49	48
	70	55	55	55	54	54	53	52	51	50	49	48	47	46
	80	52	52	52	52	51	51	50	49	48	47	46	46	45
	90	49	49	49	49	49	49	48	47	46	45	45	44	43
Zone 2	0	97	90	87	85	81	78	72	67	63	59	57	56	53
	10	91	87	85	83	81	78	72	67	63	59	57	56	53
	20	81	78	76	75	74	72	69	67	63	59	57	56	53
	30	73	71	70	69	68	67	65	62	60	58	57	56	53
	40	68	66	65	64	63	62	61	59	57	55	55	54	52
	50	63	62	61	60	60	59	57	56	54	53	52	51	50
	60	59	58	58	57	56	56	54	53	52	51	50	49	48
	70	55	55	55	54	54	53	52	51	50	49	48	47	46
	80	52	52	52	52	51	51	50	49	48	47	46	46	45
	90	49	49	49	49	49	49	48	47	46	45	45	44	43
Zone 3	0	97	90	87	85	81	78	72	67	63	59	57	56	53
	10	91	87	85	83	81	78	72	67	63	59	57	56	53
	20	81	78	76	75	74	72	69	67	63	59	57	56	53
	30	73	71	70	69	68	67	65	62	60	58	57	56	53
	40	68	66	65	64	63	62	61	59	57	55	55	54	52
	50	63	62	61	60	60	59	57	56	54	53	52	51	50
	60	59	58	58	57	56	56	54	53	52	51	50	49	48
	70	55	55	55	54	54	53	52	51	50	49	48	47	46
	80	52	52	52	52	51	51	50	49	48	47	46	46	45
	90	49	49	49	49	49	49	48	47	46	45	45	44	43

Notes:

1. Tables are based on critical rail span for load combinations as specified in chapter 2 of the ASCE 7-10 and allowable design loads per the 2015 Aluminum Design Manual.
2. Panels are assumed to be in portrait orientation with a maximum length of 82"