



**JEI Structural Engineering**

Glazing Systems  
Fast, Friendly, Affordable

Created October 13, 2020

Value Added Extra

**For Client Use Only**

Wind Load Charts w/ Unbraced Length Effects

---

## Kawneer Trifab® VersaGlaze® 451T Storefront



# JEI Structural Engineering

Glazing Systems  
Fast, Friendly, Affordable

Created October 13, 2020

Value Added Extra

For Client Use Only

Wind Load Charts w/ Unbraced Length Effects

Instructions .....	4
Kawneer 451-501 ADM15 15ft Span 3ft Lb .....	6
Kawneer 451-501 ADM15 15ft Span 6ft Lb .....	7
Kawneer 451-501 ADM15 15ft Span 10ft Lb .....	8
Kawneer 451-599 ADM15 15ft Span 3ft Lb .....	9
Kawneer 451-599 ADM15 15ft Span 6ft Lb .....	10
Kawneer 451-599 ADM15 15ft Span 10ft Lb .....	11
Kawneer 451T-CG-001 ADM15 15ft Span 3ft Lb .....	12
Kawneer 451T-CG-001 ADM15 15ft Span 6ft Lb .....	13
Kawneer 451T-CG-001 ADM15 15ft Span 10ft Lb .....	14
Kawneer 451T-CG-005 ADM15 15ft Span 3ft Lb .....	15
Kawneer 451T-CG-005 ADM15 15ft Span 6ft Lb .....	16
Kawneer 451T-CG-005 ADM15 15ft Span 10ft Lb .....	17
Kawneer 451T-CG-013 ADM15 15ft Span 3ft Lb .....	18
Kawneer 451T-CG-013 ADM15 15ft Span 6ft Lb .....	19
Kawneer 451T-CG-013 ADM15 15ft Span 10ft Lb .....	20
Kawneer 451T-CG-112 ADM15 15ft Span 3ft Lb .....	21
Kawneer 451T-CG-112 ADM15 15ft Span 6ft Lb .....	22
Kawneer 451T-CG-112 ADM15 15ft Span 10ft Lb .....	23
Kawneer 451T-CG-113 ADM15 15ft Span 3ft Lb .....	24
Kawneer 451T-CG-113 ADM15 15ft Span 6ft Lb .....	25
Kawneer 451T-CG-113 ADM15 15ft Span 10ft Lb .....	26
Kawneer 451T-VG-001 ADM15 15ft Span 3ft Lb .....	27
Kawneer 451T-VG-001 ADM15 15ft Span 6ft Lb .....	28
Kawneer 451T-VG-001 ADM15 15ft Span 10ft Lb .....	29
Kawneer 451T-VG-005 ADM15 15ft Span 3ft Lb .....	30
Kawneer 451T-VG-005 ADM15 15ft Span 6ft Lb .....	31
Kawneer 451T-VG-005 ADM15 15ft Span 10ft Lb .....	32
Kawneer 451T-VG-012 ADM15 15ft Span 3ft Lb .....	33
Kawneer 451T-VG-012 ADM15 15ft Span 6ft Lb .....	34
Kawneer 451T-VG-012 ADM15 15ft Span 10ft Lb .....	35



**JEI Structural Engineering**

Glazing Systems  
Fast, Friendly, Affordable

Created October 13, 2020

Value Added Extra

**For Client Use Only**

Wind Load Charts w/ Unbraced Length Effects

---

Kawneer 451T-VG-014 ADM15 15ft Span 3ft Lb .....	36
Kawneer 451T-VG-014 ADM15 15ft Span 6ft Lb .....	37
Kawneer 451T-VG-014 ADM15 15ft Span 10ft Lb .....	38
Kawneer 451-VG-019 ADM15 15ft Span 3ft Lb .....	39
Kawneer 451-VG-019 ADM15 15ft Span 6ft Lb .....	40
Kawneer 451-VG-019 ADM15 15ft Span 10ft Lb .....	41



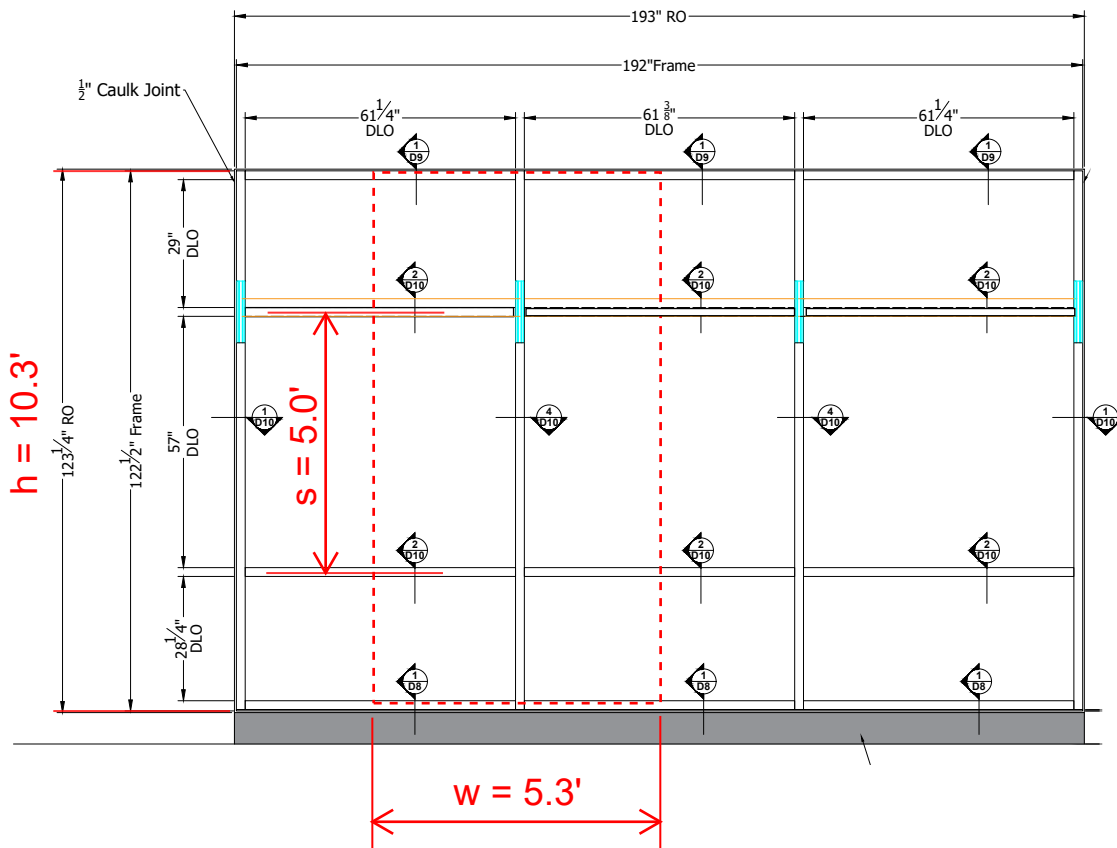
Step 1 - Make sure that max horizontal mullion spacing (s) is not more than chart maximum (12'-0" in this case.)

Step 2 - Enter the chart on the horizontal axis with your spacing or tributary width (w) of the vertical mullion.

Step 3 - Enter the chart on the vertical axis with the maximum span height (h) of the mullion.

Step 4 - Ensure that the intersection is below the design wind load indicated by colored line.

Example





### Wind Load Chart including Unbraced Length Effects

Kawneer 162-001 6063-T6 Aluminum

Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 12'-0" <sup>①</sup>

IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

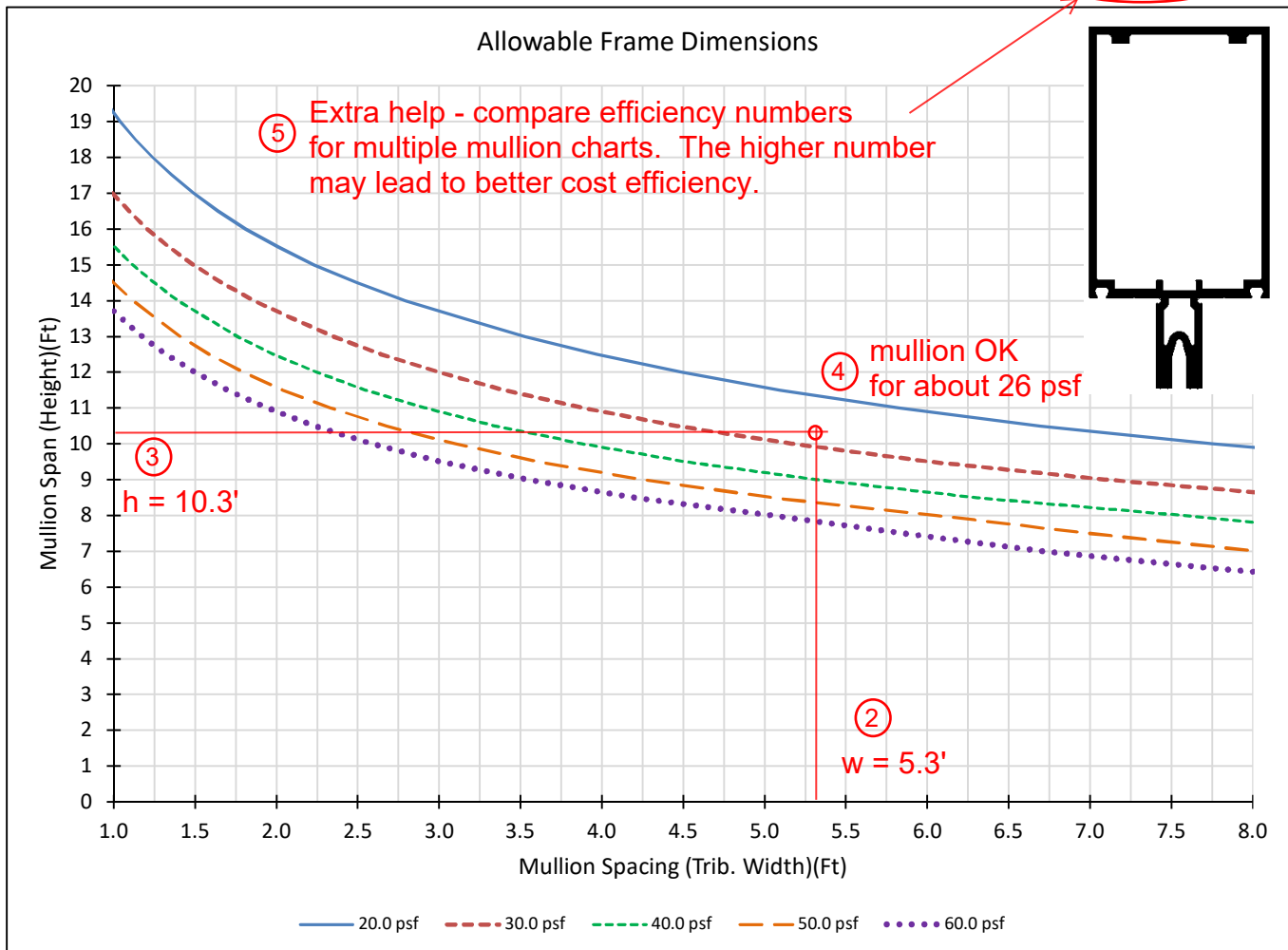
s = 5'

E =	10100 ksi	A =	1.787 in <sup>2</sup>
I <sub>x, alum</sub> =	5.036 in <sup>4</sup>	Z <sub>x, alum</sub> =	2.649 in
S <sub>x, alum</sub> =	1.993 in <sup>3</sup>	wt =	2.147 lb/ft
Reinforcing:	No Reinforcing		
I <sub>x, steel</sub> =	0.000 in <sup>4</sup>	S <sub>x, steel</sub> =	0.000 in <sup>3</sup>
I <sub>combined</sub> =	5.036 in <sup>4</sup>		

Curves are based on deflection limits of L/175 for  $\leq 13'6"$  or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Spacing (ft)	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	1172	1172	1172





## Wind Load Chart including Unbraced Length Effects

**Kawneer 451-501      6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 3'-0"**

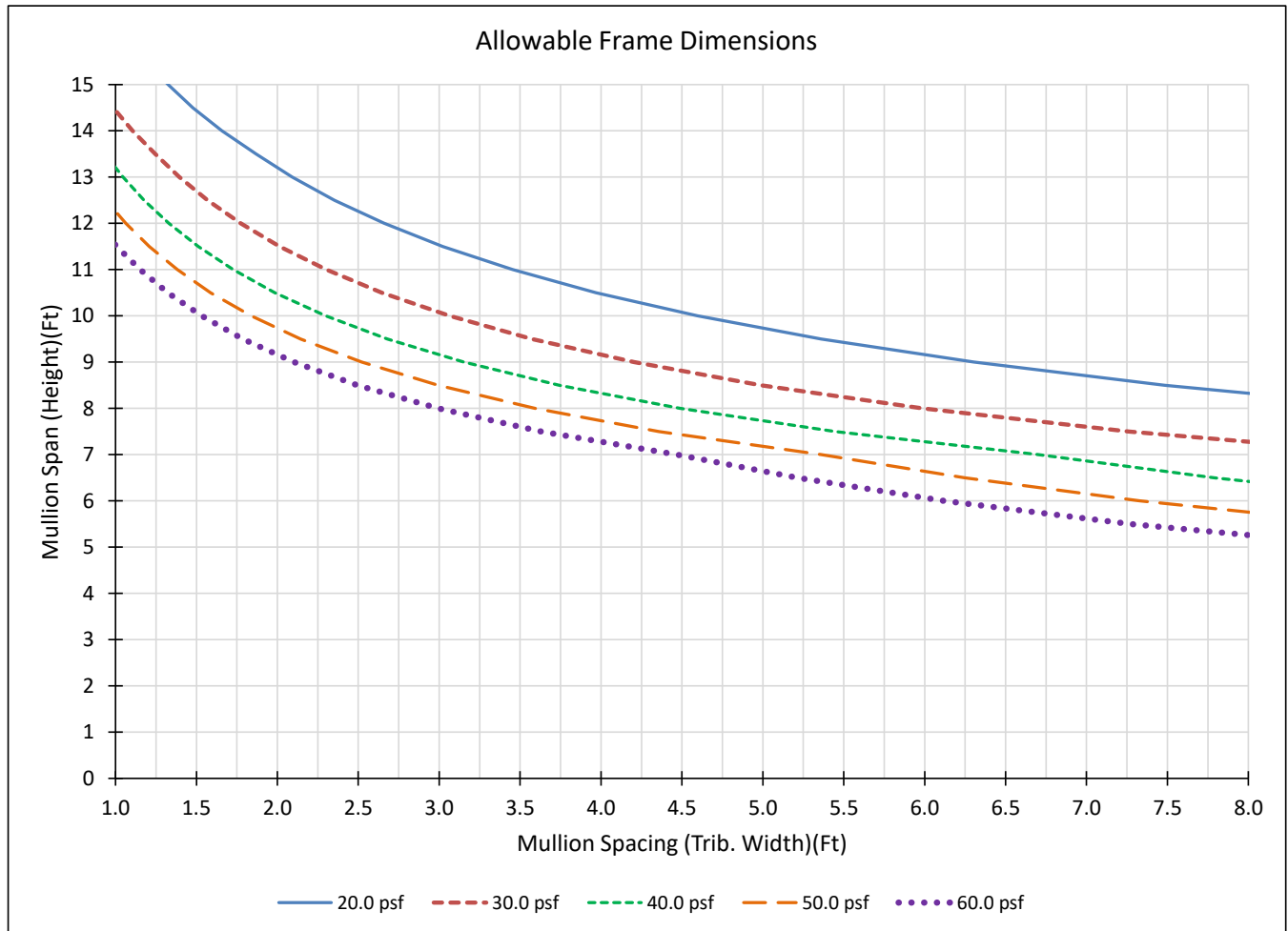
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E = 10100 ksi      A = 1.319 in<sup>2</sup>  
 $I_{x, \text{alum}}$  = 2.986 in<sup>4</sup>       $Z_{x, \text{alum}}$  = 1.716 in  
 $S_{x, \text{alum}}$  = 1.321 in<sup>3</sup>      wt = 1.585 lb/ft  
 Reinforcing: **No Reinforcing**  
 $I_{x, \text{steel}}$  = 0.000 in<sup>4</sup>       $S_{x, \text{steel}}$  = 0.000 in<sup>3</sup>  
 $I_{\text{combined}}$  = 2.986 in<sup>4</sup>

Curves are based on deflection limits of L/175 for L ≤ 13'6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	1053	1053	1053



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.



## Wind Load Chart including Unbraced Length Effects

**Kawneer 451-501 6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 6'-0"**

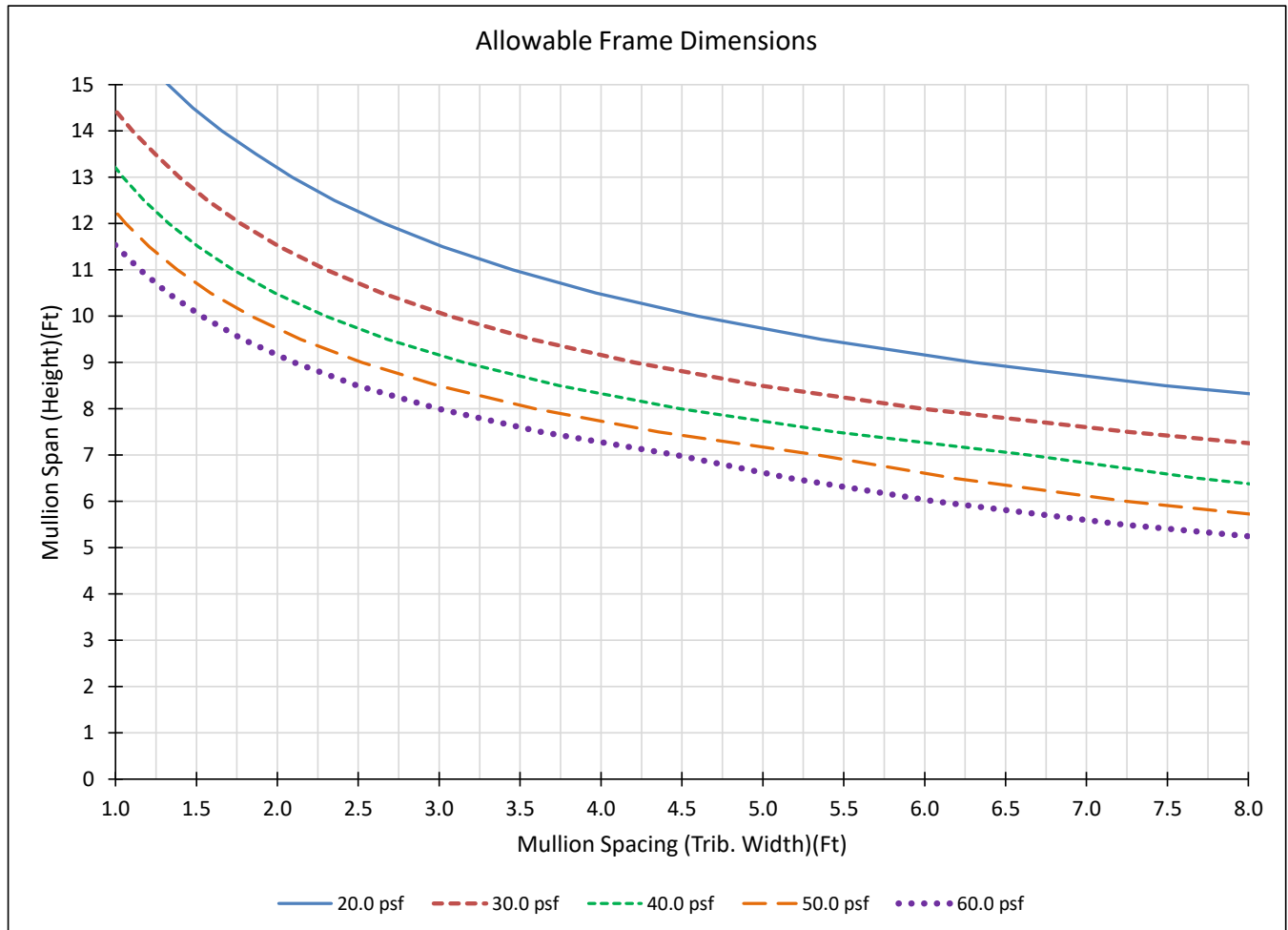
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E =	10100 ksi	A =	1.319 in <sup>2</sup>
I <sub>x, alum</sub> =	2.986 in <sup>4</sup>	Z <sub>x, alum</sub> =	1.716 in
S <sub>x, alum</sub> =	1.321 in <sup>3</sup>	wt =	1.585 lb/ft
Reinforcing:	No Reinforcing		
I <sub>x, steel</sub> =	0.000 in <sup>4</sup>	S <sub>x, steel</sub> =	0.000 in <sup>3</sup>
I <sub>combined</sub> =	2.986 in <sup>4</sup>		

Curves are based on deflection limits of L/175 for L ≤ 13'6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	1053	1053	1053



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.



## Wind Load Chart including Unbraced Length Effects

**Kawneer 451-501 6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 10'-0"**

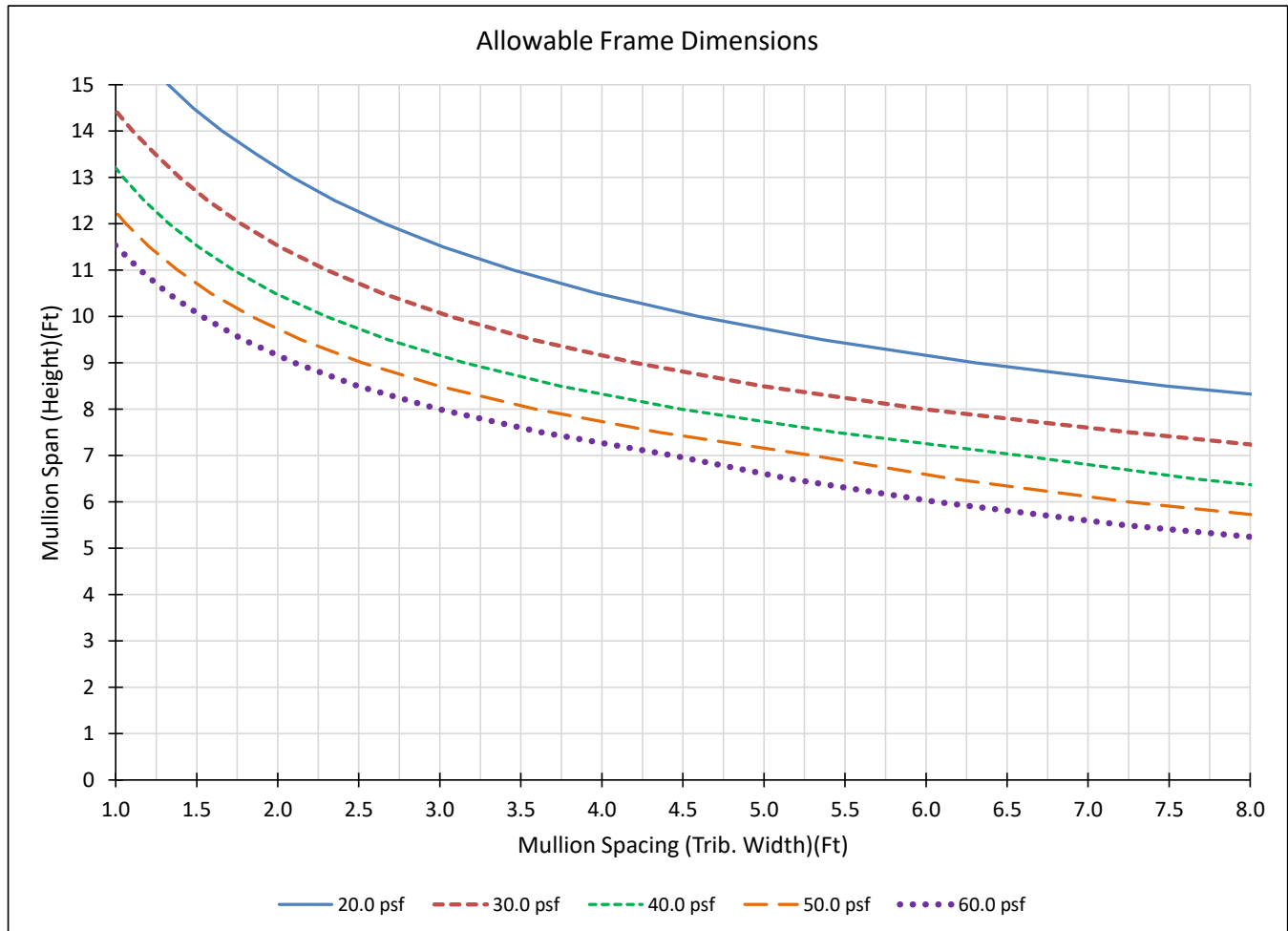
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E =	10100 ksi	A =	1.319 in <sup>2</sup>
I <sub>x, alum</sub> =	2.986 in <sup>4</sup>	Z <sub>x, alum</sub> =	1.716 in
S <sub>x, alum</sub> =	1.321 in <sup>3</sup>	wt =	1.585 lb/ft
Reinforcing:	No Reinforcing		
I <sub>x, steel</sub> =	0.000 in <sup>4</sup>	S <sub>x, steel</sub> =	0.000 in <sup>3</sup>
I <sub>combined</sub> =	2.986 in <sup>4</sup>		

Curves are based on deflection limits of L/175 for L ≤ 13'6" or L/240 + 1/4" for L > 13'6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	1053	1053	1053



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.





## Wind Load Chart including Unbraced Length Effects

**Kawneer 451-599 6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 3'-0"**

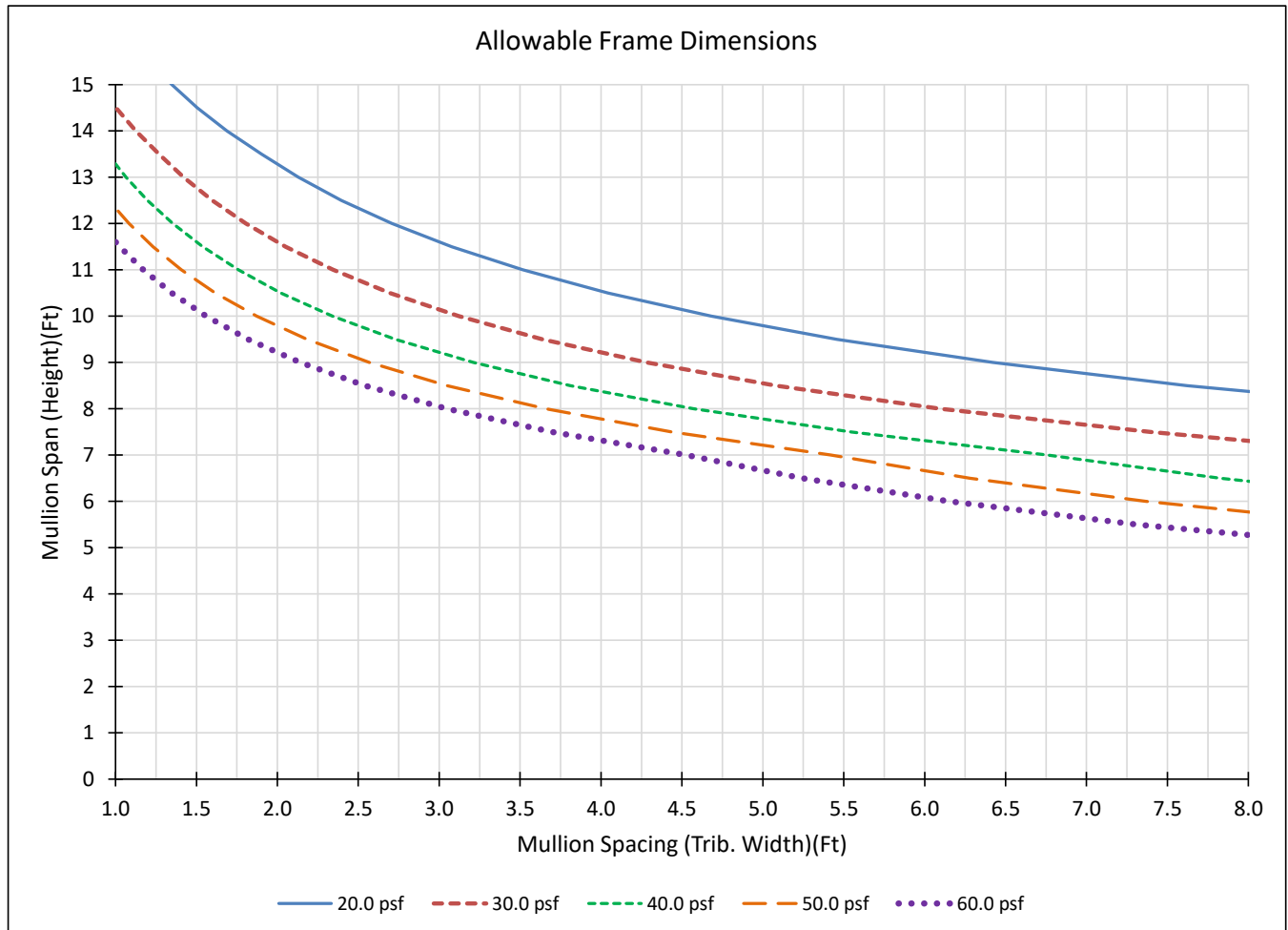
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E = 10100 ksi      A = 1.247 in<sup>2</sup>  
 $I_{x, \text{alum}}$  = 3.041 in<sup>4</sup>       $Z_{x, \text{alum}}$  = 1.705 in  
 $S_{x, \text{alum}}$  = 1.330 in<sup>3</sup>      wt = 1.498 lb/ft  
 Reinforcing: **No Reinforcing**  
 $I_{x, \text{steel}}$  = 0.000 in<sup>4</sup>       $S_{x, \text{steel}}$  = 0.000 in<sup>3</sup>  
 $I_{\text{combined}}$  = 3.041 in<sup>4</sup>

Curves are based on deflection limits of L/175 for L ≤ 13'6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	1121	1121	1095



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.



## Wind Load Chart including Unbraced Length Effects

**Kawneer 451-599      6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 6'-0"**

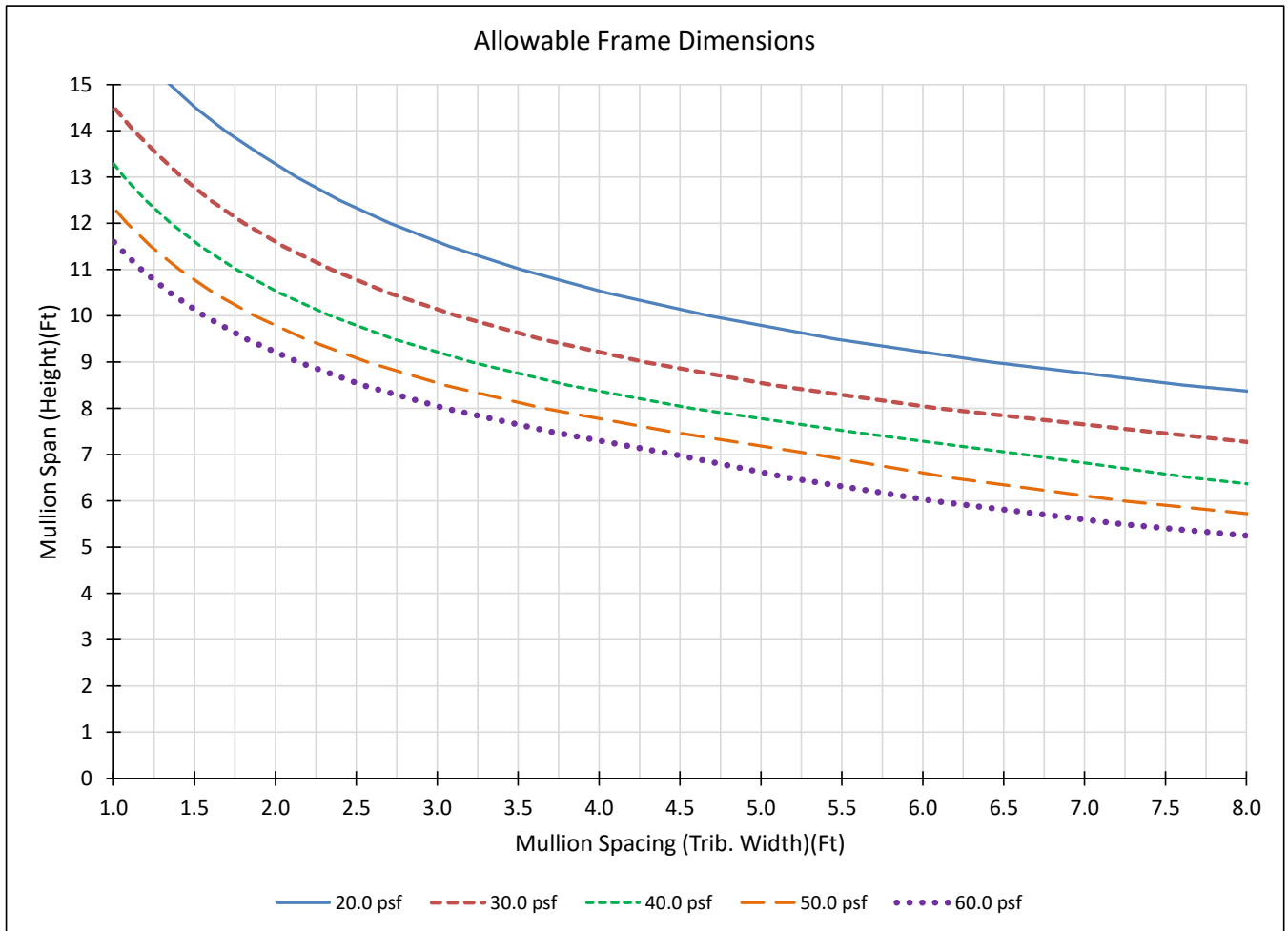
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E = 10100 ksi      A = 1.247 in<sup>2</sup>  
 $I_{x, \text{alum}}$  = 3.041 in<sup>4</sup>       $Z_{x, \text{alum}}$  = 1.705 in  
 $S_{x, \text{alum}}$  = 1.330 in<sup>3</sup>      wt = 1.498 lb/ft  
 Reinforcing: **No Reinforcing**  
 $I_{x, \text{steel}}$  = 0.000 in<sup>4</sup>       $S_{x, \text{steel}}$  = 0.000 in<sup>3</sup>  
 $I_{\text{combined}}$  = 3.041 in<sup>4</sup>

Curves are based on deflection limits of L/175 for L ≤ 13'6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	1121	1121	1095



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.



## Wind Load Chart including Unbraced Length Effects

**Kawneer 451-599 6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 10'-0"**

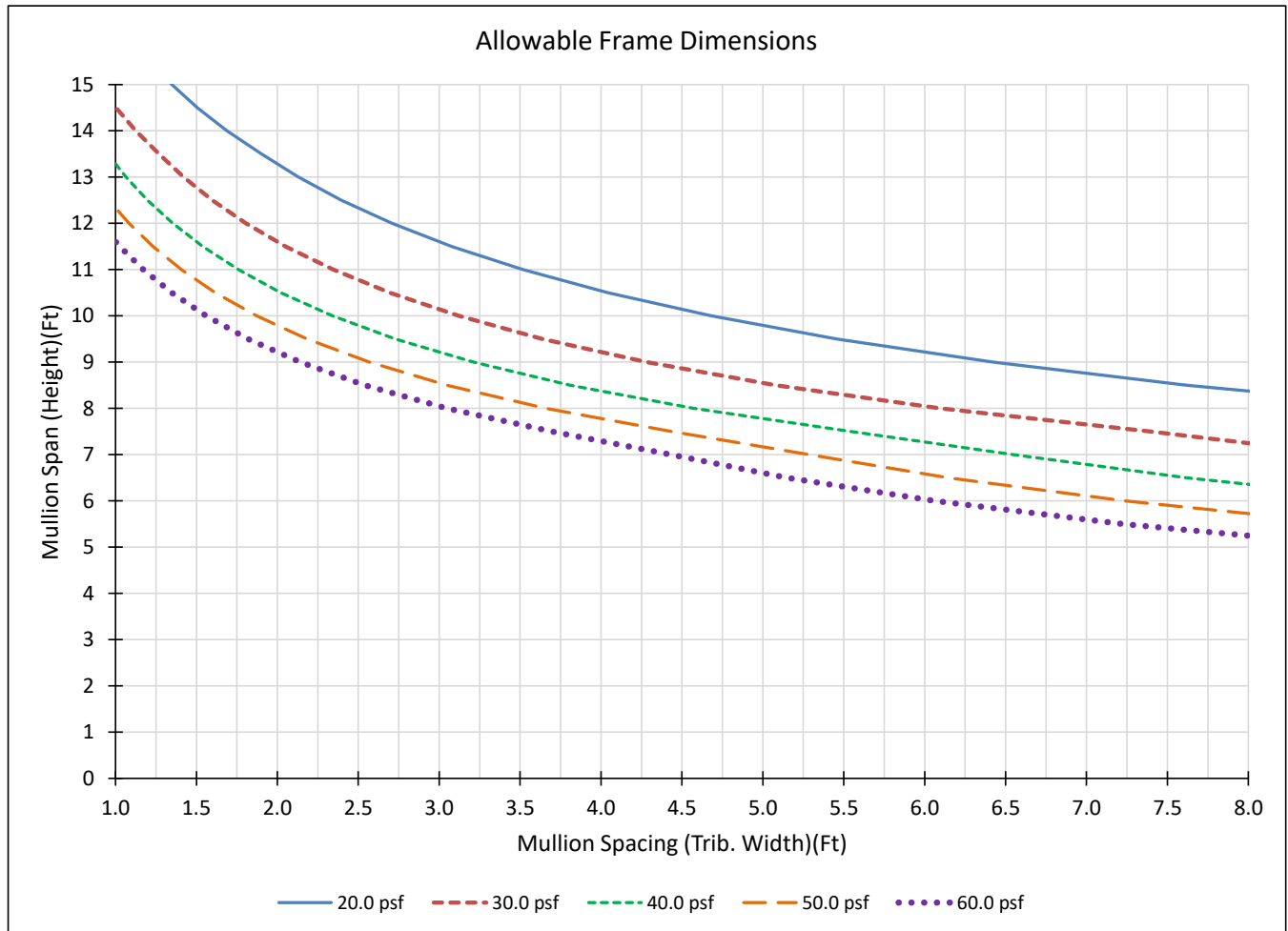
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E = 10100 ksi      A = 1.247 in<sup>2</sup>  
 $I_{x, \text{alum}}$  = 3.041 in<sup>4</sup>       $Z_{x, \text{alum}}$  = 1.705 in  
 $S_{x, \text{alum}}$  = 1.330 in<sup>3</sup>      wt = 1.498 lb/ft  
 Reinforcing: **No Reinforcing**  
 $I_{x, \text{steel}}$  = 0.000 in<sup>4</sup>       $S_{x, \text{steel}}$  = 0.000 in<sup>3</sup>  
 $I_{\text{combined}}$  = 3.041 in<sup>4</sup>

Curves are based on deflection limits of L/175 for L ≤ 13'6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	1121	1121	1095



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.



## Wind Load Chart including Unbraced Length Effects

**Kawneer 451T-CG-001      6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 3'-0"**

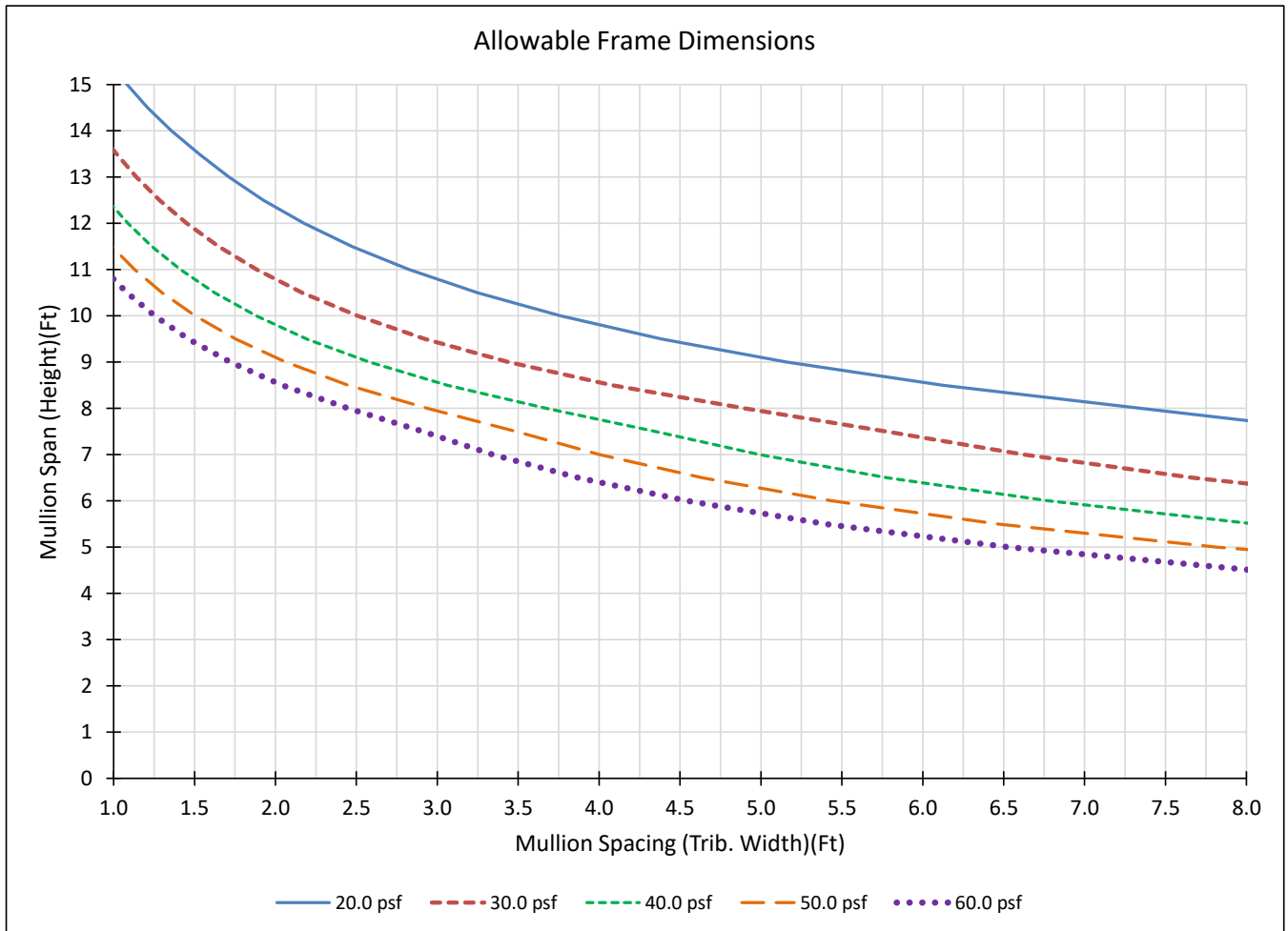
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E = 10100 ksi      A = 1.081 in<sup>2</sup>  
 $I_{x, \text{alum}}$  = 2.715 in<sup>4</sup>       $Z_{x, \text{alum}}$  = 1.529 in  
 $S_{x, \text{alum}}$  = 1.198 in<sup>3</sup>      wt = 1.299 lb/ft  
 Reinforcing: **No Reinforcing**  
 $I_{x, \text{steel}}$  = 0.000 in<sup>4</sup>       $S_{x, \text{steel}}$  = 0.000 in<sup>3</sup>  
 $I_{\text{combined}}$  = 2.444 in<sup>4</sup>

Curves are based on deflection limits of L/175 for L ≤ 13'-6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	954	848	708



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.



## Wind Load Chart including Unbraced Length Effects

**Kawneer 451T-CG-001      6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 6'-0"**

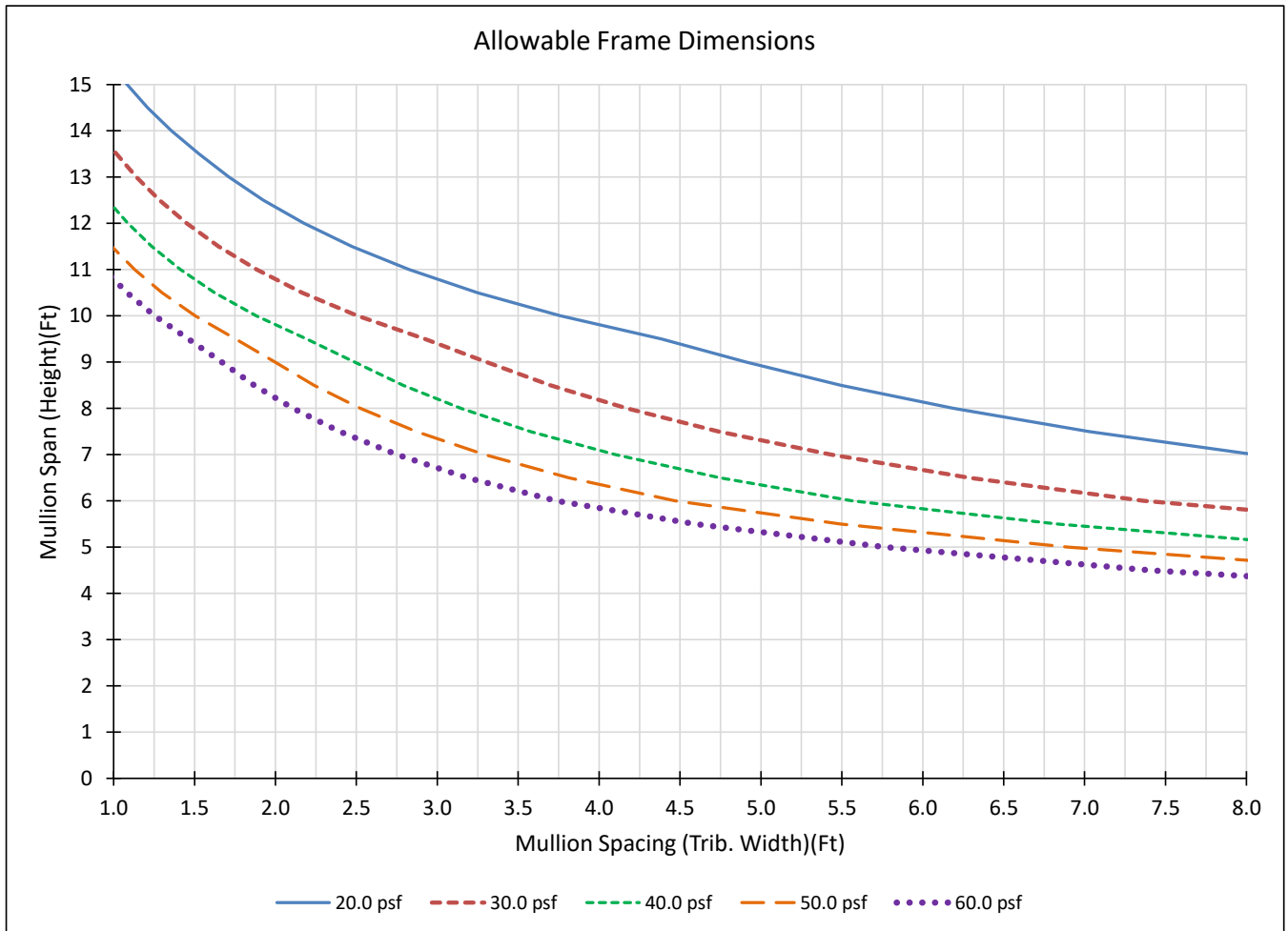
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E = 10100 ksi      A = 1.081 in<sup>2</sup>  
 $I_{x, \text{alum}}$  = 2.715 in<sup>4</sup>       $Z_{x, \text{alum}}$  = 1.529 in  
 $S_{x, \text{alum}}$  = 1.198 in<sup>3</sup>      wt = 1.299 lb/ft  
 Reinforcing: **No Reinforcing**  
 $I_{x, \text{steel}}$  = 0.000 in<sup>4</sup>       $S_{x, \text{steel}}$  = 0.000 in<sup>3</sup>  
 $I_{\text{combined}}$  = 2.444 in<sup>4</sup>

Curves are based on deflection limits of L/175 for L ≤ 13'-6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	954	848	708



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.



## Wind Load Chart including Unbraced Length Effects

**Kawneer 451T-CG-001      6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 10'-0"**

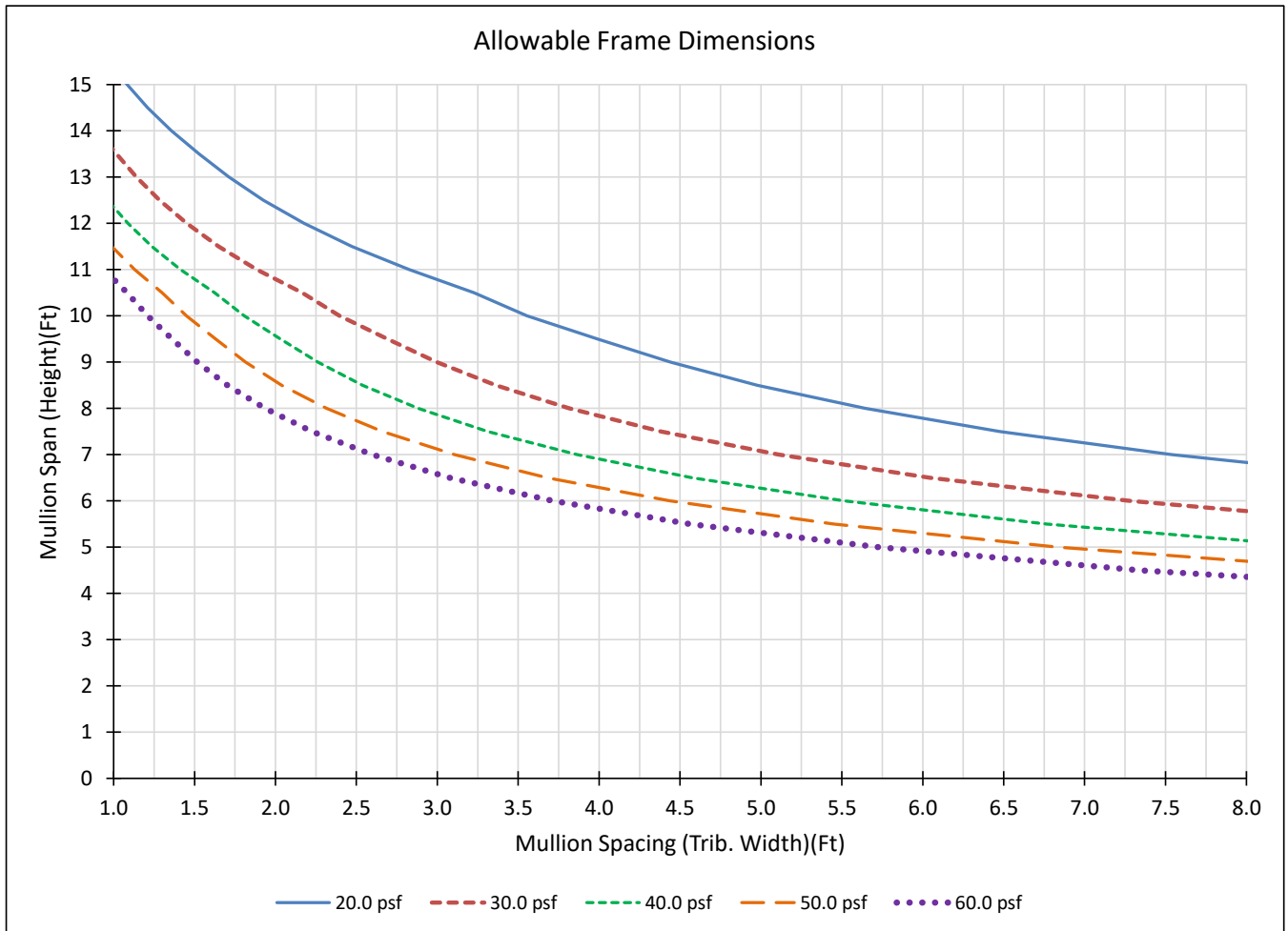
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E = 10100 ksi      A = 1.081 in<sup>2</sup>  
 $I_{x, \text{alum}}$  = 2.715 in<sup>4</sup>       $Z_{x, \text{alum}}$  = 1.529 in  
 $S_{x, \text{alum}}$  = 1.198 in<sup>3</sup>      wt = 1.299 lb/ft  
 Reinforcing: **No Reinforcing**  
 $I_{x, \text{steel}}$  = 0.000 in<sup>4</sup>       $S_{x, \text{steel}}$  = 0.000 in<sup>3</sup>  
 $I_{\text{combined}}$  = 2.444 in<sup>4</sup>

Curves are based on deflection limits of L/175 for L ≤ 13'-6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	954	848	708



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.



## Wind Load Chart including Unbraced Length Effects

**Kawneer 451T-CG-005      6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 3'-0"**

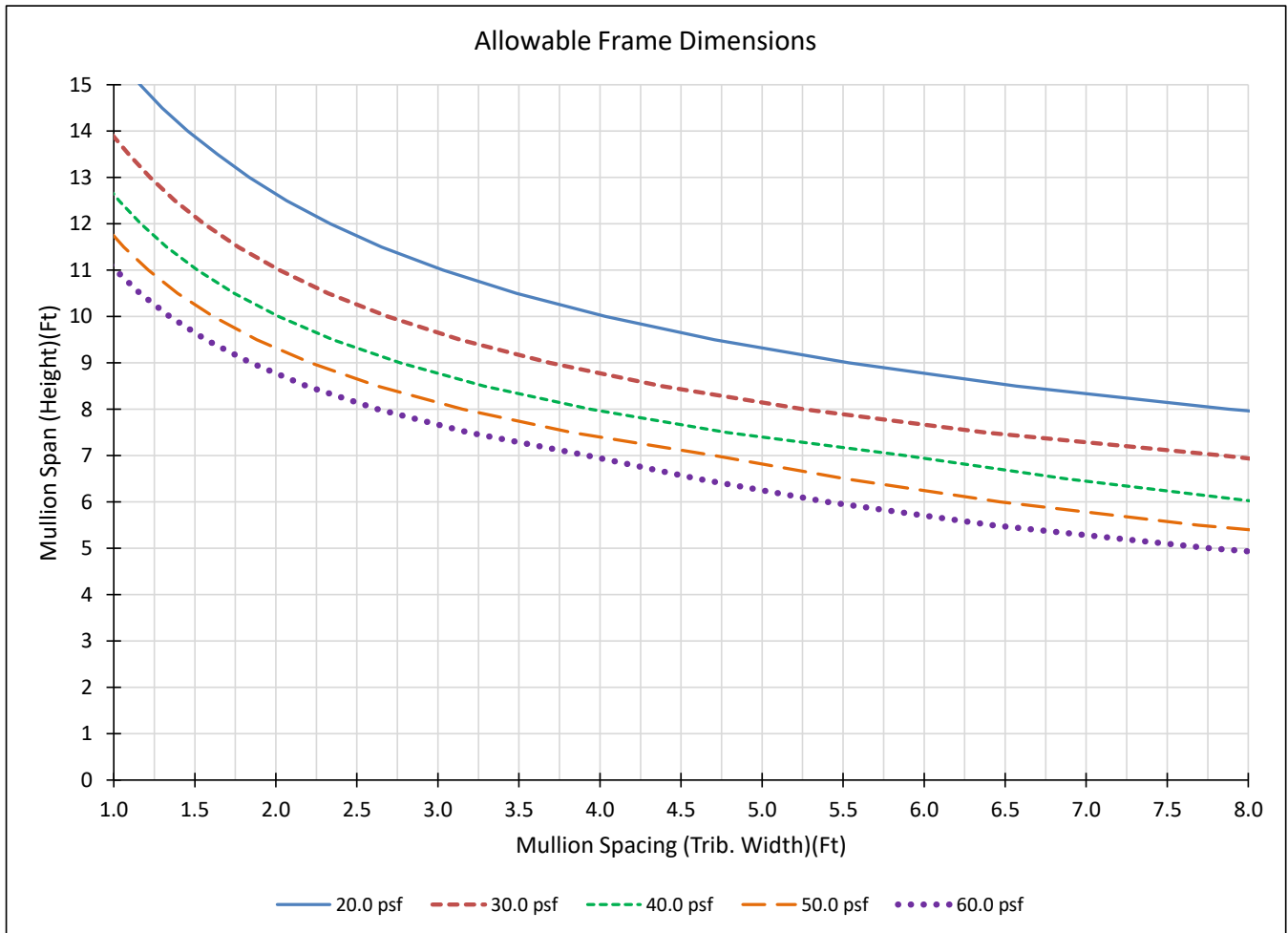
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E = 10100 ksi      A = 1.293 in<sup>2</sup>  
 $I_{x, \text{alum}} = 2.913 \text{ in}^4$        $Z_{x, \text{alum}} = 1.741 \text{ in}$   
 $S_{x, \text{alum}} = 1.295 \text{ in}^3$       wt = 1.553 lb/ft  
 Reinforcing: **No Reinforcing**  
 $I_{x, \text{steel}} = 0.000 \text{ in}^4$        $S_{x, \text{steel}} = 0.000 \text{ in}^3$   
 $I_{\text{combined}} = 2.622 \text{ in}^4$

Curves are based on deflection limits of L/175 for L ≤ 13'-6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	947	947	947



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.



## Wind Load Chart including Unbraced Length Effects

**Kawneer 451T-CG-005      6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 6'-0"**

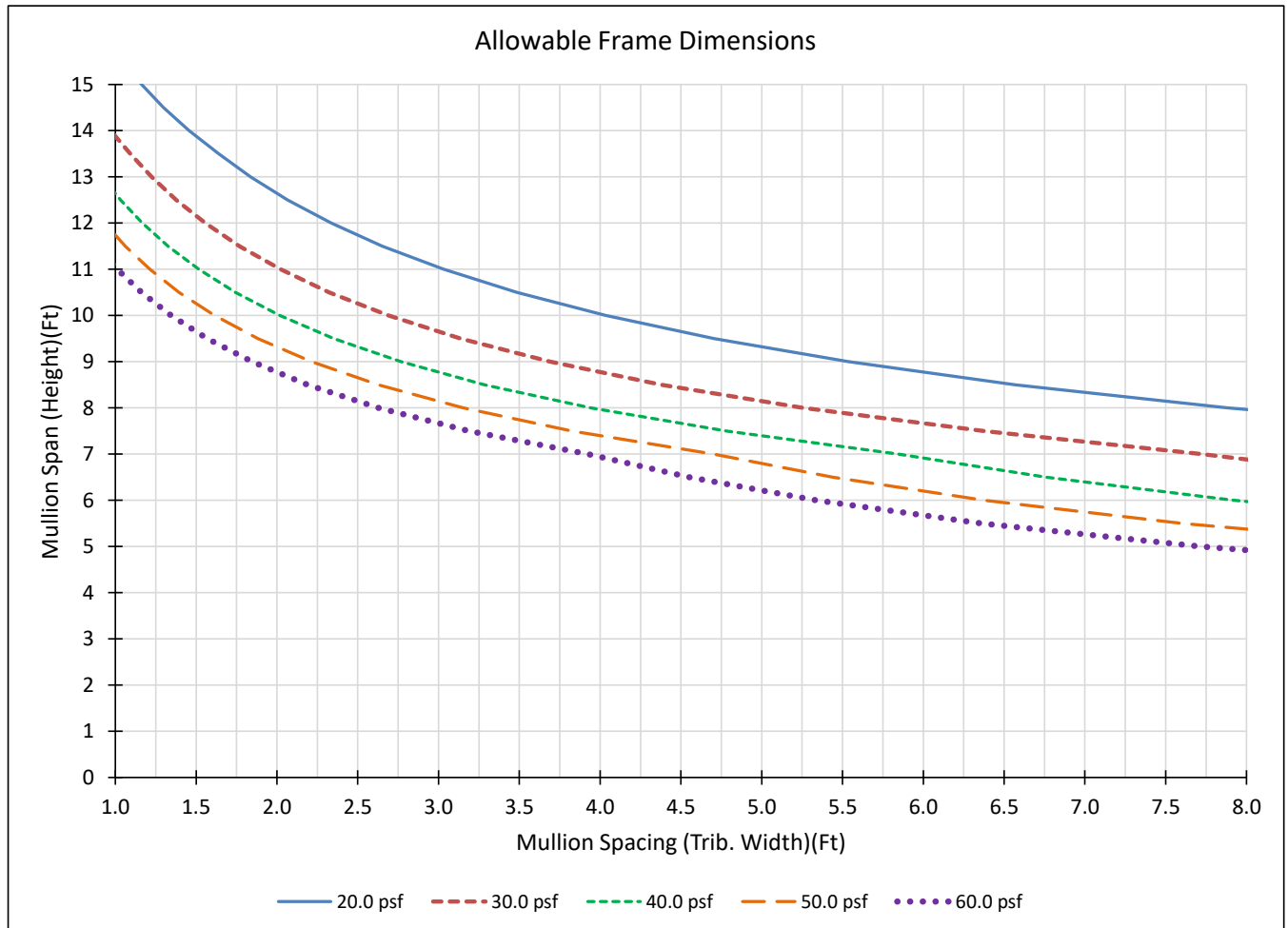
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E = 10100 ksi      A = 1.293 in<sup>2</sup>  
 $I_{x, \text{alum}}$  = 2.913 in<sup>4</sup>       $Z_{x, \text{alum}}$  = 1.741 in  
 $S_{x, \text{alum}}$  = 1.295 in<sup>3</sup>      wt = 1.553 lb/ft  
 Reinforcing: **No Reinforcing**  
 $I_{x, \text{steel}}$  = 0.000 in<sup>4</sup>       $S_{x, \text{steel}}$  = 0.000 in<sup>3</sup>  
 $I_{\text{combined}}$  = 2.622 in<sup>4</sup>

Curves are based on deflection limits of L/175 for L ≤ 13'-6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	947	947	947



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.





## Wind Load Chart including Unbraced Length Effects

**Kawneer 451T-CG-005      6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 10'-0"**

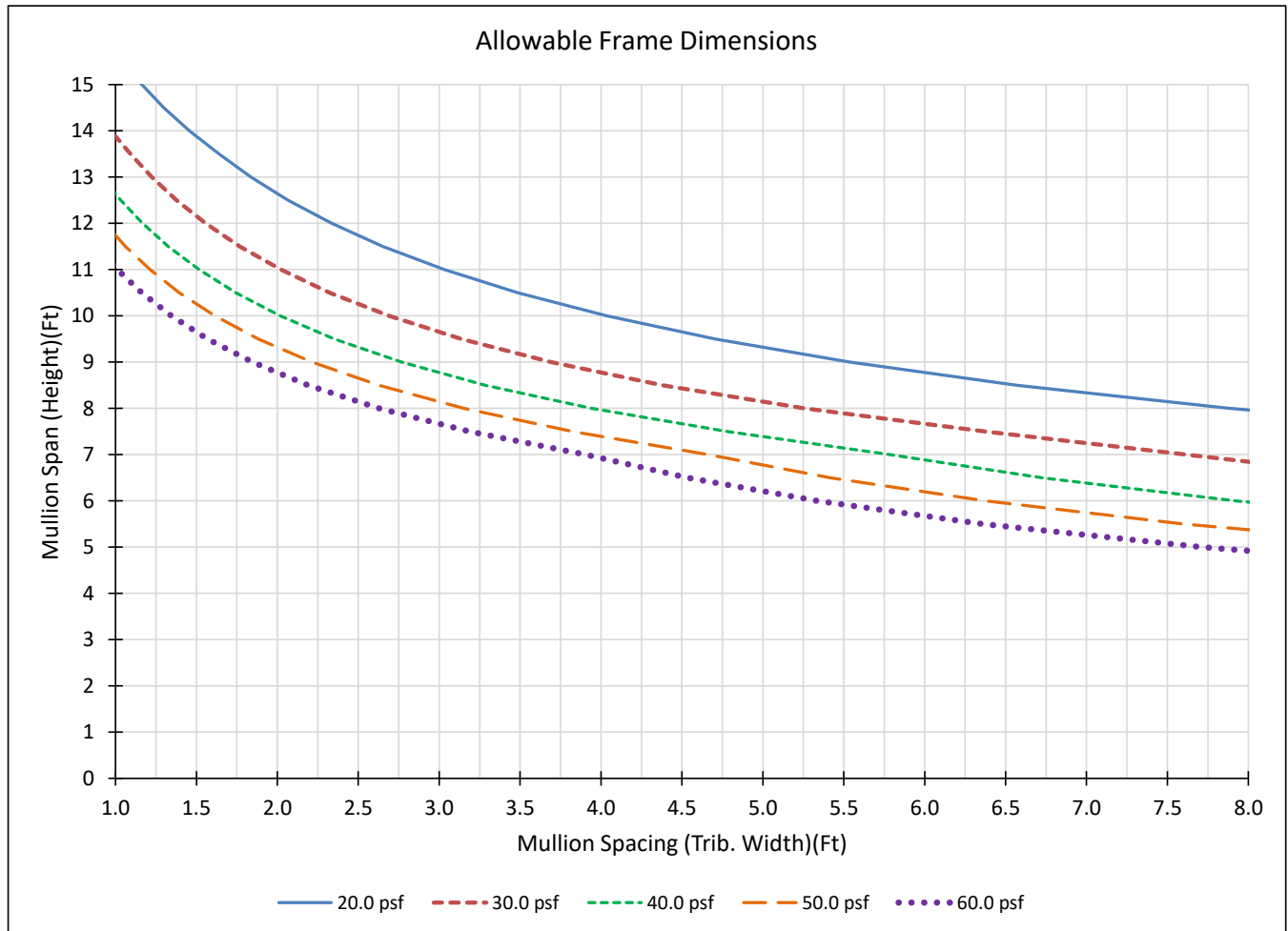
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E = 10100 ksi      A = 1.293 in<sup>2</sup>  
 $I_{x, \text{alum}} = 2.913 \text{ in}^4$        $Z_{x, \text{alum}} = 1.741 \text{ in}$   
 $S_{x, \text{alum}} = 1.295 \text{ in}^3$       wt = 1.553 lb/ft  
 Reinforcing: **No Reinforcing**  
 $I_{x, \text{steel}} = 0.000 \text{ in}^4$        $S_{x, \text{steel}} = 0.000 \text{ in}^3$   
 $I_{\text{combined}} = 2.622 \text{ in}^4$

Curves are based on deflection limits of L/175 for L ≤ 13'-6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	947	947	947



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.



## Wind Load Chart including Unbraced Length Effects

**Kawneer 451T-CG-013      6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 3'-0"**

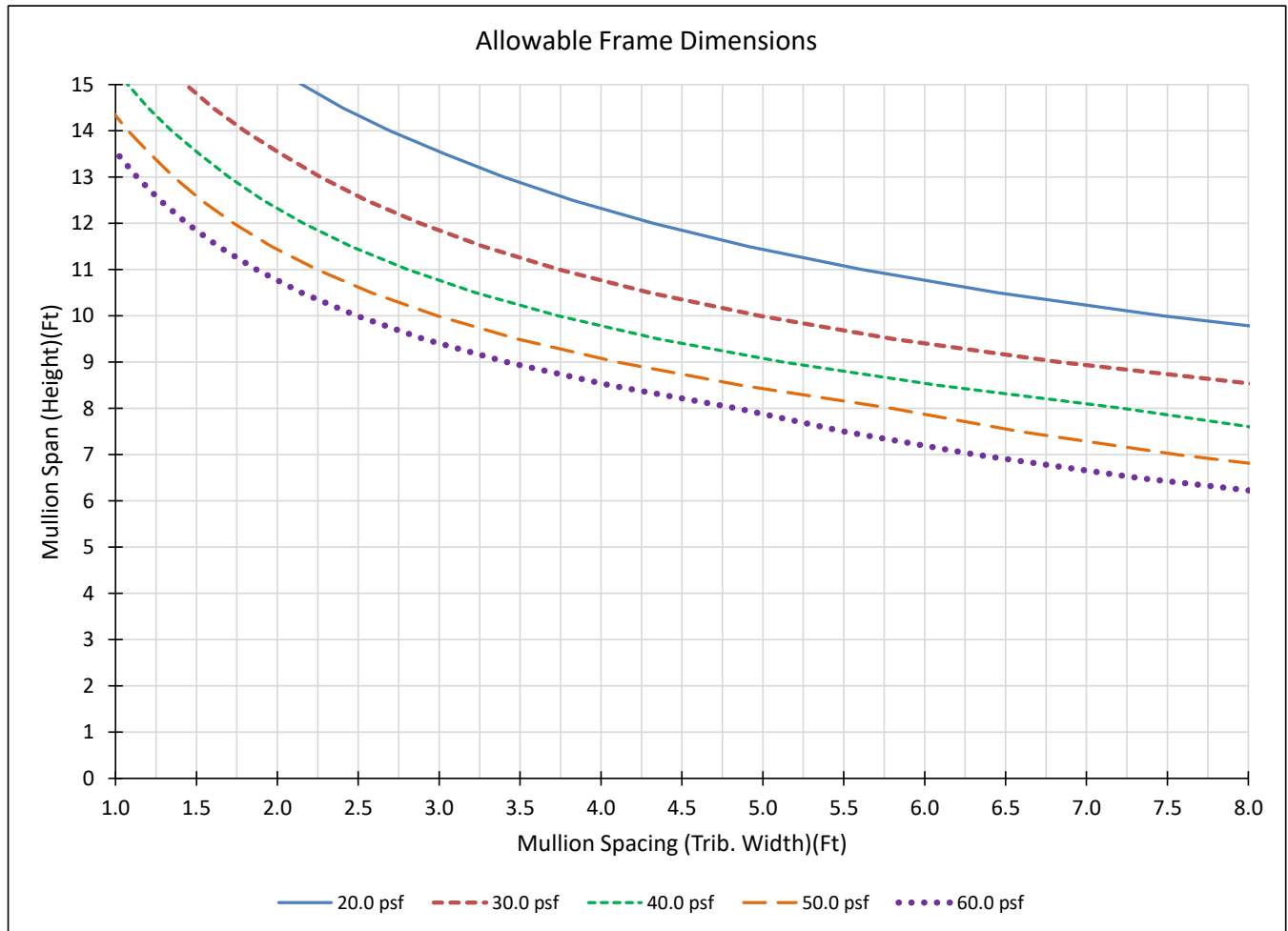
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E = 10100 ksi      A = 1.658 in<sup>2</sup>  
 $I_{x, \text{alum}} = 5.392 \text{ in}^4$        $Z_{x, \text{alum}} = 2.790 \text{ in}$   
 $S_{x, \text{alum}} = 2.387 \text{ in}^3$       wt = 1.992 lb/ft  
 Reinforcing: **No Reinforcing**  
 $I_{x, \text{steel}} = 0.000 \text{ in}^4$        $S_{x, \text{steel}} = 0.000 \text{ in}^3$   
 $I_{\text{combined}} = 4.853 \text{ in}^4$

Curves are based on deflection limits of L/175 for L ≤ 13'6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	1224	988	823



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.



## Wind Load Chart including Unbraced Length Effects

**Kawneer 451T-CG-013      6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 6'-0"**

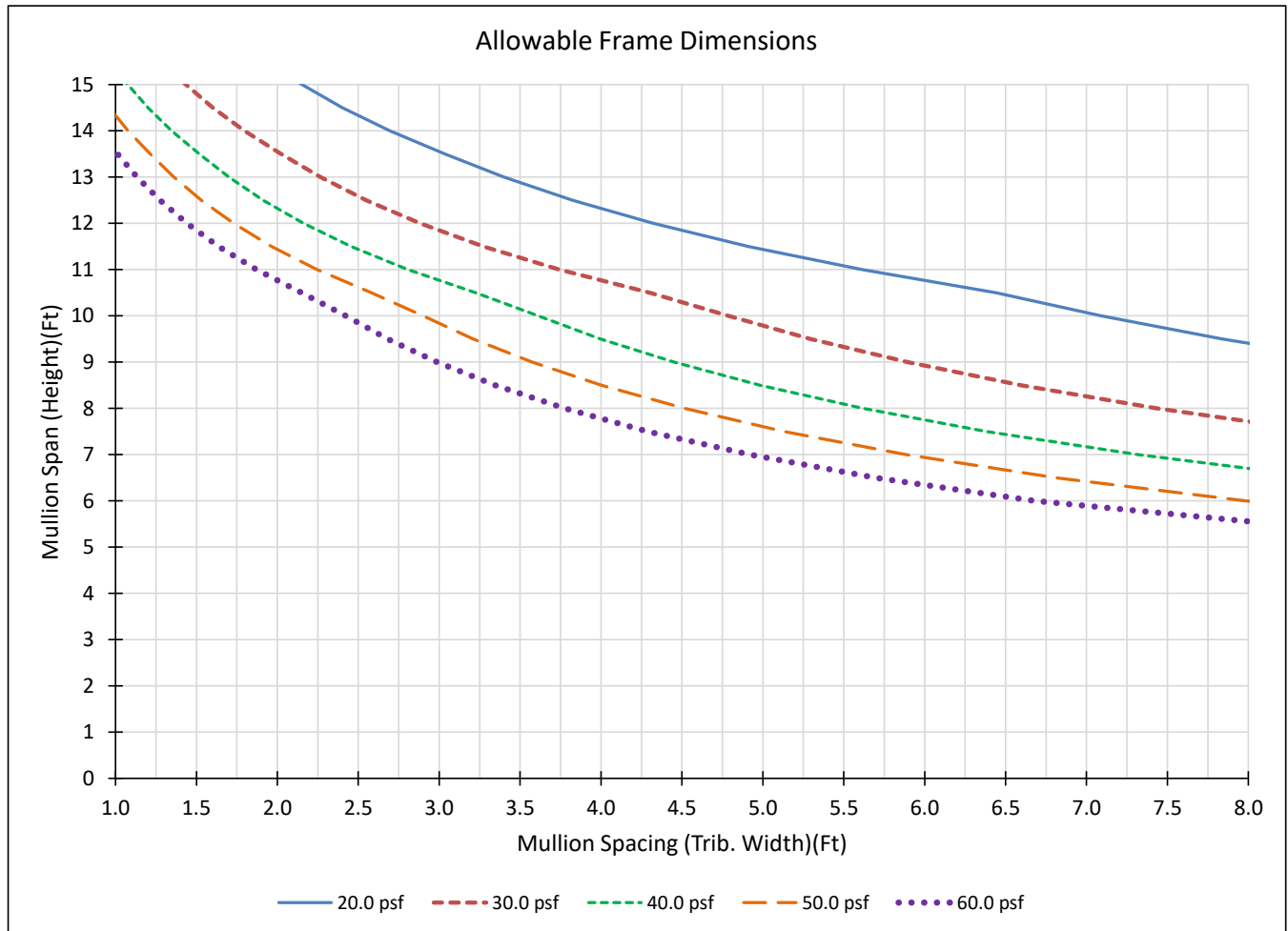
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E =	10100 ksi	A =	1.658 in <sup>2</sup>
I <sub>x, alum</sub> =	5.392 in <sup>4</sup>	Z <sub>x, alum</sub> =	2.790 in
S <sub>x, alum</sub> =	2.387 in <sup>3</sup>	wt =	1.992 lb/ft
Reinforcing:	No Reinforcing		
I <sub>x, steel</sub> =	0.000 in <sup>4</sup>	S <sub>x, steel</sub> =	0.000 in <sup>3</sup>
I <sub>combined</sub> =	4.853 in <sup>4</sup>		

Curves are based on deflection limits of L/175 for L ≤ 13'6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	1224	988	823



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.



## Wind Load Chart including Unbraced Length Effects

**Kawneer 451T-CG-013      6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 10'-0"**

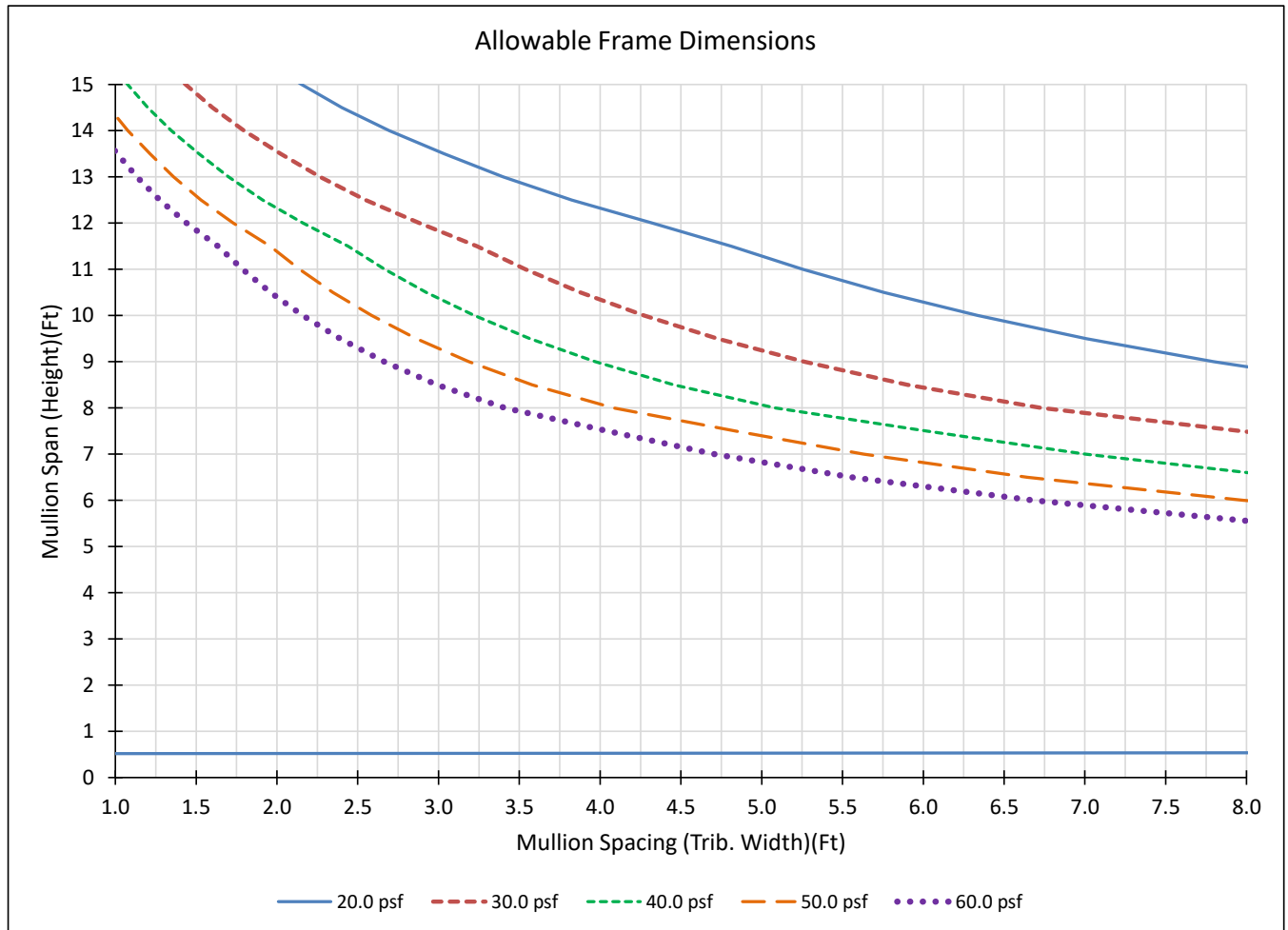
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E = 10100 ksi      A = 1.658 in<sup>2</sup>  
 $I_{x, \text{alum}} = 5.392 \text{ in}^4$        $Z_{x, \text{alum}} = 2.790 \text{ in}$   
 $S_{x, \text{alum}} = 2.387 \text{ in}^3$       wt = 1.992 lb/ft  
 Reinforcing: **No Reinforcing**  
 $I_{x, \text{steel}} = 0.000 \text{ in}^4$        $S_{x, \text{steel}} = 0.000 \text{ in}^3$   
 $I_{\text{combined}} = 4.853 \text{ in}^4$

Curves are based on deflection limits of L/175 for L ≤ 13'6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	1224	988	823



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.



## Wind Load Chart including Unbraced Length Effects

**Kawneer 451T-CG-112      6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 3'-0"**

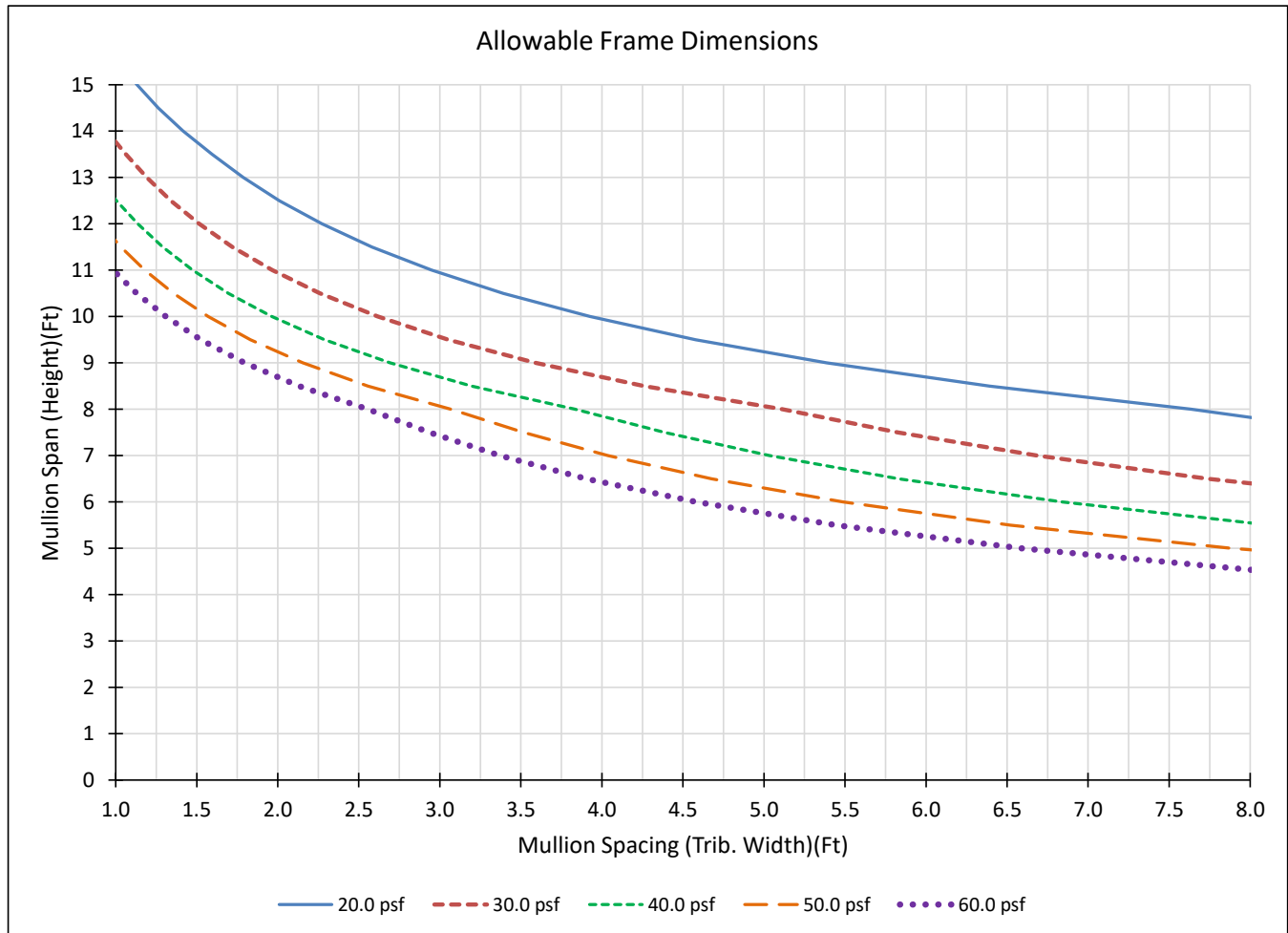
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

$E = 10100 \text{ ksi}$        $A = 1.114 \text{ in}^2$   
 $I_{x, \text{alum}} = 2.834 \text{ in}^4$        $Z_{x, \text{alum}} = 1.572 \text{ in}$   
 $S_{x, \text{alum}} = 1.248 \text{ in}^3$        $wt = 1.338 \text{ lb/ft}$   
 Reinforcing: **No Reinforcing**  
 $I_{x, \text{steel}} = 0.000 \text{ in}^4$        $S_{x, \text{steel}} = 0.000 \text{ in}^3$   
 $I_{\text{combined}} = 2.551 \text{ in}^4$

Curves are based on deflection limits of  $L/175$  for  $L \leq 13'6"$  or  $L/240 + 1/4"$  for  $L > 13'6"$  and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	933	882	684



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.



## Wind Load Chart including Unbraced Length Effects

**Kawneer 451T-CG-112      6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 6'-0"**

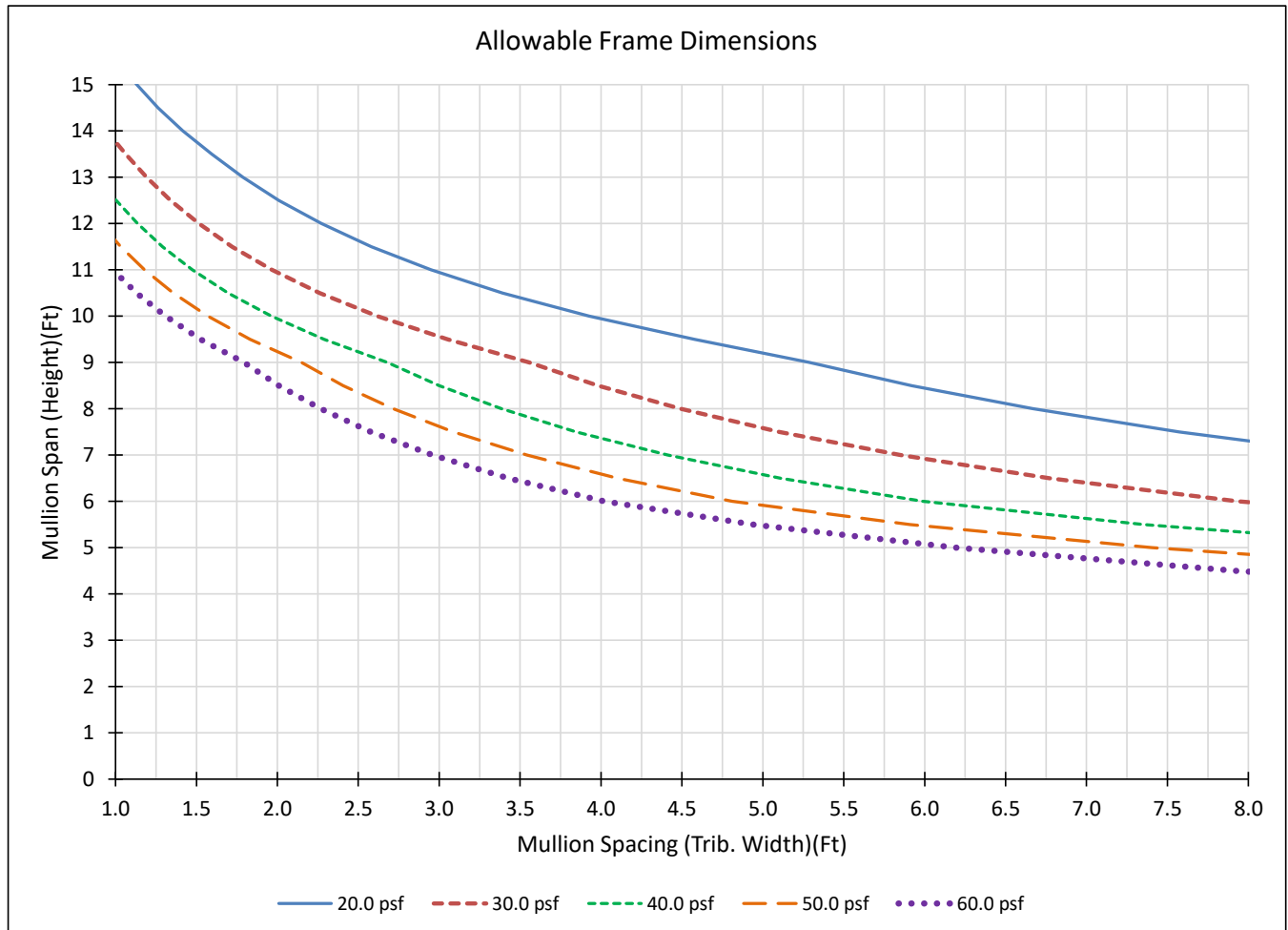
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E = 10100 ksi      A = 1.114 in<sup>2</sup>  
 $I_{x, \text{alum}} = 2.834 \text{ in}^4$        $Z_{x, \text{alum}} = 1.572 \text{ in}$   
 $S_{x, \text{alum}} = 1.248 \text{ in}^3$       wt = 1.338 lb/ft  
 Reinforcing: **No Reinforcing**  
 $I_{x, \text{steel}} = 0.000 \text{ in}^4$        $S_{x, \text{steel}} = 0.000 \text{ in}^3$   
 $I_{\text{combined}} = 2.551 \text{ in}^4$

Curves are based on deflection limits of L/175 for L ≤ 13'-6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	933	882	684



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.



## Wind Load Chart including Unbraced Length Effects

**Kawneer 451T-CG-112      6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 10'-0"**

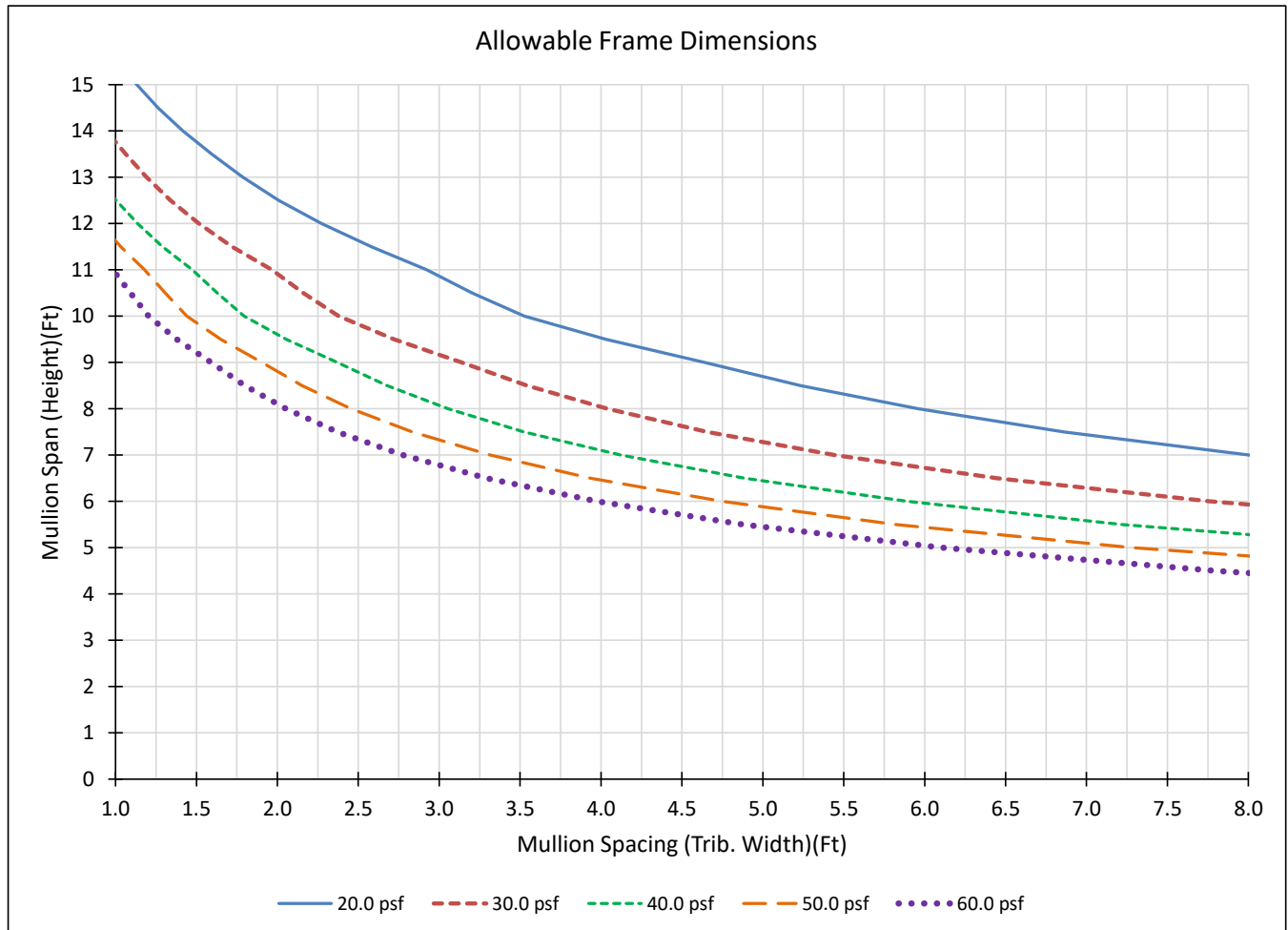
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E = 10100 ksi      A = 1.114 in<sup>2</sup>  
 $I_{x, \text{alum}}$  = 2.834 in<sup>4</sup>       $Z_{x, \text{alum}}$  = 1.572 in  
 $S_{x, \text{alum}}$  = 1.248 in<sup>3</sup>      wt = 1.338 lb/ft  
 Reinforcing: **No Reinforcing**  
 $I_{x, \text{steel}}$  = 0.000 in<sup>4</sup>       $S_{x, \text{steel}}$  = 0.000 in<sup>3</sup>  
 $I_{\text{combined}}$  = 2.551 in<sup>4</sup>

Curves are based on deflection limits of L/175 for L ≤ 13'-6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	933	882	684



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.



## Wind Load Chart including Unbraced Length Effects

**Kawneer 451T-CG-113      6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 3'-0"**

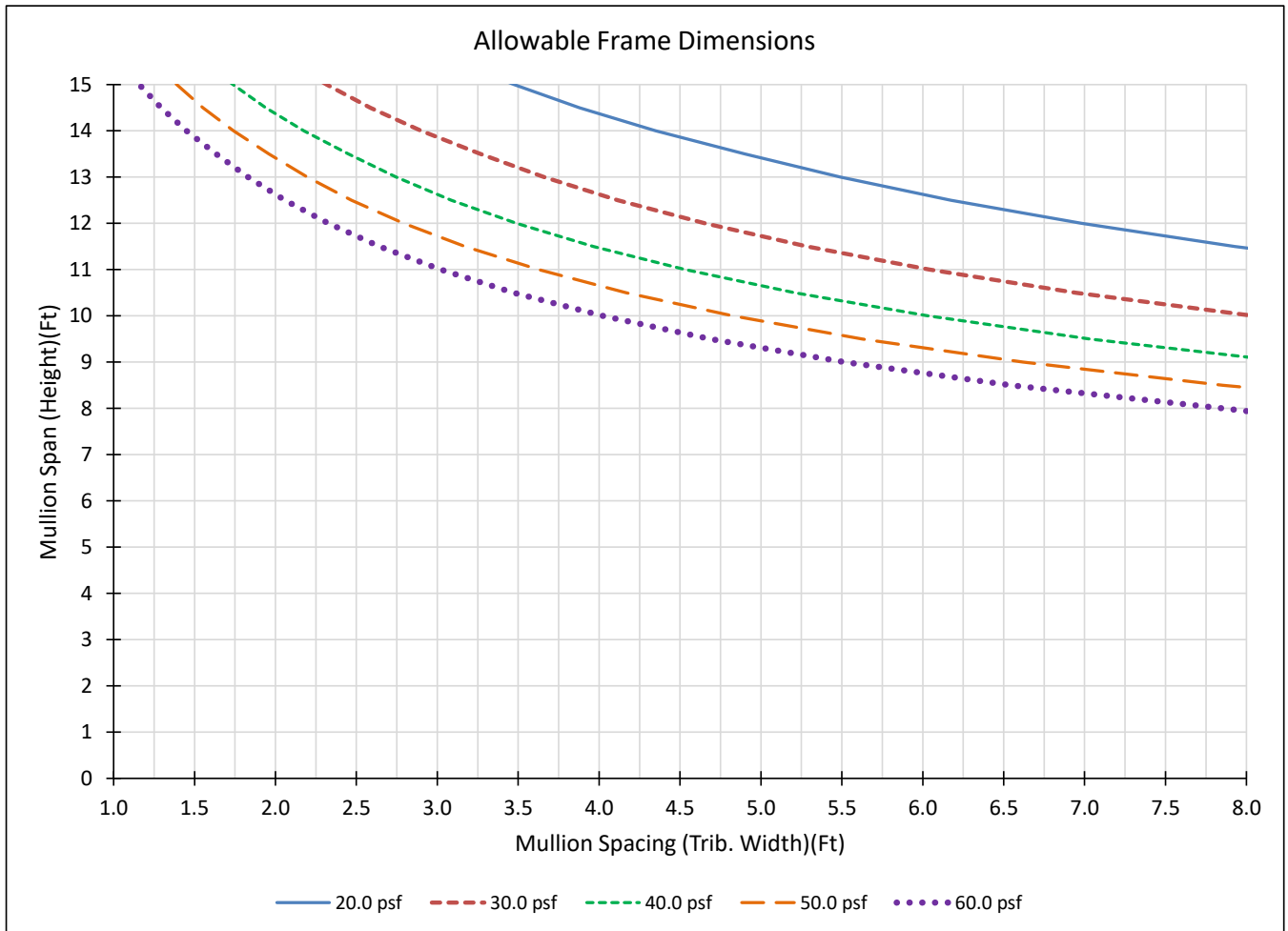
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E =	10100 ksi	A =	2.710 in <sup>2</sup>
I <sub>x, alum</sub> =	8.706 in <sup>4</sup>	Z <sub>x, alum</sub> =	4.618 in
S <sub>x, alum</sub> =	3.867 in <sup>3</sup>	wt =	3.256 lb/ft
Reinforcing:	No Reinforcing		
I <sub>x, steel</sub> =	0.000 in <sup>4</sup>	S <sub>x, steel</sub> =	0.000 in <sup>3</sup>
I <sub>combined</sub> =	7.835 in <sup>4</sup>		

Curves are based on deflection limits of L/175 for L ≤ 13'6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	1239	1078	1020



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.





## Wind Load Chart including Unbraced Length Effects

**Kawneer 451T-CG-113      6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 6'-0"**

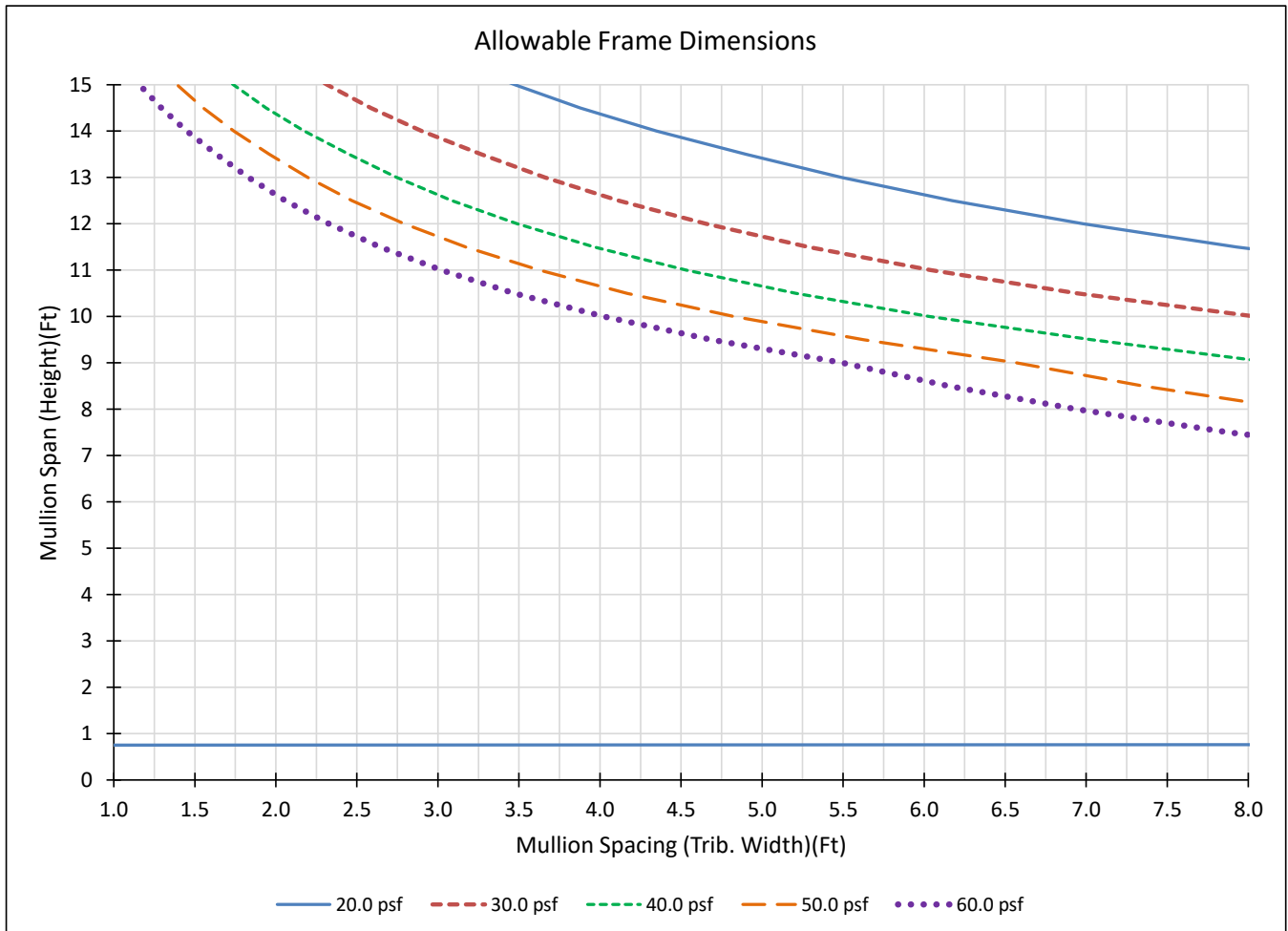
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E =	10100 ksi	A =	2.710 in <sup>2</sup>
I <sub>x, alum</sub> =	8.706 in <sup>4</sup>	Z <sub>x, alum</sub> =	4.618 in
S <sub>x, alum</sub> =	3.867 in <sup>3</sup>	wt =	3.256 lb/ft
Reinforcing:	No Reinforcing		
I <sub>x, steel</sub> =	0.000 in <sup>4</sup>	S <sub>x, steel</sub> =	0.000 in <sup>3</sup>
I <sub>combined</sub> =	7.835 in <sup>4</sup>		

Curves are based on deflection limits of L/175 for L ≤ 13'-6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	1239	1078	1020



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.



## Wind Load Chart including Unbraced Length Effects

**Kawneer 451T-CG-113      6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 10'-0"**

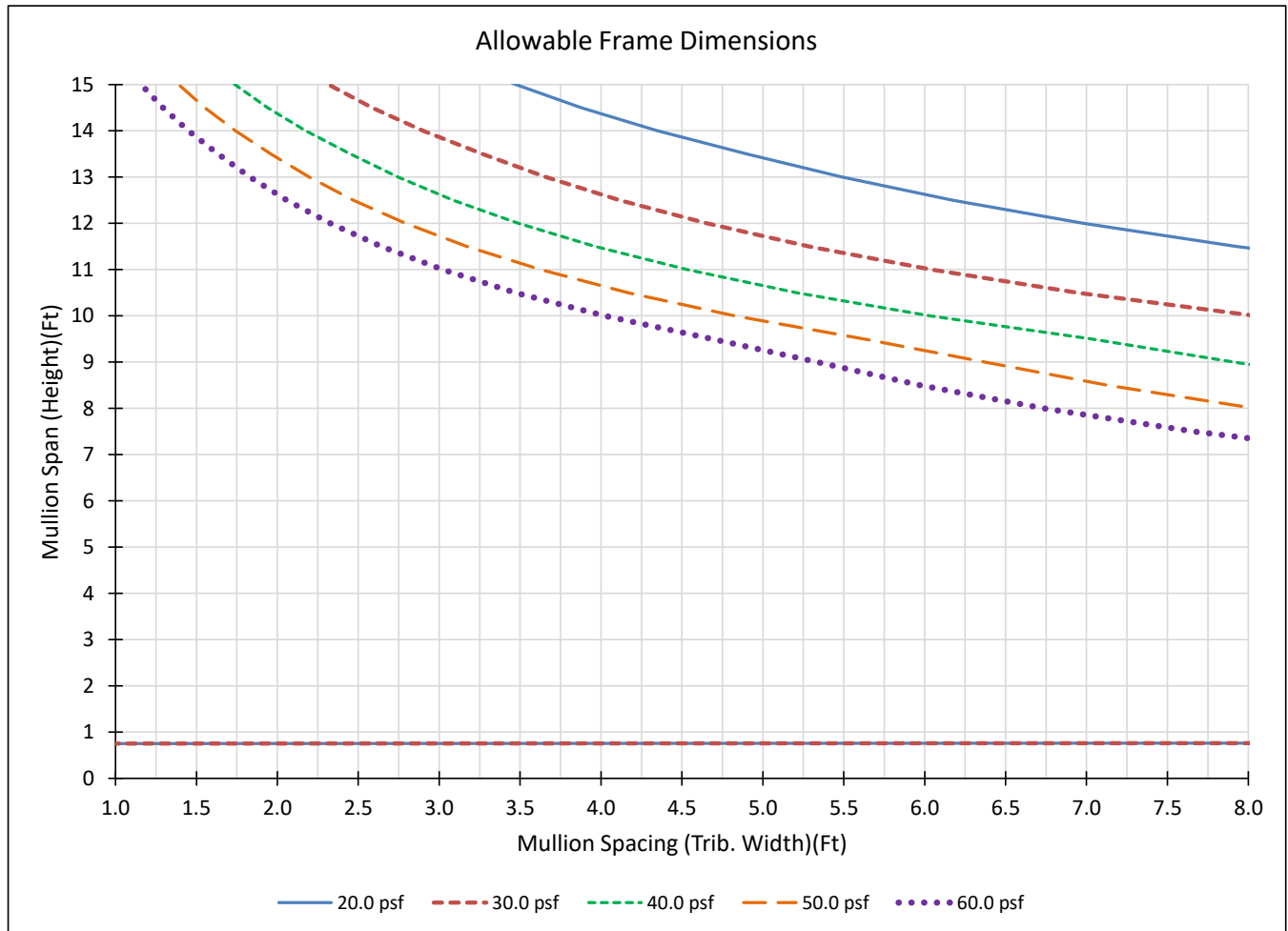
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E =	10100 ksi	A =	2.710 in <sup>2</sup>
I <sub>x, alum</sub> =	8.706 in <sup>4</sup>	Z <sub>x, alum</sub> =	4.618 in
S <sub>x, alum</sub> =	3.867 in <sup>3</sup>	wt =	3.256 lb/ft
Reinforcing:	No Reinforcing		
I <sub>x, steel</sub> =	0.000 in <sup>4</sup>	S <sub>x, steel</sub> =	0.000 in <sup>3</sup>
I <sub>combined</sub> =	7.835 in <sup>4</sup>		

Curves are based on deflection limits of L/175 for L ≤ 13'-6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	1239	1078	1020



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.



## Wind Load Chart including Unbraced Length Effects

**Kawneer 451T-VG-001      6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 3'-0"**

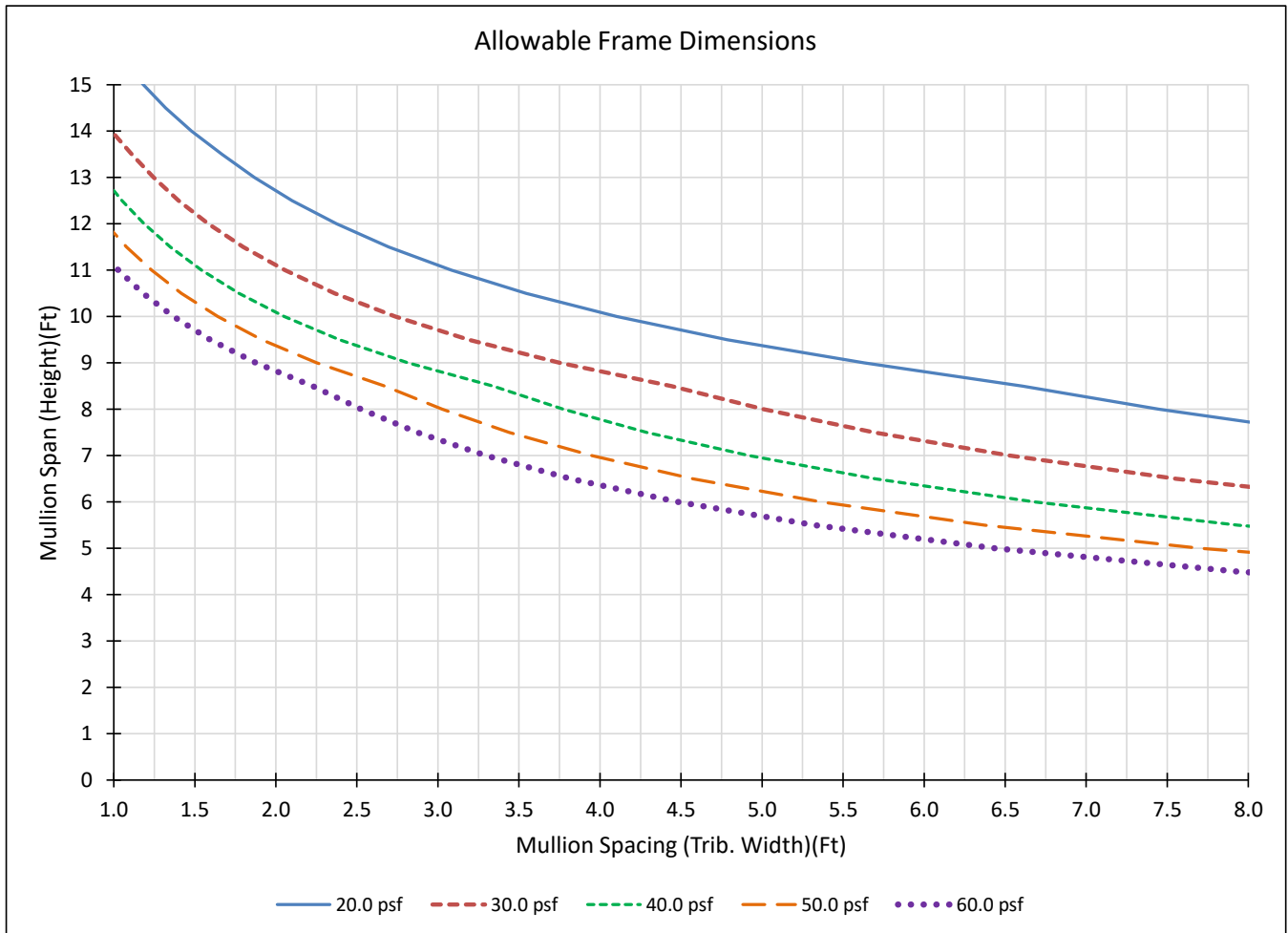
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E = 10100 ksi      A = 1.069 in<sup>2</sup>  
 $I_{x, \text{alum}}$  = 2.962 in<sup>4</sup>       $Z_{x, \text{alum}}$  = 1.570 in  
 $S_{x, \text{alum}}$  = 1.252 in<sup>3</sup>      wt = 1.284 lb/ft  
 Reinforcing: **No Reinforcing**  
 $I_{x, \text{steel}}$  = 0.000 in<sup>4</sup>       $S_{x, \text{steel}}$  = 0.000 in<sup>3</sup>  
 $I_{\text{combined}}$  = 2.666 in<sup>4</sup>

Curves are based on deflection limits of L/175 for L ≤ 13'-6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	936	820	459



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.



## Wind Load Chart including Unbraced Length Effects

**Kawneer 451T-VG-001      6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 6'-0"**

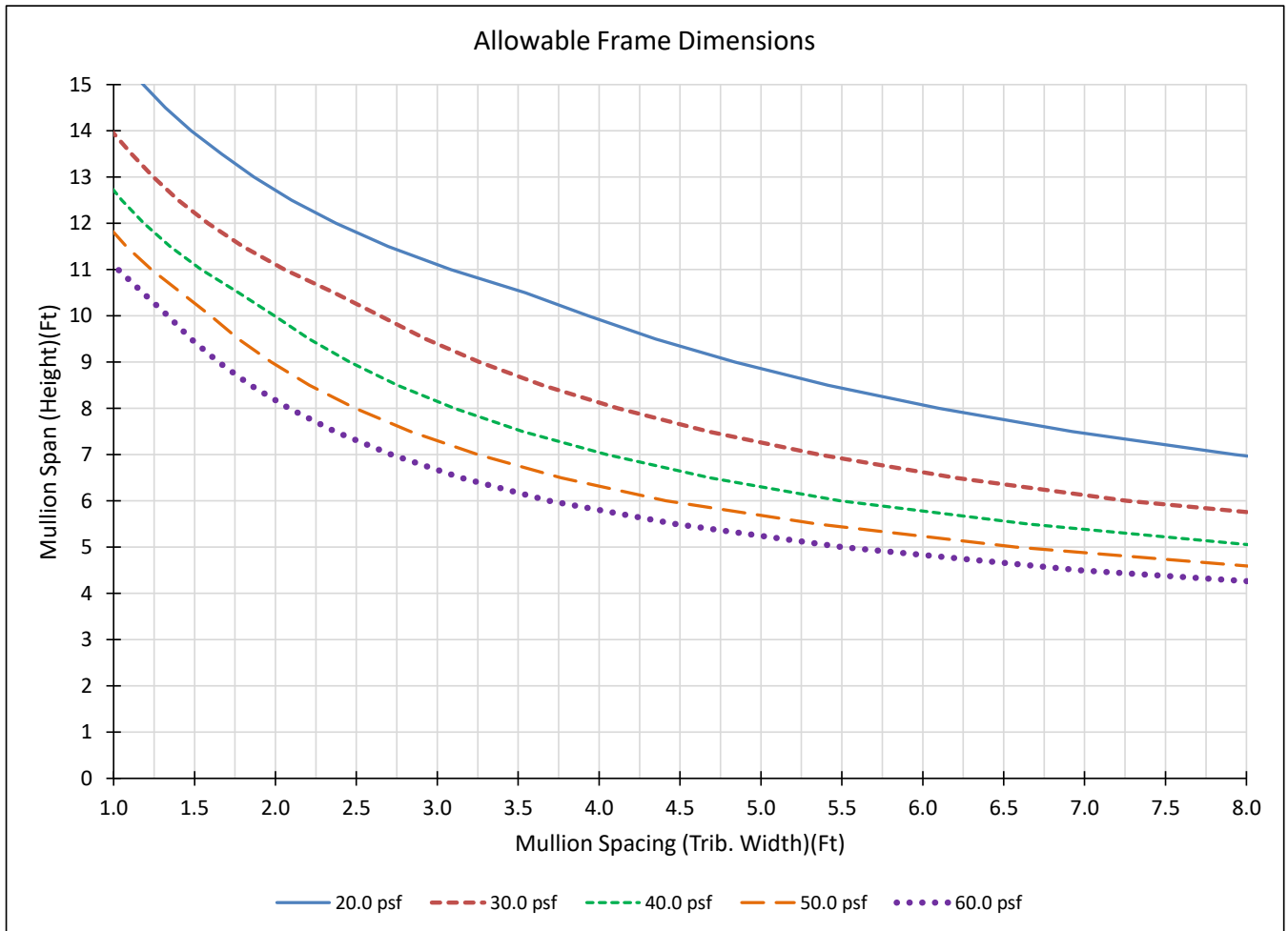
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E = 10100 ksi      A = 1.069 in<sup>2</sup>  
 $I_{x, \text{alum}}$  = 2.962 in<sup>4</sup>       $Z_{x, \text{alum}}$  = 1.570 in  
 $S_{x, \text{alum}}$  = 1.252 in<sup>3</sup>      wt = 1.284 lb/ft  
 Reinforcing: **No Reinforcing**  
 $I_{x, \text{steel}}$  = 0.000 in<sup>4</sup>       $S_{x, \text{steel}}$  = 0.000 in<sup>3</sup>  
 $I_{\text{combined}}$  = 2.666 in<sup>4</sup>

Curves are based on deflection limits of L/175 for L ≤ 13'-6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	936	820	459



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.



## Wind Load Chart including Unbraced Length Effects

**Kawneer 451T-VG-001      6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 10'-0"**

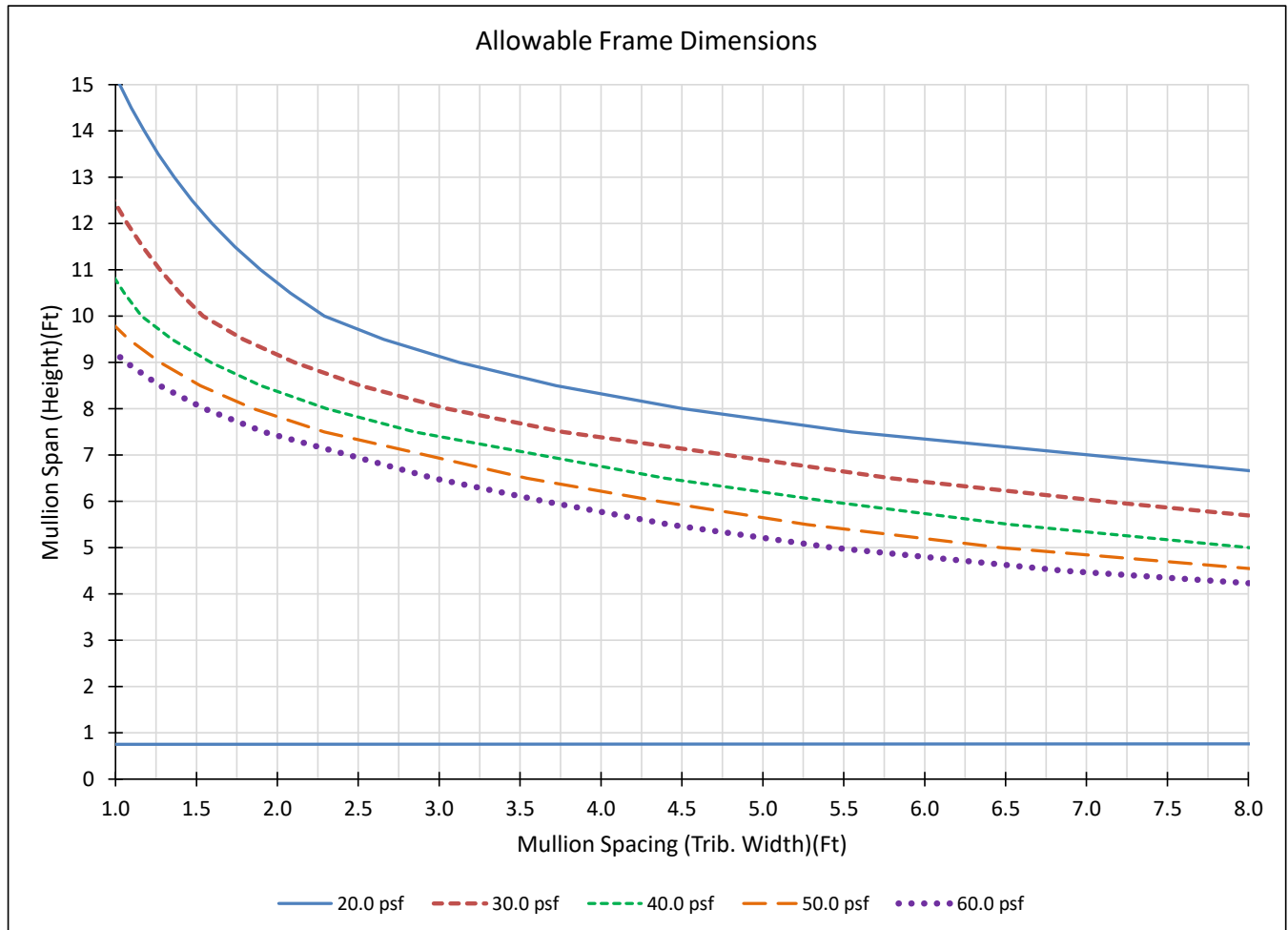
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E =	10100 ksi	A =	1.069 in <sup>2</sup>
I <sub>x, alum</sub> =	2.962 in <sup>4</sup>	Z <sub>x, alum</sub> =	1.570 in
S <sub>x, alum</sub> =	1.252 in <sup>3</sup>	wt =	1.284 lb/ft
Reinforcing:	No Reinforcing		
I <sub>x, steel</sub> =	0.000 in <sup>4</sup>	S <sub>x, steel</sub> =	0.000 in <sup>3</sup>
I <sub>combined</sub> =	2.666 in <sup>4</sup>		

Curves are based on deflection limits of L/175 for L ≤ 13'-6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	936	820	459



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.



## Wind Load Chart including Unbraced Length Effects

**Kawneer 451T-VG-005      6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 3'-0"**

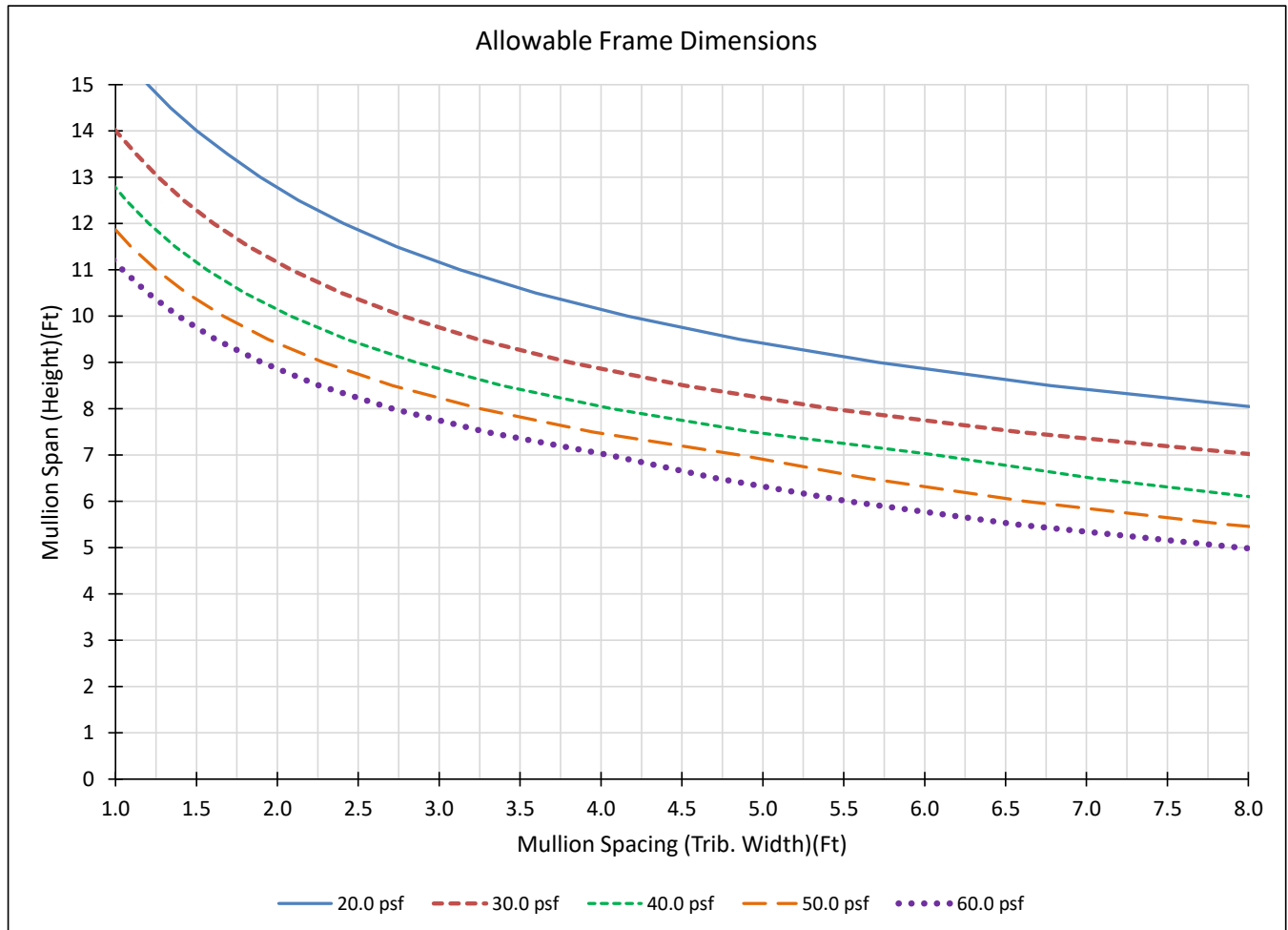
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E = 10100 ksi      A = 1.351 in<sup>2</sup>  
 $I_{x, \text{alum}}$  = 3.006 in<sup>4</sup>       $Z_{x, \text{alum}}$  = 1.717 in  
 $S_{x, \text{alum}}$  = 1.325 in<sup>3</sup>      wt = 1.623 lb/ft  
 Reinforcing: **No Reinforcing**  
 $I_{x, \text{steel}}$  = 0.000 in<sup>4</sup>       $S_{x, \text{steel}}$  = 0.000 in<sup>3</sup>  
 $I_{\text{combined}}$  = 2.705 in<sup>4</sup>

Curves are based on deflection limits of L/175 for L ≤ 13'-6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	928	928	928



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.



## Wind Load Chart including Unbraced Length Effects

Kawneer 451T-VG-005      6063-T6 Aluminum

Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 6'-0"

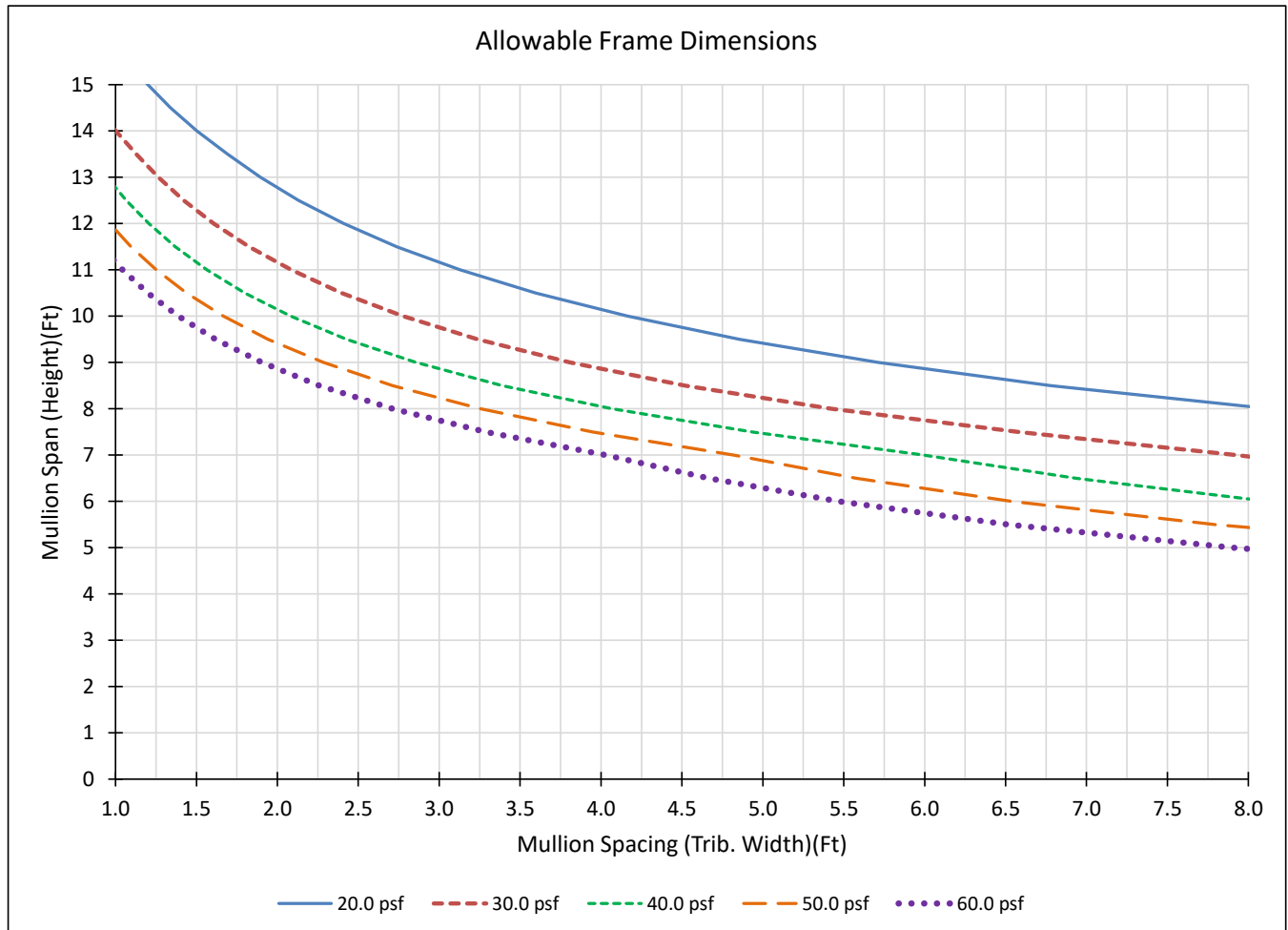
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E = 10100 ksi      A = 1.351 in<sup>2</sup>  
 $I_{x, \text{alum}}$  = 3.006 in<sup>4</sup>       $Z_{x, \text{alum}}$  = 1.717 in  
 $S_{x, \text{alum}}$  = 1.325 in<sup>3</sup>      wt = 1.623 lb/ft  
 Reinforcing: No Reinforcing  
 $I_{x, \text{steel}}$  = 0.000 in<sup>4</sup>       $S_{x, \text{steel}}$  = 0.000 in<sup>3</sup>  
 $I_{\text{combined}}$  = 2.705 in<sup>4</sup>

Curves are based on deflection limits of L/175 for L ≤ 13'-6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	928	928	928



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.



## Wind Load Chart including Unbraced Length Effects

**Kawneer 451T-VG-005      6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 10'-0"**

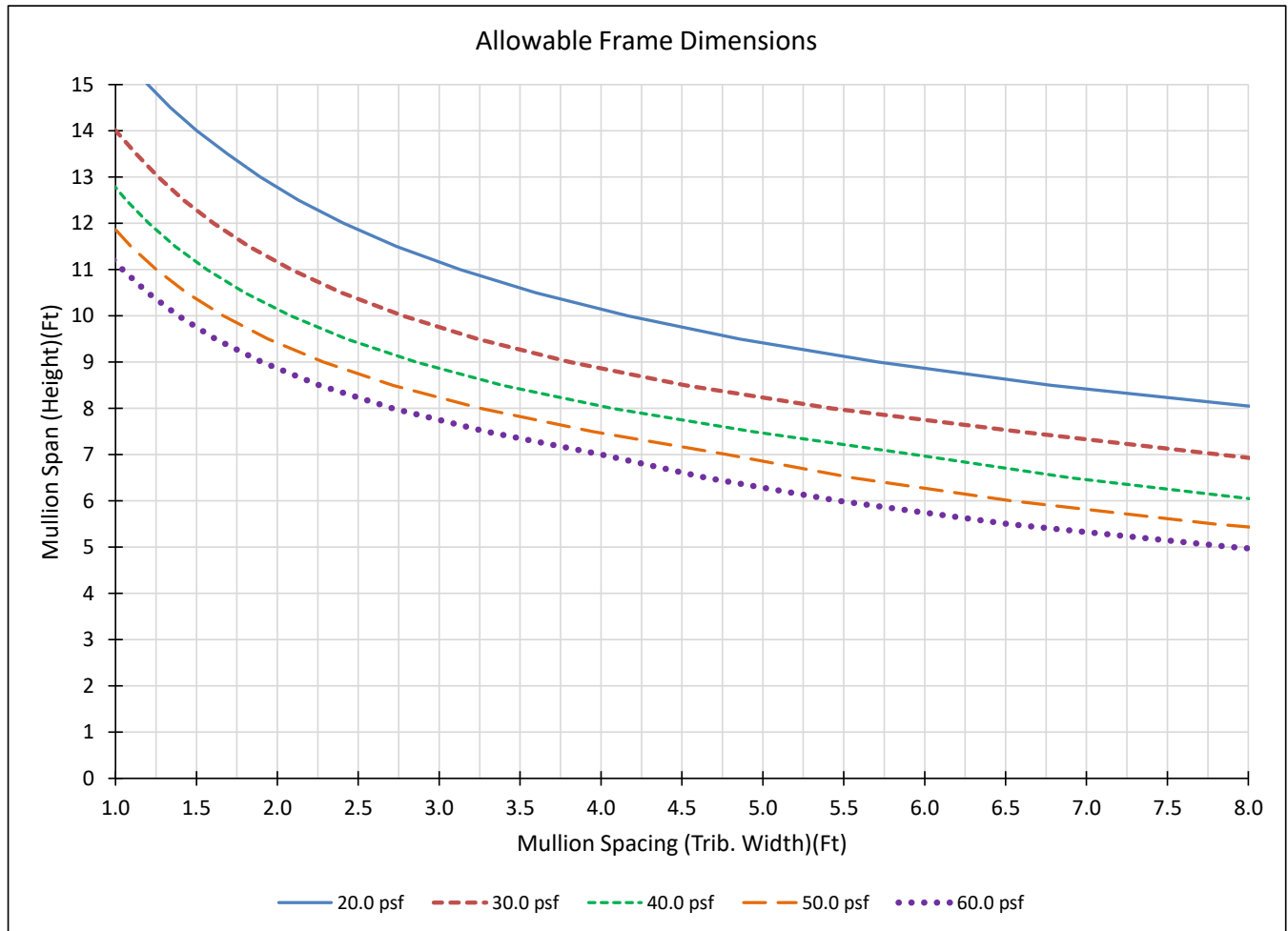
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E = 10100 ksi      A = 1.351 in<sup>2</sup>  
 $I_{x, \text{alum}}$  = 3.006 in<sup>4</sup>       $Z_{x, \text{alum}}$  = 1.717 in  
 $S_{x, \text{alum}}$  = 1.325 in<sup>3</sup>      wt = 1.623 lb/ft  
 Reinforcing: **No Reinforcing**  
 $I_{x, \text{steel}}$  = 0.000 in<sup>4</sup>       $S_{x, \text{steel}}$  = 0.000 in<sup>3</sup>  
 $I_{\text{combined}}$  = 2.705 in<sup>4</sup>

Curves are based on deflection limits of L/175 for L ≤ 13'-6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	928	928	928



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.





## Wind Load Chart including Unbraced Length Effects

**Kawneer 451T-VG-012      6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 3'-0"**

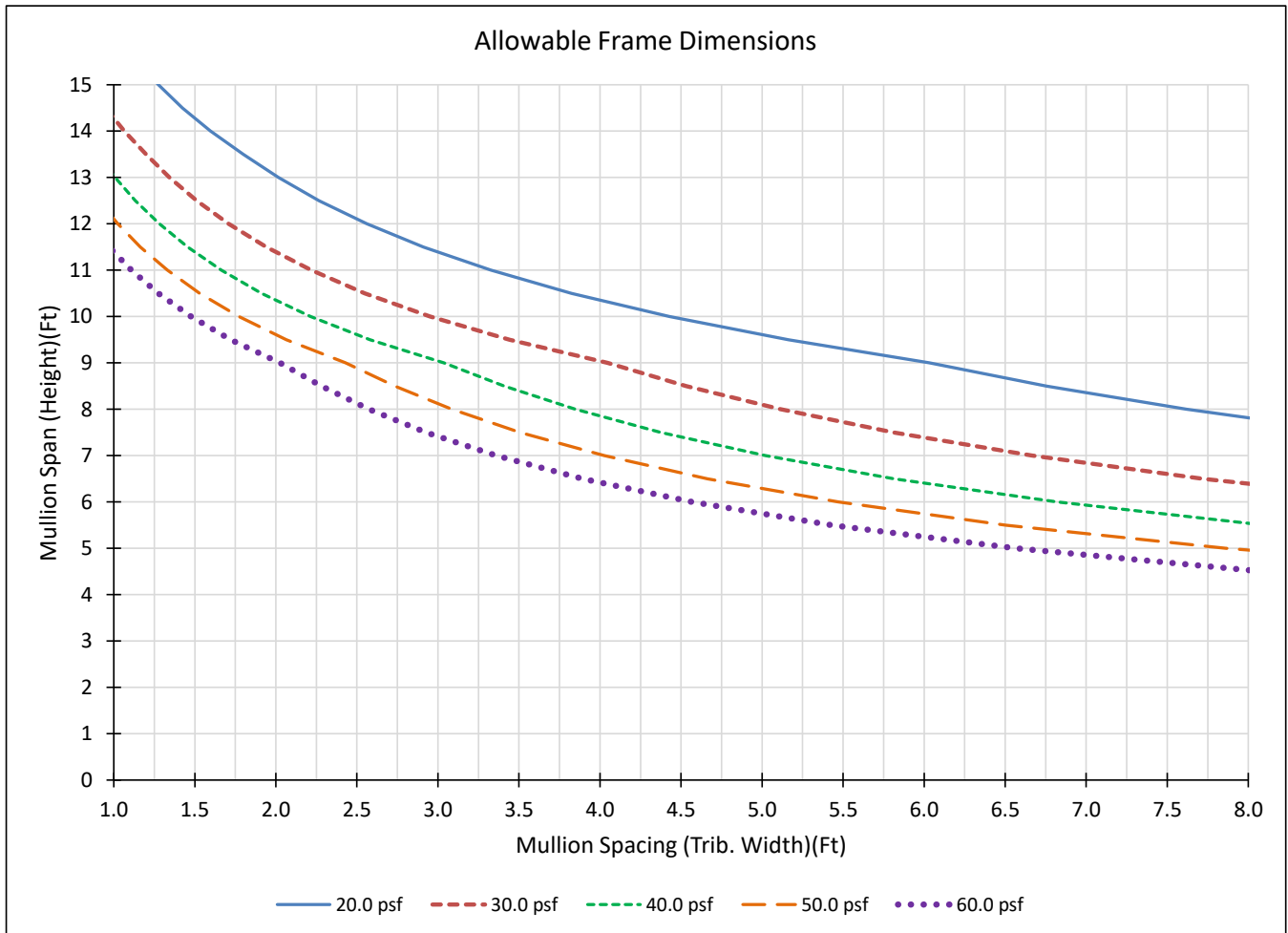
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E = 10100 ksi      A = 1.196 in<sup>2</sup>  
 $I_{x, \text{alum}}$  = 3.196 in<sup>4</sup>       $Z_{x, \text{alum}}$  = 1.637 in  
 $S_{x, \text{alum}}$  = 1.327 in<sup>3</sup>      wt = 1.437 lb/ft  
 Reinforcing: **No Reinforcing**  
 $I_{x, \text{steel}}$  = 0.000 in<sup>4</sup>       $S_{x, \text{steel}}$  = 0.000 in<sup>3</sup>  
 $I_{\text{combined}}$  = 2.876 in<sup>4</sup>

Curves are based on deflection limits of L/175 for L ≤ 13'-6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	866	792	523



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.



## Wind Load Chart including Unbraced Length Effects

**Kawneer 451T-VG-012      6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 6'-0"**

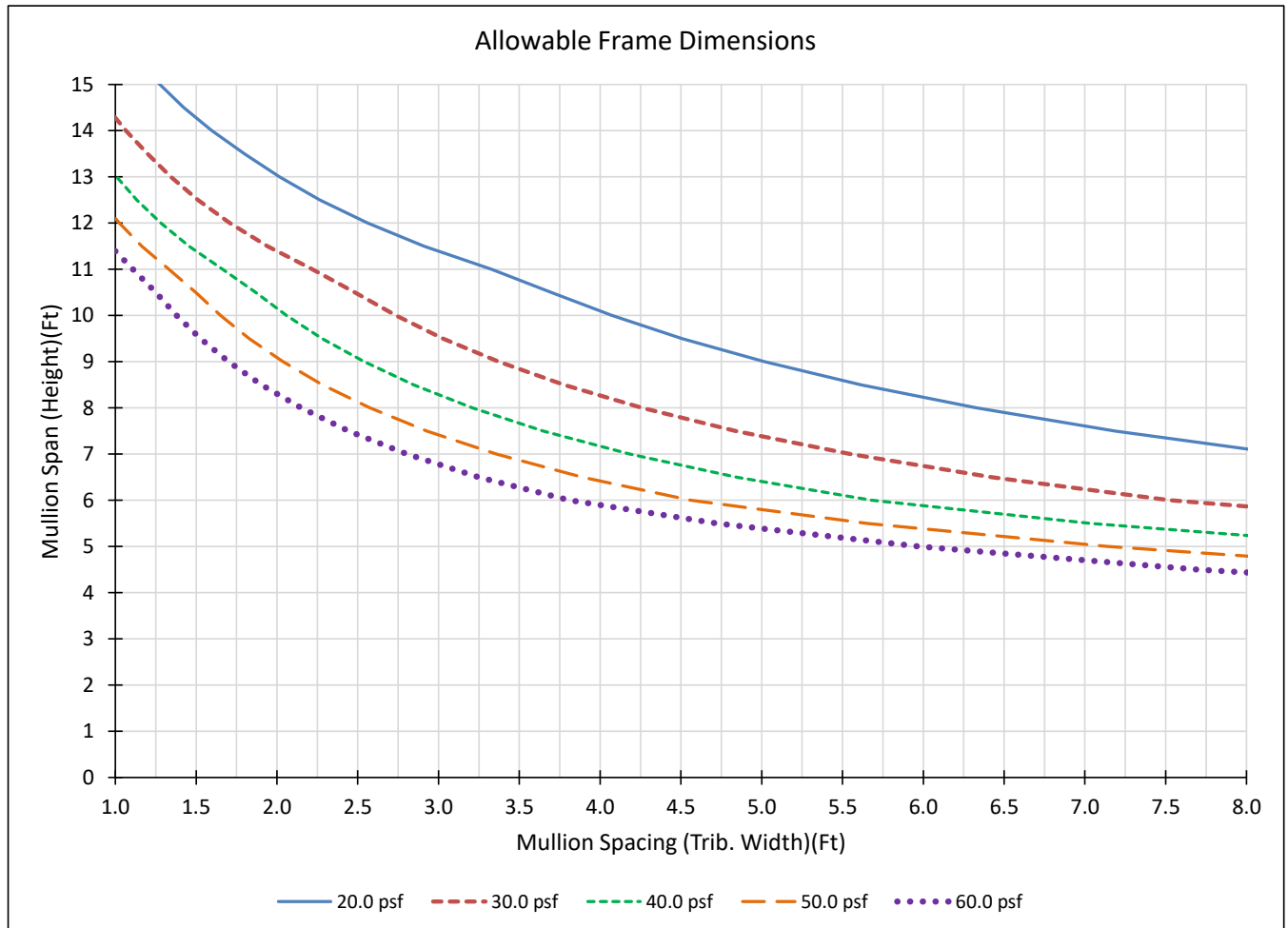
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E = 10100 ksi      A = 1.196 in<sup>2</sup>  
 $I_{x, \text{alum}} = 3.196 \text{ in}^4$        $Z_{x, \text{alum}} = 1.637 \text{ in}$   
 $S_{x, \text{alum}} = 1.327 \text{ in}^3$       wt = 1.437 lb/ft  
 Reinforcing: **No Reinforcing**  
 $I_{x, \text{steel}} = 0.000 \text{ in}^4$        $S_{x, \text{steel}} = 0.000 \text{ in}^3$   
 $I_{\text{combined}} = 2.876 \text{ in}^4$

Curves are based on deflection limits of L/175 for L ≤ 13'-6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	866	792	523



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.



## Wind Load Chart including Unbraced Length Effects

**Kawneer 451T-VG-012      6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 10'-0"**

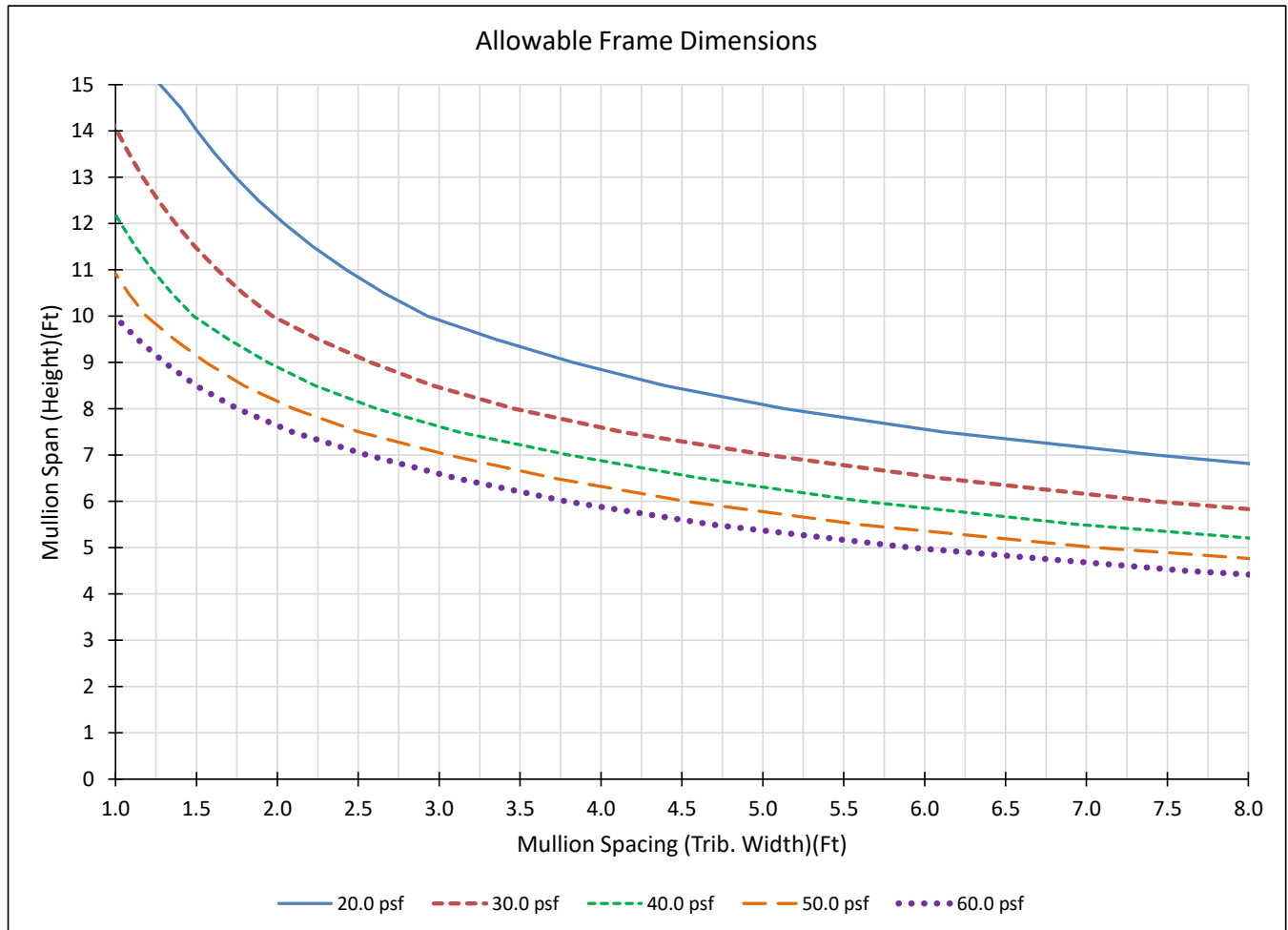
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E = 10100 ksi      A = 1.196 in<sup>2</sup>  
 $I_{x, \text{alum}}$  = 3.196 in<sup>4</sup>       $Z_{x, \text{alum}}$  = 1.637 in  
 $S_{x, \text{alum}}$  = 1.327 in<sup>3</sup>      wt = 1.437 lb/ft  
 Reinforcing: **No Reinforcing**  
 $I_{x, \text{steel}}$  = 0.000 in<sup>4</sup>       $S_{x, \text{steel}}$  = 0.000 in<sup>3</sup>  
 $I_{\text{combined}}$  = 2.876 in<sup>4</sup>

Curves are based on deflection limits of L/175 for L ≤ 13'-6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	866	792	523



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.



## Wind Load Chart including Unbraced Length Effects

**Kawneer 451T-VG-014      6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 3'-0"**

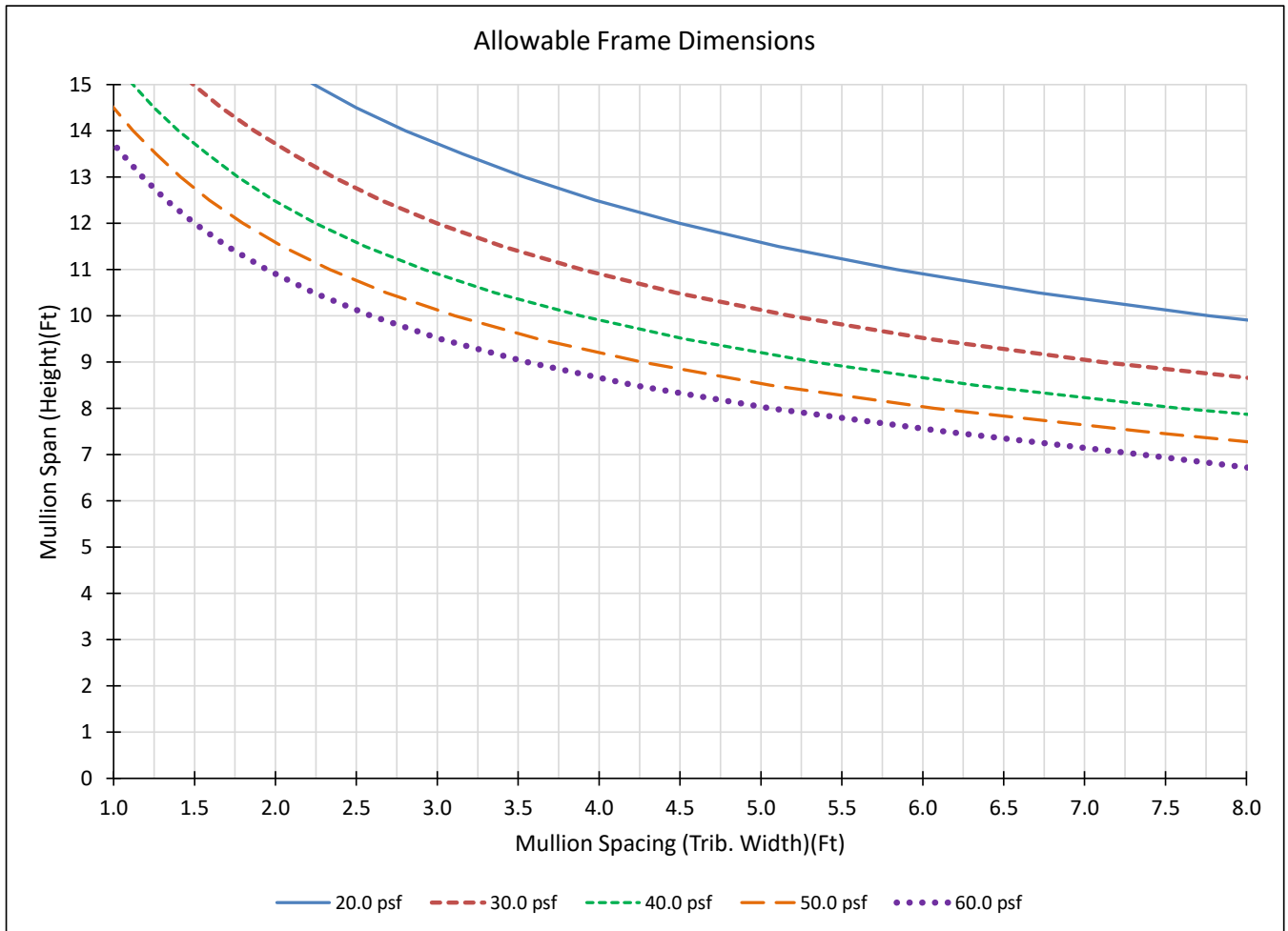
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E =	10100 ksi	A =	2.246 in <sup>2</sup>
I <sub>x, alum</sub> =	5.609 in <sup>4</sup>	Z <sub>x, alum</sub> =	3.076 in
S <sub>x, alum</sub> =	2.399 in <sup>3</sup>	wt =	2.698 lb/ft
Reinforcing:	No Reinforcing		
I <sub>x, steel</sub> =	0.000 in <sup>4</sup>	S <sub>x, steel</sub> =	0.000 in <sup>3</sup>
I <sub>combined</sub> =	5.048 in <sup>4</sup>		

Curves are based on deflection limits of L/175 for L ≤ 13'6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	1010	1010	1009



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.



## Wind Load Chart including Unbraced Length Effects

**Kawneer 451T-VG-014      6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 6'-0"**

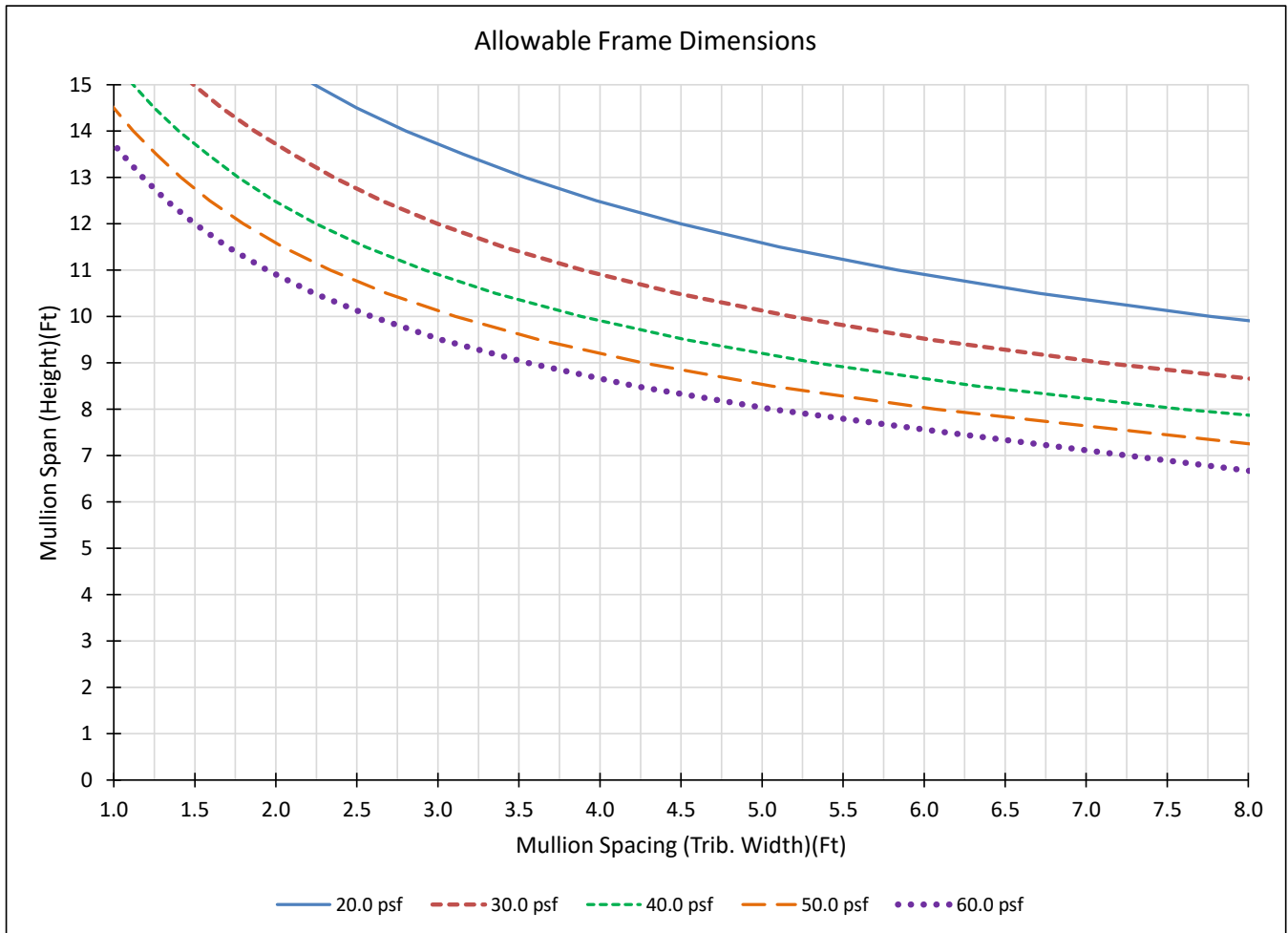
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E = 10100 ksi      A = 2.246 in<sup>2</sup>  
 I<sub>x, alum</sub> = 5.609 in<sup>4</sup>      Z<sub>x, alum</sub> = 3.076 in  
 S<sub>x, alum</sub> = 2.399 in<sup>3</sup>      wt = 2.698 lb/ft  
 Reinforcing: **No Reinforcing**  
 I<sub>x, steel</sub> = 0.000 in<sup>4</sup>      S<sub>x, steel</sub> = 0.000 in<sup>3</sup>  
 I<sub>combined</sub> = 5.048 in<sup>4</sup>

Curves are based on deflection limits of L/175 for L ≤ 13'6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	1010	1010	1009



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.



## Wind Load Chart including Unbraced Length Effects

**Kawneer 451T-VG-014      6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 10'-0"**

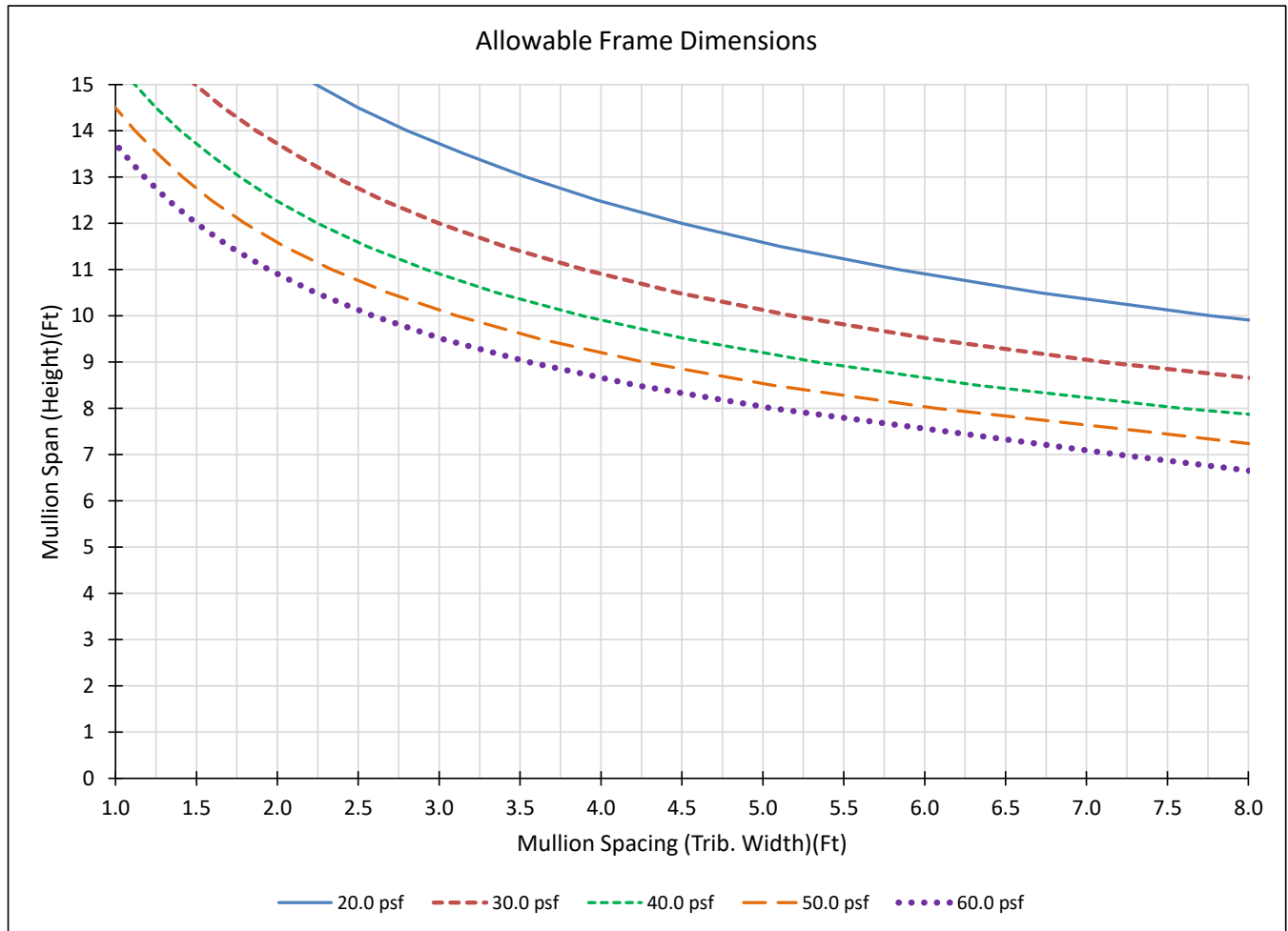
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E = 10100 ksi      A = 2.246 in<sup>2</sup>  
 $I_{x, \text{alum}}$  = 5.609 in<sup>4</sup>       $Z_{x, \text{alum}}$  = 3.076 in  
 $S_{x, \text{alum}}$  = 2.399 in<sup>3</sup>      wt = 2.698 lb/ft  
 Reinforcing: **No Reinforcing**  
 $I_{x, \text{steel}}$  = 0.000 in<sup>4</sup>       $S_{x, \text{steel}}$  = 0.000 in<sup>3</sup>  
 $I_{\text{combined}}$  = 5.048 in<sup>4</sup>

Curves are based on deflection limits of L/175 for L ≤ 13'6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	1010	1010	1009



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.



## Wind Load Chart including Unbraced Length Effects

**Kawneer 451-VG-019 6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 3'-0"**

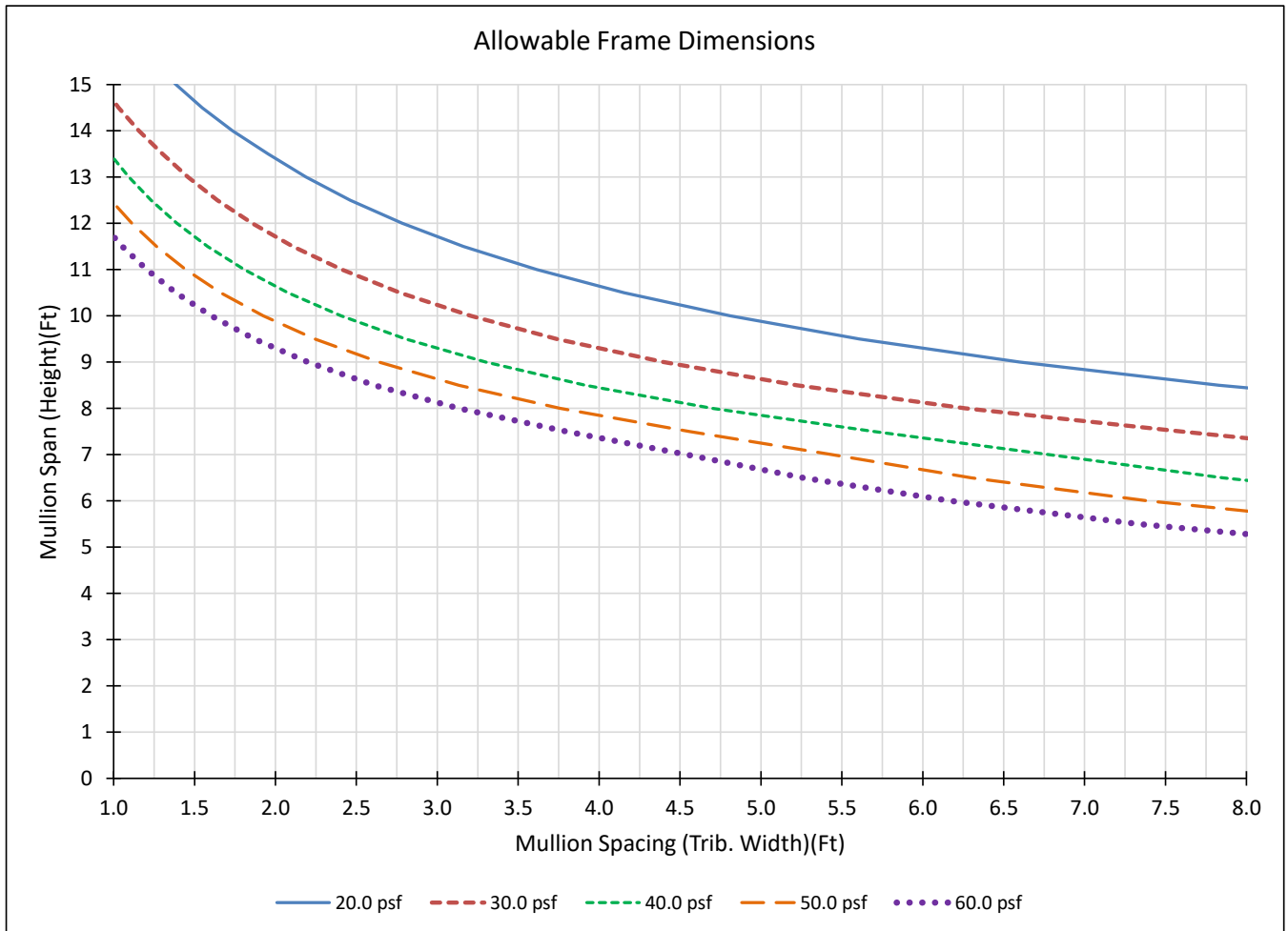
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

E = 10100 ksi      A = 1.254 in<sup>2</sup>  
 $I_{x, \text{alum}}$  = 3.125 in<sup>4</sup>       $Z_{x, \text{alum}}$  = 1.720 in  
 $S_{x, \text{alum}}$  = 1.333 in<sup>3</sup>      wt = 1.507 lb/ft  
 Reinforcing: **No Reinforcing**  
 $I_{x, \text{steel}}$  = 0.000 in<sup>4</sup>       $S_{x, \text{steel}}$  = 0.000 in<sup>3</sup>  
 $I_{\text{combined}}$  = 3.125 in<sup>4</sup>

Curves are based on deflection limits of L/175 for L ≤ 13'6" or L/240 + 1/4" for L > 13'-6" and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	1117	1117	1117



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.



## Wind Load Chart including Unbraced Length Effects

**Kawneer 451-VG-019 6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 6'-0"**

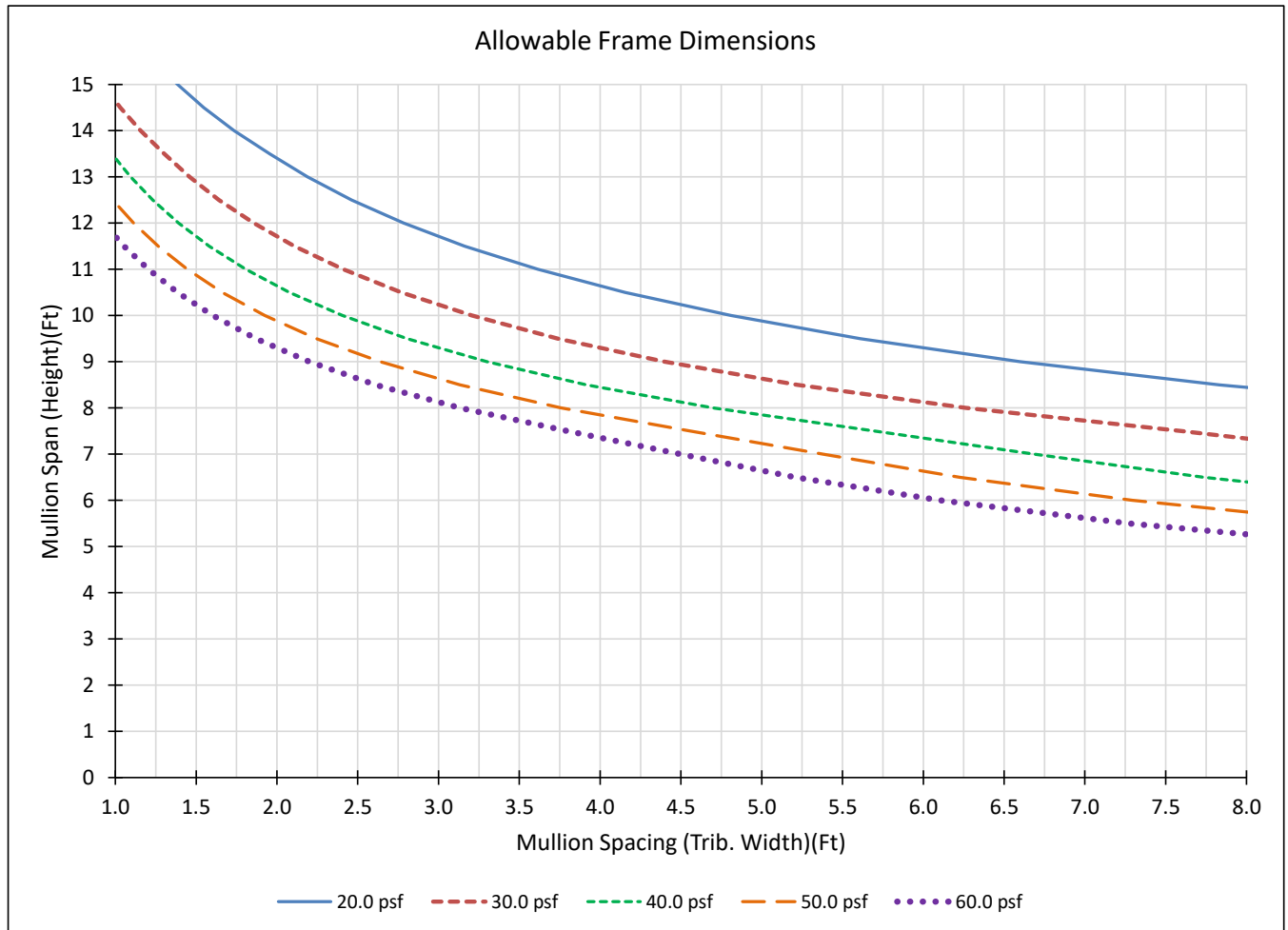
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

$E = 10100 \text{ ksi}$        $A = 1.254 \text{ in}^2$   
 $I_{x, \text{alum}} = 3.125 \text{ in}^4$        $Z_{x, \text{alum}} = 1.720 \text{ in}$   
 $S_{x, \text{alum}} = 1.333 \text{ in}^3$        $wt = 1.507 \text{ lb/ft}$   
 Reinforcing: **No Reinforcing**  
 $I_{x, \text{steel}} = 0.000 \text{ in}^4$        $S_{x, \text{steel}} = 0.000 \text{ in}^3$   
 $I_{\text{combined}} = 3.125 \text{ in}^4$

Curves are based on deflection limits of  $L/175$  for  $L \leq 13'6"$  or  $L/240 + 1/4"$  for  $L > 13'6"$  and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	1117	1117	1117



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

**Disclaimer:** This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.





## Wind Load Chart including Unbraced Length Effects

**Kawneer 451-VG-019 6063-T6 Aluminum**

**Maximum Horizontal Mullion Center Line Spacing (Unbraced Length) = 10'-0"**

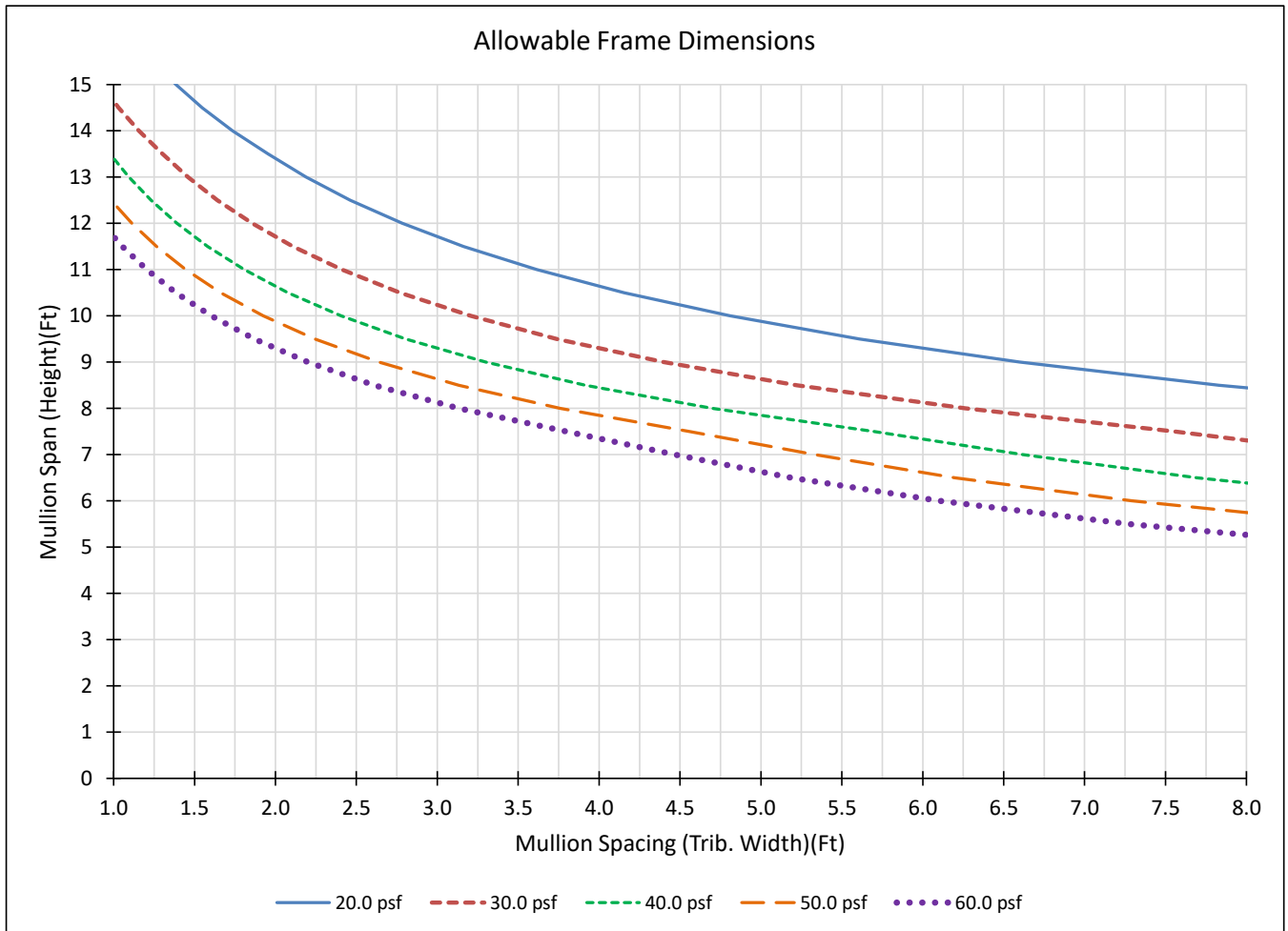
IBC 2015 - ASCE7-10 ASD - 2015 Aluminum Design Manual

$E = 10100 \text{ ksi}$        $A = 1.254 \text{ in}^2$   
 $I_{x, \text{alum}} = 3.125 \text{ in}^4$        $Z_{x, \text{alum}} = 1.720 \text{ in}$   
 $S_{x, \text{alum}} = 1.333 \text{ in}^3$        $wt = 1.507 \text{ lb/ft}$   
 Reinforcing: **No Reinforcing**  
 $I_{x, \text{steel}} = 0.000 \text{ in}^4$        $S_{x, \text{steel}} = 0.000 \text{ in}^3$   
 $I_{\text{combined}} = 3.125 \text{ in}^4$

Curves are based on deflection limits of  $L/175$  for  $L \leq 13'6"$  or  $L/240 + 1/4"$  for  $L > 13'6"$  and limiting stress (moment) according to Chapters B, C & F of the listed Aluminum Design Manual version.

If mullion span < max horizontal spacing, horizontals are not required.

JEI Efficiency Number (Higher is better)	Horizontal Mullion Spacing (ft):	2.5 ft	5.0 ft	10.0 ft
	Efficiency Number:	1117	1117	1117



Using this chart: Plot the mullion height (span) and the intended mullion spacing. If mullion spacing is uneven, add the DLO width on each side of the mullion and divide by 2. Plotted points below a given curve are acceptable for that design pressure (PSF). Plotted points above a given curve will require a heavier mullion or reinforcing for that design pressure (PSF).

Disclaimer: This chart is not a replacement for review by a licensed structural engineer and shall not be used for final installation or in lieu of sealed engineering calculations. This chart is only valid for the manufacturer part number, aluminum alloy, ASCE7 version and Aluminum Design Manual version listed above. All project criteria must meet these criteria for the chart to be a valid estimating tool. Verify the listed mullion properties against manufacture's published values to verify validity prior to use of this chart.