

**General** - Presented in the load tables are maximum uniformly distributed specified loads.

**Steel** - Conforms to ASTM A653/A653M or A792/A792M. Grade 33/230; Yield stress 33 ksi/230 MPa and tensile stress 45 ksi/310 MPa. Grade 50 /345; Yield stress 50 ksi/345 MPa and tensile stress 65 ksi/450 MPa; Grade 80 /550; Yield stress 80 ksi/550 MPa and tensile stress 82 ksi/565 MPa.

**Finishes** - A25/ZF75, G90/Z275 or AZ50/AZM150. For heavier metallic coatings, refer to ASTM A653/A653M or A792/A792M.

**Load Tables** - The following information regarding the determination of the specified wind and snow loads is contained in the 2015 Edition of the National Building Code of Canada (NBCC). Importance factors are applied to both strength (ULS) and serviceability/deflection (SLS) limit state design considerations. A lower load factor for wind of 1.4, instead of 1.5 for live and snow loads is used. This lower load factor for wind somewhat offsets the higher wind loads (1 in 50 year return) that are now listed in the NBCC by geographic location. The importance category of the end use of the building/structure must also be recognized, such as Normal or Low.

All of this will impact how the load tables are to be used. In an effort to help the design professional with the load tables, the information below was taken directly from Division B, Part 4 (Structural Design) of the NBCC.

### Specified External Wind Load

$$p = I_w [q C_e C_d C_g C_p] \quad [1]$$

Importance Category	Importance Factor, $I_w$	
	ULS	SLS
Low	0.8	0.75
Normal	1.0	0.75
High	1.15	0.75
Post-Disaster	1.25	0.75

### Specified Snow Load

$$S = I_s [S_s (C_b C_w C_s C_a) + S_f] \quad [2]$$

Importance Category	Importance Factor, $I_s$	
	ULS	SLS
Low	0.8	0.9
Normal	1.0	0.9
High	1.15	0.9
Post-Disaster	1.25	0.9

The importance factors,  $I_w$  and  $I_s$ , have been incorporated in the load tables, as well as the importance category. The parameters in the **boxed-in** portion of Equations [1] and [2] must be determined by the design professional in accordance with the NBCC.

**Strength** - The maximum uniformly distributed specified load based on strength in the load table must be equal to or greater than (**Specified live load + 0.833 times the specified dead load**). Where  $0.833 = 1.25/1.5$ . The specified live load can be either due to use and occupancy or snow load. In cases where live load and snow load act together, the load combination factors in the NBCC must be followed.

**Serviceability (Deflection)** - The maximum uniformly distributed specified load based on deflection in the load table must be equal to or greater than the specified live load. The effective moment of inertia for deflection determination was calculated at an assumed specified live load stress of  $0.6F_y$ .

### EXAMPLE (Use of Load Table)

#### AWR Roof (Normal Importance Category)

Given: (Imperial units)

(LLF = 1.5 and  $I_s = 0.9$ )

~ Panel thickness,  $t = 0.024$  in

~ Triple span continuous,  $L = 4$  ft each span

~ Bearing length,  $N = 3$  in

~ L/240 deflection limit

~ Specified Loads

1) Dead load (DL) panel DL = 1.23 psf

2) Snow Live load (LL) LL = 40 psf

**The live load is the value of the boxed-in portion of the specified snow load expression [2].**

**Solution:**  
**Strength "S"**

1) Specified load  $[LL + 0.833DL] = 41.0$  psf

2) Maximum specified load (from Load Table for Grade 33)

$I_s$  **49 psf**

Since  $49 > 41.0 \therefore$  OK

3) Check web crippling ( $N = 3$  in)

a) End reaction =  $0.400(41.0)4 =$  **66 lb/ft**  
 (from section property table)

$P_e = P_{e1} + P_{e2} [N/t]^{1/2}$   
 $= 45.4 + 11.3[3/0.024]^{1/2} =$  **172 lb/ft**

Since **172 > 66**  $\therefore$  OK

b) Interior reaction =  $1.10(41.0)4 =$  **180 lb/ft**  
 (from section property table)

$P_i = P_{i1} + P_{i2} [N/t]^{1/2}$   
 $= 87.6 + 14.9[3/0.024]^{1/2} =$  **254 lb/ft**

Since **254 > 180**  $\therefore$  OK

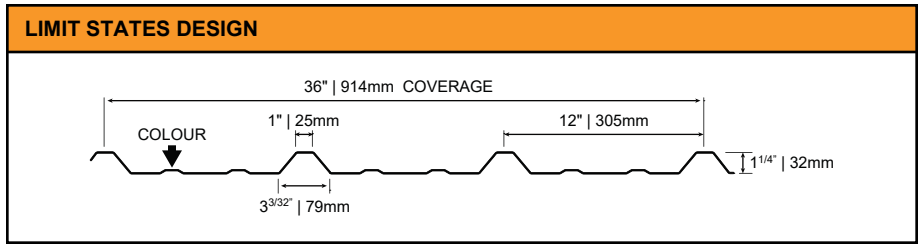
**Deflection "D"**

From table L/180 = **166 psf**

For L/240, multiply 166 by  $180/240 =$  **125 psf**

Since **125 > 40**  $\therefore$  OK

1. Based on ASTM A 653 structural steel.
2. Values in row "S" are based on strength.
3. Values in row "D" are based on deflection of 1/180th span.
4. Web crippling not included in strength calculation. See example.
5. Limit States Design principles were used in accordance with CSA Standard S136-16.



**SECTION PROPERTIES | Per Foot of Width**

Base Steel Thickness (in.)	Weight [G90] (psf)	Yield Stress (ksi)	Section Modulus		Deflection Moment of Inertia (in <sup>4</sup> )	Specified Web Crippling Data			
			Midspan (in <sup>3</sup> )	Support (in <sup>3</sup> )		Pe1 End (lb)	Pe2 End (lb)	Pi1 Interior (lb)	Pi2 Interior (lb)
0.0180	0.94	33	0.0406	0.0343	0.0435	24.2	6.04	46.8	7.96
0.0180	0.94	50	0.0385	0.0326	0.0430	36.6	9.15	70.9	12.1
0.0180	0.94	80	0.0376	0.0315	0.0426	43.5	10.9	84.4	14.3
0.0240	1.23	33	0.0571	0.0476	0.0579	45.4	11.3	87.6	14.9
0.0300	1.53	33	0.0710	0.0613	0.0722	73.5	18.4	142	24.1

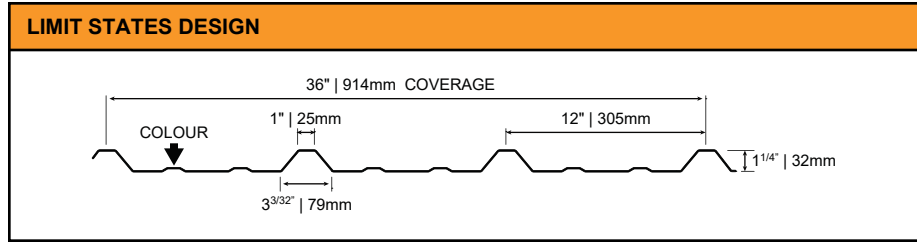
LLF = 1.50; IMPF = 0.90; NORMAL OCCUPANCY = 1.0

**LOAD TABLE | Maximum Uniformly Distributed Specified Loads (psf).**

Span Length (ft)		1-Span Base Steel Thickness (in.)					2-Span Base Steel Thickness (in.)					3-Span Base Steel Thickness (in.)				
		0.0180	0.0180	0.0180	0.0240	0.0300	0.0180	0.0180	0.0240	0.0300	0.0180	0.0180	0.0240	0.0300		
Y.S.* (ksi)		33	50	80	33	33	33	50	80	33	33	33	50	80	33	33
2.0	S	134	192	223	188	234	113	163	187	157	202	142	204	234	196	253
2.0	D	527	522	516	701	875	1264	1252	1239	1683	2101	996	986	976	1325	1654
2.5	S	86	123	143	121	150	73	104	120	101	129	91	131	150	126	162
2.5	D	270	267	264	359	448	647	641	634	862	1076	510	505	500	679	847
3.0	S	60	85	99	84	104	50	73	83	70	90	63	91	104	87	112
3.0	D	156	155	153	208	259	375	371	367	499	622	295	292	289	393	490
3.5	S	44	63	73	61	77	37	53	61	51	66	46	67	76	64	83
3.5	D	98	97	96	131	163	236	234	231	314	392	186	184	182	247	309
4.0	S	34	48	56	47	59	28	41	47	39	51	35	51	59	49	63
4.0	D	66	65	65	88	109	158	156	155	210	263	124	123	122	166	207
4.5	S	26	38	44	37	46	22	32	37	31	40	28	40	46	39	50
4.5	D	46	46	45	62	77	111	110	109	148	184	87	87	86	116	145
5.0	S	21	31	36	30	37	18	26	30	25	32	23	33	37	31	40
5.0	D	34	33	33	45	56	81	80	79	108	134	64	63	62	85	106
5.5	S	18	25	30	25	31	15	22	25	21	27	19	27	31	26	33
5.5	D	25	25	25	34	42	61	60	60	81	101	48	47	47	64	80
6.0	S	15	21	25	21	26	13	18	21	17	22	16	23	26	22	28
6.0	D	20	19	19	26	32	47	46	46	62	78	37	37	36	49	61
6.5	S	13	18	21	18	22	11	15	18	15	19	13	19	22	19	24
6.5	D	15	15	15	20	26	37	36	36	49	61	29	29	28	39	48
7.0	S	11	16	18	15	19	9	13	15	13	17	12	17	19	16	21
7.0	D	12	12	12	16	20	29	29	29	39	49	23	23	23	31	39
7.5	S	10	14	16	13	17	8	12	13	11	14	10	15	17	14	18
7.5	D	10	10	10	13	17	24	24	23	32	40	19	19	19	25	31
8.0	S	8	12	14	12	15	7	10	12	10	13	9	13	15	12	16
8.0	D	8	8	8	11	14	20	20	19	26	33	16	15	15	21	26

\*Y.S. = Yield Stress

1. Based on ASTM A 653M structural steel.
2. Values in row "S" are based on strength.
3. Values in row "D" are based on deflection of 1/180th span.
4. Web crippling not included in strength calculation. See example.
5. Limit States Design principles were used in accordance with CSA Standard S136-16.



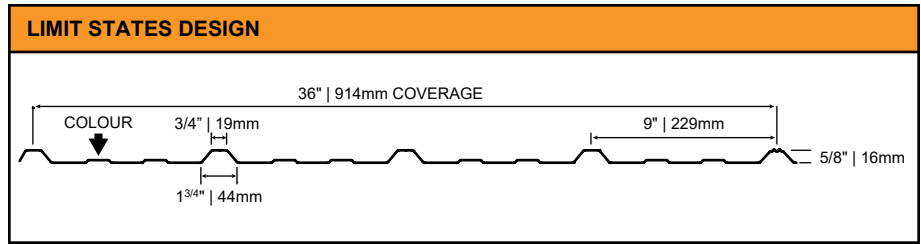
SECTION PROPERTIES   Per Metre of Width									
Base Steel Thickness (mm)	Mass [Z275] (kg/m <sup>2</sup> )	Yield Stress (MPa)	Section Modulus		Deflection Moment of Inertia (x10 <sup>6</sup> mm <sup>4</sup> )	Specified Web Crippling Data			
			Midspan (x10 <sup>3</sup> mm <sup>3</sup> )	Support (x10 <sup>3</sup> mm <sup>3</sup> )		Pe1 End (kN)	Pe2 End (kN)	Pi1 Interior (kN)	Pi2 Interior (kN)
0.457	4.59	230	2.18	1.85	0.0594	0.356	0.089	0.691	0.117
0.457	4.59	345	2.07	1.76	0.0588	0.535	0.134	1.04	0.176
0.457	4.59	550	2.02	1.69	0.0582	0.639	0.160	1.24	0.211
0.610	6.02	230	3.07	2.56	0.0790	0.669	0.167	1.29	0.220
0.762	7.46	230	3.82	3.29	0.0987	1.08	0.271	2.09	0.355

LLF = 1.50; IMPF = 0.90; NORMAL OCCUPANCY = 1.0

LOAD TABLE   Maximum Uniformly Distributed Specified Loads (kPa).																
Span Length (m)		1-Span Base Steel Thickness (mm)					2-Span Base Steel Thickness (mm)					3-Span Base Steel Thickness (mm)				
		0.457	0.457	0.610	0.762		0.457	0.457	0.610	0.762		0.457	0.457	0.610	0.762	
YS* (MPa)		230	345	550	230	230	230	345	550	230	230	230	345	550	230	230
1.0	S	2.41	3.42	4.00	3.39	4.21	2.04	2.91	3.35	2.82	3.63	2.55	3.63	4.19	3.53	4.54
1.0	D	5.71	5.66	5.60	7.61	9.49	13.7	13.6	13.4	18.3	22.8	10.8	10.7	10.6	14.4	18.0
1.2	S	1.67	2.38	2.78	2.35	2.93	1.41	2.02	2.33	1.96	2.52	1.77	2.52	2.91	2.45	3.15
1.2	D	3.31	3.27	3.24	4.40	5.49	7.94	7.86	7.77	10.6	13.2	6.25	6.19	6.12	8.32	10.4
1.4	S	1.23	1.75	2.04	1.73	2.15	1.04	1.48	1.71	1.44	1.85	1.30	1.85	2.14	1.80	2.32
1.4	D	2.08	2.06	2.04	2.77	3.46	5.00	4.95	4.90	6.65	8.30	3.94	3.90	3.86	5.24	6.54
1.6	S	0.94	1.34	1.56	1.32	1.65	0.80	1.14	1.31	1.10	1.42	0.99	1.42	1.63	1.38	1.77
1.6	D	1.39	1.38	1.37	1.86	2.32	3.35	3.31	3.28	4.46	5.56	2.64	2.61	2.58	3.51	4.38
1.8	S	0.74	1.06	1.23	1.05	1.30	0.63	0.90	1.03	0.87	1.12	0.79	1.12	1.29	1.09	1.40
1.8	D	0.98	0.97	0.96	1.30	1.63	2.35	2.33	2.30	3.13	3.91	1.85	1.83	1.81	2.47	3.08
2.0	S	0.60	0.86	1.00	0.85	1.05	0.51	0.73	0.84	0.71	0.91	0.64	0.91	1.05	0.88	1.14
2.0	D	0.71	0.71	0.70	0.95	1.19	1.71	1.70	1.68	2.28	2.85	1.35	1.34	1.32	1.80	2.24
2.2	S	0.50	0.71	0.83	0.70	0.87	0.42	0.60	0.69	0.58	0.75	0.53	0.75	0.86	0.73	0.94
2.2	D	0.54	0.53	0.53	0.71	0.89	1.29	1.28	1.26	1.71	2.14	1.01	1.00	0.99	1.35	1.69
2.4	S	0.42	0.59	0.69	0.59	0.73	0.35	0.50	0.58	0.49	0.63	0.44	0.63	0.73	0.61	0.79
2.4	D	0.41	0.41	0.40	0.55	0.69	0.99	0.98	0.97	1.32	1.65	0.78	0.77	0.77	1.04	1.30
2.6	S	0.36	0.51	0.59	0.50	0.62	0.30	0.43	0.50	0.42	0.54	0.38	0.54	0.62	0.52	0.67
2.6	D	0.33	0.32	0.32	0.43	0.54	0.78	0.77	0.76	1.04	1.30	0.61	0.61	0.60	0.82	1.02
2.8	S	0.31	0.44	0.51	0.43	0.54	0.26	0.37	0.43	0.36	0.46	0.32	0.46	0.53	0.45	0.58
2.8	D	0.26	0.26	0.25	0.35	0.43	0.62	0.62	0.61	0.83	1.04	0.49	0.49	0.48	0.65	0.82
3.0	S	0.27	0.38	0.44	0.38	0.47	0.23	0.32	0.37	0.31	0.40	0.28	0.40	0.47	0.39	0.50
3.0	D	0.21	0.21	0.21	0.28	0.35	0.51	0.50	0.50	0.68	0.84	0.40	0.40	0.39	0.53	0.66

\*Y.S. = Yield Stress

1. Based on ASTM A 653 structural steel.
2. Values in row "S" are based on strength.
3. Values in row "D" are based on deflection of 1/180th span.
4. Web crippling not included in strength calculation. See example.
5. Limit States Design principles were used in accordance with CSA Standard S136-16.



**SECTION PROPERTIES | Per Foot of Width**

Base Steel Thickness (in.)	Weight [G90] (psf)	Yield Stress (ksi)	Section Modulus		Deflection Moment of Inertia (in <sup>4</sup> )	Specified Web Crippling Data			
			Midspan (in <sup>3</sup> )	Support (in <sup>3</sup> )		Pe1 End (lb)	Pe2 End (lb)	Pi1 Interior (lb)	Pi2 Interior (lb)
0.0135	0.68	80	0.0108	0.0097	0.0064	35.0	8.76	64.0	10.9
0.0180	0.88	50	0.0163	0.0143	0.0087	54.3	13.6	100	17.0

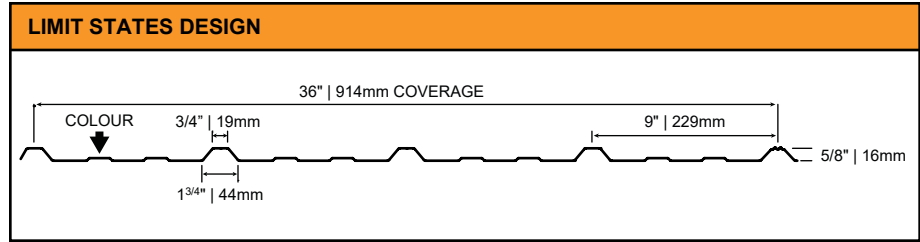
LLF = 1.50; IMPF = 0.90; NORMAL OCCUPANCY = 1.0

**LOAD TABLE | Maximum Uniformly Distributed Specified Loads (psf).**

Span Length (ft)		1-Span Base Steel Thickness (in.)				2-Span Base Steel Thickness (in.)				3-Span Base Steel Thickness (in.)			
		0.0135	0.0180			0.0135	0.0180			0.0135	0.0180		
Y.S.* (ksi)		80	50			80	50			80	50		
1.5	S	116	145			103	127			129	159		
1.5	D	184	250			440	601			347	473		
2.0	S	65	81			58	71			72	89		
2.0	D	77	106			186	254			146	200		
2.5	S	42	52			37	46			46	57		
2.5	D	40	54			95	130			75	102		
3.0	S	29	36			26	32			32	40		
3.0	D	23	31			55	75			43	59		
3.5	S	21	27			19	23			24	29		
3.5	D	14	20			35	47			27	37		
4.0	S	16	20			14	18			18	22		
4.0	D	10	13			23	32			18	25		
4.5	S	13	16			11	14			14	18		
4.5	D	7	9			16	22			13	18		
5.0	S	10	13			9	11			12	14		
5.0	D	5	7			12	16			9	13		

\*Y.S. = Yield Stress

1. Based on ASTM A 653M structural steel.
2. Values in row "S" are based on strength.
3. Values in row "D" are based on deflection of 1/180th span.
4. Web crippling not included in strength calculation. See example.
5. Limit States Design principles were used in accordance with CSA Standard S136-16.



**SECTION PROPERTIES | Per Metre of Width**

Base Steel Thickness (mm)	Mass [Z275] (kg/m <sup>2</sup> )	Yield Stress (MPa)	Section Modulus		Deflection Moment of Inertia (x10 <sup>6</sup> mm <sup>4</sup> )	Specified Web Crippling Data			
			Midspan (x10 <sup>3</sup> mm <sup>3</sup> )	Support (x10 <sup>3</sup> mm <sup>3</sup> )		Pe1 End (kN)	Pe2 End (kN)	Pi1 Interior (kN)	Pi2 Interior (kN)
0.343	3.30	550	0.583	0.519	0.0087	0.510	0.127	0.932	0.158
0.457	4.31	345	0.876	0.768	0.0119	0.792	0.198	1.46	0.248

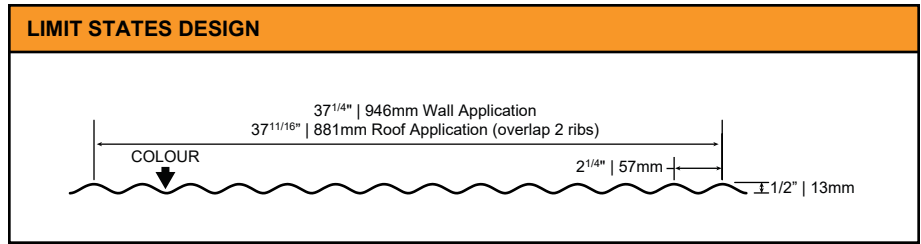
LLF = 1.50; IMPF = 0.90; NORMAL OCCUPANCY = 1.0

**LOAD TABLE | Maximum Uniformly Distributed Specified Loads (kPa).**

Span Length (m)		1-Span Base Steel Thickness (mm)				2-Span Base Steel Thickness (mm)				3-Span Base Steel Thickness (mm)			
		0.343	0.457			0.343	0.457			0.343	0.457		
YS* (MPa)		550	345			550	345			550	345		
0.5	S	4.62	5.80			4.11	5.09			5.14	6.36		
0.5	D	6.72	9.17			16.1	22.0			12.7	17.3		
0.6	S	3.21	4.03			2.86	3.53			3.57	4.42		
0.6	D	3.89	5.31			9.33	12.7			7.35	10.0		
0.8	S	1.80	2.27			1.61	1.99			2.01	2.48		
0.8	D	1.64	2.24			3.94	5.37			3.10	4.23		
1.0	S	1.16	1.45			1.03	1.27			1.29	1.59		
1.0	D	0.84	1.15			2.02	2.75			1.59	2.17		
1.2	S	0.80	1.01			0.71	0.88			0.89	1.10		
1.2	D	0.49	0.66			1.17	1.59			0.92	1.25		
1.4	S	0.59	0.74			0.52	0.65			0.66	0.81		
1.4	D	0.31	0.42			0.73	1.00			0.58	0.79		
1.6	S	0.45	0.57			0.40	0.50			0.50	0.62		
1.6	D	0.21	0.28			0.49	0.67			0.39	0.53		

\*Y.S. = Yield Stress

1. Based on ASTM A 653 structural steel.
2. Values in row "S" are based on strength.
3. Values in row "D" are based on deflection of 1/180th span.
4. Web crippling not included in strength calculation. See example.
5. Limit States Design principles were used in accordance with CSA Standard S136-16.



**SECTION PROPERTIES | Per Foot of Width**

Base Steel Thickness (in.)	Weight [G90] (psf)	Yield Stress (ksi)	Section Modulus		Deflection Moment of Inertia (in <sup>4</sup> )	Specified Web Crippling Data			
			Midspan (in <sup>3</sup> )	Support (in <sup>3</sup> )		Pe1 End (lb)	Pe2 End (lb)	Pi1 Interior (lb)	Pi2 Interior (lb)
0.0180	0.85	33	0.0235	0.0235	0.0059				
0.0180	0.85	50	0.0235	0.0235	0.0059				

LLF = 1.50; IMPF = 0.90; NORMAL OCCUPANCY = 1.0

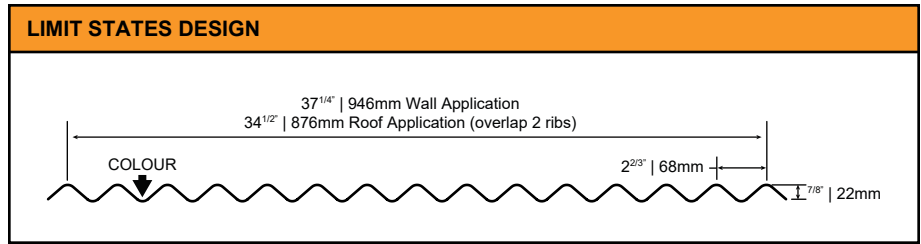
**LOAD TABLE | Maximum Uniformly Distributed Specified Loads (psf).**

Span Length (ft)		1-Span Base Steel Thickness (in.)				2-Span Base Steel Thickness (in.)				3-Span Base Steel Thickness (in.)			
		0.0180	0.0180			0.0180	0.0180			0.0180	0.0180		
Y.S.* (ksi)		33	50			33	50			33	50		
1.5	S	138	209			138	209			172	261		
1.5	D	169	169			405	405			319	319		
2.0	S	77	117			78	117			97	147		
2.0	D	71	71			171	171			135	135		
2.5	S	50	75			50	75			62	94		
2.5	D	36	36			87	87			69	69		
3.0	S	34	52			34	52			43	65		
3.0	D	21	21			51	51			40	40		
3.5	S	25	38			25	38			32	48		
3.5	D	13	13			32	32			25	25		
4.0	S					19	29			24	37		
4.0	D					21	21			17	17		
4.5	S					15	23			19	29		
4.5	D					15	15			12	12		
5.0	S					12	19						
5.0	D					11	11						
5.5	S												
5.5	D												

\*Y.S. = Yield Stress



1. Based on ASTM A 653 structural steel.
2. Values in row "S" are based on strength.
3. Values in row "D" are based on deflection of 1/180th span.
4. Web crippling not included in strength calculation. See example.
5. Limit States Design principles were used in accordance with CSA Standard S136-16.



**SECTION PROPERTIES | Per Foot of Width**

Base Steel Thickness (in.)	Weight [G90] (psf)	Yield Stress (ksi)	Section Modulus		Deflection Moment of Inertia (in <sup>4</sup> )	Specified Web Crippling Data			
			Midspan (in <sup>3</sup> )	Support (in <sup>3</sup> )		Pe1 End (lb)	Pe2 End (lb)	Pi1 Interior (lb)	Pi2 Interior (lb)
0.0180	0.97	33	0.0531	0.0531	0.0233				
0.0180	0.97	50	0.0531	0.0531	0.0233				
0.0240	1.27	33	0.0697	0.0697	0.0305				
0.0300	1.58	33	0.0856	0.0856	0.0375				

LLF = 1.50; IMPF = 0.90; NORMAL OCCUPANCY = 1.0

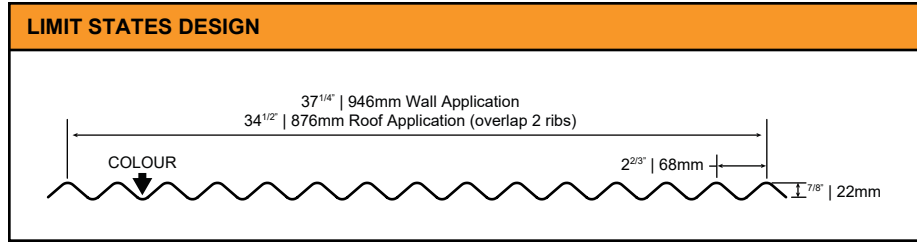
**LOAD TABLE | Maximum Uniformly Distributed Specified Loads (psf).**

Span Length (ft)		1-Span Base Steel Thickness (in.)				2-Span Base Steel Thickness (in.)				3-Span Base Steel Thickness (in.)			
		0.0180	0.0180	0.0240	0.0300	0.0180	0.0180	0.0240	0.0300	0.0180	0.0180	0.0240	0.0300
Y.S.* (ksi)		33	50	33	33	33	50	33	33	33	50	33	33
2.0	S	175	266	230	283	175	266	230	283	219	332	287	353
2.0	D	282	282	369	454	676	676	886	1089	532	532	698	858
2.5	S	112	170	147	181	112	170	147	181	140	213	184	226
2.5	D	144	144	189	232	346	346	454	558	273	273	357	439
3.0	S	78	118	102	126	78	118	102	126	97	148	128	157
3.0	D	83	83	109	134	200	200	263	323	158	158	207	254
3.5	S	57	87	75	92	57	87	75	92	72	108	94	115
3.5	D	53	53	69	85	126	126	165	203	99	99	130	160
4.0	S	44	66	57	71	44	66	57	71	55	83	72	88
4.0	D	35	35	46	57	85	85	111	136	67	67	87	107
4.5	S	35	52	45	56	35	52	45	56	43	66	57	70
4.5	D	25	25	32	40	59	59	78	96	47	47	61	75
5.0	S	28	43	37	45	28	43	37	45	35	53	46	57
5.0	D	18	18	24	29	43	43	57	70	34	34	45	55
5.5	S	23	35	30	37	23	35	30	37	29	44	38	47
5.5	D	14	14	18	22	33	33	43	52	26	26	34	41
6.0	S	19	30	26	31	19	30	26	31	24	37	32	39
6.0	D	10	10	14	17	25	25	33	40	20	20	26	32
6.5	S			22	27	17	25	22	27	21	31	27	33
6.5	D			11	13	20	20	26	32	16	16	20	25
7.0	S				23	14	22	19	23	18	27	23	29
7.0	D				11	16	16	21	25	12	12	16	20
7.5	S					12	19	16	20	16	24	20	25
7.5	D					13	13	17	21	10	10	13	16
8.0	S					11	17	14	18			18	22
8.0	D					11	11	14	17			11	13

\*Y.S. = Yield Stress



1. Based on ASTM A 653M structural steel.
2. Values in row "S" are based on strength.
3. Values in row "D" are based on deflection of 1/180th span.
4. Web crippling not included in strength calculation. See example.
5. Limit States Design principles were used in accordance with CSA Standard S136-16.



**SECTION PROPERTIES | Per Metre of Width**

Base Steel Thickness (mm)	Mass [Z275] (kg/m <sup>2</sup> )	Yield Stress (MPa)	Section Modulus		Deflection Moment of Inertia (x10 <sup>6</sup> mm <sup>4</sup> )	Specified Web Crippling Data			
			Midspan (x10 <sup>3</sup> mm <sup>3</sup> )	Support (x10 <sup>3</sup> mm <sup>3</sup> )		Pe1 End (kN)	Pe2 End (kN)	Pi1 Interior (kN)	Pi2 Interior (kN)
0.457	4.72	230	2.86	2.86	0.0317				
0.457	4.72	345	2.86	2.86	0.0317				
0.610	6.21	230	3.75	3.75	0.0416				
0.762	7.69	230	4.60	4.60	0.0512				

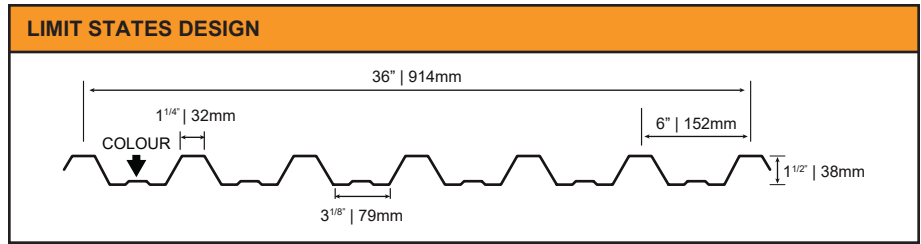
LLF = 1.50; IMPF = 0.90; NORMAL OCCUPANCY = 1.0

**LOAD TABLE | Maximum Uniformly Distributed Specified Loads (kPa).**

Span Length (m)		1-Span Base Steel Thickness (mm)				2-Span Base Steel Thickness (mm)				3-Span Base Steel Thickness (mm)			
		0.457	0.457	0.610	0.762	0.457	0.457	0.610	0.762	0.457	0.457	0.610	0.762
YS*(MPa)		230	345	230	230	230	345	230	230	230	345	230	230
1.0	S	3.15	4.73	4.14	5.08	3.15	4.73	4.14	5.08	3.94	5.91	5.17	6.35
1.0	D	3.06	3.06	4.01	4.92	7.33	7.33	9.61	11.8	5.77	5.77	7.57	9.30
1.2	S	2.19	3.29	2.87	3.53	2.19	3.29	2.87	3.53	2.74	4.11	3.59	4.41
1.2	D	1.77	1.77	2.32	2.85	4.24	4.24	5.56	6.84	3.34	3.34	4.38	5.38
1.4	S	1.61	2.41	2.11	2.59	1.61	2.41	2.11	2.59	2.01	3.02	2.64	3.24
1.4	D	1.11	1.11	1.46	1.79	2.67	2.67	3.50	4.31	2.10	2.10	2.76	3.39
1.6	S	1.23	1.85	1.62	1.99	1.23	1.85	1.62	1.99	1.54	2.31	2.02	2.48
1.6	D	0.75	0.75	0.98	1.20	1.79	1.79	2.35	2.88	1.41	1.41	1.85	2.27
1.8	S	0.97	1.46	1.28	1.57	0.97	1.46	1.28	1.57	1.22	1.83	1.60	1.96
1.8	D	0.52	0.52	0.69	0.84	1.26	1.26	1.65	2.03	0.99	0.99	1.30	1.60
2.0	S			1.03	1.27	0.79	1.18	1.03	1.27	0.99	1.48	1.29	1.59
2.0	D			0.50	0.62	0.92	0.92	1.20	1.48	0.72	0.72	0.95	1.16
2.2	S					0.65	0.98	0.85	1.05	0.81	1.22	1.07	1.31
2.2	D					0.69	0.69	0.90	1.11	0.54	0.54	0.71	0.87
2.4	S					0.55	0.82	0.72	0.88			0.90	1.10
2.4	D					0.53	0.53	0.70	0.85			0.55	0.67
2.6	S							0.61	0.75				0.94
2.6	D							0.55	0.67				0.53
2.8	S								0.65				
2.8	D								0.54				

\*Y.S. = Yield Stress

1. Based on ASTM A 653 structural steel.
2. Values in row "S" are based on strength.
3. Values in row "D" are based on deflection of 1/180th span.
4. Web crippling not included in strength calculation. See example.
5. Limit States Design principles were used in accordance with CSA Standard S136-16.



**SECTION PROPERTIES | Per Foot of Width**

Base Steel Thickness (in.)	Weight [G90] (psf)	Yield Stress (ksi)	Section Modulus		Deflection Moment of Inertia (in <sup>4</sup> )	Specified Web Crippling Data			
			Midspan (in <sup>3</sup> )	Support (in <sup>3</sup> )		Pe1 End (lb)	Pe2 End (lb)	Pi1 Interior (lb)	Pi2 Interior (lb)
0.0180	1.04	33	0.0942	0.0892	0.0988	54.1	13.5	105	17.9
0.0180	1.04	50	0.0886	0.0822	0.0961	82.0	20.5	159	27.1
0.0240	1.36	33	0.136	0.129	0.133	102	25.5	197	33.4
0.0300	1.69	33	0.177	0.165	0.166	165	41.3	318	54.1

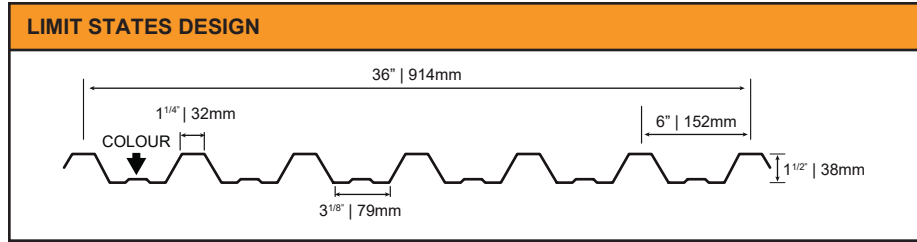
LLF = 1.50; IMPF = 0.90; NORMAL OCCUPANCY = 1.0

**LOAD TABLE | Maximum Uniformly Distributed Specified Loads (psf).**

Span Length (ft)		1-Span Base Steel Thickness (in.)				2-Span Base Steel Thickness (in.)				3-Span Base Steel Thickness (in.)			
		0.0180	0.0180	0.0240	0.0300	0.0180	0.0180	0.0240	0.0300	0.0180	0.0180	0.0240	0.0300
Y.S.* (ksi)		33	50	33	33	33	50	33	33	33	50	33	33
3.0	S	138	197	200	260	131	183	189	242	164	228	237	303
3.0	D	355	345	477	596	851	828	1145	1429	670	652	902	1126
3.5	S	102	145	147	191	96	134	139	178	120	168	174	222
3.5	D	223	217	301	375	536	521	721	900	422	411	568	709
4.0	S	78	111	112	146	74	103	106	136	92	128	133	170
4.0	D	150	146	201	251	359	349	483	603	283	275	381	475
4.5	S	61	88	89	116	58	81	84	108	73	101	105	135
4.5	D	105	102	141	176	252	245	339	423	199	193	267	333
5.0	S	50	71	72	94	47	66	68	87	59	82	85	109
5.0	D	77	75	103	129	184	179	247	309	145	141	195	243
5.5	S	41	59	59	77	39	54	56	72	49	68	70	90
5.5	D	58	56	77	97	138	134	186	232	109	106	146	183
6.0	S	35	49	50	65	33	46	47	61	41	57	59	76
6.0	D	44	43	60	74	106	103	143	179	84	81	113	141
6.5	S	29	42	43	55	28	39	40	52	35	49	50	64
6.5	D	35	34	47	59	84	81	113	141	66	64	89	111
7.0	S	25	36	37	48	24	34	35	44	30	42	43	56
7.0	D	28	27	38	47	67	65	90	113	53	51	71	89
7.5	S	22	32	32	42	21	29	30	39	26	37	38	48
7.5	D	23	22	31	38	54	53	73	91	43	42	58	72
8.0	S	19	28	28	37	18	26	27	34	23	32	33	43
8.0	D	19	18	25	31	45	44	60	75	35	34	48	59
8.5	S	17	25	25	32	16	23	24	30	20	28	29	38
8.5	D	16	15	21	26	37	36	50	63	29	29	40	49
9.0	S	15	22	22	29	15	20	21	27	18	25	26	34
9.0	D	13	13	18	22	32	31	42	53	25	24	33	42
9.5	S	14	20	20	26	13	18	19	24	16	23	24	30
9.5	D	11	11	15	19	27	26	36	45	21	21	28	35
10.0	S	12	18	18	23	12	16	17	22	15	21	21	27
10.0	D	10	9	13	16	23	22	31	39	18	18	24	30

\*Y.S. = Yield Stress

1. Based on ASTM A 653M structural steel.
2. Values in row "S" are based on strength.
3. Values in row "D" are based on deflection of 1/180th span.
4. Web crippling not included in strength calculation. See example.
5. Limit States Design principles were used in accordance with CSA Standard S136-16.



**SECTION PROPERTIES | Per Metre of Width**

Base Steel Thickness (mm)	Mass [Z275] (kg/m <sup>2</sup> )	Yield Stress (MPa)	Section Modulus		Deflection Moment of Inertia (x10 <sup>6</sup> mm <sup>4</sup> )	Specified Web Crippling Data			
			Midspan (x10 <sup>3</sup> mm <sup>3</sup> )	Support (x10 <sup>3</sup> mm <sup>3</sup> )		Pe1 End (kN)	Pe2 End (kN)	Pi1 Interior (kN)	Pi2 Interior (kN)
0.457	5.06	230	5.06	4.78	0.135	0.799	0.200	1.55	0.263
0.457	5.06	345	4.76	4.42	0.131	1.20	0.300	2.32	0.395
0.610	6.66	230	7.32	6.93	0.182	1.50	0.375	2.90	0.493
0.762	8.26	230	9.53	8.87	0.227	2.44	0.609	4.69	0.798

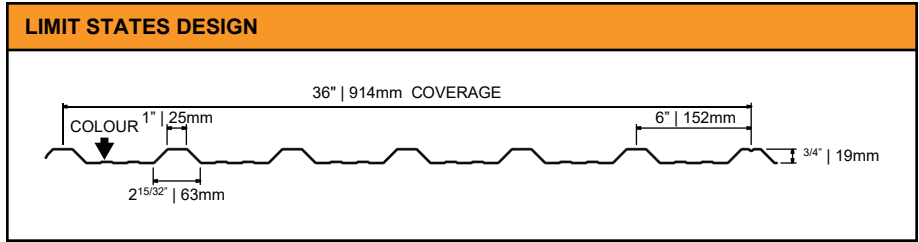
LLF = 1.50; IMPF = 0.90; NORMAL OCCUPANCY = 1.0

**LOAD TABLE | Maximum Uniformly Distributed Specified Loads (kPa).**

Span Length (m)		1-Span Base Steel Thickness (mm)				2-Span Base Steel Thickness (mm)				3-Span Base Steel Thickness (mm)			
		0.457	0.457	0.610	0.762	0.457	0.457	0.610	0.762	0.457	0.457	0.610	0.762
YS.* (MPa)		230	345	230	230	230	345	230	230	230	345	230	230
1.0	S	5.58	7.89	8.08	10.5	5.28	7.31	7.65	9.80	6.60	9.14	9.56	12.2
1.0	D	13.0	12.6	17.5	21.8	31.1	30.3	41.9	52.3	24.5	23.9	33.0	41.2
1.2	S	3.88	5.48	5.61	7.30	3.67	5.08	5.31	6.80	4.59	6.35	6.64	8.50
1.2	D	7.51	7.31	10.1	12.6	18.0	17.5	24.3	30.3	14.2	13.8	19.1	23.8
1.4	S	2.85	4.02	4.12	5.37	2.69	3.73	3.90	5.00	3.37	4.66	4.88	6.25
1.4	D	4.73	4.60	6.37	7.94	11.4	11.0	15.3	19.1	8.94	8.70	12.0	15.0
1.6	S	2.18	3.08	3.15	4.11	2.06	2.86	2.99	3.83	2.58	3.57	3.74	4.78
1.6	D	3.17	3.08	4.27	5.32	7.60	7.40	10.2	12.8	5.99	5.83	8.06	10.1
1.8	S	1.72	2.43	2.49	3.25	1.63	2.26	2.36	3.02	2.04	2.82	2.95	3.78
1.8	D	2.22	2.16	3.00	3.74	5.34	5.20	7.19	8.97	4.21	4.09	5.66	7.06
2.0	S	1.40	1.97	2.02	2.63	1.32	1.83	1.91	2.45	1.65	2.29	2.39	3.06
2.0	D	1.62	1.58	2.18	2.73	3.89	3.79	5.24	6.54	3.07	2.98	4.13	5.15
2.2	S	1.15	1.63	1.67	2.17	1.09	1.51	1.58	2.02	1.36	1.89	1.98	2.53
2.2	D	1.22	1.19	1.64	2.05	2.92	2.85	3.94	4.91	2.30	2.24	3.10	3.87
2.4	S	0.97	1.37	1.40	1.83	0.92	1.27	1.33	1.70	1.15	1.59	1.66	2.13
2.4	D	0.94	0.91	1.26	1.58	2.25	2.19	3.03	3.78	1.77	1.73	2.39	2.98
2.6	S	0.83	1.17	1.19	1.56	0.78	1.08	1.13	1.45	0.98	1.35	1.41	1.81
2.6	D	0.74	0.72	0.99	1.24	1.77	1.72	2.39	2.98	1.40	1.36	1.88	2.34
2.8	S	0.71	1.01	1.03	1.34	0.67	0.93	0.98	1.25	0.84	1.17	1.22	1.56
2.8	D	0.59	0.58	0.80	0.99	1.42	1.38	1.91	2.38	1.12	1.09	1.50	1.88
3.0	S	0.62	0.88	0.90	1.17	0.59	0.81	0.85	1.09	0.73	1.02	1.06	1.36
3.0	D	0.48	0.47	0.65	0.81	1.15	1.12	1.55	1.94	0.91	0.88	1.22	1.53
3.2	S	0.55	0.77	0.79	1.03	0.52	0.71	0.75	0.96	0.64	0.89	0.93	1.20
3.2	D	0.40	0.39	0.53	0.67	0.95	0.92	1.28	1.60	0.75	0.73	1.01	1.26
3.4	S	0.48	0.68	0.70	0.91	0.46	0.63	0.66	0.85	0.57	0.79	0.83	1.06
3.4	D	0.33	0.32	0.44	0.55	0.79	0.77	1.07	1.33	0.62	0.61	0.84	1.05

\*Y.S. = Yield Stress

1. Based on ASTM A 653 structural steel.
2. Values in row "S" are based on strength.
3. Values in row "D" are based on deflection of 1/180th span.
4. Web crippling not included in strength calculation. See example.
5. Limit States Design principles were used in accordance with CSA Standard S136-16.



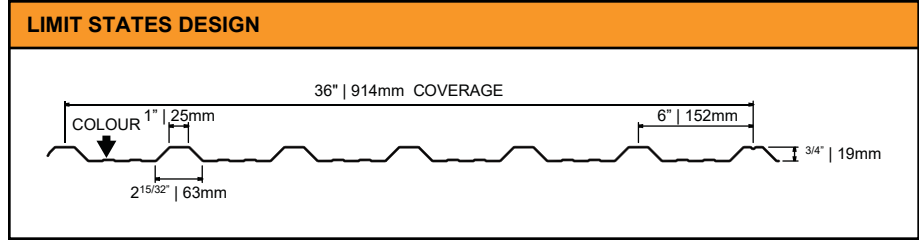
SECTION PROPERTIES   Per Foot of Width									
Base Steel Thickness (in.)	Weight (G90) (psf)	Yield Stress (ksi)	Section Modulus		Deflection Moment of Inertia (in <sup>4</sup> )	Specified Web Crippling Data			
			Midspan (in <sup>3</sup> )	Support (in <sup>3</sup> )		Pe1 End (lb)	Pe2 End (lb)	Pi1 Interior (lb)	Pi2 Interior (lb)
0.0180	0.93	50	0.0347	0.0325	0.0211	72.6	18.2	138	23.5
0.0180	0.93	80	0.0336	0.0311	0.0208	87.1	21.8	166	28.2

LLF = 1.50; IMPF = 0.90; NORMAL OCCUPANCY = 1.0

LOAD TABLE   Maximum Uniformly Distributed Specified Loads (psf).													
Span Length (ft)		1-Span Base Steel Thickness (in.)				2-Span Base Steel Thickness (in.)				3-Span Base Steel Thickness (in.)			
		0.0180	0.0180			0.0180	0.0180			0.0180	0.0180		
Y.S.* (ksi)		50	80			50	80			50	80		
2.0	S	173	201			163	187			203	234		
2.0	D	256	252			614	606			484	477		
2.5	S	111	129			104	120			130	149		
2.5	D	131	129			314	310			248	244		
3.0	S	77	89			72	83			90	104		
3.0	D	76	75			182	179			143	141		
3.5	S	57	66			53	61			66	76		
3.5	D	48	47			115	113			90	89		
4.0	S	43	50			41	47			51	58		
4.0	D	32	32			77	76			60	60		
4.5	S	34	40			32	37			40	46		
4.5	D	22	22			54	53			42	42		
5.0	S	28	32			26	30			33	37		
5.0	D	16	16			39	39			31	31		
5.5	S	23	27			22	25			27	31		
5.5	D	12	12			30	29			23	23		
6.0	S	19	22			18	21			23	26		
6.0	D	9	9			23	22			18	18		

\*Y.S. = Yield Stress

1. Based on ASTM A 653M structural steel.
2. Values in row "S" are based on strength.
3. Values in row "D" are based on deflection of 1/180th span.
4. Web crippling not included in strength calculation. See example.
5. Limit States Design principles were used in accordance with CSA Standard S136-16.



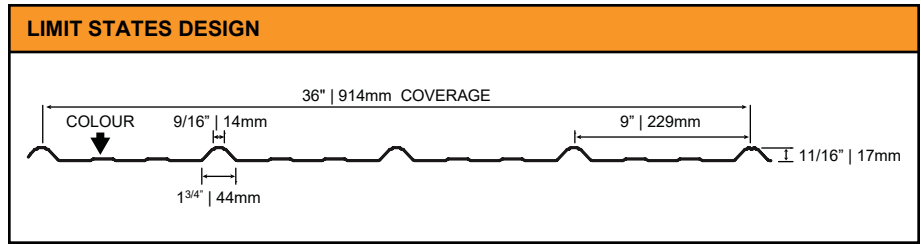
SECTION PROPERTIES   Per Metre of Width									
Base Steel Thickness (mm)	Mass [Z275] (kg/m <sup>2</sup> )	Yield Stress (MPa)	Section Modulus		Deflection Moment of Inertia (x10 <sup>6</sup> mm <sup>4</sup> )	Specified Web Crippling Data			
			Midspan (x10 <sup>3</sup> mm <sup>3</sup> )	Support (x10 <sup>3</sup> mm <sup>3</sup> )		Pe1 End (kN)	Pe2 End (kN)	Pi1 Interior (kN)	Pi2 Interior (kN)
0.457	4.56	345	1.86	1.75	0.0288	1.06	0.265	2.02	0.343
0.457	4.56	550	1.81	1.68	0.0284	1.27	0.317	2.41	0.410

LLF = 1.50; IMPF = 0.90; NORMAL OCCUPANCY = 1.0

LOAD TABLE   Maximum Uniformly Distributed Specified Loads (kPa).													
Span Length (m)		1-Span Base Steel Thickness (mm)				2-Span Base Steel Thickness (mm)				3-Span Base Steel Thickness (mm)			
		0.457	0.457			0.457	0.457			0.457	0.457		
YS* (MPa)		345	550			345	550			345	550		
0.6	S	8.57	9.93			8.05	9.21			10.1	11.5		
0.6	D	12.9	12.7			30.8	30.4			24.3	24.0		
0.8	S	4.82	5.59			4.53	5.18			5.66	6.48		
0.8	D	5.42	5.35			13.0	12.8			10.2	10.1		
1.0	S	3.08	3.57			2.90	3.32			3.62	4.15		
1.0	D	2.78	2.74			6.66	6.57			5.25	5.17		
1.2	S	2.14	2.48			2.01	2.30			2.51	2.88		
1.2	D	1.61	1.58			3.85	3.80			3.04	2.99		
1.4	S	1.57	1.82			1.48	1.69			1.85	2.12		
1.4	D	1.01	1.00			2.43	2.39			1.91	1.89		
1.6	S	1.20	1.40			1.13	1.30			1.41	1.62		
1.6	D	0.68	0.67			1.63	1.60			1.28	1.26		
1.8	S	0.95	1.10			0.89	1.02			1.12	1.28		
1.8	D	0.48	0.47			1.14	1.13			0.90	0.89		
2.0	S	0.77	0.89			0.72	0.83			0.91	1.04		
2.0	D	0.35	0.34			0.83	0.82			0.66	0.65		

\*Y.S. = Yield Stress

- Based on ASTM A 653 structural steel.
- Values in row "S" are based on strength.
- Values in row "D" are based on deflection of 1/180th span.
- Web crippling not included in strength calculation. See example.
- Limit States Design principles were used in accordance with CSA Standard S136-16.



**SECTION PROPERTIES | Per Foot of Width**

Base Steel Thickness (in.)	Weight [G90] (psf)	Yield Stress (ksi)	Section Modulus		Deflection Moment of Inertia (in <sup>4</sup> )	Specified Web Crippling Data			
			Midspan (in <sup>3</sup> )	Support (in <sup>3</sup> )		Pe1 End (lb)	Pe2 End (lb)	Pi1 Interior (lb)	Pi2 Interior (lb)
0.0135	0.68	80	0.0120	0.0096	0.0069	32.6	8.16	60.7	10.3
0.0180	0.88	50	0.0161	0.0134	0.0092	50.7	12.7	94.6	16.1

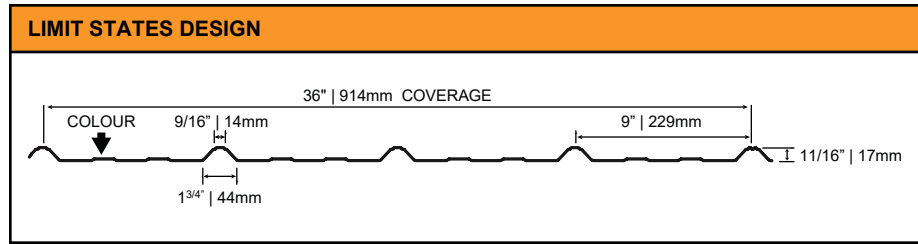
LLF = 1.50; IMPF = 0.90; NORMAL OCCUPANCY = 1.0

**LOAD TABLE | Maximum Uniformly Distributed Specified Loads (psf).**

Span Length (ft)		1-Span Base Steel Thickness (in.)				2-Span Base Steel Thickness (in.)				3-Span Base Steel Thickness (in.)			
		0.0135	0.0180			0.0135	0.0180			0.0135	0.0180		
Y.S.* (ksi)		80	50			80	50			80	50		
1.5	S	128	143			102	119			127	149		
1.5	D	198	264			476	634			375	499		
2.0	S	72	80			57	67			72	84		
2.0	D	84	111			201	267			158	210		
2.5	S	46	52			37	43			46	54		
2.5	D	43	57			103	137			81	108		
3.0	S	32	36			25	30			32	37		
3.0	D	25	33			60	79			47	62		
3.5	S	23	26			19	22			23	27		
3.5	D	16	21			37	50			30	39		
4.0	S	18	20			14	17			18	21		
4.0	D	10	14			25	33			20	26		
4.5	S	14	16			11	13			14	17		
4.5	D	7	10			18	23			14	18		
5.0	S	12	13			9	11			11	13		
5.0	D	5	7			13	17			10	13		

\*Y.S. = Yield Stress

1. Based on ASTM A 653M structural steel.
2. Values in row "S" are based on strength.
3. Values in row "D" are based on deflection of 1/180th span.
4. Web crippling not included in strength calculation. See example.
5. Limit States Design principles were used in accordance with CSA Standard S136-16.

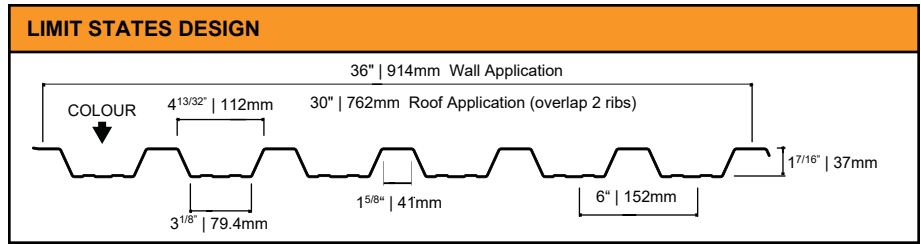


SECTION PROPERTIES   Per Metre of Width									
Base Steel Thickness (mm)	Mass [Z275] (kg/m²)	Yield Stress (MPa)	Section Modulus		Deflection Moment of Inertia (x10⁶ mm⁴)	Specified Web Crippling Data			
			Midspan (x10³ mm³)	Support (x10³ mm³)		Pe1 End (kN)	Pe2 End (kN)	Pi1 Interior (kN)	Pi2 Interior (kN)
0.343	3.30	550	0.645	0.514	0.0094	0.475	0.119	0.883	0.150
0.457	4.31	345	0.866	0.721	0.0126	0.740	0.185	1.38	0.235
LLF = 1.50; IMPF = 0.90; NORMAL OCCUPANCY = 1.0									

LOAD TABLE   Maximum Uniformly Distributed Specified Loads (kPa).													
Span Length (m)		1-Span Base Steel Thickness (mm)				2-Span Base Steel Thickness (mm)				3-Span Base Steel Thickness (mm)			
		0.343	0.457			0.343	0.457			0.343	0.457		
YS* (MPa)		550	345			550	345			550	345		
0.5	S	5.11	5.73			4.07	4.78			5.09	5.97		
0.5	D	7.26	9.66			17.4	23.2			13.7	18.3		
0.6	S	3.55	3.98			2.83	3.32			3.53	4.15		
0.6	D	4.20	5.59			10.1	13.4			7.94	10.6		
0.8	S	2.00	2.24			1.59	1.87			1.99	2.33		
0.8	D	1.77	2.36			4.25	5.66			3.35	4.46		
1.0	S	1.28	1.43			1.02	1.19			1.27	1.49		
1.0	D	0.91	1.21			2.18	2.90			1.72	2.28		
1.2	S	0.89	1.00			0.71	0.83			0.88	1.04		
1.2	D	0.53	0.70			1.26	1.68			0.99	1.32		
1.4	S	0.65	0.73			0.52	0.61			0.65	0.76		
1.4	D	0.33	0.44			0.79	1.06			0.63	0.83		
1.6	S	0.50	0.56			0.40	0.47			0.50	0.58		
1.6	D	0.22	0.29			0.53	0.71			0.42	0.56		

\*Y.S. = Yield Stress

1. Based on ASTM A 653 structural steel.
2. Values in row "S" are based on strength.
3. Values in row "D" are based on deflection of 1/180th span.
4. Web crippling not included in strength calculation. See example.
5. Limit States Design principles were used in accordance with CSA Standard S136-16.



**SECTION PROPERTIES | Per Foot of Width**

Base Steel Thickness (in.)	Weight [G90] (psf)	Yield Stress (ksi)	Section Modulus		Deflection Moment of Inertia (in <sup>4</sup> )	Specified Web Crippling Data			
			Midspan (in <sup>3</sup> )	Support (in <sup>3</sup> )		Pe1 End (lb)	Pe2 End (lb)	Pi1 Interior (lb)	Pi2 Interior (lb)
0.0180	1.04	33	0.0884	0.0847	0.0923	58.0	14.5	111	18.8
0.0180	1.04	50	0.0822	0.0778	0.0881	87.8	22.0	168	28.5
0.0240	1.36	33	0.130	0.128	0.129	109	27.2	207	35.2
0.0300	1.69	33	0.176	0.175	0.162	176	44.0	335	56.9

LLF = 1.50; IMPF = 0.90; NORMAL OCCUPANCY = 1.0

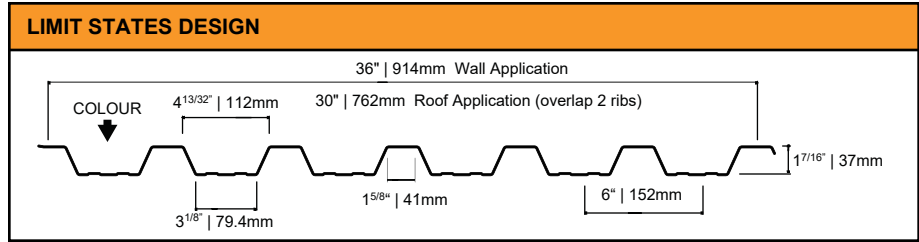
**LOAD TABLE | Maximum Uniformly Distributed Specified Loads (psf).**

Span Length (ft)		1-Span Base Steel Thickness (in.)				2-Span Base Steel Thickness (in.)				3-Span Base Steel Thickness (in.)			
		0.0180	0.0180	0.0240	0.0300	0.0180	0.0180	0.0240	0.0300	0.0135	0.0180	0.0240	0.0300
Y.S.* (ksi)		33	50	33	33	33	50	33	33	33	50	33	33
4.0	S	73	103	108	145	70	97	106	144	87	121	132	180
4.0	D	140	133	195	246	336	320	468	590	264	252	369	465
4.5	S	58	81	85	115	55	77	84	114	69	96	104	142
4.5	D	98	94	137	173	236	225	329	414	186	177	259	326
5.0	S	47	66	69	93	45	62	68	92	56	78	85	115
5.0	D	72	68	100	126	172	164	240	302	135	129	189	238
5.5	S	39	54	57	77	37	51	56	76	46	64	70	95
5.5	D	54	51	75	95	129	123	180	227	102	97	142	179
6.0	S	32	46	48	64	31	43	47	64	39	54	59	80
6.0	D	41	40	58	73	99	95	139	175	78	75	109	138
6.5	S	28	39	41	55	26	37	40	55	33	46	50	68
6.5	D	33	31	45	57	78	75	109	137	62	59	86	108
7.0	S	24	34	35	47	23	32	35	47	29	40	43	59
7.0	D	26	25	36	46	63	60	87	110	49	47	69	87
7.5	S	21	29	31	41	20	28	30	41	25	35	38	51
7.5	D	21	20	30	37	51	49	71	90	40	38	56	70
8.0	S	18	26	27	36	17	24	26	36	22	30	33	45
8.0	D	17	17	24	31	42	40	59	74	33	32	46	58
8.5	S	16	23	24	32	15	22	23	32	19	27	29	40
8.5	D	15	14	20	26	35	33	49	61	28	26	38	48
9.0	S	14	20	21	29	14	19	21	28	17	24	26	36
9.0	D	12	12	17	22	29	28	41	52	23	22	32	41
9.5	S	13	18	19	26	12	17	19	26	15	22	23	32
9.5	D	10	10	15	18	25	24	35	44	20	19	28	35
10.0	S	12	16	17	23	11	16	17	23	14	19	21	29
10.0	D	9	9	12	16	21	20	30	38	17	16	24	30

\*Y.S. = Yield Stress



1. Based on ASTM A 653M structural steel.
2. Values in row "S" are based on strength.
3. Values in row "D" are based on deflection of 1/180th span.
4. Web crippling not included in strength calculation. See example.
5. Limit States Design principles were used in accordance with CSA Standard S136-16.



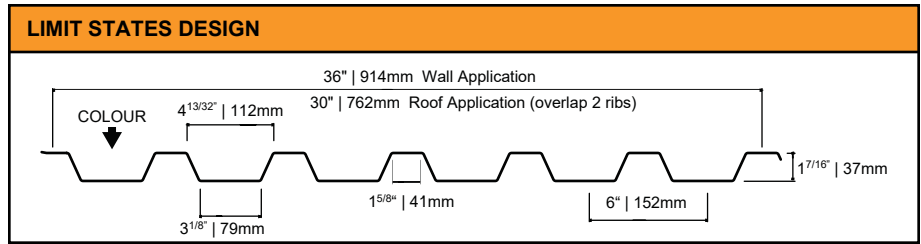
SECTION PROPERTIES   Per Metre of Width									
Base Steel Thickness (mm)	Mass [Z275] (kg/m <sup>2</sup> )	Yield Stress (MPa)	Section Modulus		Deflection Moment of Inertia (x10 <sup>6</sup> mm <sup>4</sup> )	Specified Web Crippling Data			
			Midspan (x10 <sup>3</sup> mm <sup>3</sup> )	Support (x10 <sup>3</sup> mm <sup>3</sup> )		Pe1 End (kN)	Pe2 End (kN)	Pi1 Interior (kN)	Pi2 Interior (kN)
0.457	5.06	230	4.74	4.54	0.126	0.855	0.214	1.63	0.277
0.457	5.06	345	4.42	4.18	0.120	1.28	0.321	2.45	0.416
0.610	6.66	230	7.00	6.87	0.176	1.60	0.401	3.06	0.519
0.762	8.26	230	9.43	9.37	0.222	2.60	0.649	4.94	0.840

LLF = 1.50; IMPF = 0.90; NORMAL OCCUPANCY = 1.0

LOAD TABLE   Maximum Uniformly Distributed Specified Loads (kPa).													
Span Length (m)		1-Span Base Steel Thickness (mm)				2-Span Base Steel Thickness (mm)				3-Span Base Steel Thickness (mm)			
		0.457	0.457	0.610	0.762	0.457	0.457	0.610	0.762	0.457	0.457	0.610	0.762
YS* (MPa)		230	345	230	230	230	345	230	230	230	345	230	230
1.0	S	5.24	7.32	7.72	10.4	5.01	6.92	7.59	10.4	6.27	8.65	9.48	12.9
1.0	D	12.1	11.6	16.9	21.3	29.1	27.8	40.6	51.2	22.9	21.9	32.0	40.3
1.2	S	3.64	5.08	5.36	7.23	3.48	4.81	5.27	7.19	4.35	6.01	6.58	8.98
1.2	D	7.02	6.70	9.79	12.3	16.8	16.1	23.5	29.6	13.3	12.7	18.5	23.3
1.4	S	2.67	3.73	3.94	5.31	2.56	3.53	3.87	5.28	3.20	4.41	4.84	6.60
1.4	D	4.42	4.22	6.16	7.77	10.6	10.1	14.8	18.7	8.35	7.97	11.7	14.7
1.6	S	2.05	2.86	3.02	4.07	1.96	2.70	2.96	4.04	2.45	3.38	3.70	5.05
1.6	D	2.96	2.83	4.13	5.21	7.10	6.78	9.91	12.5	5.59	5.34	7.80	9.84
1.8	S	1.62	2.26	2.38	3.21	1.55	2.14	2.34	3.19	1.93	2.67	2.93	3.99
1.8	D	2.08	1.98	2.90	3.66	4.99	4.76	6.96	8.80	3.93	3.75	5.48	6.91
2.0	S	1.31	1.83	1.93	2.60	1.25	1.73	1.90	2.59	1.57	2.16	2.37	3.23
2.0	D	1.52	1.45	2.11	2.67	3.64	3.47	5.07	6.40	2.86	2.73	4.00	5.04
2.2	S	1.08	1.51	1.60	2.15	1.04	1.43	1.57	2.14	1.30	1.79	1.96	2.67
2.2	D	1.14	1.09	1.59	2.00	2.73	2.61	3.81	4.81	2.15	2.05	3.00	3.79
2.4	S	0.91	1.27	1.34	1.81	0.87	1.20	1.32	1.80	1.09	1.50	1.65	2.25
2.4	D	0.88	0.84	1.22	1.54	2.10	2.01	2.94	3.70	1.66	1.58	2.31	2.92
2.6	S	0.77	1.08	1.14	1.54	0.74	1.02	1.12	1.53	0.93	1.28	1.40	1.91
2.6	D	0.69	0.66	0.96	1.21	1.66	1.58	2.31	2.91	1.30	1.24	1.82	2.29
2.8	S	0.67	0.93	0.99	1.33	0.64	0.88	0.97	1.32	0.80	1.10	1.21	1.65
2.8	D	0.55	0.53	0.77	0.97	1.33	1.27	1.85	2.33	1.04	1.00	1.46	1.84
3.0	S	0.58	0.81	0.86	1.16	0.56	0.77	0.84	1.15	0.70	0.96	1.05	1.44
3.0	D	0.45	0.43	0.63	0.79	1.08	1.03	1.50	1.90	0.85	0.81	1.18	1.49

\*Y.S. = Yield Stress

1. Based on ASTM A 653 structural steel.
2. Values in row "S" are based on strength.
3. Values in row "D" are based on deflection of 1/180th span.
4. Web crippling not included in strength calculation. See example.
5. Limit States Design principles were used in accordance with CSA Standard S136-16.



**SECTION PROPERTIES | Per Foot of Width**

Base Steel Thickness (in.)	Weight [G90] (psf)	Yield Stress (ksi)	Section Modulus		Deflection Moment of Inertia (in <sup>4</sup> )	Specified Web Crippling Data			
			Midspan (in <sup>3</sup> )	Support (in <sup>3</sup> )		Pe1 End (lb)	Pe2 End (lb)	Pi1 Interior (lb)	Pi2 Interior (lb)
0.0180	1.04	33	0.0884	0.0847	0.0923	58.0	14.5	111	18.8
0.0180	1.04	50	0.0822	0.0778	0.0881	87.8	22.0	168	28.5
0.0240	1.36	33	0.130	0.128	0.129	109	27.2	207	35.2
0.0300	1.69	33	0.176	0.175	0.162	176	44.0	335	56.9

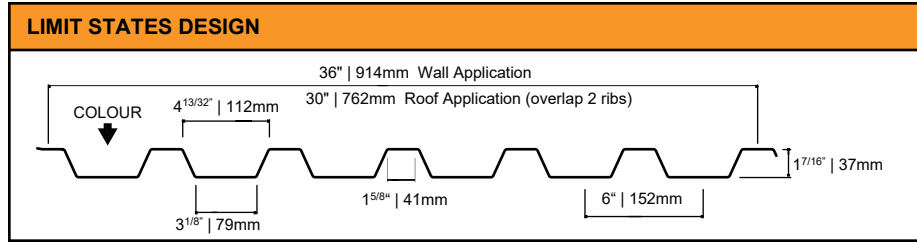
LLF = 1.50; IMPF = 0.90; NORMAL OCCUPANCY = 1.0

**LOAD TABLE | Maximum Uniformly Distributed Specified Loads (psf).**

Span Length (ft)		1-Span Base Steel Thickness (in.)				2-Span Base Steel Thickness (in.)				3-Span Base Steel Thickness (in.)			
		0.0180	0.0180	0.0240	0.0300	0.0180	0.0180	0.0240	0.0300	0.0135	0.0180	0.0240	0.0300
Y.S.* (ksi)		33	50	33	33	33	50	33	33	33	50	33	33
4.0	S	73	103	108	145	70	97	106	144	87	121	132	180
4.0	D	140	133	195	246	336	320	468	590	264	252	369	465
4.5	S	58	81	85	115	55	77	84	114	69	96	104	142
4.5	D	98	94	137	173	236	225	329	414	186	177	259	326
5.0	S	47	66	69	93	45	62	68	92	56	78	85	115
5.0	D	72	68	100	126	172	164	240	302	135	129	189	238
5.5	S	39	54	57	77	37	51	56	76	46	64	70	95
5.5	D	54	51	75	95	129	123	180	227	102	97	142	179
6.0	S	32	46	48	64	31	43	47	64	39	54	59	80
6.0	D	41	40	58	73	99	95	139	175	78	75	109	138
6.5	S	28	39	41	55	26	37	40	55	33	46	50	68
6.5	D	33	31	45	57	78	75	109	137	62	59	86	108
7.0	S	24	34	35	47	23	32	35	47	29	40	43	59
7.0	D	26	25	36	46	63	60	87	110	49	47	69	87
7.5	S	21	29	31	41	20	28	30	41	25	35	38	51
7.5	D	21	20	30	37	51	49	71	90	40	38	56	70
8.0	S	18	26	27	36	17	24	26	36	22	30	33	45
8.0	D	17	17	24	31	42	40	59	74	33	32	46	58
8.5	S	16	23	24	32	15	22	23	32	19	27	29	40
8.5	D	15	14	20	26	35	33	49	61	28	26	38	48
9.0	S	14	20	21	29	14	19	21	28	17	24	26	36
9.0	D	12	12	17	22	29	28	41	52	23	22	32	41
9.5	S	13	18	19	26	12	17	19	26	15	22	23	32
9.5	D	10	10	15	18	25	24	35	44	20	19	28	35
10.0	S	12	16	17	23	11	16	17	23	14	19	21	29
10.0	D	9	9	12	16	21	20	30	38	17	16	24	30

\*Y.S. = Yield Stress

1. Based on ASTM A 653M structural steel.
2. Values in row "S" are based on strength.
3. Values in row "D" are based on deflection of 1/180th span.
4. Web crippling not included in strength calculation. See example.
5. Limit States Design principles were used in accordance with CSA Standard S136-16.



**SECTION PROPERTIES | Per Metre of Width**

Base Steel Thickness (mm)	Mass [Z275] (kg/m <sup>2</sup> )	Yield Stress (MPa)	Section Modulus		Deflection Moment of Inertia (x10 <sup>6</sup> mm <sup>4</sup> )	Specified Web Crippling Data			
			Midspan (x10 <sup>3</sup> mm <sup>3</sup> )	Support (x10 <sup>3</sup> mm <sup>3</sup> )		Pe1 End (kN)	Pe2 End (kN)	Pi1 Interior (kN)	Pi2 Interior (kN)
0.457	5.06	230	4.74	4.54	0.126	0.855	0.214	1.63	0.277
0.457	5.06	345	4.42	4.18	0.120	1.28	0.321	2.45	0.416
0.610	6.66	230	7.00	6.87	0.176	1.60	0.401	3.06	0.519
0.762	8.26	230	9.43	9.37	0.222	2.60	0.649	4.94	0.840

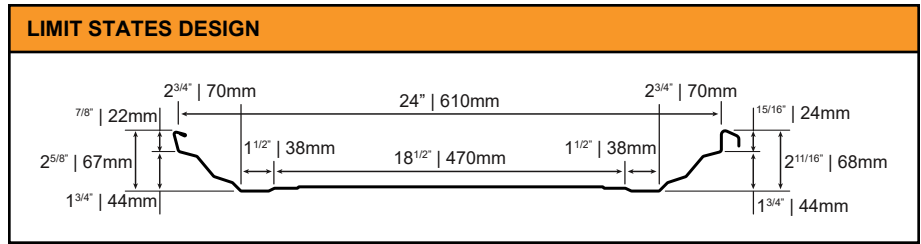
LLF = 1.50; IMPF = 0.90; NORMAL OCCUPANCY = 1.0

**LOAD TABLE | Maximum Uniformly Distributed Specified Loads (kPa).**

Span Length (m)		1-Span Base Steel Thickness (mm)				2-Span Base Steel Thickness (mm)				3-Span Base Steel Thickness (mm)			
		0.457	0.457	0.610	0.762	0.457	0.457	0.610	0.762	0.457	0.457	0.610	0.762
YS* (MPa)		230	345	230	230	230	345	230	230	230	345	230	230
1.0	S	5.24	7.32	7.72	10.4	5.01	6.92	7.59	10.4	6.27	8.65	9.48	12.9
1.0	D	12.1	11.6	16.9	21.3	29.1	27.8	40.6	51.2	22.9	21.9	32.0	40.3
1.2	S	3.64	5.08	5.36	7.23	3.48	4.81	5.27	7.19	4.35	6.01	6.58	8.98
1.2	D	7.02	6.70	9.79	12.3	16.8	16.1	23.5	29.6	13.3	12.7	18.5	23.3
1.4	S	2.67	3.73	3.94	5.31	2.56	3.53	3.87	5.28	3.20	4.41	4.84	6.60
1.4	D	4.42	4.22	6.16	7.77	10.6	10.1	14.8	18.7	8.35	7.97	11.7	14.7
1.6	S	2.05	2.86	3.02	4.07	1.96	2.70	2.96	4.04	2.45	3.38	3.70	5.05
1.6	D	2.96	2.83	4.13	5.21	7.10	6.78	9.91	12.5	5.59	5.34	7.80	9.84
1.8	S	1.62	2.26	2.38	3.21	1.55	2.14	2.34	3.19	1.93	2.67	2.93	3.99
1.8	D	2.08	1.98	2.90	3.66	4.99	4.76	6.96	8.80	3.93	3.75	5.48	6.91
2.0	S	1.31	1.83	1.93	2.60	1.25	1.73	1.90	2.59	1.57	2.16	2.37	3.23
2.0	D	1.52	1.45	2.11	2.67	3.64	3.47	5.07	6.40	2.86	2.73	4.00	5.04
2.2	S	1.08	1.51	1.60	2.15	1.04	1.43	1.57	2.14	1.30	1.79	1.96	2.67
2.2	D	1.14	1.09	1.59	2.00	2.73	2.61	3.81	4.81	2.15	2.05	3.00	3.79
2.4	S	0.91	1.27	1.34	1.81	0.87	1.20	1.32	1.80	1.09	1.50	1.65	2.25
2.4	D	0.88	0.84	1.22	1.54	2.10	2.01	2.94	3.70	1.66	1.58	2.31	2.92
2.6	S	0.77	1.08	1.14	1.54	0.74	1.02	1.12	1.53	0.93	1.28	1.40	1.91
2.6	D	0.69	0.66	0.96	1.21	1.66	1.58	2.31	2.91	1.30	1.24	1.82	2.29
2.8	S	0.67	0.93	0.99	1.33	0.64	0.88	0.97	1.32	0.80	1.10	1.21	1.65
2.8	D	0.55	0.53	0.77	0.97	1.33	1.27	1.85	2.33	1.04	1.00	1.46	1.84
3.0	S	0.58	0.81	0.86	1.16	0.56	0.77	0.84	1.15	0.70	0.96	1.05	1.44
3.0	D	0.45	0.43	0.63	0.79	1.08	1.03	1.50	1.90	0.85	0.81	1.18	1.49

\*Y.S. = Yield Stress

1. Based on ASTM A 653 structural steel.
2. Values in row "S" are based on strength.
3. Values in row "D" are based on deflection of 1/240th span.
4. Web crippling not included in strength calculation. See example.
5. Limit States Design principles were used in accordance with CSA Standard S136-16.



**SECTION PROPERTIES | Per Foot of Width**

Base Steel Thickness (in.)	Weight [G90] (psf)	Yield Stress (ksi)	Section Modulus		Deflection Moment of Inertia (in <sup>4</sup> )	Specified Web Crippling Data			
			Midspan (in <sup>3</sup> )	Support (in <sup>3</sup> )		Pe1 End (lb)	Pe2 End (lb)	Pi1 Interior (lb)	Pi2 Interior (lb)
0.0240	1.26	50	0.0997	0.0864	0.179				
0.0300	1.56	50	0.126	0.109	0.227				

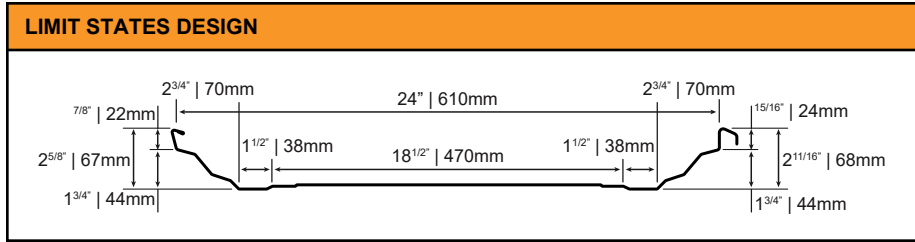
LLF = 1.50; IMPF = 0.90; NORMAL OCCUPANCY = 1.0

**LOAD TABLE | Maximum Uniformly Distributed Specified Loads (psf).**

Span Length (ft)	1-Span Base Steel Thickness (in.)				2-Span Base Steel Thickness (in.)				3-Span Base Steel Thickness (in.)			
	0.0240	0.0300			0.0240	0.0300			0.0240	0.0300		
Y.S.* (ksi)	50	50			50	50			50	50		
3.0 S	220	278			191	241			239	302		
3.0 D	482	611			1157	1466			911	1154		
3.5 S	161	204			140	177			175	221		
3.5 D	303	385			728	923			574	727		
4.0 S	123	156			107	135			134	169		
4.0 D	203	258			488	618			384	487		
4.5 S	97	123			84	106			105	133		
4.5 D	143	181			343	434			270	342		
5.0 S	78	99			68	86			85	108		
5.0 D	104	132			250	317			197	249		
5.5 S	65	82			56	71			70	89		
5.5 D	78	99			188	238			148	187		
6.0 S	54	68			47	59			59	74		
6.0 D	60	76			145	183			114	144		
6.5 S	46	58			40	50			50	63		
6.5 D	47	60			114	144			90	114		
7.0 S	39	50			34	43			43	54		
7.0 D	38	48			91	115			72	91		
7.5 S	34	43			29	37			37	47		
7.5 D	31	39			74	94			58	74		

\*Y.S. = Yield Stress

1. Based on ASTM A 653M structural steel.
2. Values in row "S" are based on strength.
3. Values in row "D" are based on deflection of 1/240th span.
4. Web crippling not included in strength calculation. See example.
5. Limit States Design principles were used in accordance with CSA Standard S136-16.



**SECTION PROPERTIES | Per Metre of Width**

Base Steel Thickness (mm)	Mass [Z275] (kg/m <sup>2</sup> )	Yield Stress (MPa)	Section Modulus		Deflection Moment of Inertia (x10 <sup>6</sup> mm <sup>4</sup> )	Specified Web Crippling Data			
			Midspan (x10 <sup>3</sup> mm <sup>3</sup> )	Support (x10 <sup>3</sup> mm <sup>3</sup> )		Pe1 End (kN)	Pe2 End (kN)	Pi1 Interior (kN)	Pi2 Interior (kN)
0.610	5.91	345	5.36	4.65	0.244				
0.762	7.35	345	6.76	5.87	0.310				

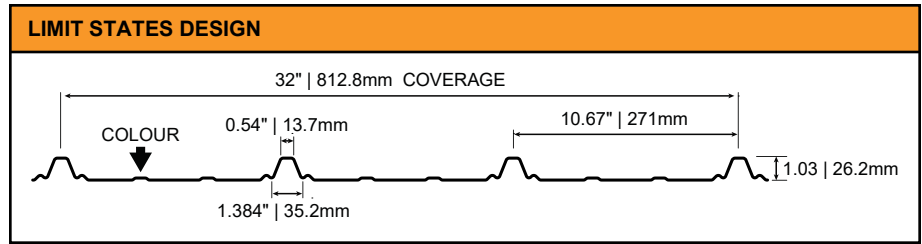
LLF = 1.50; IMPF = 0.90; NORMAL OCCUPANCY = 1.0

**LOAD TABLE | Maximum Uniformly Distributed Specified Loads (kPa).**

Span Length (m)		1-Span Base Steel Thickness (mm)				2-Span Base Steel Thickness (mm)				3-Span Base Steel Thickness (mm)			
		0.610	0.762			0.610	0.762			0.610	0.762		
YS* (MPa)		345	345			345	345			345	345		
1.0	S	8.82	11.1			7.64	9.65			9.56	12.1		
1.0	D	17.6	22.4			42.3	53.7			33.3	42.3		
1.2	S	6.10	7.70			5.28	6.68			6.62	8.36		
1.2	D	10.2	12.9			24.5	31.1			19.3	24.5		
1.4	S	4.47	5.64			3.87	4.89			4.85	6.13		
1.4	D	6.43	8.15			15.4	19.6			12.2	15.4		
1.5	S	3.89	4.90			3.36	4.25			4.22	5.33		
1.5	D	5.23	6.63			12.6	15.9			9.88	12.5		
1.6	S	3.41	4.30			2.95	3.72			3.70	4.67		
1.6	D	4.31	5.46			10.3	13.1			8.14	10.3		
1.8	S	2.68	3.38			2.32	2.93			2.91	3.68		
1.8	D	3.03	3.83			7.26	9.20			5.72	7.25		
2.0	S	2.16	2.73			1.87	2.36			2.35	2.97		
2.0	D	2.21	2.80			5.29	6.71			4.17	5.28		

\*Y.S. = Yield Stress

- Based on ASTM A 653 structural steel.
- Values in row "S" are based on strength.
- Values in row "D" are based on deflection of 1/180th span.
- Web crippling not included in strength calculation. See example.
- Limit States Design principles were used in accordance with CSA Standard S136-16.



**SECTION PROPERTIES | Per Foot of Width**

Base Steel Thickness (in.)	Weight [G90] (psf)	Yield Stress (ksi)	Section Modulus		Deflection Moment of Inertia (in <sup>4</sup> )	Specified Web Crippling Data			
			Midspan (in <sup>3</sup> )	Support (in <sup>3</sup> )		Pe1 End (lb)	Pe2 End (lb)	Pi1 Interior (lb)	Pi2 Interior (lb)
0.0180	1.00	50	0.0240	0.0195	0.0217	52.9	13.2	96.7	16.4

LLF = 1.50; IMPF = 0.90; NORMAL OCCUPANCY = 1.0

**LOAD TABLE | Maximum Uniformly Distributed Specified Loads (psf).**

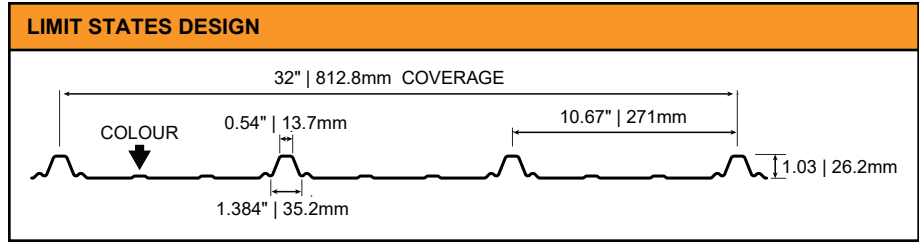
Span Length (ft)		1-Span Base Steel Thickness (in.)				2-Span Base Steel Thickness (in.)				3-Span Base Steel Thickness (in.)			
		0.0180				0.0180				0.0180			
Y.S.* (ksi)	50					50				50			
1.0	S	480				390				488			
1.0	D	2099				5037				3966			
1.5	S	214				173				217			
1.5	D	622				1492				1175			
2.0	S	120				98				122			
2.0	D	262				630				496			
2.5	S	77				62				78			
2.5	D	134				322				254			
3.0	S	53				43				54			
3.0	D	78				187				147			
3.5	S	39				32				40			
3.5	D	49				117				93			
4.0	S	30				24				30			
4.0	D	33				79				62			

\*Y.S. = Yield Stress



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1. Based on ASTM A 653M structural steel.
2. Values in row "S" are based on strength.
3. Values in row "D" are based on deflection of 1/180th span.
4. Web crippling not included in strength calculation. See example.
5. Limit States Design principles were used in accordance with CSA Standard S136-16.



SECTION PROPERTIES   Per Metre of Width									
Base Steel Thickness (mm)	Mass [Z275] (kg/m²)	Yield Stress (MPa)	Section Modulus		Deflection Moment of Inertia (x10⁶ mm⁴)	Specified Web Crippling Data			
			Midspan (x10⁵ mm³)	Support (x10⁵ mm³)		Pe1 End (kN)	Pe2 End (kN)	Pi1 Interior (kN)	Pi2 Interior (kN)
0.457	4.82	345	1.29	1.05	0.0296	0.772	0.193	1.41	0.240
LLF = 1.50; IMPF = 0.90; NORMAL OCCUPANCY = 1.0									

LOAD TABLE   Maximum Uniformly Distributed Specified Loads (kPa).													
Span Length (m)		1-Span Base Steel Thickness (mm)			2-Span Base Steel Thickness (mm)			3-Span Base Steel Thickness (mm)					
		0.457				0.457				0.457			
	Y.S.*(MPa)	345				345				345			
0.4	S	13.4				10.9				13.6			
0.4	D	44.5				107				84.0			
0.5	S	8.55				6.95				8.68			
0.5	D	22.8				54.6				43.0			
0.6	S	5.94				4.82				6.03			
0.6	D	13.2				31.6				24.9			
0.8	S	3.34				2.71				3.39			
0.8	D	5.56				13.3				10.5			
1.0	S	2.14				1.74				2.17			
1.0	D	2.85				6.83				5.38			
1.2	S	1.49				1.21				1.51			
1.2	D	1.65				3.95				3.11			

\*Y.S. = Yield Stress