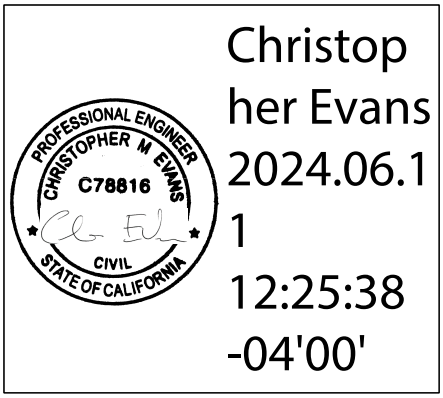
CALCULATIONS FOR:

POLIGON CWC 12X20
MULTI RIB
2022 CALIFORNIA BUILDING CODE



PREPARED UNDER THE CONTROL AND SUPERVISION OF THE DESIGN PROFESSIONAL ABOVE. THE SEAL APPLIES ONLY TO BUILDING COMPONENTS DETAILED WITHIN THESE CALCULATIONS AND SUPPLIED BY PORTER CORP AS WELL AS THE FOUNDATION DESIGN, IF APPLICABLE.

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DESIGN CRITERIA

GENERAL

Building Code:	See Cover Sheet	Roof Slope (°):	9.46		*2:12 Pitch*
Design Code:	ASCE 7-16				
Risk Category:	II	Equivalent Roof Height:	15.00	ft	

DEAD LOAD

Weight of Roofing System	2.0	psf	
Frame Dead Load	Frame Self-Weight		*(See RISA Analysis Report)*

LIVE LOAD

Roof Live Load, L_r	20.0	psf	*ASCE 7 Table 4-1*

SNOW LOAD

Ground Snow Load, p_g	0.0	psf	
Importance Factor, I (Snow Loads)	1.00		*ASCE 7 Table 1.5-2*
Slope Factor, C_s	1.0		*ASCE 7 Figure 7.4-1*
Thermal Factor, C_t	1.2		*ASCE 7 Table 7.3-2*
Exposure Factor, C_e	1.0		*ASCE 7 Table 7.3-1*
Flat Roof Snow Load, p_f	0.0	psf	*ASCE 7 Section 7.3*
Leeward Unbalanced Snow Load	0.0	psf	*ASCE 7 Section 7.6.1*
Drift Surcharge Load, p_d	0.0	psf	*ASCE 7 Section 7.7*
Width of Snow Drift, w	0.0	ft	*ASCE 7 Section 7.7*
Sliding Snow Load	0.0	psf	*ASCE 7 Section 7.9*

WIND LOAD

Basic Wind Speed, V	V_{ult}	95	mph	V_{asd}	74 mph		*ASCE 7 Section 26.5*
Exposure Category		C		V_T	mph		*ASCE 7 Section 26.7*
Ground Elevation Factor, Ke		1.00					*ASCE 7 Table 26.9-1*
Gust Effect Factor, G		0.85					*ASCE 7 Section 26.11.1*
Velocity Pressure Exposure Coefficient, K_z		0.85					*ASCE 7 Table 26.10-1*
Wind Directionality Factor, K_d		0.85		K_{zT}	0.80		*ASCE 7 Table 26.6-1*
Topographic Factor, K_{zt}		1.00					*ASCE 7 Section 26.8.2*
Velocity Pressure, q_z		16.69	psf	q_{zi}	0.00	psf	*ASCE 7 Section 26.10.2*

Main Wind-Force Resisting System *ASCE 7 Section 27.3*

Open Building, Clear Wind Flow (Cn from ASCE 7 Fig. 27.3-4 - 27.3-7)

	Upper Surface		*Lower Surface*	
Load Case	A	B	A	B
γ = 0				
Windward Cp =	-0.68	-1.53	-1.08	0.00
p (psf):	-9.63	-21.72	-15.30	0.00
γ = 180				
Leeward Cp=	1.53	0.38	1.00	1.65
p (psf):	21.65	5.37	14.25	23.44
γ = 90				
Sideward Cp=	-0.80	0.80	-0.80	0.80
p (psf):	-11.35	11.35	-11.35	11.35

Component and Cladding Elements *ASCE 7 Section 30.7.2*

Open Building, Clear Wind Flow (Cn from ASCE 7 Fig. 30.7-1 - 30.7-3)

	Wind Direction	*Toward Roof*	*Away From Roof*
Zone 3	Cn:	1.65	-1.53
	p (psf):	23.44	-21.72
Zone 2	Cn:	1.65	-1.53
	p (psf):	23.44	-21.72
Zone 1	Cn:	1.65	-1.53
	p (psf):	23.44	-21.72

SEISMIC LOAD

Analysis Procedure	Equivalent Lateral Force Procedure		*ASCE 7 Section 12.8*
Seismic Site Class	D		*ASCE 7 Section 11.4.2*
Basic Seismic Force Resisting System	Steel Ordinary Cantilever Column Systems		*ASCE 7 Table 12.2-1*
Short Spectral Response Parameter, S_s	0.57		
1-Sec Spectral Response Parameter, S_1	0.22		
Seismic Design Category	D		*ASCE 7 Section 11.6*
Importance Factor, I	1.00		*ASCE 7 Table 11.5-1*
Response Modification Coefficient, R	1.25		*ASCE 7 Table 12.2-1*
Redundancy Factor, ρ	1.30		*ASCE 7 Table 12.2-1*
Overstrength Factor, Ω_o	1.25		*ASCE 7 Table 12.2-1*
Design Short Spectral Response Parameter, S_{DS}	0.51		*ASCE 7 Section 11.4.4*
1-Sec Design Spectral Response Parameter, S_{D1}	0.48		*ASCE 7 Section 11.4.4*
Seismic Response Coefficient, C_s	0.41		*ASCE 7 Section 12.8.1.1*
Effective Seismic Weight, W	2.00	psf	*ASCE 7 Section 12.7.2*
Seismic Base Shear, V	0.82	psf	*ASCE 7 Section 12.8.1*
Seismic Load, E	1.07	psf	*ASCE 7 Section 12.4*
Seismic Load with Overstrength Factor, E_m	1.03	psf	*ASCE 7 Section 12.4*

STRUCTURAL ENGINEERING NOTES

GENERAL NOTES

Loads applied to the structure may be greater than required for the project location.

Actual structure dimensions may be smaller than shown in this document.

The engineering seal for the structure designed in these calculations is only valid if Porter Corp fabricates the steel components. Fabricating the steel components elsewhere voids the engineering provided by Porter Corp.

STRUCTURAL ANALYSIS NOTES

RISA-3D structural analysis software was used to model the 3-D space frame.

To reduce the amount of computer printout, the analysis results only show each member's controlling load case.

Unless noted otherwise in the 'RISA Analysis Report', the roof deck was not utilized in the structural analysis to provide lateral support to the members.

From the analysis, all member deflections and structural drift are within allowable limits.

STRUCTURAL DESIGN NOTES

End plates were designed by applying beam end forced to the edges of the plate and calculating the resulting prying moment at the edge of the bolt holes. In determining the prying moment it was assumed that the area of the plate between bolts was fixed.

Light gage members were designed in accordance with the latest edition of the AISC specifications and the AISI Cold-Formed Steel Design Manual.

STRUCTURAL CONNECTION NOTES

Bolt threads were assumed to not be excluded from the connections.

LOAD COMBINATIONS

Key

Abbreviation	Description
DL	Dead Load
Lr	Roof Live Load
S	Snow Load
Su	Unbalanced Snow Load
Ssliding	Sliding Snow
Sdrift	Snow Drift
Wx	Wind Load (X-Direction)
Wz	Wind Load (Z-Direction)
Wx (Min.)	16 psf Minimum Wind Load (X-Direction)
Wz (Min.)	16 psf Minimum Wind Load (Z-Direction)
Ex	Seismic Load (X-Direction)
Ez	Seismic Load (Z-Direction)
Emx	Seismic Load (X-Direction) with Overstrength Factor
Emz	Seismic Load (Z-Direction) with Overstrength Factor
Ev	Vertical Seismic Load Effect
LC	Load Case

Service (Unfactored)

Number	Description
1	SERVICE D
2	SERVICE Lr
3	SERVICE S
4	SERVICE Su
5	SERVICE Ssliding
6	SERVICE Sdrift
7	SERVICE Wx (LC A; y = 0°)
8	SERVICE Wx (LC B; y = 0°)
9	SERVICE Wx (LC A; y = 180°)
10	SERVICE Wx (LC B; y = 180°)
11	SERVICE Wz (LC A; y = 90°)
12	SERVICE Wz (LC B; y = 90°)
13	SERVICE Ex
14	SERVICE Ez
15	SERVICE Ev

Allowable Stress Design (Factored)

Number	Description
17	D
18	D + Lr
19	D + S
20	D + Su
21	D+Ssliding
22	D+Sdrift
23	D + 0.6Wx (LC A; y = 0°)
24	D + 0.6Wx (LC B; y = 0°)
25	D + 0.6Wx (LC A; y = 180°)
26	D + 0.6Wx (LC B; y = 180°)
27	D + 0.6Wz (LC A; y = 90°)
28	D + 0.6Wz (LC B; y = 90°)
29	D + 0.6Wx (Min.)
30	D + 0.6Wz (Min.)
31	D + 0.6(0.75Wx (LC A; y = 0°) + 0.75Wz (LC A; y = 90°))
32	D + 0.6(0.75Wx (LC A; y = 180°) + 0.75Wz (LC A; y = 90°))
33	D + 0.6(0.75Wx (LC B; y = 0°) + 0.75Wz (LC B; y = 90°))
34	D + 0.6(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°))
35	D + 0.6(0.75Wx (Min.) + 0.75Wx (Min.))
36	D + 0.75(0.6Wx (LC A; y = 0°)) + 0.75Lr
37	D + 0.75(0.6Wx (LC B; y = 0°)) + 0.75Lr
38	D + 0.75(0.6Wx (LC A; y = 180°)) + 0.75Lr
39	D + 0.75(0.6Wx (LC B; y = 180°)) + 0.75Lr
40	D + 0.75(0.6Wz (LC A; y = 90°)) + 0.75Lr
41	D + 0.75(0.6Wz (LC B; y = 90°)) + 0.75Lr
42	D + 0.75(0.6Wx (Min.)) + 0.75Lr
43	D + 0.75(0.6Wz (Min.)) + 0.75Lr
44	D + 0.75(0.6(0.75Wx (LC A; y=0°) + 0.75Wz (LC A; y=90°))) + 0.75Lr
45	D + 0.75(0.6(0.75Wx (LC A; y=180°) + 0.75Wz (LC A; y=90°))) + 0.75Lr
46	D + 0.75(0.6(0.75Wx (LC B; y=0°) + 0.75Wz (LC B; y=90°))) + 0.75Lr
47	D + 0.75(0.6(0.75Wx (LC B; y=180°) + 0.75Wz (LC B; y=90°))) + 0.75Lr
48	D + 0.75(0.6(0.75Wx (Min.) + 0.75Wz (Min.))) + 0.75Lr
49	D + 0.75(0.6Wx (LC A; y = 0°)) + 0.75S
50	D + 0.75(0.6Wx (LC B; y = 0°)) + 0.75S
51	D + 0.75(0.6Wx (LC A; y = 180°)) + 0.75S
52	D + 0.75(0.6Wx (LC B; y = 180°)) + 0.75S
53	D + 0.75(0.6Wz (LC A; y = 90°)) + 0.75S
54	D + 0.75(0.6Wz (LC B; y = 90°)) + 0.75S
55	D + 0.75(0.6Wx (Min.)) + 0.75S
56	D + 0.75(0.6Wz (Min.)) + 0.75S
57	D + 0.75(0.6(0.75Wx (LC A; y = 0°) + 0.75Wz (LC A; y = 90°))) + 0.75S
58	D + 0.75(0.6(0.75Wx (LC A; y = 180°) + 0.75Wz (LC A; y = 90°))) + 0.75S
59	D + 0.75(0.6(0.75Wx (LC B; y = 0°) + 0.75Wz (LC B; y = 90°))) + 0.75S
60	D + 0.75(0.6(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°))) + 0.75S
61	D + 0.75(0.6(0.75Wx (Min.) + 0.75Wz (Min.))) + 0.75S
62	0.6D + 0.6Wx (LC A; y = 0°)
63	0.6D + 0.6Wx (LC B; y = 0°)
64	0.6D + 0.6Wx (LC A; y = 180°)
65	0.6D + 0.6Wx (LC B; y = 180°)
66	0.6D + 0.6Wz (LC A; y = 90°)
67	0.6D + 0.6Wz (LC B; y = 90°)
68	0.6D + 0.6Wx (Min.)
69	0.6D + 0.6Wz (Min.)
70	0.6 + 0.6(0.75Wx (LC A; y = 0°) + 0.75Wz (LC A; y = 90°))
71	0.6D + 0.6(0.75Wx (LC A; y = 180°) + 0.75Wz (LC A; y = 90°))
72	0.6D + 0.6(0.75Wx (LC B; y = 0°) + 0.75Wz (LC B; y = 90°))
73	0.6D + 0.6(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°))
74	0.6D + 0.6(0.75Wx (Min.) + 0.75Wz (Min.))
75	1.0D+0.7Ev+0.7Ehx
76	1.0D+0.525Ev+0.525Ehx+0.75S
77	0.6D-0.7Ev+0.7Ehx
78	1.0D+0.7Ev+0.7Ehz
79	1.0D+0.525Ev+0.525Ehz+0.75S
80	0.6D-0.7Ev+0.7Ehz
81	1.0D+0.7Ev+0.7Ehx+0.21Ehz
82	1.0D+0.525Ev+0.525Ehx+0.1575Ehz+0.75S
83	0.6D-0.7Ev+0.7Ehx+0.21Ehz
84	1.0D+0.7Ev+0.7Ehz+0.21Ehx
85	1.0D+0.525Ev+0.525Ehz+0.1575Ehx+0.75S
86	0.6D-0.7Ev+0.7Ehz+0.21Ehx

Notes:

1. Load combinations are effective in all states that have adopted IBC as a base code.
2. See "RISA Analysis Report" for the load combinations that are not listed above.

LOAD COMBINATIONS

Strength Design (Factored)

Number	Description
92	1.4D
93	1.2D + 0.5Lr
94	1.2D + 0.5S
95	1.2D + 1.6Lr + 0.5Wx (LC A; y = 0°)
96	1.2D + 1.6Lr + 0.5Wx (LC B; y = 0°)
97	1.2D + 1.6Lr + 0.5Wx (LC A; y = 180°)
98	1.2D + 1.6Lr + 0.5Wx (LC B; y = 180°)
99	1.2D + 1.6Lr + 0.5Wz (LC A; y = 90°)
100	1.2D + 1.6Lr + 0.5Wz (LC B; y = 90°)
101	1.2D + 1.6Lr + 0.5Wx (Min.)
102	1.2D + 1.6Lr + 0.5Wz (Min.)
103	1.2D + 1.6Lr + 0.5(0.75Wx (LC A; y = 0°) + 0.75Wz (LC A; y = 90°))
104	1.2D + 1.6Lr + 0.5(0.75Wx (LC A; y = 180°) + 0.75Wz (LC A; y = 90°))
105	1.2D + 1.6Lr + 0.5(0.75Wx (LC B; y = 0°) + 0.75Wz (LC B; y = 90°))
106	1.2D + 1.6Lr + 0.5(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°))
107	1.2D + 1.6Lr + 0.5(0.75Wx (Min.) + 0.75Wz (Min.))
108	1.2D + 1.6S + 0.5Wx (LC A; y = 0°)
109	1.2D + 1.6S + 0.5Wx (LC B; y = 0°)
110	1.2D + 1.6S + 0.5Wx (LC A; y = 180°)
111	1.2D + 1.6S + 0.5Wx (LC B; y = 180°)
112	1.2D + 1.6S + 0.5Wz (LC A; y = 90°)
113	1.2D + 1.6S + 0.5Wz (LC B; y = 90°)
114	1.2D + 1.6S + 0.5Wx (Min.)
115	1.2D + 1.6S + 0.5Wz (Min.)
116	1.2D + 1.6S + 0.5(0.75Wx (LC A; y = 0°) + 0.75Wz (LC A; y = 90°))
117	1.2D + 1.6S + 0.5(0.75Wx (LC A; y = 180°) + 0.75Wz (LC A; y = 90°))
118	1.2D + 1.6S + 0.5(0.75Wx (LC B; y = 0°) + 0.75Wz (LC B; y = 90°))
119	1.2D + 1.6S + 0.5(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°))
120	1.2D + 1.6S + 0.5(0.75Wx (Min.) + 0.75Wz (Min.))
121	1.2D + 1.6Su + 0.5Wx (LC A; y = 0°)
122	1.2D + 1.6Su + 0.5Wx (LC B; y = 0°)
123	1.2D + 1.6Su + 0.5Wx (LC A; y = 180°)
124	1.2D + 1.6Su + 0.5Wx (LC B; y = 180°)
125	1.2D + 1.6Su + 0.5Wz (LC A; y = 90°)
126	1.2D + 1.6Su + 0.5Wz (LC B; y = 90°)
127	1.2D + 1.6Su + 0.5Wx (Min.)
128	1.2D + 1.6Su + 0.5Wz (Min.)
129	1.2D + 1.6Su + 0.5(0.75Wx (LC A; y = 0°) + 0.75Wz (LC A; y = 90°))
130	1.2D + 1.6Su + 0.5(0.75Wx (LC A; y = 180°) + 0.75Wz (LC A; y = 90°))
131	1.2D + 1.6Su + 0.5(0.75Wx (LC B; y = 0°) + 0.75Wz (LC B; y = 90°))
132	1.2D + 1.6Su + 0.5(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°))
133	1.2D + 1.6Su + 0.5(0.75Wx (Min.) + 0.75Wz (Min.))
134	1.2D + 1.6Ssliding + 0.5Wx (LC A; y = 0°)
135	1.2D + 1.6Ssliding + 0.5Wx (LC B; y = 0°)
136	1.2D + 1.6Ssliding + 0.5Wx (LC A; y = 180°)
137	1.2D + 1.6Ssliding + 0.5Wx (LC B; y = 180°)
138	1.2D + 1.6Ssliding + 0.5Wz (LC A; y = 90°)
139	1.2D + 1.6Ssliding + 0.5Wz (LC B; y = 90°)
140	1.2D + 1.6Ssliding + 0.5Wx (Min.)
141	1.2D + 1.6Ssliding + 0.5Wz (Min.)
142	1.2D + 1.6Ssliding + 0.5(0.75Wx (LC A; y = 0°) + 0.75Wz (LC A; y = 90°))
143	1.2D + 1.6Ssliding + 0.5(0.75Wx (LC A; y = 180°) + 0.75Wz (LC A; y = 90°))
144	1.2D + 1.6Ssliding + 0.5(0.75Wx (LC B; y = 0°) + 0.75Wz (LC B; y = 90°))
145	1.2D + 1.6Ssliding + 0.5(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°))
146	1.2D + 1.6Ssliding + 0.5(0.75Wx (Min.) + 0.75Wz (Min.))
147	1.2D + 1.6Sdrift + 0.5Wx (LC A; y = 0°)
148	1.2D + 1.6Sdrift + 0.5Wx (LC B; y = 0°)
149	1.2D + 1.6Sdrift + 0.5Wx (LC A; y = 180°)
150	1.2D + 1.6Sdrift + 0.5Wx (LC B; y = 180°)
151	1.2D + 1.6Sdrift + 0.5Wz (LC A; y = 90°)
152	1.2D + 1.6Sdrift + 0.5Wz (LC B; y = 90°)
153	1.2D + 1.6Sdrift + 0.5Wx (Min.)
154	1.2D + 1.6Sdrift + 0.5Wz (Min.)
155	1.2D + 1.6Sdrift + 0.5(0.75Wx (LC A; y = 0°) + 0.75Wz (LC A; y = 90°))
156	1.2D + 1.6Sdrift + 0.5(0.75Wx (LC A; y = 180°) + 0.75Wz (LC A; y = 90°)
157	1.2D + 1.6Sdrift + 0.5(0.75Wx (LC B; y = 0°) + 0.75Wz (LC B; y = 90°))
158	1.2D + 1.6Sdrift + 0.5(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°)
159	1.2D + 1.6Sdrift + 0.5(0.75Wx (Min.) + 0.75Wz (Min.))
160	1.2D + 1.0Wx (LC A; y = 0°) + 0.5Lr
161	1.2D + 1.0Wx (LC B; y = 0°) + 0.5Lr
162	1.2D + 1.0Wx (LC A; y = 180°) + 0.5Lr
163	1.2D + 1.0Wx (LC B; y = 180°) + 0.5Lr
164	1.2D + 1.0Wz (LC A; y = 90°) + 0.5Lr
165	1.2D + 1.0Wz (LC B; y = 90°) + 0.5Lr
166	1.2D + 1.0Wx (Min.) + 0.5Lr
167	1.2D + 1.0Wz (Min.) + 0.5Lr
168	1.2D + 1.0(0.75Wx (LC A; y = 0°) + 0.75Wz (LC A; y = 90°)) + 0.5Lr
169	1.2D + 1.0(0.75Wx (LC A; y = 180°) + 0.75Wz (LC A; y = 90°)) + 0.5Lr
170	1.2D + 1.0(0.75Wx (LC B; y = 0°) + 0.75Wz (LC B; y = 90°)) + 0.5Lr
171	1.2D + 1.0(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°)) + 0.5Lr
172	1.2D + 1.0(0.75Wx (Min.) + 0.75Wz (Min.)) +0.5Lr
173	1.2D + 1.0Wx (LC A; y = 0°) + 0.5S
174	1.2D + 1.0Wx (LC B; y = 0°) + 0.5S
175	1.2D + 1.0Wx (LC A; y = 180°) + 0.5S
176	1.2D + 1.0Wx (LC B; y = 180°) + 0.5S
177	1.2D + 1.0Wz (LC A; y = 90°) + 0.5S
178	1.2D + 1.0Wz (LC B; y = 90°) + 0.5S
179	1.2D + 1.0Wx (Min.) + 0.5S
180	1.2D + 1.0Wz (Min.) + 0.5S
181	1.2D + 1.0(0.75Wx (LC A; y = 0°) + 0.75Wz (LC A; y = 90°)) + 0.5S
182	1.2D + 1.0(0.75Wx (LC A; y = 180°) + 0.75Wz (LC A; y = 90°)) + 0.5S
183	1.2D + 1.0(0.75Wx (LC B; y = 0°) + 0.75Wz (LC B; y = 90°)) + 0.5S
184	1.2D + 1.0(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°)) + 0.5S
185	1.2D + 1.0(0.75Wx (Min.) + 0.75Wz (Min.)) +0.5S
186	0.9D + 1.0Wx (LC A; y = 0°)
187	0.9D + 1.0Wx (LC B; y = 0°)
188	0.9D + 1.0Wx (LC A; y = 180°)
189	0.9D + 1.0Wx (LC B; y = 180°)
190	0.9D + 1.0Wz (LC A; y = 90°)
191	0.9D + 1.0Wz (LC B; y = 90°)
192	0.9D + 1.0Wx (Min.)
193	0.9D + 1.0Wz (Min.)
194	0.9D + 1.0(0.75Wx (LC A; y = 0°) + 0.75Wz (LC A; y = 90°))
195	0.9D + 1.0(0.75Wx (LC A; y = 180°) + 0.75Wz (LC A; y = 90°))
196	0.9D + 1.0(0.75Wx (LC B; y = 0°) + 0.75Wz (LC B; y = 90°))
197	0.9D + 1.0(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°))
198	0.9D + 1.0(0.75Wx (Min.) + 0.75Wz (Min.))
199	1.2D+Ev+Ehx+0.2S
200	0.9D-Ev+Ehx
201	1.2D+Ev+Ehz+0.2S
202	0.9D-Ev+Ehz
203	1.2D+Ev+Ehx+0.3Ehz+0.2S

Notes:

1. Load combinations are effective in all states that have adopted IBC as a base code.
2. See "RISA Analysis Report" for the load combinations that are not listed above.

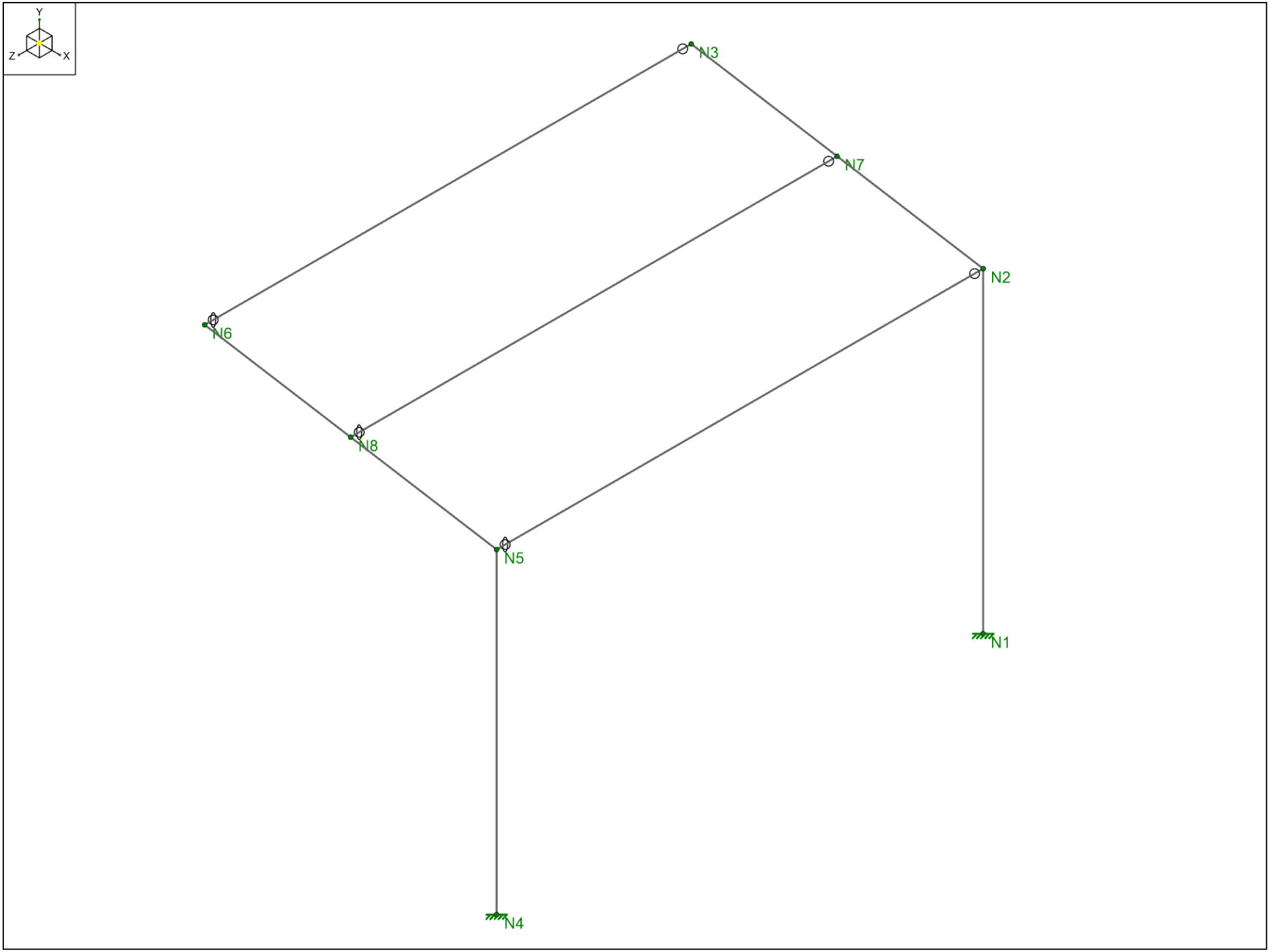
MATERIALS

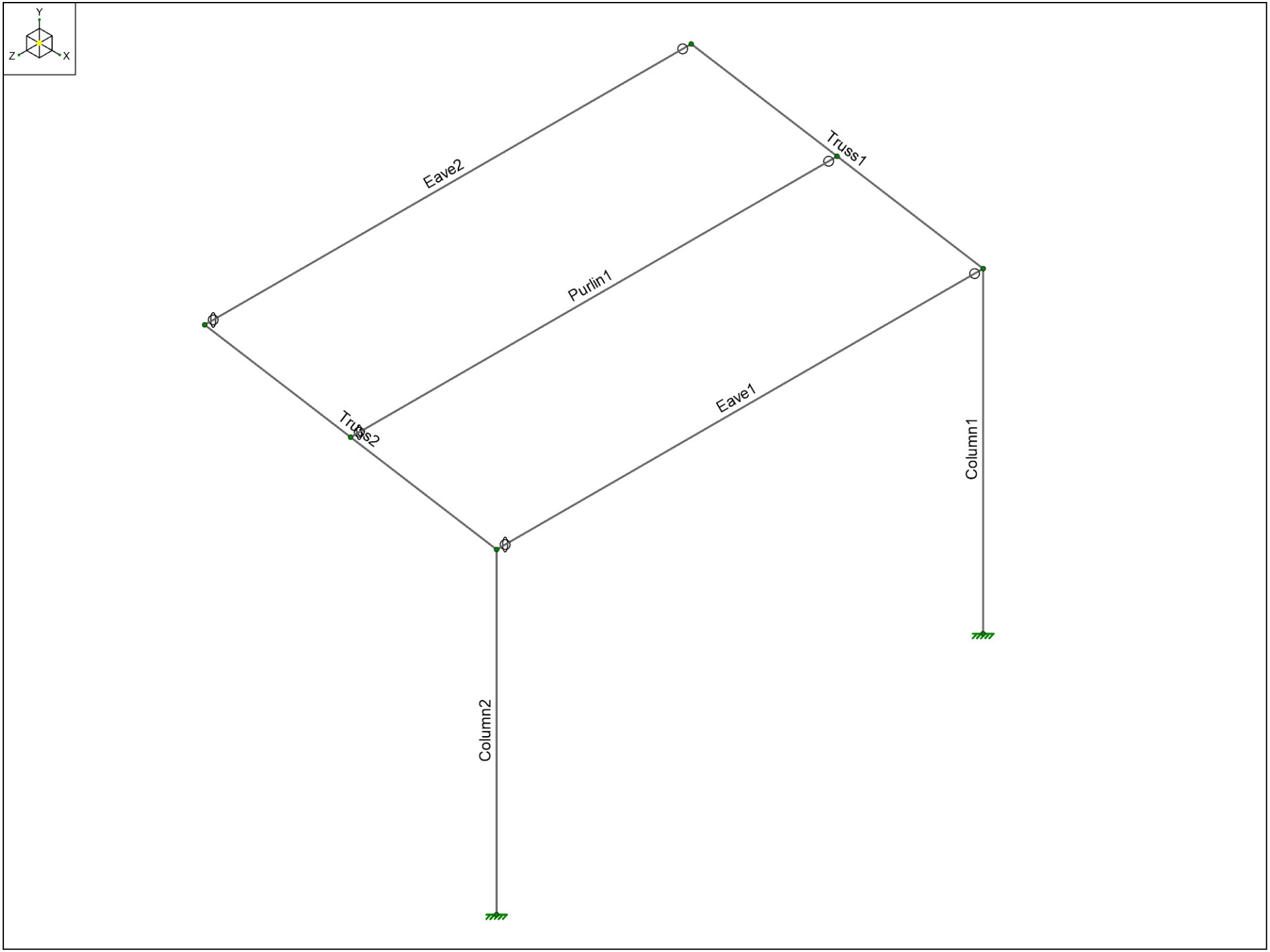
Column	HSS12x8x3/16
Truss	HSS12x8x3/16
Eave	HSS6x4x3/16
Purlin	HSS6x4x3/16

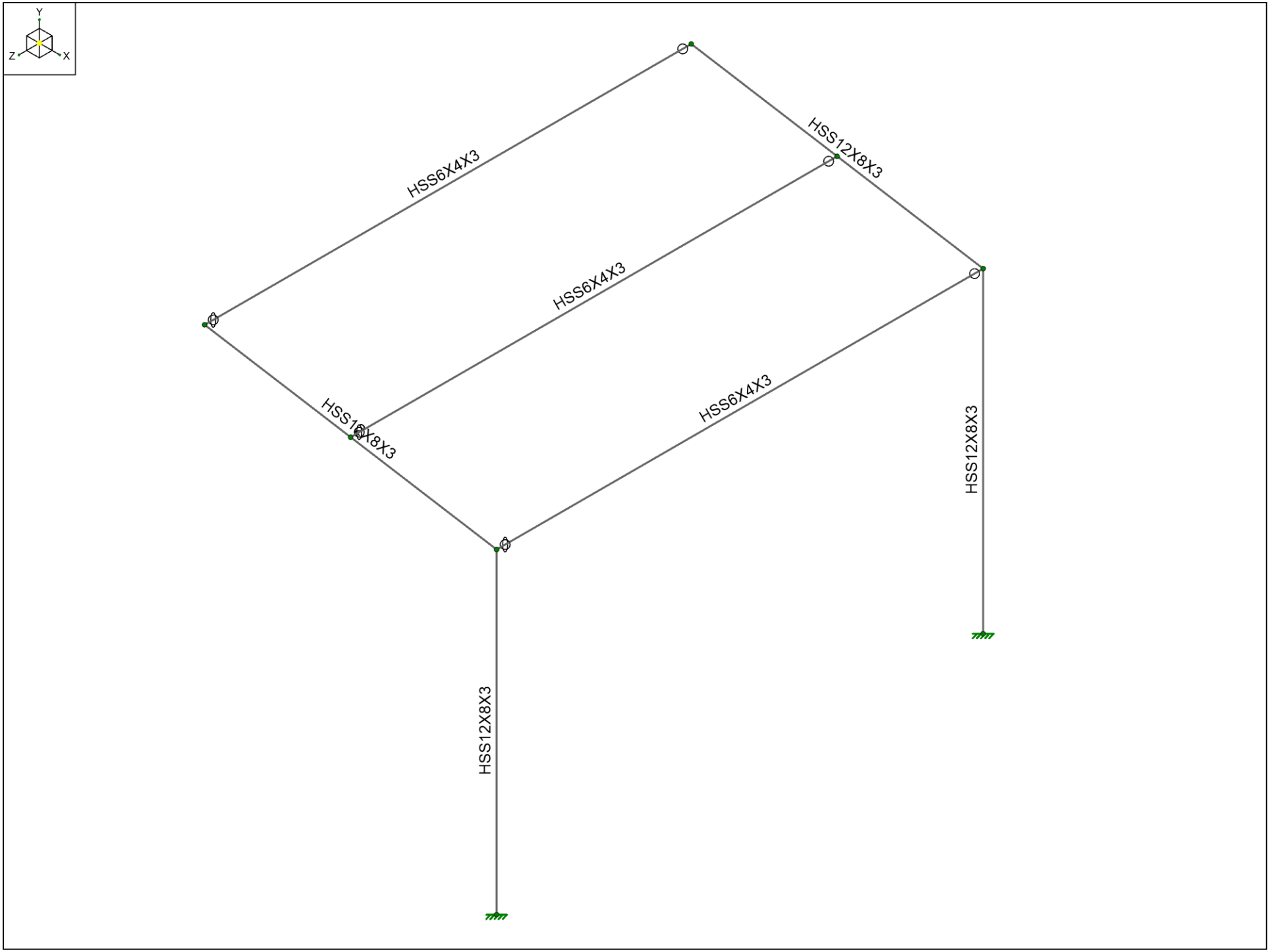
HSS Sections:	ASTM A500 Gr. C
Pipe Sections:	ASTM A53 Gr. B
RMT Sections:	ASTM A519
Channel & Angle Sections:	ASTM A36
Connection Plates:	ASTM A36
Connections Bolts	ASTM A325
Welding Process:	Gas Metal Arc Welding
Welding Electrode:	E70xx

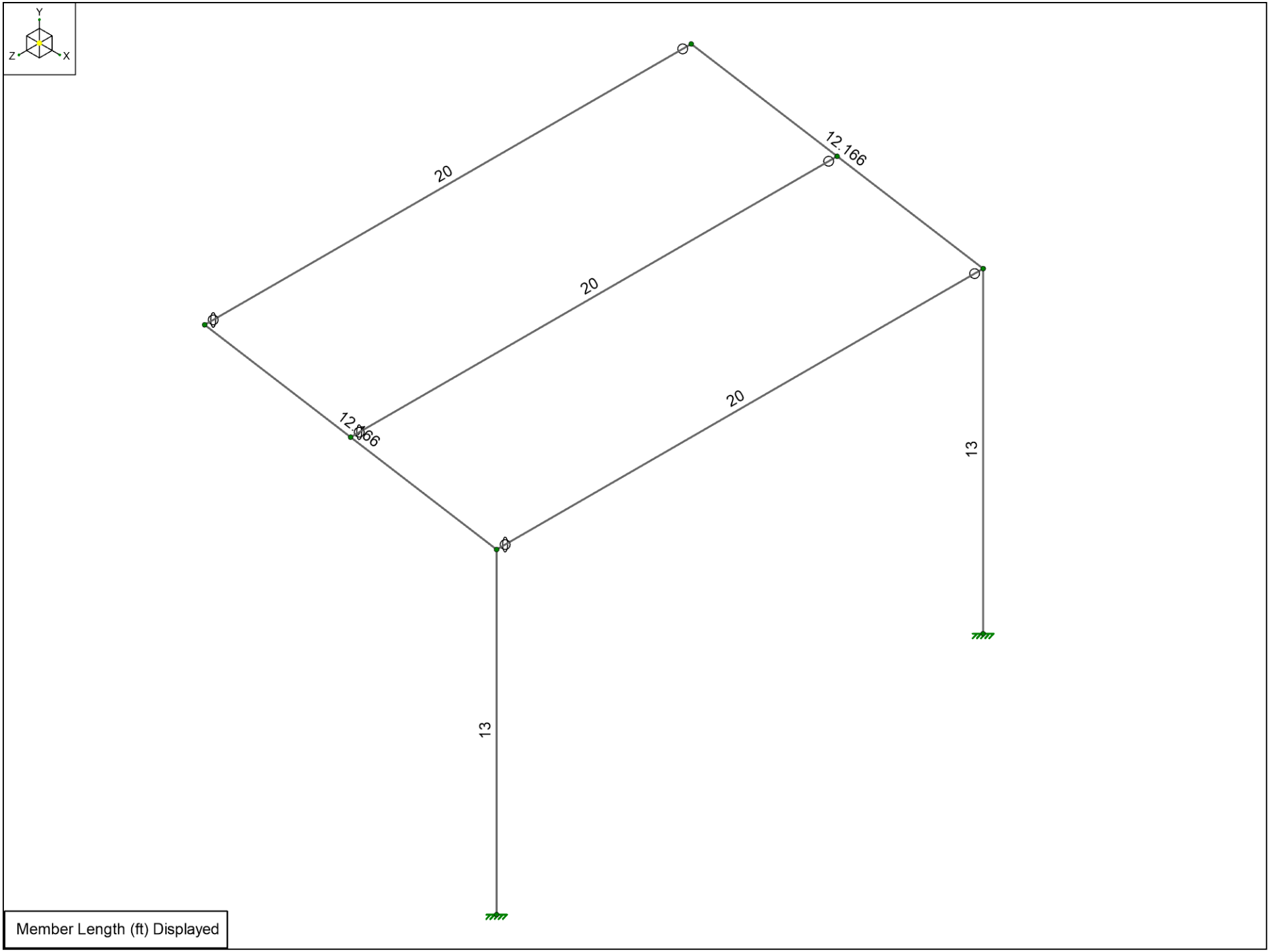
RISA MODEL VIEWS

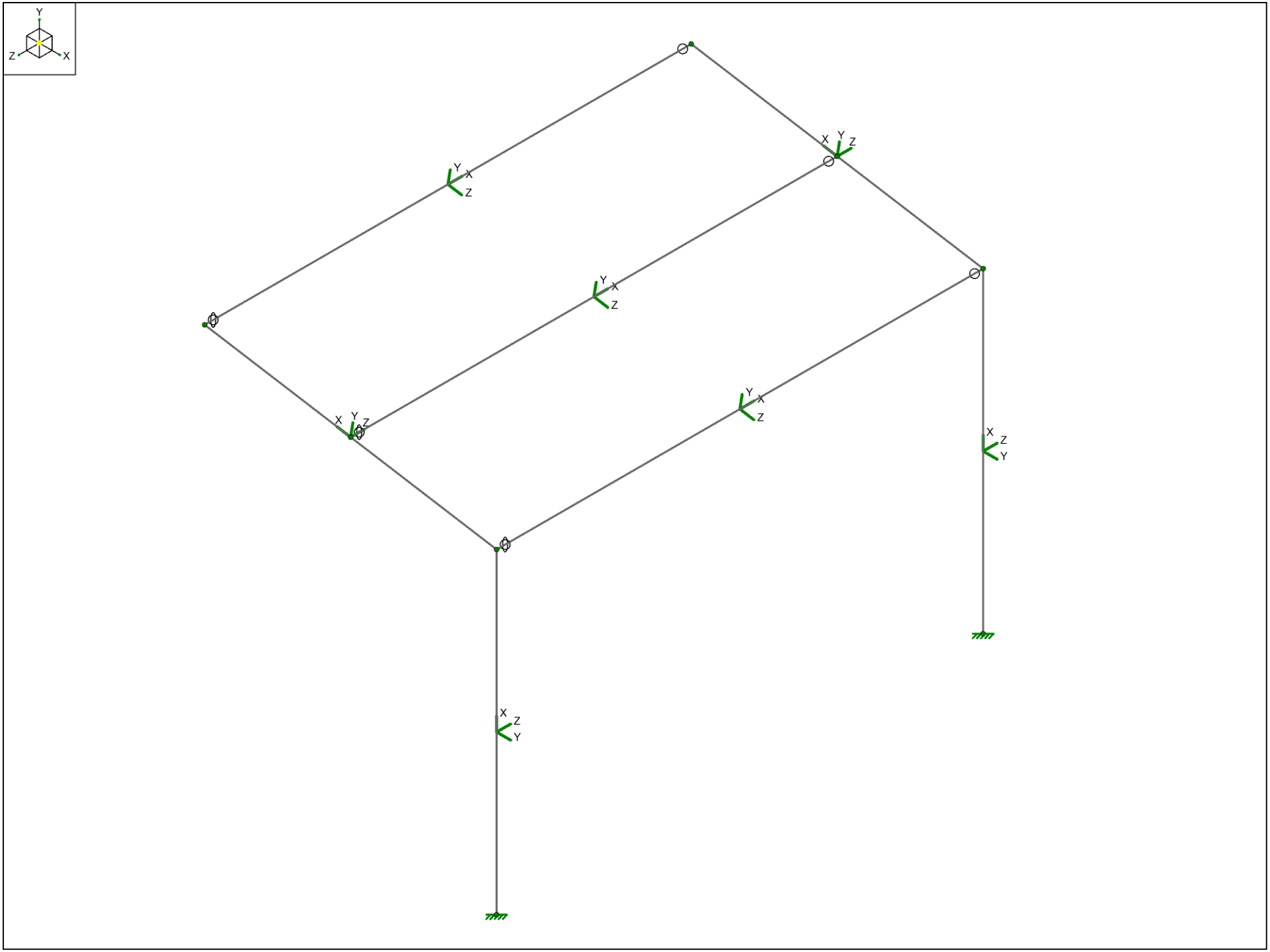
Joint Labels
Member Labels
Member Shapes
Member Lengths
Member Local Axis


Y
Z
X
N3
N7
N2
N6
N8
N5
N1
N4


Y
Z
X
Eave2
Truss1
Purlin1
Truss2
Eave1
Column1
Column2


Y
Z
X
HSS6X4X3
HSS12X8X3
HSS6X4X3
HSS12X8X3
HSS6X4X3
HSS12X8X3
HSS12X8X3

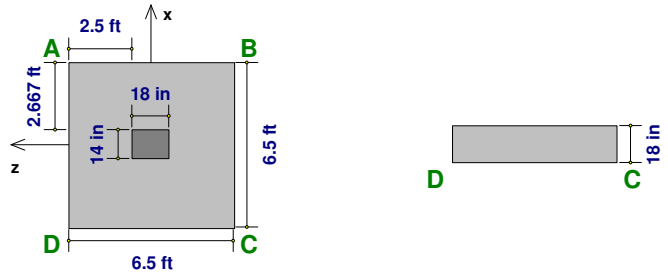

Y
Z
X
20
12.166
20
12.166
20
13
13
Member Length (ft) Displayed


Y
Z
X

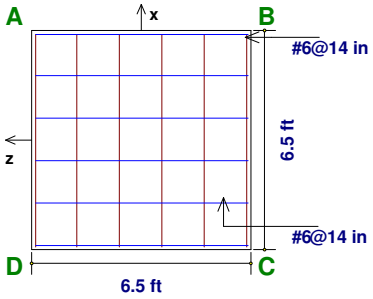
FOUNDATION DESIGN

The foundation design contained herein is site specific, and is based on Geotechnical Investigation for the Fourth Street Community Center and Park, Southeast corner of N. 4th Street & E. Henderson Avenue, Porterville, Tulare County, California, by Soils Engineering, Inc.. Dated January 13, 2023. Report No. 22-18633. Proper care must be taken to ensure any and all recommendations of the above mentioned report for site preparation, soil performance, and foundation design are met. If conditions are present that do not allow for these recommendations to be met, the geotechnical engineer must be contacted.

Sketch

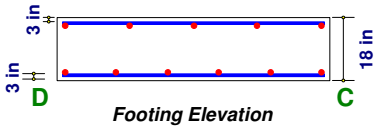


Details

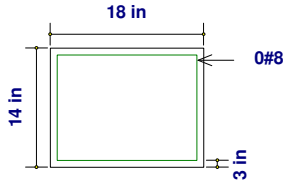


x Dir. Steel: 2.65 in^2 (6 #6)
z Dir. Steel: 2.65 in^2 (6 #6)

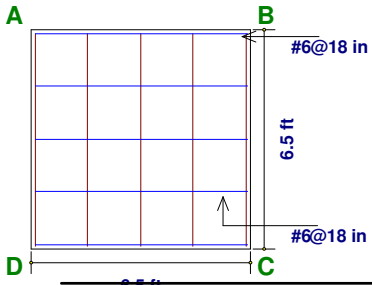
Bottom Rebar Plan



Footing Elevation



Pedestal Rebar Plan



x Dir. Steel: 2.21 in^2 (5 #6)
z Dir. Steel: 2.21 in^2 (5 #6)

Geometry, Materials and Criteria

Length:	6.5 ft	eX:	0 in	Net Allowable Bearing:	2500 psf (net)	Steel fy:	60 ksi
Width:	6.5 ft	eZ:	0 in	Concrete Weight:	145 lb/ft^3	Minimum Steel:	.0018
Thickness:	18 in	pX:	14 in	Concrete f'c:	4.5 ksi	Maximum Steel:	.0075
Height:	0 in	pZ:	18 in	Design Code:	ACI 318-19		
Rot. Angle:	0 deg						

Footing Top Bar Cover:	3 in	Overturning / Sliding SF:	1.5	Φ for Flexure:	0.9
Footing Bottom Bar Cover:	3 in	Coefficient of Friction:	0.4	Φ for Shear:	0.75
Pedestal Longitudinal Bar Cover:	3 in	Passive Resistance of Soil:	0 k	Φ for Bearing:	0.65

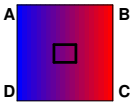
Loads

	P (k)	Vx (k)	Vz (k)	Mx (k-in)	Mz (k-in)	Overburden (psf)
DL	1.23			65.6		0
RLL	2.4		-0.02	175.79		
ELX			-0.66	94.38		
ELY	0.13			6.7		
ELZ		-0.66			-94.51	
WL+X	-0.9		0.1	-81.8		
WL+Z	1.29		-0.22	140.13		
WL-X	-0.78		0.13	-106.64		
WL-Z	1.04		-0.18	80.1		
OL1	-0.82		0.13	-81.37		
OL2	0.82		-0.1	82.1		

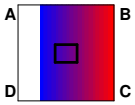
Soil Bearing

Description	Categories and Factors	Gross Allow.(psf)	Max Bearing (psf)	Max/Allowable Ratio
D	1DL	2717.5	366.048 (B)	0.135
D + Lr	1DL+1RLL	2717.5	783.33 (C)	0.288
D + S	1DL+1SL	2717.5	366.048 (B)	0.135
D + Su	1DL+1OL3	2717.5	366.048 (B)	0.135
D+Ssliding	1DL+1OL4	2717.5	366.048 (B)	0.135
D+Sdrift	1DL+1OL5	2717.5	366.048 (B)	0.135
D + 0.6Wx (LC..	1DL+1WL+X	2717.5	258.083 (A)	0.095
D + 0.6Wx (LC..	1DL+1WL-X	2717.5	307.131 (A)	0.113
D + 0.6Wx (LC..	1DL+1WL+Z	2717.5	683.266 (B)	0.251
D + 0.6Wx (LC..	1DL+1WL-Z	2717.5	542.398 (B)	0.2
D + 0.6Wz (LC..	1DL+1OL1	2717.5	260.176 (A)	0.096
D + 0.6Wz (LC..	1DL+1OL2	2717.5	538.282 (B)	0.198
D + 0.6Wx (Mi..	1DL	2717.5	366.048 (B)	0.135
D + 0.6Wz (Mi..	1DL	2717.5	366.048 (B)	0.135
D + 0.6(0.75W..	1DL+0.75WL+X+0.75OL1	2717.5	325.106 (A)	0.12
D + 0.6(0.75W..	1DL+0.75WL+Z+0.75OL1	2717.5	456.84 (B)	0.168
D + 0.6(0.75W..	1DL+0.75WL-X+0.75OL2	2717.5	332.511 (B)	0.122
D + 0.6(0.75W..	1DL+0.75WL-Z+0.75OL2	2717.5	636.895 (B)	0.234
D + 0.6(0.75W..	1DL	2717.5	366.048 (B)	0.135
D + 0.75(0.6W..	1DL+0.75WL+X+0.75RLL	2717.5	519.052 (B)	0.191
D + 0.75(0.6W..	1DL+0.75WL-X+0.75RLL	2717.5	486.526 (B)	0.179
D + 0.75(0.6W..	1DL+0.75WL+Z+0.75RLL	2717.5	1026.449 (B)	0.378
D + 0.75(0.6W..	1DL+0.75WL-Z+0.75RLL	2717.5	842.85 (B)	0.31
D + 0.75(0.6W..	1DL+0.75OL1+0.75RLL	2717.5	520.322 (B)	0.191
D + 0.75(0.6W..	1DL+0.75OL2+0.75RLL	2717.5	845.065 (B)	0.311
D + 0.75(0.6W..	1DL+0.75RLL	2717.5	659.044 (B)	0.243
D + 0.75(0.6W..	1DL+0.75RLL	2717.5	659.044 (B)	0.243
D + 0.75(0.6(..	1DL+0.5625WL+X+0.5625O..	2717.5	454.939 (B)	0.167
D + 0.75(0.6(..	1DL+0.5625WL+Z+0.5625O..	2717.5	751.628 (B)	0.277
D + 0.75(0.6(..	1DL+0.5625WL-X+0.5625O..	2717.5	627.739 (B)	0.231
D + 0.75(0.6(..	1DL+0.5625WL-Z+0.5625O..	2717.5	960.157 (B)	0.353
D + 0.75(0.6(..	1DL+0.75RLL	2717.5	659.044 (B)	0.243
D + 0.75(0.6W..	1DL+0.75WL+X+0.75SL	2717.5	235.916 (B)	0.087
D + 0.75(0.6W..	1DL+0.75WL-X+0.75SL	2717.5	262.143 (A)	0.096
D + 0.75(0.6W..	1DL+0.75WL+Z+0.75SL	2717.5	590.128 (B)	0.217
D + 0.75(0.6W..	1DL+0.75WL-Z+0.75SL	2717.5	498.31 (B)	0.183
D + 0.75(0.6W..	1DL+0.75OL1+0.75SL	2717.5	237.186 (B)	0.087
D + 0.75(0.6W..	1DL+0.75OL2+0.75SL	2717.5	495.17 (B)	0.182
D + 0.75(0.6W..	1DL+0.75SL	2717.5	366.048 (B)	0.135
D + 0.75(0.6W..	1DL+0.75SL	2717.5	366.048 (B)	0.135
D + 0.75(0.6(..	1DL+0.5625WL+X+0.5625O..	2717.5	275.624 (A)	0.101
D + 0.75(0.6(..	1DL+0.5625WL+Z+0.5625O..	2717.5	434.142 (B)	0.16
D + 0.75(0.6(..	1DL+0.5625WL-X+0.5625O..	2717.5	340.896 (B)	0.125
D + 0.75(0.6(..	1DL+0.5625WL-Z+0.5625O..	2717.5	562.8 (B)	0.207
D + 0.75(0.6(..	1DL+0.75SL	2717.5	366.048 (B)	0.135
0.6D + 0.6Wx ..	0.6DL+1WL+X	2717.5	207.212 (A)	0.076

0.6D + 0.6Wx ..	0.6DL+1WL-X	2717.5	256.261 (A)	0.094
0.6D + 0.6Wx ..	0.6DL+1WL+Z	2717.5	632.504 (B)	0.233
0.6D + 0.6Wx ..	0.6DL+1WL-Z	2717.5	404.75 (B)	0.149
0.6D + 0.6Wz ..	0.6DL+1OL1	2717.5	209.306 (A)	0.077
0.6D + 0.6Wz ..	0.6DL+1OL2	2717.5	403.506 (B)	0.148
0.6D + 0.6Wx ..	0.6DL	2717.5	219.629 (B)	0.081
0.6D + 0.6Wz ..	0.6DL	2717.5	219.629 (B)	0.081
0.6 + 0.6(0.7..	0.6DL+0.75WL+X+0.75OL1	2717.5	282.161 (A)	0.104
0.6D + 0.6(0...	0.6DL+0.75WL+Z+0.75OL1	2717.5	310.421 (B)	0.114
0.6D + 0.6(0...	0.6DL+0.75WL-X+0.75OL2	2717.5	186.092 (B)	0.068
0.6D + 0.6(0...	0.6DL+0.75WL-Z+0.75OL2	2717.5	539.347 (B)	0.198
0.6D + 0.6(0...	0.6DL	2717.5	219.629 (B)	0.081
1.0D+0.7Ev+0...	1DL+0.7ELY+0.7ELX	2717.5	512.609 (B)	0.189
1.0D+0.525Ev+..	1DL+0.525ELY+0.525ELX+..	2717.5	475.636 (B)	0.175
0.6D-0.7Ev+0...	0.6DL+-0.7ELY+0.7ELX	2717.5	356.001 (B)	0.131
1.0D+0.7Ev+0...	1DL+0.7ELY+0.7ELZ	2717.5	512.369 (C)	0.189
1.0D+0.525Ev+..	1DL+0.525ELY+0.525ELZ+..	2717.5	475.76 (C)	0.175
0.6D-0.7Ev+0...	0.6DL+-0.7ELY+0.7ELZ	2717.5	348.229 (C)	0.128
1.0D+0.7Ev+0...	1DL+0.7ELY+0.7ELX+0.21..	2717.5	555.852 (C)	0.205
1.0D+0.525Ev+..	1DL+0.525ELY+0.525ELX+..	2717.5	506.17 (C)	0.186
0.6D-0.7Ev+0...	0.6DL+-0.7ELY+0.7ELX+0..	2717.5	408.599 (C)	0.15
1.0D+0.7Ev+0...	1DL+0.7ELY+0.7ELZ+0.21..	2717.5	554.485 (C)	0.204
1.0D+0.525Ev+..	1DL+0.525ELY+0.525ELZ+..	2717.5	506.243 (C)	0.186
0.6D-0.7Ev+0...	0.6DL+-0.7ELY+0.7ELZ+0..	2717.5	399.546 (C)	0.147



1DL
QA: 127.177 psf
QB: 366.048 psf
QC: 366.048 psf
QD: 127.177 psf
NAZ: 119.528 in
NAX: -1 in



1DL+1RLL
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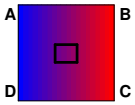
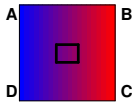
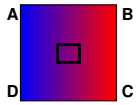
QC: 783.33 psf
QD: 0 psf
NAZ: 60.425 in
NAX: -1 in



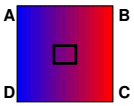
1DL+1SL
QA: 127.177 psf
QB: 366.048 psf
QC: 366.048 psf
QD: 127.177 psf
NAZ: 119.528 in
NAX: -1 in



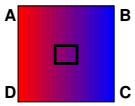
1DL+1OL3
QA: 127.177 psf
QB: 366.048 psf
QC: 366.048 psf
QD: 127.177 psf
NAZ: 119.528 in
NAX: -1 in



1DL+1OL4
QA: 127.177 psf
QB: 366.048 psf
QC: 366.048 psf
QD: 127.177 psf
NAZ: 119.528 in
NAX: -1 in



1DL+1OL5
QA: 127.177 psf
QB: 366.048 psf
QC: 366.048 psf
QD: 127.177 psf
NAZ: 119.528 in
NAX: -1 in



1DL+1WL+X
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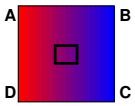
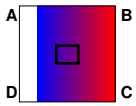
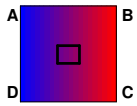
QB: 192.539 psf
QC: 192.539 psf
QD: 258.083 psf
NAZ: 307.129 in
NAX: -1 in



1DL+1WL-X
QA: 307.131 psf
QB: 149.17 psf
QC: 149.17 psf
QD: 307.131 psf
NAZ: 151.659 in
NAX: -1 in



1DL+1WL+Z
QA: 0 psf
QB: 683.266 psf
QC: 683.266 psf
QD: 0 psf
NAZ: 63.276 in
NAX: -1 in



1DL+1WL-Z
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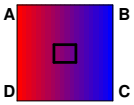
QB: 542.398 psf
QC: 542.398 psf
QD: 0.058 psf
NAZ: 78.008 in
NAX: -1 in



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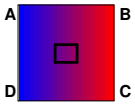
QB: 194.232 psf
QC: 194.232 psf
QD: 260.176 psf
NAZ: 307.74 in
NAX: -1 in



1DL+1OL2
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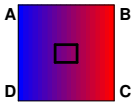
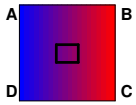
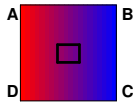
QB: 538.282 psf
QC: 538.282 psf
QD: 0 psf
NAZ: 77.096 in
NAX: -1 in



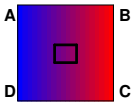
1DL
QA: 127.177 psf
QB: 366.048 psf
QC: 366.048 psf
QD: 127.177 psf
NAZ: 119.528 in
NAX: -1 in



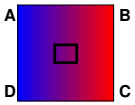
1DL
QA: 127.177 psf
QB: 366.048 psf
QC: 366.048 psf
QD: 127.177 psf
NAZ: 119.528 in
NAX: -1 in



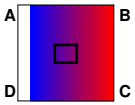
1DL+0.75WL+X+..
QA: 325.106 psf
QB: 107.054 psf
QC: 107.054 psf
QD: 325.106 psf
NAZ: 116.295 in
NAX: -1 in



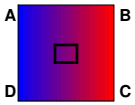
1DL+0.75WL+Z+..
QA: 53.071 psf
QB: 456.84 psf
QC: 456.84 psf
QD: 53.071 psf
NAZ: 88.252 in
NAX: -1 in



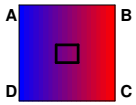
1DL+0.75WL-X+..
QA: 162.134 psf
QB: 332.511 psf
QC: 332.511 psf
QD: 162.134 psf
NAZ: 152.226 in
NAX: -1 in



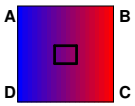
1DL+0.75WL-Z+..
QA: 0 psf
QB: 636.895 psf
QC: 636.895 psf
QD: 0 psf
NAZ: 68.492 in
NAX: -1 in



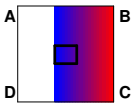
1DL
QA: 127.177 psf
QB: 366.048 psf
QC: 366.048 psf
QD: 127.177 psf
NAZ: 119.528 in
NAX: -1 in



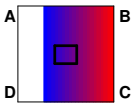
1DL+0.75WL+X+..
QA: 27.427 psf
QB: 519.052 psf
QC: 519.052 psf
QD: 27.427 psf
NAZ: 82.352 in
NAX: -1 in



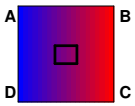
1DL+0.75WL-X+..
QA: 64.214 psf
QB: 486.526 psf
QC: 486.526 psf
QD: 64.214 psf
NAZ: 89.86 in
NAX: -1 in



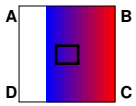
1DL+0.75WL+Z+..
QA: 0 psf
QB: 1026.449 psf
QC: 1026.449 psf
QD: 0 psf
NAZ: 47.435 in
NAX: -1 in



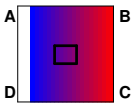
1DL+0.75WL-Z+..
QA: 0 psf
QB: 842.85 psf
QC: 842.85 psf
QD: 0 psf
NAZ: 56.947 in
NAX: -1 in



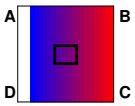
1DL+0.75OL1+0..
QA: 28.997 psf
QB: 520.322 psf
QC: 520.322 psf
QD: 28.997 psf
NAZ: 82.603 in
NAX: -1 in



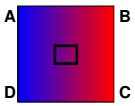
1DL+0.75OL2+0..
QA: 0 psf
QB: 845.065 psf
QC: 845.065 psf
QD: 0 psf
NAZ: 56.077 in
NAX: -1 in



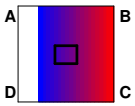
1DL+0.75RLL
QA: 0 psf
QB: 659.044 psf
QC: 659.044 psf
QD: 0 psf
NAZ: 68.459 in
NAX: -1 in



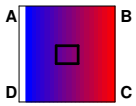
1DL+0.75RLL
QA: 0 psf
QB: 659.044 psf
QC: 659.044 psf
QD: 0 psf
NAZ: 68.459 in
NAX: -1 in



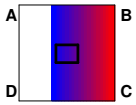
1DL+0.5625WL+..
QA: 77.695 psf
QB: 454.939 psf
QC: 454.939 psf
QD: 77.695 psf
NAZ: 94.064 in
NAX: -1 in



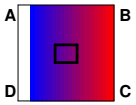
1DL+0.5625WL+..
QA: 0 psf
QB: 751.628 psf
QC: 751.628 psf
QD: 0 psf
NAZ: 61.325 in
NAX: -1 in



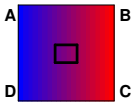
1DL+0.5625WL-..
QA: 0 psf
QB: 627.739 psf
QC: 627.739 psf
QD: 0 psf
NAZ: 72.006 in
NAX: -1 in



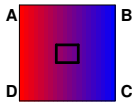
1DL+0.5625WL-..
QA: 0 psf
QB: 960.157 psf
QC: 960.157 psf
QD: 0 psf
NAZ: 51.013 in
NAX: -1 in



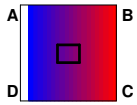
1DL+0.75RLL
QA: 0 psf
QB: 659.044 psf
QC: 659.044 psf
QD: 0 psf
NAZ: 68.459 in
NAX: -1 in



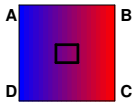
1DL+0.75WL+X+..
QA: 225.356 psf
QB: 235.916 psf
QC: 235.916 psf
QD: 225.356 psf
NAZ: 1742.586 in
NAX: -1 in



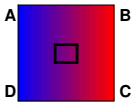
1DL+0.75WL-X+..
QA: 262.143 psf
QB: 203.39 psf
QC: 203.39 psf
QD: 262.143 psf
NAZ: 348.019 in
NAX: -1 in



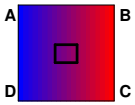
1DL+0.75WL+Z+..
QA: 0 psf
QB: 590.128 psf
QC: 590.128 psf
QD: 0 psf
NAZ: 71.245 in
NAX: -1 in



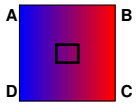
1DL+0.75WL-Z+..
QA: 31.838 psf
QB: 498.31 psf
QC: 498.31 psf
QD: 31.838 psf
NAZ: 83.324 in
NAX: -1 in



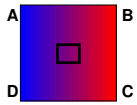
1DL+0.75OL1+0..
QA: 226.926 psf
QB: 237.186 psf
QC: 237.186 psf
QD: 226.926 psf
NAZ: 1803.266 in
NAX: -1 in



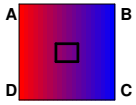
1DL+0.75OL2+0..
QA: 27.168 psf
QB: 495.17 psf
QC: 495.17 psf
QD: 27.168 psf
NAZ: 82.528 in
NAX: -1 in



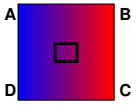
1DL+0.75SL
QA: 127.177 psf
QB: 366.048 psf
QC: 366.048 psf
QD: 127.177 psf
NAZ: 119.528 in
NAX: -1 in



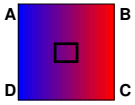
1DL+0.75SL
QA: 127.177 psf
QB: 366.048 psf
QC: 366.048 psf
QD: 127.177 psf
NAZ: 119.528 in
NAX: -1 in



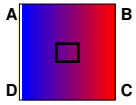
1DL+0.5625WL+..
QA: 275.624 psf
QB: 171.802 psf
QC: 171.802 psf
QD: 275.624 psf
NAZ: 207.074 in
NAX: -1 in



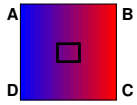
1DL+0.5625WL+..
QA: 71.598 psf
QB: 434.142 psf
QC: 434.142 psf
QD: 71.598 psf
NAZ: 93.404 in
NAX: -1 in



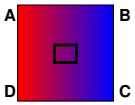
1DL+0.5625WL-..
QA: 153.394 psf
QB: 340.896 psf
QC: 340.896 psf
QD: 153.394 psf
NAZ: 141.812 in
NAX: -1 in



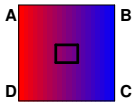
1DL+0.5625WL-..
QA: 0 psf
QB: 562.8 psf
QC: 562.8 psf
QD: 0 psf
NAZ: 75.221 in
NAX: -1 in



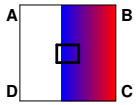
1DL+0.75SL
QA: 127.177 psf
QB: 366.048 psf
QC: 366.048 psf
QD: 127.177 psf
NAZ: 119.528 in
NAX: -1 in



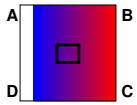
0.6DL+1WL+X
QA: 207.212 psf
QB: 46.119 psf
QC: 46.119 psf
QD: 207.212 psf
NAZ: 100.331 in
NAX: -1 in



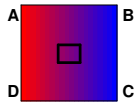
0.6DL+1WL-X
QA: 256.261 psf
QB: 2.751 psf
QC: 2.751 psf
QD: 256.261 psf
NAZ: 78.847 in
NAX: -1 in



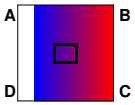
0.6DL+1WL+Z
QA: 0 psf
QB: 632.504 psf
QC: 632.504 psf
QD: 0 psf
NAZ: 44.025 in
NAX: -1 in



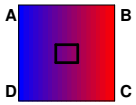
0.6DL+1WL-Z
QA: 0 psf
QB: 404.75 psf
QC: 404.75 psf
QD: 0 psf
NAZ: 66.517 in
NAX: -1 in



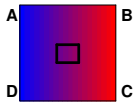
0.6DL+1OL1
QA: 209.306 psf
QB: 47.813 psf
QC: 47.813 psf
QD: 209.306 psf
NAZ: 101.093 in
NAX: -1 in



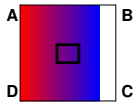
0.6DL+1OL2
QA: 0 psf
QB: 403.506 psf
QC: 403.506 psf
QD: 0 psf
NAZ: 64.709 in
NAX: -1 in



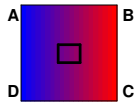
0.6DL
QA: 76.306 psf
QB: 219.629 psf
QC: 219.629 psf
QD: 76.306 psf
NAZ: 119.528 in
NAX: -1 in



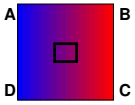
0.6DL
QA: 76.306 psf
QB: 219.629 psf
QC: 219.629 psf
QD: 76.306 psf
NAZ: 119.528 in
NAX: -1 in



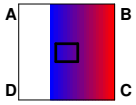
0.6DL+0.75WL+..
QA: 282.161 psf
QB: 0 psf
QC: 0 psf
QD: 282.161 psf
NAZ: 64.927 in
NAX: -1 in



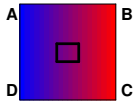
0.6DL+0.75WL+..
QA: 2.201 psf
QB: 310.421 psf
QC: 310.421 psf
QD: 2.201 psf
NAZ: 78.557 in
NAX: -1 in



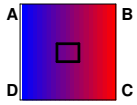
0.6DL+0.75WL-..
QA: 111.263 psf
QB: 186.092 psf
QC: 186.092 psf
QD: 111.263 psf
NAZ: 193.977 in
NAX: -1 in



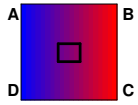
0.6DL+0.75WL-..
QA: 0 psf
QB: 539.347 psf
QC: 539.347 psf
QD: 0 psf
NAZ: 52.348 in
NAX: -1 in



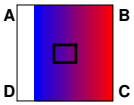
0.6DL
QA: 76.306 psf
QB: 219.629 psf
QC: 219.629 psf
QD: 76.306 psf
NAZ: 119.528 in
NAX: -1 in



1DL+0.7ELY+0...
QA: 0 psf
QB: 512.609 psf
QC: 512.609 psf
QD: 0 psf
NAZ: 75.706 in
NAX: -1 in

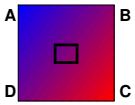


1DL+0.525ELY+..
QA: 20.82 psf
QB: 475.636 psf
QC: 475.636 psf
QD: 20.82 psf
NAZ: 81.571 in
NAX: -1 in

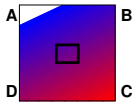


0.6DL+-0.7ELY..
QA: 0 psf
QB: 356.001 psf
QC: 356.001 psf
QD: 0 psf
NAZ: 63.896 in
NAX: -1 in

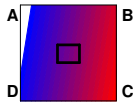
1DL+0.7ELY+0...
QA: 0 psf
QB: 241.143 psf
QC: 512.369 psf
QD: 256.374 psf
NAZ: 156.116 in
NAX: 147.348 in



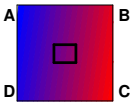
1DL+0.525ELY+..
QA: 20.695 psf
QB: 272.375 psf
QC: 475.76 psf
QD: 224.081 psf
NAZ: 147.447 in
NAX: 182.458 in



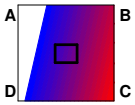
0.6DL+-0.7ELY..
QA: 0 psf
QB: 72.096 psf
QC: 348.229 psf
QD: 217.685 psf
NAZ: 208.067 in
NAX: 98.365 in



1DL+0.7ELY+0...
QA: 0 psf
QB: 471.405 psf
QC: 555.852 psf
QD: 24.53 psf
NAZ: 81.601 in
NAX: 513.412 in

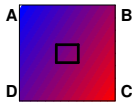


1DL+0.525ELY+..
QA: 0 psf
QB: 445.124 psf
QC: 506.17 psf
QD: 51.321 psf
NAZ: 86.801 in
NAX: 646.745 in

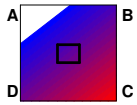


0.6DL+-0.7ELY..
QA: 0 psf
QB: 307.99 psf
QC: 408.599 psf
QD: 0 psf
NAZ: 71.928 in
NAX: 316.778 in

1DL+0.7ELY+0...
QA: 0 psf
QB: 281.454 psf
QC: 554.485 psf
QD: 215.389 psf
NAZ: 127.544 in
NAX: 158.406 in



1DL+0.525ELY+..
QA: 0 psf
QB: 302.843 psf
QC: 506.243 psf
QD: 193.608 psf
NAZ: 126.304 in
NAX: 194.135 in



0.6DL+-0.7ELY..
QA: 0 psf
QB: 109.322 psf
QC: 399.546 psf
QD: 174.375 psf
NAZ: 138.404 in
NAX: 107.381 in

Footing Flexure Design (Bottom Bars)

As-min x-dir (Top Flexure): **0 in^2**
As-min z-dir (Top Flexure): **0 in^2**
As-min x-dir (Bot Flexure): **2.527 in^2**
As-min z-dir (Bot Flexure): **2.527 in^2**
As-min x-dir (T & S): **2.527 in^2**
As-min z-dir (T & S): **2.527 in^2**

Description	Categories and Factors	Mu-xx UC Max	Mu-xx (k-in)	z-Dir As Required (in^2)	z-Dir As Provided (in^2)	Mu-zz UC Max	Mu-zz (k-in)	x-Dir As Required (in^2)	x-Dir As Provided (in^2)
1.4D	1.4DL	0.0201	40.24	0.052	2.651	0.00565	11.3	0.015	2.651
1.2D + 0.5L..	1.2DL+0.5RLL	0.03521	70.48	0.092	2.651	0.00878	17.57	0.023	2.651
1.2D + 0.5S	1.2DL+0.5SL	0.01723	34.49	0.045	2.651	0.00484	9.69	0.013	2.651
1.2D + 1.6L..	1.2DL+1.6RLL+0.8..	0.06427	128.64	0.167	2.651	0.01497	29.97	0.039	2.651
1.2D + 1.6L..	1.2DL+1.6RLL+0.8..	0.05957	119.24	0.155	2.651	0.0153	30.63	0.04	2.651
1.2D + 1.6L..	1.2DL+1.6RLL+0.8..	0.13021	260.62	0.34	2.651	0.02096	41.95	0.055	2.651
1.2D + 1.6L..	1.2DL+1.6RLL+0.8..	0.1085	217.17	0.283	2.651	0.02028	40.58	0.053	2.651
1.2D + 1.6L..	1.2DL+1.6RLL+0.8..	0.06436	128.82	0.168	2.651	0.01519	30.41	0.04	2.651
1.2D + 1.6L..	1.2DL+1.6RLL+0.8..	0.10905	218.27	0.284	2.651	0.01967	39.38	0.051	2.651
1.2D + 1.6L..	1.2DL+1.6RLL	0.08437	168.88	0.22	2.651	0.01743	34.89	0.045	2.651
1.2D + 1.6L..	1.2DL+1.6RLL	0.08437	168.88	0.22	2.651	0.01743	34.89	0.045	2.651
1.2D + 1.6L..	1.2DL+1.6RLL+0.6..	0.05571	111.51	0.145	2.651	0.01391	27.84	0.036	2.651
1.2D + 1.6L..	1.2DL+1.6RLL+0.6..	0.09715	194.45	0.253	2.651	0.0184	36.82	0.048	2.651
1.2D + 1.6L..	1.2DL+1.6RLL+0.6..	0.07961	159.34	0.207	2.651	0.01752	35.06	0.046	2.651
1.2D + 1.6L..	1.2DL+1.6RLL+0.6..	0.12268	245.54	0.32	2.651	0.02125	42.53	0.055	2.651
1.2D + 1.6L..	1.2DL+1.6RLL	0.08437	168.88	0.22	2.651	0.01743	34.89	0.045	2.651
1.2D + 1.6S..	1.2DL+1.6SL+0.83..	0.00359	7.18	0.009	2.651	0.00238	4.77	0.006	2.651
1.2D + 1.6S..	1.2DL+1.6SL+0.83..	0.00438	8.76	0.011	2.651	0.00271	5.42	0.007	2.651
1.2D + 1.6S..	1.2DL+1.6SL+0.83..	0.04033	80.72	0.105	2.651	0.00837	16.75	0.022	2.651
1.2D + 1.6S..	1.2DL+1.6SL+0.83..	0.03118	62.41	0.081	2.651	0.00768	15.38	0.02	2.651
1.2D + 1.6S..	1.2DL+1.6SL+0.83..	0.00376	7.53	0.01	2.651	0.0026	5.2	0.007	2.651
1.2D + 1.6S..	1.2DL+1.6SL+0.83..	0.03073	61.51	0.08	2.651	0.00708	14.17	0.018	2.651
1.2D + 1.6S..	1.2DL+1.6SL	0.01723	34.49	0.045	2.651	0.00484	9.69	0.013	2.651
1.2D + 1.6S..	1.2DL+1.6SL	0.01723	34.49	0.045	2.651	0.00484	9.69	0.013	2.651
1.2D + 1.6S..	1.2DL+1.6SL+0.62..	0.00542	10.84	0.014	2.651	0.00132	2.63	0.003	2.651
1.2D + 1.6S..	1.2DL+1.6SL+0.62..	0.0243	48.64	0.063	2.651	0.0058	11.62	0.015	2.651
1.2D + 1.6S..	1.2DL+1.6SL+0.62..	0.01472	29.46	0.038	2.651	0.00492	9.85	0.013	2.651
1.2D + 1.6S..	1.2DL+1.6SL+0.62..	0.03783	75.72	0.098	2.651	0.00865	17.32	0.023	2.651
1.2D + 1.6S..	1.2DL+1.6SL	0.01723	34.49	0.045	2.651	0.00484	9.69	0.013	2.651
1.2D + 1.6S..	1.2DL+1.6OL3+0.8..	0.00359	7.18	0.009	2.651	0.00238	4.77	0.006	2.651
1.2D + 1.6S..	1.2DL+1.6OL3+0.8..	0.00438	8.76	0.011	2.651	0.00271	5.42	0.007	2.651
1.2D + 1.6S..	1.2DL+1.6OL3+0.8..	0.04033	80.72	0.105	2.651	0.00837	16.75	0.022	2.651
1.2D + 1.6S..	1.2DL+1.6OL3+0.8..	0.03118	62.41	0.081	2.651	0.00768	15.38	0.02	2.651
1.2D + 1.6S..	1.2DL+1.6OL3+0.8..	0.00376	7.53	0.01	2.651	0.0026	5.2	0.007	2.651
1.2D + 1.6S..	1.2DL+1.6OL3+0.8..	0.03073	61.51	0.08	2.651	0.00708	14.17	0.018	2.651
1.2D + 1.6S..	1.2DL+1.6OL3	0.01723	34.49	0.045	2.651	0.00484	9.69	0.013	2.651
1.2D + 1.6S..	1.2DL+1.6OL3	0.01723	34.49	0.045	2.651	0.00484	9.69	0.013	2.651
1.2D + 1.6S..	1.2DL+1.6OL3+0.6..	0.00542	10.84	0.014	2.651	0.00132	2.63	0.003	2.651
1.2D + 1.6S..	1.2DL+1.6OL3+0.6..	0.0243	48.64	0.063	2.651	0.0058	11.62	0.015	2.651
1.2D + 1.6S..	1.2DL+1.6OL3+0.6..	0.01472	29.46	0.038	2.651	0.00492	9.85	0.013	2.651

1.2D + 1.6S..	1.2DL+1.6OL3+0.6..	0.03783	75.72	0.098	2.651	0.00865	17.32	0.023	2.651
1.2D + 1.6S..	1.2DL+1.6OL3	0.01723	34.49	0.045	2.651	0.00484	9.69	0.013	2.651
1.2D + 1.6S..	1.2DL+1.6OL4+0.8..	0.00359	7.18	0.009	2.651	0.00238	4.77	0.006	2.651
1.2D + 1.6S..	1.2DL+1.6OL4+0.8..	0.00438	8.76	0.011	2.651	0.00271	5.42	0.007	2.651
1.2D + 1.6S..	1.2DL+1.6OL4+0.8..	0.04033	80.72	0.105	2.651	0.00837	16.75	0.022	2.651
1.2D + 1.6S..	1.2DL+1.6OL4+0.8..	0.03118	62.41	0.081	2.651	0.00768	15.38	0.02	2.651
1.2D + 1.6S..	1.2DL+1.6OL4+0.8..	0.00376	7.53	0.01	2.651	0.0026	5.2	0.007	2.651
1.2D + 1.6S..	1.2DL+1.6OL4+0.8..	0.03073	61.51	0.08	2.651	0.00708	14.17	0.018	2.651
1.2D + 1.6S..	1.2DL+1.6OL4	0.01723	34.49	0.045	2.651	0.00484	9.69	0.013	2.651
1.2D + 1.6S..	1.2DL+1.6OL4	0.01723	34.49	0.045	2.651	0.00484	9.69	0.013	2.651
1.2D + 1.6S..	1.2DL+1.6OL4+0.6..	0.00542	10.84	0.014	2.651	0.00132	2.63	0.003	2.651
1.2D + 1.6S..	1.2DL+1.6OL4+0.6..	0.0243	48.64	0.063	2.651	0.0058	11.62	0.015	2.651
1.2D + 1.6S..	1.2DL+1.6OL4+0.6..	0.01472	29.46	0.038	2.651	0.00492	9.85	0.013	2.651
1.2D + 1.6S..	1.2DL+1.6OL4+0.6..	0.03783	75.72	0.098	2.651	0.00865	17.32	0.023	2.651
1.2D + 1.6S..	1.2DL+1.6OL4	0.01723	34.49	0.045	2.651	0.00484	9.69	0.013	2.651
1.2D + 1.6S..	1.2DL+1.6OL5+0.8..	0.00359	7.18	0.009	2.651	0.00238	4.77	0.006	2.651
1.2D + 1.6S..	1.2DL+1.6OL5+0.8..	0.00438	8.76	0.011	2.651	0.00271	5.42	0.007	2.651
1.2D + 1.6S..	1.2DL+1.6OL5+0.8..	0.04033	80.72	0.105	2.651	0.00837	16.75	0.022	2.651
1.2D + 1.6S..	1.2DL+1.6OL5+0.8..	0.03118	62.41	0.081	2.651	0.00768	15.38	0.02	2.651
1.2D + 1.6S..	1.2DL+1.6OL5+0.8..	0.00376	7.53	0.01	2.651	0.0026	5.2	0.007	2.651
1.2D + 1.6S..	1.2DL+1.6OL5+0.8..	0.03073	61.51	0.08	2.651	0.00708	14.17	0.018	2.651
1.2D + 1.6S..	1.2DL+1.6OL5	0.01723	34.49	0.045	2.651	0.00484	9.69	0.013	2.651
1.2D + 1.6S..	1.2DL+1.6OL5	0.01723	34.49	0.045	2.651	0.00484	9.69	0.013	2.651
1.2D + 1.6S..	1.2DL+1.6OL5+0.6..	0.00542	10.84	0.014	2.651	0.00132	2.63	0.003	2.651
1.2D + 1.6S..	1.2DL+1.6OL5+0.6..	0.0243	48.64	0.063	2.651	0.0058	11.62	0.015	2.651
1.2D + 1.6S..	1.2DL+1.6OL5+0.6..	0.01472	29.46	0.038	2.651	0.00492	9.85	0.013	2.651
1.2D + 1.6S..	1.2DL+1.6OL5+0.6..	0.03783	75.72	0.098	2.651	0.00865	17.32	0.023	2.651
1.2D + 1.6S..	1.2DL+1.6OL5	0.01723	34.49	0.045	2.651	0.00484	9.69	0.013	2.651
1.2D + 1.0W..	1.2DL+1.66667WL+..	0.00792	15.85	0.021	2.651	0.00386	7.72	0.01	2.651
1.2D + 1.0W..	1.2DL+1.66667WL-..	0.00641	12.84	0.017	2.651	0.00451	9.03	0.012	2.651
1.2D + 1.0W..	1.2DL+1.66667WL+..	0.10189	203.94	0.266	2.651	0.01583	31.68	0.041	2.651
1.2D + 1.0W..	1.2DL+1.66667WL-..	0.06781	135.73	0.177	2.651	0.01446	28.94	0.038	2.651
1.2D + 1.0W..	1.2DL+1.66667OL1..	0.00827	16.56	0.022	2.651	0.00429	8.59	0.011	2.651
1.2D + 1.0W..	1.2DL+1.66667OL2..	0.06767	135.44	0.176	2.651	0.01326	26.54	0.034	2.651
1.2D + 1.0W..	1.2DL+0.5RLL	0.03521	70.48	0.092	2.651	0.00878	17.57	0.023	2.651
1.2D + 1.0W..	1.2DL+0.5RLL	0.03521	70.48	0.092	2.651	0.00878	17.57	0.023	2.651
1.2D + 1.0(..	1.2DL+1.25WL+X+1..	0.0085	17.01	0.022	2.651	0.00172	3.45	0.004	2.651
1.2D + 1.0(..	1.2DL+1.25WL+Z+1..	0.05068	101.44	0.132	2.651	0.0107	21.42	0.028	2.651
1.2D + 1.0(..	1.2DL+1.25WL-X+1..	0.03019	60.42	0.079	2.651	0.00894	17.89	0.023	2.651
1.2D + 1.0(..	1.2DL+1.25WL-Z+1..	0.08958	179.31	0.233	2.651	0.0164	32.83	0.043	2.651
1.2D + 1.0(..	1.2DL+0.5RLL	0.03521	70.48	0.092	2.651	0.00878	17.57	0.023	2.651
1.2D + 1.0W..	1.2DL+1.66667WL+..	0.00992	19.86	0.026	2.651	0	0	0	2.651
1.2D + 1.0W..	1.2DL+1.66667WL-..	0.01747	34.98	0.045	2.651	0.00058	1.16	0.002	2.651
1.2D + 1.0W..	1.2DL+1.66667WL+..	0.07098	142.08	0.185	2.651	0.01189	23.8	0.031	2.651
1.2D + 1.0W..	1.2DL+1.66667WL-..	0.04555	91.17	0.119	2.651	0.01052	21.07	0.027	2.651
1.2D + 1.0W..	1.2DL+1.66667OL1..	0.01034	20.69	0.027	2.651	0.00036	0.72	0.001	2.651
1.2D + 1.0W..	1.2DL+1.66667OL2..	0.04483	89.73	0.117	2.651	0.00932	18.66	0.024	2.651
1.2D + 1.0W..	1.2DL+0.5SL	0.01723	34.49	0.045	2.651	0.00484	9.69	0.013	2.651
1.2D + 1.0W..	1.2DL+0.5SL	0.01723	34.49	0.045	2.651	0.00484	9.69	0.013	2.651

1.2D + 1.0(..	1.2DL+1.25WL+X+1..	0.01956	39.15	0.051	2.651	0	0	0	2.651
1.2D + 1.0(..	1.2DL+1.25WL+Z+1..	0.03137	62.79	0.082	2.651	0.00677	13.55	0.018	2.651
1.2D + 1.0(..	1.2DL+1.25WL-X+1..	0.01221	24.44	0.032	2.651	0.005	10.02	0.013	2.651
1.2D + 1.0(..	1.2DL+1.25WL-Z+1..	0.06235	124.8	0.162	2.651	0.01247	24.95	0.032	2.651
1.2D + 1.0(..	1.2DL+0.5SL	0.01723	34.49	0.045	2.651	0.00484	9.69	0.013	2.651
0.9D + 1.0W..	0.9DL+1.66667WL+X	0.01211	24.23	0.031	2.651	0	0	0	2.651
0.9D + 1.0W..	0.9DL+1.66667WL-X	0.01987	39.77	0.052	2.651	0	0	0	2.651
0.9D + 1.0W..	0.9DL+1.66667WL+Z	0.07476	149.64	0.195	2.651	0.01068	21.38	0.028	2.651
0.9D + 1.0W..	0.9DL+1.66667WL-Z	0.0424	84.87	0.11	2.651	0.00931	18.64	0.024	2.651
0.9D + 1.0W..	0.9DL+1.66667OL1	0.01252	25.06	0.033	2.651	0	0	0	2.651
0.9D + 1.0W..	0.9DL+1.66667OL2	0.04197	84	0.109	2.651	0.00811	16.24	0.021	2.651
0.9D + 1.0W..	0.9DL	0.01292	25.87	0.034	2.651	0.00363	7.27	0.009	2.651
0.9D + 1.0W..	0.9DL	0.01292	25.87	0.034	2.651	0.00363	7.27	0.009	2.651
0.9D + 1.0(..	0.9DL+1.25WL+X+1..	0.02471	49.47	0.064	2.651	0	0	0	2.651
0.9D + 1.0(..	0.9DL+1.25WL+Z+1..	0.02707	54.19	0.07	2.651	0.00556	11.12	0.014	2.651
0.9D + 1.0(..	0.9DL+1.25WL-X+1..	0.0079	15.81	0.021	2.651	0.00379	7.59	0.01	2.651
0.9D + 1.0(..	0.9DL+1.25WL-Z+1..	0.06258	125.27	0.163	2.651	0.01126	22.53	0.029	2.651
0.9D + 1.0(..	0.9DL	0.01292	25.87	0.034	2.651	0.00363	7.27	0.009	2.651
1.2D+Ev+Ehx..	1.2DL+1ELY+1ELX+..	0.03657	73.19	0.095	2.651	0.00527	10.54	0.014	2.651
0.9D-Ev+Ehx	0.9DL+-1ELY+1ELX	0.02992	59.89	0.078	2.651	0.0032	6.41	0.008	2.651
1.2D+Ev+Ehz..	1.2DL+1ELY+1ELZ+..	0.01874	37.5	0.049	2.651	0.02479	49.62	0.065	2.651
0.9D-Ev+Ehz	0.9DL+-1ELY+1ELZ	0.01154	23.09	0.03	2.651	0.02283	45.7	0.059	2.651
1.2D+Ev+Ehx..	1.2DL+1ELY+1ELX+..	0.03671	73.48	0.096	2.651	0.01121	22.43	0.029	2.651
0.9D-Ev+Ehx..	0.9DL+-1ELY+1ELX..	0.03012	60.28	0.078	2.651	0.00918	18.37	0.024	2.651
1.2D+Ev+Ehz..	1.2DL+1ELY+1ELZ+..	0.02415	48.33	0.063	2.651	0.02495	49.95	0.065	2.651
0.9D-Ev+Ehz..	0.9DL+-1ELY+1ELZ..	0.01709	34.21	0.044	2.651	0.02319	46.41	0.06	2.651

Footing Flexure Design (Top Bars)

Description	Categories and Factors	Mu-xx (k-in)	z Dir As (in^2)	Mu-zz (k-in)	x Dir As (in^2)
SW+OB	**1SW+1OB-(1.2D + 1..,0.9D-Ev+..)**	**53.016**	**0.069**	**38.294**	**0.05**

Moment Capacity of Plain Concrete Section Along xx and zz= 669.747k-in,669.747k-in Per Chapter 22 of ACI 318.

Footing Shear Check

Two Way (Punching) Vc: **420.171 k** One Way (x Dir. Cut) Vc: **79.694 k** One Way (z Dir. Cut) Vc: **79.694 k**

		Punching		x Dir. Cut		z Dir. Cut	
Description	Categories and Factors	Vu(k)	Vu/(ϕVc)	Vu(k)	Vu/(ϕVc)	Vu(k)	Vu/(ϕVc)
1.4D	1.4DL	1.464	0.005	1.486	0.025	0.392	0.007
1.2D + 0.5Lr	1.2DL+0.5RLL	2.275	0.007	2.608	0.044	0.609	0.01
1.2D + 0.5S	1.2DL+0.5SL	1.255	0.004	1.274	0.021	0.336	0.006
1.2D + 1.6Lr ..	1.2DL+1.6RLL+0.833333W..	4.063	0.013	4.783	0.08	1.039	0.017
1.2D + 1.6Lr ..	1.2DL+1.6RLL+0.833333W..	4.054	0.013	4.419	0.074	1.062	0.018
1.2D + 1.6Lr ..	1.2DL+1.6RLL+0.833333W..	7.349	0.023	10.118	0.169	1.454	0.024
1.2D + 1.6Lr ..	1.2DL+1.6RLL+0.833333W..	6.538	0.021	8.253	0.138	1.407	0.024
1.2D + 1.6Lr ..	1.2DL+1.6RLL+0.833333OL1	4.113	0.013	4.788	0.08	1.054	0.018
1.2D + 1.6Lr ..	1.2DL+1.6RLL+0.833333OL2	6.434	0.02	8.312	0.139	1.365	0.023
1.2D + 1.6Lr ..	1.2DL+1.6RLL	5.178	0.016	6.334	0.106	1.21	0.02
1.2D + 1.6Lr ..	1.2DL+1.6RLL	5.178	0.016	6.334	0.106	1.21	0.02
1.2D + 1.6Lr ..	1.2DL+1.6RLL+0.625WL+X..	3.672	0.012	4.133	0.069	0.965	0.016
1.2D + 1.6Lr ..	1.2DL+1.6RLL+0.625WL+Z..	5.793	0.018	7.351	0.123	1.277	0.021
1.2D + 1.6Lr ..	1.2DL+1.6RLL+0.625WL-X..	5.034	0.016	5.956	0.1	1.215	0.02
1.2D + 1.6Lr ..	1.2DL+1.6RLL+0.625WL-Z..	7.182	0.023	9.436	0.158	1.474	0.025
1.2D + 1.6Lr ..	1.2DL+1.6RLL	5.178	0.016	6.334	0.106	1.21	0.02
1.2D + 1.6S +..	1.2DL+1.6SL+0.833333WL+X	0.617	0.002	0.259	0.004	0.165	0.003
1.2D + 1.6S +..	1.2DL+1.6SL+0.833333WL-X	0.702	0.002	0.317	0.005	0.188	0.003
1.2D + 1.6S +..	1.2DL+1.6SL+0.833333WL+Z	2.178	0.007	2.995	0.05	0.581	0.01
1.2D + 1.6S +..	1.2DL+1.6SL+0.833333WL-Z	1.992	0.006	2.31	0.039	0.533	0.009
1.2D + 1.6S +..	1.2DL+1.6SL+0.833333OL1	0.674	0.002	0.271	0.005	0.18	0.003
1.2D + 1.6S +..	1.2DL+1.6SL+0.833333OL2	1.836	0.006	2.279	0.038	0.491	0.008
1.2D + 1.6S +..	1.2DL+1.6SL	1.255	0.004	1.274	0.021	0.336	0.006
1.2D + 1.6S +..	1.2DL+1.6SL	1.255	0.004	1.274	0.021	0.336	0.006
1.2D + 1.6S +..	1.2DL+1.6SL+0.625WL+X+..	0.341	0.001	0.401	0.007	0.091	0.002
1.2D + 1.6S +..	1.2DL+1.6SL+0.625WL+Z+..	1.505	0.005	1.801	0.03	0.403	0.007
1.2D + 1.6S +..	1.2DL+1.6SL+0.625WL-X+..	1.276	0.004	1.085	0.018	0.342	0.006
1.2D + 1.6S +..	1.2DL+1.6SL+0.625WL-Z+..	2.244	0.007	2.805	0.047	0.6	0.01
1.2D + 1.6S +..	1.2DL+1.6SL	1.255	0.004	1.274	0.021	0.336	0.006
1.2D + 1.6Su ..	1.2DL+1.6OL3+0.833333W..	0.617	0.002	0.259	0.004	0.165	0.003
1.2D + 1.6Su ..	1.2DL+1.6OL3+0.833333W..	0.702	0.002	0.317	0.005	0.188	0.003
1.2D + 1.6Su ..	1.2DL+1.6OL3+0.833333W..	2.178	0.007	2.995	0.05	0.581	0.01
1.2D + 1.6Su ..	1.2DL+1.6OL3+0.833333W..	1.992	0.006	2.31	0.039	0.533	0.009
1.2D + 1.6Su ..	1.2DL+1.6OL3+0.833333OL1	0.674	0.002	0.271	0.005	0.18	0.003
1.2D + 1.6Su ..	1.2DL+1.6OL3+0.833333OL2	1.836	0.006	2.279	0.038	0.491	0.008
1.2D + 1.6Su ..	1.2DL+1.6OL3	1.255	0.004	1.274	0.021	0.336	0.006
1.2D + 1.6Su ..	1.2DL+1.6OL3	1.255	0.004	1.274	0.021	0.336	0.006
1.2D + 1.6Su ..	1.2DL+1.6OL3+0.625WL+X..	0.341	0.001	0.401	0.007	0.091	0.002
1.2D + 1.6Su ..	1.2DL+1.6OL3+0.625WL+Z..	1.505	0.005	1.801	0.03	0.403	0.007
1.2D + 1.6Su ..	1.2DL+1.6OL3+0.625WL-X..	1.276	0.004	1.085	0.018	0.342	0.006
1.2D + 1.6Su ..	1.2DL+1.6OL3+0.625WL-Z..	2.244	0.007	2.805	0.047	0.6	0.01
1.2D + 1.6Su ..	1.2DL+1.6OL3	1.255	0.004	1.274	0.021	0.336	0.006
1.2D + 1.6Ssl..	1.2DL+1.6OL4+0.833333W..	0.617	0.002	0.259	0.004	0.165	0.003

1.2D + 1.6Ssl..	1.2DL+1.6OL4+0.833333W..	0.702	0.002	0.317	0.005	0.188	0.003
1.2D + 1.6Ssl..	1.2DL+1.6OL4+0.833333W..	2.178	0.007	2.995	0.05	0.581	0.01
1.2D + 1.6Ssl..	1.2DL+1.6OL4+0.833333W..	1.992	0.006	2.31	0.039	0.533	0.009
1.2D + 1.6Ssl..	1.2DL+1.6OL4+0.833333OL1	0.674	0.002	0.271	0.005	0.18	0.003
1.2D + 1.6Ssl..	1.2DL+1.6OL4+0.833333OL2	1.836	0.006	2.279	0.038	0.491	0.008
1.2D + 1.6Ssl..	1.2DL+1.6OL4	1.255	0.004	1.274	0.021	0.336	0.006
1.2D + 1.6Ssl..	1.2DL+1.6OL4	1.255	0.004	1.274	0.021	0.336	0.006
1.2D + 1.6Ssl..	1.2DL+1.6OL4+0.625WL+X..	0.341	0.001	0.401	0.007	0.091	0.002
1.2D + 1.6Ssl..	1.2DL+1.6OL4+0.625WL+Z..	1.505	0.005	1.801	0.03	0.403	0.007
1.2D + 1.6Ssl..	1.2DL+1.6OL4+0.625WL-X..	1.276	0.004	1.085	0.018	0.342	0.006
1.2D + 1.6Ssl..	1.2DL+1.6OL4+0.625WL-Z..	2.244	0.007	2.805	0.047	0.6	0.01
1.2D + 1.6Ssl..	1.2DL+1.6OL4	1.255	0.004	1.274	0.021	0.336	0.006
1.2D + 1.6Sdr..	1.2DL+1.6OL5+0.833333W..	0.617	0.002	0.259	0.004	0.165	0.003
1.2D + 1.6Sdr..	1.2DL+1.6OL5+0.833333W..	0.702	0.002	0.317	0.005	0.188	0.003
1.2D + 1.6Sdr..	1.2DL+1.6OL5+0.833333W..	2.178	0.007	2.995	0.05	0.581	0.01
1.2D + 1.6Sdr..	1.2DL+1.6OL5+0.833333W..	1.992	0.006	2.31	0.039	0.533	0.009
1.2D + 1.6Sdr..	1.2DL+1.6OL5+0.833333OL1	0.674	0.002	0.271	0.005	0.18	0.003
1.2D + 1.6Sdr..	1.2DL+1.6OL5+0.833333OL2	1.836	0.006	2.279	0.038	0.491	0.008
1.2D + 1.6Sdr..	1.2DL+1.6OL5	1.255	0.004	1.274	0.021	0.336	0.006
1.2D + 1.6Sdr..	1.2DL+1.6OL5	1.255	0.004	1.274	0.021	0.336	0.006
1.2D + 1.6Sdr..	1.2DL+1.6OL5+0.625WL+X..	0.341	0.001	0.401	0.007	0.091	0.002
1.2D + 1.6Sdr..	1.2DL+1.6OL5+0.625WL+Z..	1.505	0.005	1.801	0.03	0.403	0.007
1.2D + 1.6Sdr..	1.2DL+1.6OL5+0.625WL-X..	1.276	0.004	1.085	0.018	0.342	0.006
1.2D + 1.6Sdr..	1.2DL+1.6OL5+0.625WL-Z..	2.244	0.007	2.805	0.047	0.6	0.01
1.2D + 1.6Sdr..	1.2DL+1.6OL5	1.255	0.004	1.274	0.021	0.336	0.006
1.2D + 1.0Wx ..	1.2DL+1.66667WL+X+0.5RLL	1	0.003	0.578	0.01	0.268	0.004
1.2D + 1.0Wx ..	1.2DL+1.66667WL-X+0.5RLL	1.17	0.004	0.462	0.008	0.313	0.005
1.2D + 1.0Wx ..	1.2DL+1.66667WL+Z+0.5RLL	5.425	0.017	7.802	0.131	1.098	0.018
1.2D + 1.0Wx ..	1.2DL+1.66667WL-Z+0.5RLL	4.039	0.013	5.062	0.085	1.003	0.017
1.2D + 1.0Wz ..	1.2DL+1.66667OL1+0.5RLL	1.113	0.004	0.603	0.01	0.298	0.005
1.2D + 1.0Wz ..	1.2DL+1.66667OL2+0.5RLL	3.787	0.012	5.063	0.085	0.92	0.015
1.2D + 1.0Wx ..	1.2DL+0.5RLL	2.275	0.007	2.608	0.044	0.609	0.01
1.2D + 1.0Wz ..	1.2DL+0.5RLL	2.275	0.007	2.608	0.044	0.609	0.01
1.2D + 1.0(0...	1.2DL+1.25WL+X+1.25OL1..	0.447	0.001	0.631	0.011	0.12	0.002
1.2D + 1.0(0...	1.2DL+1.25WL+Z+1.25OL1..	2.844	0.009	3.769	0.063	0.743	0.012
1.2D + 1.0(0...	1.2DL+1.25WL-X+1.25OL2..	2.318	0.007	2.229	0.037	0.62	0.01
1.2D + 1.0(0...	1.2DL+1.25WL-Z+1.25OL2..	5.144	0.016	6.769	0.113	1.138	0.019
1.2D + 1.0(0...	1.2DL+0.5RLL	2.275	0.007	2.608	0.044	0.609	0.01
1.2D + 1.0Wx ..	1.2DL+1.66667WL+X+0.5SL	NA	NA	0.756	0.013	0.005	0
1.2D + 1.0Wx ..	1.2DL+1.66667WL-X+0.5SL	0.15	0	1.311	0.022	0.04	0
1.2D + 1.0Wx ..	1.2DL+1.66667WL+Z+0.5SL	3.627	0.012	5.339	0.089	0.825	0.014
1.2D + 1.0Wx ..	1.2DL+1.66667WL-Z+0.5SL	2.749	0.009	3.379	0.057	0.73	0.012
1.2D + 1.0Wz ..	1.2DL+1.66667OL1+0.5SL	0.093	0	0.776	0.013	0.025	0
1.2D + 1.0Wz ..	1.2DL+1.66667OL2+0.5SL	2.446	0.008	3.332	0.056	0.647	0.011
1.2D + 1.0Wx ..	1.2DL+0.5SL	1.255	0.004	1.274	0.021	0.336	0.006
1.2D + 1.0Wz ..	1.2DL+0.5SL	1.255	0.004	1.274	0.021	0.336	0.006
1.2D + 1.0(0...	1.2DL+1.25WL+X+1.25OL1..	NA	NA	1.753	0.029	0.153	0.003
1.2D + 1.0(0...	1.2DL+1.25WL+Z+1.25OL1..	1.754	0.006	2.328	0.039	0.47	0.008
1.2D + 1.0(0...	1.2DL+1.25WL-X+1.25OL2..	1.297	0.004	0.895	0.015	0.347	0.006

1.2D + 1.0(0...	1.2DL+1.25WL-Z+1.25OL2..	3.469	0.011	4.655	0.078	0.865	0.014
1.2D + 1.0(0...	1.2DL+0.5SL	1.255	0.004	1.274	0.021	0.336	0.006
0.9D + 1.0Wx ..	0.9DL+1.66667WL+X	NA	NA	1.075	0.018	0.089	0.001
0.9D + 1.0Wx ..	0.9DL+1.66667WL-X	NA	NA	1.536	0.026	0.044	0
0.9D + 1.0Wx ..	0.9DL+1.66667WL+Z	3.775	0.012	5.741	0.096	0.741	0.012
0.9D + 1.0Wx ..	0.9DL+1.66667WL-Z	2.501	0.008	3.155	0.053	0.646	0.011
0.9D + 1.0Wz ..	0.9DL+1.66667OL1	NA	NA	1.05	0.018	0.059	0
0.9D + 1.0Wz ..	0.9DL+1.66667OL2	2.22	0.007	3.13	0.052	0.563	0.009
0.9D + 1.0Wx ..	0.9DL	0.941	0.003	0.955	0.016	0.252	0.004
0.9D + 1.0Wz ..	0.9DL	0.941	0.003	0.955	0.016	0.252	0.004
0.9D + 1.0(0...	0.9DL+1.25WL+X+1.25OL1	NA	NA	1.893	0.032	0.237	0.004
0.9D + 1.0(0...	0.9DL+1.25WL+Z+1.25OL1	1.441	0.005	2.011	0.034	0.386	0.006
0.9D + 1.0(0...	0.9DL+1.25WL-X+1.25OL2	0.984	0.003	0.577	0.01	0.263	0.004
0.9D + 1.0(0...	0.9DL+1.25WL-Z+1.25OL2	3.497	0.011	4.721	0.079	0.781	0.013
0.9D + 1.0(0...	0.9DL	0.941	0.003	0.955	0.016	0.252	0.004
1.2D+Ev+Ehx+0..	1.2DL+1ELY+1ELX+0.2SL	1.381	0.004	2.727	0.046	0.365	0.006
0.9D-Ev+Ehx	0.9DL+-1ELY+1ELX	0.881	0.003	2.24	0.037	0.222	0.004
1.2D+Ev+Ehz+0..	1.2DL+1ELY+1ELZ+0.2SL	1.367	0.004	1.385	0.023	1.806	0.03
0.9D-Ev+Ehz	0.9DL+-1ELY+1ELZ	0.837	0.003	0.854	0.014	1.671	0.028
1.2D+Ev+Ehx+0..	1.2DL+1ELY+1ELX+0.3ELZ..	1.39	0.004	2.739	0.046	0.805	0.013
0.9D-Ev+Ehx+0..	0.9DL+-1ELY+1ELX+0.3ELZ	0.896	0.003	2.257	0.038	0.664	0.011
1.2D+Ev+Ehz+0..	1.2DL+1ELY+1ELZ+0.3ELX..	1.376	0.004	1.793	0.03	1.819	0.03
0.9D-Ev+Ehz+0..	0.9DL+-1ELY+1ELZ+0.3ELX	0.86	0.003	1.274	0.021	1.7	0.028

Concrete Bearing Check (Vertical Loads Only)

Bearing Bc : **1927.8 k**

Description	Categories and Factors	Bearing Bu (k)	Bearing Bu/⌀Bc
1.4D	1.4DL	1.722	0.001
1.2D + 0.5Lr	1.2DL+0.5RLL	2.676	0.002
1.2D + 0.5S	1.2DL+0.5SL	1.476	0.001
1.2D + 1.6Lr ..	1.2DL+1.6RLL+0.833333W..	4.566	0.004
1.2D + 1.6Lr ..	1.2DL+1.6RLL+0.833333W..	4.666	0.004
1.2D + 1.6Lr ..	1.2DL+1.6RLL+0.833333W..	6.391	0.005
1.2D + 1.6Lr ..	1.2DL+1.6RLL+0.833333W..	6.183	0.005
1.2D + 1.6Lr ..	1.2DL+1.6RLL+0.833333OL1	4.633	0.004
1.2D + 1.6Lr ..	1.2DL+1.6RLL+0.833333OL2	5.999	0.005
1.2D + 1.6Lr ..	1.2DL+1.6RLL	5.316	0.004
1.2D + 1.6Lr ..	1.2DL+1.6RLL	5.316	0.004
1.2D + 1.6Lr ..	1.2DL+1.6RLL+0.625WL+X..	4.241	0.003
1.2D + 1.6Lr ..	1.2DL+1.6RLL+0.625WL+Z..	5.61	0.004
1.2D + 1.6Lr ..	1.2DL+1.6RLL+0.625WL-X..	5.341	0.004
1.2D + 1.6Lr ..	1.2DL+1.6RLL+0.625WL-Z..	6.478	0.005
1.2D + 1.6Lr ..	1.2DL+1.6RLL	5.316	0.004
1.2D + 1.6S +..	1.2DL+1.6SL+0.833333WL+X	0.726	0
1.2D + 1.6S +..	1.2DL+1.6SL+0.833333WL-X	0.826	0
1.2D + 1.6S +..	1.2DL+1.6SL+0.833333WL+Z	2.551	0.002
1.2D + 1.6S +..	1.2DL+1.6SL+0.833333WL-Z	2.343	0.002
1.2D + 1.6S +..	1.2DL+1.6SL+0.833333OL1	0.793	0
1.2D + 1.6S +..	1.2DL+1.6SL+0.833333OL2	2.159	0.002
1.2D + 1.6S +..	1.2DL+1.6SL	1.476	0.001
1.2D + 1.6S +..	1.2DL+1.6SL	1.476	0.001
1.2D + 1.6S +..	1.2DL+1.6SL+0.625WL+X+..	0.401	0
1.2D + 1.6S +..	1.2DL+1.6SL+0.625WL+Z+..	1.77	0.001
1.2D + 1.6S +..	1.2DL+1.6SL+0.625WL-X+..	1.501	0.001
1.2D + 1.6S +..	1.2DL+1.6SL+0.625WL-Z+..	2.638	0.002
1.2D + 1.6S +..	1.2DL+1.6SL	1.476	0.001
1.2D + 1.6Su ..	1.2DL+1.6OL3+0.833333W..	0.726	0
1.2D + 1.6Su ..	1.2DL+1.6OL3+0.833333W..	0.826	0
1.2D + 1.6Su ..	1.2DL+1.6OL3+0.833333W..	2.551	0.002
1.2D + 1.6Su ..	1.2DL+1.6OL3+0.833333W..	2.343	0.002
1.2D + 1.6Su ..	1.2DL+1.6OL3+0.833333OL1	0.793	0
1.2D + 1.6Su ..	1.2DL+1.6OL3+0.833333OL2	2.159	0.002
1.2D + 1.6Su ..	1.2DL+1.6OL3	1.476	0.001
1.2D + 1.6Su ..	1.2DL+1.6OL3	1.476	0.001
1.2D + 1.6Su ..	1.2DL+1.6OL3+0.625WL+X..	0.401	0
1.2D + 1.6Su ..	1.2DL+1.6OL3+0.625WL+Z..	1.77	0.001
1.2D + 1.6Su ..	1.2DL+1.6OL3+0.625WL-X..	1.501	0.001
1.2D + 1.6Su ..	1.2DL+1.6OL3+0.625WL-Z..	2.638	0.002
1.2D + 1.6Su ..	1.2DL+1.6OL3	1.476	0.001
1.2D + 1.6Ssl..	1.2DL+1.6OL4+0.833333W..	0.726	0
1.2D + 1.6Ssl..	1.2DL+1.6OL4+0.833333W..	0.826	0

1.2D + 1.6Ssl..	1.2DL+1.6OL4+0.833333W..	2.551	0.002
1.2D + 1.6Ssl..	1.2DL+1.6OL4+0.833333W..	2.343	0.002
1.2D + 1.6Ssl..	1.2DL+1.6OL4+0.833333OL1	0.793	0
1.2D + 1.6Ssl..	1.2DL+1.6OL4+0.833333OL2	2.159	0.002
1.2D + 1.6Ssl..	1.2DL+1.6OL4	1.476	0.001
1.2D + 1.6Ssl..	1.2DL+1.6OL4	1.476	0.001
1.2D + 1.6Ssl..	1.2DL+1.6OL4+0.625WL+X..	0.401	0
1.2D + 1.6Ssl..	1.2DL+1.6OL4+0.625WL+Z..	1.77	0.001
1.2D + 1.6Ssl..	1.2DL+1.6OL4+0.625WL-X..	1.501	0.001
1.2D + 1.6Ssl..	1.2DL+1.6OL4+0.625WL-Z..	2.638	0.002
1.2D + 1.6Ssl..	1.2DL+1.6OL4	1.476	0.001
1.2D + 1.6Sdr..	1.2DL+1.6OL5+0.833333W..	0.726	0
1.2D + 1.6Sdr..	1.2DL+1.6OL5+0.833333W..	0.826	0
1.2D + 1.6Sdr..	1.2DL+1.6OL5+0.833333W..	2.551	0.002
1.2D + 1.6Sdr..	1.2DL+1.6OL5+0.833333W..	2.343	0.002
1.2D + 1.6Sdr..	1.2DL+1.6OL5+0.833333OL1	0.793	0
1.2D + 1.6Sdr..	1.2DL+1.6OL5+0.833333OL2	2.159	0.002
1.2D + 1.6Sdr..	1.2DL+1.6OL5	1.476	0.001
1.2D + 1.6Sdr..	1.2DL+1.6OL5	1.476	0.001
1.2D + 1.6Sdr..	1.2DL+1.6OL5+0.625WL+X..	0.401	0
1.2D + 1.6Sdr..	1.2DL+1.6OL5+0.625WL+Z..	1.77	0.001
1.2D + 1.6Sdr..	1.2DL+1.6OL5+0.625WL-X..	1.501	0.001
1.2D + 1.6Sdr..	1.2DL+1.6OL5+0.625WL-Z..	2.638	0.002
1.2D + 1.6Sdr..	1.2DL+1.6OL5	1.476	0.001
1.2D + 1.0Wx ..	1.2DL+1.66667WL+X+0.5RLL	1.176	0
1.2D + 1.0Wx ..	1.2DL+1.66667WL-X+0.5RLL	1.376	0.001
1.2D + 1.0Wx ..	1.2DL+1.66667WL+Z+0.5RLL	4.826	0.004
1.2D + 1.0Wx ..	1.2DL+1.66667WL-Z+0.5RLL	4.409	0.004
1.2D + 1.0Wz ..	1.2DL+1.66667OL1+0.5RLL	1.309	0.001
1.2D + 1.0Wz ..	1.2DL+1.66667OL2+0.5RLL	4.043	0.003
1.2D + 1.0Wx ..	1.2DL+0.5RLL	2.676	0.002
1.2D + 1.0Wz ..	1.2DL+0.5RLL	2.676	0.002
1.2D + 1.0(0...	1.2DL+1.25WL+X+1.25OL1..	0.526	0
1.2D + 1.0(0...	1.2DL+1.25WL+Z+1.25OL1..	3.264	0.003
1.2D + 1.0(0...	1.2DL+1.25WL-X+1.25OL2..	2.726	0.002
1.2D + 1.0(0...	1.2DL+1.25WL-Z+1.25OL2..	5.001	0.004
1.2D + 1.0(0...	1.2DL+0.5RLL	2.676	0.002
1.2D + 1.0Wx ..	1.2DL+1.66667WL+X+0.5SL	0	0
1.2D + 1.0Wx ..	1.2DL+1.66667WL-X+0.5SL	0.176	0
1.2D + 1.0Wx ..	1.2DL+1.66667WL+Z+0.5SL	3.626	0.003
1.2D + 1.0Wx ..	1.2DL+1.66667WL-Z+0.5SL	3.209	0.003
1.2D + 1.0Wz ..	1.2DL+1.66667OL1+0.5SL	0.109	0
1.2D + 1.0Wz ..	1.2DL+1.66667OL2+0.5SL	2.843	0.002
1.2D + 1.0Wx ..	1.2DL+0.5SL	1.476	0.001
1.2D + 1.0Wz ..	1.2DL+0.5SL	1.476	0.001
1.2D + 1.0(0...	1.2DL+1.25WL+X+1.25OL1..	0	0
1.2D + 1.0(0...	1.2DL+1.25WL+Z+1.25OL1..	2.063	0.002
1.2D + 1.0(0...	1.2DL+1.25WL-X+1.25OL2..	1.526	0.001
1.2D + 1.0(0...	1.2DL+1.25WL-Z+1.25OL2..	3.801	0.003

1.2D + 1.0(0...	1.2DL+0.5SL	1.476	0.001
0.9D + 1.0Wx ..	0.9DL+1.66667WL+X	0	0
0.9D + 1.0Wx ..	0.9DL+1.66667WL-X	0	0
0.9D + 1.0Wx ..	0.9DL+1.66667WL+Z	3.257	0.003
0.9D + 1.0Wx ..	0.9DL+1.66667WL-Z	2.84	0.002
0.9D + 1.0Wz ..	0.9DL+1.66667OL1	0	0
0.9D + 1.0Wz ..	0.9DL+1.66667OL2	2.474	0.002
0.9D + 1.0Wx ..	0.9DL	1.107	0
0.9D + 1.0Wz ..	0.9DL	1.107	0
0.9D + 1.0(0...	0.9DL+1.25WL+X+1.25OL1	0	0
0.9D + 1.0(0...	0.9DL+1.25WL+Z+1.25OL1	1.694	0.001
0.9D + 1.0(0...	0.9DL+1.25WL-X+1.25OL2	1.157	0
0.9D + 1.0(0...	0.9DL+1.25WL-Z+1.25OL2	3.432	0.003
0.9D + 1.0(0...	0.9DL	1.107	0
1.2D+Ev+Ehx+0..	1.2DL+1ELY+1ELX+0.2SL	1.606	0.001
0.9D-Ev+Ehx	0.9DL+-1ELY+1ELX	0.977	0
1.2D+Ev+Ehz+0..	1.2DL+1ELY+1ELZ+0.2SL	1.606	0.001
0.9D-Ev+Ehz	0.9DL+-1ELY+1ELZ	0.977	0
1.2D+Ev+Ehx+0..	1.2DL+1ELY+1ELX+0.3ELZ..	1.606	0.001
0.9D-Ev+Ehx+0..	0.9DL+-1ELY+1ELX+0.3ELZ	0.977	0
1.2D+Ev+Ehz+0..	1.2DL+1ELY+1ELZ+0.3ELX..	1.606	0.001
0.9D-Ev+Ehz+0..	0.9DL+-1ELY+1ELZ+0.3ELX	0.977	0

Overturning Check (Service)

Description	Categories and Factors	Mo-xx (k-in)	Ms-xx (k-in)	Mo-zz (k-in)	Ms-zz (k-in)	OSF-xx	OSF-zz
D	1DL	65.6	406.356	0	406.356	6.194	NA
D + Lr	1DL+1RLL	241.75	499.956	0	499.956	2.068	NA
D + S	1DL+1SL	65.6	406.356	0	406.356	6.194	NA
D + Su	1DL+1OL3	65.6	406.356	0	406.356	6.194	NA
D+Ssliding	1DL+1OL4	65.6	406.356	0	406.356	6.194	NA
D+Sdrift	1DL+1OL5	65.6	406.356	0	406.356	6.194	NA
D + 0.6Wx (LC..	1DL+1WL+X	118.7	471.956	35.1	406.356	3.976	11.577
D + 0.6Wx (LC..	1DL+1WL-X	139.4	471.956	30.42	406.356	3.386	13.358
D + 0.6Wx (LC..	1DL+1WL+Z	209.69	456.666	0	456.666	2.178	NA
D + 0.6Wx (LC..	1DL+1WL-Z	148.94	446.916	0	446.916	3.001	NA
D + 0.6Wz (LC..	1DL+1OL1	115.69	471.956	31.98	406.356	4.079	12.707
D + 0.6Wz (LC..	1DL+1OL2	149.5	438.336	0	438.336	2.932	NA
D + 0.6Wx (Mi..	1DL	65.6	406.356	0	406.356	6.194	NA
D + 0.6Wz (Mi..	1DL	65.6	406.356	0	406.356	6.194	NA
D + 0.6(0.75W..	1DL+0.75WL+X+0.7..	175.792	471.956	50.31	406.356	2.685	8.077
D + 0.6(0.75W..	1DL+0.75WL+Z+0.7..	197.652	506.871	23.985	444.088	2.564	18.515
D + 0.6(0.75W..	1DL+0.75WL-X+0.7..	151.34	512.076	22.815	430.341	3.384	18.862
D + 0.6(0.75W..	1DL+0.75WL-Z+0.7..	191.03	460.761	0	460.761	2.412	NA
D + 0.6(0.75W..	1DL	65.6	406.356	0	406.356	6.194	NA
D + 0.75(0.6W..	1DL+0.75WL+X+0.7..	224.037	539.256	26.325	476.556	2.407	18.103
D + 0.75(0.6W..	1DL+0.75WL-X+0.7..	220.527	558.291	22.815	476.556	2.532	20.888
D + 0.75(0.6W..	1DL+0.75WL+Z+0.7..	305.78	514.288	0	514.288	1.682	NA
D + 0.75(0.6W..	1DL+0.75WL-Z+0.7..	260.217	506.976	0	506.976	1.948	NA
D + 0.75(0.6W..	1DL+0.75OL1+0.75..	221.697	539.338	23.985	476.556	2.433	19.869
D + 0.75(0.6W..	1DL+0.75OL2+0.75..	260.637	500.541	0	500.541	1.92	NA
D + 0.75(0.6W..	1DL+0.75RLL	197.712	476.556	0	476.556	2.41	NA
D + 0.75(0.6W..	1DL+0.75RLL	197.712	476.556	0	476.556	2.41	NA
D + 0.75(0.6(..	1DL+0.5625WL+X+0..	235.445	570.668	37.733	476.556	2.424	12.63
D + 0.75(0.6(..	1DL+0.5625WL+Z+0..	296.752	551.942	17.989	504.855	1.86	28.065
D + 0.75(0.6(..	1DL+0.5625WL-X+0..	262.017	555.846	17.111	494.544	2.121	28.902
D + 0.75(0.6(..	1DL+0.5625WL-Z+0..	291.785	517.359	0	517.359	1.773	NA
D + 0.75(0.6(..	1DL+0.75RLL	197.712	476.556	0	476.556	2.41	NA
D + 0.75(0.6W..	1DL+0.75WL+X+0.7..	91.925	469.056	26.325	406.356	5.103	15.436
D + 0.75(0.6W..	1DL+0.75WL-X+0.7..	104.55	471.956	22.815	406.356	4.514	17.811
D + 0.75(0.6W..	1DL+0.75WL+Z+0.7..	173.667	444.088	0	444.088	2.557	NA
D + 0.75(0.6W..	1DL+0.75WL-Z+0.7..	128.105	436.776	0	436.776	3.41	NA
D + 0.75(0.6W..	1DL+0.75OL1+0.75SL	89.585	469.138	23.985	406.356	5.237	16.942
D + 0.75(0.6W..	1DL+0.75OL2+0.75SL	128.525	430.341	0	430.341	3.348	NA
D + 0.75(0.6W..	1DL+0.75SL	65.6	406.356	0	406.356	6.194	NA
D + 0.75(0.6W..	1DL+0.75SL	65.6	406.356	0	406.356	6.194	NA
D + 0.75(0.6(..	1DL+0.5625WL+X+0..	131.844	471.956	37.733	406.356	3.58	10.769
D + 0.75(0.6(..	1DL+0.5625WL+Z+0..	164.639	481.742	17.989	434.655	2.926	24.163
D + 0.75(0.6(..	1DL+0.5625WL-X+0..	129.905	485.646	17.111	424.344	3.738	24.799
D + 0.75(0.6(..	1DL+0.5625WL-Z+0..	159.672	447.159	0	447.159	2.8	NA
D + 0.75(0.6(..	1DL+0.75SL	65.6	406.356	0	406.356	6.194	NA
0.6D + 0.6Wx ..	0.6DL+1WL+X	118.7	283.173	35.1	243.813	2.386	6.946

0.6D + 0.6Wx ..	0.6DL+1WL-X	139.4	283.173	30.42	243.813	2.031	8.015
0.6D + 0.6Wx ..	0.6DL+1WL+Z	183.45	294.123	0	294.123	1.603	NA
0.6D + 0.6Wx ..	0.6DL+1WL-Z	122.7	284.373	0	284.373	2.318	NA
0.6D + 0.6Wz ..	0.6DL+1OL1	115.69	283.173	31.98	243.813	2.448	7.624
0.6D + 0.6Wz ..	0.6DL+1OL2	123.26	275.793	0	275.793	2.237	NA
0.6D + 0.6Wx ..	0.6DL	39.36	243.813	0	243.813	6.194	NA
0.6D + 0.6Wz ..	0.6DL	39.36	243.813	0	243.813	6.194	NA
0.6 + 0.6(0.7..	0.6DL+0.75WL+X+0..	175.792	283.173	50.31	243.813	1.611	4.846
0.6D + 0.6(0...	0.6DL+0.75WL+Z+0..	171.412	344.328	23.985	281.546	2.009	11.738
0.6D + 0.6(0...	0.6DL+0.75WL-X+0..	125.1	349.533	22.815	267.798	2.794	11.738
0.6D + 0.6(0...	0.6DL+0.75WL-Z+0..	164.79	298.218	0	298.218	1.81	NA
0.6D + 0.6(0...	0.6DL	39.36	243.813	0	243.813	6.194	NA
1.0D+0.7Ev+0...	1DL+0.7ELY+0.7ELX	144.672	409.905	0	409.905	2.833	NA
1.0D+0.525Ev+..	1DL+0.525ELY+0.5..	124.904	409.017	0	409.017	3.275	NA
0.6D-0.7Ev+0...	0.6DL+-0.7ELY+0...	117.291	248.503	3.549	243.813	2.119	68.699
1.0D+0.7Ev+0...	1DL+0.7ELY+0.7ELZ	70.29	409.905	74.473	409.905	5.832	5.504
1.0D+0.525Ev+..	1DL+0.525ELY+0.5..	69.117	409.017	55.855	409.017	5.918	7.323
0.6D-0.7Ev+0...	0.6DL+-0.7ELY+0...	42.909	248.503	78.022	243.813	5.791	3.125
1.0D+0.7Ev+0...	1DL+0.7ELY+0.7EL..	144.672	409.905	22.342	409.905	2.833	18.347
1.0D+0.525Ev+..	1DL+0.525ELY+0.5..	124.904	409.017	16.756	409.017	3.275	24.41
0.6D-0.7Ev+0...	0.6DL+-0.7ELY+0...	117.291	248.503	25.891	243.813	2.119	9.417
1.0D+0.7Ev+0...	1DL+0.7ELY+0.7EL..	92.605	409.905	74.473	409.905	4.426	5.504
1.0D+0.525Ev+..	1DL+0.525ELY+0.5..	85.853	409.017	55.855	409.017	4.764	7.323
0.6D-0.7Ev+0...	0.6DL+-0.7ELY+0...	65.224	248.503	78.022	243.813	3.81	3.125

Mo-xx: Governing Overturning Moment about AD or BC
Ms-xx: Governing Stablizing Moment about AD or BC
OSF-xx: Ratio of Ms-xx to Mo-xx

Sliding Check (Service)

Description	Categories and Factors	Va-xx (k)	Vr-xx (k)	Va-zz (k)	Vr-zz (k)	SR-xx	SR-zz
D	1DL	0	4.168	0	4.168	NA	NA
D + Lr	1DL+1RLL	0	5.128	0.02	5.128	NA	256.388
D + S	1DL+1SL	0	4.168	0	4.168	NA	NA
D + Su	1DL+1OL3	0	4.168	0	4.168	NA	NA
D+Ssliding	1DL+1OL4	0	4.168	0	4.168	NA	NA
D+Sdrift	1DL+1OL5	0	4.168	0	4.168	NA	NA
D + 0.6Wx (LC..	1DL+1WL+X	0	3.808	0.1	3.808	NA	38.078
D + 0.6Wx (LC..	1DL+1WL-X	0	3.856	0.13	3.856	NA	29.66
D + 0.6Wx (LC..	1DL+1WL+Z	0	4.684	0.22	4.684	NA	21.29
D + 0.6Wx (LC..	1DL+1WL-Z	0	4.584	0.18	4.584	NA	25.465
D + 0.6Wz (LC..	1DL+1OL1	0	3.84	0.13	3.84	NA	29.537
D + 0.6Wz (LC..	1DL+1OL2	0	4.496	0.1	4.496	NA	44.957
D + 0.6Wx (Mi..	1DL	0	4.168	0	4.168	NA	NA
D + 0.6Wz (Mi..	1DL	0	4.168	0	4.168	NA	NA
D + 0.6(0.75W..	1DL+0.75WL+X+0.7..	0	3.652	0.173	3.652	NA	21.17
D + 0.6(0.75W..	1DL+0.75WL+Z+0.7..	0	4.309	0.068	4.309	NA	63.833
D + 0.6(0.75W..	1DL+0.75WL-X+0.7..	0	4.18	0.022	4.18	NA	185.767
D + 0.6(0.75W..	1DL+0.75WL-Z+0.7..	0	4.726	0.21	4.726	NA	22.504
D + 0.6(0.75W..	1DL	0	4.168	0	4.168	NA	NA
D + 0.75(0.6W..	1DL+0.75WL+X+0.7..	0	4.618	0.06	4.618	NA	76.962
D + 0.75(0.6W..	1DL+0.75WL-X+0.7..	0	4.654	0.083	4.654	NA	56.409
D + 0.75(0.6W..	1DL+0.75WL+Z+0.7..	0	5.275	0.18	5.275	NA	29.304
D + 0.75(0.6W..	1DL+0.75WL-Z+0.7..	0	5.2	0.15	5.2	NA	34.665
D + 0.75(0.6W..	1DL+0.75OL1+0.75..	0	4.642	0.083	4.642	NA	56.264
D + 0.75(0.6W..	1DL+0.75OL2+0.75..	0	5.134	0.09	5.134	NA	57.042
D + 0.75(0.6W..	1DL+0.75RLL	0	4.888	0.015	4.888	NA	325.85
D + 0.75(0.6W..	1DL+0.75RLL	0	4.888	0.015	4.888	NA	325.85
D + 0.75(0.6(..	1DL+0.5625WL+X+0..	0	4.501	0.114	4.501	NA	39.351
D + 0.75(0.6(..	1DL+0.5625WL+Z+0..	0	4.994	0.066	4.994	NA	76.091
D + 0.75(0.6(..	1DL+0.5625WL-X+0..	0	4.897	0.002	4.897	NA	2611.6
D + 0.75(0.6(..	1DL+0.5625WL-Z+0..	0	5.306	0.172	5.306	NA	30.761
D + 0.75(0.6(..	1DL+0.75RLL	0	4.888	0.015	4.888	NA	325.85
D + 0.75(0.6W..	1DL+0.75WL+X+0.7..	0	3.898	0.075	3.898	NA	51.97
D + 0.75(0.6W..	1DL+0.75WL-X+0.7..	0	3.934	0.098	3.934	NA	40.346
D + 0.75(0.6W..	1DL+0.75WL+Z+0.7..	0	4.555	0.165	4.555	NA	27.605
D + 0.75(0.6W..	1DL+0.75WL-Z+0.7..	0	4.48	0.135	4.48	NA	33.183
D + 0.75(0.6W..	1DL+0.75OL1+0.75SL	0	3.922	0.098	3.922	NA	40.223
D + 0.75(0.6W..	1DL+0.75OL2+0.75SL	0	4.414	0.075	4.414	NA	58.85
D + 0.75(0.6W..	1DL+0.75SL	0	4.168	0	4.168	NA	NA
D + 0.75(0.6W..	1DL+0.75SL	0	4.168	0	4.168	NA	NA
D + 0.75(0.6(..	1DL+0.5625WL+X+0..	0	3.781	0.129	3.781	NA	29.223
D + 0.75(0.6(..	1DL+0.5625WL+Z+0..	0	4.274	0.051	4.274	NA	84.415
D + 0.75(0.6(..	1DL+0.5625WL-X+0..	0	4.177	0.017	4.177	NA	247.511
D + 0.75(0.6(..	1DL+0.5625WL-Z+0..	0	4.586	0.158	4.586	NA	29.119
D + 0.75(0.6(..	1DL+0.75SL	0	4.168	0	4.168	NA	NA
0.6D + 0.6Wx ..	0.6DL+1WL+X	0	2.141	0.1	2.141	NA	21.407

0.6D + 0.6Wx ..	0.6DL+1WL-X	0	2.189	0.13	2.189	NA	16.836
0.6D + 0.6Wx ..	0.6DL+1WL+Z	0	3.017	0.22	3.017	NA	13.712
0.6D + 0.6Wx ..	0.6DL+1WL-Z	0	2.917	0.18	2.917	NA	16.204
0.6D + 0.6Wz ..	0.6DL+1OL1	0	2.173	0.13	2.173	NA	16.713
0.6D + 0.6Wz ..	0.6DL+1OL2	0	2.829	0.1	2.829	NA	28.287
0.6D + 0.6Wx ..	0.6DL	0	2.501	0	2.501	NA	NA
0.6D + 0.6Wz ..	0.6DL	0	2.501	0	2.501	NA	NA
0.6 + 0.6(0.7..	0.6DL+0.75WL+X+0..	0	1.985	0.173	1.985	NA	11.505
0.6D + 0.6(0...	0.6DL+0.75WL+Z+0..	0	2.642	0.068	2.642	NA	39.136
0.6D + 0.6(0...	0.6DL+0.75WL-X+0..	0	2.513	0.022	2.513	NA	111.673
0.6D + 0.6(0...	0.6DL+0.75WL-Z+0..	0	3.059	0.21	3.059	NA	14.565
0.6D + 0.6(0...	0.6DL	0	2.501	0	2.501	NA	NA
1.0D+0.7Ev+0...	1DL+0.7ELY+0.7ELX	0	4.204	0.462	4.204	NA	9.1
1.0D+0.525Ev+..	1DL+0.525ELY+0.5..	0	4.195	0.347	4.195	NA	12.107
0.6D-0.7Ev+0...	0.6DL+-0.7ELY+0...	0	2.464	0.462	2.464	NA	5.334
1.0D+0.7Ev+0...	1DL+0.7ELY+0.7ELZ	0.462	4.204	0	4.204	9.1	NA
1.0D+0.525Ev+..	1DL+0.525ELY+0.5..	0.347	4.195	0	4.195	12.107	NA
0.6D-0.7Ev+0...	0.6DL+-0.7ELY+0...	0.462	2.464	0	2.464	5.334	NA
1.0D+0.7Ev+0...	1DL+0.7ELY+0.7EL..	0.139	4.204	0.462	4.204	30.333	9.1
1.0D+0.525Ev+..	1DL+0.525ELY+0.5..	0.104	4.195	0.347	4.195	40.356	12.107
0.6D-0.7Ev+0...	0.6DL+-0.7ELY+0...	0.139	2.464	0.462	2.464	17.78	5.334
1.0D+0.7Ev+0...	1DL+0.7ELY+0.7EL..	0.462	4.204	0.139	4.204	9.1	30.333
1.0D+0.525Ev+..	1DL+0.525ELY+0.5..	0.347	4.195	0.104	4.195	12.107	40.356
0.6D-0.7Ev+0...	0.6DL+-0.7ELY+0...	0.462	2.464	0.139	2.464	5.334	17.78

Va-xx: Applied Lateral Force to Cause Sliding Along xx Axis
Vr-xx: Resisting Lateral Force Against Sliding Along xx Axis
SR-xx: Ratio of Vr-xx to Va-xx

SERVICE LOAD COLUMN BASE REACTION SUMMARY

Refer to RISA model views for column local axis
Wind values are based on Vasd and should be factored accordingly for LRFD analysis
Negative axial values represent uplift

Service Loads (Unfactored)

LC	Member Label	Sec	Axial [k]	y Shear [k]	z Shear [k]	Torque [k-in]	y-y Moment [k-in]	z-z Moment [k-in]	LC Description
1	Column1	1	1.226	0.003	0.000	0.000	0.000	65.601	SERVICE D
1	Column2	1	1.226	0.003	0.000	0.000	0.000	65.601	SERVICE D
2	Column1	1	2.400	0.016	0.000	0.000	0.000	175.787	SERVICE Lr
2	Column2	1	2.400	0.016	0.000	0.000	0.000	175.787	SERVICE Lr
3	Column1	1	0.000	0.000	0.000	0.000	0.000	0.000	SERVICE S
3	Column2	1	0.000	0.000	0.000	0.000	0.000	0.000	SERVICE S
4	Column1	1	0.000	0.000	0.000	0.000	0.000	0.000	SERVICE Su
4	Column2	1	0.000	0.000	0.000	0.000	0.000	0.000	SERVICE Su
5	Column1	1	0.000	0.000	0.000	0.000	0.000	0.000	SERVICE Ssliding
5	Column2	1	0.000	0.000	0.000	0.000	0.000	0.000	SERVICE Ssliding
6	Column1	1	0.000	0.000	0.000	0.000	0.000	0.000	SERVICE Sdrift
6	Column2	1	0.000	0.000	0.000	0.000	0.000	0.000	SERVICE Sdrift
7	Column1	1	-0.897	-0.147	0.000	0.000	0.000	-81.782	SERVICE Wx (LC A; y = 0°)
7	Column2	1	-0.897	-0.147	0.000	0.000	0.000	-81.782	SERVICE Wx (LC A; y = 0°)
8	Column1	1	-0.782	-0.127	0.000	0.000	0.000	-106.636	SERVICE Wx (LC B; y = 0°)
8	Column2	1	-0.782	-0.127	0.000	0.000	0.000	-106.636	SERVICE Wx (LC B; y = 0°)
9	Column1	1	1.293	0.222	0.000	0.000	0.000	140.131	SERVICE Wx (LC A; y = 180°)
9	Column2	1	1.293	0.222	0.000	0.000	0.000	140.131	SERVICE Wx (LC A; y = 180°)
10	Column1	1	1.037	0.176	0.000	0.000	0.000	80.099	SERVICE Wx (LC B; y = 180°)
10	Column2	1	1.037	0.176	0.000	0.000	0.000	80.099	SERVICE Wx (LC B; y = 180°)
11	Column1	1	-0.817	-0.134	0.000	0.000	0.000	-81.366	SERVICE Wz (LC A; y = 90°)
11	Column2	1	-0.817	-0.134	0.000	0.000	0.000	-81.366	SERVICE Wz (LC A; y = 90°)
12	Column1	1	0.817	0.139	0.000	0.000	0.000	82.098	SERVICE Wz (LC B; y = 90°)
12	Column2	1	0.817	0.139	0.000	0.000	0.000	82.098	SERVICE Wz (LC B; y = 90°)
13	Column1	1	0.000	0.655	0.000	0.000	0.000	94.380	SERVICE Ex
13	Column2	1	0.000	0.655	0.000	0.000	0.000	94.380	SERVICE Ex
14	Column1	1	0.000	0.000	-0.655	34.764	94.511	0.000	SERVICE Ez
14	Column2	1	0.000	0.000	-0.655	34.764	94.511	0.000	SERVICE Ez
15	Column1	1	0.126	0.000	0.000	0.000	0.000	6.703	SERVICE Ev
15	Column2	1	0.126	0.000	0.000	0.000	0.000	6.703	SERVICE Ev

CONNECTION DESIGN

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Specifier's comments:

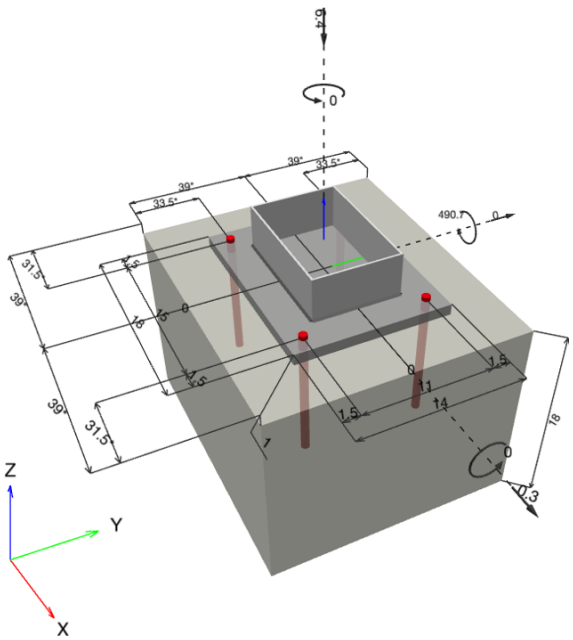
1 Anchor Design

1.1 Input data

Anchor type and diameter:	**Heavy Hex Head ASTM F 1554 GR. 55 3/4**
Item number:	not available
Effective embedment depth:	h_{ef} = 11.000 in.
Material:	ASTM F 1554
Evaluation Service Report:	Hilti Technical Data
Issued I Valid:	- | -
Proof:	Design Method ACI 318-19 / CIP
Stand-off installation:	e_b = 0.000 in. (no stand-off); t = 1.000 in.
Anchor plate[CBFEM] :	l_x x l_y x t = 18.000 in. x 14.000 in. x 1.000 in.;
Profile:	Rectangular HSS (AISC), HSS12X8X.1875; (L x W x T) = 12.000 in. x 8.000 in. x 0.188 in.
Base material:	cracked concrete, Custom, f_c' = 4,500 psi; h = 18.000 in.
Reinforcement:	tension: not present, shear: not present; edge reinforcement: none or < No. 4 bar

[CBFEM] - The anchor calculation is based on a component-based Finite Element Method (CBFEM)

Geometry [in.] & Loading [kip, in.kip]



Input data and results must be checked for conformity with the existing conditions and for plausibility!
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1.1.1 Load combination and design results

Case	Description	Forces [kip] / Moments [in.kip]	Seismic	Max. Util. Anchor [%]
1	1.2D + 1.6Lr + 0.5Wx (LC A; y = 180°)	N = -6.400; V_x = 0.300; V_y = 0.000; M_x = 0.000000; M_y = 490.700000; M_z = 0.000000;	no	86
2	1.2D + 1.6Lr + 0.5(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°))	N = -6.500; V_x = 0.300; V_y = 0.000; M_x = 0.000000; M_y = 475.700000; M_z = 0.000000;	no	83
3	1.2D + 1.6Lr + 0.5Wz (LC B; y = 90°)	N = -6.000; V_x = 0.200; V_y = 0.000; M_x = 0.000000; M_y = 439.900000; M_z = 0.000000;	no	77
4	1.2D + 1.6Lr + 0.5Wx (LC B; y = 180°)	N = -6.200; V_x = 0.200; V_y = 0.000; M_x = 0.000000; M_y = 438.500000; M_z = 0.000000;	no	77
5	1.2D + 1.6Lr + 0.5(0.75Wx (Min.) + 0.75Wz (Min.))	N = -5.300; V_x = 0.200; V_y = -0.200; M_x = 19.000000; M_y = 388.100000; M_z = 5.300000;	no	71
6	1.2D + 1.0Wx (LC A; y = 180°) + 0.5Lr	N = -4.800; V_x = 0.400; V_y = 0.000; M_x = 0.000000; M_y = 408.100000; M_z = 0.000000;	no	72
7	1.2D + 1.6Lr + 0.5Wz (Min.)	N = -5.300; V_x = 0.100; V_y = -0.200; M_x = 25.400000; M_y = 367.800000; M_z = 7.100000;	no	68
8	1.2D + 1.6Lr + 0.5(0.75Wx (LC A; y = 180°) + 0.75Wz (LC A; y = 90°))	N = -5.600; V_x = 0.100; V_y = 0.000; M_x = 0.000000; M_y = 405.200000; M_z = 0.000000;	no	71
9	1.2D + 1.6Lr + 0.5Wx (Min.)	N = -5.300; V_x = 0.200; V_y = 0.000; M_x = 0.000000; M_y = 394.900000; M_z = 0.000000;	no	69
10	1.2D + 1.0(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°)) + 0.5Lr	N = -5.000; V_x = 0.500; V_y = 0.000; M_x = 0.000000; M_y = 377.300000; M_z = 0.000000;	no	66
11	1.2D + 1.6Lr + 0.5(0.75Wx (LC B; y = 0°) + 0.75Wz (LC B; y = 90°))	N = -5.300; V_x = 0.100; V_y = 0.000; M_x = 0.000000; M_y = 351.800000; M_z = 0.000000;	no	61
12	1.2D + 1.0Wx (LC A; y = 180°) + 0.5S	N = -3.600; V_x = 0.400; V_y = 0.000; M_x = 0.000000; M_y = 316.500000; M_z = 0.000000;	no	56
13	1.2D + 1.0Wz (LC B; y = 90°) + 0.5Lr	N = -4.000; V_x = 0.300; V_y = 0.000; M_x = 0.000000; M_y = 308.300000; M_z = 0.000000;	no	54
14	0.9D + 1.0Wx (LC A; y = 180°)	N = -3.300; V_x = 0.400; V_y = 0.000; M_x = 0.000000; M_y = 295.900000; M_z = 0.000000;	no	53
15	1.2D + 1.0Wx (LC B; y = 180°) + 0.5Lr	N = -4.400; V_x = 0.300; V_y = 0.000; M_x = 0.000000; M_y = 305.300000; M_z = 0.000000;	no	53
16	1.2D + 1.6Lr + 0.5Wx (LC A; y = 0°)	N = -4.600; V_x = -0.100; V_y = 0.000; M_x = 0.000000; M_y = 295.700000; M_z = 0.000000;	no	51
17	1.2D + 1.6Lr + 0.5Wz (LC A; y = 90°)	N = -4.600; V_x = -0.100; V_y = 0.000; M_x = 0.000000; M_y = 296.200000; M_z = 0.000000;	no	51

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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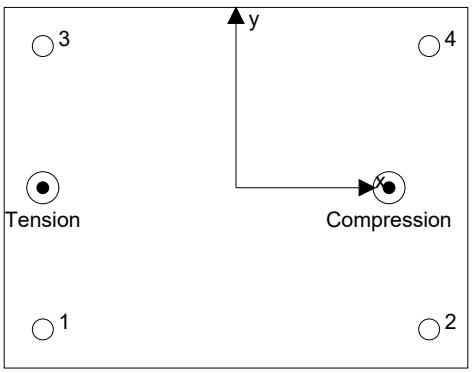
Case	Description	Forces [kip] / Moments [in.kip]	Seismic	Max. Util. Anchor [%]
18	1.2D + 1.0(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°)) + 0.5S	N = -3.800; V_x = 0.400; V_y = 0.000; M_x = 0.000000; M_y = 285.900000; M_z = 0.000000;	no	50
19	0.9D + 1.0(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°))	N = -3.400; V_x = 0.400; V_y = 0.000; M_x = 0.000000; M_y = 265.300000; M_z = 0.000000;	no	47
20	1.2D + 1.6Lr + 0.5Wx (LC B; y = 0°)	N = -4.700; V_x = -0.100; V_y = 0.000; M_x = 0.000000; M_y = 274.400000; M_z = 0.000000;	no	47

1.2 Load case/Resulting anchor forces

Controlling load case: 1 1.2D + 1.6Lr + 0.5Wx (LC A; y = 180°)



Anchor reactions [kip]
Tension force: (+Tension, -Compression)

Anchor	Tension force	Shear force	Shear force x	Shear force y
1	16.128	0.120	0.087	0.083
2	-0.001	0.066	0.063	-0.022
3	16.129	0.120	0.087	-0.083
4	-0.001	0.066	0.063	0.022

resulting tension force in (x/y)=(-7.500/0.000): 32.255 [kip]
resulting compression force in (x/y)=(5.942/0.001): 39.910 [kip]

Anchor forces are calculated based on a component-based Finite Element Method (CBFEM)

1.3 Tension load

	Load N_{ua} [kip]	Capacity ϕ N_n [kip]	Utilization $\beta_N = N_{ua}/\phi$ N_n	Status
Steel Strength*	16.129	18.787	86	OK
Pullout Strength*	16.129	22.957	71	OK
Concrete Breakout Failure**	32.257	54.820	59	OK
Concrete Side-Face Blowout, direction **	N/A	N/A	N/A	N/A

* highest loaded anchor **anchor group (anchors in tension)

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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1.3.1 Steel Strength

$N_{sa} = A_{se,N} f_{uta}$ ACI 318-19 Eq. (17.6.1.2)
$\phi N_{sa} \geq N_{ua}$ ACI 318-19 Table 17.5.2

Variables

$A_{se,N}$ [in.^{2}]	f_{uta} [psi]
0.33	75,000

Calculations

N_{sa} [kip]
25.050

Results

N_{sa} [kip]	ϕ_{steel}	ϕN_{sa} [kip]	N_{ua} [kip]
25.050	0.750	18.787	16.129

1.3.2 Pullout Strength

$N_{pN} = \psi_{c,p} N_p$ ACI 318-19 Eq. (17.6.3.1)
$N_p = 8 A_{brg} f'_c$ ACI 318-19 Eq. (17.6.3.2.2a)
$\phi N_{pN} \geq N_{ua}$ ACI 318-19 Table 17.5.2

Variables

$\psi_{c,p}$	A_{brg} [in.^{2}]	λ_a	f'_c [psi]
1.000	0.91	1.000	4,500

Calculations

N_p [kip]
32.796

Results

N_{pn} [kip]	$\phi_{concrete}$	ϕN_{pn} [kip]	N_{ua} [kip]
32.796	0.700	22.957	16.129

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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1.3.3 Concrete Breakout Failure

$N_{cbg} = \left(\frac{A_{Nc}}{A_{Nc0}}\right) \psi_{ec,N}\ \psi_{ed,N}\ \psi_{c,N}\ \psi_{cp,N}\ N_b$ — ACI 318-19 Eq. (17.6.2.1b)

$\phi\ N_{cbg} \geq N_{ua}$ — ACI 318-19 Table 17.5.2

A_{Nc} see ACI 318-19, Section 17.6.2.1, Fig. R 17.6.2.1(b)

$A_{Nc0} = 9\ h_{ef}^2$ — ACI 318-19 Eq. (17.6.2.1.4)

$\psi_{ec,N} = \left(\frac{1}{1 + \frac{2\ e'_N}{3\ h_{ef}}}\right) \leq 1.0$ — ACI 318-19 Eq. (17.6.2.3.1)

$\psi_{ed,N} = 0.7 + 0.3\left(\frac{c_{a,min}}{1.5h_{ef}}\right) \leq 1.0$ — ACI 318-19 Eq. (17.6.2.4.1b)

$\psi_{cp,N} = \text{MAX}\left(\frac{c_{a,min}}{c_{ac}}, \frac{1.5h_{ef}}{c_{ac}}\right) \leq 1.0$ — ACI 318-19 Eq. (17.6.2.6.1b)

$N_b = k_c\ \lambda_a\ \sqrt{f'_c}\ h_{ef}^{1.5}$ — ACI 318-19 Eq. (17.6.2.2.1)

Variables

h_{ef} [in.]	$e_{c1,N}$ [in.]	$e_{c2,N}$ [in.]	$c_{a,min}$ [in.]	$\psi_{c,N}$
11.000	0.000	0.000	31.500	1.000

c_{ac} [in.]	k_c	λ_a	f'_c [psi]
-	24	1.000	4,500

Calculations

A_{Nc} [in.^{2}]	A_{Nc0} [in.^{2}]	$\psi_{ec1,N}$	$\psi_{ec2,N}$	$\psi_{ed,N}$	$\psi_{cp,N}$	N_b [kip]
1,452.00	1,089.00	1.000	1.000	1.000	1.000	58.736

Results

N_{cbg} [kip]	$\phi_{concrete}$	$\phi\ N_{cbg}$ [kip]	N_{ua} [kip]
78.314	0.700	54.820	32.257

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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1.4 Shear load

	Load V_{ua} [kip]	Capacity ϕ V_n [kip]	Utilization $\beta_V = V_{ua}/\phi$ V_n	Status
Steel Strength*	0.120	9.769	2	OK
Steel failure (with lever arm)*	N/A	N/A	N/A	N/A
Pryout Strength**	0.300	159.478	1	OK
Concrete edge failure in direction y-**	0.318	36.388	1	OK

* highest loaded anchor **anchor group (relevant anchors)

1.4.1 Steel Strength

$V_{sa} = 0.6\ A_{se,V}\ f_{uta}$ ACI 318-19 Eq. (17.7.1.2b)
$\phi\ V_{steel} \geq V_{ua}$ ACI 318-19 Table 17.5.2

Variables

$A_{se,V}$ [in.^{2}]	f_{uta} [psi]
0.33	75,000

Calculations

V_{sa} [kip]
15.030

Results

V_{sa} [kip]	ϕ_{steel}	$\phi\ V_{sa}$ [kip]	V_{ua} [kip]
15.030	0.650	9.769	0.120

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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1.4.2 Pryout Strength

$V_{cpg} = k_{cp} \left[\left(\frac{A_{Nc}}{A_{Nc0}} \right) \psi_{ec,N} \psi_{ed,N} \psi_{c,N} \psi_{cp,N} N_b \right]$ ACI 318-19 Eq. (17.7.3.1b)

$\phi V_{cpg} \geq V_{ua}$ ACI 318-19 Table 17.5.2

A_{Nc} see ACI 318-19, Section 17.6.2.1, Fig. R 17.6.2.1(b)

$A_{Nc0} = 9 h_{ef}^2$ ACI 318-19 Eq. (17.6.2.1.4)

$\psi_{ec,N} = \left(\frac{1}{1 + \frac{2 e'_N}{3 h_{ef}}} \right) \leq 1.0$ ACI 318-19 Eq. (17.6.2.3.1)

$\psi_{ed,N} = 0.7 + 0.3 \left(\frac{c_{a,min}}{1.5 h_{ef}} \right) \leq 1.0$ ACI 318-19 Eq. (17.6.2.4.1b)

$\psi_{cp,N} = \text{MAX}\left(\frac{c_{a,min}}{c_{ac}}, \frac{1.5 h_{ef}}{c_{ac}} \right) \leq 1.0$ ACI 318-19 Eq. (17.6.2.6.1b)

$N_b = k_c \lambda_a \sqrt{f'_c} h_{ef}^{1.5}$ ACI 318-19 Eq. (17.6.2.2.1)

Variables

k_{cp}	h_{ef} [in.]	$e_{c1,N}$ [in.]	$e_{c2,N}$ [in.]	$c_{a,min}$ [in.]
2	11.000	0.000	0.000	31.500

$\psi_{c,N}$	c_{ac} [in.]	k_c	λ_a	f'_c [psi]
1.000	∞	24	1.000	4,500

Calculations

A_{Nc} [in.^{2}]	A_{Nc0} [in.^{2}]	$\psi_{ec1,N}$	$\psi_{ec2,N}$	$\psi_{ed,N}$	$\psi_{cp,N}$	N_b [kip]
2,112.00	1,089.00	1.000	1.000	1.000	1.000	58.736

Results

V_{cpg} [kip]	$\phi_{concrete}$	ϕV_{cpg} [kip]	V_{ua} [kip]
227.826	0.700	159.478	0.300

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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1.4.3 Concrete edge failure in direction y-

$V_{cbg} = \left(\frac{A_{Vc}}{A_{Vc0}}\right) \psi_{ec,V} \psi_{ed,V} \psi_{c,V} \psi_{h,V} \psi_{parallel,V} V_b$ ACI 318-19 Eq. (17.7.2.1b)

$\phi V_{cbg} \geq V_{ua}$ ACI 318-19 Table 17.5.2

A_{Vc} see ACI 318-19, Section 17.7.2.1, Fig. R 17.7.2.1(b)

$A_{Vc0} = 4.5 c_{a1}^2$ ACI 318-19 Eq. (17.7.2.1.3)

$\psi_{ec,V} = \left(\frac{1}{1 + \frac{e'_v}{1.5c_{a1}}}\right) \leq 1.0$ ACI 318-19 Eq. (17.7.2.3.1)

$\psi_{ed,V} = 0.7 + 0.3\left(\frac{c_{a2}}{1.5c_{a1}}\right) \leq 1.0$ ACI 318-19 Eq. (17.7.2.4.1b)

$\psi_{h,V} = \sqrt{\frac{1.5c_{a1}}{h_a}} \geq 1.0$ ACI 318-19 Eq. (17.7.2.6.1)

$V_b = 9 \lambda_a \sqrt{f'_c} c_{a1}^{1.5}$ ACI 318-19 Eq. (17.7.2.2.1b)

Variables

c_{a1} [in.]	c_{a2} [in.]	e_{cV} [in.]	$\psi_{c,V}$	h_a [in.]
21.000	31.500	1.450	1.000	18.000

l_e [in.]	λ_a	d_a [in.]	f'_c [psi]	$\psi_{parallel,V}$
6.000	1.000	0.750	4,500	1.000

Calculations

A_{Vc} [in.^{2}]	A_{Vc0} [in.^{2}]	$\psi_{ec,V}$	$\psi_{ed,V}$	$\psi_{h,V}$	V_b [kip]
1,404.00	1,984.50	0.956	1.000	1.323	58.100

Results

V_{cbg} [kip]	$\phi_{concrete}$	ϕV_{cbg} [kip]	V_{ua} [kip]
51.983	0.700	36.388	0.318

1.5 Combined tension and shear loads, per ACI 318-19 section 17.8

β_N	β_V	ζ	Utilization $\beta_{N,V}$ [%]	Status
0.859	0.012	1.000	73	OK

$\beta_{NV} = (\beta_N + \beta_V) / 1.2 <= 1$

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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1.6 Warnings

- The anchor design methods in PROFIS Engineering require rigid anchor plates as per current regulations (ETAG 001/Annex C, EOTA TR029, etc.). This means load re-distribution on the anchors due to elastic deformations of the anchor plate are not considered - the anchor plate is assumed to be sufficiently stiff, in order not to be deformed when subjected to the design loading. PROFIS Engineering calculates the minimum required anchor plate thickness with CBFEM to limit the stress of the anchor plate based on the assumptions explained above. The proof if the rigid base plate assumption is valid is not carried out by PROFIS Engineering. Input data and results must be checked for agreement with the existing conditions and for plausibility!
- Condition A applies where the potential concrete failure surfaces are crossed by supplementary reinforcement proportioned to tie the potential concrete failure prism into the structural member. Condition B applies where such supplementary reinforcement is not provided, or where pullout or pryout strength governs.
- For additional information about ACI 318 strength design provisions, please go to https://submittals.us.hilti.com/PROFISAnchorDesignGuide/
- Attention! In case of compressive anchor forces a buckling check as well as the proof of the local load transfer into and within the base material (incl. punching) has to be done separately.
- The anchor design methods in PROFIS Engineering require rigid anchor plates, as per current regulations (AS 5216:2021, ETAG 001/Annex C, EOTA TR029 etc.). This means that the anchor plate should be sufficiently rigid to prevent load re-distribution to the anchors due to elastic/plastic displacements. The user accepts that the anchor plate is considered close to rigid by engineering judgment."

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1.7 Installation data

Profile: Rectangular HSS (AISC), HSS12X8X.1875; (L x W x T) = 12.000 in. x 8.000 in. x 0.188 in.

Hole diameter in the fixture: d_f = 0.812 in.

Plate thickness (input): 1.000 in.

Anchor type and diameter: Heavy Hex Head ASTM F 1554 GR. 55 3/4

Item number: not available

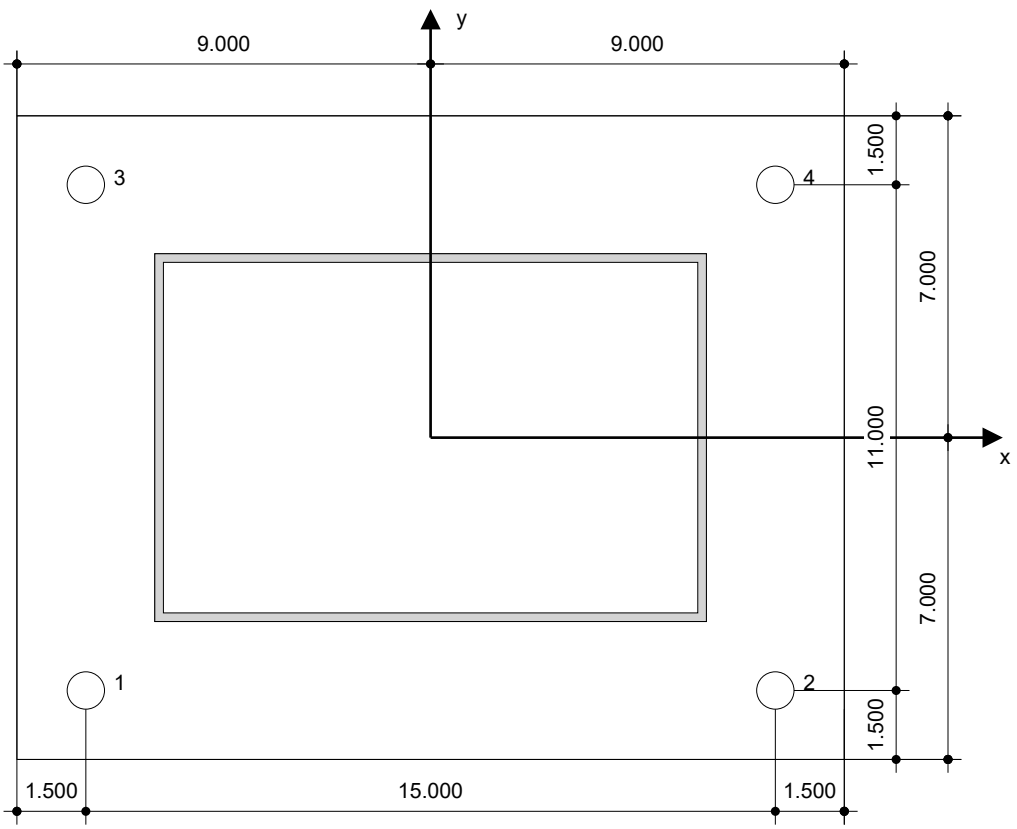
Maximum installation torque: -

Hole diameter in the base material: - in.

Hole depth in the base material: 11.000 in.

Minimum thickness of the base material: 12.000 in.

Hilti Heavy Hex Head headed stud anchor with 11 in embedment, 3/4, Steel galvanized, installation per instruction for use



Coordinates Anchor [in.]

Anchor	x	y	c_{-x}	c_{+x}	c_{-y}	c_{+y}
1	-7.500	-5.500	31.500	46.500	33.500	44.500
2	7.500	-5.500	46.500	31.500	33.500	44.500
3	-7.500	5.500	31.500	46.500	44.500	33.500
4	7.500	5.500	46.500	31.500	44.500	33.500

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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2 Anchor plate design

2.1 Input data

Anchor plate:	Shape: Rectangular l_x x l_y x t = 18.000 in x 14.000 in x 1.000 in Calculation: CBFEM Material: ASTM A36; F_y = 36,000 psi; ε_{lim} = 5.00%
Anchor type and size:	Heavy Hex Head ASTM F 1554 GR. 55 3/4, h_{ef} = 11.000 in
Anchor stiffness:	The anchor is modeled considering stiffness values determined from load displacement curves tested in an independent laboratory. Please note that no simple replacement of the anchor is possible as the anchor stiffness has a major impact on the load distribution results.
Design method:	AISC and LRFD-based design using component-based FEM
Stand-off installation:	e_b = 0.000 in (No stand-off); t = 1.000 in
Profile:	HSS12X8X.1875; (L x W x T x FT) = 12.000 in x 8.000 in x 0.188 in x - Material: ASTM A500 Gr.C Rect; F_y = 50,000 psi; ε_{lim} = 5.00% Eccentricity x: 0.000 in Eccentricity y: 0.000 in
Base material:	Cracked concrete; Custom; $f_{c,cyl}$ = 4,500 psi; h = 18.000 in; E = 3,823,676 psi; G = 1,662,468 psi; v = 0.15; D = 145.00 lb/ft³
Welds (profile to anchor plate):	Type of redistribution: Plastic Material: E70xx
Mesh size:	Number of elements on edge: 8 Min. size of element: 0.394 in Max. size of element: 1.969 in

2.2 Summary

	Description	Profile		Anchor plate			Welds [%]	Concrete [%]
		σ_{Ed} [psi]	ε_{Pl} [%]	σ_{Ed} [psi]	ε_{Pl} [%]	Hole bearing [%]		
1	**1.2D + 1.6Lr + 0.5Wx (LC A; y = 180°)**	**28,793**	**0.00**	**27,618**	**0.00**	**1**	**86**	**12**
2	1.2D + 1.6Lr + 0.5(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°))	28,147	0.00	26,696	0.00	1	85	12
3	1.2D + 1.6Lr + 0.5Wz (LC B; y = 90°)	26,744	0.00	24,751	0.00	1	84	11
4	1.2D + 1.6Lr + 0.5Wx (LC B; y = 180°)	26,639	0.00	24,602	0.00	1	84	11
5	1.2D + 1.6Lr + 0.5(0.75Wx (Min.) + 0.75Wz (Min.))	25,365	0.00	22,840	0.00	1	82	10
6	1.2D + 1.0Wx (LC A; y = 180°) + 0.5Lr	25,644	0.00	23,267	0.00	1	82	10
7	1.2D + 1.6Lr + 0.5Wz (Min.)	24,719	0.00	21,961	0.00	1	81	9
8	1.2D + 1.6Lr + 0.5(0.75Wx (LC A; y = 180°) +	25,346	0.00	22,838	0.00	1	82	10

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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	0.75Wz (LC A; y = 90°))							
9	1.2D + 1.6Lr + 0.5Wx (Min.)	24,968	0.00	22,323	0.00	1	82	10
10	1.2D + 1.0(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°)) + 0.5Lr	24,322	0.00	21,324	0.00	1	81	9
11	1.2D + 1.6Lr + 0.5(0.75Wx (LC B; y = 0°) + 0.75Wz (LC B; y = 90°))	23,319	0.00	19,610	0.00	1	80	9
12	1.2D + 1.0Wx (LC A; y = 180°) + 0.5S	22,318	0.00	17,971	0.00	1	79	8
13	1.2D + 1.0Wz (LC B; y = 90°) + 0.5Lr	21,881	0.00	17,311	0.00	1	79	7
14	0.9D + 1.0Wx (LC A; y = 180°)	21,498	0.00	16,776	0.00	1	78	7
15	1.2D + 1.0Wx (LC B; y = 180°) + 0.5Lr	21,657	0.00	16,976	0.00	1	78	7
16	1.2D + 1.6Lr + 0.5Wx (LC A; y = 0°)	21,214	0.00	16,312	0.00	1	78	7
17	1.2D + 1.6Lr + 0.5Wz (LC A; y = 90°)	21,236	0.00	16,343	0.00	1	78	7
18	1.2D + 1.0(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°)) + 0.5S	20,955	0.00	15,962	0.00	1	78	7
19	0.9D + 1.0(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°))	20,177	0.00	14,982	0.00	1	77	6
20	1.2D + 1.6Lr + 0.5Wx (LC B; y = 0°)	20,295	0.00	15,056	0.00	1	77	7

2.3 Anchor plate classification

Results below are displayed for the decisive load combinations: 1.2D + 1.6Lr + 0.5Wx (LC A; y = 180°)

Anchor tension forces	Equivalent rigid anchor plate (CBFEM)	Component-based Finite Element Method (CBFEM) anchor plate design
Anchor 1	15.345 kip	16.128 kip
Anchor 2	-0.002 kip	-0.001 kip
Anchor 3	15.345 kip	16.129 kip
Anchor 4	-0.002 kip	-0.001 kip

User accepted to consider the selected anchor plate as rigid by his/her engineering judgement. This means the anchor design guidelines can be applied.

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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2.4 Profile/Stiffeners/Plate

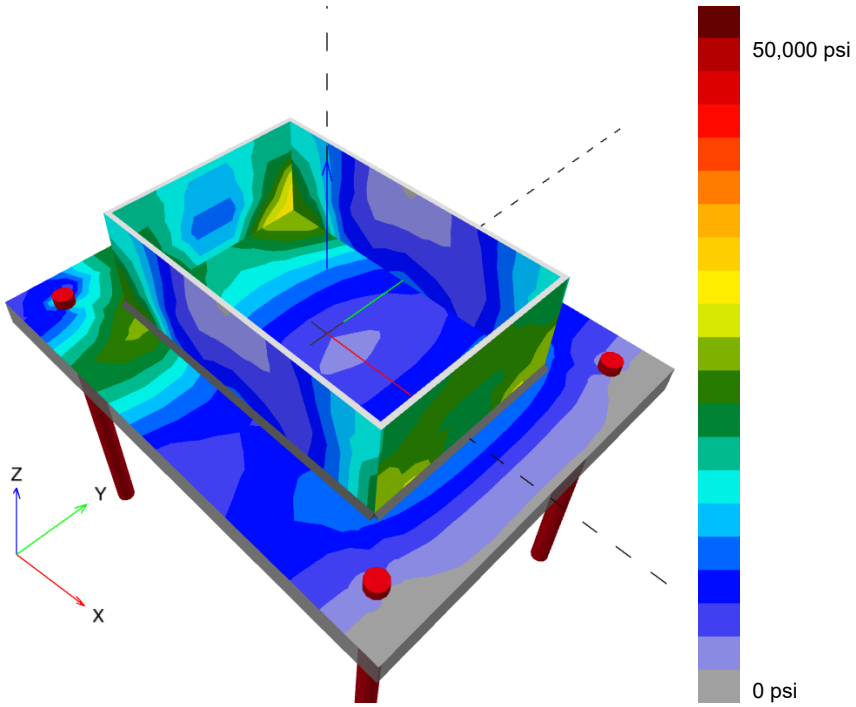
Profile and stiffeners are verified at the level of the steel to concrete connection. The connection design does not replace the steel design for critical cross sections, which should be performed outside of PROFIS Engineering.

2.4.1 Equivalent stress and plastic strain

Part	Load combination	Material	f_y [psi]	ε_{lim} [%]	σ_{Ed} [psi]	ε_{Pl} [%]	Status
Plate	1.2D + 1.6Lr + 0.5Wx (LC A; y = 180°)	ASTM A36	36,000	5.00	27,618	0.00	OK
Profile	1.2D + 1.6Lr + 0.5Wx (LC A; y = 180°)	ASTM A500 Gr.C Rect	50,000	5.00	28,793	0.00	OK
Profile	1.2D + 1.6Lr + 0.5Wx (LC A; y = 180°)	ASTM A500 Gr.C Rect	50,000	5.00	26,752	0.00	OK
Profile	1.2D + 1.6Lr + 0.5Wx (LC A; y = 180°)	ASTM A500 Gr.C Rect	50,000	5.00	22,227	0.00	OK
Profile	1.2D + 1.6Lr + 0.5Wx (LC A; y = 180°)	ASTM A500 Gr.C Rect	50,000	5.00	22,220	0.00	OK

2.4.1.1 Equivalent stress

Results below are displayed for the decisive load combination: 1 - 1.2D + 1.6Lr + 0.5Wx (LC A; y = 180°)



Input data and results must be checked for conformity with the existing conditions and for plausibility!
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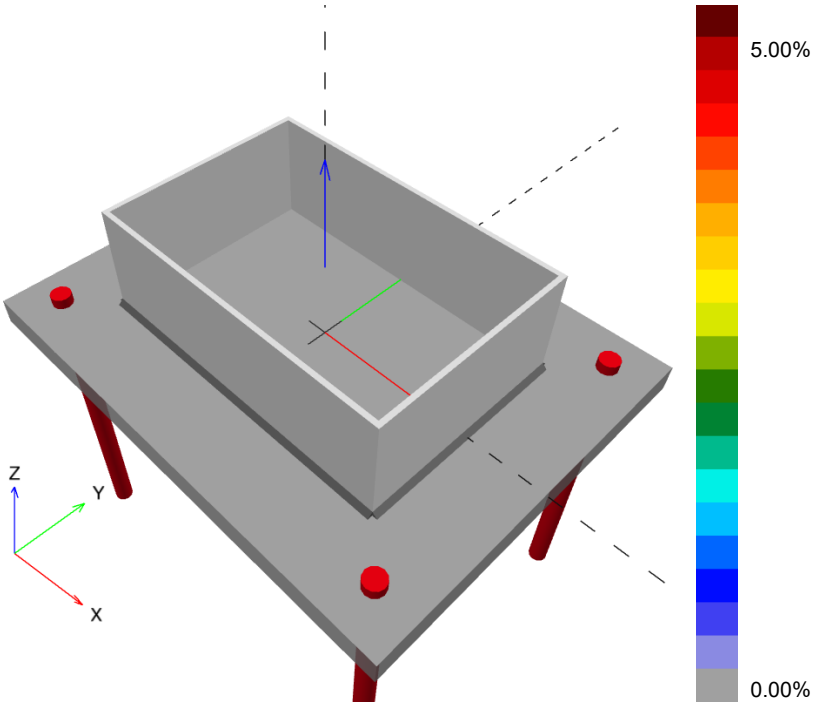
2.4.1.2 Plastic strain

Results below are displayed for the decisive load combination: 1 - 1.2D + 1.6Lr + 0.5Wx (LC A; y = 180°)



2.4.2 Plate hole bearing resistance, AISC 360-16 Section J3

Decisive load combination: 1 - 1.2D + 1.6Lr + 0.5Wx (LC A; y = 180°)

Equations

$R_n = \min(1.2\, l_c\, t\, F_u\, ,\ 2.4\, d\, t\, F_u)$ (AISC 360-16 J3-6a, c)

$\Phi R_n = 0.75\, R_n$

$V \leq \Phi R_n$

Variables

	l_c [in]	t [in]	F_u [psi]	d [in]	R_n [kip]
Anchor 1	1.663	1.000	58,000	0.750	104.400
Anchor 2	17.044	1.000	58,000	0.750	104.400
Anchor 3	1.663	1.000	58,000	0.750	104.400
Anchor 4	17.045	1.000	58,000	0.750	104.400

Results

	V [kip]	ΦR_n [kip]	Utilization [%]	Status
Anchor 1	0.120	78.300	1	OK
Anchor 2	0.066	78.300	1	OK
Anchor 3	0.121	78.300	1	OK

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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	V [kip]	ΦR_n [kip]	Utilization [%]	Status
Anchor 4	0.066	78.300	1	OK

2.5 Welds

Profiles are modeled without taking the corner radius into account. Special rules for welding (e.g. for cold-formed profiles ...) are not taken into account by the software.

2.5.1 Anchor plate to profile

Decisive load combination: 1 - 1.2D + 1.6Lr + 0.5Wx (LC A; y = 180°)

Equations

$F_{nw} = 0.6\, F_{EXX}\, (1.0 + 0.5\sin^{1.5}\Theta)$

$\Phi R_n = \Phi\, F_{nw}\, A_w$

$\text{Utilization} = \frac{F_n}{\Phi\, R_n}$

Variables

Edge	X_u	T_h [in]	L_s [in]	L [in]	L_c [in]	F_{EXX} [psi]	Θ [°]	A_w [in²]
Member 1-tfl 1	E70xx	◢0.132	0.187	7.986	1.141	70,000	68.3	0.15
Member 1-bfl 1	E70xx	0.132◣	0.187	7.972	1.139	70,000	83.1	0.15
Member 1-w 1	E70xx	◢0.132	0.187	11.605	1.161	70,000	74.9	0.15
Member 1-w 2	E70xx	0.132◣	0.187	11.605	1.161	70,000	74.9	0.15

Results

Edge	F_n [kip]	ΦR_n [kip]	Utilization [%]	Status
Member 1-tfl 1	5.886	6.867	86	OK
Member 1-bfl 1	5.357	7.077	76	OK
Member 1-w 1	5.986	7.115	85	OK
Member 1-w 2	5.987	7.114	85	OK

2.6 Concrete

Decisive load combination: 1 - 1.2D + 1.6Lr + 0.5Wx (LC A; y = 180°)

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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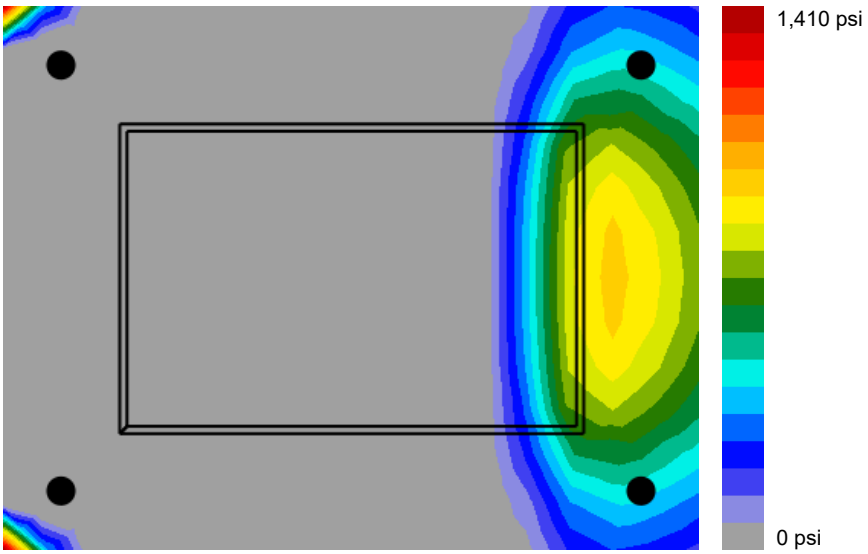
2.6.1 Compression in concrete under the anchor plate



2.6.2 Concrete block compressive strength resistance check, AISC 360-16 Section J8

Equations

$$F_p = \Phi f_{p,max}$$

$$f_{p,max} = 0.85 f_c' \sqrt{\left(\frac{A_2}{A_1}\right)} \le 1.7 f_c;\ \sqrt{\left(\frac{A_2}{A_1}\right)} \le 2$$

$$\sigma = \frac{N}{A_1}$$

$$\text{Utilization} = \frac{\sigma}{F_p}$$

Variables

N [kip]	f_c' [psi]	Φ	A_1 [in²]	A_2 [in²]
39.910	4,500	0.65	69.79	4,089.09

Results

Load combination	F_p [psi]	σ [psi]	Utilization [%]	Status
1.2D + 1.6Lr + 0.5Wx (LC A; y = 180°)	4,973	572	12	OK

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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2.7 Symbol explanation

A_1	Loaded area of concrete
A_2	Supporting area
A_w	Effective area of weld critical element
d	Nominal diameter of the bolt
ε_{lim}	Limit plastic strain
ε_{Pl}	Plastic strain from CBFEM results
f_c	Concrete compressive strength
f_c'	Concrete compressive strength
F_{EXX}	Electrode classification number, i.e. minimum specified tensile strength
F_u	Specified minimum tensile strength of the connected material
F_n	Force in weld critical element
F_{nw}	Nominal stress of the weld material
F_p	Concrete block design bearing strength
$f_{p,max}$	Concrete block design bearing strength maximum
f_y	Yield strength
l_c	Clear distance, in the direction of the force, between the edge of the hole and the edge of the adjacent hole or edge of the material
L	Length of weld
L_c	Length of weld critical element
L_s	Leg size of weld
N	Resulting compression force
σ	Average stress in concrete
σ_{Ed}	Equivalent stress
Φ	Resistance factor
ΦR_n	Factored resistance
R_n	Resistance
t	Thickness of the anchor plate
Θ	Angle of loading measured from the weld longitudinal axis
T_h	Throat thickness of weld
V	Resultant of shear forces Vy, Vz in bolt.
X_u	Filler metal tensile strength

2.8 Warnings

- By using the CBFEM calculation functionality of PROFIS Engineering you may act outside the applicable design codes and your specified anchor plate may not behave rigid. Please, validate the results with a professional designer and/or structural engineer to ensure suitability and adequacy for your specific jurisdiction and project requirements.
- The anchor is modeled considering stiffness values determined from load displacement curves tested in an independent laboratory. Please note that no simple replacement of the anchor is possible as the anchor stiffness has a major impact on the load distribution results.

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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Company:		Page:	18
Address:		Specifier:	chreva
Phone I Fax:	|	E-Mail:	
Design:	P18161	Date:	5/30/2024
Fastening point:			

3 Summary of results

Design of the anchor plate, anchors, welds and other elements are based on CBFEM (component based finite element method) and AISC.

	Load combination	Max. utilization	Status
Anchors	1.2D + 1.6Lr + 0.5Wx (LC A; y = 180°)	86%	OK
Anchor plate	1.2D + 1.6Lr + 0.5Wx (LC A; y = 180°)	77%	OK
Welds	1.2D + 1.6Lr + 0.5Wx (LC A; y = 180°)	86%	OK
Concrete	1.2D + 1.6Lr + 0.5Wx (LC A; y = 180°)	12%	OK
Profile	1.2D + 1.6Lr + 0.5Wx (LC A; y = 180°)	58%	OK

Fastening meets the design criteria!

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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4 Remarks; Your Cooperation Duties

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STRENGTH DESIGN COLUMN BASE REACTIONS

Strength Design Reactions (Factored)

							strong axis	
		N	Vx	Vy	Mz	Mx	My	Column*
LC	Load Combination Description	[k]	[k]	[k]	[in-kip]	[in-kip]	[in-kip]	
92	1.4D	-1.7	0.0	0.0	0.0	0.0	92.1	Column1
93	1.2D + 0.5Lr	-2.7	0.0	0.0	0.0	0.0	167.4	Column1
94	1.2D + 0.5S	-1.5	0.0	0.0	0.0	0.0	78.8	Column1
95	1.2D + 1.6Lr + 0.5Wx (LC A; y = 0°)	-4.6	-0.1	0.0	0.0	0.0	295.7	Column1
96	1.2D + 1.6Lr + 0.5Wx (LC B; y = 0°)	-4.7	-0.1	0.0	0.0	0.0	274.4	Column1
97	1.2D + 1.6Lr + 0.5Wx (LC A; y = 180°)	-6.4	0.3	0.0	0.0	0.0	490.7	Column1
98	1.2D + 1.6Lr + 0.5Wx (LC B; y = 180°)	-6.2	0.2	0.0	0.0	0.0	438.5	Column1
99	1.2D + 1.6Lr + 0.5Wz (LC A; y = 90°)	-4.6	-0.1	0.0	0.0	0.0	296.2	Column1
100	1.2D + 1.6Lr + 0.5Wz (LC B; y = 90°)	-6.0	0.2	0.0	0.0	0.0	439.9	Column1
101	1.2D + 1.6Lr + 0.5Wx (Min.)	-5.3	0.2	0.0	0.0	0.0	394.9	Column1
102	1.2D + 1.6Lr + 0.5Wz (Min.)	-5.3	0.1	-0.2	7.1	25.4	367.8	Column1
103	1.2D + 1.6Lr + 0.5(0.75Wx (LC A; y = 0°) + 0.75Wz (LC A; y =	-4.2	-0.1	0.0	0.0	0.0	259.7	Column1
104	1.2D + 1.6Lr + 0.5(0.75Wx (LC A; y = 180°) + 0.75Wz (LC A;	-5.6	0.1	0.0	0.0	0.0	405.2	Column1
105	1.2D + 1.6Lr + 0.5(0.75Wx (LC B; y = 0°) + 0.75Wz (LC B; y =	-5.3	0.1	0.0	0.0	0.0	351.8	Column1
106	1.2D + 1.6Lr + 0.5(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B;	-6.5	0.3	0.0	0.0	0.0	475.7	Column1
107	1.2D + 1.6Lr + 0.5(0.75Wx (Min.) + 0.75Wz (Min.))	-5.3	0.2	-0.2	5.3	19.0	388.1	Column1
108	1.2D + 1.6S + 0.5Wx (LC A; y = 0°)	-0.7	-0.1	0.0	0.0	0.0	9.8	Column1
109	1.2D + 1.6S + 0.5Wx (LC B; y = 0°)	-0.8	-0.1	0.0	0.0	0.0	-11.1	Column1
110	1.2D + 1.6S + 0.5Wx (LC A; y = 180°)	-2.5	0.2	0.0	0.0	0.0	196.9	Column1
111	1.2D + 1.6S + 0.5Wx (LC B; y = 180°)	-2.3	0.2	0.0	0.0	0.0	146.4	Column1
112	1.2D + 1.6S + 0.5Wz (LC A; y = 90°)	-0.8	-0.1	0.0	0.0	0.0	10.1	Column1
113	1.2D + 1.6S + 0.5Wz (LC B; y = 90°)	-2.2	0.1	0.0	0.0	0.0	148.1	Column1
114	1.2D + 1.6S + 0.5Wx (Min.)	-1.5	0.2	0.0	0.0	0.0	105.8	Column1
115	1.2D + 1.6S + 0.5Wz (Min.)	-1.5	0.0	-0.2	7.0	24.7	78.8	Column1
116	1.2D + 1.6S + 0.5(0.75Wx (LC A; y = 0°) + 0.75Wz (LC A; y =	-0.4	-0.2	0.0	0.0	0.0	-24.7	Column1
117	1.2D + 1.6S + 0.5(0.75Wx (LC A; y = 180°) + 0.75Wz (LC A; y	-1.8	0.1	0.0	0.0	0.0	114.8	Column1
118	1.2D + 1.6S + 0.5(0.75Wx (LC B; y = 0°) + 0.75Wz (LC B; y =	-1.5	0.0	0.0	0.0	0.0	63.3	Column1
119	1.2D + 1.6S + 0.5(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y	-2.6	0.2	0.0	0.0	0.0	182.1	Column1
120	1.2D + 1.6S + 0.5(0.75Wx (Min.) + 0.75Wz (Min.))	-1.5	0.1	-0.2	5.3	18.5	99.0	Column1
121	1.2D + 1.6Su + 0.5Wx (LC A; y = 0°)	-0.7	-0.1	0.0	0.0	0.0	9.8	Column1
122	1.2D + 1.6Su + 0.5Wx (LC B; y = 0°)	-0.8	-0.1	0.0	0.0	0.0	-11.1	Column1
123	1.2D + 1.6Su + 0.5Wx (LC A; y = 180°)	-2.5	0.2	0.0	0.0	0.0	196.9	Column1
124	1.2D + 1.6Su + 0.5Wx (LC B; y = 180°)	-2.3	0.2	0.0	0.0	0.0	146.4	Column1
125	1.2D + 1.6Su + 0.5Wz (LC A; y = 90°)	-0.8	-0.1	0.0	0.0	0.0	10.1	Column1
126	1.2D + 1.6Su + 0.5Wz (LC B; y = 90°)	-2.2	0.1	0.0	0.0	0.0	148.1	Column1
127	1.2D + 1.6Su + 0.5Wx (Min.)	-1.5	0.2	0.0	0.0	0.0	105.8	Column1
128	1.2D + 1.6Su + 0.5Wz (Min.)	-1.5	0.0	-0.2	7.0	24.7	78.8	Column1
129	1.2D + 1.6Su + 0.5(0.75Wx (LC A; y = 0°) + 0.75Wz (LC A; y	-0.4	-0.2	0.0	0.0	0.0	-24.7	Column1
130	1.2D + 1.6Su + 0.5(0.75Wx (LC A; y = 180°) + 0.75Wz (LC A;	-1.8	0.1	0.0	0.0	0.0	114.8	Column1
131	1.2D + 1.6Su + 0.5(0.75Wx (LC B; y = 0°) + 0.75Wz (LC B; y	-1.5	0.0	0.0	0.0	0.0	63.3	Column1
132	1.2D + 1.6Su + 0.5(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B;	-2.6	0.2	0.0	0.0	0.0	182.1	Column1
133	1.2D + 1.6Su + 0.5(0.75Wx (Min.) + 0.75Wz (Min.))	-1.5	0.1	-0.2	5.3	18.5	99.0	Column1
134	1.2D + 1.6Ssliding + 0.5Wx (LC A; y = 0°)	-0.7	-0.1	0.0	0.0	0.0	9.8	Column1
135	1.2D + 1.6Ssliding + 0.5Wx (LC B; y = 0°)	-0.8	-0.1	0.0	0.0	0.0	-11.1	Column1
136	1.2D + 1.6Ssliding + 0.5Wx (LC A; y = 180°)	-2.5	0.2	0.0	0.0	0.0	196.9	Column1
137	1.2D + 1.6Ssliding + 0.5Wx (LC B; y = 180°)	-2.3	0.2	0.0	0.0	0.0	146.4	Column1
138	1.2D + 1.6Ssliding + 0.5Wz (LC A; y = 90°)	-0.8	-0.1	0.0	0.0	0.0	10.1	Column1
139	1.2D + 1.6Ssliding + 0.5Wz (LC B; y = 90°)	-2.2	0.1	0.0	0.0	0.0	148.1	Column1
140	1.2D + 1.6Ssliding + 0.5Wx (Min.)	-1.5	0.2	0.0	0.0	0.0	105.8	Column1
141	1.2D + 1.6Ssliding + 0.5Wz (Min.)	-1.5	0.0	-0.2	7.0	24.7	78.8	Column1
142	1.2D + 1.6Ssliding + 0.5(0.75Wx (LC A; y = 0°) + 0.75Wz (LC	-0.4	-0.2	0.0	0.0	0.0	-24.7	Column1
143	1.2D + 1.6Ssliding + 0.5(0.75Wx (LC A; y = 180°) + 0.75Wz (	-1.8	0.1	0.0	0.0	0.0	114.8	Column1
144	1.2D + 1.6Ssliding + 0.5(0.75Wx (LC B; y = 0°) + 0.75Wz (LC	-1.5	0.0	0.0	0.0	0.0	63.3	Column1
145	1.2D + 1.6Ssliding + 0.5(0.75Wx (LC B; y = 180°) + 0.75Wz (	-2.6	0.2	0.0	0.0	0.0	182.1	Column1
146	1.2D + 1.6Ssliding + 0.5(0.75Wx (Min.) + 0.75Wz (Min.))	-1.5	0.1	-0.2	5.3	18.5	99.0	Column1
147	1.2D + 1.6Sdrift + 0.5Wx (LC A; y = 0°)	-0.7	-0.1	0.0	0.0	0.0	9.8	Column1
148	1.2D + 1.6Sdrift + 0.5Wx (LC B; y = 0°)	-0.8	-0.1	0.0	0.0	0.0	-11.1	Column1
149	1.2D + 1.6Sdrift + 0.5Wx (LC A; y = 180°)	-2.5	0.2	0.0	0.0	0.0	196.9	Column1
150	1.2D + 1.6Sdrift + 0.5Wx (LC B; y = 180°)	-2.3	0.2	0.0	0.0	0.0	146.4	Column1
151	1.2D + 1.6Sdrift + 0.5Wz (LC A; y = 90°)	-0.8	-0.1	0.0	0.0	0.0	10.1	Column1
152	1.2D + 1.6Sdrift + 0.5Wz (LC B; y = 90°)	-2.2	0.1	0.0	0.0	0.0	148.1	Column1
153	1.2D + 1.6Sdrift + 0.5Wx (Min.)	-1.5	0.2	0.0	0.0	0.0	105.8	Column1
154	1.2D + 1.6Sdrift + 0.5Wz (Min.)	-1.5	0.0	-0.2	7.0	24.7	78.8	Column1
155	1.2D + 1.6Sdrift + 0.5(0.75Wx (LC A; y = 0°) + 0.75Wz (LC A;	-0.4	-0.2	0.0	0.0	0.0	-24.7	Column1
156	1.2D + 1.6Sdrift + 0.5(0.75Wx (LC A; y = 180°) + 0.75Wz (LC	-1.8	0.1	0.0	0.0	0.0	114.8	Column1
157	1.2D + 1.6Sdrift + 0.5(0.75Wx (LC B; y = 0°) + 0.75Wz (LC B;	-1.5	0.0	0.0	0.0	0.0	63.3	Column1

Strength Design Reactions (Factored)

							strong axis	
		N	**Vx**	**Vy**	**Mz**	**Mx**	**My**	**Column***
158	1.2D + 1.6Sdrift + 0.5(0.75Wx (LC B; y = 180°) + 0.75Wz (LC	-2.6	0.2	0.0	0.0	0.0	182.1	Column1
159	1.2D + 1.6Sdrift + 0.5(0.75Wx (Min.) + 0.75Wz (Min.))	-1.5	0.1	-0.2	5.3	18.5	99.0	Column1
160	1.2D + 1.0Wx (LC A; y = 0°) + 0.5Lr	-1.2	-0.2	0.0	0.0	0.0	27.9	Column1
161	1.2D + 1.0Wx (LC B; y = 0°) + 0.5Lr	-1.4	-0.2	0.0	0.0	0.0	-14.0	Column1
162	1.2D + 1.0Wx (LC A; y = 180°) + 0.5Lr	-4.8	0.4	0.0	0.0	0.0	408.1	Column1
163	1.2D + 1.0Wx (LC B; y = 180°) + 0.5Lr	-4.4	0.3	0.0	0.0	0.0	305.3	Column1
164	1.2D + 1.0Wz (LC A; y = 90°) + 0.5Lr	-1.3	-0.2	0.0	0.0	0.0	28.7	Column1
165	1.2D + 1.0Wz (LC B; y = 90°) + 0.5Lr	-4.0	0.3	0.0	0.0	0.0	308.3	Column1
166	1.2D + 1.0Wx (Min.) + 0.5Lr	-2.7	0.3	0.0	0.0	0.0	221.4	Column1
167	1.2D + 1.0Wz (Min.) + 0.5Lr	-2.7	0.0	-0.4	14.1	49.8	167.4	Column1
168	1.2D + 1.0(0.75Wx (LC A; y = 0°) + 0.75Wz (LC A; y = 90°)) +	-0.5	-0.4	0.0	0.0	0.0	-40.4	Column1
169	1.2D + 1.0(0.75Wx (LC A; y = 180°) + 0.75Wz (LC A; y = 90°)	-3.3	0.1	0.0	0.0	0.0	241.2	Column1
170	1.2D + 1.0(0.75Wx (LC B; y = 0°) + 0.75Wz (LC B; y = 90°)) +	-2.7	0.0	0.0	0.0	0.0	135.2	Column1
171	1.2D + 1.0(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°)	-5.0	0.5	0.0	0.0	0.0	377.3	Column1
172	1.2D + 1.0(0.75Wx (Min.) + 0.75Wz (Min.)) +0.5Lr	-2.7	0.3	-0.3	10.5	37.3	207.9	Column1
173	1.2D + 1.0Wx (LC A; y = 0°) + 0.5S	0.0	-0.2	0.0	0.0	0.0	-58.8	Column1
174	1.2D + 1.0Wx (LC B; y = 0°) + 0.5S	-0.2	-0.2	0.0	0.0	0.0	-100.5	Column1
175	1.2D + 1.0Wx (LC A; y = 180°) + 0.5S	-3.6	0.4	0.0	0.0	0.0	316.5	Column1
176	1.2D + 1.0Wx (LC B; y = 180°) + 0.5S	-3.2	0.3	0.0	0.0	0.0	214.7	Column1
177	1.2D + 1.0Wz (LC A; y = 90°) + 0.5S	-0.1	-0.2	0.0	0.0	0.0	-58.1	Column1
178	1.2D + 1.0Wz (LC B; y = 90°) + 0.5S	-2.8	0.2	0.0	0.0	0.0	217.9	Column1
179	1.2D + 1.0Wx (Min.) + 0.5S	-1.5	0.3	0.0	0.0	0.0	132.7	Column1
180	1.2D + 1.0Wz (Min.) + 0.5S	-1.5	0.0	-0.4	14.1	49.4	78.8	Column1
181	1.2D + 1.0(0.75Wx (LC A; y = 0°) + 0.75Wz (LC A; y = 90°)) +	0.7	-0.4	0.0	0.0	0.0	-126.3	Column1
182	1.2D + 1.0(0.75Wx (LC A; y = 180°) + 0.75Wz (LC A; y = 90°)	-2.1	0.1	0.0	0.0	0.0	151.7	Column1
183	1.2D + 1.0(0.75Wx (LC B; y = 0°) + 0.75Wz (LC B; y = 90°)) +	-1.5	0.0	0.0	0.0	0.0	46.8	Column1
184	1.2D + 1.0(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°)	-3.8	0.4	0.0	0.0	0.0	285.9	Column1
185	1.2D + 1.0(0.75Wx (Min.) + 0.75Wz (Min.)) +0.5S	-1.5	0.2	-0.3	10.5	37.0	119.2	Column1
186	0.9D + 1.0Wx (LC A; y = 0°)	0.4	-0.2	0.0	0.0	0.0	-78.2	Column1
187	0.9D + 1.0Wx (LC B; y = 0°)	0.2	-0.2	0.0	0.0	0.0	-119.8	Column1
188	0.9D + 1.0Wx (LC A; y = 180°)	-3.3	0.4	0.0	0.0	0.0	295.9	Column1
189	0.9D + 1.0Wx (LC B; y = 180°)	-2.8	0.3	0.0	0.0	0.0	194.4	Column1
190	0.9D + 1.0Wz (LC A; y = 90°)	0.3	-0.2	0.0	0.0	0.0	-77.5	Column1
191	0.9D + 1.0Wz (LC B; y = 90°)	-2.5	0.2	0.0	0.0	0.0	197.6	Column1
192	0.9D + 1.0Wx (Min.)	-1.1	0.3	0.0	0.0	0.0	112.8	Column1
193	0.9D + 1.0Wz (Min.)	-1.1	0.0	-0.4	14.0	49.3	59.0	Column1
194	0.9D + 1.0(0.75Wx (LC A; y = 0°) + 0.75Wz (LC A; y = 90°))	1.0	-0.4	0.0	0.0	0.0	-145.5	Column1
195	0.9D + 1.0(0.75Wx (LC A; y = 180°) + 0.75Wz (LC A; y = 90°)	-1.7	0.1	0.0	0.0	0.0	131.6	Column1
196	0.9D + 1.0(0.75Wx (LC B; y = 0°) + 0.75Wz (LC B; y = 90°))	-1.1	0.0	0.0	0.0	0.0	27.1	Column1
197	0.9D + 1.0(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°)	-3.4	0.4	0.0	0.0	0.0	265.3	Column1
198	0.9D + 1.0(0.75Wx (Min.) + 0.75Wz (Min.))	-1.1	0.2	-0.3	10.5	36.9	99.4	Column1
199	1.2D+Ev+Ehx+0.2S	-1.6	0.7	0.0	0.0	0.0	180.3	Column1
200	0.9D-Ev+Ehx	-1.0	0.7	0.0	0.0	0.0	146.8	Column1
201	1.2D+Ev+Ehz+0.2S	-1.6	0.0	-0.7	34.9	95.5	85.7	Column1
202	0.9D-Ev+Ehz	-1.0	0.0	-0.7	34.8	95.1	52.2	Column1
203	1.2D+Ev+Ehx+0.3Ehz+0.2S	-1.6	0.7	-0.2	10.4	28.6	180.3	Column1
204	0.9D-Ev+Ehx+0.3Ehz	-1.0	0.7	-0.2	10.4	28.5	146.8	Column1
205	1.2D+Ev+Ehz+0.3Ehx+0.2S	-1.6	0.2	-0.7	34.8	95.5	114.1	Column1
206	0.9D-Ev+Ehz+0.3Ehx	-1.0	0.2	-0.7	34.8	95.1	80.6	Column1

*Columns identified are determined from expected peak anchor stress for the given load combination

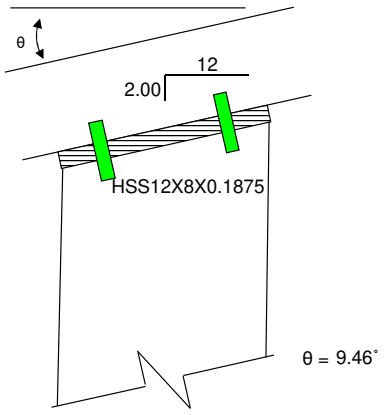
FLYOVER TRUSS

4 BOLTS

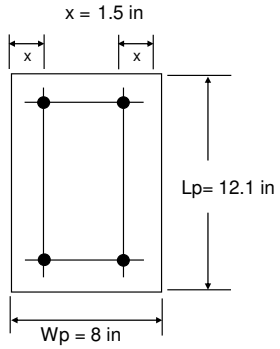
Bolt Check: (4) 0.75" Diameter, A325 Bolts				Allowable	Actual	Load Combination / Member	
1	Shear	AISC (J3-1)	R_N/Ω	11.9 kip	1.3 kip	84 / Column1	**OK**
2	Tension	AISC (J3-1)	R_N/Ω	19.9 kip	12.6 kip	38 / Column1	**OK**
3	Bearing	AISC (J3-6b,d)	R_N/Ω	35.7 kip	1.3 kip	84 / Column1	**OK**

End Plate Check: 0.75" Thick				Allowable	Actual	Load Combination / Member	
4	Shear Yielding	AISC (J4-3)	R_N/Ω	131.4 kip	0.8 kip	47 / Column1	**OK**
5	Shear Rupture	AISC (J4-4)	R_N/Ω	137.6 kip	0.8 kip	47 / Column1	**OK**
6	Weld Check *w = 0.1875"*	AISC (J2-3)	R_N/Ω	2.8 kip/in	1.9 kip/in	38 / Column1	**OK**
7	Plate Thickness (t_P)		$\sqrt{\frac{4M_{PL}}{22W_P}}$	0.61 in	0.75 in	38 / Column1	**OK**

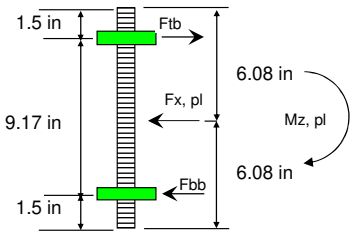
Design Forces / Moments								
Check	Load Combination	Member	Fx (Axial) [k]	Fy [k]	Fz [k]	Mx [k-in]	My [k-in]	Mz [k-in]
1	84	Column1	1.0	0.1	-0.3	24.4	4.1	71.1
2	38	Column1	3.7	0.2	0.0	0.0	0.0	274.7
3	84	Column1	1.0	0.1	-0.3	24.4	4.1	71.1
4	47	Column1	3.7	0.2	0.0	0.0	0.0	259.3
5	47	Column1	3.7	0.2	0.0	0.0	0.0	259.3
6	38	Column1	3.7	0.2	0.0	0.0	0.0	274.7
7	38	Column1	3.7	0.2	0.0	0.0	0.0	274.7



Connection Elevation



End Plate Elevation



End Plate Section

Member Height (in):	12	Number of Bolts:	4
Member Width (in):	8	Bolt Diameter (in):	0.750
Member Thickness (in):	0.188	End Plate Thickness (in):	0.750
End Plate Weld Size (in):	0.188	Flange Plate Thickness (in):	0.750

EAVE/PURLIN CONNECTION

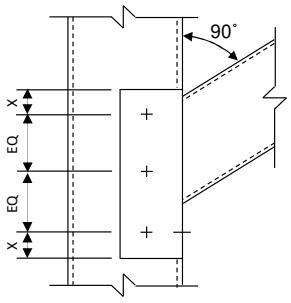
ONE-SIDED

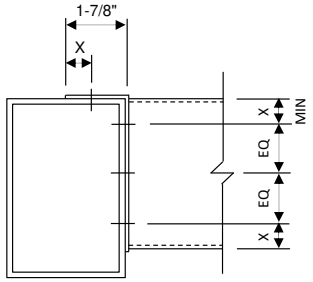
Top Flange Checks: (3) 12-24 Screws				**Allowable**	**Actual**	**Load Combination / Member**	
1	Shear (3 of the screws)			2420 lb	90 lb	78 / Purlin1	**OK**
2	Tension (none of the screws)			0 lb	0 lb	n/a	**OK**
3	Shear Yielding (plate)	AISC (J4-3)	R_N/Ω	11621 lb	90 lb	78 / Purlin1	**OK**
4	Shear Rupture (plate)	AISC (J4-4)	R_N/Ω	12287 lb	90 lb	78 / Purlin1	**OK**

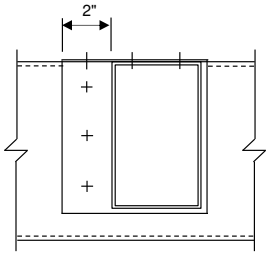
Side Flange Checks: (3) 12-24 Screws				**Allowable**	**Actual**	**Load Combination / Member**	
5	Shear (3 of the screws)			2420 lb	1843 lb	47 / Purlin1	**OK**
6	Tension (none of the screws)			0 lb	0 lb	n/a	**OK**
7	Shear Yielding (plate)	AISC (J4-3)	R_N/Ω	11621 lb	1843 lb	47 / Purlin1	**OK**
8	Shear Rupture (plate)	AISC (J4-4)	R_N/Ω	12287 lb	1843 lb	47 / Purlin1	**OK**

Weld Check: 0.125" Fillet Weld				**Allowable**	**Actual**	**Load Combination / Member**	
9	Weld Check	AISC (J2-3)	R_N/Ω	1.94 kip/in	0.09 kip/in	47 / Purlin1	**OK**

Design Forces / Moments								
Check	Load Combination	Member	Fx (Axial) [k]	Fy [k]	Fz [k]	Mx [k-in]	My [k-in]	Mz [k-in]
1	78	Purlin1	-0.1	0.3	0.0	0.0	0.0	0.0
2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
3	78	Purlin1	-0.1	0.3	0.0	0.0	0.0	0.0
4	78	Purlin1	-0.1	0.3	0.0	0.0	0.0	0.0
5	47	Purlin1	0.0	1.7	-0.2	0.0	0.0	0.0
6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
7	47	Purlin1	0.0	1.7	-0.2	0.0	0.0	0.0
8	47	Purlin1	0.0	1.7	-0.2	0.0	0.0	0.0
9	47	Purlin1	0.0	1.7	-0.2	0.0	0.0	0.0







x = 3/4"

** Purlin on opposite side of truss not shown for clarity*

** Screw quantity in sketches above may not reflect actual requirements*

Plan View | Connection Elevation | End Plate Elevation

Member Height (in):	6	Sheet Metal Thickness:	10 gage *0.1345 in*
Member Width (in):	4	Screw Size:	12-24 *# 1P2905*
Member Thickness (in):	0.188	Screw Quantity (Top):	3
End Plate Weld Size (in):	1/8	Screw Quantity (Side):	3

RISA ANALYSIS REPORT

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Distributed	Area(Member)
1	FRAMEWEIGHT	DL		-1			
2	DL	DL					1
3	LL	LL					1
4	SL	SL					
5	SLU	SL					
6	SLsliding	SL					
7	SLdrift	SL					
8	UPPER SURFACE	WL					2
9	LOWER SURFACE	WL					2
10	NA	WL					
11	NA	WL					
12	NA	WL					
13	NA	WL					
14	X10MINWIND	WL					1
15	NA	WL					
16	NA	WL					
17	SIDE WIND	WL					2
18	NA	WL					
19	NA	WL					
20	NA	WL					
21	Z10MINWIND	WL					1
22	EX FRAME	EL	-1				
23	EX ROOF	EL					1
24	EZ FRAME	EL			-1		
25	EZ ROOF	EL					1
26	BLC 2 Transient Area Loads	None				3	
27	BLC 3 Transient Area Loads	None				3	
28	BLC 8 Transient Area Loads	None				4	
29	BLC 9 Transient Area Loads	None				4	
30	BLC 14 Transient Area Loads	None				3	
31	BLC 17 Transient Area Loads	None				6	
32	BLC 21 Transient Area Loads	None				4	
33	BLC 23 Transient Area Loads	None				3	
34	BLC 25 Transient Area Loads	None				3	

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	SERVICE D			1	1	2	2						
2	SERVICE Lr			3	20								
3	SERVICE S			4									
4	SERVICE Su			5									
5	SERVICE Ssliding			6									
6	SERVICE Sdrift			7									
7	SERVICE Wx (LC A; y = 0°)			8	-5.776	9	-9.181						
8	SERVICE Wx (LC B; y = 0°)			8	-13.03	9							
9	SERVICE Wx (LC A; y = 180°)			8	12.993	9	8.553						
10	SERVICE Wx (LC B; y = 180°)			8	3.222	9	14.067						
11	SERVICE Wz (LC A; y = 90°)			17	-6.811								
12	SERVICE Wz (LC B; y = 90°)			17	6.811								
13	SERVICE Ex			22	0.534	23	1.067						
14	SERVICE Ez			24	0.534	25	1.067						
15	SERVICE Ev			1	0.103	2	0.205						
16													
17	D	Yes	Y	L1	1								
18	D + Lr	Yes	Y	L1	1	L2	1						
19	D + S	Yes	Y	L1	1	L3	1						
20	D + Su	Yes	Y	L1	1	L4	1						
21	D+Ssliding	Yes	Y	L1	1	L5	1						
22	D+Sdrift	Yes	Y	L1	1	L6	1						
23	D + 0.6Wx (LC A; y = 0°)	Yes	Y	L1	1	L7	1						
24	D + 0.6Wx (LC B; y = 0°)	Yes	Y	L1	1	L8	1						
25	D + 0.6Wx (LC A; y = 180°)	Yes	Y	L1	1	L9	1						
26	D + 0.6Wx (LC B; y = 180°)	Yes	Y	L1	1	L10	1						
27	D + 0.6Wz (LC A; y = 90°)	Yes	Y	L1	1	L11	1						
28	D + 0.6Wz (LC B; y = 90°)	Yes	Y	L1	1	L12	1						
29	D + 0.6Wx (Min.)	Yes	Y	L1	1	14	9.6						
30	D + 0.6Wz (Min.)	Yes	Y	L1	1	21	9.6						

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
31	D + 0.6(0.75Wx (LC A; y = 0°) + 0.75Wz (LC A; y = 90°))	Yes	Y	L1	1	L7	0.75	L11	0.75				
32	D + 0.6(0.75Wx (LC A; y = 180°) + 0.75Wz (LC A; y = 90°))	Yes	Y	L1	1	L9	0.75	L11	0.75				
33	D + 0.6(0.75Wx (LC B; y = 0°) + 0.75Wz (LC B; y = 90°))	Yes	Y	L1	1	L8	0.75	L12	0.75				
34	D + 0.6(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°))	Yes	Y	L1	1	L10	0.75	L12	0.75				
35	D + 0.6(0.75Wx (Min.) + 0.75Wx (Min.))	Yes	Y	L1	1	14	7.2	21	7.2				
36	D + 0.75(0.6Wx (LC A; y = 0°)) + 0.75Lr	Yes	Y	L1	1	L7	0.75	L2	0.75				
37	D + 0.75(0.6Wx (LC B; y = 0°)) + 0.75Lr	Yes	Y	L1	1	L8	0.75	L2	0.75				
38	D + 0.75(0.6Wx (LC A; y = 180°)) + 0.75Lr	Yes	Y	L1	1	L9	0.75	L2	0.75				
39	D + 0.75(0.6Wx (LC B; y = 180°)) + 0.75Lr	Yes	Y	L1	1	L10	0.75	L2	0.75				
40	D + 0.75(0.6Wz (LC A; y = 90°)) + 0.75Lr	Yes	Y	L1	1	L11	0.75	L2	0.75				
41	D + 0.75(0.6Wz (LC B; y = 90°)) + 0.75Lr	Yes	Y	L1	1	L12	0.75	L2	0.75				
42	D + 0.75(0.6Wx (Min.)) + 0.75Lr	Yes	Y	L1	1	14	7.2	L2	0.75				
43	D + 0.75(0.6Wz (Min.)) + 0.75Lr	Yes	Y	L1	1	21	7.2	L2	0.75				
44	D + 0.75(0.6(0.75Wx (LC A; y=0°) + 0.75Wz (LC A; y=90°))) + 0.75Lr	Yes	Y	L1	1	L7	0.563	L11	0.563	L2	0.75		
45	D + 0.75(0.6(0.75Wx (LC A; y=180°) + 0.75Wz (LC A; y=90°))) + 0.75Lr	Yes	Y	L1	1	L9	0.563	L11	0.563	L2	0.75		
46	D + 0.75(0.6(0.75Wx (LC B; y=0°) + 0.75Wz (LC B; y=90°))) + 0.75Lr	Yes	Y	L1	1	L8	0.563	L12	0.563	L2	0.75		
47	D + 0.75(0.6(0.75Wx (LC B; y=180°) + 0.75Wz (LC B; y=90°))) + 0.75Lr	Yes	Y	L1	1	L10	0.563	L12	0.563	L2	0.75		
48	D + 0.75(0.6(0.75Wx (Min.) + 0.75Wz (Min.))) + 0.75Lr	Yes	Y	L1	1	14	5.4	21	5.4	L2	0.75		
49	D + 0.75(0.6Wx (LC A; y = 0°)) + 0.75S	Yes	Y	L1	1	L7	0.75	L3	0.75				
50	D + 0.75(0.6Wx (LC B; y = 0°)) + 0.75S	Yes	Y	L1	1	L8	0.75	L3	0.75				
51	D + 0.75(0.6Wx (LC A; y = 180°)) + 0.75S	Yes	Y	L1	1	L9	0.75	L3	0.75				
52	D + 0.75(0.6Wx (LC B; y = 180°)) + 0.75S	Yes	Y	L1	1	L10	0.75	L3	0.75				
53	D + 0.75(0.6Wz (LC A; y = 90°)) + 0.75S	Yes	Y	L1	1	L11	0.75	L3	0.75				
54	D + 0.75(0.6Wz (LC B; y = 90°)) + 0.75S	Yes	Y	L1	1	L12	0.75	L3	0.75				
55	D + 0.75(0.6Wx (Min.)) + 0.75S	Yes	Y	L1	1	14	7.2	L3	0.75				
56	D + 0.75(0.6Wz (Min.)) + 0.75S	Yes	Y	L1	1	21	7.2	L3	0.75				
57	D + 0.75(0.6(0.75Wx (LC A; y = 0°) + 0.75Wz (LC A; y = 90°))) + 0.75S	Yes	Y	L1	1	L7	0.563	L11	0.563	L3	0.75		
58	D + 0.75(0.6(0.75Wx (LC A; y = 180°) + 0.75Wz (LC A; y = 90°))) + 0.75S	Yes	Y	L1	1	L9	0.563	L11	0.563	L3	0.75		
59	D + 0.75(0.6(0.75Wx (LC B; y = 0°) + 0.75Wz (LC B; y = 90°))) + 0.75S	Yes	Y	L1	1	L8	0.563	L12	0.563	L3	0.75		
60	D + 0.75(0.6(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°))) + 0.75S	Yes	Y	L1	1	L10	0.563	L12	0.563	L3	0.75		
61	D + 0.75(0.6(0.75Wx (Min.) + 0.75Wz (Min.))) + 0.75S	Yes	Y	L1	1	14	5.4	21	5.4	L3	0.75		
62	0.6D + 0.6Wx (LC A; y = 0°)	Yes	Y	L1	0.6	L7	1						
63	0.6D + 0.6Wx (LC B; y = 0°)	Yes	Y	L1	0.6	L8	1						
64	0.6D + 0.6Wx (LC A; y = 180°)	Yes	Y	L1	0.6	L9	1						
65	0.6D + 0.6Wx (LC B; y = 180°)	Yes	Y	L1	0.6	L10	1						
66	0.6D + 0.6Wz (LC A; y = 90°)	Yes	Y	L1	0.6	L11	1						
67	0.6D + 0.6Wz (LC B; y = 90°)	Yes	Y	L1	0.6	L12	1						
68	0.6D + 0.6Wx (Min.)	Yes	Y	L1	0.6	14	9.6						
69	0.6D + 0.6Wz (Min.)	Yes	Y	L1	0.6	21	9.6						
70	0.6 + 0.6(0.75Wx (LC A; y = 0°) + 0.75Wz (LC A; y = 90°))	Yes	Y	L1	0.6	L7	0.75	L11	0.75				
71	0.6D + 0.6(0.75Wx (LC A; y = 180°) + 0.75Wz (LC A; y = 90°))	Yes	Y	L1	0.6	L9	0.75	L11	0.75				
72	0.6D + 0.6(0.75Wx (LC B; y = 0°) + 0.75Wz (LC B; y = 90°))	Yes	Y	L1	0.6	L8	0.75	L12	0.75				
73	0.6D + 0.6(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°))	Yes	Y	L1	0.6	L10	0.75	L12	0.75				
74	0.6D + 0.6(0.75Wx (Min.) + 0.75Wz (Min.))	Yes	Y	L1	0.6	14	7.2	21	7.2				
75	1.0D+0.7Ev+0.7Ehx	Yes	Y	L1	1	L15	0.7	L13	0.7				
76	1.0D+0.525Ev+0.525Ehx+0.75S	Yes	Y	L1	1	L15	0.525	L13	0.525	L3	0.75		
77	0.6D-0.7Ev+0.7Ehx	Yes	Y	L1	0.6	L15	-0.7	L13	0.7				
78	1.0D+0.7Ev+0.7Ehz	Yes	Y	L1	1	L15	0.7	L14	0.7				
79	1.0D+0.525Ev+0.525Ehz+0.75S	Yes	Y	L1	1	L15	0.525	L14	0.525	L3	0.75		
80	0.6D-0.7Ev+0.7Ehz	Yes	Y	L1	0.6	L15	-0.7	L14	0.7				
81	1.0D+0.7Ev+0.7Ehx+0.21Ehz	Yes	Y	L1	1	L15	0.7	L13	0.7	L14	0.21		
82	1.0D+0.525Ev+0.525Ehx+0.1575Ehz+0.75S	Yes	Y	L1	1	L15	0.525	L13	0.525	L14	0.16	L3	0.75
83	0.6D-0.7Ev+0.7Ehx+0.21Ehz	Yes	Y	L1	0.6	L15	-0.7	L13	0.7	L14	0.21		
84	1.0D+0.7Ev+0.7Ehz+0.21Ehx	Yes	Y	L1	1	L15	0.7	L14	0.7	L13	0.21		
85	1.0D+0.525Ev+0.525Ehz+0.1575Ehx+0.75S	Yes	Y	L1	1	L15	0.525	L14	0.525	L13	0.16	L3	0.75
86	0.6D-0.7Ev+0.7Ehz+0.21Ehx	Yes	Y	L1	0.6	L15	-0.7	L14	0.7	L13	0.21		
87													
88													
89													
90													
91													
92	1.4D			L1	1.4								
93	1.2D + 0.5Lr			L1	1.2	L2	0.5						
94	1.2D + 0.5S			L1	1.2	L3	0.5						
95	1.2D + 1.6Lr + 0.5Wx (LC A; y = 0°)			L1	1.2	L2	1.6	L7	0.833				
96	1.2D + 1.6Lr + 0.5Wx (LC B; y = 0°)			L1	1.2	L2	1.6	L8	0.833				
97	1.2D + 1.6Lr + 0.5Wx (LC A; y = 180°)			L1	1.2	L2	1.6	L9	0.833				
98	1.2D + 1.6Lr + 0.5Wx (LC B; y = 180°)			L1	1.2	L2	1.6	L10	0.833				

Load Combinations (Continued)

	Description	Solve P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
99	1.2D + 1.6Lr + 0.5Wz (LC A; y = 90°)		L1	1.2	L2	1.6	L11	0.833				
100	1.2D + 1.6Lr + 0.5Wz (LC B; y = 90°)		L1	1.2	L2	1.6	L12	0.833				
101	1.2D + 1.6Lr + 0.5Wx (Min.)		L1	1.2	L2	1.6	14	8				
102	1.2D + 1.6Lr + 0.5Wz (Min.)		L1	1.2	L2	1.6	21	8				
103	1.2D + 1.6Lr + 0.5(0.75Wx (LC A; y = 0°) + 0.75Wz (LC A; y = 90°))		L1	1.2	L2	1.6	L7	0.625	L11	0.63		
104	1.2D + 1.6Lr + 0.5(0.75Wx (LC A; y = 180°) + 0.75Wz (LC A; y = 90°))		L1	1.2	L2	1.6	L9	0.625	L11	0.63		
105	1.2D + 1.6Lr + 0.5(0.75Wx (LC B; y = 0°) + 0.75Wz (LC B; y = 90°))		L1	1.2	L2	1.6	L8	0.625	L12	0.63		
106	1.2D + 1.6Lr + 0.5(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°))		L1	1.2	L2	1.6	L10	0.625	L12	0.63		
107	1.2D + 1.6Lr + 0.5(0.75Wx (Min.) + 0.75Wz (Min.))		L1	1.2	L2	1.6	14	6	21	6		
108	1.2D + 1.6S + 0.5Wx (LC A; y = 0°)		L1	1.2	L3	1.6	L7	0.833				
109	1.2D + 1.6S + 0.5Wx (LC B; y = 0°)		L1	1.2	L3	1.6	L8	0.833				
110	1.2D + 1.6S + 0.5Wx (LC A; y = 180°)		L1	1.2	L3	1.6	L9	0.833				
111	1.2D + 1.6S + 0.5Wx (LC B; y = 180°)		L1	1.2	L3	1.6	L10	0.833				
112	1.2D + 1.6S + 0.5Wz (LC A; y = 90°)		L1	1.2	L3	1.6	L11	0.833				
113	1.2D + 1.6S + 0.5Wz (LC B; y = 90°)		L1	1.2	L3	1.6	L12	0.833				
114	1.2D + 1.6S + 0.5Wx (Min.)		L1	1.2	L3	1.6	14	8				
115	1.2D + 1.6S + 0.5Wz (Min.)		L1	1.2	L3	1.6	21	8				
116	1.2D + 1.6S + 0.5(0.75Wx (LC A; y = 0°) + 0.75Wz (LC A; y = 90°))		L1	1.2	L3	1.6	L7	0.625	L11	0.63		
117	1.2D + 1.6S + 0.5(0.75Wx (LC A; y = 180°) + 0.75Wz (LC A; y = 90°))		L1	1.2	L3	1.6	L9	0.625	L11	0.63		
118	1.2D + 1.6S + 0.5(0.75Wx (LC B; y = 0°) + 0.75Wz (LC B; y = 90°))		L1	1.2	L3	1.6	L8	0.625	L12	0.63		
119	1.2D + 1.6S + 0.5(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°))		L1	1.2	L3	1.6	L10	0.625	L12	0.63		
120	1.2D + 1.6S + 0.5(0.75Wx (Min.) + 0.75Wz (Min.))		L1	1.2	L3	1.6	14	6	21	6		
121	1.2D + 1.6Su + 0.5Wx (LC A; y = 0°)		L1	1.2	L4	1.6	L7	0.833				
122	1.2D + 1.6Su + 0.5Wx (LC B; y = 0°)		L1	1.2	L4	1.6	L8	0.833				
123	1.2D + 1.6Su + 0.5Wx (LC A; y = 180°)		L1	1.2	L4	1.6	L9	0.833				
124	1.2D + 1.6Su + 0.5Wx (LC B; y = 180°)		L1	1.2	L4	1.6	L10	0.833				
125	1.2D + 1.6Su + 0.5Wz (LC A; y = 90°)		L1	1.2	L4	1.6	L11	0.833				
126	1.2D + 1.6Su + 0.5Wz (LC B; y = 90°)		L1	1.2	L4	1.6	L12	0.833				
127	1.2D + 1.6Su + 0.5Wx (Min.)		L1	1.2	L4	1.6	14	8				
128	1.2D + 1.6Su + 0.5Wz (Min.)		L1	1.2	L4	1.6	21	8				
129	1.2D + 1.6Su + 0.5(0.75Wx (LC A; y = 0°) + 0.75Wz (LC A; y = 90°))		L1	1.2	L4	1.6	L7	0.625	L11	0.63		
130	1.2D + 1.6Su + 0.5(0.75Wx (LC A; y = 180°) + 0.75Wz (LC A; y = 90°))		L1	1.2	L4	1.6	L9	0.625	L11	0.63		
131	1.2D + 1.6Su + 0.5(0.75Wx (LC B; y = 0°) + 0.75Wz (LC B; y = 90°))		L1	1.2	L4	1.6	L8	0.625	L12	0.63		
132	1.2D + 1.6Su + 0.5(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°))		L1	1.2	L4	1.6	L10	0.625	L12	0.63		
133	1.2D + 1.6Su + 0.5(0.75Wx (Min.) + 0.75Wz (Min.))		L1	1.2	L4	1.6	14	6	21	6		
134	1.2D + 1.6Ssliding + 0.5Wx (LC A; y = 0°)		L1	1.2	L5	1.6	L7	0.833				
135	1.2D + 1.6Ssliding + 0.5Wx (LC B; y = 0°)		L1	1.2	L5	1.6	L8	0.833				
136	1.2D + 1.6Ssliding + 0.5Wx (LC A; y = 180°)		L1	1.2	L5	1.6	L9	0.833				
137	1.2D + 1.6Ssliding + 0.5Wx (LC B; y = 180°)		L1	1.2	L5	1.6	L10	0.833				
138	1.2D + 1.6Ssliding + 0.5Wz (LC A; y = 90°)		L1	1.2	L5	1.6	L11	0.833				
139	1.2D + 1.6Ssliding + 0.5Wz (LC B; y = 90°)		L1	1.2	L5	1.6	L12	0.833				
140	1.2D + 1.6Ssliding + 0.5Wx (Min.)		L1	1.2	L5	1.6	14	8				
141	1.2D + 1.6Ssliding + 0.5Wz (Min.)		L1	1.2	L5	1.6	21	8				
142	1.2D + 1.6Ssliding + 0.5(0.75Wx (LC A; y = 0°) + 0.75Wz (LC A; y = 90°))		L1	1.2	L5	1.6	L7	0.625	L11	0.63		
143	1.2D + 1.6Ssliding + 0.5(0.75Wx (LC A; y = 180°) + 0.75Wz (LC A; y = 90°))		L1	1.2	L5	1.6	L9	0.625	L11	0.63		
144	1.2D + 1.6Ssliding + 0.5(0.75Wx (LC B; y = 0°) + 0.75Wz (LC B; y = 90°))		L1	1.2	L5	1.6	L8	0.625	L12	0.63		
145	1.2D + 1.6Ssliding + 0.5(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°))		L1	1.2	L5	1.6	L10	0.625	L12	0.63		
146	1.2D + 1.6Ssliding + 0.5(0.75Wx (Min.) + 0.75Wz (Min.))		L1	1.2	L5	1.6	14	6	21	6		
147	1.2D + 1.6Sdrift + 0.5Wx (LC A; y = 0°)		L1	1.2	L6	1.6	L7	0.833				
148	1.2D + 1.6Sdrift + 0.5Wx (LC B; y = 0°)		L1	1.2	L6	1.6	L8	0.833				
149	1.2D + 1.6Sdrift + 0.5Wx (LC A; y = 180°)		L1	1.2	L6	1.6	L9	0.833				
150	1.2D + 1.6Sdrift + 0.5Wx (LC B; y = 180°)		L1	1.2	L6	1.6	L10	0.833				
151	1.2D + 1.6Sdrift + 0.5Wz (LC A; y = 90°)		L1	1.2	L6	1.6	L11	0.833				
152	1.2D + 1.6Sdrift + 0.5Wz (LC B; y = 90°)		L1	1.2	L6	1.6	L12	0.833				
153	1.2D + 1.6Sdrift + 0.5Wx (Min.)		L1	1.2	L6	1.6	14	8				
154	1.2D + 1.6Sdrift + 0.5Wz (Min.)		L1	1.2	L6	1.6	21	8				
155	1.2D + 1.6Sdrift + 0.5(0.75Wx (LC A; y = 0°) + 0.75Wz (LC A; y = 90°))		L1	1.2	L6	1.6	L7	0.625	L11	0.63		
156	1.2D + 1.6Sdrift + 0.5(0.75Wx (LC A; y = 180°) + 0.75Wz (LC A; y = 90°))		L1	1.2	L6	1.6	L9	0.625	L11	0.63		
157	1.2D + 1.6Sdrift + 0.5(0.75Wx (LC B; y = 0°) + 0.75Wz (LC B; y = 90°))		L1	1.2	L6	1.6	L8	0.625	L12	0.63		
158	1.2D + 1.6Sdrift + 0.5(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°))		L1	1.2	L6	1.6	L10	0.625	L12	0.63		
159	1.2D + 1.6Sdrift + 0.5(0.75Wx (Min.) + 0.75Wz (Min.))		L1	1.2	L6	1.6	14	6	21	6		
160	1.2D + 1.0Wx (LC A; y = 0°) + 0.5Lr		L1	1.2	L7	1.667	L2	0.5				
161	1.2D + 1.0Wx (LC B; y = 0°) + 0.5Lr		L1	1.2	L8	1.667	L2	0.5				
162	1.2D + 1.0Wx (LC A; y = 180°) + 0.5Lr		L1	1.2	L9	1.667	L2	0.5				
163	1.2D + 1.0Wx (LC B; y = 180°) + 0.5Lr		L1	1.2	L10	1.667	L2	0.5				
164	1.2D + 1.0Wz (LC A; y = 90°) + 0.5Lr		L1	1.2	L11	1.667	L2	0.5				
165	1.2D + 1.0Wz (LC B; y = 90°) + 0.5Lr		L1	1.2	L12	1.667	L2	0.5				
166	1.2D + 1.0Wx (Min.) + 0.5Lr		L1	1.2	14	16	L2	0.5				

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
167	1.2D + 1.0Wz (Min.) + 0.5Lr			L1	1.2	21	16	L2	0.5				
168	1.2D + 1.0(0.75Wx (LC A; y = 0°) + 0.75Wz (LC A; y = 90°)) + 0.5Lr			L1	1.2	L7	1.25	L11	1.25	L2	0.5		
169	1.2D + 1.0(0.75Wx (LC A; y = 180°) + 0.75Wz (LC A; y = 90°)) + 0.5Lr			L1	1.2	L9	1.25	L11	1.25	L2	0.5		
170	1.2D + 1.0(0.75Wx (LC B; y = 0°) + 0.75Wz (LC B; y = 90°)) + 0.5Lr			L1	1.2	L8	1.25	L12	1.25	L2	0.5		
171	1.2D + 1.0(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°)) + 0.5Lr			L1	1.2	L10	1.25	L12	1.25	L2	0.5		
172	1.2D + 1.0(0.75Wx (Min.) + 0.75Wz (Min.)) +0.5Lr			L1	1.2	14	12	21	12	L2	0.5		
173	1.2D + 1.0Wx (LC A; y = 0°) + 0.5S			L1	1.2	L7	1.667	L3	0.5				
174	1.2D + 1.0Wx (LC B; y = 0°) + 0.5S			L1	1.2	L8	1.667	L3	0.5				
175	1.2D + 1.0Wx (LC A; y = 180°) + 0.5S			L1	1.2	L9	1.667	L3	0.5				
176	1.2D + 1.0Wx (LC B; y = 180°) + 0.5S			L1	1.2	L10	1.667	L3	0.5				
177	1.2D + 1.0Wz (LC A; y = 90°) + 0.5S			L1	1.2	L11	1.667	L3	0.5				
178	1.2D + 1.0Wz (LC B; y = 90°) + 0.5S			L1	1.2	L12	1.667	L3	0.5				
179	1.2D + 1.0Wx (Min.) + 0.5S			L1	1.2	14	16	L3	0.5				
180	1.2D + 1.0Wz (Min.) + 0.5S			L1	1.2	21	16	L3	0.5				
181	1.2D + 1.0(0.75Wx (LC A; y = 0°) + 0.75Wz (LC A; y = 90°)) + 0.5S			L1	1.2	L7	1.25	L11	1.25	L3	0.5		
182	1.2D + 1.0(0.75Wx (LC A; y = 180°) + 0.75Wz (LC A; y = 90°)) + 0.5S			L1	1.2	L9	1.25	L11	1.25	L3	0.5		
183	1.2D + 1.0(0.75Wx (LC B; y = 0°) + 0.75Wz (LC B; y = 90°)) + 0.5S			L1	1.2	L8	1.25	L12	1.25	L3	0.5		
184	1.2D + 1.0(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°)) + 0.5S			L1	1.2	L10	1.25	L12	1.25	L3	0.5		
185	1.2D + 1.0(0.75Wx (Min.) + 0.75Wz (Min.)) +0.5S			L1	1.2	14	12	21	12	L3	0.5		
186	0.9D + 1.0Wx (LC A; y = 0°)			L1	0.9	L7	1.667						
187	0.9D + 1.0Wx (LC B; y = 0°)			L1	0.9	L8	1.667						
188	0.9D + 1.0Wx (LC A; y = 180°)			L1	0.9	L9	1.667						
189	0.9D + 1.0Wx (LC B; y = 180°)			L1	0.9	L10	1.667						
190	0.9D + 1.0Wz (LC A; y = 90°)			L1	0.9	L11	1.667						
191	0.9D + 1.0Wz (LC B; y = 90°)			L1	0.9	L12	1.667						
192	0.9D + 1.0Wx (Min.)			L1	0.9	14	16						
193	0.9D + 1.0Wz (Min.)			L1	0.9	21	16						
194	0.9D + 1.0(0.75Wx (LC A; y = 0°) + 0.75Wz (LC A; y = 90°))			L1	0.9	L7	1.25	L11	1.25				
195	0.9D + 1.0(0.75Wx (LC A; y = 180°) + 0.75Wz (LC A; y = 90°))			L1	0.9	L9	1.25	L11	1.25				
196	0.9D + 1.0(0.75Wx (LC B; y = 0°) + 0.75Wz (LC B; y = 90°))			L1	0.9	L8	1.25	L12	1.25				
197	0.9D + 1.0(0.75Wx (LC B; y = 180°) + 0.75Wz (LC B; y = 90°))			L1	0.9	L10	1.25	L12	1.25				
198	0.9D + 1.0(0.75Wx (Min.) + 0.75Wz (Min.))			L1	0.9	14	12	21	12				
199	1.2D+Ev+Ehx+0.2S			L1	1.2	L15	1	L13	1	L3	0.2		
200	0.9D-Ev+Ehx			L1	0.9	L15	-1	L13	1				
201	1.2D+Ev+Ehz+0.2S			L1	1.2	L15	1	L14	1	L3	0.2		
202	0.9D-Ev+Ehz			L1	0.9	L15	-1	L14	1				
203	1.2D+Ev+Ehx+0.3Ehz+0.2S			L1	1.2	L15	1	L13	1	L14	0.3	L3	0.2
204	0.9D-Ev+Ehx+0.3Ehz			L1	0.9	L15	-1	L13	1	L14	0.3		
205	1.2D+Ev+Ehz+0.3Ehx+0.2S			L1	1.2	L15	1	L14	1	L13	0.3	L3	0.2
206	0.9D-Ev+Ehz+0.3Ehx			L1	0.9	L15	-1	L14	1	L13	0.3		
207													
208	SERVICE Emx			22	0.513	23	1.026						
209	SERVICE Emz			24	0.513	25	1.026						
210													
211	1.0D+0.7Ev+0.7Emhx			L1	1	L13	0.7	L208	0.7				
212	1.0D+0.525Ev+0.525Emhx+0.75S			L1	1	L13	0.525	L208	0.525	L3	0.75		
213	0.6D-0.7Ev+0.7Emhx			L1	0.6	L13	-0.7	L208	0.7				
214	1.0D+0.7Ev+0.7Emhz			L1	1	L13	0.7	L209	0.7				
215	1.0D+0.525Ev+0.525Emhz+0.75S			L1	1	L13	0.525	L209	0.525	L3	0.75		
216	0.6D-0.7Ev+0.7Emhz			L1	0.6	L13	-0.7	L209	0.7				
217													
218													
219													
220													
221	1.2D+Ev+Emhx+0.2S			L1	1.2	L13	1	L208	1	L3	0.2		
222	0.9D-Ev+Emhx			L1	0.9	L13	-1	L208	1				
223	1.2D+Ev+Emhx+0.2S			L1	1.2	L13	1	L209	1	L3	0.2		
224	0.9D-Ev+Emhz			L1	0.9	L13	-1	L209	1				
225													
226													
227													
228													
229													
230													
231													
232													
233													
234													

Load Combinations (Continued)

	Description	Solve P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
235												
236												
237												
238												
239												
240												
241												
242												
243												
244												
245												
246												
247												
248												
249												
250												

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
1	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N4	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	Column	HSS12X8X3	Column	Tube	A500 Gr.C RECT	Typical	6.76	75.7	140	153
2	Truss	HSS12X8X3	Beam	Tube	A500 Gr.C RECT	Typical	6.76	75.7	140	153
3	Eave	HSS6X4X3	Beam	Tube	A500 Gr.C RECT	Typical	3.28	8.76	16.4	18.2
4	Purlin	HSS6X4X3	Beam	Tube	A500 Gr.C RECT	Typical	3.28	8.76	16.4	18.2

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	Column1	N1	N2	180	Column	Column	Tube	A500 Gr.C RECT	Typical
2	Column2	N4	N5	180	Column	Column	Tube	A500 Gr.C RECT	Typical
3	Eave1	N5	N2	9.46	Eave	Beam	Tube	A500 Gr.C RECT	Typical
4	Eave2	N6	N3	9.46	Eave	Beam	Tube	A500 Gr.C RECT	Typical
5	Purlin1	N8	N7	9.46	Purlin	Beam	Tube	A500 Gr.C RECT	Typical
6	Truss1	N2	N3		Truss	Beam	Tube	A500 Gr.C RECT	Typical
7	Truss2	N5	N6		Truss	Beam	Tube	A500 Gr.C RECT	Typical

Member Advanced Data

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
1	Column1			Yes	** NA **	None
2	Column2			Yes	** NA **	None
3	Eave1	AllPIN	BenPIN	Yes	Default	None
4	Eave2	AllPIN	BenPIN	Yes	Default	None
5	Purlin1	AllPIN	BenPIN	Yes	Default	None
6	Truss1			Yes	Default	None
7	Truss2			Yes	Default	None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Lb y-y [ft]	K y-y	K z-z	Channel Conn.	a [ft]	Function
1	Column1	Column	13		2	2	N/A	N/A	Lateral
2	Column2	Column	13		2	2	N/A	N/A	Lateral
3	Eave1	Eave	20		1	1	N/A	N/A	Lateral
4	Eave2	Eave	20		1	1	N/A	N/A	Lateral
5	Purlin1	Purlin	20		1	1	N/A	N/A	Lateral
6	Truss1	Truss	12.166	Segment	2.1	2.1	N/A	N/A	Lateral
7	Truss2	Truss	12.166	Segment	2.1	2.1	N/A	N/A	Lateral

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁶°F⁻¹]	Density [lb/ft³]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	490	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	490	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	490	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	527	42	1.4	58	1.3
5	A500 Gr.B RECT	29000	11154	0.3	0.65	527	46	1.4	58	1.3
6	A500 Gr.C RND	29000	11154	0.3	0.65	527	46	1.4	62	1.3
7	A500 Gr.C RECT	29000	11154	0.3	0.65	527	50	1.4	62	1.3
8	A53 Gr.B	29000	11154	0.3	0.65	490	35	1.6	60	1.2
9	A1085	29000	11154	0.3	0.65	490	50	1.4	65	1.3
10	A913 Gr.65	29000	11154	0.3	0.65	490	65	1.1	80	1.1

Envelope AISC 15TH (360-16): ASD Member Steel Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	Pnc/om [k]	Pnt/om [k]	Mnyy/om [k-in]	Mnzz/om [k-in]	Cb	Eqn
0	Column1	HSS12X8X3	0.497	0	38	0.052	0	z	78	93.397	202.395	421.253	644.526	1.043	H1-1b
1	Column2	HSS12X8X3	0.497	0	38	0.052	0	z	78	93.397	202.395	421.253	644.526	1.043	H1-1b
2	Eave1	HSS6X4X3	0.343	10.101	47	0.029	20	y	47	22.859	98.204	137.321	197.605	1.14	H1-1b
3	Eave2	HSS6X4X3	0.324	10.101	38	0.027	20	y	38	22.859	98.204	137.321	197.605	1.14	H1-1b
4	Purlin1	HSS6X4X3	0.585	10.101	47	0.048	20	y	47	22.859	98.204	137.321	197.605	1.14	H1-1b
5	Truss1	HSS12X8X3	0.428	0	38	0.044	0	y	38	116.377	202.395	421.253	644.526	2.122	H1-1b
6	Truss2	HSS12X8X3	0.428	0	38	0.044	0	y	38	116.377	202.395	421.253	644.526	2.122	H1-1b

Material Take-Off

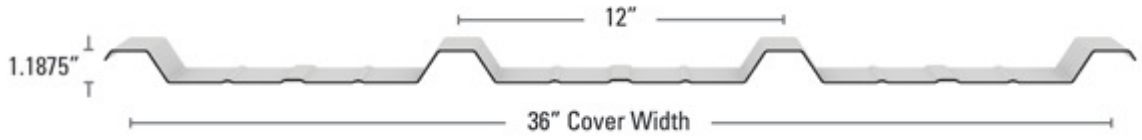
	Material	Size	Pieces	Length[ft]	Weight[LB]
0	Hot Rolled Steel				
1	A500 Gr.C RECT	HSS12X8X3	4	50.3	1245.177
2	A500 Gr.C RECT	HSS6X4X3	3	60	720.234
3	Total HR Steel		7	110.3	1965.41

PANEL DATA

Multi-Rib

Bare Galvalume & Painted Galvalume

a product of McElroy Metal



Section Properties						Top in Compression			Bottom in Compression		
Gauge	F_y (ksi)	Weight (psf)	Va (kip/ft)	P_{a_end} (lbs/ft)	P_{a_int} (lbs/ft)	I_x (in^4/ft)	S_e (in^3/ft)	M_a (kip-in/ft)	I_x (in^4/ft)	S_e (in^3/ft)	M_a (kip-in/ft)
24	63.7	1.10	0.7727	235.0	280.7	0.05	0.055	1.375	0.029	0.046	1.148

1. Yield strength measured per ASTM A370.
2. Remainder of section properties are calculated in accordance with AISI S100-16.
3. V_a is the allowable shear
4. P_a is the allowable load for web crippling on end & interior supports.
5. I_x is for deflection determination.
6. S_e is for bending.
7. M_a is the allowable bending moment.
8. All values are for one foot of panel width.

Allowable Uniform Loads (PSF)													
	Span Length (ft)												
Load Type	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0
+	355.1	288.9	222.8	156.6	90.5	86.3	82.1	58.2	34.4	21	18	16	14
-	246	162	148.5	134.9	121.4	94.6	67.9	50.7	33.5	18	15	13	11

Notes:

1. Allowable uniform loads are based upon equal span lengths.
2. Highlighted values measured per ASTM A1592 and include a factor of safety of 2.0.
3. Remaining values calculated from section properties or straight-line interpolation.
4. Calculated values are limited to combined shear & bending using Eq. H2-1 of AISI S100-16.
5. Calculated values are limited by web crippling using a bearing length of 2".
6. Web crippling values are determined using a ratio of the uniform load **actually** supported by the top flanges of the section.
7. The weight of the panel has **NOT** been deducted from the allowable loads.

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