BALZER
& ASSOCIATES
PLANNERS / ARCHITECTS
ENGINEERS / SURVEYORS

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Roanoke
Richmond
New River Valley
Staunton
Harrisonburg
Lynchburg

September 23, 2022

Matt Sargent
Island Architects
2309 East Broad Street
Richmond, Virginia 23223

Re: Essex Residence – Engineered Structural Design
24 Essex Road
Chestnut Hill, MA 02467
Balzer Project No.: 57220165.00

Dear Mr. Sargent,

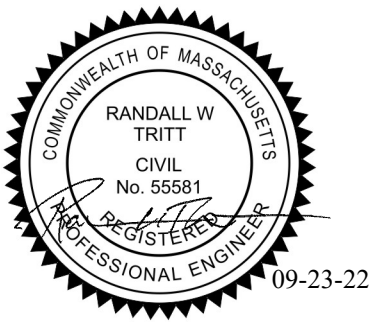
Balzer structural personnel provided the preliminary structural design of the proposed addition to the single family residence at 24 Essex Road in Chestnut Hill, Massachusetts. Our office coordinated with the architectural design provided by Island Architects.

Balzer has provided a preliminary engineered design for the main gravity and lateral force resisting system which is included in the attached calculation package. Based on our preliminary analysis, the architectural limitations for beam depth and column size can be achieved with our design. The design loads used in the analysis meet the requirements of the ASCE 7-16 and AISC 15th (360-16) Steel Construction Manual.

Please contact this office if there remain any outstanding questions or further information is required. Thank you.

Sincerely,
BALZER AND ASSOCIATES, INC.

Randall W. Tritt, P.E.
Vice-President Structural Engineering



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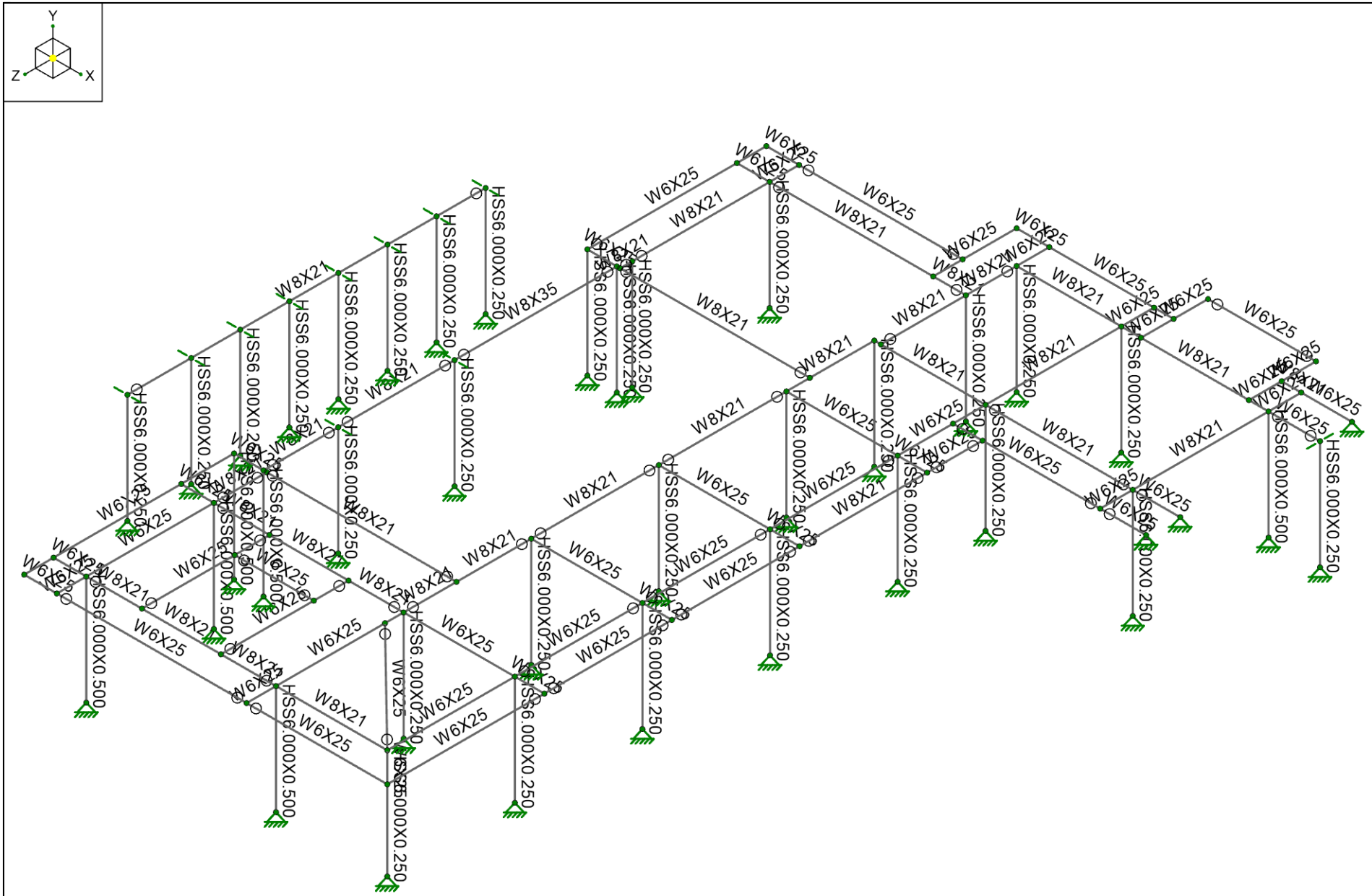
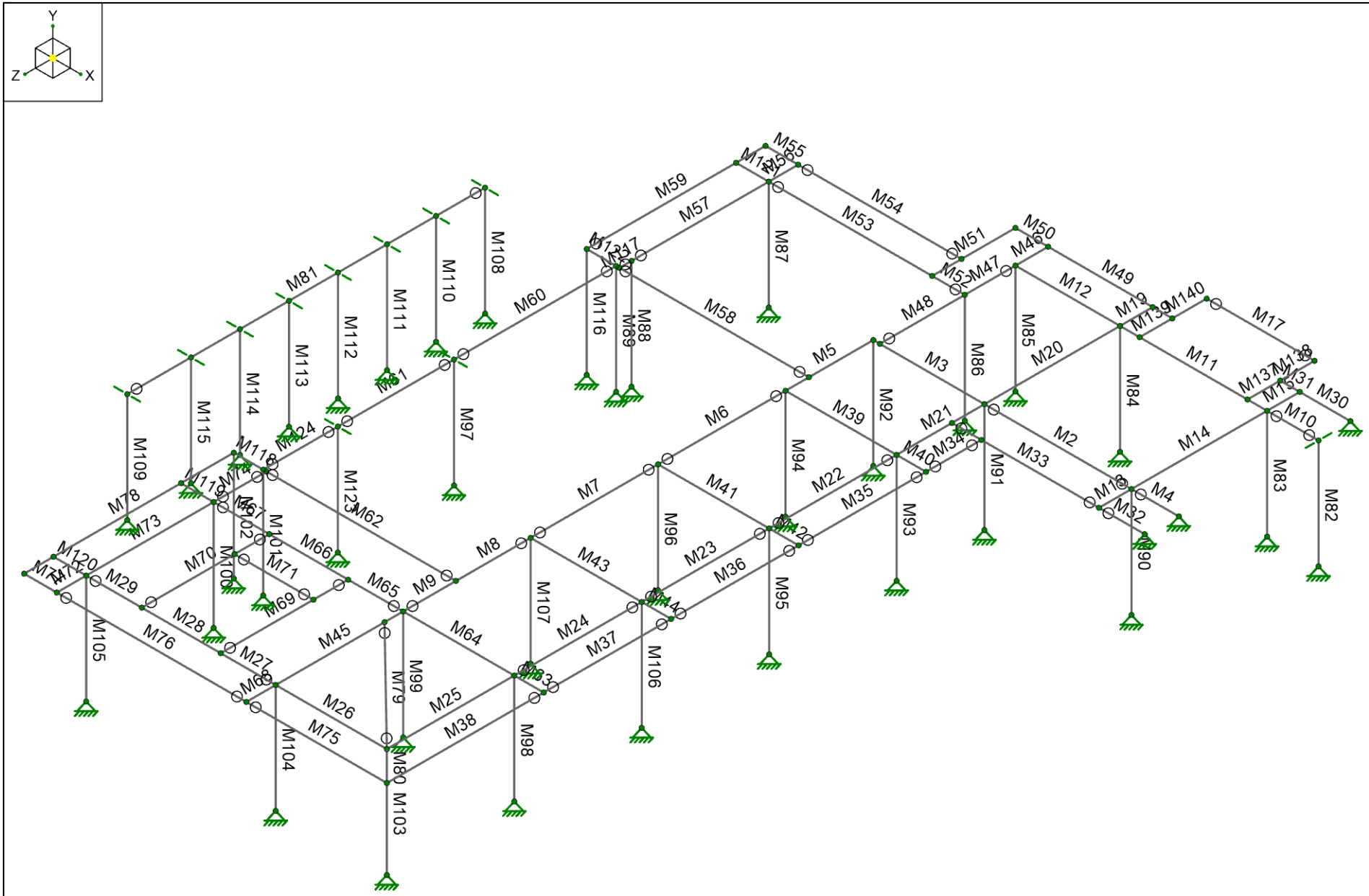


Balzer and Associates, Inc	Essex Residence	SK-3
Nellie Kate A. Goodman, PE		Sep 23, 2022
57220165.00		Essex Risa Model overhang adjustment.r3d



Balzer and Associates, Inc	Essex Residence	SK-4
Nellie Kate A. Goodman, PE		Sep 23, 2022
57220165.00		Essex Risa Model overhang adjustment.r3d

Node Loads and Enforced Displacements (BLC 5 : WLX)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	N116	L	X	0.571
2	N119	L	X	0.848
3	N130	L	X	2.56
4	N121	L	X	2.8

Node Loads and Enforced Displacements (BLC 9 : WLY)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	N96	L	Y	0

Member Point Loads

No Data to Print...

Wall Panel Point Loads

No Data to Print...

Diaphragm Point Loads

No Data to Print...

Member Distributed Loads (BLC 1 : DL)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M10	Y	-0.154	-0.154	0	%100
2	M4	Y	-0.154	-0.154	0	%100
3	M2	Y	-0.129	-0.129	0	%100
4	M33	Y	-0.025	-0.025	0	%100
5	M11	Y	-0.164	-0.164	0	%100
6	M17	Y	-0.06	-0.06	0	%100
7	M49	Y	-0.025	-0.025	0	%100
8	M12	Y	-0.129	-0.129	0	%100
9	M51	Y	-0.025	-0.025	0	%100
10	M46	Y	-0.025	-0.025	0	%100
11	M47	Y	-0.025	-0.025	0	%100
12	M48	Y	-0.15	-0.15	0	%100
13	M3	Y	-0.104	-0.104	0	%100
14	M54	Y	-0.025	-0.025	0	%100
15	M59	Y	-0.025	-0.025	0	%100
16	M34	Y	-0.025	-0.025	0	%100
17	M35	Y	-0.025	-0.025	0	%100
18	M36	Y	-0.025	-0.025	0	%100
19	M37	Y	-0.025	-0.025	0	%100
20	M38	Y	-0.025	-0.025	0	%100
21	M75	Y	-0.025	-0.025	0	%100
22	M76	Y	-0.025	-0.025	0	%100
23	M78	Y	-0.025	-0.025	0	%100
24	M53	Y	-0.025	-0.025	0	%100
25	M5	Y	-0.23	-0.23	0	%100
26	M6	Y	-0.23	-0.23	0	%100
27	M7	Y	-0.23	-0.23	0	%100
28	M8	Y	-0.23	-0.23	0	%100
29	M9	Y	-0.23	-0.23	0	%100
30	M21	Y	-0.108	-0.108	0	%100
31	M22	Y	-0.108	-0.108	0	%100

Member Distributed Loads (BLC 1 : DL) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
32	M23	Y	-0.108	-0.108	0	%100
33	M24	Y	-0.108	-0.108	0	%100
34	M25	Y	-0.107	0	0	%100
35	M26	Y	0	-0.107	0	%100
36	M79	Y	-0.108	0	0	%100
37	M79	Y	-0.108	0	0	%100
38	M73	Y	-0.025	-0.025	0	%100
39	M72	Y	-0.025	-0.025	0	%100
40	M74	Y	-0.17	-0.17	0	%100
41	M60	Y	-0.25	-0.25	0	%100
42	M81	Y	-0.102	-0.102	0	%100
43	M57	Y	-0.175	-0.175	0	%100
44	M56	Y	-0.025	-0.025	0	%100
45	M61	Y	-0.25	-0.25	0	%100
46	M124	Y	-0.25	-0.25	0	%100
47	M126	Y	-0.104	-0.104	0	%100
48	M127	Y	-0.129	-0.129	0	%100
49	M45	Y	-0.041	-0.041	0	%100
50	M73	Y	-0.041	-0.041	0	%100
51	M69	Y	-0.105	-0.105	0	%100
52	M70	Y	-0.105	-0.105	0	%100
53	M27	Y	-0.025	-0.025	0	%100
54	M28	Y	-0.025	-0.025	0	%100
55	M29	Y	-0.025	-0.025	0	%100

Member Distributed Loads (BLC 3 : RLL)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M10	Y	-0.205	-0.205	0	%100
2	M4	Y	-0.205	-0.205	0	%100
3	M2	Y	-0.172	-0.172	0	%100
4	M33	Y	-0.033	-0.033	0	%100
5	M11	Y	-0.218	-0.218	0	%100
6	M17	Y	-0.08	-0.08	0	%100
7	M49	Y	-0.033	-0.033	0	%100
8	M12	Y	-0.172	-0.172	0	%100
9	M51	Y	-0.033	-0.033	0	%100
10	M46	Y	-0.033	-0.033	0	%100
11	M47	Y	-0.033	-0.033	0	%100
12	M48	Y	-0.2	-0.2	0	%100
13	M3	Y	-0.138	-0.138	0	%100
14	M54	Y	-0.033	-0.033	0	%100
15	M53	Y	-0.033	-0.033	0	%100
16	M59	Y	-0.033	-0.033	0	%100
17	M34	Y	-0.033	-0.033	0	%100
18	M35	Y	-0.033	-0.033	0	%100
19	M36	Y	-0.033	-0.033	0	%100
20	M37	Y	-0.033	-0.033	0	%100
21	M38	Y	-0.033	-0.033	0	%100
22	M75	Y	-0.033	-0.033	0	%100
23	M76	Y	-0.033	-0.033	0	%100
24	M78	Y	-0.033	-0.033	0	%100
25	M5	Y	-0.307	-0.307	0	%100
26	M6	Y	-0.307	-0.307	0	%100
27	M7	Y	-0.307	-0.307	0	%100
28	M8	Y	-0.307	-0.307	0	%100

Member Distributed Loads (BLC 3 : RLL) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
29	M9	Y	-0.307	-0.307	0	%100
30	M21	Y	-0.143	-0.143	0	%100
31	M22	Y	-0.143	-0.143	0	%100
32	M23	Y	-0.143	-0.143	0	%100
33	M24	Y	-0.143	-0.143	0	%100
34	M25	Y	-0.143	0	0	%100
35	M26	Y	0	-0.143	0	%100
36	M79	Y	-0.143	0	0	%100
37	M79	Y	-0.143	0	0	%100
38	M73	Y	-0.033	-0.033	0	%100
39	M72	Y	-0.033	-0.033	0	%100
40	M74	Y	-0.227	-0.227	0	%100
41	M60	Y	-0.333	-0.333	0	%100
42	M81	Y	-0.137	-0.137	0	%100
43	M57	Y	-0.233	-0.233	0	%100
44	M56	Y	-0.033	-0.033	0	%100
45	M61	Y	-0.333	-0.333	0	%100
46	M124	Y	-0.333	-0.333	0	%100
47	M45	Y	-0.055	-0.055	0	%100
48	M73	Y	-0.055	-0.055	0	%100
49	M69	Y	-0.14	-0.14	0	%100
50	M70	Y	-0.14	-0.14	0	%100
51	M27	Y	-0.033	-0.033	0	%100
52	M28	Y	-0.033	-0.033	0	%100
53	M29	Y	-0.033	-0.033	0	%100
54	M120	Y	-0.033	-0.033	0	%100

Member Distributed Loads (BLC 4 : SL)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M10	Y	-0.41	-0.41	0	%100
2	M4	Y	-0.41	-0.41	0	%100
3	M2	Y	-0.343	-0.343	0	%100
4	M33	Y	-0.067	-0.067	0	%100
5	M11	Y	-0.436	-0.436	0	%100
6	M17	Y	-0.16	-0.16	0	%100
7	M49	Y	-0.067	-0.067	0	%100
8	M12	Y	-0.343	-0.343	0	%100
9	M51	Y	-0.067	-0.067	0	%100
10	M46	Y	-0.067	-0.067	0	%100
11	M47	Y	-0.067	-0.067	0	%100
12	M48	Y	-0.4	-0.4	0	%100
13	M3	Y	-0.277	-0.277	0	%100
14	M54	Y	-0.067	-0.067	0	%100
15	M59	Y	-0.067	-0.067	0	%100
16	M34	Y	-0.067	-0.067	0	%100
17	M35	Y	-0.067	-0.067	0	%100
18	M36	Y	-0.067	-0.067	0	%100
19	M37	Y	-0.067	-0.067	0	%100
20	M38	Y	-0.067	-0.067	0	%100
21	M75	Y	-0.067	-0.067	0	%100
22	M76	Y	-0.067	-0.067	0	%100
23	M78	Y	-0.067	-0.067	0	%100
24	M53	Y	-0.067	-0.067	0	%100
25	M5	Y	-0.613	-0.613	0	%100
26	M6	Y	-0.613	-0.613	0	%100

Member Distributed Loads (BLC 4 : SL) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
27	M7	Y	-0.613	-0.613	0	%100
28	M8	Y	-0.613	-0.613	0	%100
29	M9	Y	-0.613	-0.613	0	%100
30	M21	Y	-0.287	-0.287	0	%100
31	M22	Y	-0.287	-0.287	0	%100
32	M23	Y	-0.287	-0.287	0	%100
33	M24	Y	-0.287	-0.287	0	%100
34	M26	Y	0	-0.287	0	%100
35	M25	Y	-0.287	0	0	%100
36	M79	Y	-0.287	0	0	%100
37	M79	Y	-0.287	0	0	%100
38	M73	Y	-0.067	-0.067	0	%100
39	M72	Y	-0.067	-0.067	0	%100
40	M74	Y	-0.453	-0.453	0	%100
41	M60	Y	-0.667	-0.667	0	%100
42	M81	Y	-0.273	-0.273	0	%100
43	M57	Y	-0.467	-0.467	0	%100
44	M56	Y	-0.067	-0.067	0	%100
45	M61	Y	-0.667	-0.667	0	%100
46	M124	Y	-0.667	-0.667	0	%100
47	M45	Y	-0.11	-0.11	0	%100
48	M73	Y	-0.11	-0.11	0	%100
49	M73	Y	-0.11	-0.11	0	%100
50	M69	Y	-0.28	-0.28	0	%100
51	M70	Y	-0.28	-0.28	0	%100
52	M27	Y	-0.066	-0.066	0	%100
53	M28	Y	-0.066	-0.066	0	%100
54	M29	Y	-0.066	-0.066	0	%100
55	M120	Y	-0.066	-0.066	0	%100

Member Distributed Loads (BLC 9 : WLY)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M17	Y	0.154	0.154	0	%100
2	M11	Y	0.154	0.154	0	%100
3	M49	Y	0.064	0.064	0	%100
4	M12	Y	0.064	0.064	0	%100
5	M50	Y	0.064	0.064	0	%100
6	M51	Y	0.064	0.064	0	%100
7	M47	Y	0.064	0.064	0	%100
8	M46	Y	0.064	0.064	0	%100
9	M54	Y	0.064	0.064	0	%100
10	M53	Y	0.064	0.064	0	%100
11	M55	Y	0.064	0.064	0	%100
12	M56	Y	0.064	0.064	0	%100
13	M59	Y	0.064	0.064	0	%100
14	M57	Y	0.064	0.064	0	%100
15	M121	Y	0.064	0.064	0	%100
16	M122	Y	0.064	0.064	0	%100
17	M33	Y	0.064	0.064	0	%100
18	M34	Y	0.064	0.064	0	%100
19	M35	Y	0.064	0.064	0	%100
20	M2	Y	0.064	0.064	0	%100
21	M21	Y	0.064	0.064	0	%100
22	M22	Y	0.064	0.064	0	%100
23	M36	Y	0.064	0.064	0	%100

Member Distributed Loads (BLC 9 : WLY) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
24	M23	Y	0.064	0.064	0	%100
25	M37	Y	0.064	0.064	0	%100
26	M24	Y	0.064	0.064	0	%100
27	M38	Y	0.064	0.064	0	%100
28	M25	Y	0.064	0.064	0	%100
29	M26	Y	0.064	0.064	0	%100
30	M75	Y	0.064	0.064	0	%100
31	M76	Y	0.064	0.064	0	%100
32	M77	Y	0.064	0.064	0	%100
33	M78	Y	0.064	0.064	0	%100
34	M120	Y	0.064	0.064	0	%100
35	M118	Y	0.064	0.064	0	%100
36	M73	Y	0.064	0.064	0	%100
37	M74	Y	0.064	0.064	0	%100
38	M80	Y	0.064	0.064	0	%100
39	M26	Y	0.218	0.218	0	%100
40	M25	Y	0.218	0.218	0	%100
41	M24	Y	0.218	0.218	0	%100
42	M23	Y	0.218	0.218	0	%100
43	M22	Y	0.218	0.218	0	%100
44	M21	Y	0.218	0.218	0	%100
45	M5	Y	0.218	0.218	0	%100
46	M6	Y	0.218	0.218	0	%100
47	M7	Y	0.218	0.218	0	%100
48	M8	Y	0.218	0.218	0	%100
49	M9	Y	0.218	0.218	0	%100
50	M79	Y	0.218	0.218	0	%100
51	M10	Y	0.134	0.134	0	%100
52	M4	Y	0.134	0.134	0	%100
53	M2	Y	0.134	0.134	0	%100
54	M11	Y	0.134	0.134	0	%100
55	M12	Y	0.134	0.134	0	%100
56	M3	Y	0.134	0.134	0	%100
57	M48	Y	0.191	0.191	0	%100
58	M57	Y	0.191	0.191	0	%100
59	M5	Y	0.191	0.191	0	%100
60	M6	Y	0.191	0.191	0	%100
61	M7	Y	0.191	0.191	0	%100
62	M8	Y	0.191	0.191	0	%100
63	M9	Y	0.191	0.191	0	%100
64	M74	Y	0.191	0.191	0	%100
65	M124	Y	0.191	0.191	0	%100
66	M61	Y	0.191	0.191	0	%100
67	M60	Y	0.191	0.191	0	%100
68	M60	Y	0.128	0.128	0	%100
69	M61	Y	0.128	0.128	0	%100
70	M124	Y	0.128	0.128	0	%100
71	M27	Y	0.025	0.025	0	%100
72	M28	Y	0.025	0.025	0	%100
73	M29	Y	0.025	0.025	0	%100
74	M45	Y	0.042	0.042	0	%100
75	M73	Y	0.042	0.042	0	%100
76	M73	Y	0.042	0.042	0	%100
77	M69	Y	0.106	0.106	0	%100
78	M70	Y	0.106	0.106	0	%100

Member Distributed Loads (BLC 9 : WLY) (Continued)

Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]

Wall Panel Distributed Loads

No Data to Print...

Diaphragm Distributed Loads

No Data to Print...

Member Area Loads

No Data to Print...

Plate Surface Loads

No Data to Print...

Wall Panel Surface Loads

No Data to Print...

Diaphragm Surface Loads

No Data to Print...

Basic Load Cases

	BLC Description	Category	Y Gravity	Nodal	Distributed
1	DL	DL	-1		55
2	LL	LL			
3	RLL	RLL			54
4	SL	SL			55
5	WLX	WLX		4	
6	WLZ	WL-Z			
7	ELX	ELX			
8	ELZ	ELZ			
9	WLY	WLY		1	78

Moving Loads

No Data to Print...

Moving Load Patterns

No Data to Print...

Time History Loads

No Data to Print...

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	Deflection 1	Yes	Y	DL	1										
2	Deflection 2	Yes	Y	LL	1										
3	Deflection 3	Yes	Y	DL	1	LL	1								
4	IBC 16-8	Yes	Y	DL	1										
5	IBC 16-9	Yes	Y	DL	1	LL	1	LLS	1						
6	IBC 16-10 (a)	Yes	Y	DL	1	RLL	1								
7	IBC 16-10 (b)	Yes	Y	DL	1	SL	1	SLN	1						
8	IBC 16-11 (a)	Yes	Y	DL	1	LL	0.75	LLS	0.75	RLL	0.75				
9	IBC 16-11 (b)	Yes	Y	DL	1	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75		
10	IBC 16-12 (a) (a)	Yes	Y	DL	1	WLX	0.6								

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
11	IBC 16-12 (a) (b)	Yes	Y	DL	1	WLZ	0.6								
12	IBC 16-12 (WLY+)	Yes	Y	DL	1	WLY	0.6								
13	IBC 16-12 (WLY)	Yes	Y	DL	1	WLY	-0.6								
14	IBC 16-12 (a) (c)	Yes	Y	DL	1	WLX	-0.6								
15	IBC 16-12 (a) (d)	Yes	Y	DL	1	WLZ	-0.6								
16	IBC 16-13 (WLY)	Yes	Y	DL	1	WLY	0.45	LL	0.75	LLS	0.75	RLL	0.75		
17	IBC 16-13 (a) (a)	Yes	Y	DL	1	WLX	0.45	LL	0.75	LLS	0.75	RLL	0.75		
18	IBC 16-13 (a) (b)	Yes	Y	DL	1	WLZ	0.45	LL	0.75	LLS	0.75	RLL	0.75		
19	IBC 16-13 (a) (c)	Yes	Y	DL	1	WLX	-0.45	LL	0.75	LLS	0.75	RLL	0.75		
20	IBC 16-13 (WLY-)	Yes	Y	DL	1	WLY	-0.45	LL	0.75	LLS	0.75	RLL	0.75		
21	IBC 16-13 (a) (d)	Yes	Y	DL	1	WLZ	-0.45	LL	0.75	LLS	0.75	RLL	0.75		
22	IBC 16-13 (b) (a)	Yes	Y	DL	1	WLX	0.45	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
23	IBC 16-13 (WLY BA)	Yes	Y	DL	1	WLY	0.45	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
24	IBC 16-13 (b) (b)	Yes	Y	DL	1	WLZ	0.45	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
25	IBC 16-13 (b) (c)	Yes	Y	DL	1	WLX	-0.45	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
26	IBC 16-13 (WLY BC)	Yes	Y	DL	1	WLY	-0.45	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
27	IBC 16-13 (b) (d)	Yes	Y	DL	1	WLZ	-0.45	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
28	IBC 16-13 (c) (a)	Yes	Y	DL	1	WLX	0.45	LL	0.75	LLS	0.75				
29	IBC 16-13 (WLY CB)	Yes	Y	DL	1	WLY	0.45	LL	0.75	LLS	0.75				
30	IBC 16-13 (c) (b)	Yes	Y	DL	1	WLZ	0.45	LL	0.75	LLS	0.75				
31	IBC 16-13 (c) (c)	Yes	Y	DL	1	WLX	-0.45	LL	0.75	LLS	0.75				
32	IBC 16-13 (XLY CD)	Yes	Y	DL	1	WLY	-0.45	LL	0.75	LLS	0.75				
33	IBC 16-13 (c) (d)	Yes	Y	DL	1	WLZ	-0.45	LL	0.75	LLS	0.75				
34	IBC 16-15 (a)	Yes	Y	DL	0.6	WLX	0.6								
35	IBC 16-15 (WLY)	Yes	Y	DL	0.6	WLY	0.6								
36	IBC 16-15 (b)	Yes	Y	DL	0.6	WLZ	0.6								
37	IBC 16-15 (c)	Yes	Y	DL	0.6	WLX	-0.6								
38	IBC 16-15 (WLY-)	Yes	Y	DL	0.6	WLY	-0.6								
39	IBC 16-15 (d)	Yes	Y	DL	0.6	WLZ	-0.6								

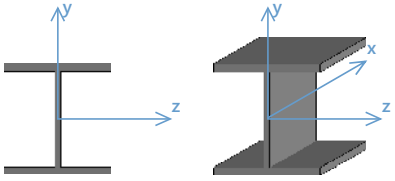
Load Combination Design

	Description	CD	Service	Hot Rolled	Cold Formed	Wood	Concrete	Masonry	Aluminum	Stainless	Connection
1	Deflection 1		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	Deflection 2		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	Deflection 3		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	IBC 16-8	0.9	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	IBC 16-9		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	IBC 16-10 (a)	1.25	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	IBC 16-10 (b)	1.15	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	IBC 16-11 (a)	1.25	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	IBC 16-11 (b)	1.15	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	IBC 16-12 (a) (a)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	IBC 16-12 (a) (b)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12	IBC 16-12 (WLY+)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
13	IBC 16-12 (WLY)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
14	IBC 16-12 (a) (c)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
15	IBC 16-12 (a) (d)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
16	IBC 16-13 (WLY)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
17	IBC 16-13 (a) (a)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
18	IBC 16-13 (a) (b)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
19	IBC 16-13 (a) (c)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
20	IBC 16-13 (WLY-)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
21	IBC 16-13 (a) (d)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
22	IBC 16-13 (b) (a)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
23	IBC 16-13 (WLY BA)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Load Combination Design (Continued)

	Description	CD	Service	Hot Rolled	Cold Formed	Wood	Concrete	Masonry	Aluminum	Stainless	Connection
24	IBC 16-13 (b) (b)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
25	IBC 16-13 (b) (c)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
26	IBC 16-13 (WLY BC)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
27	IBC 16-13 (b) (d)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
28	IBC 16-13 (c) (a)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
29	IBC 16-13 (WLY CB)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
30	IBC 16-13 (c) (b)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
31	IBC 16-13 (c) (c)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
32	IBC 16-13 (XLY CD)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
33	IBC 16-13 (c) (d)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
34	IBC 16-15 (a)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
35	IBC 16-15 (WLY)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
36	IBC 16-15 (b)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
37	IBC 16-15 (c)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
38	IBC 16-15 (WLY-)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
39	IBC 16-15 (d)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Detail Report: M4 **Unity Check:** 0.037 (LC 7) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N5
Member Type:	Beam	J Node:	N6
Length (ft):	4.833	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

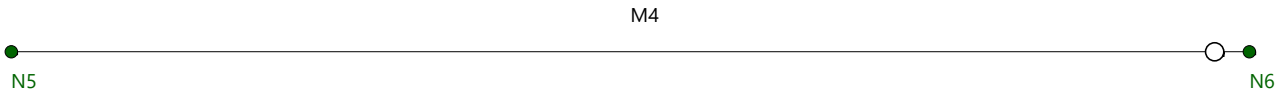
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

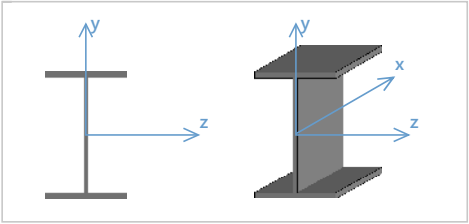
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/9935
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	2.417
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	7	-	-	-	-
Axial Tension Analysis	7	0.131 k	219.76 k	-	-
Axial Compression Analysis	7	0.000 k	202.377 k	-	-
Flexural Analysis (Strong Axis)	7	1.72 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	7	0.000 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	7	1.423 k	40.832 k	0.035	Pass
Shear Analysis (Minor Axis z)	7	0.000 k	99.392 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.037	Pass

Detail Report: M2 **Unity Check:** 0.274 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N6
Member Type:	Beam	J Node:	N3
Length (ft):	15	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

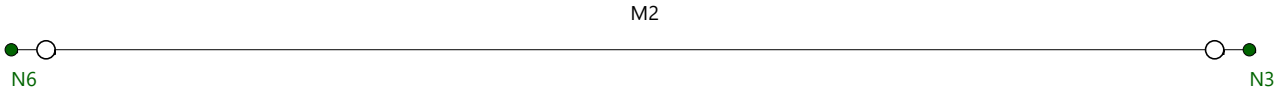
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

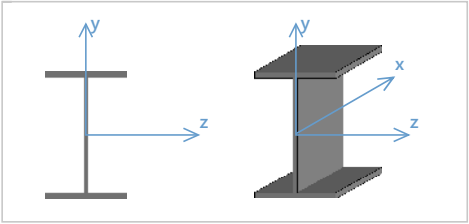
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/556
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	7.5
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.024 k	184.431 k	-	-
Axial Compression Analysis	26	0.000 k	124.041 k	-	-
Flexural Analysis (Strong Axis)	26	13.95 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.000 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	26	3.747 k	41.4 k	0.091	Pass
Shear Analysis (Minor Axis z)	26	0.055 k	75.737 k	0.001	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.274	Pass

Detail Report: M3 **Unity Check:** 0.116 (LC 7) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N3
Member Type:	Beam	J Node:	N4
Length (ft):	11.333	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

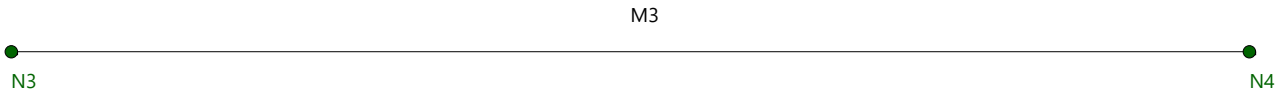
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

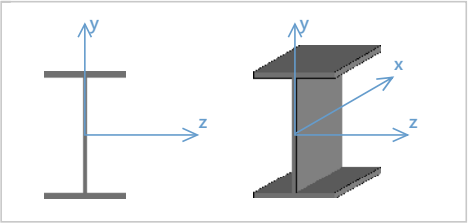
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/1794
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	5.785
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	7	-	-	-	-
Axial Tension Analysis	7	0.000 k	184.431 k	-	-
Axial Compression Analysis	7	0.094 k	133.412 k	-	-
Flexural Analysis (Strong Axis)	7	5.748 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	7	0.041 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	7	4.145 k	41.4 k	0.1	Pass
Shear Analysis (Minor Axis z)	7	0.16 k	75.737 k	0.002	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.116	Pass

Detail Report: M5 **Unity Check:** 0.164 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N4
Member Type:	Beam	J Node:	N7
Length (ft):	8.958	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

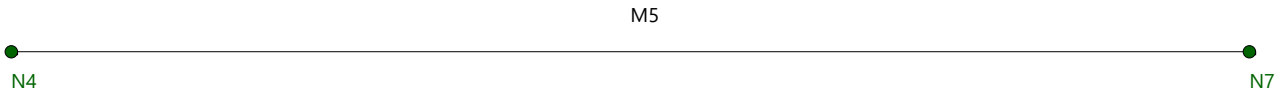
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

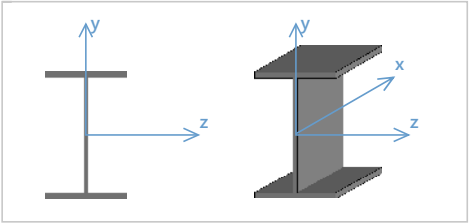
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/1628
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	4.666
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	184.431 k	-	-
Axial Compression Analysis	26	0.002 k	142.542 k	-	-
Flexural Analysis (Strong Axis)	26	7.867 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.138 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	26	4.308 k	41.4 k	0.104	Pass
Shear Analysis (Minor Axis z)	26	0.126 k	75.737 k	0.002	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.164	Pass

Detail Report: M6 **Unity Check:** 0.371 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N7
Member Type:	Beam	J Node:	N8
Length (ft):	13	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

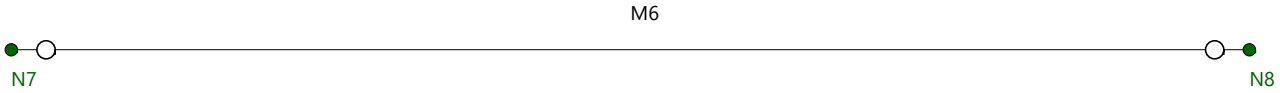
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

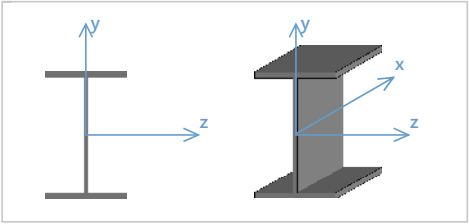
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/474
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	6.5
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.018 k	184.431 k	-	-
Axial Compression Analysis	26	0.000 k	128.559 k	-	-
Flexural Analysis (Strong Axis)	26	18.899 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.000 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	26	5.819 k	41.4 k	0.141	Pass
Shear Analysis (Minor Axis z)	26	0.007 k	75.737 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.371	Pass

Detail Report: M7 **Unity Check:** 0.371 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N8
Member Type:	Beam	J Node:	N9
Length (ft):	13	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

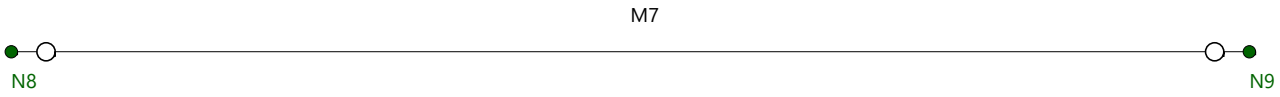
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

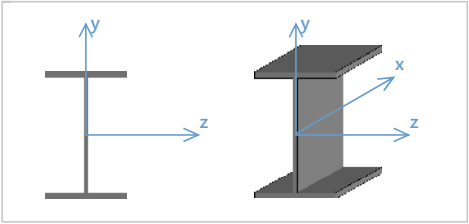
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/474
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	6.5
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.048 k	184.431 k	-	-
Axial Compression Analysis	26	0.000 k	128.559 k	-	-
Flexural Analysis (Strong Axis)	26	18.899 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.000 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	26	5.819 k	41.4 k	0.141	Pass
Shear Analysis (Minor Axis z)	26	0.007 k	75.737 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.371	Pass

Detail Report: M8 **Unity Check:** 0.397 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N9
Member Type:	Beam	J Node:	N10
Length (ft):	7.612	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

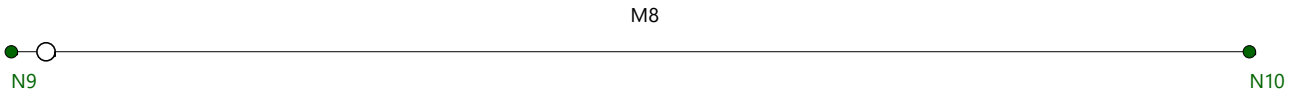
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

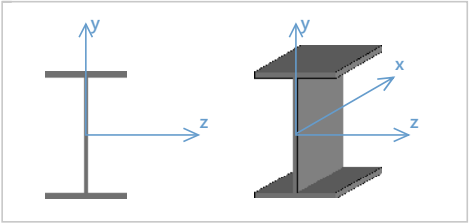
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/844
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	4.202
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.078 k	184.431 k	-	-
Axial Compression Analysis	26	0.000 k	149.055 k	-	-
Flexural Analysis (Strong Axis)	26	19.522 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.183 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	26	5.93 k	41.4 k	0.143	Pass
Shear Analysis (Minor Axis z)	26	0.065 k	75.737 k	0.001	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.397	Pass

Detail Report: M9 **Unity Check:** 0.39 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N10
Member Type:	Beam	J Node:	N11
Length (ft):	5.388	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

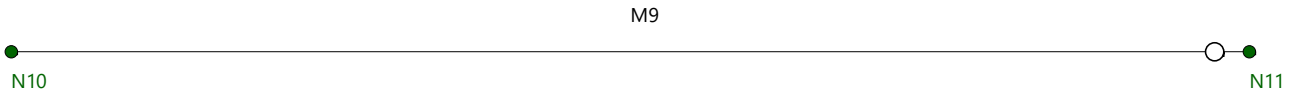
Material:	A992	Therm. Coeff. ($1e^{5}°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

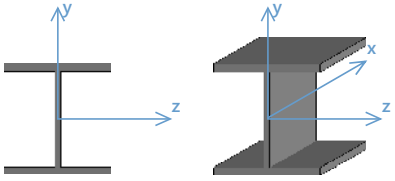
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/1448
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	2.357
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.085 k	184.431 k	-	-
Axial Compression Analysis	26	0.000 k	161.726 k	-	-
Flexural Analysis (Strong Axis)	26	19.084 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.207 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	26	5.97 k	41.4 k	0.144	Pass
Shear Analysis (Minor Axis z)	26	0.076 k	75.737 k	0.001	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.39	Pass

Detail Report: M10 **Unity Check:** 0.053 (LC 7) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N12
Member Type:	Beam	J Node:	N13
Length (ft):	5.249	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

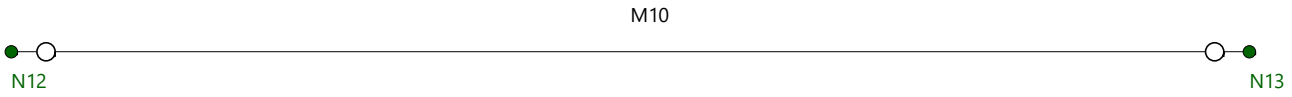
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

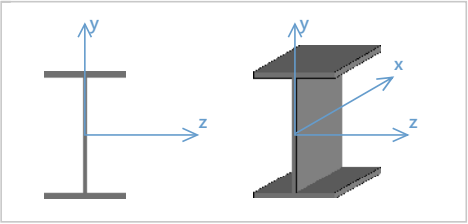
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/7756
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	2.625
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	7	-	-	-	-
Axial Tension Analysis	7	0.000 k	219.76 k	-	-
Axial Compression Analysis	7	0.001 k	200.359 k	-	-
Flexural Analysis (Strong Axis)	7	2.029 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	7	0.000 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	7	2.145 k	40.832 k	0.053	Pass
Shear Analysis (Minor Axis z)	7	1.625 k	99.392 k	0.016	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.043	Pass

Detail Report: M11 **Unity Check:** 0.259 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N13
Member Type:	Beam	J Node:	N14
Length (ft):	15	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

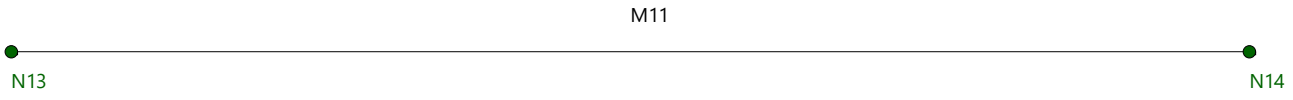
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

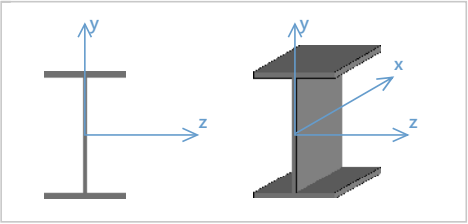
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/1118
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	7.031
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.009 k	184.431 k	-	-
Axial Compression Analysis	26	0.000 k	124.041 k	-	-
Flexural Analysis (Strong Axis)	26	10.225 k-ft	47.157 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.603 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	26	4.064 k	41.4 k	0.098	Pass
Shear Analysis (Minor Axis z)	26	0.167 k	75.737 k	0.002	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.259	Pass

Detail Report: M12 **Unity Check:** 0.203 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N14
Member Type:	Beam	J Node:	N15
Length (ft):	10.667	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

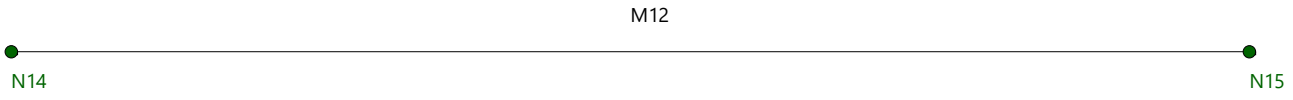
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

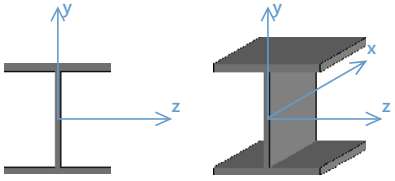
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/9173
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	6.889
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.176 k	184.431 k	-	-
Axial Compression Analysis	26	0.000 k	135.689 k	-	-
Flexural Analysis (Strong Axis)	26	9.383 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.251 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	26	3.441 k	41.4 k	0.083	Pass
Shear Analysis (Minor Axis z)	26	0.098 k	75.737 k	0.001	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.203	Pass

Detail Report: M13 **Unity Check:** 0.092 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N16
Member Type:	Beam	J Node:	N6
Length (ft):	3.312	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

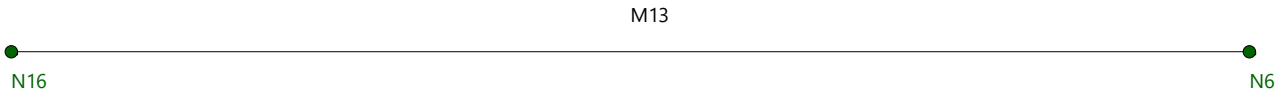
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

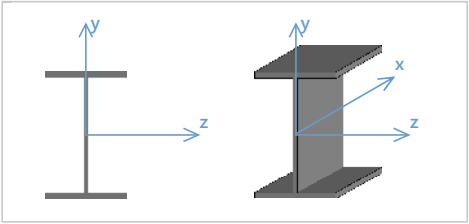
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/3717
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.017 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	209.952 k	-	-
Flexural Analysis (Strong Axis)	26	3.763 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.254 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	1.179 k	40.832 k	0.029	Pass
Shear Analysis (Minor Axis z)	26	0.077 k	99.392 k	0.001	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.092	Pass

Detail Report: M14 **Unity Check:** 0.241 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N6
Member Type:	Beam	J Node:	N13
Length (ft):	13.833	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

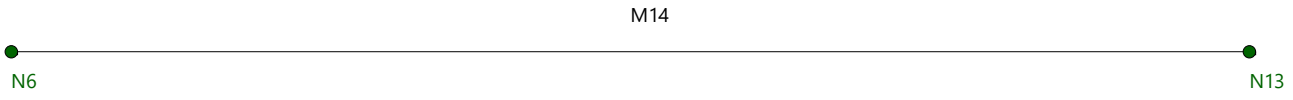
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

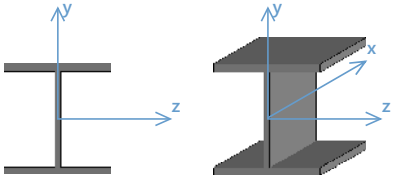
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/1245
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	7.781
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.217 k	184.431 k	-	-
Axial Compression Analysis	26	0.000 k	126.524 k	-	-
Flexural Analysis (Strong Axis)	26	10.43 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.509 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	26	0.888 k	41.4 k	0.021	Pass
Shear Analysis (Minor Axis z)	26	0.423 k	75.737 k	0.006	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.241	Pass

Detail Report: M15 **Unity Check:** 0.389 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N13
Member Type:	Beam	J Node:	N17
Length (ft):	3.333	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

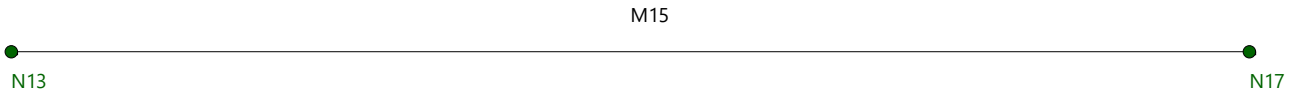
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

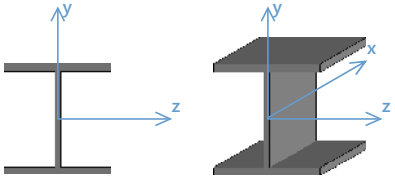
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/910
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	3.333
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	219.76 k	-	-
Axial Compression Analysis	26	0.356 k	209.851 k	-	-
Flexural Analysis (Strong Axis)	26	15.005 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	1.497 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	5.373 k	40.832 k	0.132	Pass
Shear Analysis (Minor Axis z)	26	3.873 k	99.392 k	0.039	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.389	Pass

Detail Report: M17 **Unity Check:** 0.088 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N133
Member Type:	Beam	J Node:	N136
Length (ft):	11	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

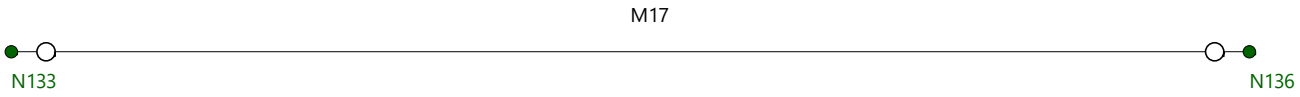
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

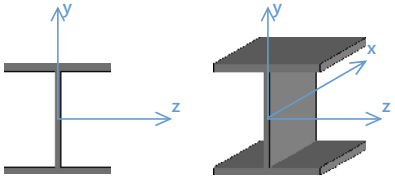
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/1810
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	5.5
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.157 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	181.012 k	-	-
Flexural Analysis (Strong Axis)	26	4.148 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.000 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	1.562 k	40.832 k	0.038	Pass
Shear Analysis (Minor Axis z)	26	0.144 k	99.392 k	0.001	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.088	Pass

Detail Report: M19 **Unity Check:** 0.351 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N20
Member Type:	Beam	J Node:	N14
Length (ft):	3.333	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

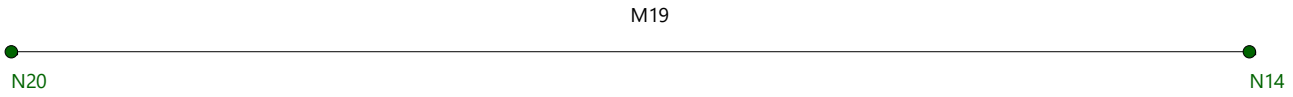
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

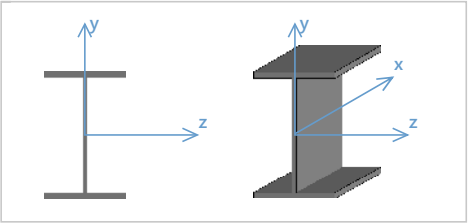
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/910
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.298 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	209.851 k	-	-
Flexural Analysis (Strong Axis)	26	15.185 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.597 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	4.956 k	40.832 k	0.121	Pass
Shear Analysis (Minor Axis z)	26	1.56 k	99.392 k	0.016	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.351	Pass

Detail Report: M20 **Unity Check:** 0.278 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N14
Member Type:	Beam	J Node:	N3
Length (ft):	13.833	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

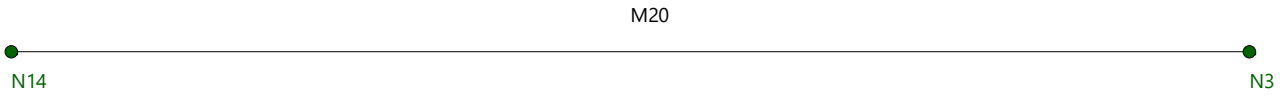
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

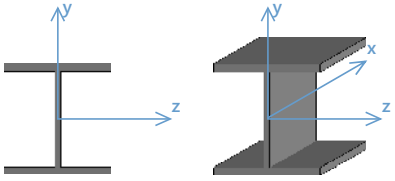
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/1235
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	5.62
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.369 k	184.431 k	-	-
Axial Compression Analysis	26	0.000 k	126.524 k	-	-
Flexural Analysis (Strong Axis)	26	12.588 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.426 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	26	1.202 k	41.4 k	0.029	Pass
Shear Analysis (Minor Axis z)	26	0.395 k	75.737 k	0.005	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.278	Pass

Detail Report: M21 **Unity Check:** 0.131 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N3
Member Type:	Beam	J Node:	N21
Length (ft):	8.958	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

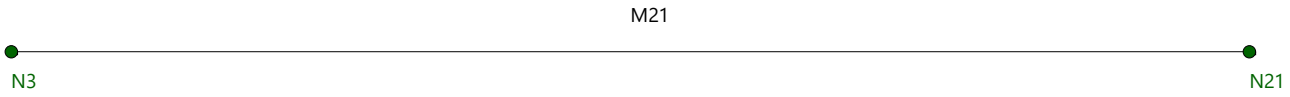
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

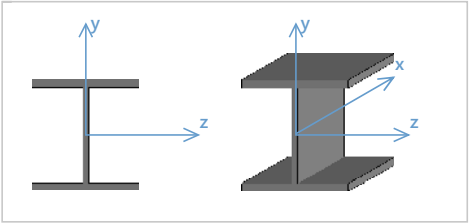
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/1553
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	4.293
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.187 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	186.04 k	-	-
Flexural Analysis (Strong Axis)	26	5.999 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.072 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	2.994 k	40.832 k	0.073	Pass
Shear Analysis (Minor Axis z)	26	0.171 k	99.392 k	0.002	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.131	Pass

Detail Report: M22 **Unity Check:** 0.213 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N21
Member Type:	Beam	J Node:	N22
Length (ft):	13	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

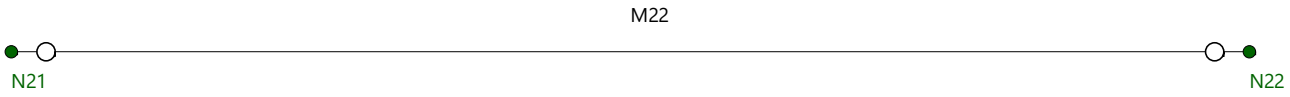
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

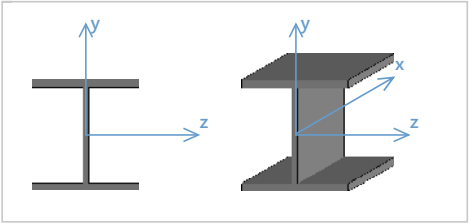
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/634
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	6.5
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.172 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	177.488 k	-	-
Flexural Analysis (Strong Axis)	26	10.015 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.000 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	3.119 k	40.832 k	0.076	Pass
Shear Analysis (Minor Axis z)	26	0.103 k	99.392 k	0.001	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.213	Pass

Detail Report: M23 **Unity Check:** 0.213 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N22
Member Type:	Beam	J Node:	N23
Length (ft):	13	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

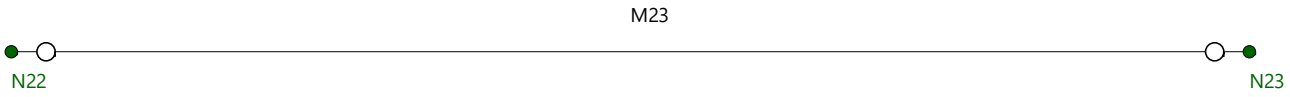
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

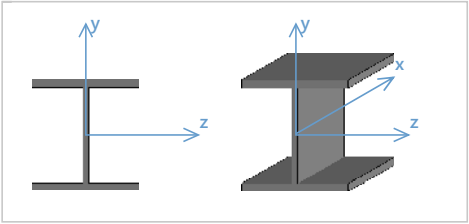
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/634
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	6.5
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.18 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	177.488 k	-	-
Flexural Analysis (Strong Axis)	26	10.015 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.000 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	3.083 k	40.832 k	0.076	Pass
Shear Analysis (Minor Axis z)	26	0.004 k	99.392 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.213	Pass

Detail Report: M24 **Unity Check:** 0.213 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N23
Member Type:	Beam	J Node:	N24
Length (ft):	13	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

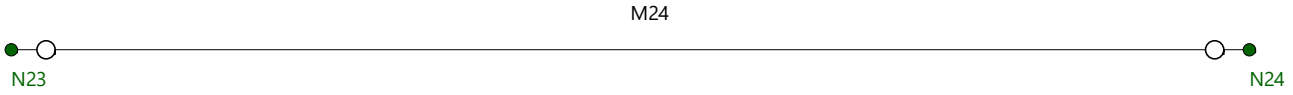
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

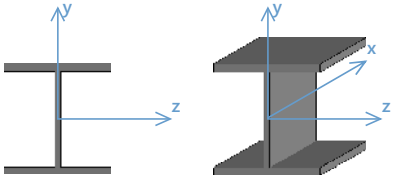
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/634
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	6.5
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.188 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	177.488 k	-	-
Flexural Analysis (Strong Axis)	26	10.015 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.000 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	3.105 k	40.832 k	0.076	Pass
Shear Analysis (Minor Axis z)	26	0.063 k	99.392 k	0.001	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.213	Pass

Detail Report: M25 **Unity Check:** 0.086 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N24
Member Type:	Beam	J Node:	N25
Length (ft):	13	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

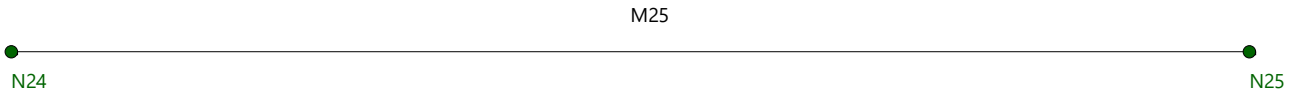
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

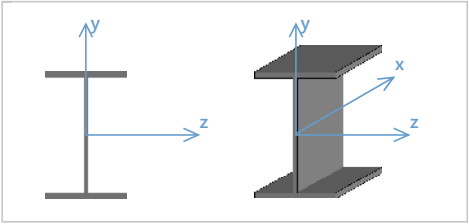
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/2024
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	5.958
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	219.76 k	-	-
Axial Compression Analysis	26	0.018 k	177.488 k	-	-
Flexural Analysis (Strong Axis)	26	3.898 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.069 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	2.23 k	40.832 k	0.055	Pass
Shear Analysis (Minor Axis z)	26	0.038 k	99.392 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.086	Pass

Detail Report: M26 **Unity Check:** 0.066 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N25
Member Type:	Beam	J Node:	N26
Length (ft):	11.333	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

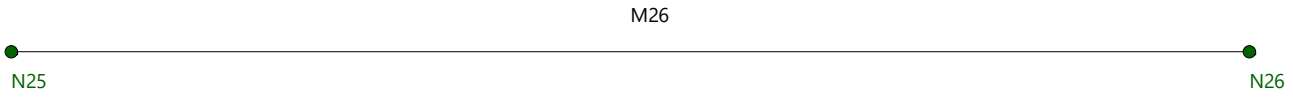
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

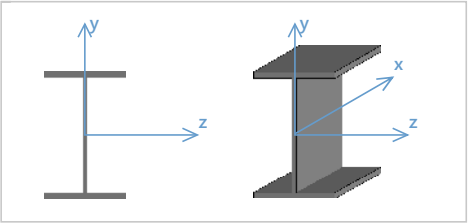
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/7097
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	5.785
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.087 k	184.431 k	-	-
Axial Compression Analysis	26	0.000 k	133.412 k	-	-
Flexural Analysis (Strong Axis)	26	3.323 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.013 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	26	2.123 k	41.4 k	0.051	Pass
Shear Analysis (Minor Axis z)	26	0.003 k	75.737 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.066	Pass

Detail Report: M27 **Unity Check:** 0.383 (LC 7) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N26
Member Type:	Beam	J Node:	N27
Length (ft):	5.612	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

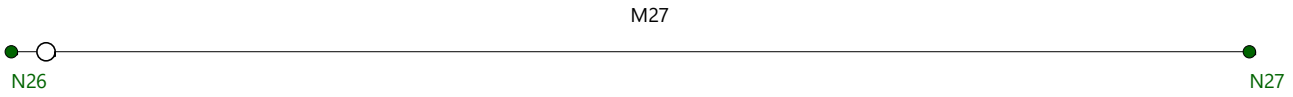
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

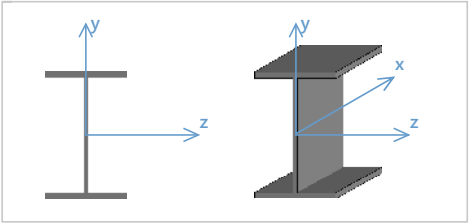
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/1674
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	3.215
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	7	-	-	-	-
Axial Tension Analysis	7	0.248 k	184.431 k	-	-
Axial Compression Analysis	7	0.000 k	160.376 k	-	-
Flexural Analysis (Strong Axis)	7	19.436 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	7	0.000 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	7	3.804 k	41.4 k	0.092	Pass
Shear Analysis (Minor Axis z)	7	0.055 k	75.737 k	0.001	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.383	Pass

Detail Report: M28 **Unity Check:** 0.401 (LC 7) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N27
Member Type:	Beam	J Node:	N28
Length (ft):	8.055	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

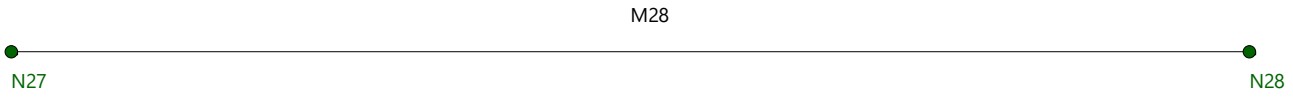
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

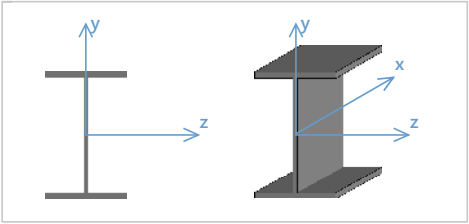
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/595
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	4.027
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	7	-	-	-	-
Axial Tension Analysis	7	0.248 k	184.431 k	-	-
Axial Compression Analysis	7	0.000 k	146.803 k	-	-
Flexural Analysis (Strong Axis)	7	20.383 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	7	0.001 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	7	0.488 k	41.4 k	0.012	Pass
Shear Analysis (Minor Axis z)	7	0.055 k	75.737 k	0.001	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.401	Pass

Detail Report: M29 **Unity Check:** 0.384 (LC 7) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N28
Member Type:	Beam	J Node:	N29
Length (ft):	5.667	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

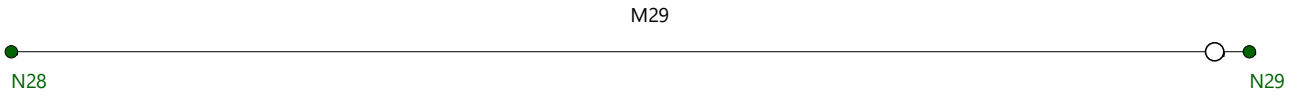
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

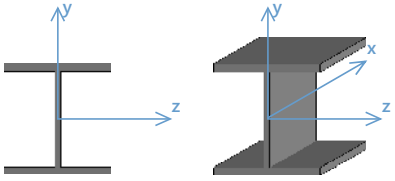
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/1649
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	2.42
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	7	-	-	-	-
Axial Tension Analysis	7	0.248 k	184.431 k	-	-
Axial Compression Analysis	7	0.000 k	160.047 k	-	-
Flexural Analysis (Strong Axis)	7	19.522 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	7	0.001 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	7	3.789 k	41.4 k	0.092	Pass
Shear Analysis (Minor Axis z)	7	0.055 k	75.737 k	0.001	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.384	Pass

Detail Report: M30 **Unity Check:** 0.155 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N30
Member Type:	Beam	J Node:	N17
Length (ft):	5.167	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

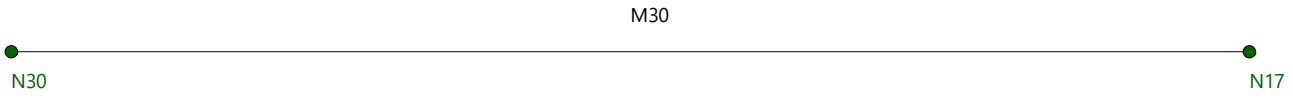
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

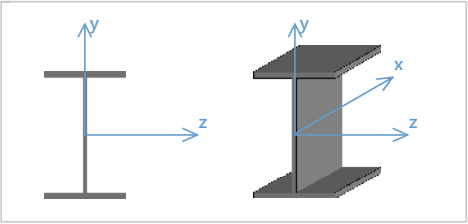
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/4015
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	5.167
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.426 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	200.755 k	-	-
Flexural Analysis (Strong Axis)	26	5.726 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.695 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	1.173 k	40.832 k	0.029	Pass
Shear Analysis (Minor Axis z)	26	0.134 k	99.392 k	0.001	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.155	Pass

Detail Report: M31 **Unity Check:** 0.264 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N17
Member Type:	Beam	J Node:	N31
Length (ft):	2	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

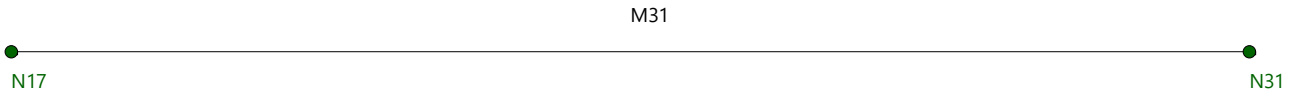
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

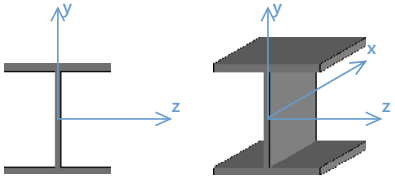
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/10000
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.433 k	184.431 k	-	-
Axial Compression Analysis	26	0.000 k	180.305 k	-	-
Flexural Analysis (Strong Axis)	26	5.944 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	26	2.078 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	26	4.054 k	41.4 k	0.098	Pass
Shear Analysis (Minor Axis z)	26	4.564 k	75.737 k	0.06	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.264	Pass

Detail Report: M32 **Unity Check:** 0.002 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N32
Member Type:	Beam	J Node:	N16
Length (ft):	4.667	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

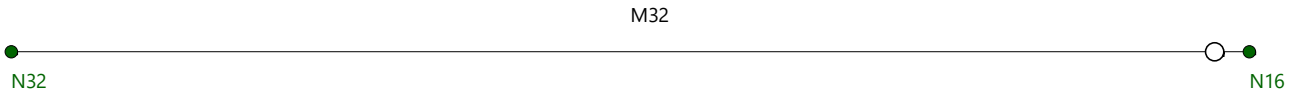
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

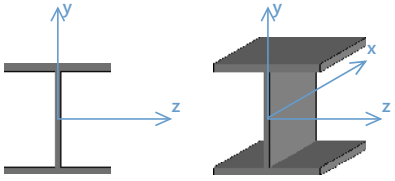
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/10000
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	32	-	-	-	-
Axial Tension Analysis	26	0.000 k	219.76 k	-	-
Axial Compression Analysis	26	0.115 k	203.201 k	-	-
Flexural Analysis (Strong Axis)	26	0.068 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.000 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	32	0.058 k	40.832 k	0.001	Pass
Shear Analysis (Minor Axis z)	32	0.000 k	99.392 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.002	Pass

Detail Report: M33 **Unity Check:** 0.096 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N16
Member Type:	Beam	J Node:	N96
Length (ft):	15	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

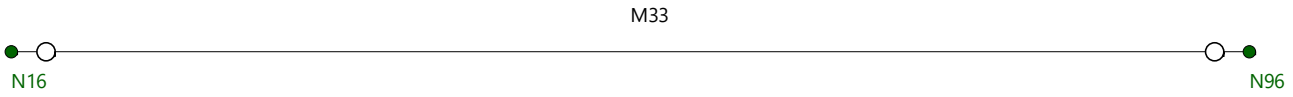
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

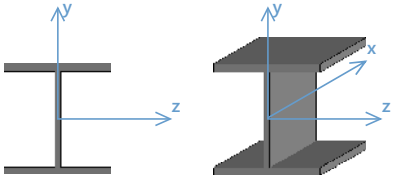
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/1285
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	7.656
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	219.76 k	-	-
Axial Compression Analysis	26	0.038 k	174.932 k	-	-
Flexural Analysis (Strong Axis)	26	4.174 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.15 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	1.389 k	40.832 k	0.034	Pass
Shear Analysis (Minor Axis z)	26	0.43 k	99.392 k	0.004	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.096	Pass

Detail Report: M34 **Unity Check:** 0.011 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N33
Member Type:	Beam	J Node:	N34
Length (ft):	5.646	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

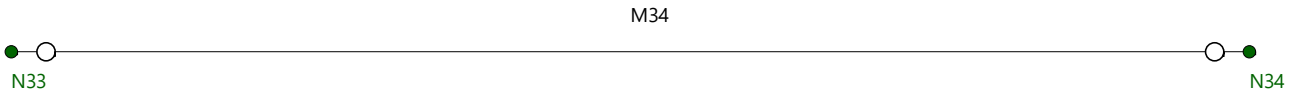
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

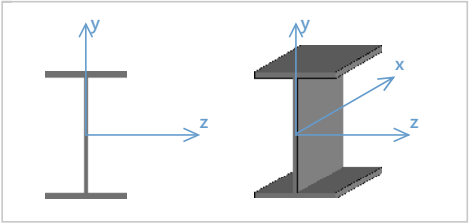
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/10000
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.089 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	198.493 k	-	-
Flexural Analysis (Strong Axis)	26	0.513 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.000 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	0.456 k	40.832 k	0.011	Pass
Shear Analysis (Minor Axis z)	26	0.251 k	99.392 k	0.003	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.011	Pass

Detail Report: M35 **Unity Check:** 0.052 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N34
Member Type:	Beam	J Node:	N35
Length (ft):	13	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

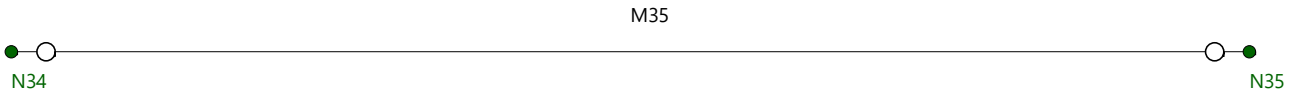
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

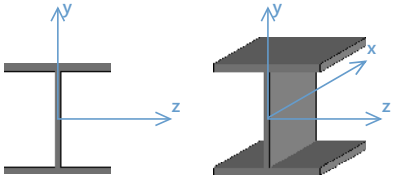
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/3401
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	6.5
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.197 k	184.431 k	-	-
Axial Compression Analysis	26	0.000 k	128.559 k	-	-
Flexural Analysis (Strong Axis)	26	2.634 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.000 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	26	0.859 k	41.4 k	0.021	Pass
Shear Analysis (Minor Axis z)	26	0.099 k	75.737 k	0.001	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.052	Pass

Detail Report: M36 **Unity Check:** 0.058 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N35
Member Type:	Beam	J Node:	N36
Length (ft):	13	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

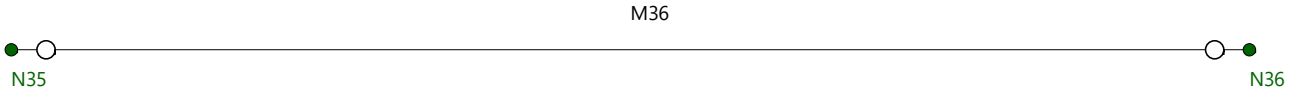
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

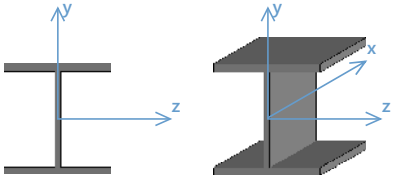
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/2336
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	6.5
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.202 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	177.488 k	-	-
Flexural Analysis (Strong Axis)	26	2.719 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.000 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	0.837 k	40.832 k	0.021	Pass
Shear Analysis (Minor Axis z)	26	0.002 k	99.392 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.058	Pass

Detail Report: M37 **Unity Check:** 0.058 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N36
Member Type:	Beam	J Node:	N37
Length (ft):	13	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

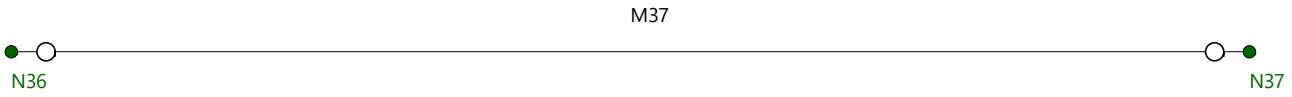
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

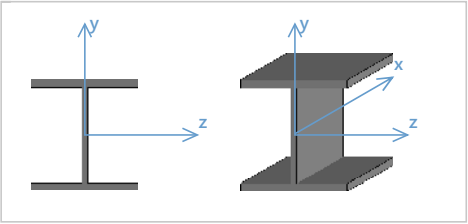
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/2336
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	6.5
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.207 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	177.488 k	-	-
Flexural Analysis (Strong Axis)	26	2.719 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.000 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	0.861 k	40.832 k	0.021	Pass
Shear Analysis (Minor Axis z)	26	0.065 k	99.392 k	0.001	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.058	Pass

Detail Report: M38 **Unity Check:** 0.074 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N37
Member Type:	Beam	J Node:	N38
Length (ft):	16	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

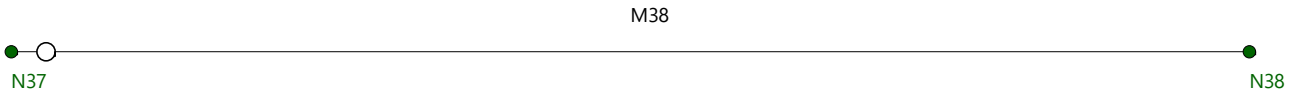
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

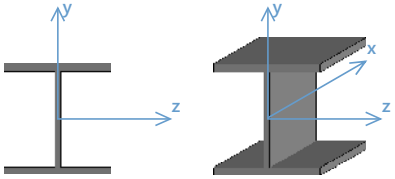
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/2481
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	7
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.229 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	173.92 k	-	-
Flexural Analysis (Strong Axis)	26	3.464 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.001 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	1.352 k	40.832 k	0.033	Pass
Shear Analysis (Minor Axis z)	26	0.286 k	99.392 k	0.003	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.074	Pass

Detail Report: M39 **Unity Check:** 0.066 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N7
Member Type:	Beam	J Node:	N21
Length (ft):	11.333	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

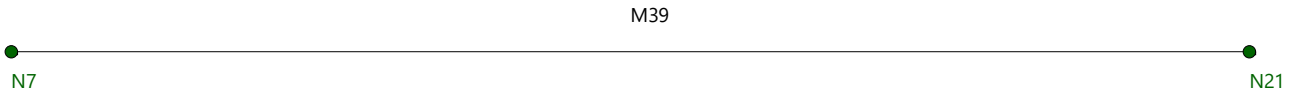
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

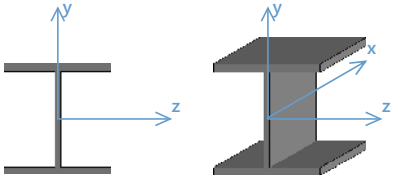
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/5961
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	6.965
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	219.76 k	-	-
Axial Compression Analysis	26	0.009 k	180.341 k	-	-
Flexural Analysis (Strong Axis)	26	2.807 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.147 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	0.409 k	40.832 k	0.01	Pass
Shear Analysis (Minor Axis z)	26	0.028 k	99.392 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.066	Pass

Detail Report: M40 **Unity Check:** 0.092 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N21
Member Type:	Beam	J Node:	N34
Length (ft):	3	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

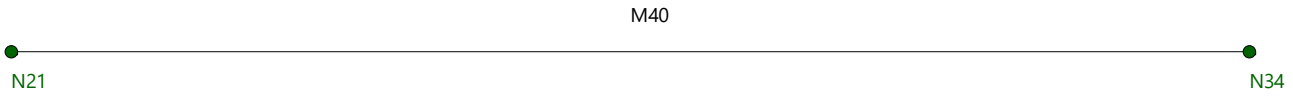
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

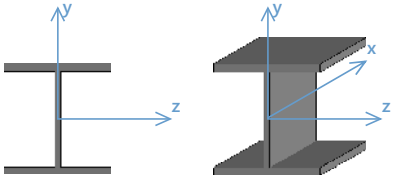
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/4133
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	3
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	211.449 k	-	-
Flexural Analysis (Strong Axis)	26	3.64 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.325 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	1.249 k	40.832 k	0.031	Pass
Shear Analysis (Minor Axis z)	26	0.108 k	99.392 k	0.001	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.092	Pass

Detail Report: M41 **Unity Check:** 0.096 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N8
Member Type:	Beam	J Node:	N22
Length (ft):	11.333	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

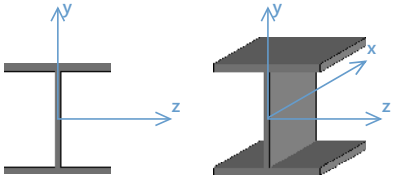
Design Properties:

$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/3898
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	7.083
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		

AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.066 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	180.341 k	-	-
Flexural Analysis (Strong Axis)	26	4.425 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.045 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	0.611 k	40.832 k	0.015	Pass
Shear Analysis (Minor Axis z)	26	0.044 k	99.392 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.096	Pass

Detail Report: M42 **Unity Check:** 0.108 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N22
Member Type:	Beam	J Node:	N35
Length (ft):	3	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

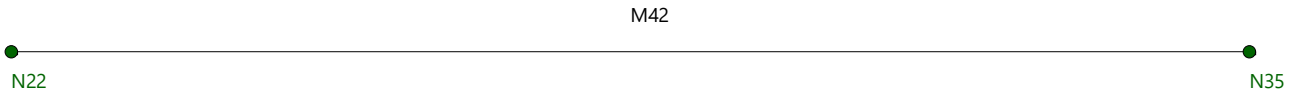
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

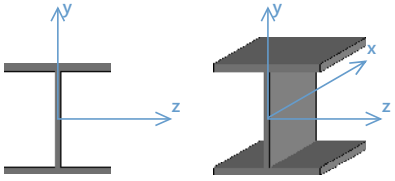
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/2973
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	3
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	211.449 k	-	-
Flexural Analysis (Strong Axis)	26	5.052 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.015 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	1.722 k	40.832 k	0.042	Pass
Shear Analysis (Minor Axis z)	26	0.005 k	99.392 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.108	Pass

Detail Report: M43 **Unity Check:** 0.093 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N9
Member Type:	Beam	J Node:	N23
Length (ft):	11.333	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

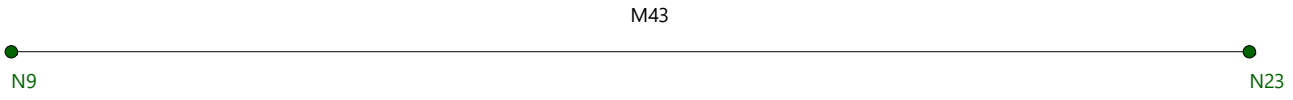
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

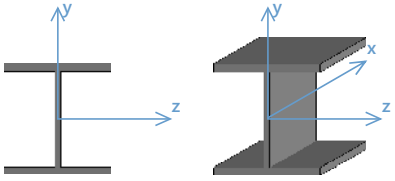
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/3869
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	7.083
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.081 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	180.341 k	-	-
Flexural Analysis (Strong Axis)	26	4.282 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.044 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	0.581 k	40.832 k	0.014	Pass
Shear Analysis (Minor Axis z)	26	0.044 k	99.392 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.093	Pass

Detail Report: M44 **Unity Check:** 0.11 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N23
Member Type:	Beam	J Node:	N36
Length (ft):	3	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

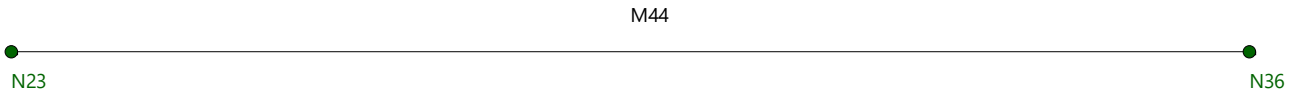
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

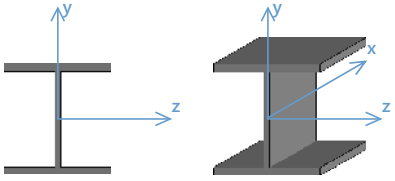
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/2927
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	3
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	211.449 k	-	-
Flexural Analysis (Strong Axis)	26	5.131 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.015 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	1.748 k	40.832 k	0.043	Pass
Shear Analysis (Minor Axis z)	26	0.005 k	99.392 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.11	Pass

Detail Report: M45 **Unity Check:** 0.131 (LC 7) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N11
Member Type:	Beam	J Node:	N26
Length (ft):	13	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

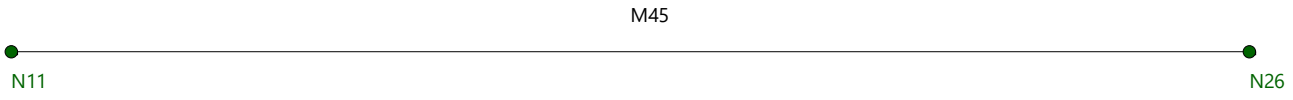
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

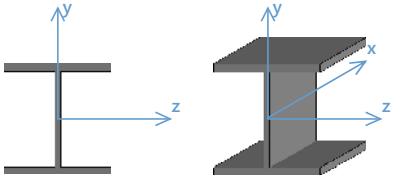
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/1470
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	5.281
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	7	-	-	-	-
Axial Tension Analysis	7	0.000 k	219.76 k	-	-
Axial Compression Analysis	7	0.147 k	177.488 k	-	-
Flexural Analysis (Strong Axis)	7	5.745 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	7	0.18 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	7	4.732 k	40.832 k	0.116	Pass
Shear Analysis (Minor Axis z)	7	0.199 k	99.392 k	0.002	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.131	Pass

Detail Report: M46 **Unity Check:** 0.188 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N39
Member Type:	Beam	J Node:	N15
Length (ft):	3.333	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

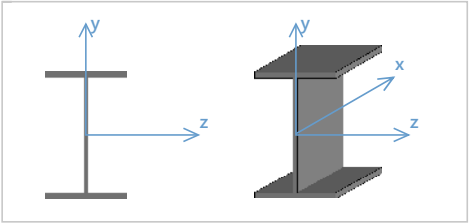
Design Properties:

$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/2797
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		

AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	219.76 k	-	-
Axial Compression Analysis	26	0.178 k	209.851 k	-	-
Flexural Analysis (Strong Axis)	26	5.286 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	1.604 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	3.008 k	40.832 k	0.074	Pass
Shear Analysis (Minor Axis z)	26	4.67 k	99.392 k	0.047	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.188	Pass

Detail Report: M47 **Unity Check:** 0.115 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N15
Member Type:	Beam	J Node:	N40
Length (ft):	5.167	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

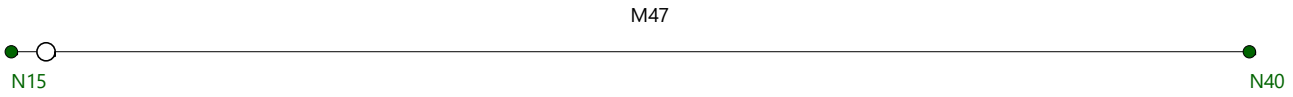
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

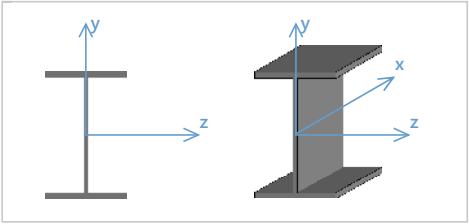
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/10000
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.288 k	184.431 k	-	-
Axial Compression Analysis	26	0.000 k	163.071 k	-	-
Flexural Analysis (Strong Axis)	26	2.781 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.843 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	26	1.074 k	41.4 k	0.026	Pass
Shear Analysis (Minor Axis z)	26	0.598 k	75.737 k	0.008	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.115	Pass

Detail Report: M48 **Unity Check:** 0.145 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N40
Member Type:	Beam	J Node:	N41
Length (ft):	8.667	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

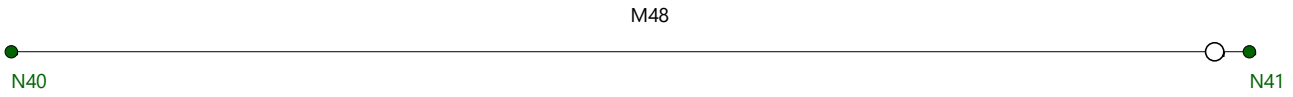
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

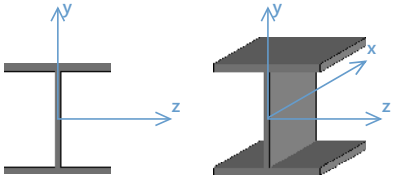
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/4773
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	4.785
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	7	-	-	-	-
Axial Tension Analysis	26	0.267 k	184.431 k	-	-
Axial Compression Analysis	26	0.000 k	143.868 k	-	-
Flexural Analysis (Strong Axis)	26	4.322 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.843 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	7	3.194 k	41.4 k	0.077	Pass
Shear Analysis (Minor Axis z)	7	0.532 k	75.737 k	0.007	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.145	Pass

Detail Report: M49 **Unity Check:** 0.152 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N134
Member Type:	Beam	J Node:	N39
Length (ft):	12.667	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

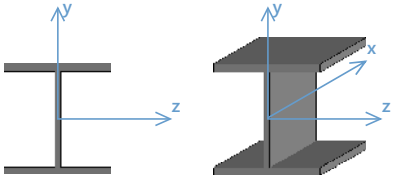
Design Properties:

$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/1379
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	5.542
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		

AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.171 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	177.999 k	-	-
Flexural Analysis (Strong Axis)	26	6.639 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.23 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	3.742 k	40.832 k	0.092	Pass
Shear Analysis (Minor Axis z)	26	0.957 k	99.392 k	0.01	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.152	Pass

Detail Report: M50 **Unity Check:** 0.234 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N39
Member Type:	Beam	J Node:	N42
Length (ft):	3.333	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

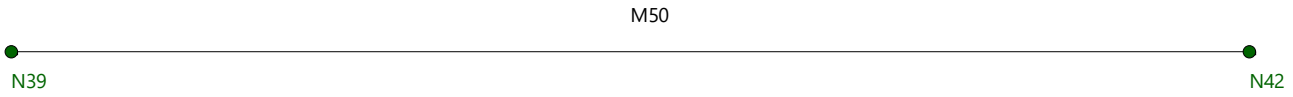
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

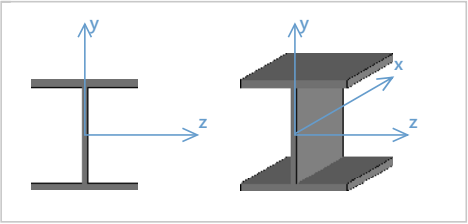
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/10000
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.194 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	209.851 k	-	-
Flexural Analysis (Strong Axis)	26	3.585 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	3.373 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	3.776 k	40.832 k	0.092	Pass
Shear Analysis (Minor Axis z)	26	10.236 k	99.392 k	0.103	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.234	Pass

Detail Report: M51 **Unity Check:** 0.085 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N42
Member Type:	Beam	J Node:	N43
Length (ft):	8.5	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

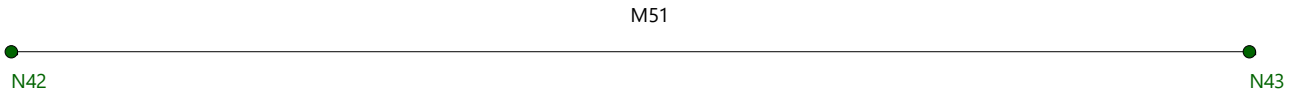
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

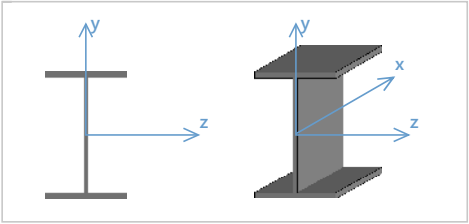
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/3769
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	4.693
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.159 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	187.421 k	-	-
Flexural Analysis (Strong Axis)	26	2.906 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.485 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	1.18 k	40.832 k	0.029	Pass
Shear Analysis (Minor Axis z)	26	0.084 k	99.392 k	0.001	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.085	Pass

Detail Report: M52 **Unity Check:** 0.147 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N40
Member Type:	Beam	J Node:	N43
Length (ft):	3.333	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

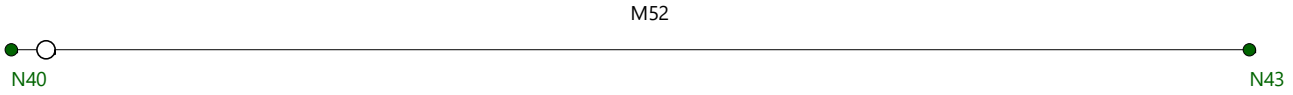
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

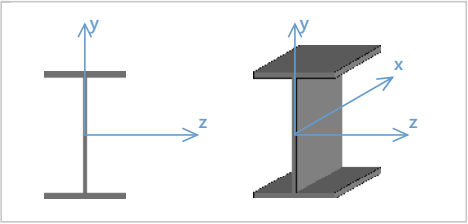
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/8990
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	1.91
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.255 k	184.431 k	-	-
Axial Compression Analysis	26	0.000 k	173.919 k	-	-
Flexural Analysis (Strong Axis)	26	6.265 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.333 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	26	2.895 k	41.4 k	0.07	Pass
Shear Analysis (Minor Axis z)	26	2.096 k	75.737 k	0.028	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.147	Pass

Detail Report: M53 **Unity Check:** 0.208 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N43
Member Type:	Beam	J Node:	N44
Length (ft):	16.667	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

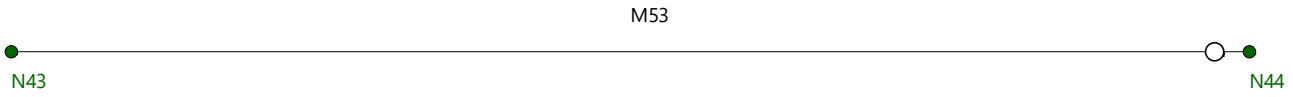
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

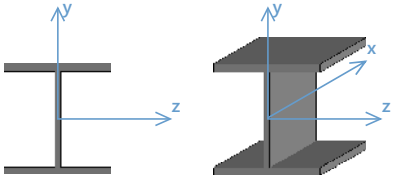
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/858
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	7.813
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.303 k	184.431 k	-	-
Axial Compression Analysis	26	0.000 k	121.111 k	-	-
Flexural Analysis (Strong Axis)	26	7.856 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.745 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	26	1.776 k	41.4 k	0.043	Pass
Shear Analysis (Minor Axis z)	26	0.788 k	75.737 k	0.01	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.208	Pass

Detail Report: M54 **Unity Check:** 0.095 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N45
Member Type:	Beam	J Node:	N46
Length (ft):	16.667	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

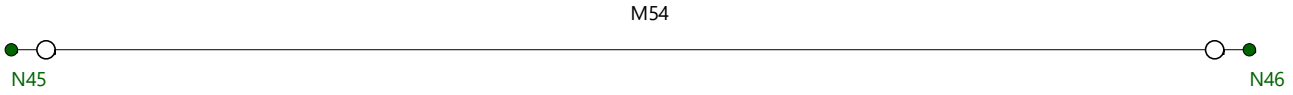
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

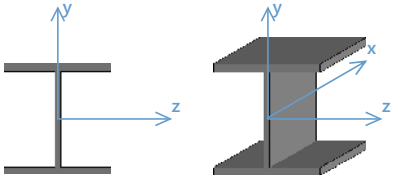
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/1109
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	8.333
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.145 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	173.323 k	-	-
Flexural Analysis (Strong Axis)	26	4.469 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.000 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	1.405 k	40.832 k	0.034	Pass
Shear Analysis (Minor Axis z)	26	0.9 k	99.392 k	0.009	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.095	Pass

Detail Report: M55 **Unity Check:** 0.07 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N46
Member Type:	Beam	J Node:	N47
Length (ft):	3.333	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

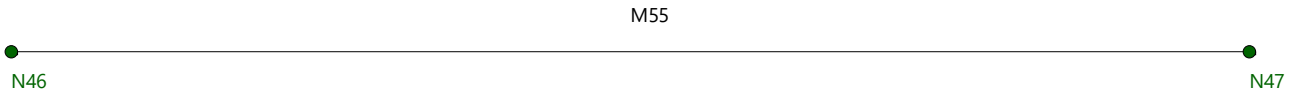
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

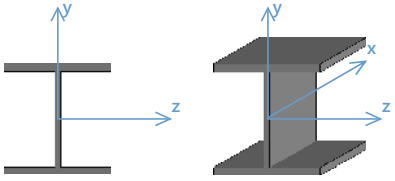
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/10000
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	7	-	-	-	-
Axial Tension Analysis	26	0.192 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	209.851 k	-	-
Flexural Analysis (Strong Axis)	26	0.356 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	1.32 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	7	1.176 k	40.832 k	0.029	Pass
Shear Analysis (Minor Axis z)	7	4.004 k	99.392 k	0.04	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.07	Pass

Detail Report: M56 **Unity Check:** 0.197 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N46
Member Type:	Beam	J Node:	N44
Length (ft):	3	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

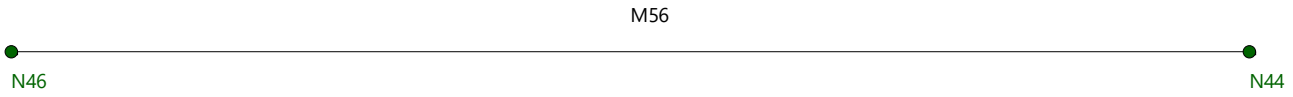
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

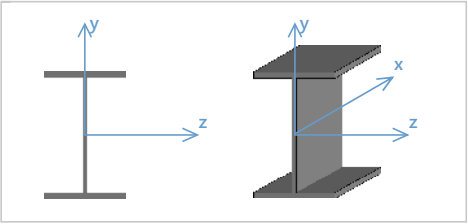
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/3247
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	219.76 k	-	-
Axial Compression Analysis	26	0.047 k	211.449 k	-	-
Flexural Analysis (Strong Axis)	26	4.658 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	2.091 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	2.903 k	40.832 k	0.071	Pass
Shear Analysis (Minor Axis z)	26	5.689 k	99.392 k	0.057	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.197	Pass

Detail Report: M57 **Unity Check:** 0.274 (LC 7) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N44
Member Type:	Beam	J Node:	N48
Length (ft):	14	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

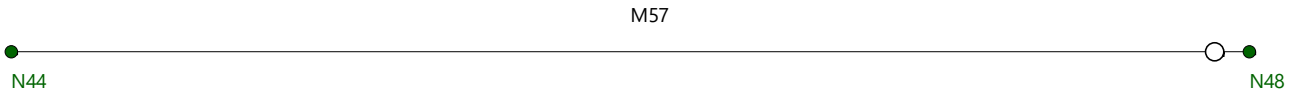
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

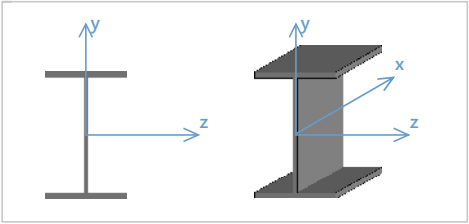
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/645
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	7.292
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	7	0.000 k	184.431 k	-	-
Axial Compression Analysis	7	0.096 k	126.144 k	-	-
Flexural Analysis (Strong Axis)	7	13.555 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	7	0.109 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	26	5.314 k	41.4 k	0.128	Pass
Shear Analysis (Minor Axis z)	26	0.552 k	75.737 k	0.007	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.274	Pass

Detail Report: M58 **Unity Check:** 0.021 (LC 7) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N49
Member Type:	Beam	J Node:	N50
Length (ft):	19.667	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

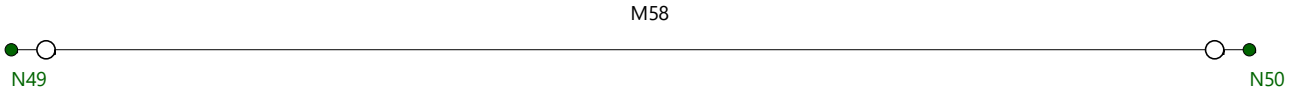
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

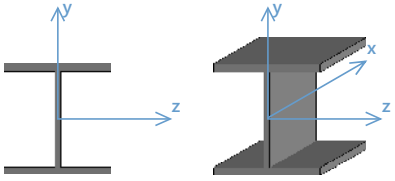
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/5859
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	9.833
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	7	0.000 k	184.431 k	-	-
Axial Compression Analysis	7	0.08 k	117.199 k	-	-
Flexural Analysis (Strong Axis)	7	0.987 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	7	0.019 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	26	0.373 k	41.4 k	0.009	Pass
Shear Analysis (Minor Axis z)	26	0.403 k	75.737 k	0.005	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.021	Pass

Detail Report: M59 **Unity Check:** 0.096 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N51
Member Type:	Beam	J Node:	N47
Length (ft):	18.235	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

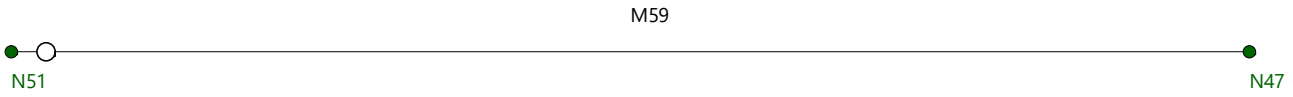
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

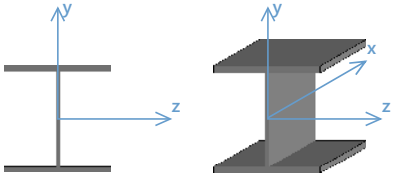
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/1355
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	8.548
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.007 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	172.124 k	-	-
Flexural Analysis (Strong Axis)	26	3.709 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.373 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	1.477 k	40.832 k	0.036	Pass
Shear Analysis (Minor Axis z)	26	1.388 k	99.392 k	0.014	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.096	Pass

Detail Report: M60 **Unity Check:** 0.376 (LC 7) **Load Combination:** Envelope



Input Data:

Shape:	W8X35	I Node:	N49
Member Type:	Beam	J Node:	N52
Length (ft):	16.536	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

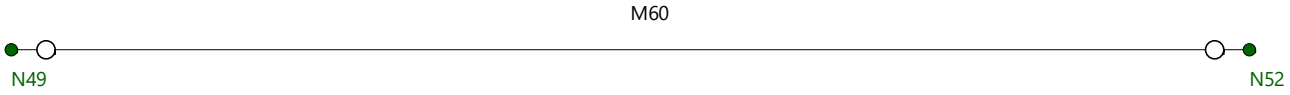
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.12	Area (in^2):	10.3	S_w (in^4):	15.2
b_f (in):	8.02	Z_{yy} (in^3):	16.1	r_T (in):	2.2
t_f (in):	0.495	Z_{zz} (in^3):	34.7	J (in^4):	0.769
t_w (in):	0.31	C_w (in^6):	619	k_{det} (in):	1.188
I_{yy} (in^4):	42.6	W_{no} (in^2):	15.3	k_{des} (in):	0.889
I_{zz} (in^4):	127				

Design Properties:

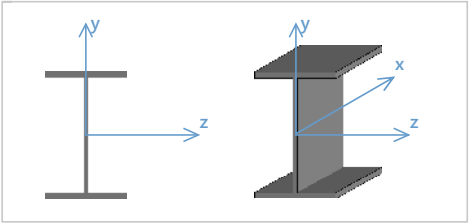
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/365
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	8.268
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	7	-	-	-	-
Axial Tension Analysis	7	0.000 k	308.383 k	-	-
Axial Compression Analysis	7	0.143 k	235.079 k	-	-
Flexural Analysis (Strong Axis)	7	32.536 k-ft	86.577 k-ft	-	-
Flexural Analysis (Weak Axis)	7	0.000 k-ft	40.17 k-ft	-	-
Shear Analysis (Major Axis y)	7	7.887 k	50.344 k	0.157	Pass
Shear Analysis (Minor Axis z)	7	0.053 k	142.631 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.376	Pass

Detail Report: M61 **Unity Check:** 0.324 (LC 7) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N52
Member Type:	Beam	J Node:	N114
Length (ft):	11.854	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

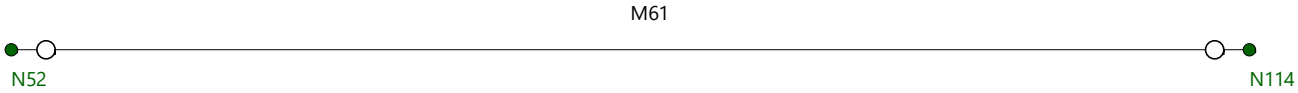
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

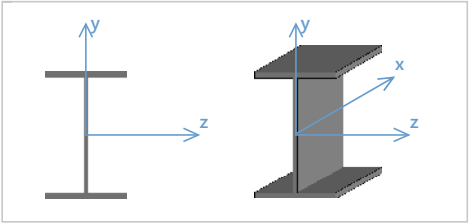
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/596
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	5.927
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	7	-	-	-	-
Axial Tension Analysis	7	0.000 k	184.431 k	-	-
Axial Compression Analysis	7	0.199 k	131.774 k	-	-
Flexural Analysis (Strong Axis)	7	16.47 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	7	0.000 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	7	5.558 k	41.4 k	0.134	Pass
Shear Analysis (Minor Axis z)	7	0.000 k	75.737 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.324	Pass

Detail Report: M62 **Unity Check:** 0.051 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N10
Member Type:	Beam	J Node:	N53
Length (ft):	19.667	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

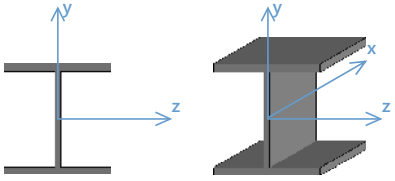
Design Properties:

$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/4375
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	10.243
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		

AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.066 k	184.431 k	-	-
Axial Compression Analysis	26	0.000 k	117.199 k	-	-
Flexural Analysis (Strong Axis)	26	1.292 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.089 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	26	2.091 k	41.4 k	0.051	Pass
Shear Analysis (Minor Axis z)	26	0.768 k	75.737 k	0.01	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.032	Pass

Detail Report: M63 **Unity Check:** 0.11 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N37
Member Type:	Beam	J Node:	N24
Length (ft):	3	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

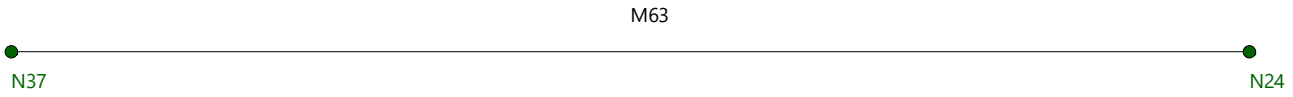
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

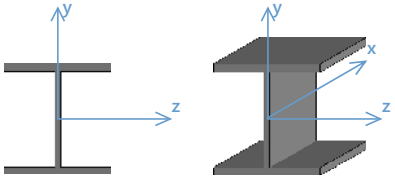
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/2970
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	211.449 k	-	-
Flexural Analysis (Strong Axis)	26	5.058 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.064 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	1.724 k	40.832 k	0.042	Pass
Shear Analysis (Minor Axis z)	26	0.021 k	99.392 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.11	Pass

Detail Report: M64 **Unity Check:** 0.069 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N24
Member Type:	Beam	J Node:	N11
Length (ft):	11.333	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

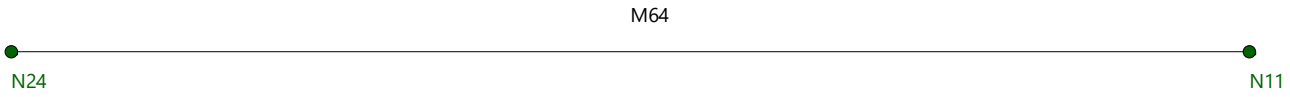
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

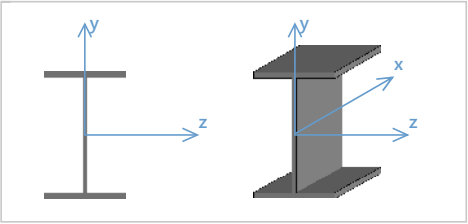
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/4155
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	4.84
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	7	-	-	-	-
Axial Tension Analysis	26	0.169 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	180.341 k	-	-
Flexural Analysis (Strong Axis)	26	2.948 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.132 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	7	0.387 k	40.832 k	0.009	Pass
Shear Analysis (Minor Axis z)	7	0.364 k	99.392 k	0.004	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.069	Pass

Detail Report: M65 **Unity Check:** 0.319 (LC 7) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N11
Member Type:	Beam	J Node:	N54
Length (ft):	5.612	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

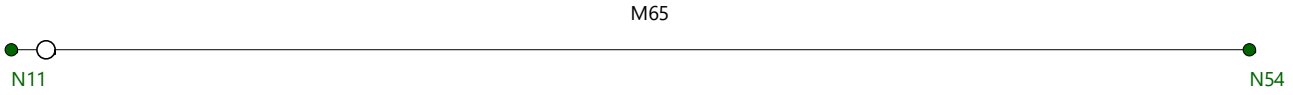
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

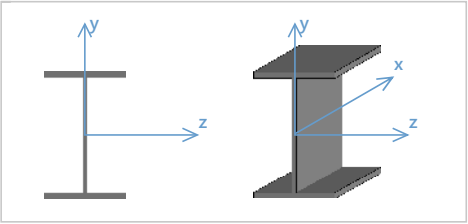
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/2061
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	3.215
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	7	-	-	-	-
Axial Tension Analysis	7	0.000 k	184.431 k	-	-
Axial Compression Analysis	7	0.026 k	160.376 k	-	-
Flexural Analysis (Strong Axis)	7	16.218 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	7	0.000 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	7	2.956 k	41.4 k	0.071	Pass
Shear Analysis (Minor Axis z)	7	0.014 k	75.737 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.319	Pass

Detail Report: M66 **Unity Check:** 0.323 (LC 7) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N54
Member Type:	Beam	J Node:	N55
Length (ft):	8.055	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

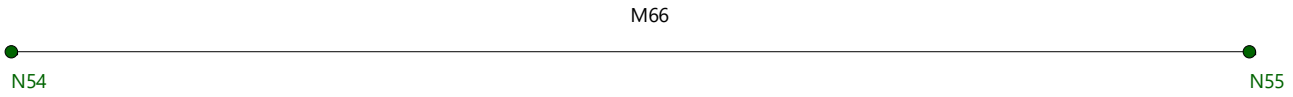
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

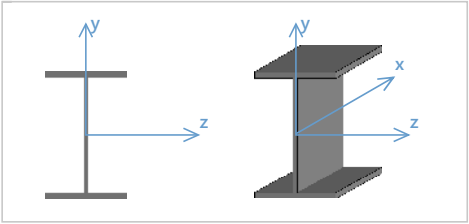
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/734
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	4.027
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	6	-	-	-	-
Axial Tension Analysis	7	0.000 k	184.431 k	-	-
Axial Compression Analysis	7	0.027 k	146.803 k	-	-
Flexural Analysis (Strong Axis)	7	16.427 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	7	0.001 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	6	0.112 k	41.4 k	0.003	Pass
Shear Analysis (Minor Axis z)	6	0.044 k	75.737 k	0.001	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.323	Pass

Detail Report: M67 **Unity Check:** 0.32 (LC 7) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N55
Member Type:	Beam	J Node:	N56
Length (ft):	5.667	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

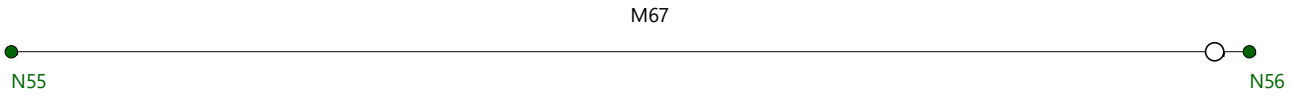
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

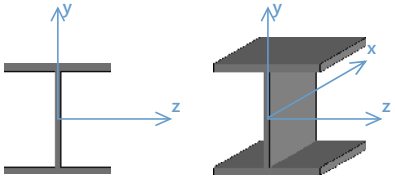
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/2032
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	2.42
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	7	-	-	-	-
Axial Tension Analysis	7	0.000 k	184.431 k	-	-
Axial Compression Analysis	7	0.026 k	160.047 k	-	-
Flexural Analysis (Strong Axis)	7	16.285 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	7	0.001 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	7	2.94 k	41.4 k	0.071	Pass
Shear Analysis (Minor Axis z)	7	0.015 k	75.737 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.32	Pass

Detail Report: M68 **Unity Check:** 0.13 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N26
Member Type:	Beam	J Node:	N57
Length (ft):	3	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

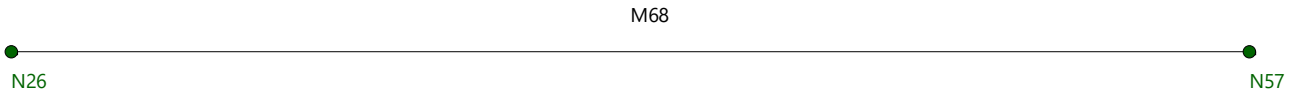
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

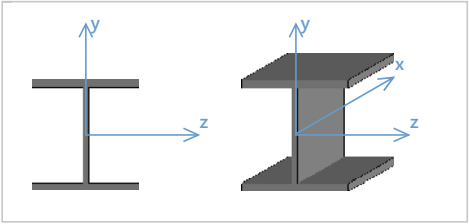
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/2550
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	3
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	211.449 k	-	-
Flexural Analysis (Strong Axis)	26	5.887 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.1 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	2 k	40.832 k	0.049	Pass
Shear Analysis (Minor Axis z)	26	0.033 k	99.392 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.13	Pass

Detail Report: M69 **Unity Check:** 0.187 (LC 7) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N54
Member Type:	Beam	J Node:	N27
Length (ft):	13	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

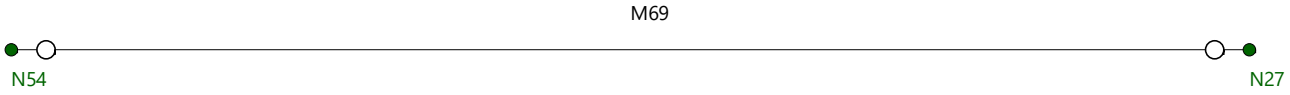
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

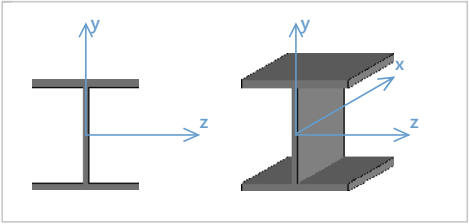
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/705
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	6.5
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	7	-	-	-	-
Axial Tension Analysis	7	0.000 k	219.76 k	-	-
Axial Compression Analysis	7	0.000 k	177.488 k	-	-
Flexural Analysis (Strong Axis)	7	8.839 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	7	0.000 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	7	2.824 k	40.832 k	0.069	Pass
Shear Analysis (Minor Axis z)	7	0.234 k	99.392 k	0.002	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.187	Pass

Detail Report: M70 **Unity Check:** 0.187 (LC 7) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N55
Member Type:	Beam	J Node:	N28
Length (ft):	13	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

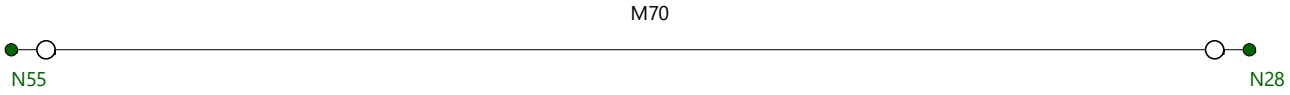
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

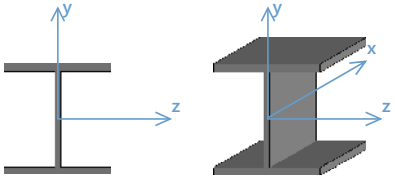
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/705
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	6.5
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	7	-	-	-	-
Axial Tension Analysis	7	0.000 k	219.76 k	-	-
Axial Compression Analysis	7	0.000 k	177.488 k	-	-
Flexural Analysis (Strong Axis)	7	8.839 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	7	0.000 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	7	2.816 k	40.832 k	0.069	Pass
Shear Analysis (Minor Axis z)	7	0.21 k	99.392 k	0.002	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.187	Pass

Detail Report: M71 **Unity Check:** 0.004 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N58
Member Type:	Beam	J Node:	N59
Length (ft):	8.055	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

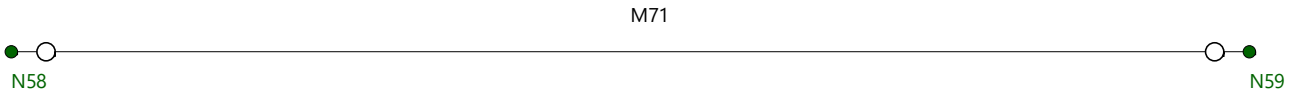
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

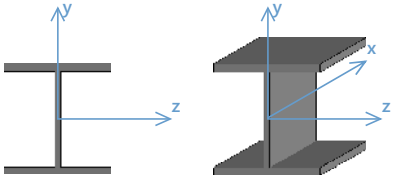
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/10000
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	7	-	-	-	-
Axial Tension Analysis	26	0.000 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	188.862 k	-	-
Flexural Analysis (Strong Axis)	26	0.203 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.000 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	7	0.105 k	40.832 k	0.003	Pass
Shear Analysis (Minor Axis z)	7	0.012 k	99.392 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.004	Pass

Detail Report: M72 **Unity Check:** 0.107 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N60
Member Type:	Beam	J Node:	N29
Length (ft):	3	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

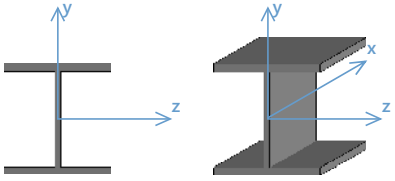
Design Properties:

$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/3509
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		

AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	219.76 k	-	-
Axial Compression Analysis	26	0.13 k	211.449 k	-	-
Flexural Analysis (Strong Axis)	26	4.379 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.285 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	1.633 k	40.832 k	0.04	Pass
Shear Analysis (Minor Axis z)	26	0.212 k	99.392 k	0.002	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.107	Pass

Detail Report: M73 **Unity Check:** 0.176 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N29
Member Type:	Beam	J Node:	N56
Length (ft):	13	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

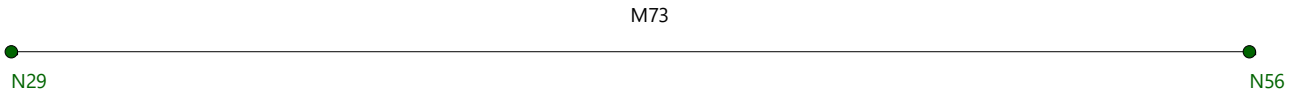
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

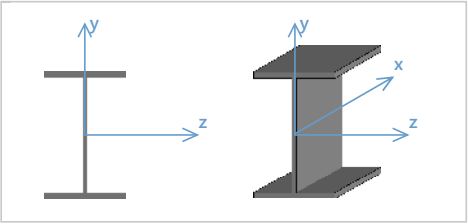
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/1719
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	7.448
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	7	-	-	-	-
Axial Tension Analysis	26	0.000 k	219.76 k	-	-
Axial Compression Analysis	26	0.583 k	177.488 k	-	-
Flexural Analysis (Strong Axis)	26	7.91 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.148 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	7	3.063 k	40.832 k	0.075	Pass
Shear Analysis (Minor Axis z)	7	0.061 k	99.392 k	0.001	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.176	Pass

Detail Report: M74 **Unity Check:** 0.063 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N56
Member Type:	Beam	J Node:	N61
Length (ft):	5.388	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

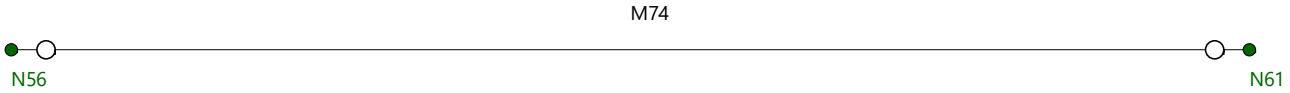
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

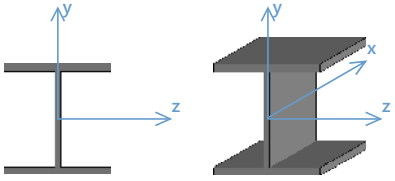
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/9223
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	2.694
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	184.431 k	-	-
Axial Compression Analysis	26	0.423 k	161.726 k	-	-
Flexural Analysis (Strong Axis)	26	2.343 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.000 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	26	2.595 k	41.4 k	0.063	Pass
Shear Analysis (Minor Axis z)	26	1.743 k	75.737 k	0.023	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.047	Pass

Detail Report: M75 **Unity Check:** 0.074 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N38
Member Type:	Beam	J Node:	N57
Length (ft):	14.333	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

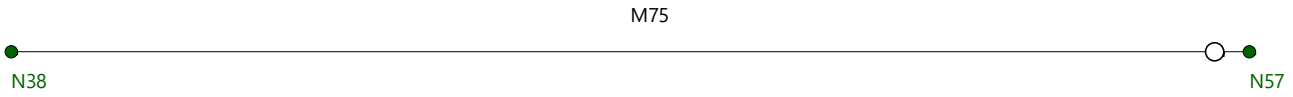
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

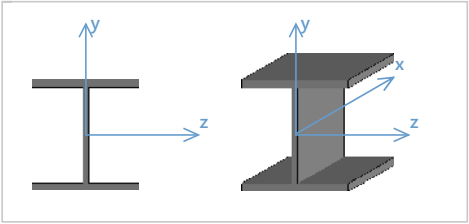
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/4459
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	8.361
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.235 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	175.698 k	-	-
Flexural Analysis (Strong Axis)	26	3.455 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.014 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	1.224 k	40.832 k	0.03	Pass
Shear Analysis (Minor Axis z)	26	0.166 k	99.392 k	0.002	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.074	Pass

Detail Report: M76 **Unity Check:** 0.128 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N57
Member Type:	Beam	J Node:	N60
Length (ft):	19.333	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

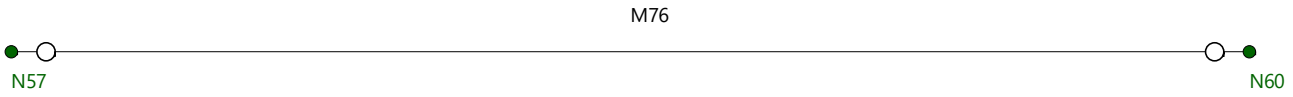
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

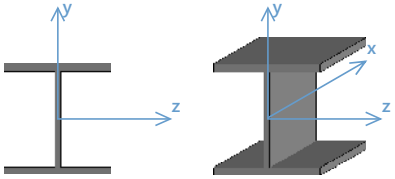
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/710
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	9.667
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.268 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	171.424 k	-	-
Flexural Analysis (Strong Axis)	26	6.013 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.000 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	1.263 k	40.832 k	0.031	Pass
Shear Analysis (Minor Axis z)	26	0.05 k	99.392 k	0.001	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.128	Pass

Detail Report: M77 **Unity Check:** 0.03 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N60
Member Type:	Beam	J Node:	N62
Length (ft):	3.333	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

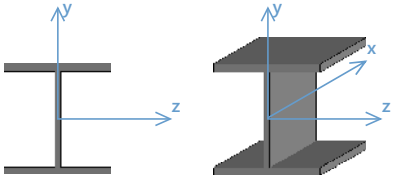
Design Properties:

$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/10000
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		

AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.117 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	209.851 k	-	-
Flexural Analysis (Strong Axis)	26	0.01 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.638 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	0.339 k	40.832 k	0.008	Pass
Shear Analysis (Minor Axis z)	26	1.387 k	99.392 k	0.014	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.03	Pass

Detail Report: M78 **Unity Check:** 0.065 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N62
Member Type:	Beam	J Node:	N63
Length (ft):	21.388	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

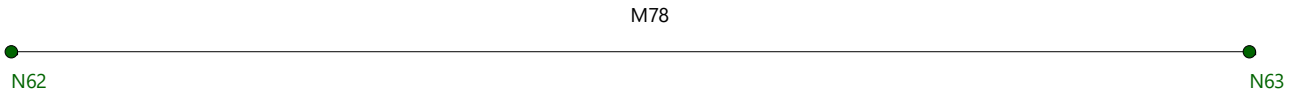
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

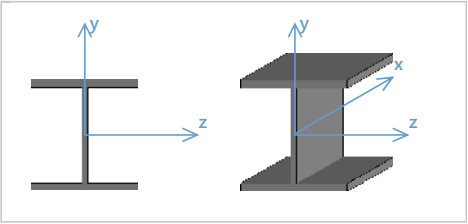
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/1262
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.304 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	170.355 k	-	-
Flexural Analysis (Strong Axis)	26	2.72 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.133 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	1.148 k	40.832 k	0.028	Pass
Shear Analysis (Minor Axis z)	26	0.568 k	99.392 k	0.006	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.065	Pass

Detail Report: M79 **Unity Check:** 0.302 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N64
Member Type:	Beam	J Node:	N25
Length (ft):	15.86	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

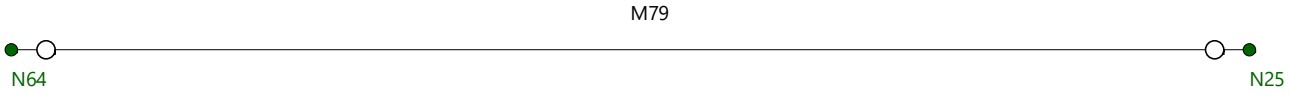
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

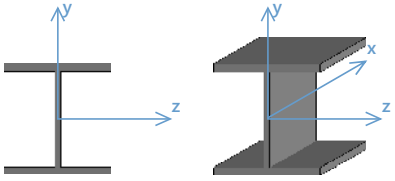
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/371
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	7.765
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	219.76 k	-	-
Axial Compression Analysis	26	0.289 k	174.053 k	-	-
Flexural Analysis (Strong Axis)	26	14.199 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.000 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	4.506 k	40.832 k	0.11	Pass
Shear Analysis (Minor Axis z)	26	0.332 k	99.392 k	0.003	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.302	Pass

Detail Report: M80 **Unity Check:** 0.127 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N25
Member Type:	Beam	J Node:	N38
Length (ft):	4.243	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

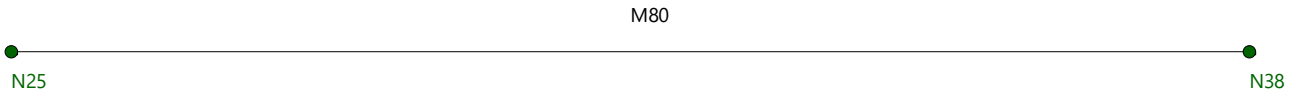
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

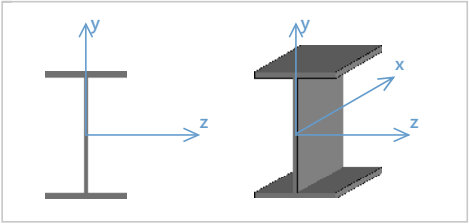
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/2994
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	4.243
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	219.76 k	-	-
Axial Compression Analysis	26	0.327 k	205.319 k	-	-
Flexural Analysis (Strong Axis)	26	5.819 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.065 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	2.638 k	40.832 k	0.065	Pass
Shear Analysis (Minor Axis z)	26	0.066 k	99.392 k	0.001	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.127	Pass

Detail Report: M81 **Unity Check:** 0.042 (LC 7) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N65
Member Type:	Beam	J Node:	N66
Length (ft):	36.5	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

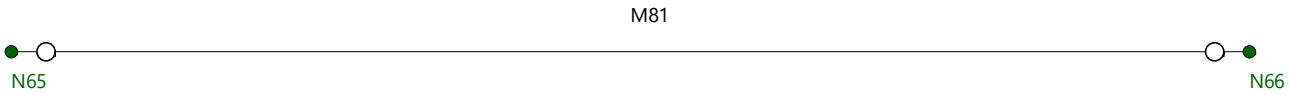
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

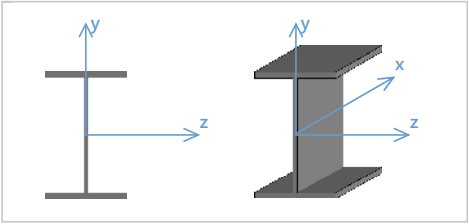
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/10000
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	7	-	-	-	-
Axial Tension Analysis	7	0.000 k	184.431 k	-	-
Axial Compression Analysis	7	0.000 k	108.781 k	-	-
Flexural Analysis (Strong Axis)	7	1.382 k-ft	33.219 k-ft	-	-
Flexural Analysis (Weak Axis)	7	0.000 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	7	1.495 k	41.4 k	0.036	Pass
Shear Analysis (Minor Axis z)	7	0.000 k	75.737 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.042	Pass

Detail Report: M117 **Unity Check:** 0.06 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N48
Member Type:	Beam	J Node:	N110
Length (ft):	1.235	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

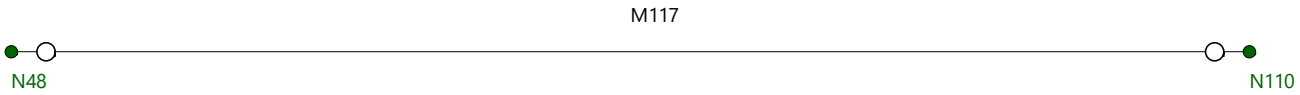
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

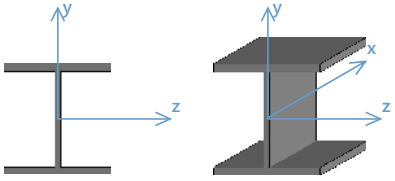
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/10000
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	7	0.000 k	184.431 k	-	-
Axial Compression Analysis	7	0.113 k	182.807 k	-	-
Flexural Analysis (Strong Axis)	7	0.000 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	7	0.000 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	26	2.249 k	41.4 k	0.054	Pass
Shear Analysis (Minor Axis z)	26	4.554 k	75.737 k	0.06	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.001	Pass

Detail Report: M118 **Unity Check:** 0.05 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N53
Member Type:	Beam	J Node:	N63
Length (ft):	3	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

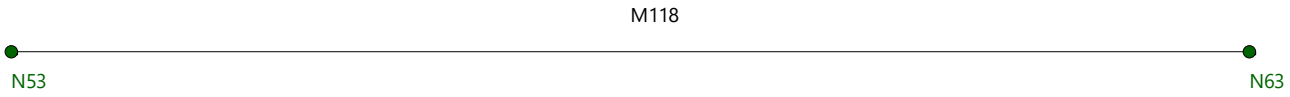
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

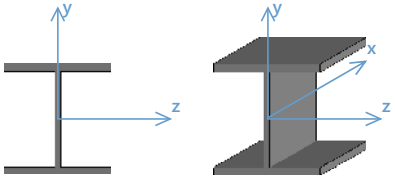
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/10000
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.162 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	211.45 k	-	-
Flexural Analysis (Strong Axis)	26	1.193 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.528 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	0.861 k	40.832 k	0.021	Pass
Shear Analysis (Minor Axis z)	26	0.18 k	99.392 k	0.002	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.05	Pass

Detail Report: M119 **Unity Check:** 0.063 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N56
Member Type:	Beam	J Node:	N112
Length (ft):	3.333	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

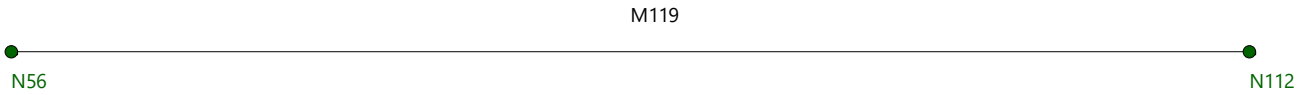
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

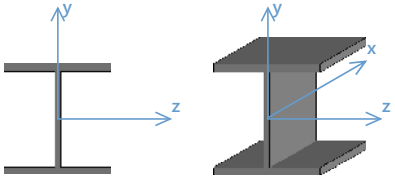
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/4927
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	3.333
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	219.76 k	-	-
Axial Compression Analysis	26	0.301 k	209.851 k	-	-
Flexural Analysis (Strong Axis)	26	2.84 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.054 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	0.905 k	40.832 k	0.022	Pass
Shear Analysis (Minor Axis z)	26	0.254 k	99.392 k	0.003	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.063	Pass

Detail Report: M120 **Unity Check:** 0.133 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N29
Member Type:	Beam	J Node:	N111
Length (ft):	3.333	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

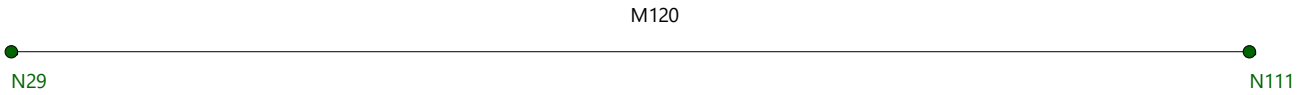
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

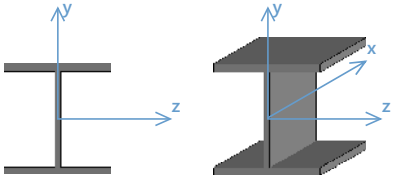
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/2630
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	3.333
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	219.76 k	-	-
Axial Compression Analysis	26	0.08 k	209.851 k	-	-
Flexural Analysis (Strong Axis)	26	5.382 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.406 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	1.801 k	40.832 k	0.044	Pass
Shear Analysis (Minor Axis z)	26	0.43 k	99.392 k	0.004	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.133	Pass

Detail Report: M121 **Unity Check:** 0.186 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N44
Member Type:	Beam	J Node:	N113
Length (ft):	3.333	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

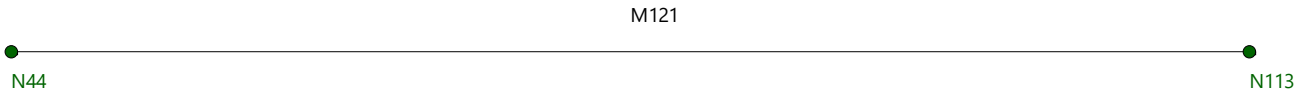
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

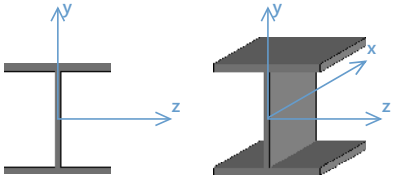
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/2931
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	3.333
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	219.76 k	-	-
Axial Compression Analysis	26	0.236 k	209.851 k	-	-
Flexural Analysis (Strong Axis)	26	4.77 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	1.796 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	2.808 k	40.832 k	0.069	Pass
Shear Analysis (Minor Axis z)	26	5.175 k	99.392 k	0.052	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.186	Pass

Detail Report: M122 **Unity Check:** 0.01 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N51
Member Type:	Beam	J Node:	N49
Length (ft):	3	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

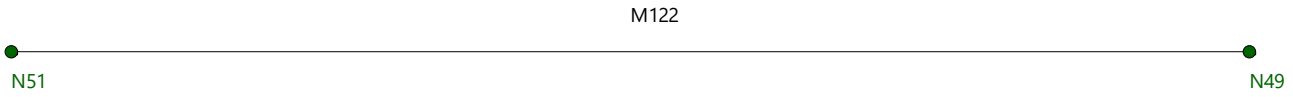
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

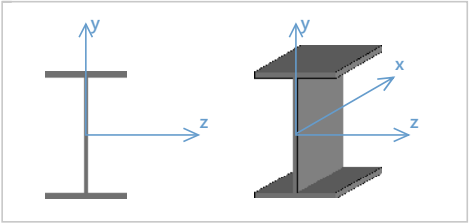
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/10000
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.028 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	211.449 k	-	-
Flexural Analysis (Strong Axis)	26	0.203 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.127 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	0.238 k	40.832 k	0.006	Pass
Shear Analysis (Minor Axis z)	26	0.33 k	99.392 k	0.003	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.01	Pass

Detail Report: M124 **Unity Check:** 0.134 (LC 7) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N114
Member Type:	Beam	J Node:	N53
Length (ft):	7.612	I Release:	BenPIN
Material Type:	Hot Rolled Steel	J Release:	BenPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

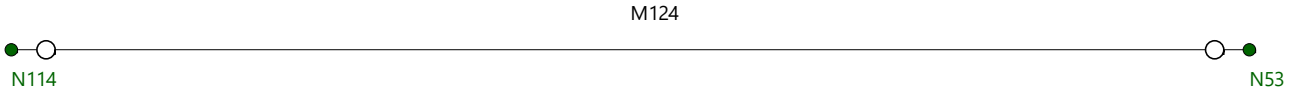
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

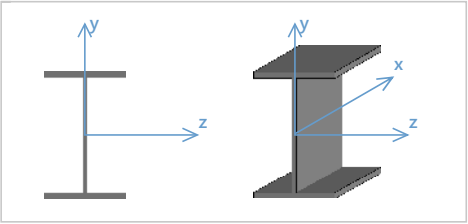
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/2252
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	3.806
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	7	-	-	-	-
Axial Tension Analysis	7	0.000 k	184.431 k	-	-
Axial Compression Analysis	7	0.238 k	149.054 k	-	-
Flexural Analysis (Strong Axis)	7	6.792 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	7	0.000 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	7	3.572 k	41.4 k	0.086	Pass
Shear Analysis (Minor Axis z)	7	0.006 k	75.737 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.134	Pass

Detail Report: M126 **Unity Check:** 0.065 (LC 10) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N118
Member Type:	Beam	J Node:	N119
Length (ft):	11.333	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

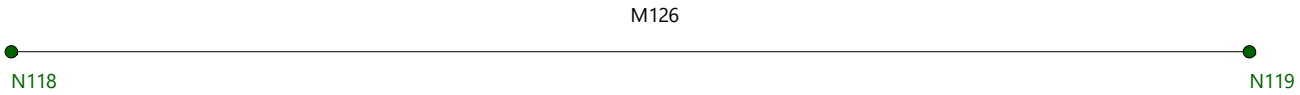
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

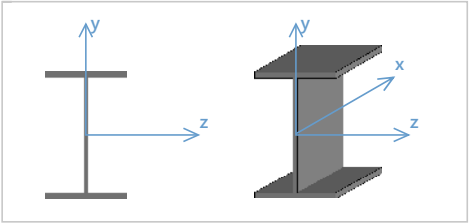
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/5935
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	7.083
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	10	-	-	-	-
Applied Loading - Shear + Torsion	14	-	-	-	-
Axial Tension Analysis	10	0.000 k	184.431 k	-	-
Axial Compression Analysis	10	0.282 k	133.412 k	-	-
Flexural Analysis (Strong Axis)	10	3.24 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	10	0.000 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	14	1.217 k	41.4 k	0.029	Pass
Shear Analysis (Minor Axis z)	14	0.000 k	75.737 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	10	-	-	0.065	Pass

Detail Report: M127 **Unity Check:** 0.046 (LC 10) **Load Combination:** Envelope



Input Data:

Shape:	W8X21	I Node:	N120
Member Type:	Beam	J Node:	N116
Length (ft):	10.667	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

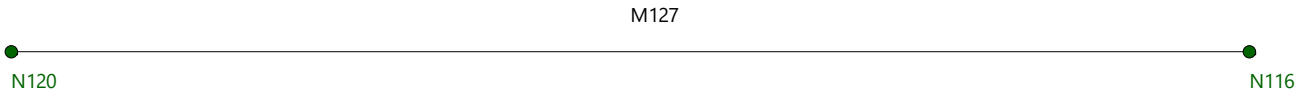
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	8.28	Area (in^2):	6.16	S_w (in^4):	5.47
b_f (in):	5.27	Z_{yy} (in^3):	5.69	r_T (in):	1.41
t_f (in):	0.4	Z_{zz} (in^3):	20.4	J (in^4):	0.282
t_w (in):	0.25	C_w (in^6):	152	k_{det} (in):	0.875
I_{yy} (in^4):	9.77	W_{no} (in^2):	10.4	k_{des} (in):	0.7
I_{zz} (in^4):	75.3				

Design Properties:

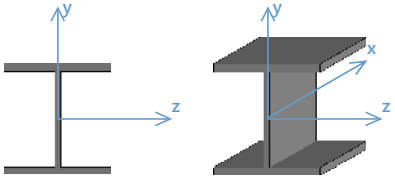
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/6171
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	6.222
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	10	-	-	-	-
Applied Loading - Shear + Torsion	14	-	-	-	-
Axial Tension Analysis	10	0.000 k	184.431 k	-	-
Axial Compression Analysis	10	0.202 k	135.689 k	-	-
Flexural Analysis (Strong Axis)	10	2.306 k-ft	50.898 k-ft	-	-
Flexural Analysis (Weak Axis)	10	0.000 k-ft	14.197 k-ft	-	-
Shear Analysis (Major Axis y)	14	1.164 k	41.4 k	0.028	Pass
Shear Analysis (Minor Axis z)	14	0.000 k	75.737 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	10	-	-	0.046	Pass

Detail Report: M135 **Unity Check:** 0.201 (LC 14) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N123
Member Type:	Beam	J Node:	N121
Length (ft):	3	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

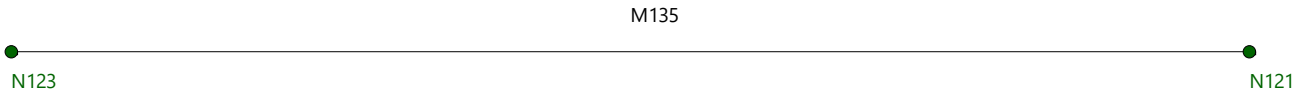
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

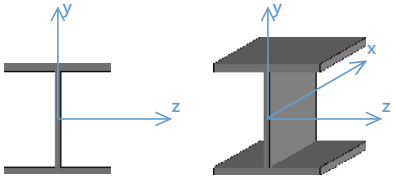
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/10000
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	14	-	-	-	-
Applied Loading - Shear + Torsion	14	-	-	-	-
Axial Tension Analysis	14	0.92 k	219.76 k	-	-
Axial Compression Analysis	14	0.000 k	211.45 k	-	-
Flexural Analysis (Strong Axis)	14	9.377 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	14	0.000 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	14	6.286 k	40.832 k	0.154	Pass
Shear Analysis (Minor Axis z)	14	0.000 k	99.392 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	14	-	-	0.201	Pass

Detail Report: M136 **Unity Check:** 0.184 (LC 14) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N130
Member Type:	Beam	J Node:	N126
Length (ft):	3	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

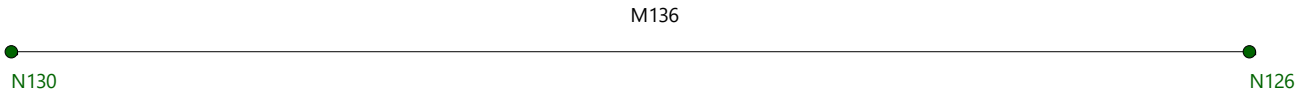
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

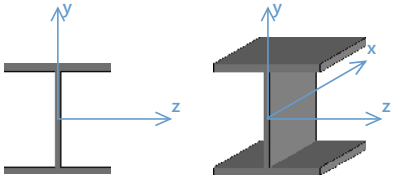
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/10000
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	14	-	-	-	-
Applied Loading - Shear + Torsion	14	-	-	-	-
Axial Tension Analysis	14	0.882 k	219.76 k	-	-
Axial Compression Analysis	14	0.000 k	211.449 k	-	-
Flexural Analysis (Strong Axis)	14	8.573 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	14	0.000 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	14	5.751 k	40.832 k	0.141	Pass
Shear Analysis (Minor Axis z)	14	0.000 k	99.392 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	14	-	-	0.184	Pass

Detail Report: M137 **Unity Check:** 0.197 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N132
Member Type:	Beam	J Node:	N31
Length (ft):	3.333	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

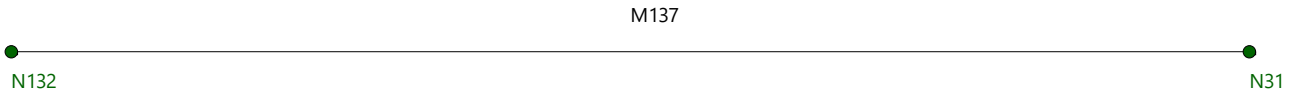
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

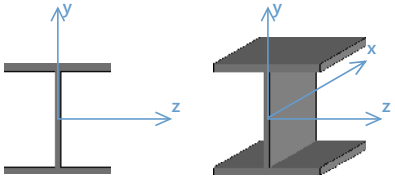
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/8221
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	1.91
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.221 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	209.851 k	-	-
Flexural Analysis (Strong Axis)	26	4.885 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	1.992 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	2.626 k	40.832 k	0.064	Pass
Shear Analysis (Minor Axis z)	26	4.68 k	99.392 k	0.047	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.197	Pass

Detail Report: M138 **Unity Check:** 0.141 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N31
Member Type:	Beam	J Node:	N133
Length (ft):	3.504	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

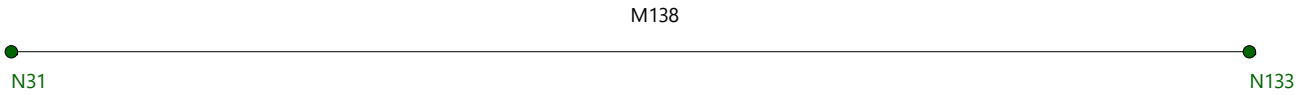
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

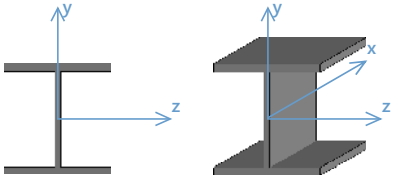
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/7121
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	1.46
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	209.012 k	-	-
Flexural Analysis (Strong Axis)	26	5.437 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.549 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	1.596 k	40.832 k	0.039	Pass
Shear Analysis (Minor Axis z)	26	0.157 k	99.392 k	0.002	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.141	Pass

Detail Report: M139 **Unity Check:** 0.138 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N134
Member Type:	Beam	J Node:	N135
Length (ft):	3.333	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

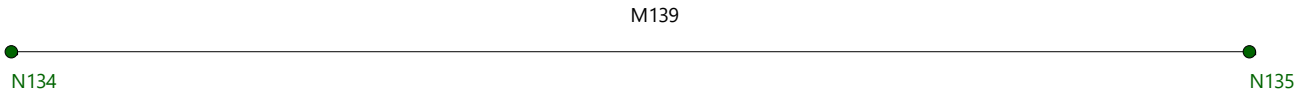
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

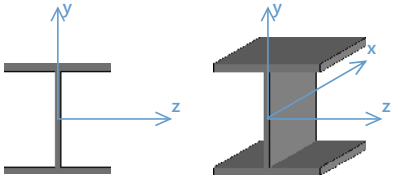
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/7438
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	1.424
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	219.76 k	-	-
Axial Compression Analysis	26	0.279 k	209.851 k	-	-
Flexural Analysis (Strong Axis)	26	5.425 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.475 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	1.879 k	40.832 k	0.046	Pass
Shear Analysis (Minor Axis z)	26	0.99 k	99.392 k	0.01	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.138	Pass

Detail Report: M140 **Unity Check:** 0.141 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	W6X25	I Node:	N136
Member Type:	Beam	J Node:	N134
Length (ft):	3.504	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

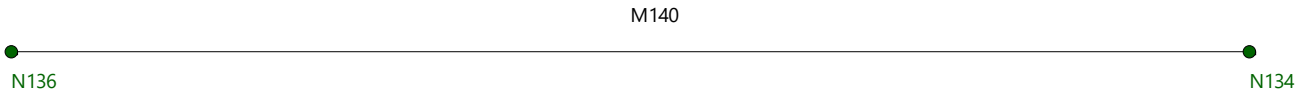
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6.38	Area (in^2):	7.34	S_w (in^4):	6.23
b_f (in):	6.08	Z_{yy} (in^3):	8.56	r_T (in):	1.66
t_f (in):	0.455	Z_{zz} (in^3):	18.9	J (in^4):	0.461
t_w (in):	0.32	C_w (in^6):	150	k_{det} (in):	0.938
I_{yy} (in^4):	17.1	W_{no} (in^2):	9.01	k_{des} (in):	0.705
I_{zz} (in^4):	53.4				

Design Properties:

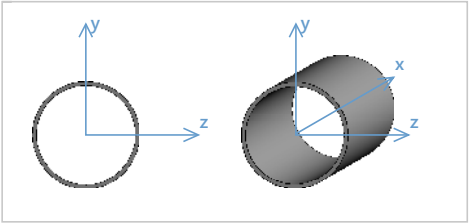
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/7109
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	2.044
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	1
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	219.76 k	-	-
Axial Compression Analysis	26	0.000 k	209.012 k	-	-
Flexural Analysis (Strong Axis)	26	5.442 k-ft	47.156 k-ft	-	-
Flexural Analysis (Weak Axis)	26	0.549 k-ft	21.357 k-ft	-	-
Shear Analysis (Major Axis y)	26	1.596 k	40.832 k	0.039	Pass
Shear Analysis (Minor Axis z)	26	0.157 k	99.392 k	0.002	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.141	Pass

Detail Report: M82 **Unity Check:** 0.018 (LC 7) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N12
Member Type:	Column	J Node:	N67
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

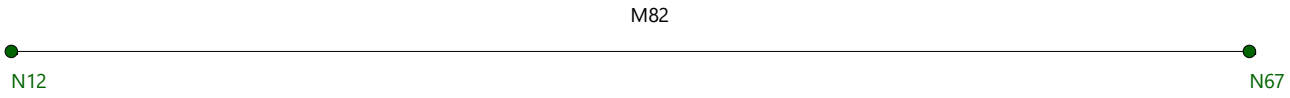
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

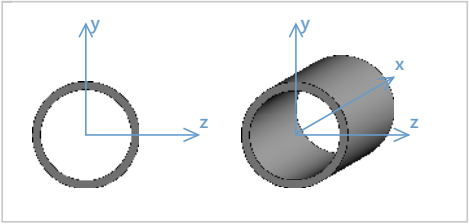
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	7	0.000 k	126.347 k	-	-
Axial Compression Analysis	7	1.706 k	92.442 k	-	-
Flexural Analysis	7	0.000 k-ft	19.336 k-ft	-	-
Shear Analysis	26	0.002 k	37.904 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.018	Pass
Torsional Analysis	7	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M83 **Unity Check:** 0.186 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.500	I Node:	N13
Member Type:	Column	J Node:	N68
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

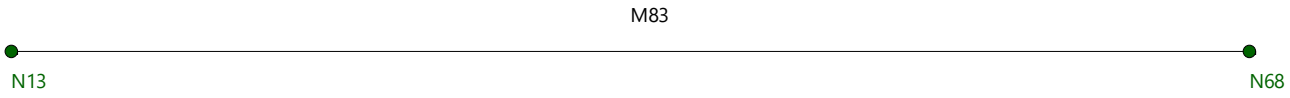
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	8.09	I_{yy} (in^4):	31.2
t (in):	0.465	J (in^4):	62.4	I_{zz} (in^4):	31.2
Z (in^3):	14.3				

Design Properties:

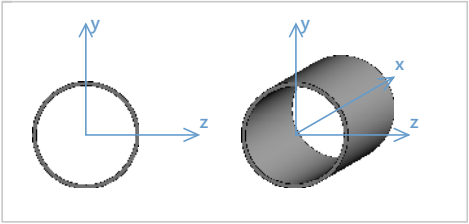
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	242.216 k	-	-
Axial Compression Analysis	26	9.492 k	172.766 k	-	-
Flexural Analysis	26	5.645 k-ft	35.679 k-ft	-	-
Shear Analysis	26	0.507 k	72.665 k	0.007	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.186	Pass
Torsional Analysis	26	0.000 k-ft	33.499 k-ft	0.000	Pass

Detail Report: M84 **Unity Check:** 0.215 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N14
Member Type:	Column	J Node:	N69
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

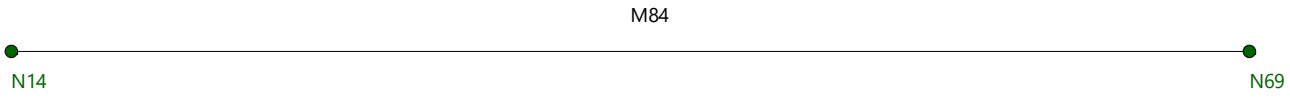
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

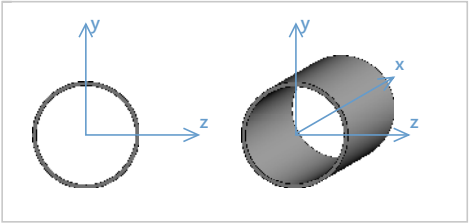
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	126.347 k	-	-
Axial Compression Analysis	26	12.894 k	92.442 k	-	-
Flexural Analysis	26	2.816 k-ft	19.336 k-ft	-	-
Shear Analysis	26	0.253 k	37.904 k	0.007	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.215	Pass
Torsional Analysis	26	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M85 **Unity Check:** 0.294 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N15
Member Type:	Column	J Node:	N70
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

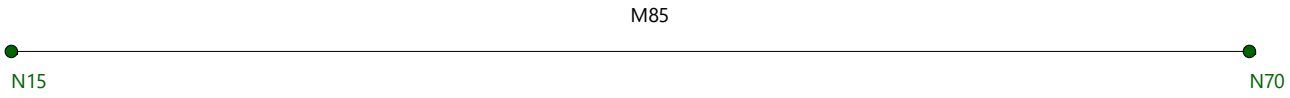
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

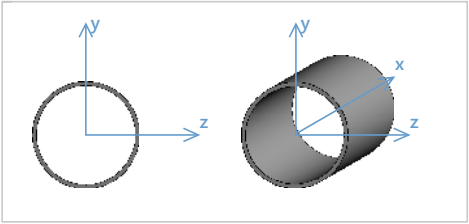
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	126.347 k	-	-
Axial Compression Analysis	26	3.605 k	92.442 k	-	-
Flexural Analysis	26	5.305 k-ft	19.336 k-ft	-	-
Shear Analysis	26	0.477 k	37.904 k	0.013	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.294	Pass
Torsional Analysis	26	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M86 **Unity Check:** 0.109 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N40
Member Type:	Column	J Node:	N71
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

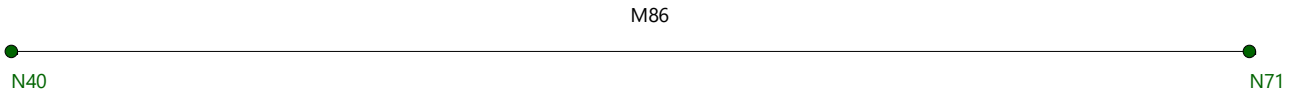
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

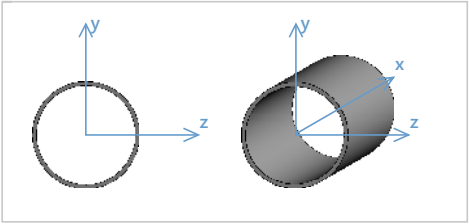
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	126.347 k	-	-
Axial Compression Analysis	26	5.689 k	92.442 k	-	-
Flexural Analysis	26	1.514 k-ft	19.336 k-ft	-	-
Shear Analysis	26	0.136 k	37.904 k	0.004	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.109	Pass
Torsional Analysis	26	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M87 **Unity Check:** 0.322 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N44
Member Type:	Column	J Node:	N72
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

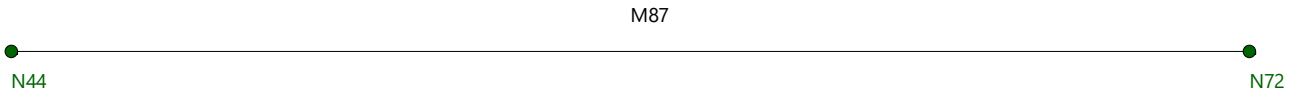
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

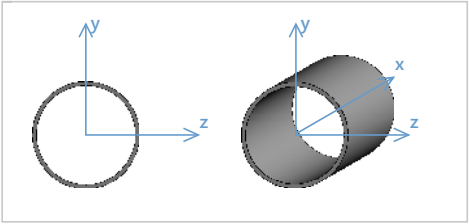
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	126.347 k	-	-
Axial Compression Analysis	26	9.652 k	92.442 k	-	-
Flexural Analysis	26	5.216 k-ft	19.336 k-ft	-	-
Shear Analysis	26	0.469 k	37.904 k	0.012	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.322	Pass
Torsional Analysis	26	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M88 **Unity Check:** 0.048 (LC 7) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N48
Member Type:	Column	J Node:	N73
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

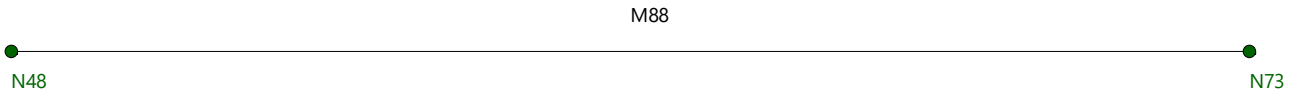
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

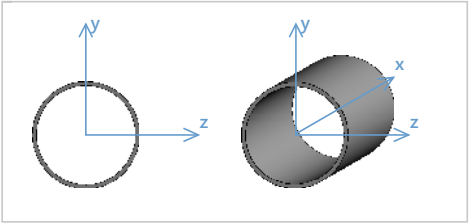
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	7	0.000 k	126.347 k	-	-
Axial Compression Analysis	7	4.412 k	92.442 k	-	-
Flexural Analysis	7	0.000 k-ft	19.336 k-ft	-	-
Shear Analysis	26	0.005 k	37.904 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.048	Pass
Torsional Analysis	7	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M89 **Unity Check:** 0.088 (LC 7) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N49
Member Type:	Column	J Node:	N74
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

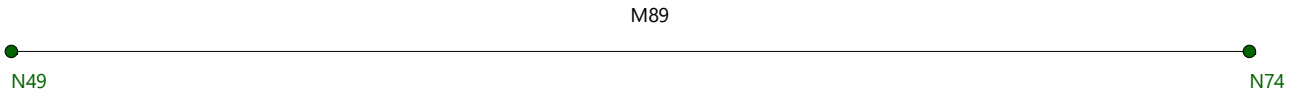
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

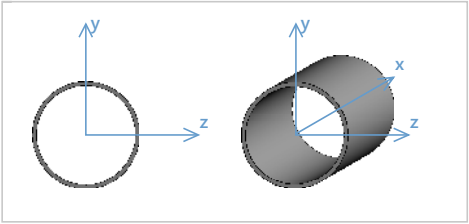
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	7	-	-	-	-
Axial Tension Analysis	7	0.000 k	126.347 k	-	-
Axial Compression Analysis	7	8.159 k	92.442 k	-	-
Flexural Analysis	7	0.000 k-ft	19.336 k-ft	-	-
Shear Analysis	7	0.017 k	37.904 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.088	Pass
Torsional Analysis	7	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M90 **Unity Check:** 0.149 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N6
Member Type:	Column	J Node:	N75
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

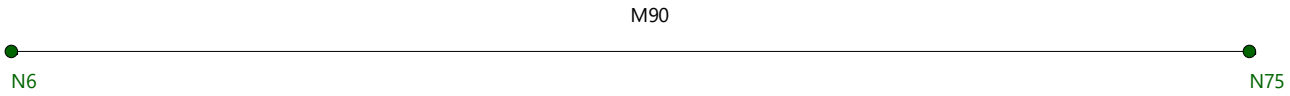
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

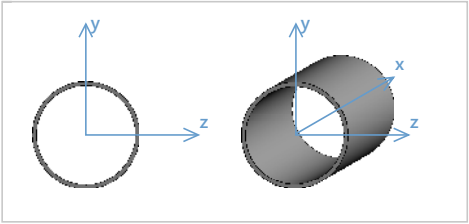
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	126.347 k	-	-
Axial Compression Analysis	26	5.718 k	92.442 k	-	-
Flexural Analysis	26	2.282 k-ft	19.336 k-ft	-	-
Shear Analysis	26	0.205 k	37.904 k	0.005	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.149	Pass
Torsional Analysis	26	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M91 **Unity Check:** 0.172 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N3
Member Type:	Column	J Node:	N76
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

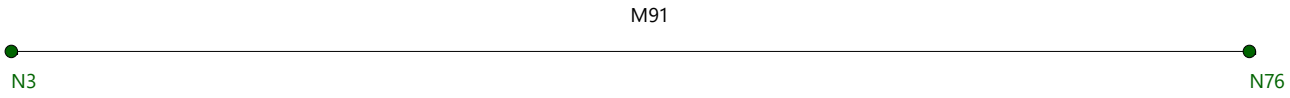
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

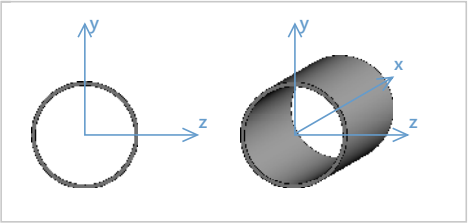
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	126.347 k	-	-
Axial Compression Analysis	26	8.218 k	92.442 k	-	-
Flexural Analysis	26	2.47 k-ft	19.336 k-ft	-	-
Shear Analysis	26	0.222 k	37.904 k	0.006	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.172	Pass
Torsional Analysis	26	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M92 **Unity Check:** 0.189 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N4
Member Type:	Column	J Node:	N77
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

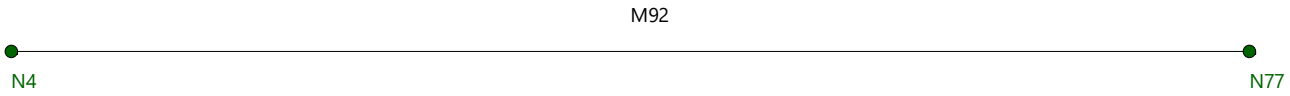
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

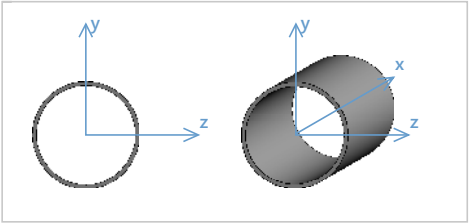
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	126.347 k	-	-
Axial Compression Analysis	26	8.343 k	92.442 k	-	-
Flexural Analysis	26	2.786 k-ft	19.336 k-ft	-	-
Shear Analysis	26	0.25 k	37.904 k	0.007	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.189	Pass
Torsional Analysis	26	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M93 **Unity Check:** 0.092 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N21
Member Type:	Column	J Node:	N78
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

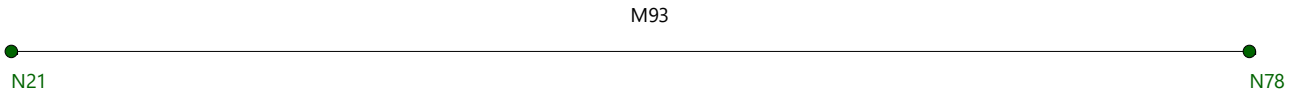
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

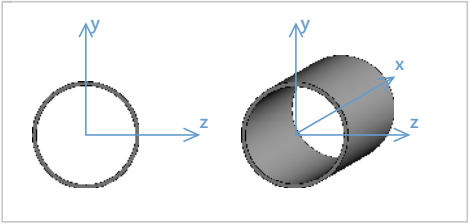
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	126.347 k	-	-
Axial Compression Analysis	26	7.248 k	92.442 k	-	-
Flexural Analysis	26	1.023 k-ft	19.336 k-ft	-	-
Shear Analysis	26	0.092 k	37.904 k	0.002	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.092	Pass
Torsional Analysis	26	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M94 **Unity Check:** 0.106 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N7
Member Type:	Column	J Node:	N79
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

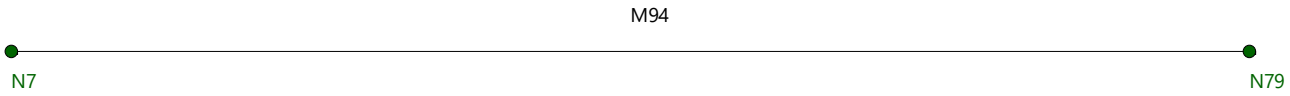
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

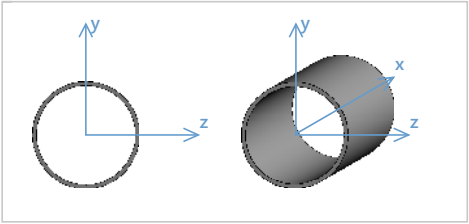
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	7	-	-	-	-
Axial Tension Analysis	26	0.000 k	126.347 k	-	-
Axial Compression Analysis	26	9.759 k	92.442 k	-	-
Flexural Analysis	26	0.000 k-ft	19.336 k-ft	-	-
Shear Analysis	7	0.038 k	37.904 k	0.001	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.106	Pass
Torsional Analysis	26	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M95 **Unity Check:** 0.094 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N22
Member Type:	Column	J Node:	N82
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

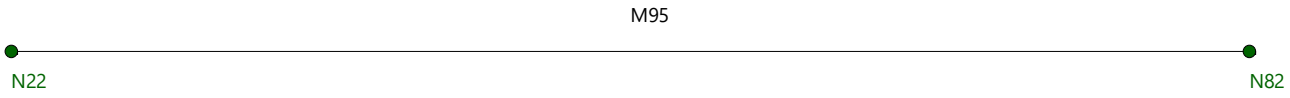
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

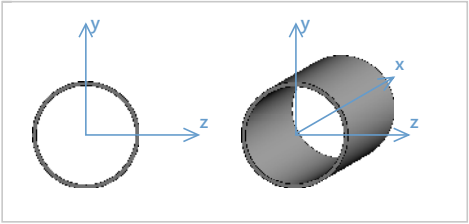
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	126.347 k	-	-
Axial Compression Analysis	26	8.655 k	92.442 k	-	-
Flexural Analysis	26	0.000 k-ft	19.336 k-ft	-	-
Shear Analysis	26	0.056 k	37.904 k	0.001	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.094	Pass
Torsional Analysis	26	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M96 **Unity Check:** 0.124 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N8
Member Type:	Column	J Node:	N80
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

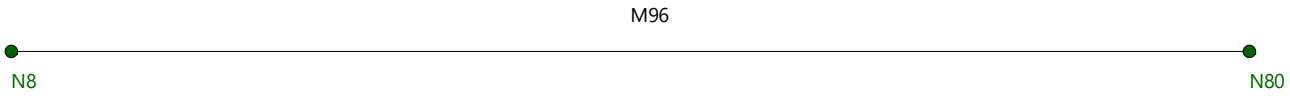
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

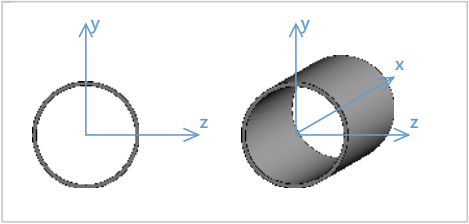
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	126.347 k	-	-
Axial Compression Analysis	26	11.463 k	92.442 k	-	-
Flexural Analysis	26	0.000 k-ft	19.336 k-ft	-	-
Shear Analysis	26	0.079 k	37.904 k	0.002	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.124	Pass
Torsional Analysis	26	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M97 **Unity Check:** 0.147 (LC 7) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N52
Member Type:	Column	J Node:	N81
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

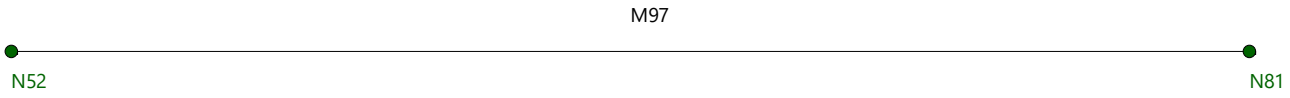
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

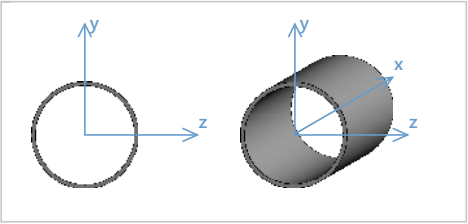
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	7	-	-	-	-
Axial Tension Analysis	7	0.000 k	126.347 k	-	-
Axial Compression Analysis	7	13.588 k	92.442 k	-	-
Flexural Analysis	7	0.000 k-ft	19.336 k-ft	-	-
Shear Analysis	7	0.000 k	37.904 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.147	Pass
Torsional Analysis	7	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M98 **Unity Check:** 0.188 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N24
Member Type:	Column	J Node:	N85
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

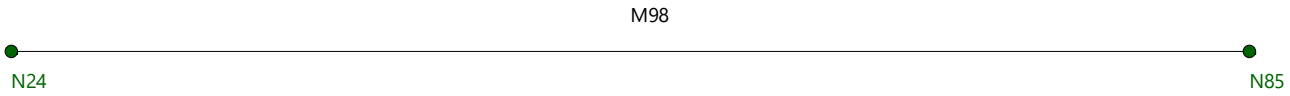
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

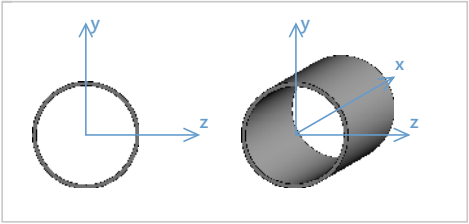
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	126.347 k	-	-
Axial Compression Analysis	26	7.386 k	92.442 k	-	-
Flexural Analysis	26	2.858 k-ft	19.336 k-ft	-	-
Shear Analysis	26	0.257 k	37.904 k	0.007	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.188	Pass
Torsional Analysis	26	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M99 **Unity Check:** 0.23 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N11
Member Type:	Column	J Node:	N84
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

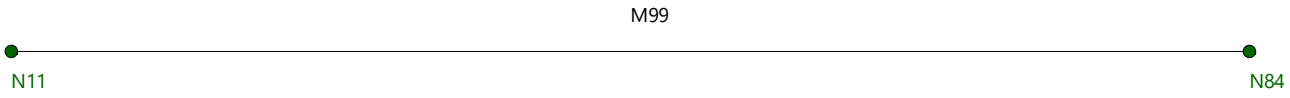
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

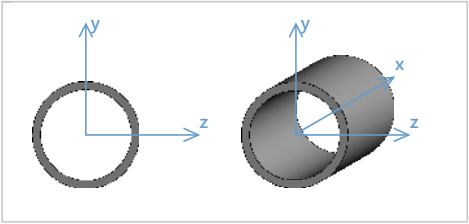
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	126.347 k	-	-
Axial Compression Analysis	26	13.382 k	92.442 k	-	-
Flexural Analysis	26	3.05 k-ft	19.336 k-ft	-	-
Shear Analysis	26	0.274 k	37.904 k	0.007	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.23	Pass
Torsional Analysis	26	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M100 **Unity Check:** 0.101 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.500	I Node:	N56
Member Type:	Column	J Node:	N91
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

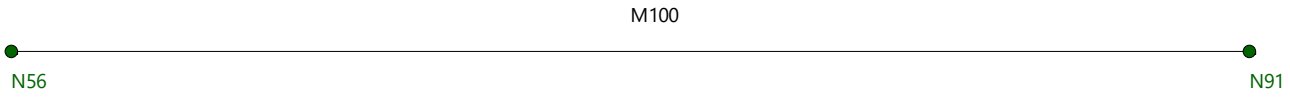
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	8.09	I_{yy} (in^4):	31.2
t (in):	0.465	J (in^4):	62.4	I_{zz} (in^4):	31.2
Z (in^3):	14.3				

Design Properties:

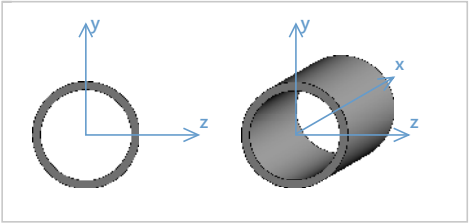
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	242.216 k	-	-
Axial Compression Analysis	26	7.201 k	172.766 k	-	-
Flexural Analysis	26	2.864 k-ft	35.679 k-ft	-	-
Shear Analysis	26	0.257 k	72.665 k	0.004	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.101	Pass
Torsional Analysis	26	0.000 k-ft	33.499 k-ft	0.000	Pass

Detail Report: M101 **Unity Check:** 0.046 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.500	I Node:	N53
Member Type:	Column	J Node:	N90
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

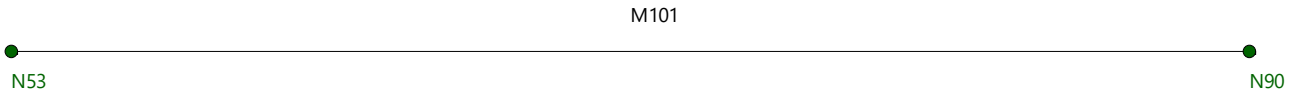
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	8.09	I_{yy} (in^4):	31.2
t (in):	0.465	J (in^4):	62.4	I_{zz} (in^4):	31.2
Z (in^3):	14.3				

Design Properties:

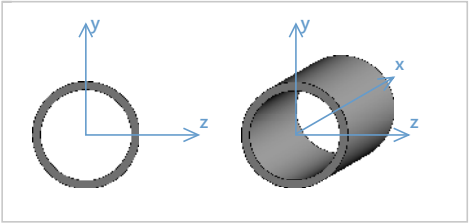
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	242.216 k	-	-
Axial Compression Analysis	26	4.698 k	172.766 k	-	-
Flexural Analysis	26	1.149 k-ft	35.679 k-ft	-	-
Shear Analysis	26	0.103 k	72.665 k	0.001	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.046	Pass
Torsional Analysis	26	0.000 k-ft	33.499 k-ft	0.000	Pass

Detail Report: M102 **Unity Check:** 0.038 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.500	I Node:	N63
Member Type:	Column	J Node:	N92
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

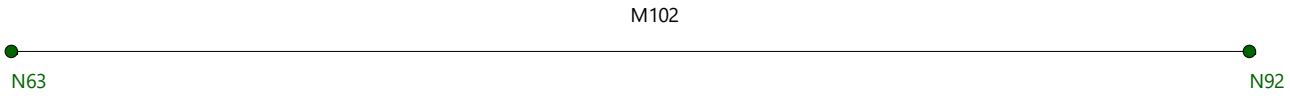
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	8.09	I_{yy} (in^4):	31.2
t (in):	0.465	J (in^4):	62.4	I_{zz} (in^4):	31.2
Z (in^3):	14.3				

Design Properties:

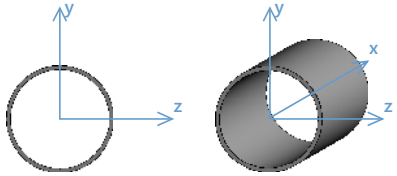
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	242.216 k	-	-
Axial Compression Analysis	26	1.439 k	172.766 k	-	-
Flexural Analysis	26	1.223 k-ft	35.679 k-ft	-	-
Shear Analysis	26	0.11 k	72.665 k	0.002	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.038	Pass
Torsional Analysis	26	0.000 k-ft	33.499 k-ft	0.000	Pass

Detail Report: M103 **Unity Check:** 0.13 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N25
Member Type:	Column	J Node:	N87
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

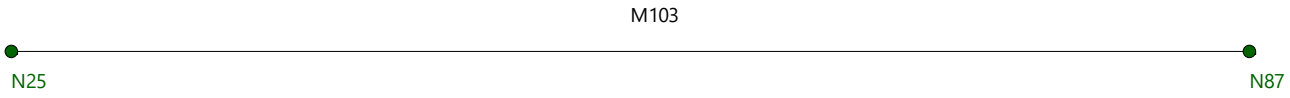
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

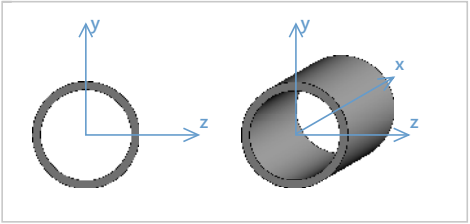
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	126.347 k	-	-
Axial Compression Analysis	26	8.526 k	92.442 k	-	-
Flexural Analysis	26	1.615 k-ft	19.336 k-ft	-	-
Shear Analysis	26	0.145 k	37.904 k	0.004	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.13	Pass
Torsional Analysis	26	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M104 **Unity Check:** 0.126 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.500	I Node:	N26
Member Type:	Column	J Node:	N88
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

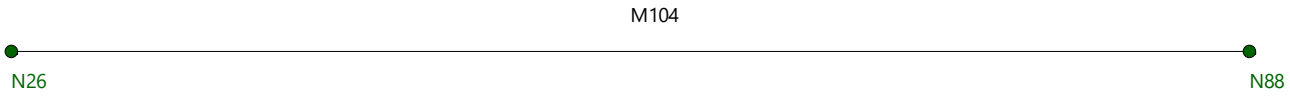
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	8.09	I_{yy} (in^4):	31.2
t (in):	0.465	J (in^4):	62.4	I_{zz} (in^4):	31.2
Z (in^3):	14.3				

Design Properties:

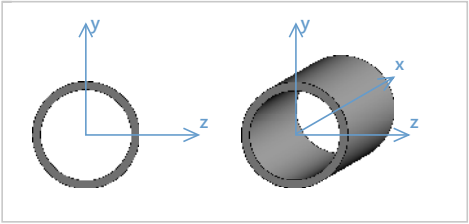
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	242.216 k	-	-
Axial Compression Analysis	26	9.573 k	172.766 k	-	-
Flexural Analysis	26	3.507 k-ft	35.679 k-ft	-	-
Shear Analysis	26	0.315 k	72.665 k	0.004	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.126	Pass
Torsional Analysis	26	0.000 k-ft	33.499 k-ft	0.000	Pass

Detail Report: M105 **Unity Check:** 0.21 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.500	I Node:	N29
Member Type:	Column	J Node:	N89
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

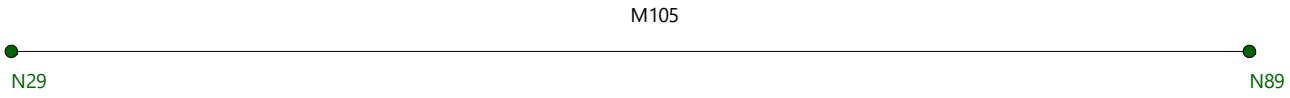
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	8.09	I_{yy} (in^4):	31.2
t (in):	0.465	J (in^4):	62.4	I_{zz} (in^4):	31.2
Z (in^3):	14.3				

Design Properties:

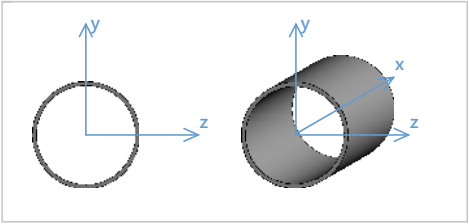
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	242.216 k	-	-
Axial Compression Analysis	26	10.06 k	172.766 k	-	-
Flexural Analysis	26	6.449 k-ft	35.679 k-ft	-	-
Shear Analysis	26	0.58 k	72.665 k	0.008	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.21	Pass
Torsional Analysis	26	0.000 k-ft	33.499 k-ft	0.000	Pass

Detail Report: M106 **Unity Check:** 0.094 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N23
Member Type:	Column	J Node:	N86
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

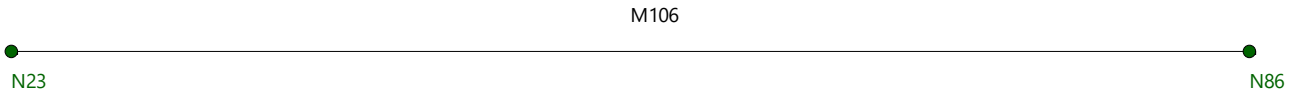
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

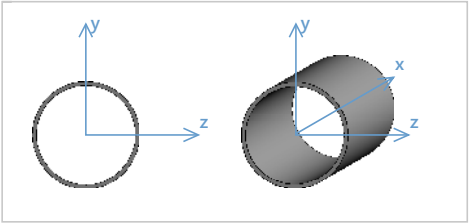
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	126.347 k	-	-
Axial Compression Analysis	26	8.651 k	92.442 k	-	-
Flexural Analysis	26	0.000 k-ft	19.336 k-ft	-	-
Shear Analysis	26	0.076 k	37.904 k	0.002	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.094	Pass
Torsional Analysis	26	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M107 **Unity Check:** 0.125 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N9
Member Type:	Column	J Node:	N83
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

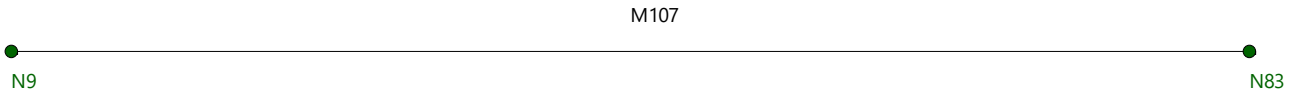
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

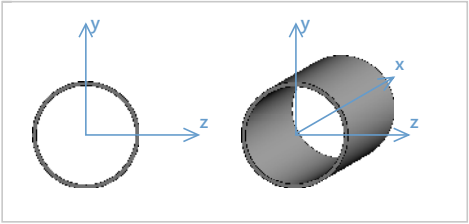
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	26	0.000 k	126.347 k	-	-
Axial Compression Analysis	26	11.59 k	92.442 k	-	-
Flexural Analysis	26	0.000 k-ft	19.336 k-ft	-	-
Shear Analysis	26	0.062 k	37.904 k	0.002	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.125	Pass
Torsional Analysis	26	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M108 **Unity Check:** 0.01 (LC 7) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N66
Member Type:	Column	J Node:	N95
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

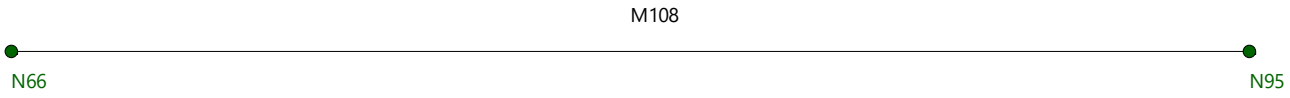
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

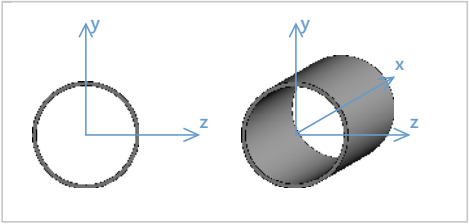
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	39	-	-	-	-
Axial Tension Analysis	7	0.000 k	126.347 k	-	-
Axial Compression Analysis	7	0.967 k	92.442 k	-	-
Flexural Analysis	7	0.000 k-ft	19.336 k-ft	-	-
Shear Analysis	39	0.000 k	37.904 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.01	Pass
Torsional Analysis	7	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M109 **Unity Check:** 0.013 (LC 7) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N65
Member Type:	Column	J Node:	N94
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

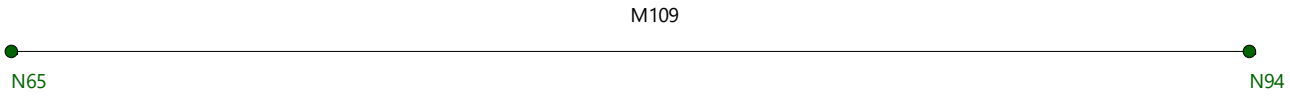
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

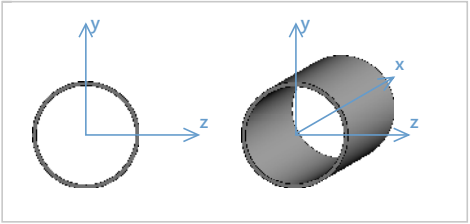
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	39	-	-	-	-
Axial Tension Analysis	7	0.000 k	126.347 k	-	-
Axial Compression Analysis	7	1.227 k	92.442 k	-	-
Flexural Analysis	7	0.000 k-ft	19.336 k-ft	-	-
Shear Analysis	39	0.000 k	37.904 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.013	Pass
Torsional Analysis	7	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M110 **Unity Check:** 0.025 (LC 7) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N97
Member Type:	Column	J Node:	N98
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

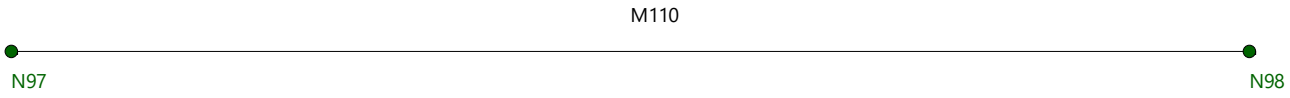
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

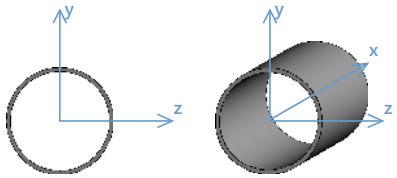
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	7	-	-	-	-
Axial Tension Analysis	7	0.000 k	126.347 k	-	-
Axial Compression Analysis	7	2.338 k	92.442 k	-	-
Flexural Analysis	7	0.000 k-ft	19.336 k-ft	-	-
Shear Analysis	7	0.002 k	37.904 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.025	Pass
Torsional Analysis	7	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M111 **Unity Check:** 0.023 (LC 7) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N99
Member Type:	Column	J Node:	N100
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

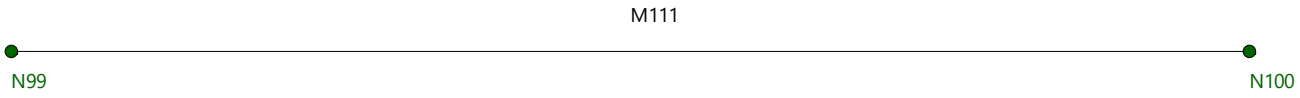
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

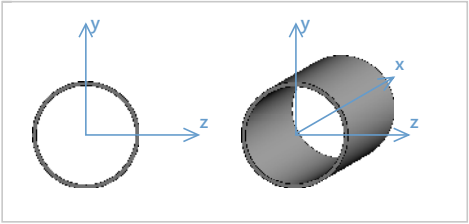
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	7	-	-	-	-
Axial Tension Analysis	7	0.000 k	126.347 k	-	-
Axial Compression Analysis	7	2.127 k	92.442 k	-	-
Flexural Analysis	7	0.000 k-ft	19.336 k-ft	-	-
Shear Analysis	7	0.001 k	37.904 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.023	Pass
Torsional Analysis	7	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M112 **Unity Check:** 0.023 (LC 7) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N101
Member Type:	Column	J Node:	N102
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

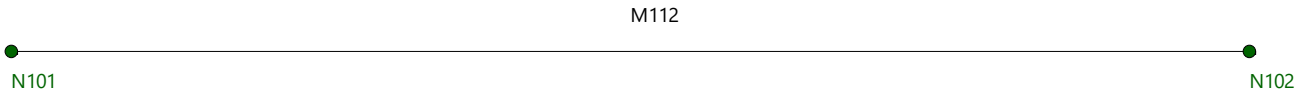
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

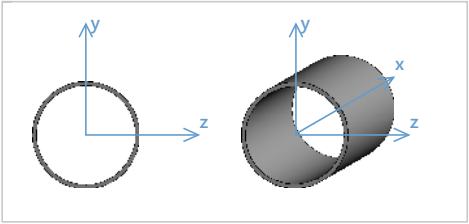
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	7	-	-	-	-
Axial Tension Analysis	7	0.000 k	126.347 k	-	-
Axial Compression Analysis	7	2.142 k	92.442 k	-	-
Flexural Analysis	7	0.000 k-ft	19.336 k-ft	-	-
Shear Analysis	7	0.001 k	37.904 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.023	Pass
Torsional Analysis	7	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M113 **Unity Check:** 0.023 (LC 7) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N103
Member Type:	Column	J Node:	N104
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

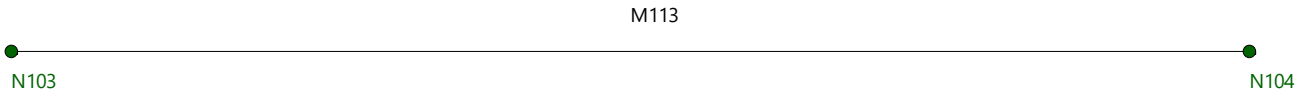
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

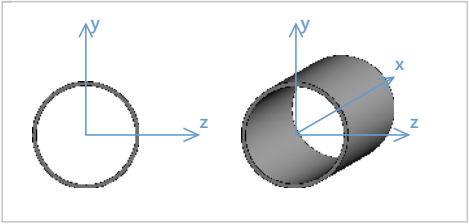
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	7	-	-	-	-
Axial Tension Analysis	7	0.000 k	126.347 k	-	-
Axial Compression Analysis	7	2.148 k	92.442 k	-	-
Flexural Analysis	7	0.000 k-ft	19.336 k-ft	-	-
Shear Analysis	7	0.001 k	37.904 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.023	Pass
Torsional Analysis	7	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M114 **Unity Check:** 0.022 (LC 7) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N105
Member Type:	Column	J Node:	N106
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

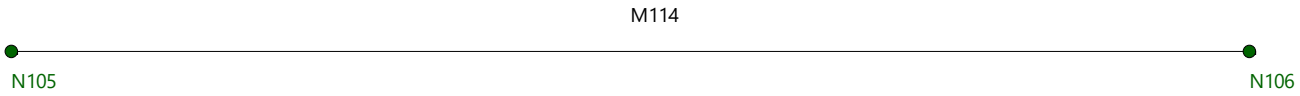
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

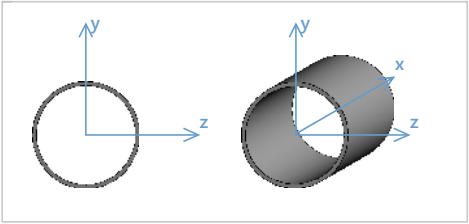
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	7	-	-	-	-
Axial Tension Analysis	7	0.000 k	126.347 k	-	-
Axial Compression Analysis	7	2.018 k	92.442 k	-	-
Flexural Analysis	7	0.000 k-ft	19.336 k-ft	-	-
Shear Analysis	7	0.001 k	37.904 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.022	Pass
Torsional Analysis	7	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M115 **Unity Check:** 0.03 (LC 7) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N107
Member Type:	Column	J Node:	N108
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

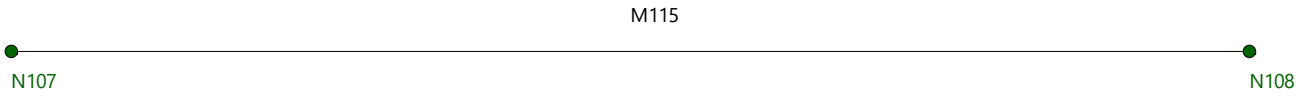
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

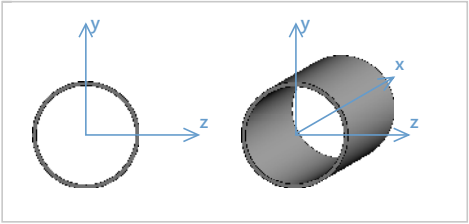
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	7	-	-	-	-
Axial Tension Analysis	7	0.000 k	126.347 k	-	-
Axial Compression Analysis	7	2.779 k	92.442 k	-	-
Flexural Analysis	7	0.000 k-ft	19.336 k-ft	-	-
Shear Analysis	7	0.006 k	37.904 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.03	Pass
Torsional Analysis	7	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M116 **Unity Check:** 0.016 (LC 26) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N51
Member Type:	Column	J Node:	N109
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

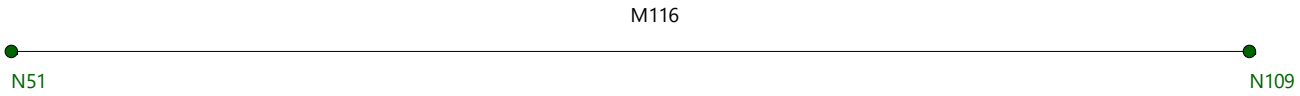
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

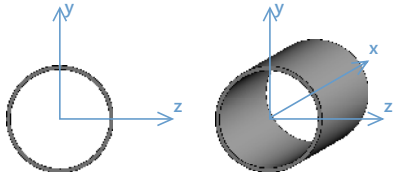
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	26	-	-	-	-
Applied Loading - Shear + Torsion	7	-	-	-	-
Axial Tension Analysis	26	0.000 k	126.347 k	-	-
Axial Compression Analysis	26	1.189 k	92.442 k	-	-
Flexural Analysis	26	0.184 k-ft	19.336 k-ft	-	-
Shear Analysis	7	0.017 k	37.904 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	26	-	-	0.016	Pass
Torsional Analysis	26	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M123 **Unity Check:** 0.074 (LC 7) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N114
Member Type:	Column	J Node:	N115
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

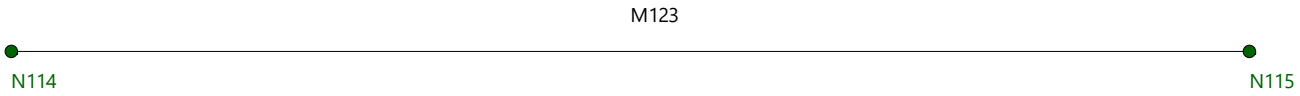
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

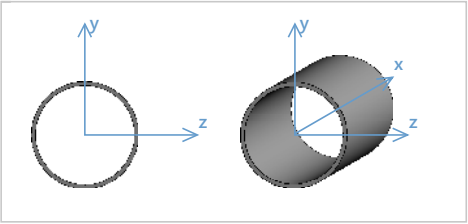
$L_{b\ y-y}$ (ft):	1	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	1	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	7	-	-	-	-
Applied Loading - Shear + Torsion	26	-	-	-	-
Axial Tension Analysis	7	0.000 k	126.347 k	-	-
Axial Compression Analysis	7	9.287 k	126.029 k	-	-
Flexural Analysis	7	0.000 k-ft	19.336 k-ft	-	-
Shear Analysis	26	0.000 k	37.904 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	7	-	-	0.074	Pass
Torsional Analysis	7	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M125 **Unity Check:** 0.126 (LC 14) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N116
Member Type:	Column	J Node:	N117
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

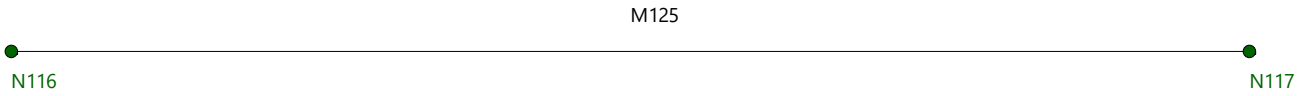
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

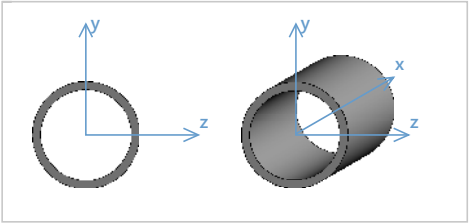
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	14	-	-	-	-
Applied Loading - Shear + Torsion	14	-	-	-	-
Axial Tension Analysis	14	0.000 k	126.347 k	-	-
Axial Compression Analysis	14	1.164 k	92.442 k	-	-
Flexural Analysis	14	2.307 k-ft	19.336 k-ft	-	-
Shear Analysis	14	0.207 k	37.904 k	0.005	Pass
Bending & Axial Interaction Check (UC Bending Max)	14	-	-	0.126	Pass
Torsional Analysis	14	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M128 **Unity Check:** 0.281 (LC 14) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.500	I Node:	N121
Member Type:	Column	J Node:	N122
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

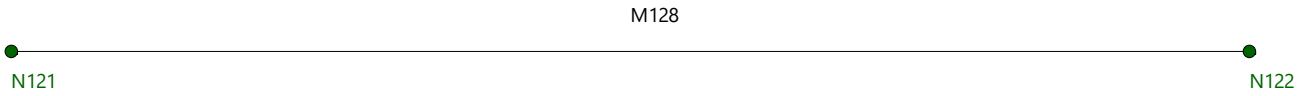
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	8.09	I_{yy} (in^4):	31.2
t (in):	0.465	J (in^4):	62.4	I_{zz} (in^4):	31.2
Z (in^3):	14.3				

Design Properties:

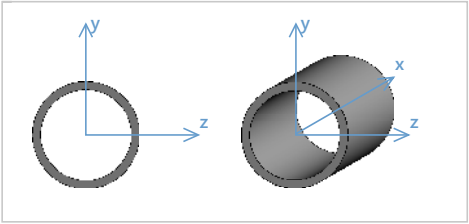
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	14	-	-	-	-
Applied Loading - Shear + Torsion	14	-	-	-	-
Axial Tension Analysis	14	0.000 k	242.216 k	-	-
Axial Compression Analysis	14	6.286 k	172.766 k	-	-
Flexural Analysis	14	9.377 k-ft	35.679 k-ft	-	-
Shear Analysis	14	0.843 k	72.665 k	0.012	Pass
Bending & Axial Interaction Check (UC Bending Max)	14	-	-	0.281	Pass
Torsional Analysis	14	0.000 k-ft	33.499 k-ft	0.000	Pass

Detail Report: M129 **Unity Check:** 0.281 (LC 10) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.500	I Node:	N123
Member Type:	Column	J Node:	N124
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

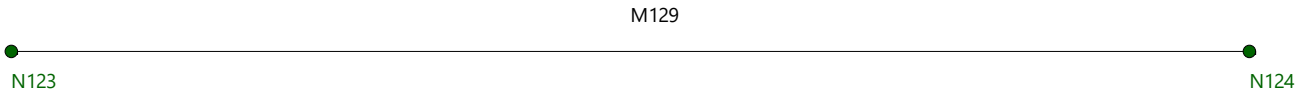
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	8.09	I_{yy} (in^4):	31.2
t (in):	0.465	J (in^4):	62.4	I_{zz} (in^4):	31.2
Z (in^3):	14.3				

Design Properties:

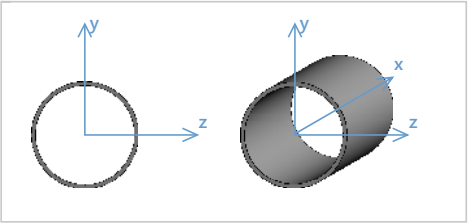
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	10	-	-	-	-
Applied Loading - Shear + Torsion	10	-	-	-	-
Axial Tension Analysis	10	0.000 k	242.216 k	-	-
Axial Compression Analysis	10	6.286 k	172.766 k	-	-
Flexural Analysis	10	9.375 k-ft	35.679 k-ft	-	-
Shear Analysis	10	0.843 k	72.665 k	0.012	Pass
Bending & Axial Interaction Check (UC Bending Max)	10	-	-	0.281	Pass
Torsional Analysis	10	0.000 k-ft	33.499 k-ft	0.000	Pass

Detail Report: M130 **Unity Check:** 0.126 (LC 10) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N120
Member Type:	Column	J Node:	N125
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

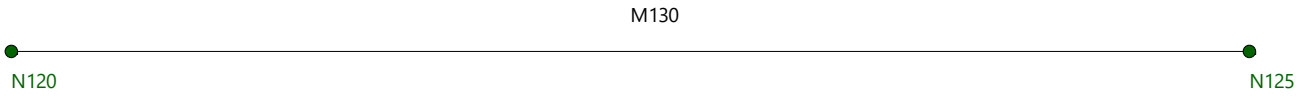
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

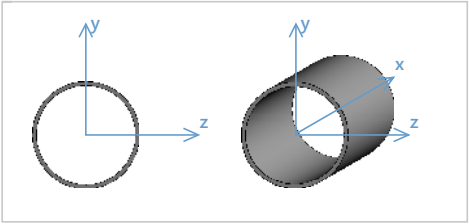
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	10	-	-	-	-
Applied Loading - Shear + Torsion	10	-	-	-	-
Axial Tension Analysis	10	0.000 k	126.347 k	-	-
Axial Compression Analysis	10	1.164 k	92.442 k	-	-
Flexural Analysis	10	2.306 k-ft	19.336 k-ft	-	-
Shear Analysis	10	0.207 k	37.904 k	0.005	Pass
Bending & Axial Interaction Check (UC Bending Max)	10	-	-	0.126	Pass
Torsional Analysis	10	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M131 **Unity Check:** 0.474 (LC 10) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N126
Member Type:	Column	J Node:	N127
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

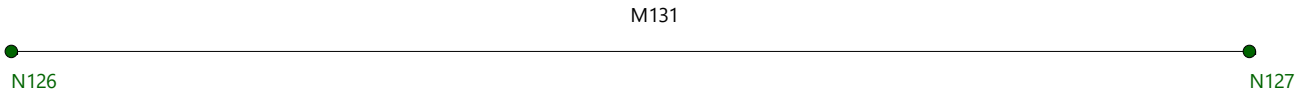
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

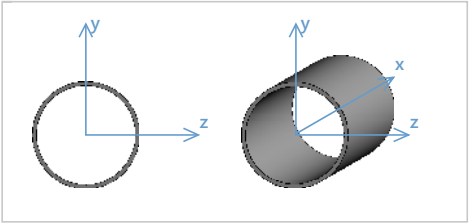
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	10	-	-	-	-
Applied Loading - Shear + Torsion	10	-	-	-	-
Axial Tension Analysis	10	0.000 k	126.347 k	-	-
Axial Compression Analysis	10	5.751 k	92.442 k	-	-
Flexural Analysis	10	8.572 k-ft	19.336 k-ft	-	-
Shear Analysis	10	0.771 k	37.904 k	0.02	Pass
Bending & Axial Interaction Check (UC Bending Max)	10	-	-	0.474	Pass
Torsional Analysis	10	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M132 **Unity Check:** 0.174 (LC 10) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N118
Member Type:	Column	J Node:	N128
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

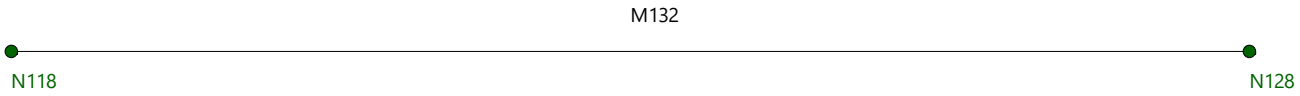
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

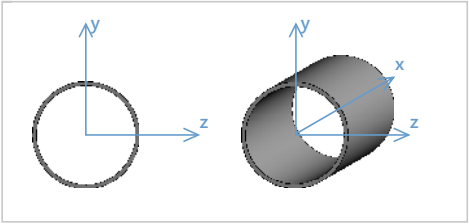
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	10	-	-	-	-
Applied Loading - Shear + Torsion	10	-	-	-	-
Axial Tension Analysis	10	0.000 k	126.347 k	-	-
Axial Compression Analysis	10	1.217 k	92.442 k	-	-
Flexural Analysis	10	3.24 k-ft	19.336 k-ft	-	-
Shear Analysis	10	0.291 k	37.904 k	0.008	Pass
Bending & Axial Interaction Check (UC Bending Max)	10	-	-	0.174	Pass
Torsional Analysis	10	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M133 **Unity Check:** 0.174 (LC 14) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N119
Member Type:	Column	J Node:	N129
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

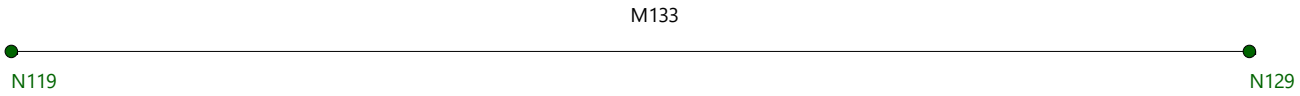
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

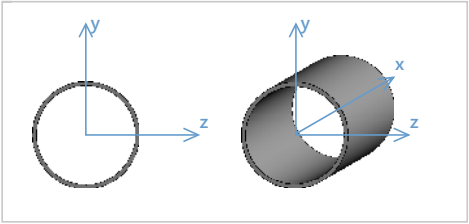
$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	14	-	-	-	-
Applied Loading - Shear + Torsion	14	-	-	-	-
Axial Tension Analysis	14	0.000 k	126.347 k	-	-
Axial Compression Analysis	14	1.217 k	92.442 k	-	-
Flexural Analysis	14	3.241 k-ft	19.336 k-ft	-	-
Shear Analysis	14	0.291 k	37.904 k	0.008	Pass
Bending & Axial Interaction Check (UC Bending Max)	14	-	-	0.174	Pass
Torsional Analysis	14	0.000 k-ft	18.222 k-ft	0.000	Pass

Detail Report: M134 **Unity Check:** 0.474 (LC 14) **Load Combination:** Envelope



Input Data:

Shape:	HSS6.000X0.250	I Node:	N130
Member Type:	Column	J Node:	N131
Length (ft):	11.125	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

Material Properties:

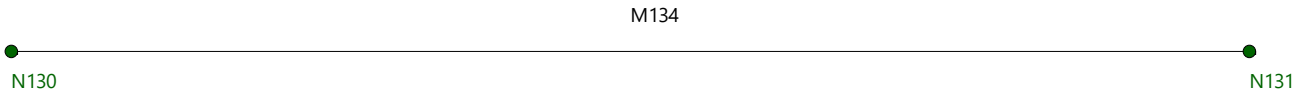
Material:	A992	Therm. Coeff. ($1e^5°F^{-1}$):	0.65	R_y:	1.1
E (ksi):	29000	Density (k/ft^3):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t:	1.1
Nu:	0.3				

Shape Properties:

d (in):	6	Area (in^2):	4.22	I_{yy} (in^4):	17.6
t (in):	0.233	J (in^4):	35.2	I_{zz} (in^4):	17.6
Z (in^3):	7.75				

Design Properties:

$L_{b\ y-y}$ (ft):	N/A	K_{y-y}:	1	Max Defl Ratio:	L/0
$L_{b\ z-z}$ (ft):	N/A	K_{z-z}:	1	Max Defl Location:	0
$L_{comp\ top}$ (ft):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (ft):	N/A	z sway:	No		
L_{torque} (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		



AISC 15th (360-16): ASD Code Check

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	14	-	-	-	-
Applied Loading - Shear + Torsion	14	-	-	-	-
Axial Tension Analysis	14	0.000 k	126.347 k	-	-
Axial Compression Analysis	14	5.75 k	92.442 k	-	-
Flexural Analysis	14	8.573 k-ft	19.336 k-ft	-	-
Shear Analysis	14	0.771 k	37.904 k	0.02	Pass
Bending & Axial Interaction Check (UC Bending Max)	14	-	-	0.474	Pass
Torsional Analysis	14	0.000 k-ft	18.222 k-ft	0.000	Pass