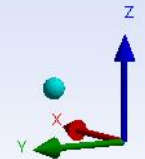
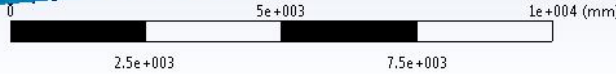
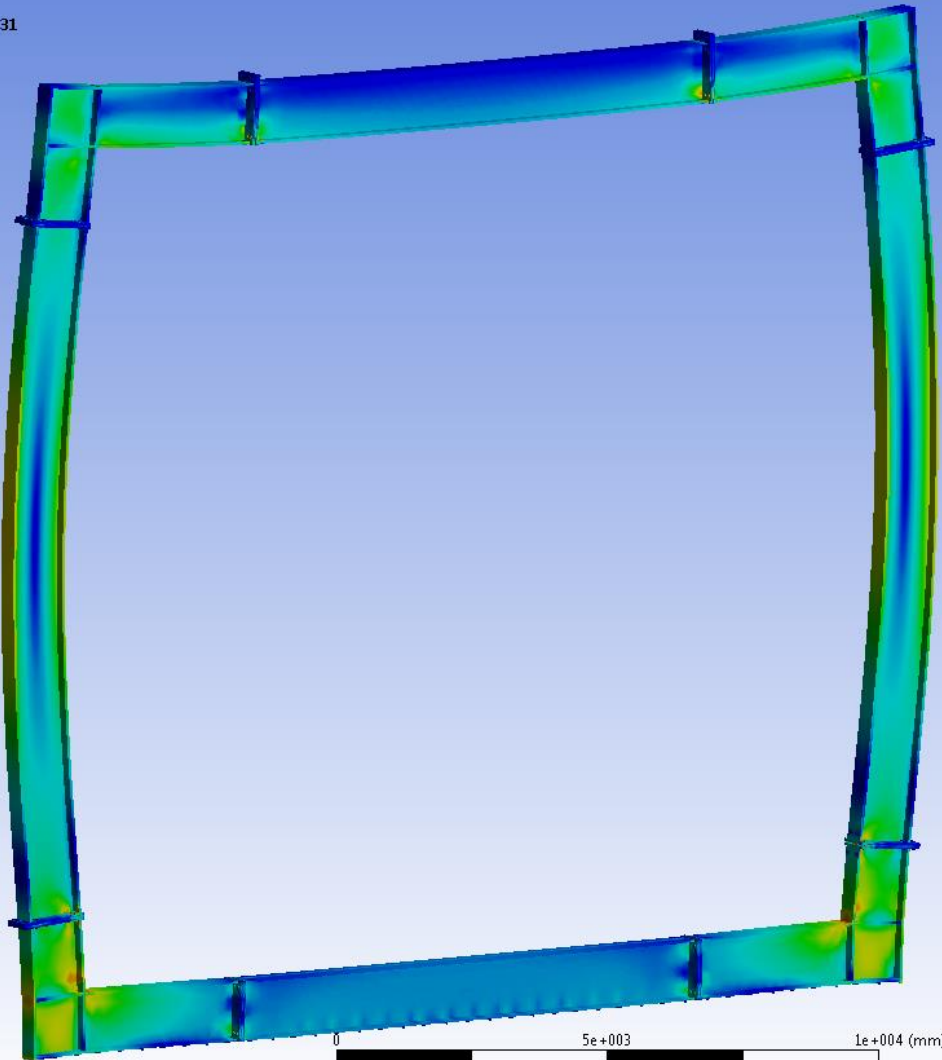
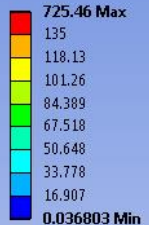


A: frame solid beams 410*410*1138*55*55*31

Equivalent Stress
Type: Equivalent (von-Mises) Stress
Unit: MPa
Time: 1
04/05/2015 07:45

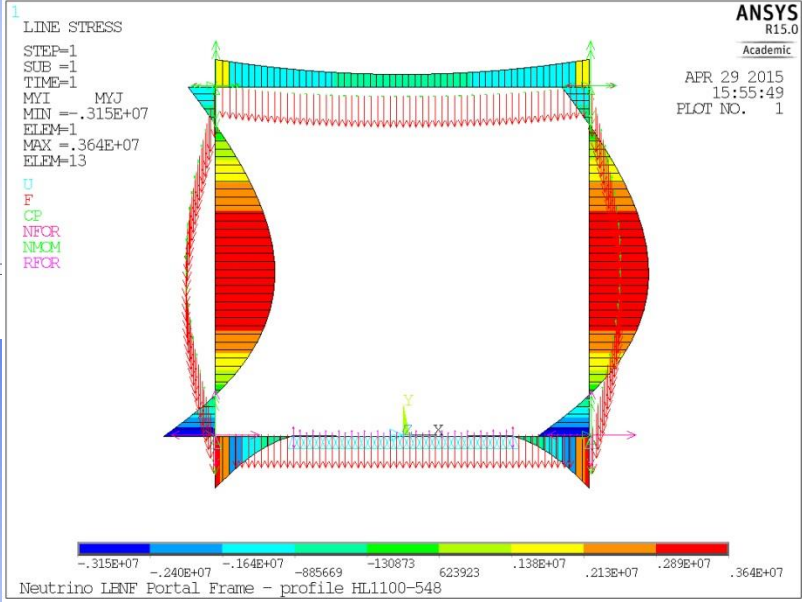
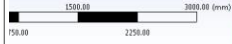
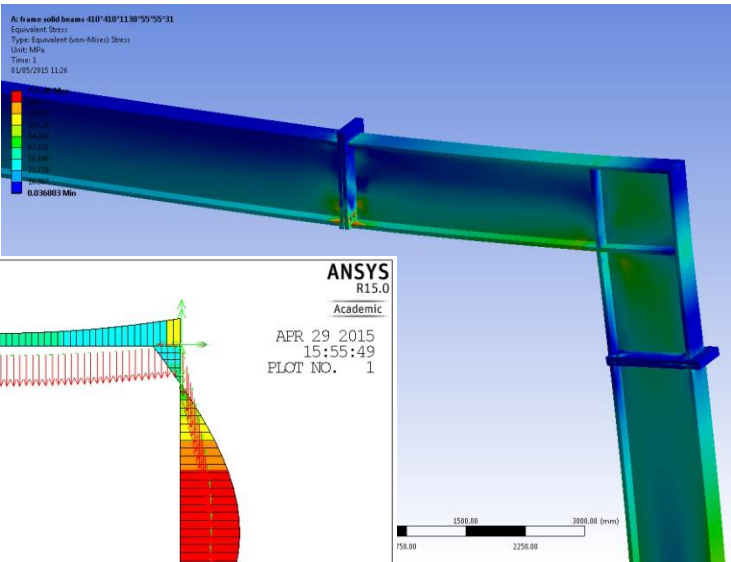
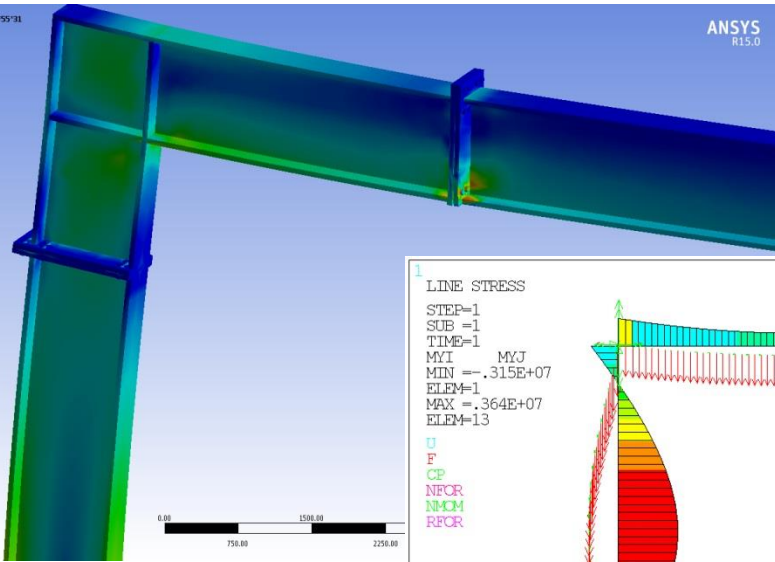


A: frame solid beams 410°410°1130°55°55°31
Equivalent Stress
Type: Equivalent (von-Mises) Stress
Unit: MPa
Time: 1
01/05/2015 11:26

A: frame solid beams 410°410°1130°55°55°31
Equivalent Stress
Type: Equivalent (von-Mises) Stress
Unit: MPa
Time: 1
01/05/2015 11:26

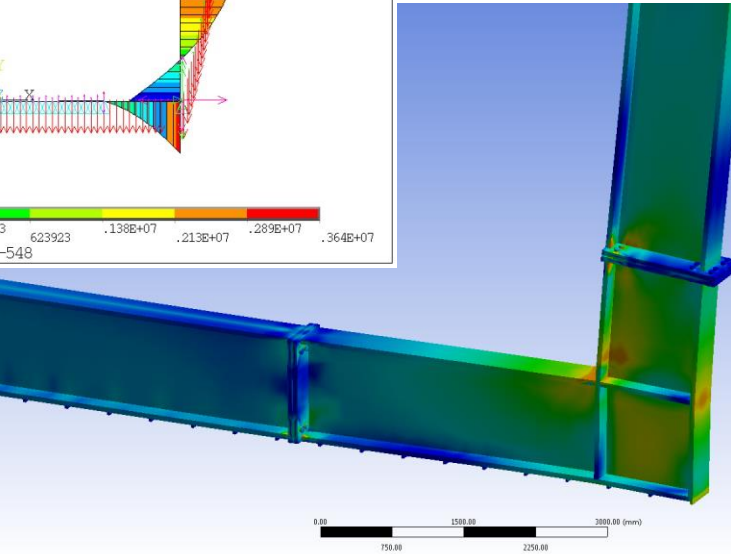
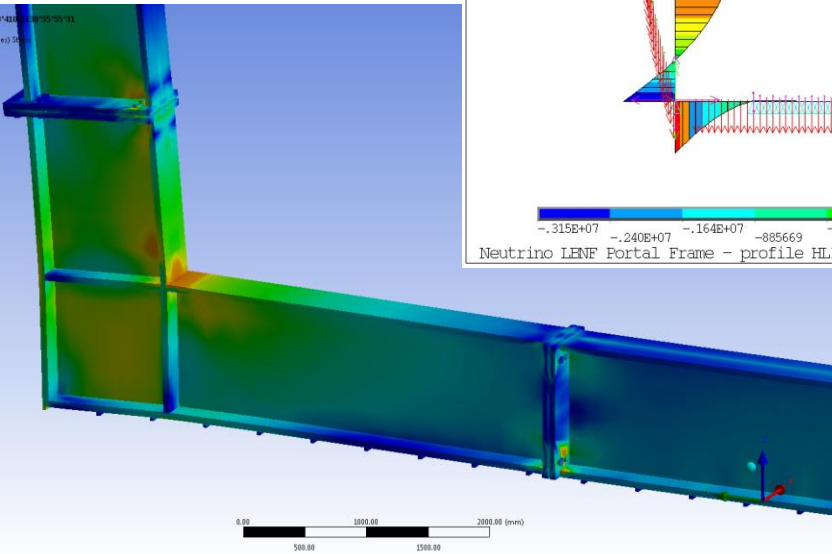
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135
118.13
101.26
84.393
67.518
50.648
33.778
16.907
0.036803 Min

725.46 Max
135
118.13
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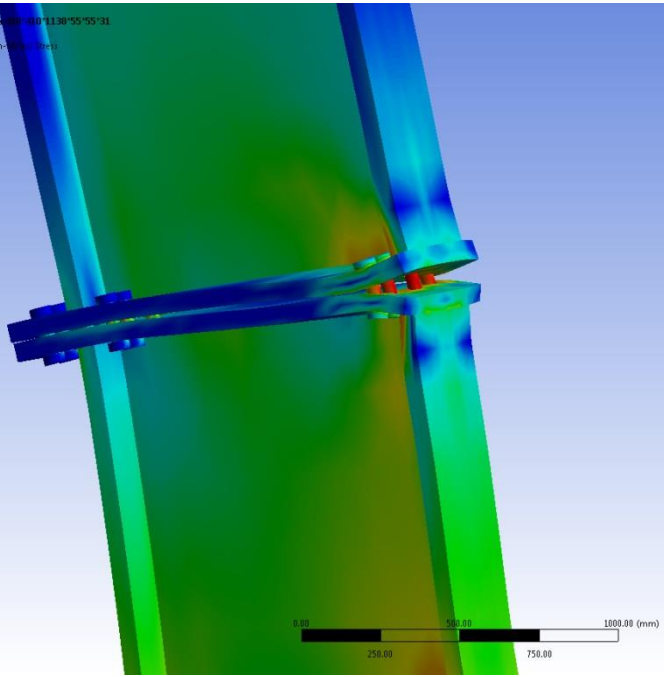
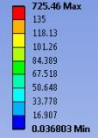
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Equivalent Stress
Type: Equivalent (von-Mises) Stress
Unit: MPa
Time: 1
01/05/2015 11:26

725.46 Max
135
118.13
101.26
84.393
67.518
50.648
33.778
16.907
0.036803 Min



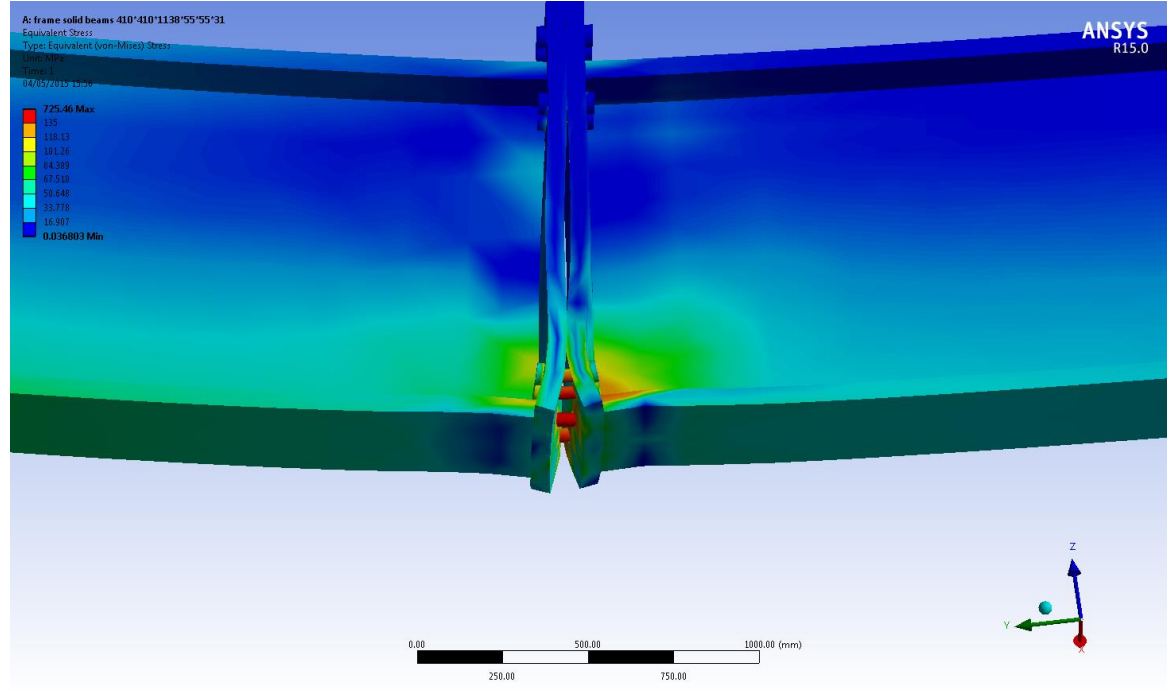
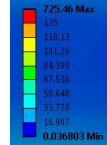
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Equivalent Stress
Type: Equivalent (von-Mises) Stress
Unit: MPa
Time: 1
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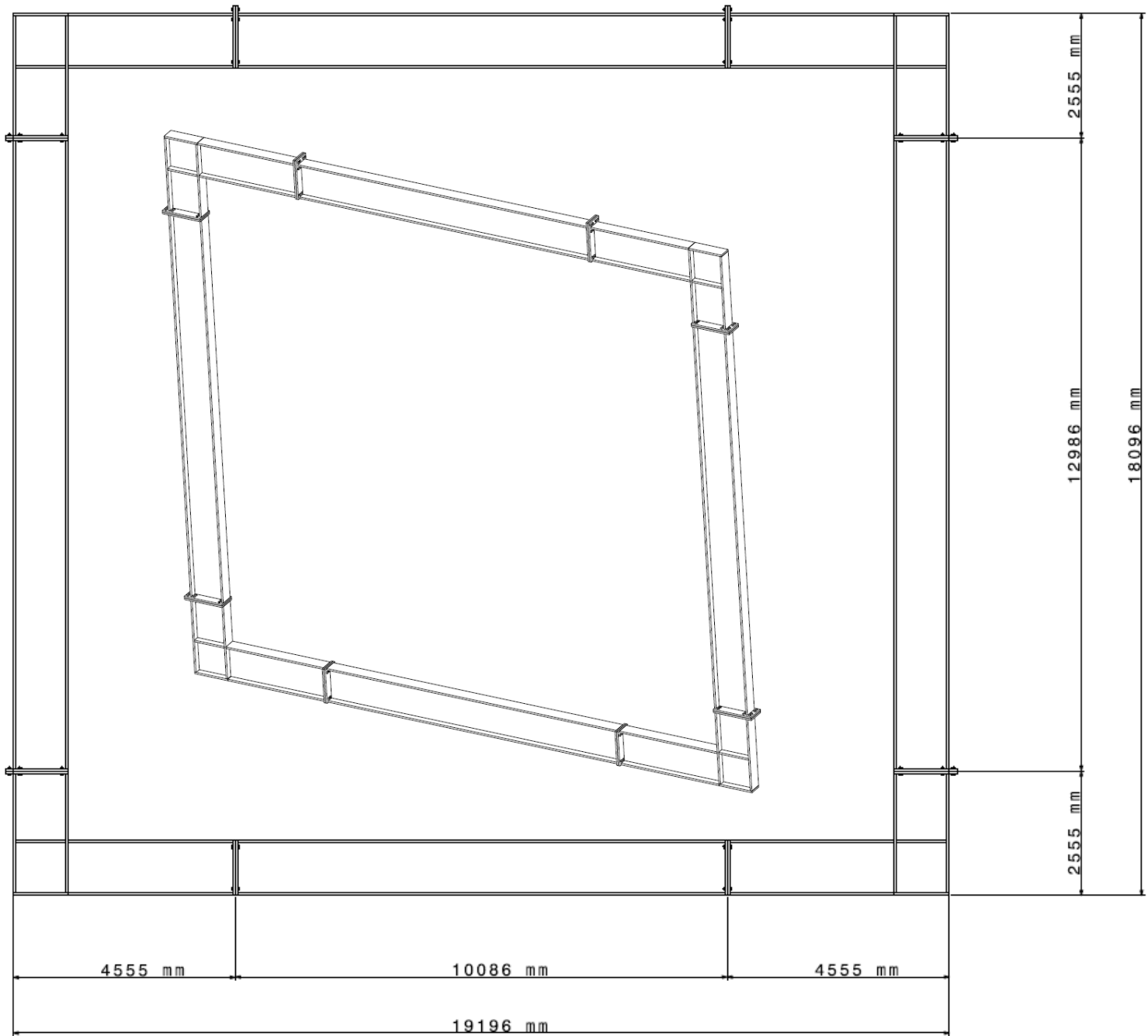
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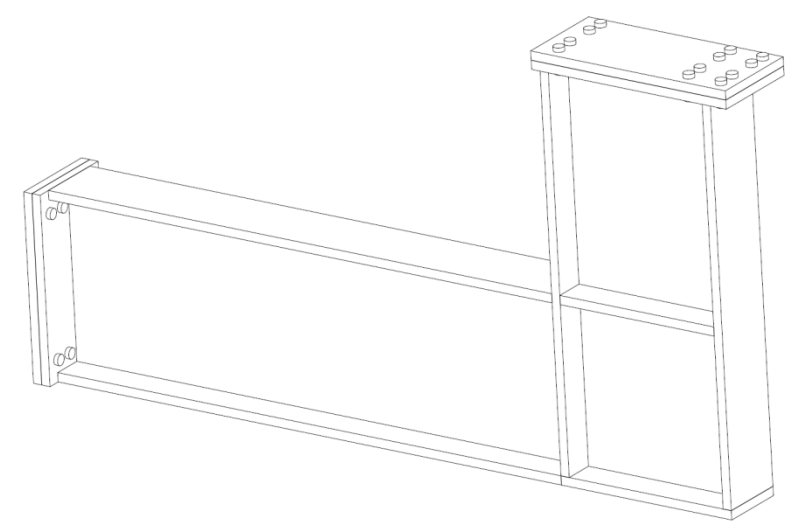
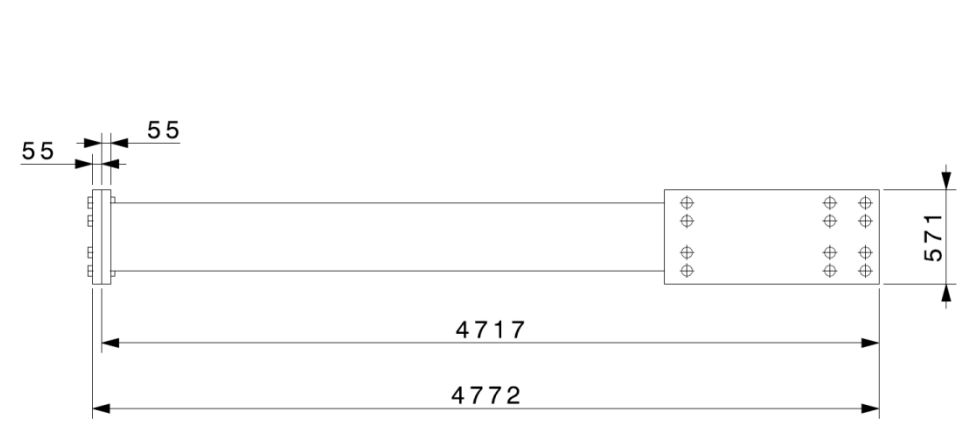
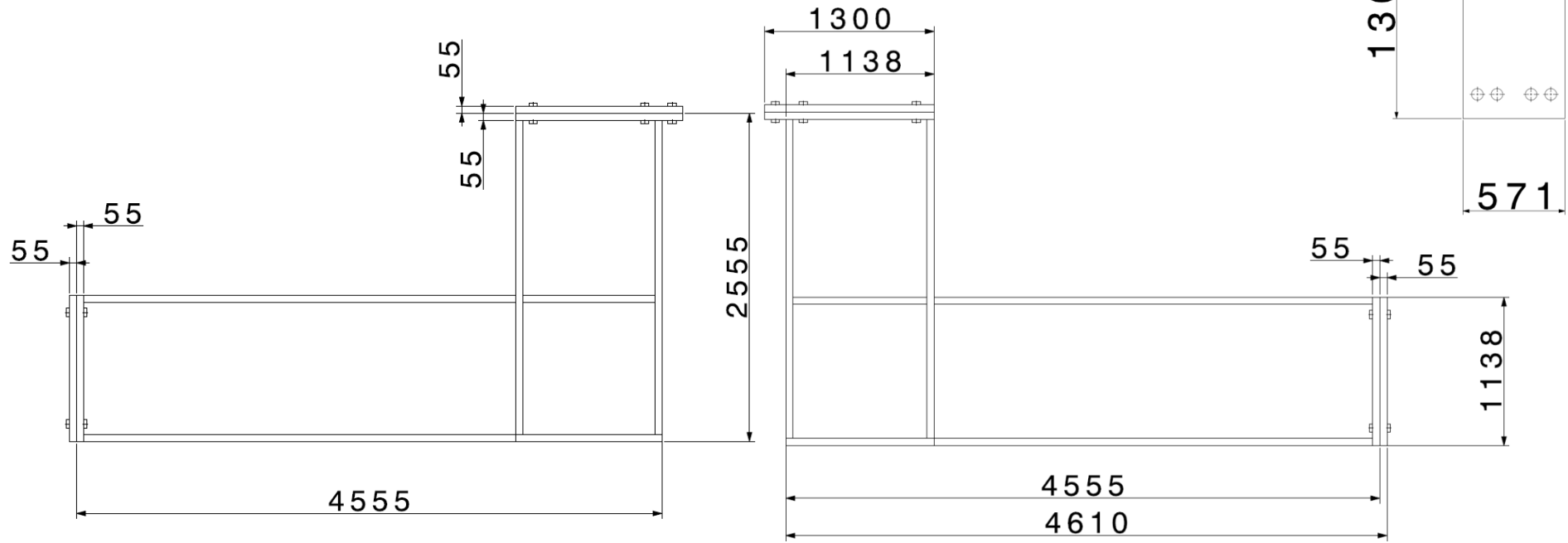


A: frame solid beams 410*410*1138*55*55*31
Equivalent Stress
Type: Equivalent (von-Mises) Stress
Unit: MPa
Time: 1
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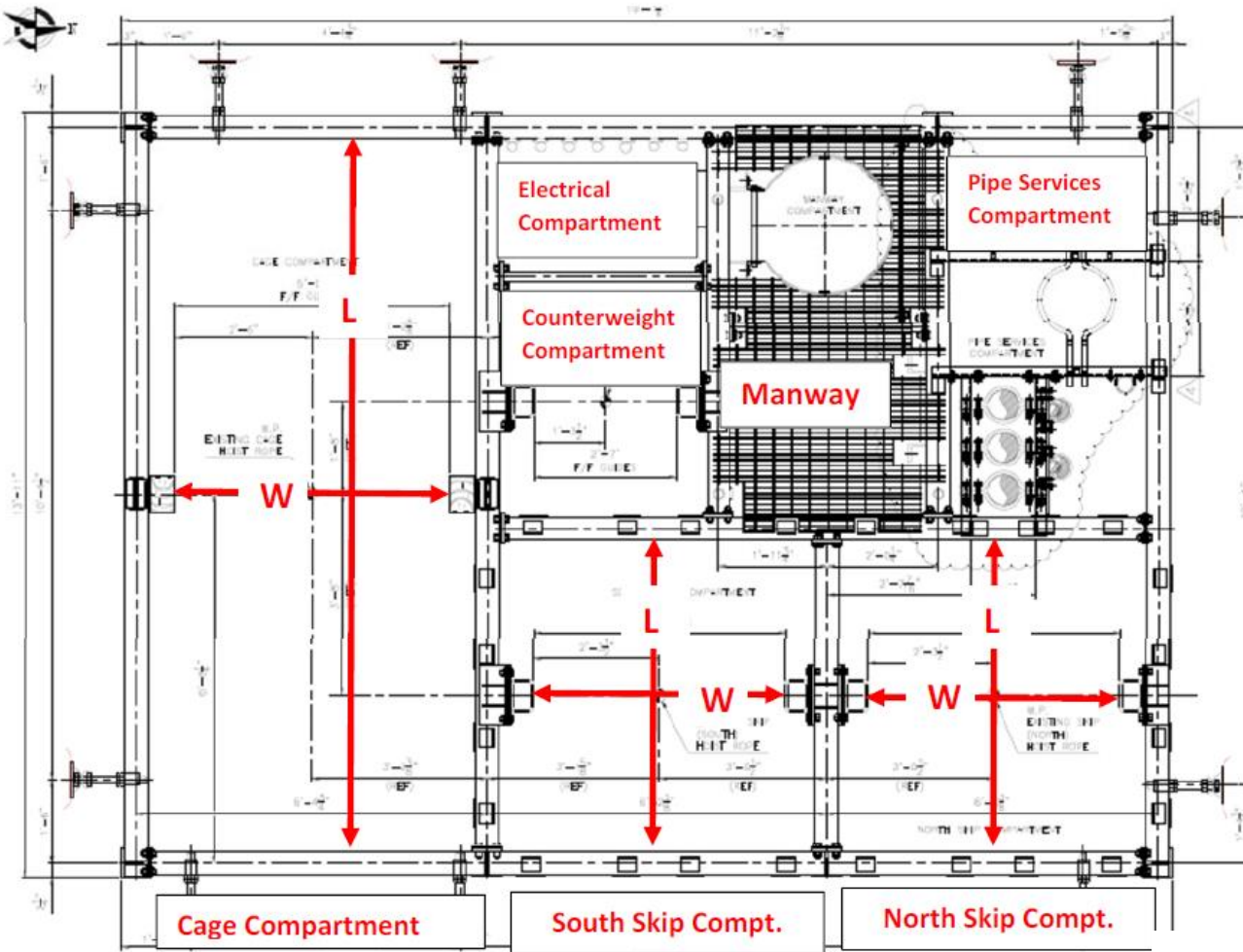
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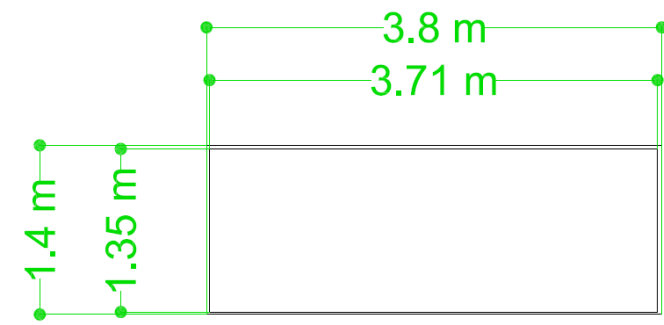




Ross Shaft Typical Set General Arrangement Plan View – New Furnishings



	Length 'L' (ft)	Width 'W' (ft)
Cage Compartment	12' 10 1/2"	5'
South Skip Compt.	5' 7 1/4"	4' 7"
North Skip Compt.	5' 7 1/4"	4' 7"



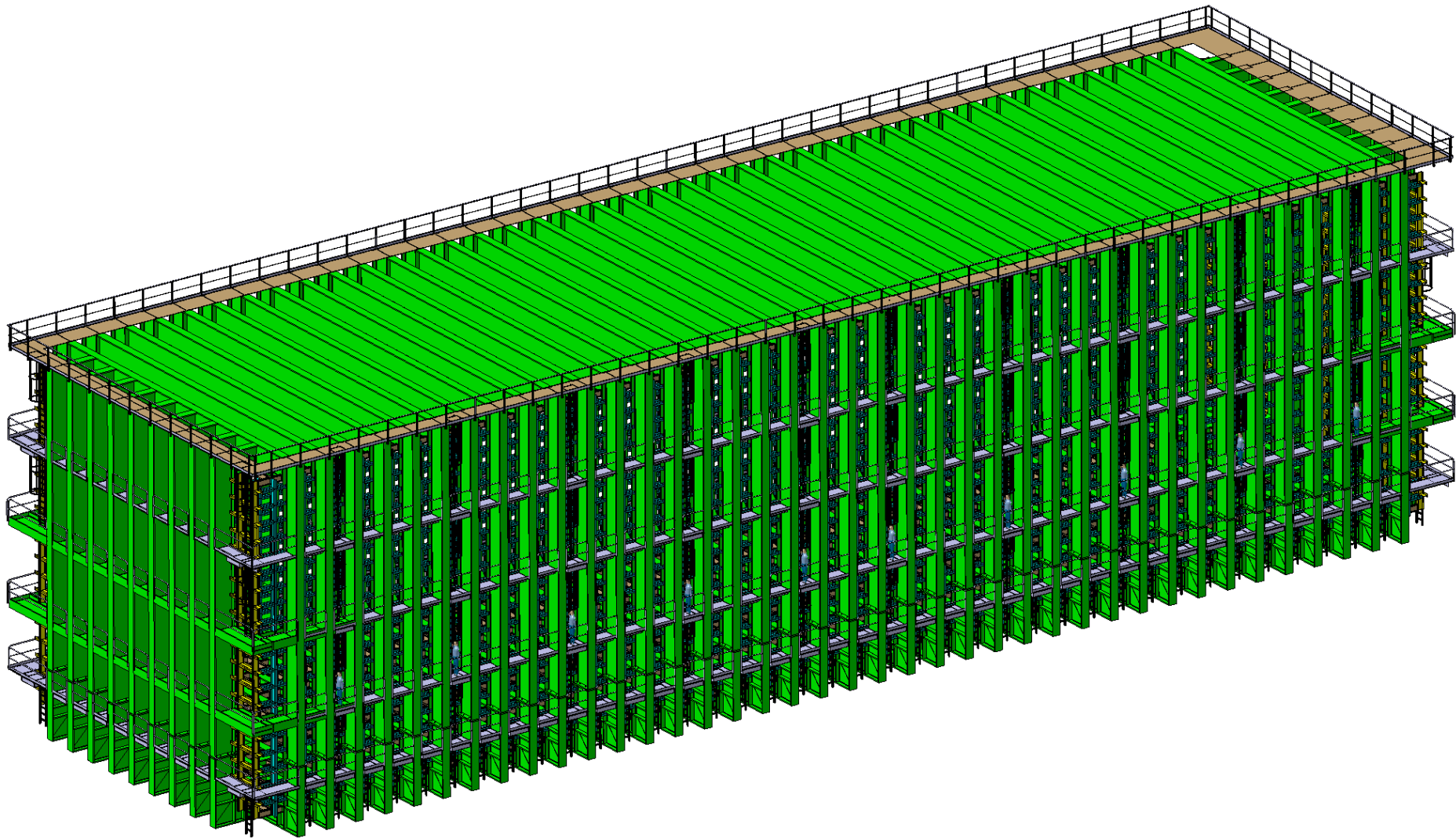
Top View

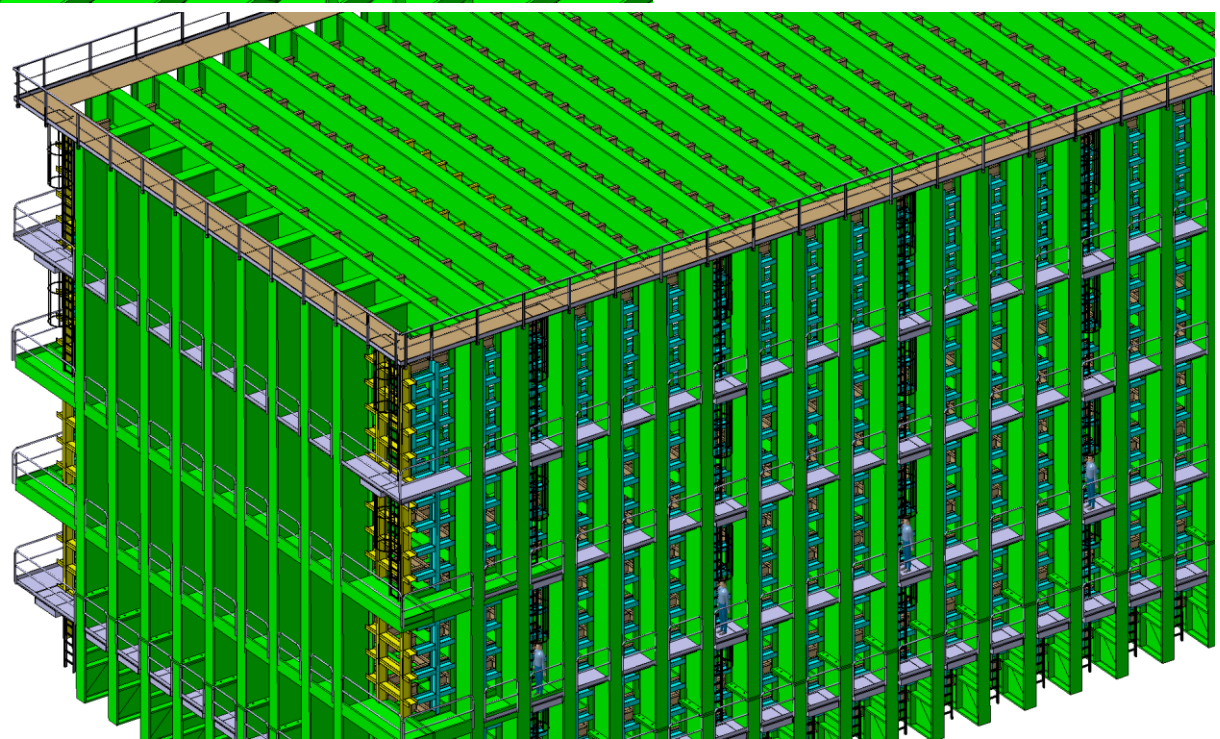
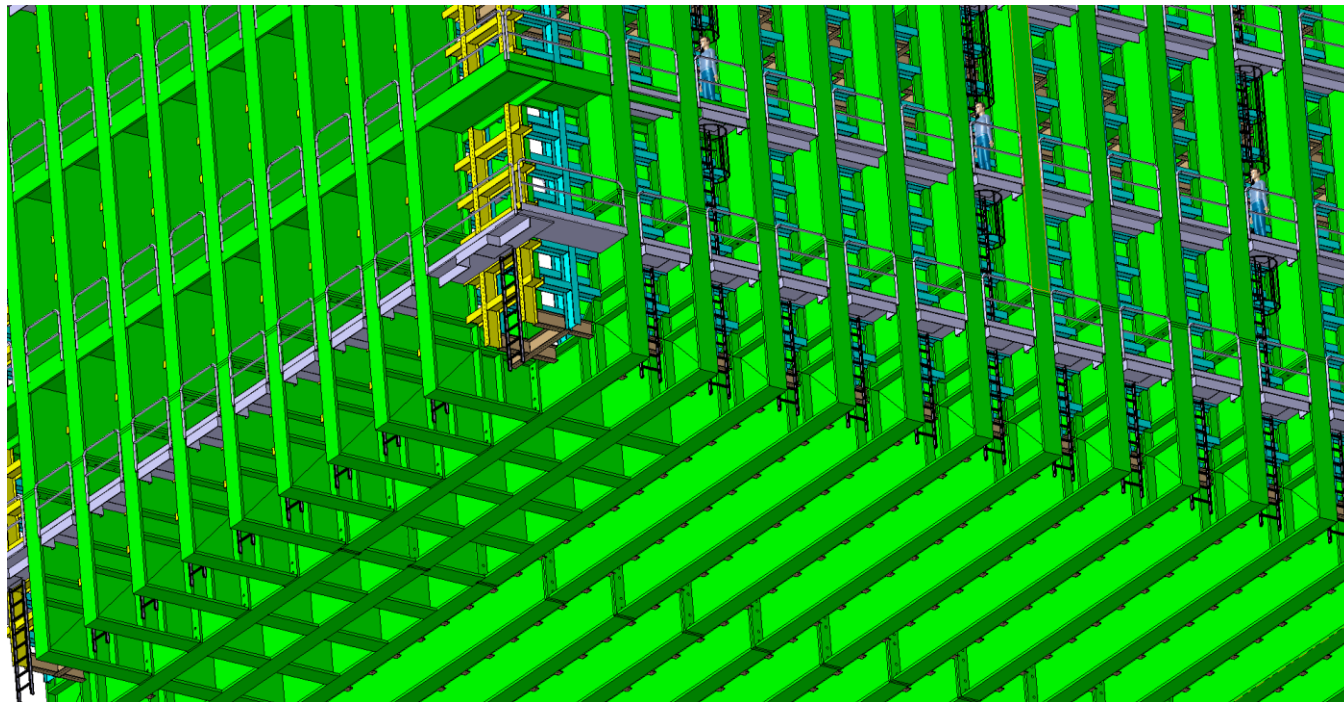
Table 1A (Cont'd)
Section I; Section III, Classes 2 and 3; Section VIII, Division 1; and Section XII
Maximum Allowable Stress Values S for Ferrous Materials
 (*See Maximum Temperature Limits for Restrictions on Class)

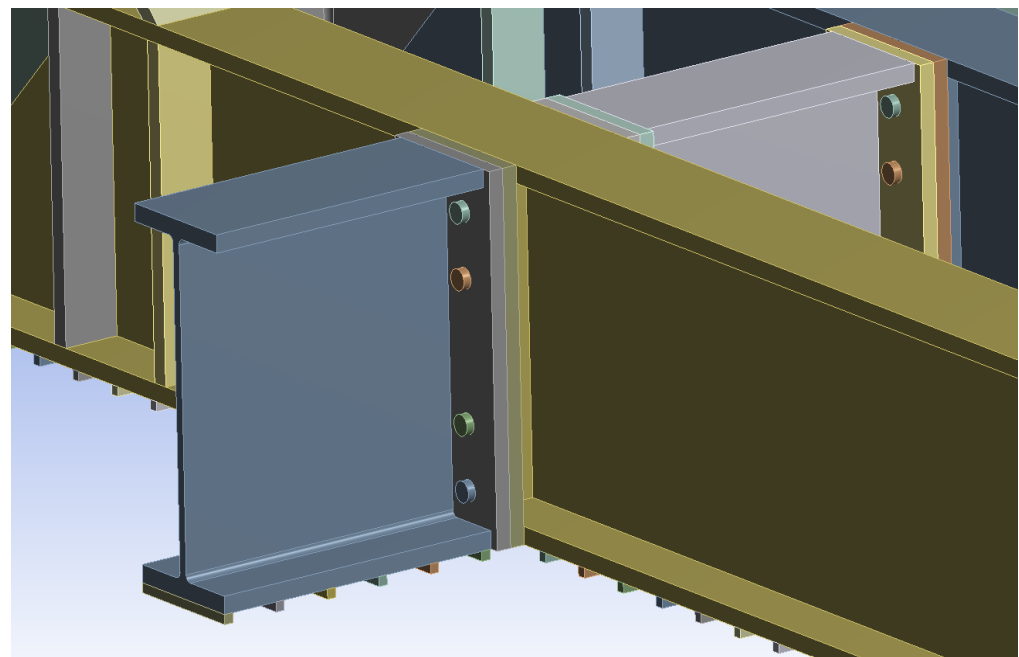
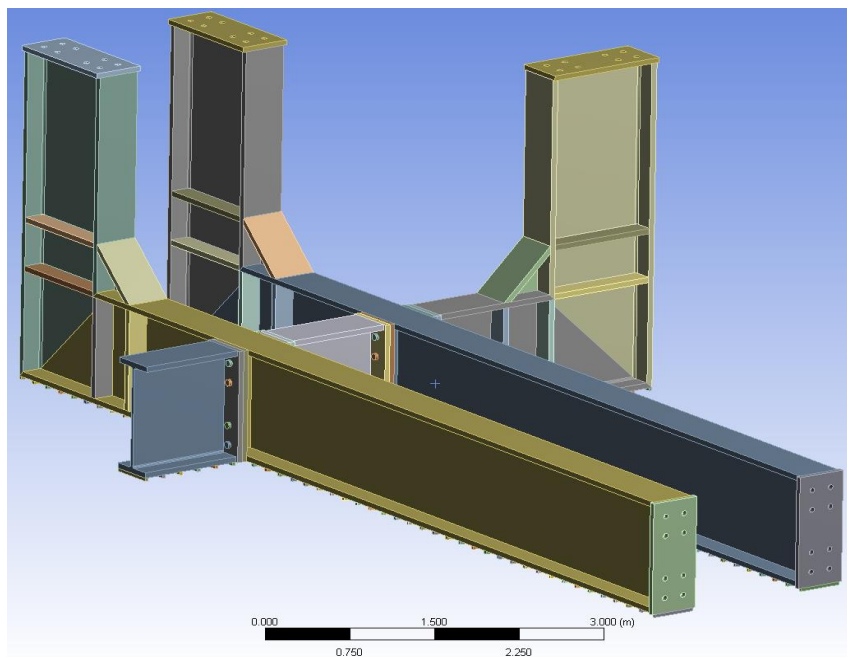
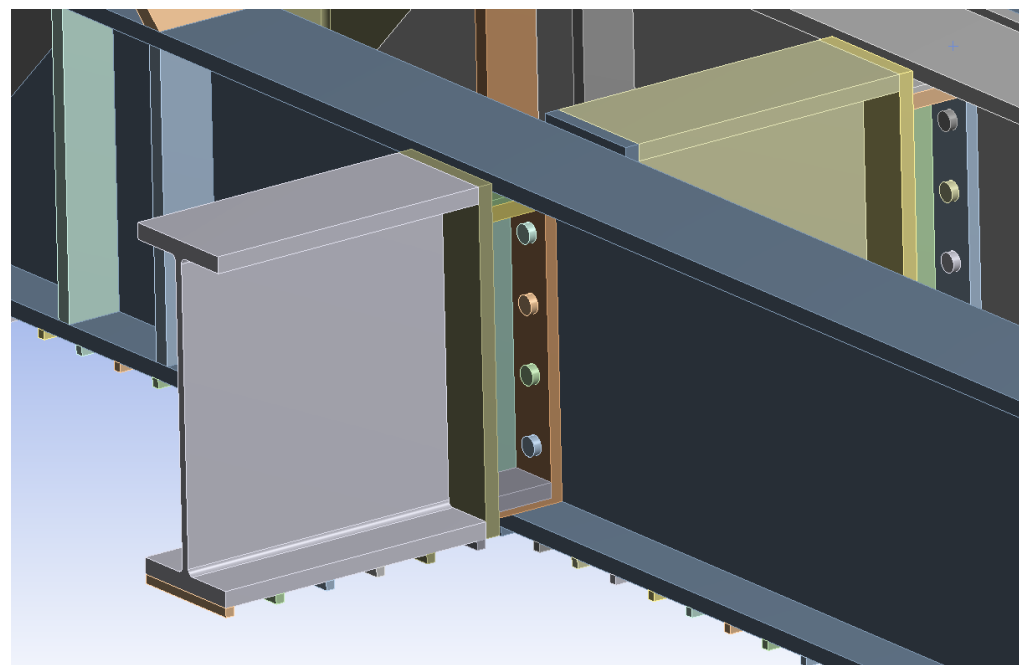
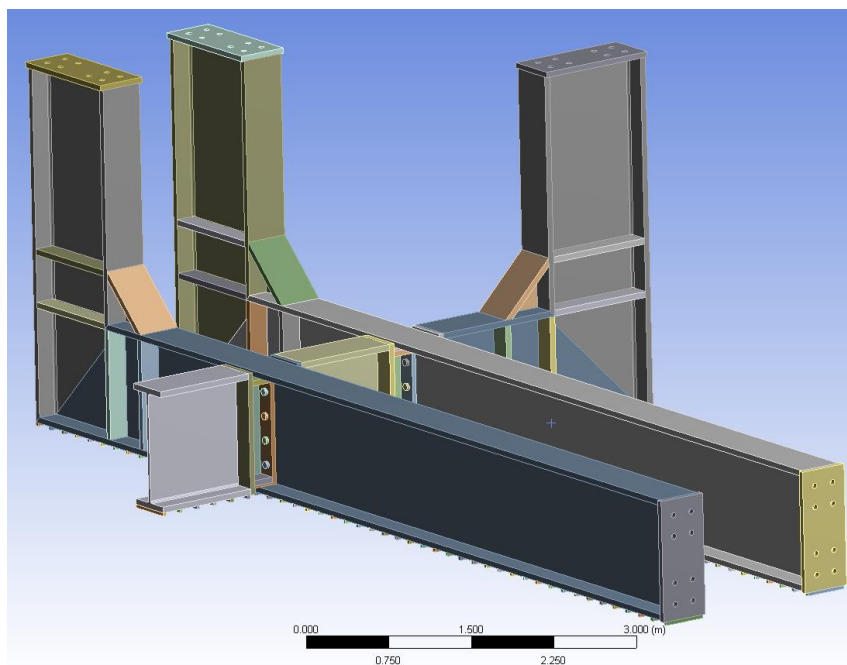
Table 1A (Cont'd)
Section I; Section III, Classes 2 and 3; Section VIII, Division 1; and Section XII
Maximum Allowable Stress Values S for Ferrous Materials
 (*See Maximum Temperature Limits for Restrictions on Class)

Line No.	Nominal Composition	Product Form	Spec. No.	Type/Grade	Alloy Desig./UNS No.	Class/Condition/ Temper	Size/Thickness, in.	P-No.	Applicability and Max. Temperature Limits (NP = Not Permitted) (SPT = Supports Only)		External Pressure Chart No.	Notes					
									Min. Tensile Strength, ksi	Min. Yield Strength, ksi							
1	5Ni-1/4Mo	Plate	SA-645	A	K41583	—	—	11A	1	95	65	NP	NP	250	250	CS-3	—
2	8Ni	Forgings	SA-522	II	K71340	—	—	11A	2	100	75	NP	200 (Cl. 3 only)	NP	NP	CS-3	G20, W5
3	8Ni	Plate	SA-553	II	K71340	—	—	11A	3	100	85	NP	200 (Cl. 3 only)	250	250	CS-3	G20, W5
4	8Ni	Plate	SA-553	II	K71340	—	—	11A	4	100	85	NP	200 (Cl. 3 only)	250	250	CS-3	G20, W4
(13) 5	9Ni	Plate	SA/EN 10028-4	X8Ni9	—	NNT640	≤2	11A	5	93	69.5	NP	NP	250	250	CS-3	G20
(13) 6	9Ni	Plate	SA/EN 10028-4	X8Ni9	—	QT640	≤2	11A	6	93	69.5	NP	NP	250	250	CS-3	G20
(13) 7	9Ni	Plate	SA/EN 10028-4	X7Ni9	—	QT	≤2	11A	7	98.5	83.5	NP	NP	250	250	CS-3	G20, W4
(13) 8	9Ni	Plate	SA/EN 10028-4	X7Ni9	—	QT	≤2	11A	8	98.5	83.5	NP	NP	250	250	CS-3	G20, W5
(13) 9	9Ni	Plate	SA/EN 10028-4	X8Ni9	—	QT680	≤2	11A	9	98.5	83.5	NP	NP	250	250	CS-3	G20, W4
(13) 10	9Ni	Plate	SA/EN 10028-4	X8Ni9	—	QT680	≤2	11A	10	98.5	83.5	NP	NP	250	250	CS-3	G20, W5
11	9Ni	Smls. & wld. pipe	SA-333	8	K81340	—	—	11A	11	100	75	NP	200 (Cl. 3 only)	NP	NP	CS-3	G20, W12
12	9Ni	Smls. & wld. pipe	SA-333	8	K81340	—	—	11A	12	100	75	NP	200 (Cl. 3 only)	NP	NP	CS-3	G20, W5, W12
13	9Ni	Smls. pipe	SA-333	8	K81340	—	—	11A	13	100	75	NP	NP	250	250	CS-3	G20, W4
14	9Ni	Smls. pipe	SA-333	8	K81340	—	—	11A	14	100	75	NP	NP	250	250	CS-3	G20, W5
15	9Ni	Wld. pipe	SA-333	8	K81340	—	—	11A	15	100	75	NP	NP	250	250	CS-3	G20, G24, W3
16	9Ni	Wld. tube	SA-334	8	K81340	—	—	11A	16	100	75	NP	200 (Cl. 3 only)	NP	NP	CS-3	G20, W12
17	9Ni	Smls. & wld. tube	SA-334	8	K81340	—	—	11A	17	100	75	NP	200 (Cl. 3 only)	NP	NP	CS-3	G20, W5, W12
18	9Ni	Smls. tube	SA-334	8	K81340	—	—	11A	18	100	75	NP	NP	250	250	CS-3	G20, W4
19	9Ni	Smls. tube	SA-334	8	K81340	—	—	11A	19	100	75	NP	NP	250	250	CS-3	G20, W5
20	9Ni	Wld. tube	SA-334	8	K81340	—	—	11A	20	100	75	NP	NP	250	250	CS-3	G20, G24, W3
21	9Ni	Plate	SA-353	—	K81340	—	—	11A	21	100	75	NP	200 (Cl. 3 only)	250	250	CS-3	G20, W4
22	9Ni	Plate	SA-353	—	K81340	—	—	11A	22	100	75	NP	NP	250	250	CS-3	G20, W5
23	9Ni	Plate	SA-353	—	K81340	—	—	11A	23	100	75	NP	200 (Cl. 3 only)	NP	NP	CS-3	G20, W5
24	9Ni	Smls. & wld. fittings	SA-420	WPL8	K81340	—	—	11A	24	100	75	NP	NP	250	250	CS-3	G20, W4
25	9Ni	Smls. & wld. fittings	SA-420	WPL8	K81340	—	—	11A	25	100	75	NP	NP	250	250	CS-3	G20, W3
26	9Ni	Forgings	SA-522	I	K81340	—	—	11A	26	100	75	NP	200 (Cl. 3 only)	250	250	CS-3	G20, S8, W4
27	9Ni	Forgings	SA-522	I	K81340	—	—	11A	27	100	75	NP	NP	250	250	CS-3	G20, S8, W5
28	9Ni	Plate	SA-553	I	K81340	—	—	11A	28	100	85	NP	200 (Cl. 3 only)	250	250	CS-3	G20, W4
29	9Ni	Plate	SA-553	I	K81340	—	—	11A	29	100	85	NP	200 (Cl. 3 only)	250	250	CS-3	G20, W5
30	25Ni-15Cr-2Ti	Bar	SA-638	660	S66286	—	—	—	30	130	85	NP	700	700	NP	HA-5	W1
31	27Ni-22Cr-7Mo-Mn-Cu-N	Smls. tube	SA-213	—	S31277	—	—	45	31	112	52	NP	NP	800	NP	NFN-26	G5
32	27Ni-22Cr-7Mo-Mn-Cu-N	Smls. tube	SA-213	—	S31277	—	—	45	32	112	52	NP	NP	800	NP	NFN-26	—
33	27Ni-22Cr-7Mo-Mn-Cu-N	Plate	SA-240	—	S31277	—	—	45	33	112	52	NP	NP	800	NP	NFN-26	G5
34	27Ni-22Cr-7Mo-Mn-Cu-N	Plate	SA-240	—	S31277	—	—	45	34	112	52	NP	NP	800	NP	NFN-26	—
35	27Ni-22Cr-7Mo-Mn-Cu-N	Wld. tube	SA-249	—	S31277	—	—	45	35	112	52	NP	NP	800	NP	NFN-26	G3, G5
36	27Ni-22Cr-7Mo-Mn-Cu-N	Wld. tube	SA-249	—	S31277	—	—	45	36	112	52	NP	NP	800	NP	NFN-26	—
37	29Ni-20Cr-3Cu-2Mo	Castings	SA-351	CN7M	J95150	—	—	45	37	62	25	600	600 (Cl. 3 only)	600	NP	NFN-9	G1, G5
38	29Ni-20Cr-3Cu-2Mo	Castings	SA-351	CN7M	J95150	—	—	45	38	62	25	600	NP	600	NP	NFN-9	G1
39	16Cr-4Ni-6Mn	Plate	SA-240	201LN	S20153	—	—	8	39	95	45	NP	NP	800	650	HA-6	G5
40	16Cr-4Ni-6Mn	Plate	SA-240	201LN	S20153	—	—	8	40	95	45	NP	NP	800	650	HA-6	—
41	16Cr-9Mn-2Ni-N	Plate	SA-240	204	S20400	—	—	8	41	95	48	NP	NP	900	650	HA-6	G5
42	16Cr-9Mn-2Ni-N	Plate	SA-240	204	S20400	—	—	8	42	95	48	NP	NP	900	650	HA-6	—

Line No.	Nominal Composition	Product Form	Spec. No.	Type/Grade	Alloy Desig./UNS No.	Class/Condition/ Temper	Size/Thickness, in.	P-No.	Applicability and Max. Temperature Limits (NP = Not Permitted) (SPT = Supports Only)		External Pressure Chart No.	Notes
									Min. Tensile Strength, ksi	Min. Yield Strength, ksi		
1	95	65	NP	NP	250	250	CS-3	—				
2	100	75	NP	200 (Cl. 3 only)	NP	NP	CS-3	G20, W5				
3	100	85	NP	200 (Cl. 3 only)	250	250	CS-3	G20, W5				
4	100	85	NP	200 (Cl. 3 only)	250	250	CS-3	G20, W4				
5	93	69.5	NP	NP	250	250	CS-3	G20				
6	93	69.5	NP	NP	250	250	CS-3	G20				
7	98.5	83.5	NP	NP	250	250	CS-3	G20, W4				
8	98.5	83.5	NP	NP	250	250	CS-3	G20, W5				
9	98.5	83.5	NP	NP	250	250	CS-3	G20, W4				
10	98.5	83.5	NP	NP	250	250	CS-3	G20, W5				
11	100	75	NP	200 (Cl. 3 only)	NP	NP	CS-3	G20, W12				
12	100	75	NP	200 (Cl. 3 only)	NP	NP	CS-3	G20, W5, W12				
13	100	75	NP	NP	250	250	CS-3	G20, W4				
14	100	75	NP	NP	250	250	CS-3	G20, W5				
15	100	75	NP	NP	250	250	CS-3	G20, G24, W3				
16	100	75	NP	200 (Cl. 3 only)	NP	NP	CS-3	G20, W12				
17	100	75	NP	200 (Cl. 3 only)	NP	NP	CS-3	G20, W5, W12				
18	100	75	NP	NP	250	250	CS-3	G20, W4				
19	100	75	NP	NP	250	250	CS-3	G20, W5				
20	100	75	NP	NP	250	250	CS-3	G20, G24, W3				
21	100	75	NP	200 (Cl. 3 only)	250	250	CS-3	G20, W4				
22	100	75	NP	NP	250	250	CS-3	G20, W5				
23	100	75	NP	200 (Cl. 3 only)	NP	NP	CS-3	G20, W5				
24	100	75	NP	NP	250	250	CS-3	G20, W4				
25	100	75	NP	NP	250	250	CS-3	G20, W3				
26	100	75	NP	200 (Cl. 3 only)	250	250	CS-3	G20, S8, W4				
27	100	75	NP	NP	250	250	CS-3	G20, S8, W5				
28	100	85	NP	200 (Cl. 3 only)	250	250	CS-3	G20, W4				
29	100	85	NP	200 (Cl. 3 only)	250	250	CS-3	G20, W5				
30	130	85	NP	700	700	NP	HA-5	W1				
31	112	52	NP	NP	800	NP	NFN-26	G5				
32	112	52	NP	NP	800	NP	NFN-26	—				
33	112	52	NP	NP	800	NP	NFN-26	G5				
34	112	52	NP	NP	800	NP	NFN-26	—				
35	112	52	NP	NP	800	NP	NFN-26	G3, G5				
36	112	52	NP	NP	800	NP	NFN-26	—				
37	62	25	600	600 (Cl. 3 only)	600	NP	NFN-9	G1, G5				
38	62	25	600	NP	600	NP	NFN-9	G1				
39	95	45	NP	NP	800	650	HA-6	G5				
40	95	45	NP	NP	800	650	HA-6	—				
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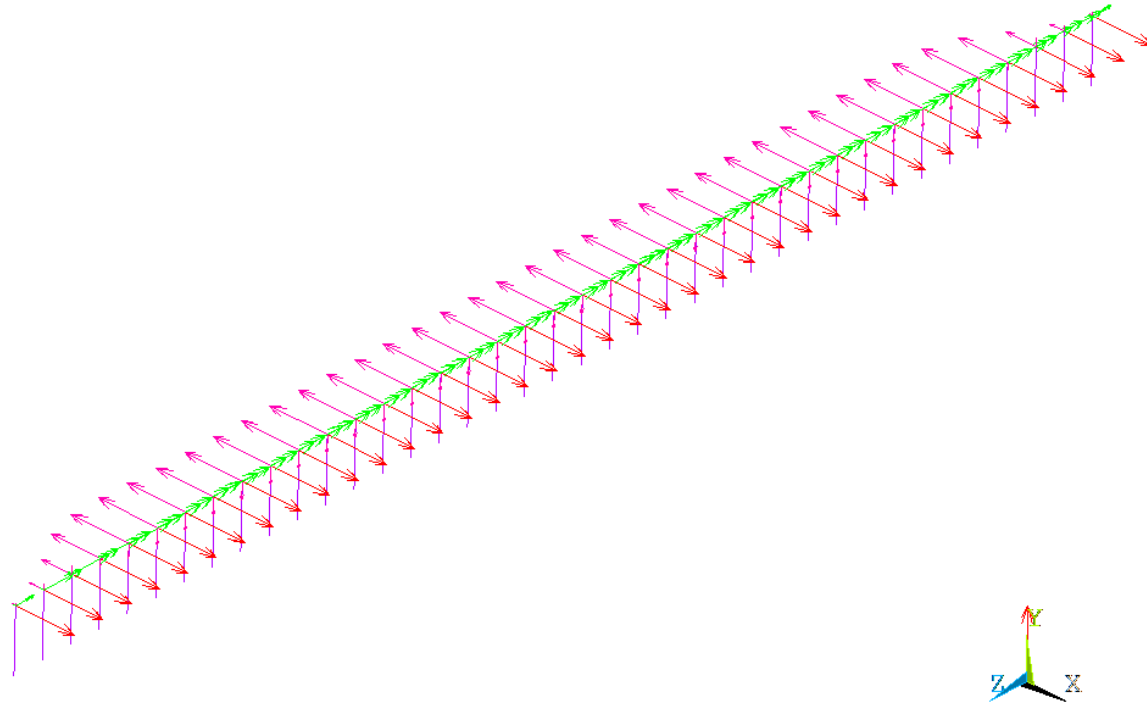
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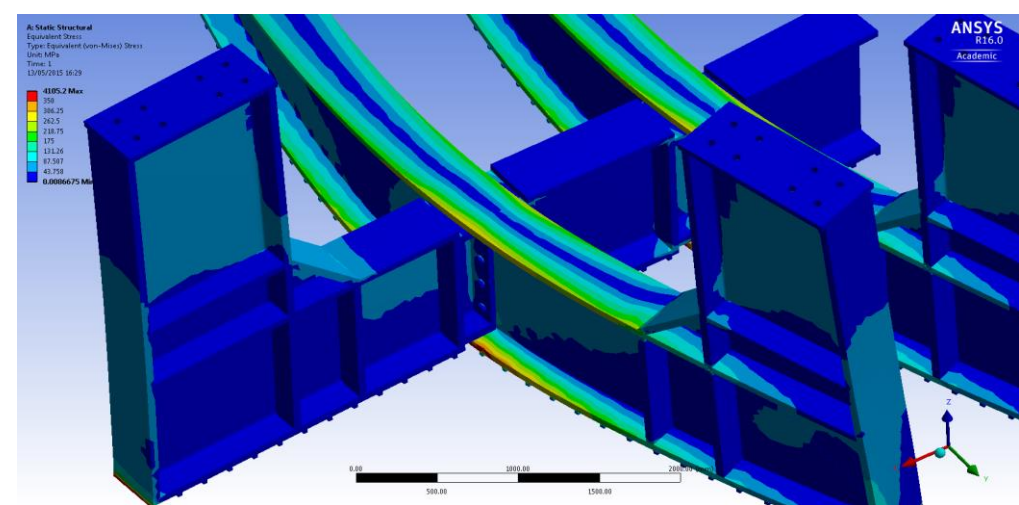
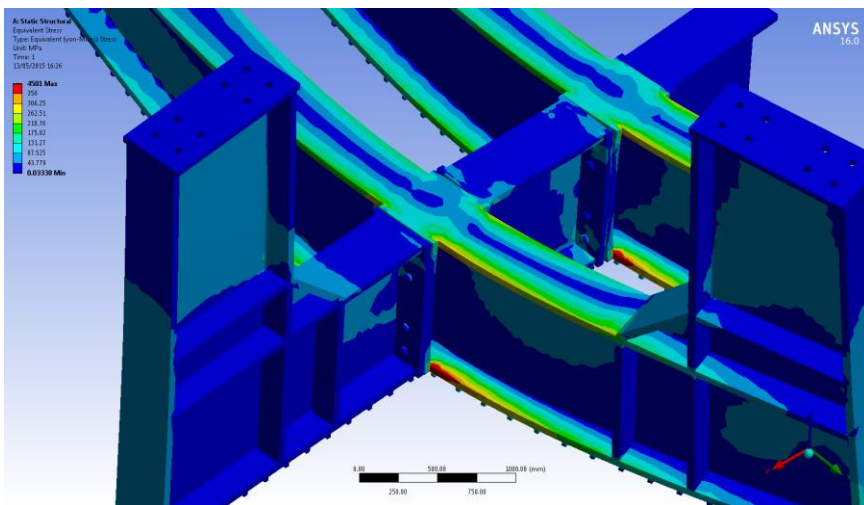
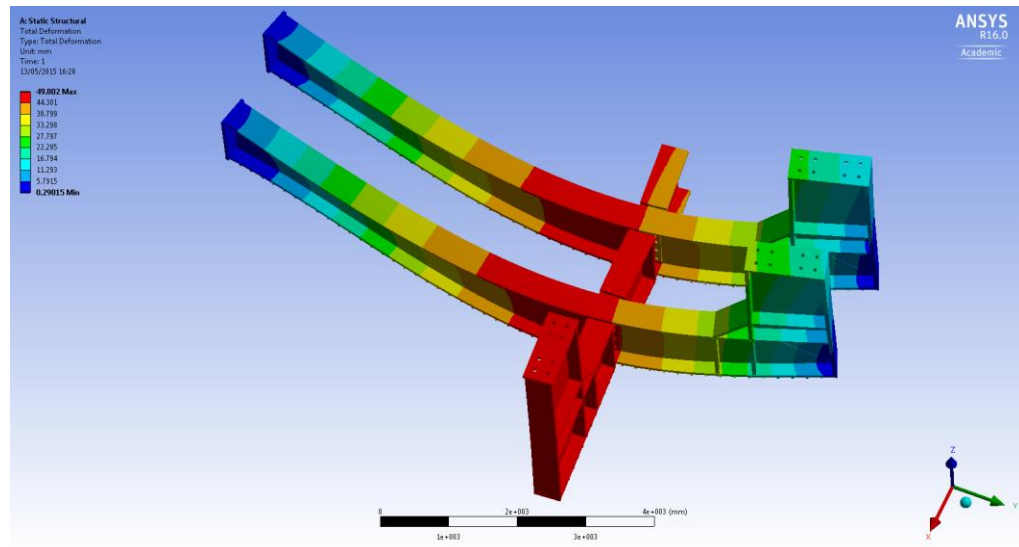
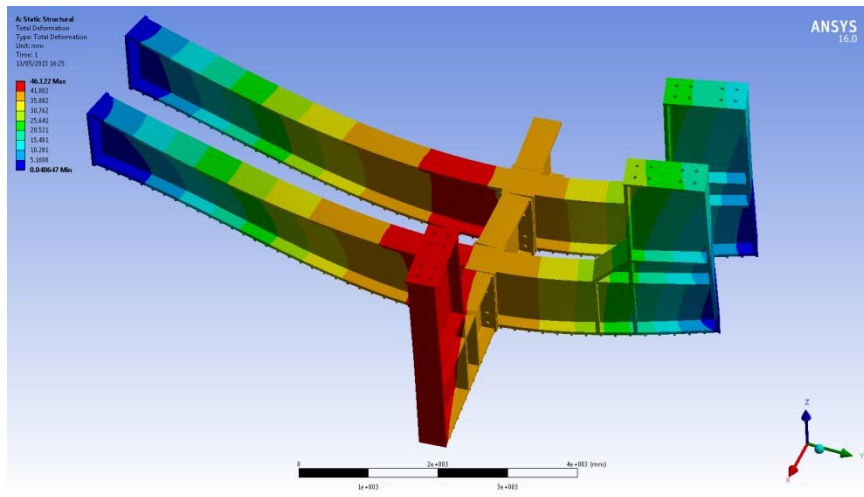
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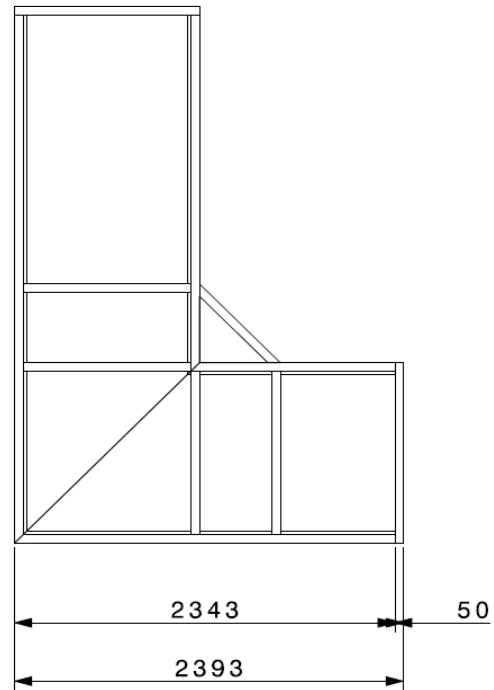
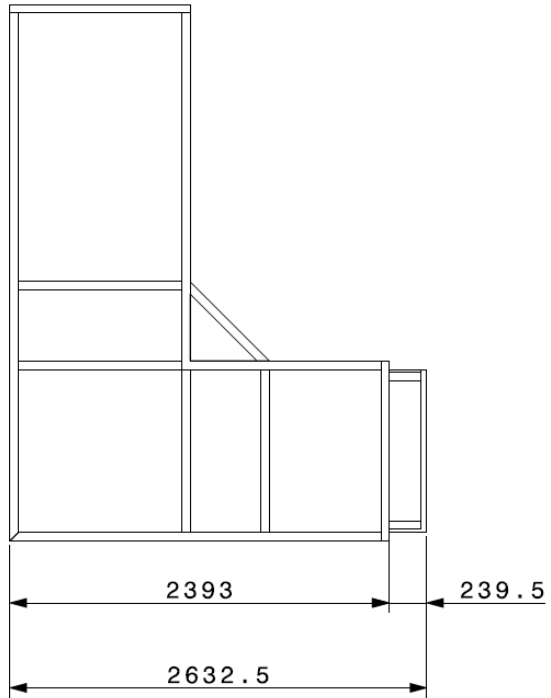
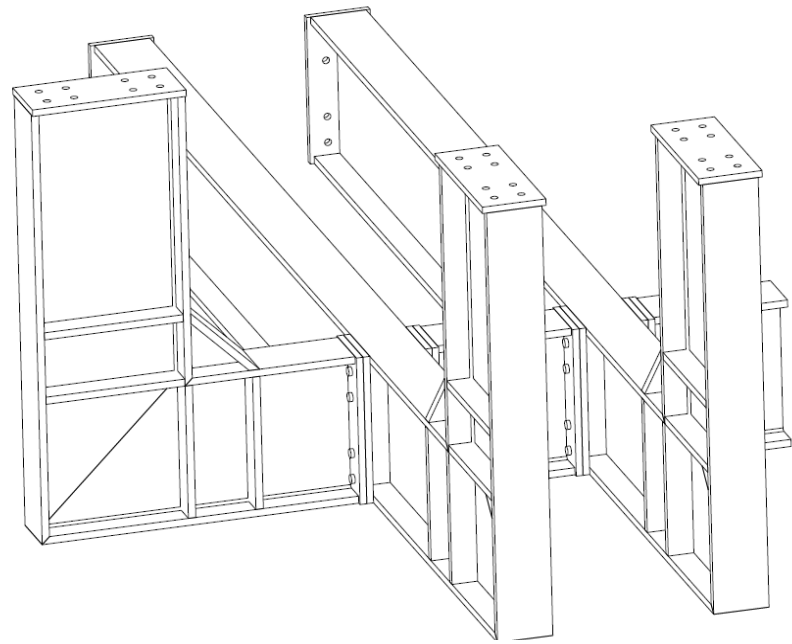
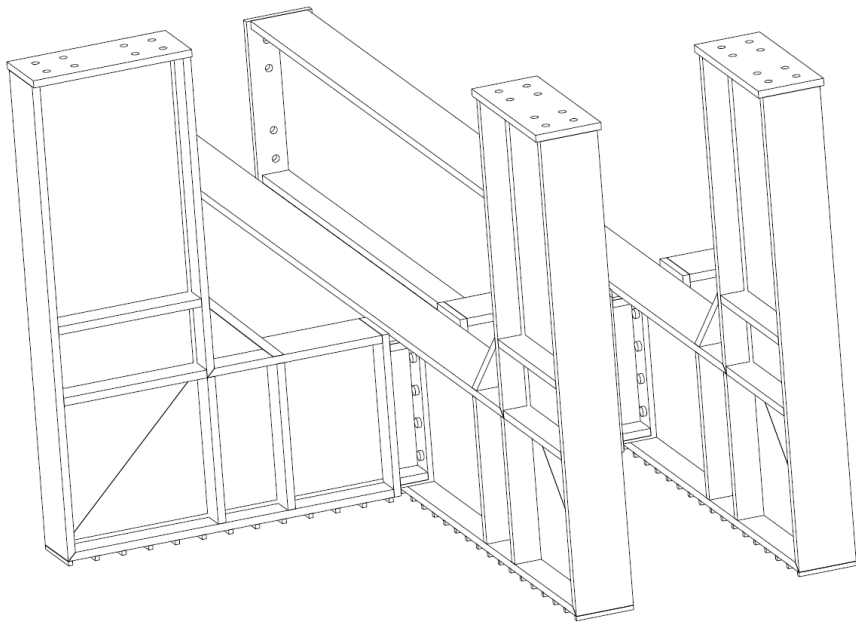
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MAY 13 2015
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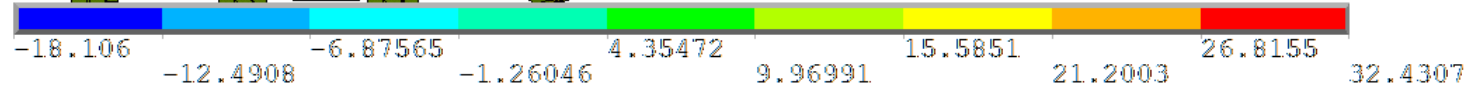
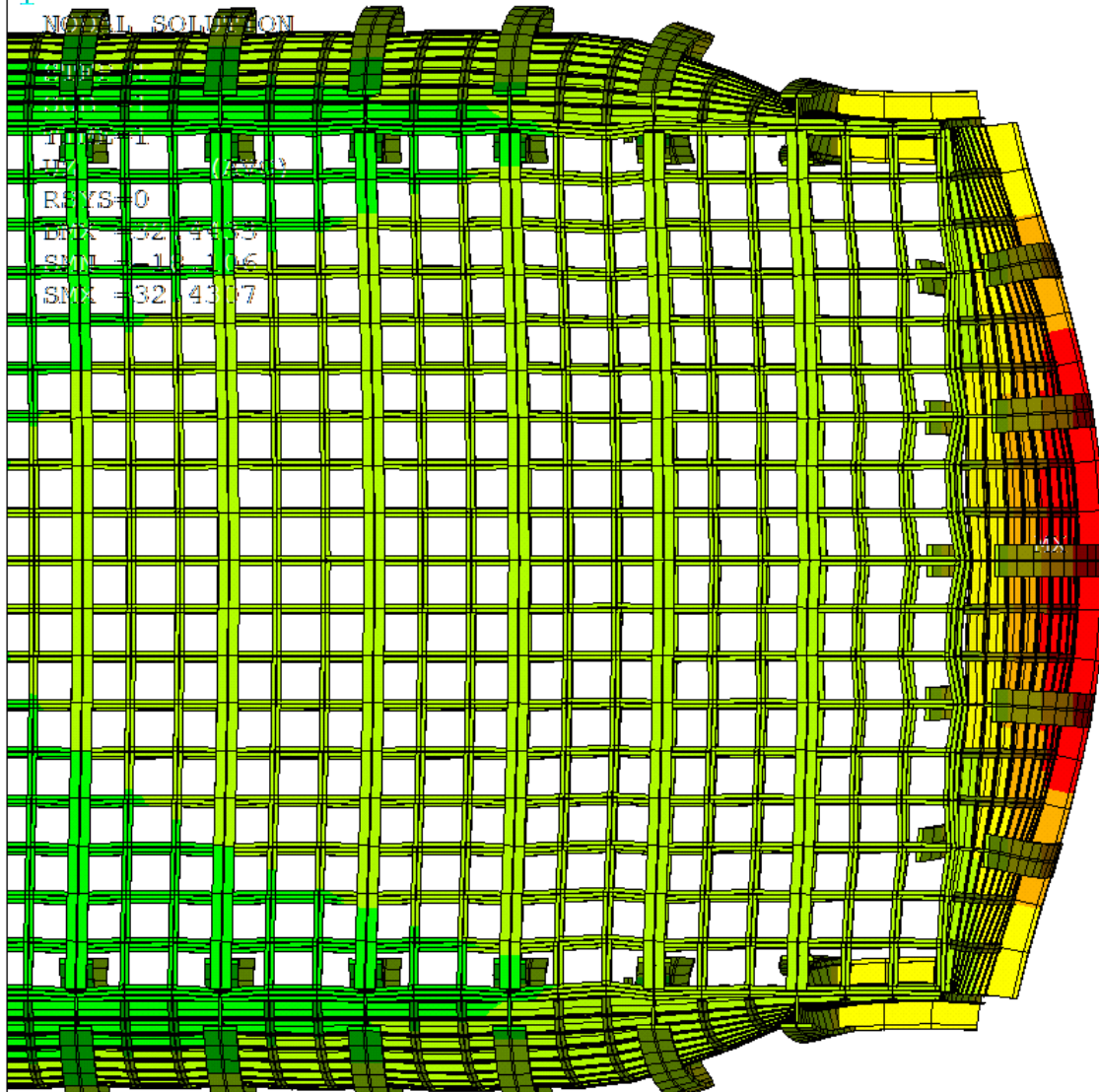
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NODAL SOLUTION

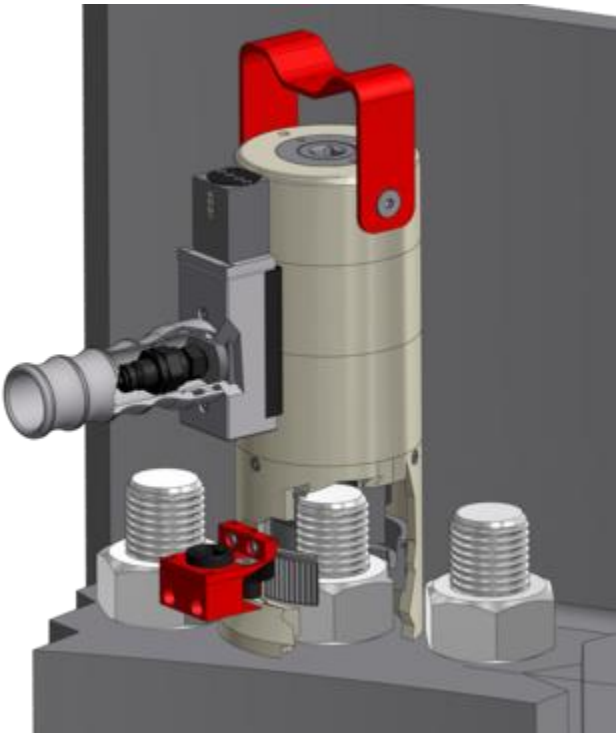
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MS 20 - 10.9	33.02789						
MS 22 - 10.9	33.02790						
MS 24 - 10.9	33.02791	72,389	M 24	7/8	1 4/9	2.60	6.77
MS 27 - 10.9	33.02792	85,270	M 27	1	1 5/8	2.81	6.56
MS 30 - 10.9	33.02793	102,873	M 30	1 1/8	1 4/5	3.03	7.57
MS 33 - 10.9	33.02794	127,467	M 33	1 1/4	2	3.33	7.15
MS 36 - 10.9	33.02795	149,723	M 36	1 3/8	2 1/5	3.68	7.78
MS 39 - 10.9	33.02796	179,848	M 39	1 1/2	2 3/8	3.92	8.27
MS 42 - 10.9	33.02797	207,724	M 42	1 5/8	2 4/7	4.21	8.66
MS 45 - 10.9	33.02798	242,795	M 45	1 3/4	2 3/4	4.45	8.90
MS 48 - 10.9	33.02799	274,583	M 48	1 7/8	3	4.78	9.09

[VIDEO 1](#)

[VIDEO 2](#)

