



DLR Group

Architecture
Engineering
Planning
Interiors

Lee's Summit Middle School #4

Lee's Summit, MO

Structural Calculations

DLR Group Project No. 13-20102-00



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Structural Systems

I. Overview

The Lee's Summit New Middle School project will consist of an approximately 200,000 sf new two-story building, with a competition gym and an auxiliary gym. The auxiliary gymnasium will be designed as a storm shelter for increased occupant protection during a severe wind event.

The project will include a one-story restroom and concession building located near the baseball/softball fields.

Structural design will be in accordance with the International Building Code 2018 Edition as adopted and amended by the City of Lee's Summit, Missouri. Structural design of the storm shelter will be in accordance with ICC 500-2014 ICC/NSSA "Standard for the Design and Construction of Storm Shelters".

II. Structural Systems Description

- A. Roof Systems: The typical roof framing be 1½" x 20 gage wide rib (Type B) painted metal roof deck supported by open-web steel joists and structural steel beams spanning between steel girders supported by steel columns.

The gym addition will consist of long span steel joist supporting acoustic metal roof deck supported by 10" thick load bearing precast wall panels. Dovetail acoustic metal roof deck (e.g. Epic ER2RA, or equal) will be provided at the commons area. Dovetail acoustic metal roof deck (e.g. Epic ER3.5A, or equal) will be provided at the main gym roof.

The roof framing for the restroom and concession building will consist of plywood sheathing on pre-engineered wood trusses supported by load bearing concrete masonry walls. The design of the wood trusses will be a delegated design with the material properties to be determined by the designer. The truss fabricator shall be an "Approved Fabricator" in accordance with IBC Section 1704.2.5.

- B. Floor Systems: The typical elevated floor framing system will consist of a 4½" thick reinforced concrete slab over 2" x 20 gage composite metal deck (6½" total thickness) capable of spanning 8'-0" to 10'-0" between steel beams. Typical steel beams will be designed with headed studs to engage the slab in a composite manner.

Learning stairs will be constructed of cast-in-place concrete over composite metal deck supported by composite steel beams.

- C. Shelter Systems: Roof framing at the hardened area is anticipated to be precast double tees spanning between load bearing precast walls. 52-inch deep double tees are currently anticipated. The double tees will be topped with a minimum of 4" thick normal weight concrete reinforced with #4 @ 12 each way for missile impact resistance. Precast load bearing wall panels are assumed to have a minimum structural thickness of 14". The total panel thickness may be greater due to architectural considerations. Panel joints shall be interlocking type or 3/8" maximum for impact resistance. The hardened area will be separated from the surrounding structure by expansion joints. All mechanical duct penetrations shall be protected with baffled steel plates or rated louvers.

- D. Foundation Systems: A geotechnical investigation has not yet been performed at this site and geotechnical recommendations are not yet available. It is currently being assumed that foundations will consist of isolated and continuous shallow foundations that bear on suitable soil materials prepared as recommended by the project geotechnical engineer.

All footings and foundations will be cast-in-place concrete and reinforced with ASTM A615 Grade 60 reinforcing steel. Perimeter trench footings will extend to frost depth as required by the building code and as recommended by the project geotechnical engineer. Slabs on grade will be a minimum of 4 inches thick and reinforced with welded wire reinforcement. Slabs on grade will be placed over a 15 mil vapor retarder placed on a minimum of 4 inches of granular drainage fill over the subgrade prepared as recommended by the project geotechnical engineer's report. Over-excavation of unsuitable fill and soft materials may be required. Unsuitable materials will be replaced with engineered fill as recommended by the project geotechnical engineer's report.

- E. Lateral Systems: Typical resistance to wind and seismic lateral forces will be provided by structural steel systems not specifically designed for seismic resistance (braced frames) and intermediate precast shear walls. Based upon assumed Site Class "D" the Seismic Design Category is "B" typically, and "C" at the storm shelter.

Resistance to wind and seismic lateral forces in the restroom and concession building will be provided by intermediate reinforced masonry shear walls.

III. Structural Design Criteria

- A. Roof and Floor Dead Loads
Dead loads for design shall be the actual weights of materials of construction and fixed service equipment.

- B. Roof Live Loads
 - 1. 20 psf minimum (25 psf for preliminary design)
 - 2. Roof top unit weights
 - 3. No live load reductions
- C. Floor Live Loads
 - 1. ASCE 7-16, Chapter 4
- D. Snow Loads
 - 1. ASCE 7-16, Chapter 7
 - 2. Ground snow load, $P_g = 20$ PSF
 - 3. Occupancy Category: III (ASCE 7-16, Table 1.5-1)
 - 4. Exposure Factor, $C_e = 1.0$ Terrain Category C, Partially Exposed (ASCE 7-16, Table 7.3-1)
 - 5. Importance Factor, $I_s = 1.1$ (ASCE 7-16, Table 1.5-2)
 - 6. Thermal Factor, $C_t = 1.0$ (ASCE 7-16, Table 7.3-2)
 - 7. Minimum roof snow load, $P_m = 22$ PSF

Storm Shelter

 - 1. Occupancy Category: IV (ASCE 7-16, Table 1.5-1)
 - 2. Importance Factor, $I_s = 1.2$ (ASCE 7-16, Table 1.5-1)
 - 3. Minimum uniform roof snow load, $P_m = 24$ PSF (Independent load case)
- D. Wind Loads
 - 1. ASCE 7-16, Chapter 26-30
 - 2. Directional Procedure (ASCE 7-16, Chapter 27)
 - 3. Occupancy Category: III (ASCE 7-16, Table 1.5-1)
 - 4. Importance Factor: 1.00 (ASCE 7-16, Table 1.5-2)
 - 5. 120 mph Basic Wind Speed (3-sec gust) (ASCE 7-16, Figure 26.5-1)
 - 6. Exposure Category C (ASCE 7-16, Section 26.7.3)
 - 7. Enclosure Classification: Enclosed

Storm Shelter

 - 1. 250 mph Ultimate Wind Speed (3-sec gust) ICC 500-14, Figure 304.2(1)
 - 2. Enclosure Classification: Partially Enclosed
- E. Seismic Loads
 - 1. IBC 2018, Section 1613 and ASCE 7-16, Chapters 11 and 12
 - 2. Site Class: D (Assumed)
 - 3. $S_s \sim 0.101$ (IBC 2018 Figure 1613.2.1(1))
 - 4. $S_1 \sim 0.069$ (IBC 2018 Figure 1613.2.1(2))
 - 5. $F_a = 1.6$ (IBC 2018, Table 1613.2.3(1))
 - 6. $F_v = 2.4$ (IBC 2018, Table 1613.2.3(2))
 - 7. $S_{MS} = 0.161$ (IBC 2018, Eq. 16-36)
 - 8. $S_{M1} = 0.165$ (IBC 2018, Eq. 16-37)

9. $S_{DS} = 0.107$ (IBC 2018, Eq. 16-38)
10. $S_{D1} = 0.110$ (IBC 2018, Eq. 16-39)
11. Seismic Design Category: B (IBC 2018, Tables 1613.2.5(1) & 1613.2.5(2))
12. Steel systems not specifically designed for seismic resistance (ASCE 7-16, Table 12.2.1) $R = 3$, $\Omega = 3$, $C_d = 3$
13. Intermediate precast shear walls (ASCE 7-16, Table 12.2.1) $R = 4$, $\Omega = 2 \frac{1}{2}$, $C_d = 4$
14. Intermediate reinforced masonry shear walls (ASCE 7-16, Table 12.2.1) $R = 3 \frac{1}{2}$, $\Omega = 2 \frac{1}{2}$, $C_d = 2 \frac{1}{4}$
15. Importance Factor, $I_e = 1.25$ (ASCE 7-16, Table 1.5-2)

Storm Shelter

1. Seismic Design Category: C
2. Intermediate precast shear walls (ASCE 7-16, Table 12.2.1) $R = 4$, $\Omega = 2 \frac{1}{2}$, $C_d = 4$
3. Risk Category: IV (ASCE 7-16, Table 1.5-2)
4. Importance Factor, $I_e = 1.50$ (ASCE 7-16, Table 1.5-2)

IV. Materials

E. Structural Steel

1. Wide flange shapes shall conform to ASTM A992 Grade 50
2. Channels and angles shall conform to ASTM A36
3. Round Hollow Structural Sections (HSS) shall conform to ASTM A500 Grade B ($F_y = 42$ ksi, $F_u = 58$ ksi)
4. Square and Rectangular Hollow Structural Sections (HSS) shall conform to ASTM A500 Grade B ($F_y = 46$ ksi, $F_u = 58$ ksi)
5. Angles and structural plates shall conform to ASTM A36
6. High strength bolts shall conform to ASTM A325, Type 1
7. Threaded rods shall conform to ASTM A36
8. Anchor rods shall conform to ASTM F1554 Grade 55, weldable
9. Base plates shall conform to ASTM A36

F. Cast-In-Place Concrete

1. Reinforcing Steel: All reinforcing steel shall conform to ASTM A615, Grade 60 unless noted otherwise on the drawings
2. All concrete is normal weight concrete
3. Deformed bar anchors shall conform to ASTM A496. ($F_y = 70$ ksi)
4. Weldable Reinforcing steel shall conform to ASTM 706
5. Headed stud anchors shall conform to ASTM A108. ($F_u = 60$ ksi)
6. Spread (dug) footings $f'_c = 4500$ psi, exposure category F2, C1
7. Shallow foundations $f'_c = 4500$ psi, exposure category F2, C1
8. Foundation walls $f'_c = 4500$ psi, exposure category F2, C1

- 9. Interior slab on Grade $f'c = 4000$ psi, exposure category F0, C0
- 10. Composite floor slabs $f'c = 4000$ psi, exposure category F0, C0

- G. Precast Concrete
 - 1. Precast Concrete shall be 5000 psi NWT
 - 2. Mild Reinforcing steel shall conform to ASTM A615 Grade 60.
 - 3. Prestressing Tendons shall be uncoated, 7-wire, stress-relieved strand ASTM A416, Grade 270K.
 - 4. Deformed bar anchors shall conform to ASTM A496 ($F_y = 70$ ksi)
 - 5. Weldable Reinforcing steel shall conform to ASTM 706.
 - 6. Headed stud anchors shall conform to ASTM A108 ($F_u = 60$ ksi)

- H. Structural Masonry
 - 1. Reinforcing Steel: All reinforcing steel shall conform to ASTM A615, Grade 60 unless noted otherwise on the drawings
 - 2. Masonry units shall be normal weight units
 - 3. $F'm = 2,000$ psi

- I. Wood for Rough Carpentry
 - 1. Douglas Fir Larch No. 2 or better

V. Geotechnical Recommendations

Final geotechnical recommendations are pending.

VI. Structural Specifications

033000 Cast-In-Place Concrete
034100 Precast Structural Concrete
042000 Unit Masonry
051200 Structural Steel Framing
052100 Steel Joist Framing
053100 Steel Decking
061516 Wood Roof Decking
061000 Rough Carpentry
061600 Sheathing
061753 Shop-Fabricated Wood Trusses

VII. Structural Design Codes

2018 International Building Code
ASCE 7-16 Minimum Design Loads for Buildings and Other Structures

Lee's Summit New Middle School
Schematic Design Submittal: February 20, 2020

AISC 360-16 Specification for Structural Steel Buildings

AISC Steel Construction Manual 15th Edition

ACI 318-14 Building Code Requirements for Structural Concrete (and Commentary)

TMS 402-16/602-16 Building Code Requirements and Specification for Masonry Structures (and Companion Commentaries)

NDS 2015 National Design Specification (NDS) for Wood Construction with 2015 Supplement



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Reaction Summary

09/03/20 09:39:19

Steel Code: AISC 360-16 LRFD

STEEL BEAM REACTION SUMMARY:

LOAD COMBINATIONS

1.40DL + 0.00LL

1.20DL + 1.60LL

Floor Type: LEVEL 2 - 115'-0"

Beam No.	Beam Size	Supports		(ft)	Unfactored(kips)			Factored (kips)	
		X	Y		DL	+LL	-LL	+TOTAL	-TOTAL
3	W24X55	0.00	-16.00		27.5	17.5	0.0	61.0	0.0
		43.00	-16.00		18.4	13.2	0.0	43.2	0.0
4	W24X55	4.00	-16.00		11.5	8.2	0.0	26.9	0.0
		4.00	0.00		11.5	8.2	0.0	26.9	0.0
5	W24X55	43.00	-16.00		11.5	8.2	0.0	26.9	0.0
		43.00	0.00		11.5	8.2	0.0	26.9	0.0
6	W24X55	43.00	-30.00		10.9	7.9	0.0	25.8	0.0
		43.00	-16.00		11.0	7.9	0.0	25.8	0.0
7	W24X55	0.00	-41.00		28.0	20.0	0.0	65.5	0.0
		0.00	-16.00		26.1	18.5	0.0	60.8	0.0
8	W24X55	0.00	-60.00		18.7	12.4	0.0	42.3	0.0
		0.00	-41.00		18.7	12.4	0.0	42.3	0.0
9	W24X55	43.00	-41.00		8.7	7.7	0.0	22.8	0.0
		43.00	-30.00		8.7	7.7	0.0	22.8	0.0
12	W24X76	0.00	-115.00		42.9	21.9	0.0	86.6	0.0
		0.00	-79.00		42.9	21.9	0.0	86.6	0.0
13	W24X55	43.00	-79.00		19.6	20.6	0.0	56.4	0.0
		43.00	-60.00		19.6	20.0	0.0	55.5	0.0
14	W24X76	43.00	-115.00		46.7	25.9	0.0	97.4	0.0
		43.00	-79.00		46.7	25.9	0.0	97.4	0.0
15	W24X55	0.00	-115.00		12.0	7.5	0.0	26.4	0.0
		43.00	-115.00		12.0	7.5	0.0	26.4	0.0
16	W24X55	0.00	-79.00		14.4	15.0	0.0	41.3	0.0
		43.00	-79.00		14.4	15.0	0.0	41.3	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Reaction Summary

09/03/2019 12:19

Steel Code: AISC 360-16 LRFD

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
17	W24X55	0.00	-60.00	14.8	12.2	0.0	37.2	0.0
		43.00	-60.00	14.8	12.2	0.0	37.2	0.0
18	W24X55	0.00	-41.00	13.9	11.6	0.0	35.3	0.0
		43.00	-41.00	13.9	11.6	0.0	35.3	0.0
19	W24X55	0.00	-30.00	14.6	14.3	0.0	40.4	0.0
		43.00	-30.00	14.6	13.1	0.0	38.5	0.0
20	W14X22	43.00	-30.00	4.2	2.1	0.0	8.4	0.0
		56.00	-30.00	4.2	2.1	0.0	8.4	0.0
22	W18X35	56.00	-41.00	6.3	5.8	0.0	16.8	0.0
		56.00	-30.00	6.3	5.8	0.0	16.8	0.0
23	W18X35	56.00	-60.00	14.2	12.0	0.0	36.2	0.0
		56.00	-41.00	14.2	12.0	0.0	36.2	0.0
24	W18X35	56.00	-79.00	14.2	12.0	0.0	36.2	0.0
		56.00	-60.00	14.2	12.0	0.0	36.2	0.0
25	W24X68	56.00	-115.00	34.2	22.6	0.0	77.3	0.0
		56.00	-79.00	34.2	21.7	0.0	75.8	0.0
26	W14X22	43.00	-41.00	4.0	3.8	0.0	10.9	0.0
		56.00	-41.00	4.0	3.8	0.0	10.9	0.0
27	W14X22	43.00	-60.00	4.3	4.1	0.0	11.7	0.0
		56.00	-60.00	4.3	4.1	0.0	11.7	0.0
28	W14X22	43.00	-79.00	4.2	4.0	0.0	11.4	0.0
		56.00	-79.00	4.2	4.0	0.0	11.4	0.0
29	W14X22	43.00	-115.00	3.4	2.3	0.0	7.7	0.0
		56.00	-115.00	3.4	2.3	0.0	7.7	0.0
30	W16X31	56.00	-30.00	9.5	4.7	0.0	19.0	0.0
		85.00	-30.00	9.5	4.7	0.0	19.0	0.0
31	W16X31	56.00	-41.00	9.0	8.6	0.0	24.6	0.0
		85.00	-41.00	9.0	8.6	0.0	24.6	0.0
32	W16X31	56.00	-60.00	9.6	9.2	0.0	26.3	0.0
		85.00	-60.00	9.6	9.2	0.0	26.3	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Reaction Summary

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Steel Code: AISC 360-16 LRFD

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
33	W16X31	56.00	-79.00	9.4	8.9	0.0	25.6	0.0
		85.00	-79.00	9.4	8.9	0.0	25.6	0.0
34	W16X31	56.00	-115.00	7.7	5.7	0.0	18.4	0.0
		85.00	-115.00	7.7	5.2	0.0	17.6	0.0
35	W18X35	85.00	-41.00	9.2	8.5	0.0	24.7	0.0
		85.00	-30.00	9.2	8.5	0.0	24.7	0.0
36	W18X35	85.00	-60.00	13.2	11.4	0.0	34.2	0.0
		85.00	-41.00	13.2	11.4	0.0	34.2	0.0
37	W18X35	85.00	-79.00	13.2	11.4	0.0	34.2	0.0
		85.00	-60.00	13.2	11.4	0.0	34.2	0.0
38	W24X55	85.00	-115.00	31.6	20.4	0.0	70.7	0.0
		85.00	-79.00	31.6	20.2	0.0	70.4	0.0
40	W14X22	85.00	-79.00	3.2	3.1	0.0	8.8	0.0
		95.00	-79.00	3.2	3.1	0.0	8.8	0.0
41	W18X35	95.00	-79.00	10.4	7.8	0.0	24.9	0.0
		118.00	-79.00	7.9	5.4	0.0	18.2	0.0
42	W16X26	95.00	-79.00	5.4	5.0	0.0	14.5	0.0
		95.00	-60.00	5.4	5.0	0.0	14.5	0.0
43	W16X31	85.00	-60.00	3.3	3.2	0.0	9.1	0.0
		95.00	-60.00	3.3	3.2	0.0	9.1	0.0
44	W14X22	85.00	-41.00	3.1	3.0	0.0	8.4	0.0
		95.00	-41.00	3.1	3.0	0.0	8.4	0.0
45	W16X26	95.00	-60.00	5.4	5.0	0.0	14.5	0.0
		95.00	-41.00	5.4	5.0	0.0	14.5	0.0
47	W16X31	85.00	-30.00	10.8	11.1	0.0	30.7	0.0
		118.00	-30.00	10.8	10.4	0.0	29.7	0.0
48	W18X35	118.00	-41.00	9.8	9.1	0.0	26.3	0.0
		118.00	-30.00	9.8	9.1	0.0	26.3	0.0
49	W18X35	85.00	-16.00	13.0	14.0	0.0	37.9	0.0
		118.00	-16.00	13.0	12.7	0.0	35.8	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Reaction Summary

09/03/2019 14:19

Steel Code: AISC 360-16 LRFD

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
50	W27X84	118.00	-30.00	41.0	25.7	0.0	90.3	0.0
		118.00	0.00	39.3	24.5	0.0	86.4	0.0
52	W16X31	108.00	0.00	3.9	2.3	0.0	8.3	0.0
		118.00	0.00	3.9	2.3	0.0	8.3	0.0
53	W18X35	85.00	-16.00	10.0	7.9	0.0	24.6	0.0
		85.00	0.00	10.0	7.9	0.0	24.6	0.0
54	W18X35	85.00	-30.00	8.8	6.9	0.0	21.5	0.0
		85.00	-16.00	8.8	6.9	0.0	21.5	0.0
55	W18X35	118.00	0.00	13.0	7.4	0.0	27.5	0.0
		151.00	0.00	13.0	7.4	0.0	27.5	0.0
57	W18X35	151.00	-30.00	8.8	6.1	0.0	20.3	0.0
		151.00	-16.00	8.8	6.1	0.0	20.3	0.0
58	W14X22	151.00	-30.00	3.2	1.6	0.0	6.5	0.0
		161.00	-30.00	3.2	1.6	0.0	6.5	0.0
59	W18X35	161.00	-30.00	10.6	5.2	0.0	21.0	0.0
		193.00	-30.00	10.6	5.2	0.0	21.0	0.0
60	W18X35	118.00	-16.00	13.0	11.4	0.0	33.8	0.0
		151.00	-16.00	13.0	11.4	0.0	33.8	0.0
61	W16X31	118.00	-30.00	10.8	10.2	0.0	29.3	0.0
		151.00	-30.00	10.8	10.2	0.0	29.3	0.0
62	W18X35	151.00	-41.00	6.4	5.9	0.0	17.2	0.0
		151.00	-30.00	6.4	5.9	0.0	17.2	0.0
63	W21X44	161.00	-54.00	19.8	14.6	0.0	47.1	0.0
		161.00	-30.00	20.9	15.5	0.0	49.8	0.0
64	W18X35	118.00	-41.00	10.4	7.0	0.0	23.7	0.0
		151.00	-41.00	15.0	10.8	0.0	35.3	0.0
65	W14X22	151.00	-41.00	3.1	3.0	0.0	8.5	0.0
		161.00	-41.00	3.1	3.0	0.0	8.5	0.0
66	W14X22	151.00	-60.00	3.4	3.3	0.0	9.4	0.0
		161.00	-60.00	3.4	3.3	0.0	9.4	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Reaction Summary

09/03/2019 09:39:19

Steel Code: AISC 360-16 LRFD

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
67	W16X26	151.00	-60.00	5.5	5.1	0.0	14.8	0.0
		151.00	-41.00	5.3	4.9	0.0	14.3	0.0
68	W14X22	145.25	-60.00	2.0	1.9	0.0	5.4	0.0
		151.00	-60.00	2.0	1.9	0.0	5.4	0.0
69	W21X44	193.00	-54.00	19.4	12.6	0.0	43.5	0.0
		193.00	-30.00	20.3	13.3	0.0	45.7	0.0
70	W16X31	161.00	-54.00	10.5	10.0	0.0	28.6	0.0
		193.00	-54.00	10.5	10.0	0.0	28.6	0.0
71	W14X22	151.00	-79.00	3.2	3.1	0.0	8.8	0.0
		161.00	-79.00	3.2	3.1	0.0	8.8	0.0
72	W16X26	161.00	-79.00	16.2	6.8	0.0	30.4	0.0
		180.75	-79.00	16.2	6.8	0.0	30.4	0.0
73	W16X26	180.75	-79.00	4.2	2.2	0.0	8.7	0.0
		193.00	-79.00	4.2	2.3	0.0	8.7	0.0
74	W21X44	193.00	-79.00	20.6	13.2	0.0	45.9	0.0
		193.00	-54.00	20.9	13.4	0.0	46.6	0.0
75	W21X44	161.00	-79.00	21.1	15.4	0.0	49.9	0.0
		161.00	-54.00	21.5	15.6	0.0	50.8	0.0
76	W18X35	151.00	-79.00	18.5	15.5	0.0	47.1	0.0
		151.00	-60.00	13.6	10.5	0.0	33.1	0.0
77	W18X35	118.00	-115.00	8.8	5.8	0.0	19.9	0.0
		151.00	-115.00	8.8	5.8	0.0	19.9	0.0
78	W14X22	151.00	-115.00	2.6	1.8	0.0	5.9	0.0
		161.00	-115.00	2.6	1.8	0.0	5.9	0.0
79	W16X26	161.00	-115.00	5.2	4.2	0.0	13.0	0.0
		180.75	-115.00	5.2	4.2	0.0	13.0	0.0
80	W18X35	180.75	-97.00	9.7	7.9	0.0	24.2	0.0
		180.75	-79.00	9.6	7.9	0.0	24.1	0.0
82	W27X84	161.00	-115.00	42.7	26.0	0.0	92.9	0.0
		161.00	-79.00	42.7	26.0	0.0	92.9	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Reaction Summary

09/03/2019 Page 30/19

Steel Code: AISC 360-16 LRFD

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
83	W24X62	151.00	-115.00	34.9	21.5	0.0	76.4	0.0
		151.00	-79.00	34.9	21.5	0.0	76.4	0.0
85	W27X84	118.00	-115.00	45.5	25.9	0.0	96.0	0.0
		118.00	-79.00	45.5	25.9	0.0	96.0	0.0
88	W18X35	151.00	-67.24	3.3	3.2	0.0	9.1	0.0
		161.00	-67.24	3.3	3.2	0.0	9.1	0.0
89	W18X35	151.00	-67.24	10.2	6.7	-0.0	22.9	0.0
90	W16X31	95.00	-60.00	12.8	9.2	0.0	30.0	0.0
91	W14X22	100.75	-60.00	4.5	2.8	0.0	9.8	0.0
		100.75	-41.00	4.5	2.8	0.0	9.8	0.0
92	W14X22	100.75	-79.00	4.5	2.8	0.0	9.8	0.0
		100.75	-60.00	4.5	2.8	0.0	9.8	0.0
102	W24X55	0.00	-72.67	14.8	17.0	0.0	45.0	0.0
		43.00	-72.67	14.8	17.0	0.0	45.0	0.0
103	W24X55	0.00	-66.33	14.8	15.3	0.0	42.3	0.0
		43.00	-66.33	14.8	15.3	0.0	42.3	0.0
104	W24X55	0.00	-53.67	14.8	12.2	0.0	37.2	0.0
		43.00	-53.67	14.8	12.2	0.0	37.2	0.0
105	W24X55	0.00	-47.33	14.8	12.2	0.0	37.2	0.0
		43.00	-47.33	14.8	12.2	0.0	37.2	0.0
106	W24X55	0.00	-23.00	16.2	14.3	0.0	42.4	0.0
		43.00	-23.00	16.2	13.5	0.0	41.1	0.0
107	W24X55	0.00	-35.50	13.0	12.0	0.0	34.8	0.0
		43.00	-35.50	13.0	11.5	0.0	34.1	0.0
109	W21X48	4.00	-8.00	16.5	13.3	0.0	41.1	0.0
		43.00	-8.00	16.5	13.3	0.0	41.1	0.0
111	W14X22	43.00	-35.50	3.7	3.6	0.0	10.2	0.0
		56.00	-35.50	3.7	3.6	0.0	10.2	0.0
112	W14X22	43.00	-53.67	4.3	4.1	0.0	11.7	0.0
		56.00	-53.67	4.3	4.1	0.0	11.7	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Reaction Summary

09/03/2019 13:19

Steel Code: AISC 360-16 LRFD

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
113	W14X22	43.00	-47.33	4.3	4.1	0.0	11.7	0.0
		56.00	-47.33	4.3	4.1	0.0	11.7	0.0
114	W14X22	43.00	-72.67	4.3	4.1	0.0	11.7	0.0
		56.00	-72.67	4.3	4.1	0.0	11.7	0.0
115	W14X22	43.00	-66.33	4.3	4.1	0.0	11.7	0.0
		56.00	-66.33	4.3	4.1	0.0	11.7	0.0
120	W16X31	56.00	-35.50	8.4	8.0	0.0	22.9	0.0
		85.00	-35.50	8.4	8.0	0.0	22.9	0.0
121	W16X31	56.00	-53.67	9.6	9.2	0.0	26.3	0.0
		85.00	-53.67	9.6	9.2	0.0	26.3	0.0
122	W16X31	56.00	-47.33	9.6	9.2	0.0	26.3	0.0
		85.00	-47.33	9.6	9.2	0.0	26.3	0.0
123	W16X31	56.00	-72.67	9.6	9.2	0.0	26.3	0.0
		85.00	-72.67	9.6	9.2	0.0	26.3	0.0
124	W16X31	56.00	-66.33	9.6	9.2	0.0	26.3	0.0
		85.00	-66.33	9.6	9.2	0.0	26.3	0.0
133	W18X35	85.00	-8.00	13.8	14.9	0.0	40.4	0.0
		118.00	-8.00	13.8	13.5	0.0	38.2	0.0
134	W18X35	85.00	-23.00	12.1	13.0	0.0	35.4	0.0
		118.00	-23.00	12.1	11.8	0.0	33.5	0.0
135	W16X31	85.00	-35.50	9.6	9.1	0.0	26.0	0.0
		118.00	-35.50	9.6	9.1	0.0	26.0	0.0
136	W14X22	85.00	-53.67	3.3	3.2	0.0	9.0	0.0
		95.00	-53.67	3.3	3.2	0.0	9.0	0.0
137	W14X22	85.00	-47.33	3.3	3.2	0.0	9.0	0.0
		95.00	-47.33	3.3	3.2	0.0	9.0	0.0
138	W14X22	95.00	-53.67	1.9	1.8	0.0	5.2	0.0
		100.75	-53.67	1.9	1.8	0.0	5.2	0.0
139	W14X22	95.00	-47.33	1.9	1.8	0.0	5.2	0.0
		100.75	-47.33	1.9	1.8	0.0	5.2	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Reaction Summary

09/03/2019 Page 38/19

Steel Code: AISC 360-16 LRFD

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
140	W14X22	85.00	-72.67	3.3	3.2	0.0	9.0	0.0
		95.00	-72.67	3.3	3.2	0.0	9.0	0.0
141	W14X22	85.00	-66.33	3.3	3.2	0.0	9.0	0.0
		95.00	-66.33	3.3	3.2	0.0	9.0	0.0
142	W14X22	95.00	-72.67	1.9	1.8	0.0	5.2	0.0
		100.75	-72.67	1.9	1.8	0.0	5.2	0.0
143	W14X22	95.00	-66.33	1.9	1.8	0.0	5.2	0.0
		100.75	-66.33	1.9	1.8	0.0	5.2	0.0
144	W18X35	118.00	-8.00	13.8	11.9	0.0	35.6	0.0
		151.00	-8.00	13.8	11.9	0.0	35.6	0.0
145	W18X35	118.00	-23.00	12.1	10.9	0.0	32.1	0.0
		151.00	-23.00	12.1	10.9	0.0	32.1	0.0
146	W16X31	118.00	-35.50	9.6	9.1	0.0	26.0	0.0
		151.00	-35.50	9.6	9.1	0.0	26.0	0.0
147	W14X22	145.25	-53.93	1.9	1.8	0.0	5.1	0.0
		151.00	-53.93	1.9	1.8	0.0	5.1	0.0
151	W14X22	151.00	-53.93	3.2	3.1	0.0	8.9	0.0
		161.00	-54.00	3.2	3.1	0.0	8.9	0.0
156	W16X31	161.00	-72.67	10.6	10.1	0.0	28.9	0.0
		193.00	-72.67	10.6	10.1	0.0	28.9	0.0
157	W16X31	161.00	-66.33	10.6	10.1	0.0	28.9	0.0
		193.00	-66.33	10.6	10.1	0.0	28.9	0.0
171	W14X22	151.00	-72.67	3.1	2.9	0.0	8.4	0.0
		161.00	-72.67	3.1	2.9	0.0	8.4	0.0
172	W14X22	108.00	-8.00	0.1	0.0	0.0	0.1	0.0
		108.00	0.00	0.1	0.0	0.0	0.1	0.0
174	W24X62	4.00	0.00	15.8	8.8	0.0	33.1	0.0
		43.00	0.00	15.8	8.8	0.0	33.1	0.0
175	W24X55	95.00	-115.00	26.8	18.0	0.0	60.9	0.0
		95.00	-79.00	26.8	18.0	0.0	60.9	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Reaction Summary

09/03/2019 19:39:19

Steel Code: AISC 360-16 LRFD

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
176	W14X22	85.00	-115.00	2.6	1.8	0.0	5.9	0.0
		95.00	-115.00	2.6	1.8	0.0	5.9	0.0
180	W14X22	85.00	-109.00	3.1	3.0	0.0	8.5	0.0
		95.00	-109.00	3.1	3.0	0.0	8.5	0.0
181	W14X22	85.00	-103.00	3.1	3.0	0.0	8.5	0.0
		95.00	-103.00	3.1	3.0	0.0	8.5	0.0
182	W14X22	85.00	-97.00	3.1	3.0	0.0	8.5	0.0
		95.00	-97.00	3.1	3.0	0.0	8.5	0.0
183	W14X22	85.00	-91.00	3.1	3.0	0.0	8.5	0.0
		95.00	-91.00	3.1	3.0	0.0	8.5	0.0
184	W14X22	85.00	-85.00	3.1	3.0	0.0	8.5	0.0
		95.00	-85.00	3.1	3.0	0.0	8.5	0.0
185	W16X26	95.00	-109.00	7.2	6.9	0.0	19.7	0.0
		118.00	-109.00	7.2	6.9	0.0	19.7	0.0
186	W16X26	95.00	-103.00	7.2	6.9	0.0	19.7	0.0
		118.00	-103.00	7.2	6.9	0.0	19.7	0.0
187	W16X26	95.00	-97.00	7.2	6.9	0.0	19.7	0.0
		118.00	-97.00	7.2	6.9	0.0	19.7	0.0
188	W16X26	95.00	-91.00	7.2	6.9	0.0	19.7	0.0
		118.00	-91.00	7.2	6.9	0.0	19.7	0.0
189	W16X26	95.00	-85.00	7.2	6.9	0.0	19.7	0.0
		118.00	-85.00	7.2	6.9	0.0	19.7	0.0
190	W16X31	56.00	-109.00	9.2	9.3	0.0	25.9	0.0
		85.00	-109.00	9.2	8.8	0.0	25.1	0.0
191	W16X31	56.00	-103.00	9.2	8.7	0.0	24.9	0.0
		85.00	-103.00	9.2	8.7	0.0	24.9	0.0
192	W16X31	56.00	-97.00	9.2	8.7	0.0	24.9	0.0
		85.00	-97.00	9.2	8.7	0.0	24.9	0.0
193	W16X31	56.00	-91.00	9.2	8.7	0.0	24.9	0.0
		85.00	-91.00	9.2	8.7	0.0	24.9	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Reaction Summary

09/03/2009 10:19

Steel Code: AISC 360-16 LRFD

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
194	W16X31	56.00	-85.00	9.2	8.7	0.0	24.9	0.0
		85.00	-85.00	9.2	8.7	0.0	24.9	0.0
195	W14X22	43.00	-109.00	4.0	3.9	0.0	11.1	0.0
		56.00	-109.00	4.0	3.9	0.0	11.1	0.0
196	W14X22	43.00	-103.00	4.0	3.9	0.0	11.1	0.0
		56.00	-103.00	4.0	3.9	0.0	11.1	0.0
197	W14X22	43.00	-97.00	4.0	3.9	0.0	11.1	0.0
		56.00	-97.00	4.0	3.9	0.0	11.1	0.0
198	W14X22	43.00	-91.00	4.0	3.9	0.0	11.1	0.0
		56.00	-91.00	4.0	3.9	0.0	11.1	0.0
199	W14X22	43.00	-85.00	4.0	3.9	0.0	11.1	0.0
		56.00	-85.00	4.0	3.9	0.0	11.1	0.0
200	W24X55	0.00	-109.00	14.1	11.7	0.0	35.7	0.0
		43.00	-109.00	14.1	11.7	0.0	35.7	0.0
201	W24X55	0.00	-103.00	14.1	11.7	0.0	35.7	0.0
		43.00	-103.00	14.1	11.7	0.0	35.7	0.0
202	W24X55	0.00	-97.00	14.1	11.7	0.0	35.7	0.0
		43.00	-97.00	14.1	11.7	0.0	35.7	0.0
203	W24X55	0.00	-91.00	14.1	11.7	0.0	35.7	0.0
		43.00	-91.00	14.1	11.7	0.0	35.7	0.0
204	W24X55	0.00	-85.00	14.1	11.7	0.0	35.7	0.0
		43.00	-85.00	14.1	11.7	0.0	35.7	0.0
205	W16X31	118.00	-109.00	10.4	9.9	0.0	28.3	0.0
		151.00	-109.00	10.4	9.9	0.0	28.3	0.0
206	W16X31	118.00	-103.00	10.4	9.9	0.0	28.3	0.0
		151.00	-103.00	10.4	9.9	0.0	28.3	0.0
207	W16X31	118.00	-97.00	10.4	9.9	0.0	28.3	0.0
		151.00	-97.00	10.4	9.9	0.0	28.3	0.0
208	W16X31	118.00	-91.00	10.4	9.9	0.0	28.3	0.0
		151.00	-91.00	10.4	9.9	0.0	28.3	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Reaction Summary

09/03/2009 19:19

Steel Code: AISC 360-16 LRFD

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
209	W16X31	118.00	-85.00	10.4	9.9	0.0	28.3	0.0
		151.00	-85.00	10.4	9.9	0.0	28.3	0.0
210	W14X22	151.00	-109.00	3.1	3.0	0.0	8.5	0.0
		161.00	-109.00	3.1	3.0	0.0	8.5	0.0
211	W14X22	151.00	-103.00	3.1	3.0	0.0	8.5	0.0
		161.00	-103.00	3.1	3.0	0.0	8.5	0.0
212	W14X22	151.00	-97.00	3.1	3.0	0.0	8.5	0.0
		161.00	-97.00	3.1	3.0	0.0	8.5	0.0
213	W14X22	151.00	-91.00	3.1	3.0	0.0	8.5	0.0
		161.00	-91.00	3.1	3.0	0.0	8.5	0.0
214	W14X22	151.00	-85.00	3.1	3.0	0.0	8.5	0.0
		161.00	-85.00	3.1	3.0	0.0	8.5	0.0
215	W16X26	161.00	-109.00	6.2	7.4	0.0	19.3	0.0
		180.75	-109.00	6.2	7.4	0.0	19.3	0.0
216	W16X26	161.00	-103.00	6.2	7.4	0.0	19.3	0.0
		180.75	-103.00	6.2	7.4	0.0	19.3	0.0
217	W16X26	161.00	-97.00	6.2	7.4	0.0	19.3	0.0
		180.75	-97.00	6.2	7.4	0.0	19.3	0.0
218	W16X26	161.00	-91.00	6.2	7.4	0.0	19.3	0.0
		180.75	-91.00	6.2	7.4	0.0	19.3	0.0
219	W16X26	161.00	-85.00	6.2	7.4	0.0	19.3	0.0
		180.75	-85.00	6.2	7.4	0.0	19.3	0.0
220	W16X31	161.00	-60.00	10.4	9.9	0.0	28.2	0.0
		193.00	-60.00	10.4	9.9	0.0	28.2	0.0
221	W16X31	161.00	-41.00	10.1	9.6	0.0	27.5	0.0
		193.00	-41.00	10.1	9.6	0.0	27.5	0.0
222	W16X31	161.00	-35.50	9.3	8.8	0.0	25.2	0.0
		193.00	-35.50	9.3	8.8	0.0	25.2	0.0
223	W14X22	151.00	-35.50	2.9	2.7	0.0	7.8	0.0
		161.00	-35.50	2.9	2.7	0.0	7.8	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Reaction Summary

09/03/2019 Page: 32/19

Steel Code: AISC 360-16 LRFD

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
224	W16X31	161.00	-47.50	10.9	10.2	0.0	29.5	0.0
		193.00	-47.50	10.9	10.2	0.0	29.5	0.0
225	W14X22	151.00	-47.50	3.3	3.2	0.0	9.2	0.0
		161.00	-47.50	3.4	3.2	0.0	9.2	0.0
226	W14X22	145.25	-47.50	1.9	1.9	0.0	5.3	0.0
		151.00	-47.50	1.9	1.9	0.0	5.3	0.0
227	W16X26	145.25	-67.24	6.4	4.0	0.0	14.2	0.0
		145.25	-41.00	6.6	4.1	0.0	14.5	0.0

Floor Type: ROOF - 129'-0"

Beam No.	Beam Size	Supports (ft)		Unfactored(kips)			Factored (kips)	
		X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
3	W21X44	0.00	-16.00	9.5	12.8	0.0	31.8	0.0
		43.00	-16.00	3.9	5.3	0.0	13.2	0.0
4	W16X26	4.00	-16.00	5.6	8.3	0.0	20.0	0.0
		4.00	0.00	5.6	8.9	0.0	21.0	0.0
5	W18X35	43.00	-16.00	8.8	13.7	0.0	32.4	0.0
		43.00	0.00	8.8	15.6	0.0	35.4	0.0
6	W16X26	43.00	-30.00	5.9	6.8	0.0	18.0	0.0
		43.00	-16.00	5.5	6.1	0.0	16.3	0.0
7	W21X44	0.00	-41.00	9.8	12.9	0.0	32.5	0.0
		0.00	-16.00	9.8	12.9	0.0	32.5	0.0
8	W16X26	0.00	-60.00	7.0	9.6	0.0	23.8	0.0
		0.00	-41.00	7.0	9.6	0.0	23.8	0.0
9	W16X26	43.00	-41.00	2.3	4.1	0.0	9.3	0.0
		43.00	-30.00	4.3	7.8	0.0	17.7	0.0
12	W30X90	0.00	-115.00	15.7	21.2	0.0	52.8	0.0
		0.00	-79.00	15.7	19.8	0.0	50.5	0.0
14	W24X62	43.00	-115.00	12.1	22.1	0.0	49.9	0.0
		43.00	-79.00	12.1	18.4	0.0	44.1	0.0
15	W24X55	0.00	-115.00	4.8	5.2	0.0	14.0	0.0
		43.00	-115.00	4.8	5.1	0.0	14.0	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Reaction Summary

09/03/2009 19:19

Steel Code: AISC 360-16 LRFD

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
16	W21X44	0.00	-79.00	3.4	6.4	0.0	14.3	0.0
		43.00	-79.00	3.4	5.0	0.0	12.1	0.0
17	W21X44	0.00	-60.00	3.5	6.5	0.0	14.6	0.0
		43.00	-60.00	3.5	5.1	0.0	12.3	0.0
18	W21X44	0.00	-41.00	3.6	6.7	0.0	14.9	0.0
		43.00	-41.00	3.6	5.2	0.0	12.6	0.0
20	W16X26	43.00	-30.00	2.9	1.6	0.0	6.0	0.0
		56.00	-30.00	2.9	1.6	0.0	6.0	0.0
22	W16X26	56.00	-41.00	1.6	2.7	0.0	6.2	0.0
		56.00	-30.00	1.6	2.7	0.0	6.2	0.0
23	W16X26	56.00	-60.00	4.0	6.5	0.0	15.2	0.0
		56.00	-41.00	4.0	6.5	0.0	15.2	0.0
24	W16X31	56.00	-79.00	4.0	6.5	0.0	15.3	0.0
		56.00	-60.00	4.0	6.5	0.0	15.3	0.0
25	W24X55	56.00	-115.00	9.3	16.6	0.0	37.7	0.0
		56.00	-79.00	9.3	13.6	0.0	32.9	0.0
26	W14X22	43.00	-41.00	1.0	1.6	0.0	3.7	0.0
		56.00	-41.00	1.0	1.6	0.0	3.7	0.0
28	W14X22	43.00	-79.00	0.9	1.4	0.0	3.3	0.0
		56.00	-79.00	0.9	1.4	0.0	3.3	0.0
29	W14X22	43.00	-115.00	1.2	1.6	0.0	4.0	0.0
		56.00	-115.00	1.2	1.6	0.0	4.0	0.0
30	W16X26	56.00	-30.00	6.6	3.5	0.0	13.4	0.0
		85.00	-30.00	6.6	3.5	0.0	13.4	0.0
31	W16X26	56.00	-41.00	2.2	3.5	0.0	8.3	0.0
		85.00	-41.00	2.2	3.5	0.0	8.3	0.0
33	W16X26	56.00	-79.00	2.1	3.2	0.0	7.5	0.0
		85.00	-79.00	2.1	3.2	0.0	7.5	0.0
34	W16X26	56.00	-115.00	2.8	3.5	0.0	8.9	0.0
		85.00	-115.00	2.8	3.5	0.0	8.9	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Reaction Summary

09/03/2009 14:19

Steel Code: AISC 360-16 LRFD

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
35	W16X26	85.00	-41.00	1.5	2.6	0.0	6.0	0.0
		85.00	-30.00	1.5	2.6	0.0	6.0	0.0
36	W18X35	85.00	-60.00	3.9	6.5	0.0	15.2	0.0
		85.00	-41.00	3.9	6.5	0.0	15.2	0.0
37	W16X26	85.00	-79.00	3.9	6.5	0.0	15.1	0.0
		85.00	-60.00	3.9	6.5	0.0	15.1	0.0
38	W24X55	85.00	-115.00	8.7	15.6	0.0	35.3	0.0
		85.00	-79.00	8.7	13.0	0.0	31.2	0.0
40	W14X22	85.00	-79.00	0.7	1.3	0.0	3.0	0.0
		95.00	-79.00	0.7	1.7	0.0	3.5	0.0
41	W16X26	95.00	-79.00	2.4	3.1	0.0	7.9	0.0
		118.00	-79.00	2.4	3.1	0.0	7.9	0.0
42	W16X26	95.00	-79.00	2.5	3.4	0.0	8.5	0.0
		95.00	-60.00	2.5	3.4	0.0	8.5	0.0
43	W14X22	85.00	-60.00	0.7	1.4	0.0	3.0	0.0
		95.00	-60.00	0.7	1.7	0.0	3.6	0.0
44	W14X22	85.00	-41.00	0.8	1.5	0.0	3.3	0.0
		95.00	-41.00	0.8	1.8	0.0	3.8	0.0
45	W16X26	95.00	-60.00	2.5	3.4	0.0	8.5	0.0
		95.00	-41.00	2.5	3.4	0.0	8.5	0.0
48	W16X26	118.00	-41.00	2.4	4.8	0.0	10.6	0.0
		118.00	-30.00	2.4	4.8	0.0	10.6	0.0
49	W21X44	85.00	-16.00	6.5	9.8	0.0	23.5	0.0
		118.00	-16.00	5.8	9.1	0.0	21.5	0.0
50	W24X55	118.00	-30.00	11.8	17.7	0.0	42.4	0.0
		118.00	0.00	10.8	18.9	0.0	43.2	0.0
52	W14X22	108.00	0.00	1.9	1.1	0.0	4.1	0.0
		118.00	0.00	1.9	1.1	0.0	4.1	0.0
53	W16X26	85.00	-16.00	7.5	11.2	0.0	26.8	0.0
		85.00	0.00	7.5	12.7	0.0	29.3	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Reaction Summary

09/03/2009 15:19

Steel Code: AISC 360-16 LRFD

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
54	W16X26	85.00	-30.00	4.6	4.3	0.0	12.3	0.0
		85.00	-16.00	4.6	4.3	0.0	12.3	0.0
55	W18X35	118.00	0.00	6.6	3.6	0.0	13.7	0.0
		151.00	0.00	6.6	3.6	0.0	13.7	0.0
57	W14X22	151.00	-30.00	4.3	5.2	0.0	13.4	0.0
		151.00	-16.00	4.3	5.2	0.0	13.4	0.0
58	W14X22	151.00	-30.00	1.9	1.0	0.0	3.8	0.0
		161.00	-30.00	1.9	1.0	0.0	3.9	0.0
59	W18X35	161.00	-30.00	6.3	3.3	0.0	12.8	0.0
		193.00	-30.00	6.3	3.3	0.0	12.8	0.0
60	W16X26	118.00	-16.00	2.2	3.6	0.0	8.4	0.0
		151.00	-16.00	2.2	4.5	0.0	9.9	0.0
62	W16X26	151.00	-41.00	2.0	4.2	0.0	9.1	0.0
		151.00	-30.00	2.0	4.3	0.0	9.2	0.0
63	W18X35	161.00	-54.00	5.8	10.4	0.0	23.6	0.0
		161.00	-30.00	5.9	12.8	0.0	27.6	0.0
64	W21X44	118.00	-41.00	3.9	5.0	0.0	12.7	0.0
		151.00	-41.00	3.9	4.9	0.0	12.5	0.0
65	W14X22	151.00	-41.00	0.6	1.1	0.0	2.5	0.0
		161.00	-41.00	0.6	1.1	0.0	2.5	0.0
66	W14X22	151.00	-60.00	0.8	2.0	0.0	4.1	0.0
		161.00	-60.00	0.8	1.6	0.0	3.4	0.0
67	W16X26	151.00	-60.00	2.4	3.2	0.0	7.9	0.0
		151.00	-41.00	2.5	3.3	0.0	8.3	0.0
69	W21X44	193.00	-54.00	8.2	10.3	0.0	26.3	0.0
		193.00	-30.00	8.4	11.6	0.0	28.6	0.0
71	W14X22	151.00	-79.00	0.7	1.7	0.0	3.5	0.0
		161.00	-79.00	0.7	1.3	0.0	3.0	0.0
72	W14X22	161.00	-79.00	1.4	2.8	0.0	6.1	0.0
		180.75	-79.00	1.4	3.5	0.0	7.2	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Reaction Summary

09/03/2009 10:19

Steel Code: AISC 360-16 LRFD

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
73	W14X22	180.75	-79.00	2.4	1.5	0.0	5.4	0.0
		193.00	-79.00	2.4	1.6	0.0	5.4	0.0
74	W21X44	193.00	-79.00	8.5	11.6	0.0	28.8	0.0
		193.00	-54.00	8.3	10.2	0.0	26.2	0.0
75	W18X35	161.00	-79.00	6.0	11.7	0.0	25.8	0.0
		161.00	-54.00	5.6	10.1	0.0	23.0	0.0
76	W16X26	151.00	-79.00	2.5	3.4	0.0	8.5	0.0
		151.00	-60.00	2.5	3.4	0.0	8.5	0.0
77	W18X35	118.00	-115.00	3.4	3.9	0.0	10.4	0.0
		151.00	-115.00	3.4	3.9	0.0	10.4	0.0
80	W16X26	180.75	-97.00	5.6	7.3	0.0	18.4	0.0
		180.75	-79.00	5.6	7.4	0.0	18.5	0.0
83	W24X68	151.00	-115.00	13.8	25.0	0.0	56.5	0.0
		151.00	-79.00	14.1	22.7	0.0	53.2	0.0
85	W24X62	118.00	-115.00	12.2	22.0	0.0	49.8	0.0
		118.00	-79.00	12.8	20.1	0.0	47.5	0.0
93	W16X26	108.00	-16.00	2.7	6.2	0.0	13.1	0.0
		108.00	0.00	2.7	7.0	0.0	14.4	0.0
145	W16X26	118.00	-35.50	2.7	5.7	0.0	12.3	0.0
		151.00	-35.50	2.7	5.8	0.0	12.5	0.0
148	W12X19	85.00	-74.25	0.7	1.4	0.0	3.0	0.0
		95.00	-74.25	0.7	1.7	0.0	3.6	0.0
149	W12X19	85.00	-69.50	0.7	1.4	0.0	3.0	0.0
		95.00	-69.50	0.7	1.7	0.0	3.6	0.0
150	W12X19	85.00	-64.75	0.7	1.4	0.0	3.0	0.0
		95.00	-64.75	0.7	1.7	0.0	3.6	0.0
172	W12X19	151.00	-53.93	0.7	1.9	0.0	3.9	0.0
		161.00	-54.00	0.7	1.5	0.0	3.3	0.0
174	W12X19	151.00	-74.25	0.7	1.7	0.0	3.6	0.0
		161.00	-74.25	0.7	1.4	0.0	3.0	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Reaction Summary

09/03/2009 17:19

Steel Code: AISC 360-16 LRFD

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
175	W12X19	151.00	-69.50	0.7	1.7	0.0	3.6	0.0
		161.00	-69.50	0.7	1.4	0.0	3.0	0.0
176	W12X19	151.00	-64.75	0.7	1.7	0.0	3.6	0.0
		161.00	-64.75	0.7	1.4	0.0	3.0	0.0
177	W18X35	161.00	-54.00	2.6	4.1	0.0	9.7	0.0
		193.00	-54.00	2.6	5.3	0.0	11.6	0.0
185	W24X55	43.00	0.00	4.6	4.6	0.0	12.8	0.0
		85.00	0.00	4.6	4.6	0.0	12.8	0.0
186	W21X44	43.00	-16.00	5.0	7.0	0.0	17.3	0.0
		85.00	-16.00	4.0	5.4	0.0	13.4	0.0
187	W16X26	56.00	-30.00	2.6	4.6	0.0	10.5	0.0
		56.00	-16.00	2.6	4.6	0.0	10.5	0.0
194	W21X44	4.00	0.00	7.9	4.3	0.0	16.4	0.0
		43.00	0.00	7.9	4.3	0.0	16.4	0.0
231	W16X26	118.00	-83.50	2.3	5.0	0.0	10.7	0.0
		151.00	-83.50	2.3	5.0	0.0	10.7	0.0
246	W14X22	85.00	-115.00	1.0	1.2	0.0	3.1	0.0
		95.00	-115.00	1.0	1.2	0.0	3.1	0.0
247	W24X55	95.00	-115.00	7.5	13.6	0.0	30.9	0.0
		95.00	-79.00	7.8	12.5	0.0	29.3	0.0
262	W16X26	95.00	-83.50	1.6	3.5	0.0	7.5	0.0
		118.00	-83.50	1.6	3.5	0.0	7.5	0.0
263	W16X26	95.00	-41.00	4.6	8.0	0.0	18.3	0.0
		95.00	-16.00	4.6	7.5	0.0	17.6	0.0
266	W16X26	95.00	-35.50	1.9	4.0	0.0	8.6	0.0
		118.00	-35.50	1.9	4.0	0.0	8.6	0.0
272	W16X26	151.00	-115.00	2.9	3.6	0.0	9.2	0.0
		180.75	-115.00	2.9	3.6	0.0	9.2	0.0
273	W14X22	151.00	-97.00	2.0	3.5	0.0	8.0	0.0
		180.75	-97.00	2.0	4.6	0.0	9.8	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Reaction Summary

09/03/2009 18:19

Steel Code: AISC 360-16 LRFD

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
280	W12X19	151.00	-49.60	0.6	1.6	0.0	3.3	0.0
		161.00	-49.60	0.6	1.3	0.0	2.8	0.0
281	W12X19	151.00	-45.27	0.6	1.4	0.0	3.0	0.0
		161.00	-45.27	0.6	1.2	0.0	2.7	0.0
294	W12X19	85.00	-55.25	0.7	1.4	0.0	3.0	0.0
		95.00	-55.25	0.7	1.7	0.0	3.6	0.0
295	W12X19	85.00	-50.50	0.7	1.4	0.0	3.0	0.0
		95.00	-50.50	0.7	1.7	0.0	3.6	0.0
296	W12X19	85.00	-45.75	0.7	1.4	0.0	3.0	0.0
		95.00	-45.75	0.7	1.7	0.0	3.6	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Reaction Summary

Page 19/27
09/03/20 09:39:19

STEEL JOIST REACTION SUMMARY:

Floor Type: ROOF - 129'-0"

Beam No.	Beam Size	Supports (ft)		Reactions (kips)				
		X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
27	10K1	43.00	-60.00	0.8	1.5	0.0	2.2	0.0
		56.00	-60.00	0.8	1.5	0.0	2.2	0.0
32	26K5	56.00	-60.00	1.7	3.2	0.0	5.0	0.0
		85.00	-60.00	1.7	3.2	0.0	5.0	0.0
61	30K10	118.00	-30.00	2.1	4.2	0.0	6.3	0.0
		151.00	-30.00	2.1	5.1	0.0	7.2	0.0
98	32LH09	0.00	-36.00	2.7	6.8	0.0	9.5	0.0
		43.00	-36.00	2.7	5.3	0.0	8.0	0.0
99	32LH09	0.00	-31.00	2.7	6.8	0.0	9.5	0.0
		43.00	-31.00	2.7	5.3	0.0	8.0	0.0
100	32LH09	0.00	-26.00	2.7	6.8	0.0	9.5	0.0
		43.00	-26.00	2.7	5.3	0.0	8.0	0.0
101	32LH09	0.00	-21.00	2.7	6.8	0.0	9.5	0.0
		43.00	-21.00	2.7	5.3	0.0	8.0	0.0
104	32LH09	0.00	-74.25	2.6	6.5	0.0	9.1	0.0
		43.00	-74.25	2.6	5.1	0.0	7.6	0.0
105	32LH09	0.00	-69.50	2.6	6.5	0.0	9.1	0.0
		43.00	-69.50	2.6	5.1	0.0	7.6	0.0
106	32LH09	0.00	-64.75	2.6	6.5	0.0	9.1	0.0
		43.00	-64.75	2.6	5.1	0.0	7.6	0.0
112	10K1	43.00	-35.50	0.9	1.7	0.0	2.6	0.0
		56.00	-35.50	0.9	1.7	0.0	2.6	0.0
115	26K5	56.00	-35.50	2.0	3.7	0.0	5.7	0.0
		85.00	-35.50	2.0	3.7	0.0	5.7	0.0
118	10K1	43.00	-74.25	0.8	1.5	0.0	2.2	0.0
		56.00	-74.25	0.8	1.5	0.0	2.2	0.0
119	10K1	43.00	-69.50	0.8	1.5	0.0	2.2	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Reaction SummaryPage 20/27
09/03/20 09:39:19

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
		56.00	-69.50	0.8	1.5	0.0	2.2	0.0
120	10K1	43.00	-64.75	0.8	1.5	0.0	2.2	0.0
		56.00	-64.75	0.8	1.5	0.0	2.2	0.0
121	26K5	56.00	-74.25	1.7	3.2	0.0	5.0	0.0
		85.00	-74.25	1.7	3.2	0.0	5.0	0.0
122	26K5	56.00	-69.50	1.7	3.2	0.0	5.0	0.0
		85.00	-69.50	1.7	3.2	0.0	5.0	0.0
123	26K5	56.00	-64.75	1.7	3.2	0.0	5.0	0.0
		85.00	-64.75	1.7	3.2	0.0	5.0	0.0
142	30K10	118.00	-25.33	1.9	3.8	0.0	5.8	0.0
		151.00	-25.33	1.9	4.9	0.0	6.8	0.0
143	30K10	118.00	-20.67	1.9	3.8	0.0	5.8	0.0
		151.00	-20.67	1.9	4.9	0.0	6.8	0.0
179	28K9	161.00	-41.00	1.6	3.7	0.0	5.3	0.0
		193.00	-41.00	1.6	4.3	0.0	5.9	0.0
181	28K9	161.00	-74.25	1.9	5.0	0.0	6.9	0.0
		193.00	-74.25	1.9	6.0	0.0	7.9	0.0
182	28K9	161.00	-69.50	1.9	4.8	0.0	6.7	0.0
		193.00	-69.50	1.9	5.5	0.0	7.4	0.0
183	28K9	161.00	-64.75	1.9	4.3	0.0	6.2	0.0
		193.00	-64.75	1.9	5.1	0.0	7.0	0.0
190	26K5	56.00	-25.33	1.7	3.2	0.0	4.9	0.0
		85.00	-25.33	1.7	3.2	0.0	4.9	0.0
191	26K5	56.00	-20.67	1.7	3.2	0.0	4.9	0.0
		85.00	-20.67	1.7	3.2	0.0	4.9	0.0
192	10K1	43.00	-25.33	0.8	1.4	0.0	2.2	0.0
		56.00	-25.33	0.8	1.4	0.0	2.2	0.0
193	10K1	43.00	-20.67	0.8	1.4	0.0	2.2	0.0
		56.00	-20.67	0.8	1.4	0.0	2.2	0.0
197	32LH09	0.00	-110.50	2.4	7.6	0.0	10.1	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Reaction SummaryPage 21/27
09/03/20 09:39:19

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
		43.00	-110.50	2.4	7.5	0.0	9.9	0.0
198	32LH09	0.00	-106.00	2.4	6.8	0.0	9.2	0.0
		43.00	-106.00	2.4	6.2	0.0	8.6	0.0
199	32LH09	0.00	-101.50	2.4	6.3	0.0	8.7	0.0
		43.00	-101.50	2.4	5.1	0.0	7.5	0.0
200	32LH09	0.00	-97.00	2.4	6.1	0.0	8.6	0.0
		43.00	-97.00	2.4	4.8	0.0	7.2	0.0
201	32LH09	0.00	-92.50	2.4	6.2	0.0	8.6	0.0
		43.00	-92.50	2.4	4.8	0.0	7.3	0.0
202	32LH09	0.00	-88.00	2.4	6.2	0.0	8.6	0.0
		43.00	-88.00	2.4	4.8	0.0	7.3	0.0
203	32LH09	0.00	-83.50	2.4	6.2	0.0	8.6	0.0
		43.00	-83.50	2.4	4.8	0.0	7.3	0.0
204	10K1	43.00	-110.50	0.7	2.3	0.0	3.0	0.0
		56.00	-110.50	0.7	2.3	0.0	3.0	0.0
205	10K1	43.00	-106.00	0.7	1.9	0.0	2.6	0.0
		56.00	-106.00	0.7	1.9	0.0	2.6	0.0
206	10K1	43.00	-101.50	0.7	1.5	0.0	2.2	0.0
		56.00	-101.50	0.7	1.5	0.0	2.2	0.0
207	10K1	43.00	-97.00	0.7	1.4	0.0	2.1	0.0
		56.00	-97.00	0.7	1.4	0.0	2.1	0.0
208	10K1	43.00	-92.50	0.7	1.4	0.0	2.1	0.0
		56.00	-92.50	0.7	1.4	0.0	2.1	0.0
209	10K1	43.00	-88.00	0.7	1.4	0.0	2.1	0.0
		56.00	-88.00	0.7	1.4	0.0	2.1	0.0
210	10K1	43.00	-83.50	0.7	1.4	0.0	2.1	0.0
		56.00	-83.50	0.7	1.4	0.0	2.1	0.0
211	26K6	56.00	-110.50	1.6	5.0	0.0	6.7	0.0
		85.00	-110.50	1.6	5.0	0.0	6.7	0.0
212	26K5	56.00	-106.00	1.6	4.1	0.0	5.8	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Reaction SummaryPage 22/27
09/03/20 09:39:19

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
		85.00	-106.00	1.6	4.1	0.0	5.8	0.0
213	26K5	56.00	-101.50	1.6	3.3	0.0	5.0	0.0
		85.00	-101.50	1.6	3.3	0.0	5.0	0.0
214	26K5	56.00	-97.00	1.6	3.0	0.0	4.7	0.0
		85.00	-97.00	1.6	3.0	0.0	4.7	0.0
215	26K5	56.00	-92.50	1.6	3.1	0.0	4.7	0.0
		85.00	-92.50	1.6	3.1	0.0	4.7	0.0
216	26K5	56.00	-88.00	1.6	3.1	0.0	4.7	0.0
		85.00	-88.00	1.6	3.1	0.0	4.7	0.0
217	26K5	56.00	-83.50	1.6	3.1	0.0	4.7	0.0
		85.00	-83.50	1.6	3.1	0.0	4.7	0.0
225	30K7	118.00	-110.50	1.9	5.7	0.0	7.6	0.0
		151.00	-110.50	1.9	5.7	0.0	7.6	0.0
226	30K7	118.00	-106.00	1.9	4.7	0.0	6.6	0.0
		151.00	-106.00	1.9	4.7	0.0	6.6	0.0
227	30K7	118.00	-101.50	1.9	3.8	0.0	5.6	0.0
		151.00	-101.50	1.9	3.8	0.0	5.6	0.0
228	30K7	118.00	-97.00	1.9	3.4	0.0	5.3	0.0
		151.00	-97.00	1.9	3.4	0.0	5.3	0.0
229	30K7	118.00	-92.50	1.9	3.5	0.0	5.3	0.0
		151.00	-92.50	1.9	3.5	0.0	5.3	0.0
230	30K7	118.00	-88.00	1.9	3.7	0.0	5.6	0.0
		151.00	-88.00	1.9	3.7	0.0	5.6	0.0
249	10K1	85.00	-110.50	0.6	1.7	0.0	2.3	0.0
		95.00	-110.50	0.6	1.7	0.0	2.3	0.0
250	10K1	85.00	-106.00	0.6	1.4	0.0	2.0	0.0
		95.00	-106.00	0.6	1.4	0.0	2.0	0.0
251	10K1	85.00	-101.50	0.6	1.1	0.0	1.7	0.0
		95.00	-101.50	0.6	1.1	0.0	1.7	0.0
252	10K1	85.00	-97.00	0.6	1.0	0.0	1.6	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Reaction SummaryPage 23/27
09/03/20 09:39:19

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
		95.00	-97.00	0.6	1.0	0.0	1.6	0.0
253	10K1	85.00	-92.50	0.6	1.1	0.0	1.6	0.0
		95.00	-92.50	0.6	1.1	0.0	1.6	0.0
254	10K1	85.00	-88.00	0.6	1.1	0.0	1.7	0.0
		95.00	-88.00	0.6	1.1	0.0	1.7	0.0
255	10K1	85.00	-83.50	0.6	1.3	0.0	1.8	0.0
		95.00	-83.50	0.6	1.4	0.0	2.0	0.0
256	22K4	95.00	-110.50	1.3	4.0	0.0	5.3	0.0
		118.00	-110.50	1.3	4.0	0.0	5.3	0.0
257	22K4	95.00	-106.00	1.3	3.3	0.0	4.6	0.0
		118.00	-106.00	1.3	3.3	0.0	4.6	0.0
258	22K4	95.00	-101.50	1.3	2.6	0.0	3.9	0.0
		118.00	-101.50	1.3	2.6	0.0	3.9	0.0
259	22K4	95.00	-97.00	1.3	2.4	0.0	3.7	0.0
		118.00	-97.00	1.3	2.4	0.0	3.7	0.0
260	22K4	95.00	-92.50	1.3	2.4	0.0	3.7	0.0
		118.00	-92.50	1.3	2.4	0.0	3.7	0.0
261	22K4	95.00	-88.00	1.3	2.6	0.0	3.9	0.0
		118.00	-88.00	1.3	2.6	0.0	3.9	0.0
264	10K1	85.00	-30.00	0.6	1.2	0.0	1.8	0.0
		95.00	-30.00	0.6	1.2	0.0	1.9	0.0
265	22K4	95.00	-30.00	1.5	2.8	0.0	4.3	0.0
		118.00	-30.00	1.5	2.8	0.0	4.3	0.0
267	10K1	85.00	-35.50	0.7	1.5	0.0	2.2	0.0
		95.00	-35.50	0.7	1.7	0.0	2.4	0.0
268	10K1	85.00	-25.33	0.6	1.1	0.0	1.7	0.0
		95.00	-25.33	0.6	1.1	0.0	1.7	0.0
269	10K1	85.00	-20.67	0.6	1.1	0.0	1.7	0.0
		95.00	-20.67	0.6	1.1	0.0	1.7	0.0
270	22K4	95.00	-25.33	1.3	2.5	0.0	3.9	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Reaction SummaryPage 24/27
09/03/20 09:39:19

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
		118.00	-25.33	1.3	2.5	0.0	3.9	0.0
271	22K4	95.00	-20.67	1.3	2.5	0.0	3.9	0.0
		118.00	-20.67	1.3	2.5	0.0	3.9	0.0
274	24K8	151.00	-110.50	1.7	5.2	0.0	6.8	0.0
		180.75	-110.50	1.7	5.3	0.0	7.0	0.0
275	24K8	151.00	-106.00	1.7	4.3	0.0	6.0	0.0
		180.75	-106.00	1.7	4.8	0.0	6.5	0.0
276	24K8	151.00	-101.50	1.7	3.7	0.0	5.3	0.0
		180.75	-101.50	1.7	4.6	0.0	6.3	0.0
277	24K8	151.00	-92.50	1.7	3.6	0.0	5.2	0.0
		180.75	-92.50	1.7	4.6	0.0	6.3	0.0
278	24K8	151.00	-88.00	1.7	3.7	0.0	5.3	0.0
		180.75	-88.00	1.7	4.7	0.0	6.3	0.0
279	24K8	151.00	-83.50	1.7	4.1	0.0	5.7	0.0
		180.75	-83.50	1.7	4.7	0.0	6.4	0.0
282	28K9	161.00	-49.60	1.7	3.5	0.0	5.2	0.0
		193.00	-49.60	1.7	4.4	0.0	6.2	0.0
283	28K9	161.00	-45.27	1.7	3.5	0.0	5.2	0.0
		193.00	-45.27	1.7	4.4	0.0	6.1	0.0
284	28K9	161.00	-60.00	2.1	4.3	0.0	6.5	0.0
		193.00	-60.00	2.1	5.5	0.0	7.6	0.0
285	32LH09	0.00	-55.25	2.6	6.5	0.0	9.1	0.0
		43.00	-55.25	2.6	5.1	0.0	7.6	0.0
286	32LH09	0.00	-50.50	2.6	6.5	0.0	9.1	0.0
		43.00	-50.50	2.6	5.1	0.0	7.6	0.0
287	32LH09	0.00	-45.75	2.6	6.5	0.0	9.1	0.0
		43.00	-45.75	2.6	5.1	0.0	7.6	0.0
288	10K1	43.00	-55.25	0.8	1.5	0.0	2.2	0.0
		56.00	-55.25	0.8	1.5	0.0	2.2	0.0
289	10K1	43.00	-50.50	0.8	1.5	0.0	2.2	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Reaction SummaryPage 25/27
09/03/20 09:39:19

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
		56.00	-50.50	0.8	1.5	0.0	2.2	0.0
290	10K1	43.00	-45.75	0.8	1.5	0.0	2.2	0.0
		56.00	-45.75	0.8	1.5	0.0	2.2	0.0
291	26K5	56.00	-55.25	1.7	3.2	0.0	5.0	0.0
		85.00	-55.25	1.7	3.2	0.0	5.0	0.0
292	26K5	56.00	-50.50	1.7	3.2	0.0	5.0	0.0
		85.00	-50.50	1.7	3.2	0.0	5.0	0.0
293	26K5	56.00	-45.75	1.7	3.2	0.0	5.0	0.0
		85.00	-45.75	1.7	3.2	0.0	5.0	0.0
297	30K12	43.00	-12.00	2.1	4.6	0.0	6.7	0.0
		85.00	-12.00	2.1	4.6	0.0	6.7	0.0
298	30K12	43.00	-8.00	2.1	5.6	0.0	7.7	0.0
		85.00	-8.00	2.1	5.6	0.0	7.7	0.0
299	30KCS5	43.00	-4.00	2.1	6.6	0.0	8.7	0.0
		85.00	-4.00	2.1	6.6	0.0	8.7	0.0
300	22K4	85.00	-12.00	1.1	2.5	0.0	3.7	0.0
		108.00	-12.00	1.1	2.5	0.0	3.7	0.0
301	22K4	85.00	-8.00	1.1	3.1	0.0	4.2	0.0
		108.00	-8.00	1.1	3.1	0.0	4.2	0.0
302	22K4	85.00	-4.00	1.1	3.6	0.0	4.8	0.0
		108.00	-4.00	1.1	3.6	0.0	4.8	0.0
303	10K1	108.00	-12.00	0.5	1.1	0.0	1.6	0.0
		118.00	-12.00	0.5	1.1	0.0	1.6	0.0
304	10K1	108.00	-8.00	0.5	1.3	0.0	1.8	0.0
		118.00	-8.00	0.5	1.3	0.0	1.8	0.0
305	10K1	108.00	-4.00	0.5	1.6	0.0	2.1	0.0
		118.00	-4.00	0.5	1.6	0.0	2.1	0.0
306	30K12	118.00	-12.00	1.6	3.7	0.0	5.4	0.0
		151.00	-12.00	1.6	4.4	0.0	6.0	0.0
307	30K12	118.00	-8.00	1.6	4.4	0.0	6.1	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Reaction Summary

Page 26/27

09/03/20 09:39:19

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
		151.00	-8.00	1.6	4.8	0.0	6.4	0.0
308	30K12	118.00	-4.00	1.6	5.2	0.0	6.8	0.0
		151.00	-4.00	1.6	5.3	0.0	6.9	0.0
309	30K12	4.00	-12.00	1.9	5.1	0.0	7.0	0.0
		43.00	-12.00	1.9	4.4	0.0	6.3	0.0
310	30K12	4.00	-8.00	1.9	5.6	0.0	7.5	0.0
		43.00	-8.00	1.9	5.2	0.0	7.2	0.0
311	30K12	4.00	-4.00	1.9	6.2	0.0	8.2	0.0
		43.00	-4.00	1.9	6.1	0.0	8.1	0.0
312	28K9	161.00	-37.33	1.5	4.0	0.0	5.5	0.0
		193.00	-37.33	1.5	4.3	0.0	5.8	0.0
313	28K9	161.00	-33.66	1.5	4.7	0.0	6.1	0.0
		193.00	-33.66	1.5	4.7	0.0	6.2	0.0
314	10K1	151.00	-37.33	0.5	1.3	0.0	1.7	0.0
		161.00	-37.33	0.5	1.3	0.0	1.7	0.0
315	10K1	151.00	-33.66	0.5	1.4	0.0	1.9	0.0
		161.00	-33.66	0.5	1.5	0.0	1.9	0.0

Floor Type: CLERESTORY - 138'-6

Beam No.	Beam Size	Supports (ft)		Reactions (kips)				
		X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
17	30K10	118.00	-79.00	2.7	5.0	0.0	7.6	0.0
		118.00	-41.00	2.7	5.0	0.0	7.6	0.0
18	30K10	123.50	-79.00	2.6	4.9	0.0	7.5	0.0
		123.50	-41.00	2.6	4.9	0.0	7.5	0.0
19	30K10	129.00	-79.00	2.6	4.9	0.0	7.5	0.0
		129.00	-41.00	2.6	4.9	0.0	7.5	0.0
20	30K10	134.50	-79.00	2.6	4.9	0.0	7.5	0.0
		134.50	-41.00	2.6	4.9	0.0	7.5	0.0
21	30K10	140.00	-79.00	2.6	4.9	0.0	7.5	0.0
		140.00	-41.00	2.6	4.9	0.0	7.5	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Reaction Summary

Page 27/27

09/03/20 09:39:19

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
22	30K10	145.50	-79.00	2.6	4.9	0.0	7.5	0.0
		145.50	-41.00	2.6	4.9	0.0	7.5	0.0
23	30K10	100.75	-79.00	2.7	5.0	0.0	7.8	0.0
		100.75	-41.00	2.7	5.0	0.0	7.8	0.0
24	30K10	106.50	-79.00	2.7	5.0	0.0	7.8	0.0
		106.50	-41.00	2.7	5.0	0.0	7.8	0.0
25	30K10	112.25	-79.00	2.7	5.0	0.0	7.8	0.0
		112.25	-41.00	2.7	5.0	0.0	7.8	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Beam Summary

09/03/20 09:39:19

Steel Code: AISC 360-16 LRFD

STEEL BEAM DESIGN SUMMARY:

Demand/Capacity Limits for: Strength: 1.000 Deflection: 1.000

Floor Type: CLERESTORY - 138'-6

Bm #	Length ft	+Mu kip-ft	-Mu kip-ft	Φ Mn kip-ft	Fy ksi	Beam Size	Studs

Floor Type: ROOF - 129'-0"

Bm #	Length ft	+Mu kip-ft	-Mu kip-ft	Φ Mn kip-ft	Fy ksi	Beam Size	Studs
3	43.00	171.9	0.0	357.8	50.0	W21X44 u	
4	16.00	104.3	0.0	165.8	50.0	W16X26 u	
5	16.00	176.3	0.0	249.4	50.0	W18X35 u	
6	14.00	75.8	0.0	164.2	50.0	W16X26 u	
7	25.00	236.2	0.0	348.9	50.0	W21X44 u	
8	19.00	143.8	0.0	165.8	50.0	W16X26 u	
9	11.00	46.1	0.0	165.8	50.0	W16X26 u	
12	36.00	511.0	0.0	1061.3	50.0	W30X90	
14	36.00	464.0	0.0	573.8	50.0	W24X62 u	
15	43.00	150.7	0.0	502.5	50.0	W24X55	
16	43.00	135.2	0.0	357.8	50.0	W21X44 u	
17	43.00	138.2	0.0	357.8	50.0	W21X44 u	
18	43.00	141.1	0.0	357.8	50.0	W21X44 u	
20	13.00	19.6	0.0	165.8	50.0	W16X26 u	
22	11.00	33.9	0.0	165.8	50.0	W16X26 u	
23	19.00	95.9	0.0	165.8	50.0	W16X26 u	
24	19.00	96.2	0.0	202.5	50.0	W16X31 u	
25	36.00	347.5	0.0	502.5	50.0	W24X55 u	
26	13.00	11.9	0.0	124.5	50.0	W14X22 u	
28	13.00	10.8	0.0	124.5	50.0	W14X22 u	
29	13.00	12.9	0.0	124.5	50.0	W14X22 u	
30	29.00	97.4	0.0	165.8	50.0	W16X26 u	
31	29.00	60.0	0.0	165.8	50.0	W16X26 u	
33	29.00	54.4	0.0	165.8	50.0	W16X26 u	
34	29.00	64.9	0.0	165.8	50.0	W16X26 u	
35	11.00	32.4	0.0	165.8	50.0	W16X26 u	
36	19.00	95.5	0.0	249.4	50.0	W18X35 u	
37	19.00	95.0	0.0	165.8	50.0	W16X26 u	
38	36.00	326.4	0.0	502.5	50.0	W24X55 u	
40	10.00	8.1	0.0	124.5	50.0	W14X22 u	
41	23.00	45.2	0.0	165.8	50.0	W16X26 u	
42	19.00	48.7	0.0	165.8	50.0	W16X26 u	
43	10.00	8.3	0.0	124.5	50.0	W14X22 u	
44	10.00	8.9	0.0	124.5	50.0	W14X22 u	
45	19.00	48.7	0.0	165.8	50.0	W16X26 u	



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Beam Summary

Page 2/11

09/03/20 09:39:19

Steel Code: AISC 360-16 LRFD

Bm #	Length	+Mu	-Mu	ΦMn	Fy	Beam Size	Studs
48	11.00	58.1	0.0	165.8	50.0	W16X26 u	
49	33.00	213.7	0.0	357.8	50.0	W21X44 u	
50	30.00	417.7	0.0	502.5	50.0	W24X55 u	
52	10.00	10.1	0.0	124.5	50.0	W14X22 u	
53	16.00	145.6	0.0	165.8	50.0	W16X26 u	
54	14.00	54.3	0.0	159.7	50.0	W16X26 u	
55	33.00	112.7	0.0	249.4	50.0	W18X35 u	
57	14.00	58.8	0.0	117.7	50.0	W14X22 u	
58	10.00	9.8	0.0	124.5	50.0	W14X22 u	
59	32.00	102.4	0.0	249.4	50.0	W18X35 u	
60	33.00	72.0	0.0	165.8	50.0	W16X26 u	
62	11.00	44.6	0.0	165.8	50.0	W16X26 u	
63	24.00	179.9	0.0	249.4	50.0	W18X35 u	
64	33.00	103.2	0.0	357.8	50.0	W21X44 u	
65	10.00	6.3	0.0	124.5	50.0	W14X22 u	
66	10.00	9.4	0.0	124.5	50.0	W14X22 u	
67	19.00	47.5	0.0	165.8	50.0	W16X26 u	
69	24.00	188.0	0.0	357.8	50.0	W21X44 u	
71	10.00	8.1	0.0	124.5	50.0	W14X22 u	
72	19.75	32.8	0.0	124.5	50.0	W14X22 u	
73	12.25	16.5	0.0	124.5	50.0	W14X22 u	
74	25.00	202.4	0.0	354.5	50.0	W21X44	
75	25.00	187.9	0.0	245.9	50.0	W18X35 u	
76	19.00	48.7	0.0	165.8	50.0	W16X26 u	
77	33.00	85.5	0.0	249.4	50.0	W18X35 u	
80	18.00	104.2	0.0	165.8	50.0	W16X26 u	
83	36.00	533.6	0.0	663.8	50.0	W24X68	
85	36.00	465.3	0.0	573.8	50.0	W24X62 u	
93	16.00	73.0	0.0	165.8	50.0	W16X26 u	
145	33.00	101.0	0.0	165.8	50.0	W16X26	
148	10.00	8.3	0.0	92.6	50.0	W12X19 u	
149	10.00	8.3	0.0	92.6	50.0	W12X19 u	
150	10.00	8.3	0.0	92.6	50.0	W12X19 u	
172	10.00	9.0	0.0	92.6	50.0	W12X19 u	
174	10.00	8.3	0.0	92.6	50.0	W12X19 u	
175	10.00	8.3	0.0	92.6	50.0	W12X19 u	
176	10.00	8.3	0.0	92.6	50.0	W12X19 u	
177	32.00	80.6	0.0	249.4	50.0	W18X35 u	
185	42.00	134.8	0.0	502.5	50.0	W24X55	
186	42.00	183.8	0.0	357.8	50.0	W21X44 u	
187	14.00	48.9	0.0	159.3	50.0	W16X26 u	
194	39.00	159.5	0.0	357.8	50.0	W21X44	
231	33.00	88.6	0.0	165.8	50.0	W16X26	
246	10.00	7.7	0.0	124.5	50.0	W14X22 u	
247	36.00	288.7	0.0	502.5	50.0	W24X55 u	



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Beam Summary

Page 3/11

09/03/20 09:39:19

Steel Code: AISC 360-16 LRFD

Bm #	Length	+Mu	-Mu	Φ Mn	Fy	Beam Size	Studs
262	23.00	43.0	0.0	165.8	50.0	W16X26 u	
263	25.00	136.5	0.0	163.7	50.0	W16X26 u	
266	23.00	49.6	0.0	165.8	50.0	W16X26 u	
272	29.75	68.2	0.0	165.8	50.0	W16X26 u	
273	29.75	64.4	0.0	124.5	50.0	W14X22 u	
280	10.00	7.6	0.0	92.6	50.0	W12X19 u	
281	10.00	7.1	0.0	92.6	50.0	W12X19 u	
294	10.00	8.3	0.0	92.6	50.0	W12X19 u	
295	10.00	8.3	0.0	92.6	50.0	W12X19 u	
296	10.00	8.3	0.0	92.6	50.0	W12X19 u	

Floor Type: LEVEL 2 - 115'-0"

Bm #	Length ft	+Mu kip-ft	-Mu kip-ft	Φ Mn kip-ft	Fy ksi	Beam Size	Studs
3	43.00	488.9	0.0	879.4	50.0	W24X55 u	55
4	16.00	197.4	0.0	701.5	50.0	W24X55 u	16
5	16.00	197.4	0.0	701.5	50.0	W24X55 u	16
6	14.00	166.8	0.0	680.1	50.0	W24X55 u	14
7	25.00	507.8	0.0	743.9	50.0	W24X55 u	22
8	19.00	259.4	0.0	788.9	50.0	W24X55 u	26
9	11.00	124.2	0.0	721.9	50.0	W24X55 u	18
12	36.00	916.9	0.0	1213.3	50.0	W24X76 u	54
13	19.00	356.0	0.0	746.7	50.0	W24X55 u	30
14	36.00	1049.2	0.0	1291.8	50.0	W24X76 u	66
15	43.00	283.9	0.0	863.1	50.0	W24X55 u	50
16	43.00	443.6	0.0	882.2	50.0	W24X55 u	50
17	43.00	400.0	0.0	882.9	50.0	W24X55 u	50
18	43.00	379.6	0.0	881.1	50.0	W24X55 u	50
19	43.00	416.6	0.0	882.5	50.0	W24X55 u	51
20	13.00	27.4	0.0	195.1	50.0	W14X22 u	10
22	11.00	91.5	0.0	372.1	50.0	W18X35 u	12
23	19.00	228.8	0.0	418.7	50.0	W18X35 u	18
24	19.00	228.8	0.0	418.7	50.0	W18X35 u	18
25	36.00	818.3	0.0	1160.3	50.0	W24X68 u	60
26	13.00	35.6	0.0	196.2	50.0	W14X22 u	10
27	13.00	38.0	0.0	196.2	50.0	W14X22 u	10
28	13.00	37.0	0.0	196.2	50.0	W14X22 u	10
29	13.00	25.1	0.0	195.1	50.0	W14X22 u	10
30	29.00	137.7	0.0	309.8	50.0	W16X31 u	14
31	29.00	178.1	0.0	311.7	50.0	W16X31 u	14
32	29.00	190.3	0.0	311.8	50.0	W16X31 u	14
33	29.00	185.4	0.0	311.8	50.0	W16X31 u	14
34	29.00	129.1	0.0	310.1	50.0	W16X31 u	14
35	11.00	135.1	0.0	372.1	50.0	W18X35 u	12
36	19.00	215.8	0.0	418.7	50.0	W18X35 u	18



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Beam Summary

Page 4/11

09/03/20 09:39:19

Steel Code: AISC 360-16 LRFD

Bm #	Length	+Mu	-Mu	ΦMn	Fy	Beam Size	Studs
37	19.00	215.8	0.0	418.7	50.0	W18X35 u	18
38	36.00	758.3	0.0	900.2	50.0	W24X55 u	40
40	10.00	21.9	0.0	195.6	50.0	W14X22 u	10
41	23.00	123.3	0.0	400.6	50.0	W18X35 u	25
42	19.00	91.2	0.0	289.6	50.0	W16X26 u	14
43	10.00	22.6	0.0	309.8	50.0	W16X31 u	16
44	10.00	21.0	0.0	195.6	50.0	W14X22 u	10
45	19.00	91.2	0.0	289.6	50.0	W16X26 u	14
47	33.00	246.8	0.0	378.2	50.0	W16X31 u	29
48	11.00	143.8	0.0	372.1	50.0	W18X35 u	12
49	33.00	299.1	0.0	455.6	50.0	W18X35 u	32
50	30.00	875.6	0.0	1297.3	50.0	W27X84 u	32
52	10.00	20.7	0.0	307.4	50.0	W16X31 u	16
53	16.00	179.0	0.0	371.5	50.0	W18X35 u	12
54	14.00	137.3	0.0	370.8	50.0	W18X35 u	12
55	33.00	226.6	0.0	450.2	50.0	W18X35 u	30
57	14.00	129.0	0.0	370.8	50.0	W18X35 u	12
58	10.00	16.2	0.0	194.4	50.0	W14X22 u	10
59	32.00	168.2	0.0	444.9	50.0	W18X35 u	30
60	33.00	279.2	0.0	455.6	50.0	W18X35 u	30
61	33.00	241.7	0.0	378.2	50.0	W16X31 u	28
62	11.00	93.7	0.0	372.1	50.0	W18X35 u	12
63	24.00	383.7	0.0	540.5	50.0	W21X44 u	17
64	33.00	221.6	0.0	450.1	50.0	W18X35 u	38
65	10.00	21.3	0.0	124.5	50.0	W14X22 u	
66	10.00	23.6	0.0	124.5	50.0	W14X22 u	
67	19.00	92.2	0.0	262.1	50.0	W16X26 u	14
68	5.75	7.8	0.0	124.5	50.0	W14X22 u	
69	24.00	341.1	0.0	537.2	50.0	W21X44 u	17
70	32.00	228.8	0.0	378.2	50.0	W16X31 u	28
71	10.00	21.9	0.0	195.6	50.0	W14X22 u	10
72	19.75	150.1	0.0	259.1	50.0	W16X26 u	12
73	12.25	26.6	0.0	256.3	50.0	W16X26 u	12
74	25.00	369.5	0.0	537.5	50.0	W21X44 u	16
75	25.00	412.5	0.0	540.7	50.0	W21X44 u	16
76	19.00	238.8	0.0	402.9	50.0	W18X35 u	17
77	33.00	163.9	0.0	446.3	50.0	W18X35 u	30
78	10.00	14.9	0.0	194.4	50.0	W14X22 u	10
79	19.75	64.1	0.0	257.8	50.0	W16X26 u	12
80	18.00	137.7	0.0	413.4	50.0	W18X35 u	18
82	36.00	961.4	0.0	1487.4	50.0	W27X84 u	58
83	36.00	822.2	0.0	1006.8	50.0	W24X62 u	44
85	36.00	1034.0	0.0	1545.3	50.0	W27X84 u	72
88	10.00	22.7	0.0	249.4	50.0	W18X35 u	
89	5.75	0.0	-106.7	231.8	50.0	W18X35 u	



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Beam Summary

Page 5/11

09/03/20 09:39:19

Steel Code: AISC 360-16 LRFD

Bm #	Length	+Mu	-Mu	ΦMn	Fy	Beam Size	Studs
90	5.75	0.0	-142.6	185.9	50.0	W16X31 u	
91	19.00	54.7	0.0	221.8	50.0	W14X22 u	12
92	19.00	54.7	0.0	221.8	50.0	W14X22 u	12
102	43.00	483.7	0.0	882.9	50.0	W24X55 u	50
103	43.00	454.4	0.0	882.9	50.0	W24X55 u	50
104	43.00	400.0	0.0	882.9	50.0	W24X55 u	50
105	43.00	400.0	0.0	882.9	50.0	W24X55 u	50
106	43.00	443.5	0.0	885.2	50.0	W24X55 u	51
107	43.00	367.1	0.0	879.2	50.0	W24X55 u	51
109	39.00	400.4	0.0	701.4	50.0	W21X48 u	44
111	13.00	33.1	0.0	196.2	50.0	W14X22 u	10
112	13.00	38.0	0.0	196.2	50.0	W14X22 u	10
113	13.00	38.0	0.0	196.2	50.0	W14X22 u	10
114	13.00	38.0	0.0	196.2	50.0	W14X22 u	10
115	13.00	38.0	0.0	196.2	50.0	W14X22 u	10
120	29.00	165.8	0.0	311.5	50.0	W16X31 u	14
121	29.00	190.3	0.0	311.8	50.0	W16X31 u	14
122	29.00	190.3	0.0	311.8	50.0	W16X31 u	14
123	29.00	190.3	0.0	311.8	50.0	W16X31 u	14
124	29.00	190.3	0.0	311.8	50.0	W16X31 u	14
133	33.00	319.2	0.0	456.1	50.0	W18X35 u	32
134	33.00	279.6	0.0	455.1	50.0	W18X35 u	32
135	33.00	214.7	0.0	377.0	50.0	W16X31 u	28
136	10.00	22.5	0.0	124.5	50.0	W14X22 u	
137	10.00	22.5	0.0	124.5	50.0	W14X22 u	
138	5.75	7.4	0.0	124.5	50.0	W14X22 u	
139	5.75	7.4	0.0	124.5	50.0	W14X22 u	
140	10.00	22.5	0.0	124.5	50.0	W14X22 u	
141	10.00	22.5	0.0	124.5	50.0	W14X22 u	
142	5.75	7.4	0.0	124.5	50.0	W14X22 u	
143	5.75	7.4	0.0	124.5	50.0	W14X22 u	
144	33.00	293.7	0.0	456.1	50.0	W18X35 u	30
145	33.00	264.6	0.0	455.1	50.0	W18X35 u	30
146	33.00	214.7	0.0	377.0	50.0	W16X31 u	28
147	5.75	7.3	0.0	124.5	50.0	W14X22 u	
151	10.00	22.2	0.0	124.5	50.0	W14X22 u	
156	32.00	231.1	0.0	378.3	50.0	W16X31 u	28
157	32.00	231.1	0.0	378.3	50.0	W16X31 u	28
171	10.00	20.9	0.0	124.5	50.0	W14X22 u	
172	8.00	0.2	0.0	194.9	50.0	W14X22 u	8
174	39.00	322.6	0.0	963.4	50.0	W24X62 u	54
175	36.00	655.6	0.0	900.2	50.0	W24X55 u	40
176	10.00	14.9	0.0	194.4	50.0	W14X22 u	10
180	10.00	21.3	0.0	195.6	50.0	W14X22 u	10
181	10.00	21.3	0.0	195.6	50.0	W14X22 u	10



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Beam Summary

Page 6/11

09/03/20 09:39:19

Steel Code: AISC 360-16 LRFD

Bm #	Length	+Mu	-Mu	ΦMn	Fy	Beam Size	Studs
182	10.00	21.3	0.0	195.6	50.0	W14X22 u	10
183	10.00	21.3	0.0	195.6	50.0	W14X22 u	10
184	10.00	21.3	0.0	195.6	50.0	W14X22 u	10
185	23.00	113.2	0.0	259.4	50.0	W16X26 u	12
186	23.00	113.2	0.0	259.4	50.0	W16X26 u	12
187	23.00	113.2	0.0	259.4	50.0	W16X26 u	12
188	23.00	113.2	0.0	259.4	50.0	W16X26 u	12
189	23.00	113.2	0.0	259.4	50.0	W16X26 u	12
190	29.00	183.5	0.0	311.7	50.0	W16X31 u	14
191	29.00	180.5	0.0	311.7	50.0	W16X31 u	14
192	29.00	180.5	0.0	311.7	50.0	W16X31 u	14
193	29.00	180.5	0.0	311.7	50.0	W16X31 u	14
194	29.00	180.5	0.0	311.7	50.0	W16X31 u	14
195	13.00	36.0	0.0	196.2	50.0	W14X22 u	10
196	13.00	36.0	0.0	196.2	50.0	W14X22 u	10
197	13.00	36.0	0.0	196.2	50.0	W14X22 u	10
198	13.00	36.0	0.0	196.2	50.0	W14X22 u	10
199	13.00	36.0	0.0	196.2	50.0	W14X22 u	10
200	43.00	383.7	0.0	881.5	50.0	W24X55 u	50
201	43.00	383.7	0.0	881.5	50.0	W24X55 u	50
202	43.00	383.7	0.0	881.5	50.0	W24X55 u	50
203	43.00	383.7	0.0	881.5	50.0	W24X55 u	50
204	43.00	383.7	0.0	881.5	50.0	W24X55 u	50
205	33.00	233.8	0.0	377.8	50.0	W16X31 u	28
206	33.00	233.8	0.0	377.8	50.0	W16X31 u	28
207	33.00	233.8	0.0	377.8	50.0	W16X31 u	28
208	33.00	233.8	0.0	377.8	50.0	W16X31 u	28
209	33.00	233.8	0.0	377.8	50.0	W16X31 u	28
210	10.00	21.3	0.0	195.6	50.0	W14X22 u	10
211	10.00	21.3	0.0	195.6	50.0	W14X22 u	10
212	10.00	21.3	0.0	195.6	50.0	W14X22 u	10
213	10.00	21.3	0.0	195.6	50.0	W14X22 u	10
214	10.00	21.3	0.0	195.6	50.0	W14X22 u	10
215	19.75	95.1	0.0	259.1	50.0	W16X26 u	12
216	19.75	95.1	0.0	259.1	50.0	W16X26 u	12
217	19.75	95.1	0.0	259.1	50.0	W16X26 u	12
218	19.75	95.1	0.0	259.1	50.0	W16X26 u	12
219	19.75	95.1	0.0	259.1	50.0	W16X26 u	12
220	32.00	225.8	0.0	378.0	50.0	W16X31 u	28
221	32.00	219.8	0.0	377.8	50.0	W16X31 u	28
222	32.00	201.9	0.0	377.0	50.0	W16X31 u	28
223	10.00	19.6	0.0	124.5	50.0	W14X22 u	
224	32.00	235.8	0.0	378.5	50.0	W16X31 u	28
225	10.00	23.0	0.0	124.5	50.0	W14X22 u	
226	5.75	7.6	0.0	124.5	50.0	W14X22 u	



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Beam Summary

Page 7/11

09/03/20 09:39:19

Steel Code: AISC 360-16 LRFD

Bm #	Length	+Mu	-Mu	ΦM_n	Fy	Beam Size	Studs
227	26.24	112.5	0.0	157.1	50.0	W16X26	

* after Size denotes beam failed stress/capacity criteria.

after Size denotes beam failed deflection criteria.

u after Size denotes this size has been assigned by the User.



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Beam Summary

Page 8/11

09/03/20 09:39:19

Steel Code: AISC 360-16 LRFD

JOIST SELECTION SUMMARY:

Demand/Capacity Limits for: Strength: 1.000 Deflection: 1.000

Floor Type: CLERESTORY - 138'-6

Standard Joists:

Joist #	Length	WDL	WLL	WTL	Joist	
17	38.00	140.6	260.9	401.6	30K10	u
18	38.00	137.5	256.3	393.8	30K10	u
19	38.00	137.5	256.3	393.8	30K10	u
20	38.00	137.5	256.3	393.8	30K10	u
21	38.00	137.5	256.3	393.8	30K10	u
22	38.00	137.5	256.3	393.8	30K10	u
23	38.00	143.7	265.6	409.3	30K10	u
24	38.00	143.7	265.6	409.3	30K10	u
25	38.00	143.7	265.6	409.3	30K10	u

Floor Type: ROOF - 129'-0"

Standard Joists:

Joist #	Length	WDL	WLL	WTL	Joist	
27	13.00	118.7	223.3	342.0	10K1	u
32	29.00	118.7	223.3	342.0	26K5	u
61	33.00	127.1	272.4	437.6	30K10	u
98	43.00	125.0	264.8	441.1	32LH09	u
99	43.00	125.0	264.8	441.1	32LH09	u
100	43.00	125.0	264.8	441.1	32LH09	u
101	43.00	125.0	264.8	441.1	32LH09	u
104	43.00	118.8	253.8	421.3	32LH09	u
105	43.00	118.8	253.8	421.3	32LH09	u
106	43.00	118.8	253.8	421.3	32LH09	u
112	13.00	137.5	258.5	396.0	10K1	u
115	29.00	137.5	258.5	396.0	26K5	u
118	13.00	118.7	223.3	342.0	10K1	u
119	13.00	118.7	223.3	342.0	10K1	u
120	13.00	118.7	223.3	342.0	10K1	u
121	29.00	118.7	223.3	342.0	26K5	u
122	29.00	118.7	223.3	342.0	26K5	u
123	29.00	118.7	223.3	342.0	26K5	u
142	33.00	116.7	248.3	412.1	30K10	u
143	33.00	116.7	248.3	412.1	30K10	u
179	32.00	99.2	238.2	366.6	28K9	u
181	32.00	118.8	353.6	532.6	28K9	u
182	32.00	118.8	322.2	468.9	28K9	u
183	32.00	118.8	284.6	437.7	28K9	u
190	29.00	116.7	219.3	336.0	26K5	u



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Beam Summary

Page 9/11

09/03/20 09:39:19

Steel Code: AISC 360-16 LRFD

Joist #	Length	WDL	WLL	WTL	Joist	
191	29.00	116.7	219.3	336.0	26K5	u
192	13.00	116.7	219.3	336.0	10K1	u
193	13.00	116.7	219.3	336.0	10K1	u
197	43.00	112.5	347.8	468.2	32LH09	u
198	43.00	112.5	292.9	429.0	32LH09	u
199	43.00	112.5	249.9	403.5	32LH09	u
200	43.00	112.5	238.5	398.0	32LH09	u
201	43.00	112.5	241.3	399.9	32LH09	u
202	43.00	112.5	241.4	400.0	32LH09	u
203	43.00	112.5	241.4	400.0	32LH09	u
204	13.00	112.5	346.5	459.0	10K1	u
205	13.00	112.5	285.7	398.3	10K1	u
206	13.00	112.5	229.8	342.3	10K1	u
207	13.00	112.5	209.1	321.6	10K1	u
208	13.00	112.5	211.5	324.0	10K1	u
209	13.00	112.5	211.5	324.0	10K1	u
210	13.00	112.5	211.5	324.0	10K1	u
211	29.00	112.5	346.5	459.0	26K6	
212	29.00	112.5	285.7	398.3	26K5	u
213	29.00	112.5	229.8	342.3	26K5	u
214	29.00	112.5	209.1	321.6	26K5	u
215	29.00	112.5	211.5	324.0	26K5	u
216	29.00	112.5	211.5	324.0	26K5	u
217	29.00	112.5	211.5	324.0	26K5	u
225	33.00	112.5	346.5	459.0	30K7	u
226	33.00	112.5	285.7	398.3	30K7	u
227	33.00	112.5	229.8	342.3	30K7	u
228	33.00	112.5	209.1	321.6	30K7	u
229	33.00	112.5	211.5	324.0	30K7	u
230	33.00	112.5	226.7	339.2	30K7	u
249	10.00	112.5	346.5	459.0	10K1	u
250	10.00	112.5	285.7	398.3	10K1	u
251	10.00	112.5	229.8	342.3	10K1	u
252	10.00	112.5	209.1	321.6	10K1	u
253	10.00	112.5	211.5	324.0	10K1	u
254	10.00	112.5	226.7	339.2	10K1	u
255	10.00	112.5	273.5	423.7	10K1	u
256	23.00	112.5	346.5	459.0	22K4	u
257	23.00	112.5	285.7	398.3	22K4	u
258	23.00	112.5	229.8	342.3	22K4	u
259	23.00	112.5	209.1	321.6	22K4	u
260	23.00	112.5	211.5	324.0	22K4	u
261	23.00	112.5	226.7	339.2	22K4	u
264	10.00	127.1	244.8	371.8	10K1	u
265	23.00	127.1	244.8	371.8	22K4	u



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Beam Summary

Page 10/11

09/03/20 09:39:19

Steel Code: AISC 360-16 LRFD

Joist #	Length	WDL	WLL	WTL	Joist	
267	10.00	137.5	320.3	493.3	10K1	u
268	10.00	116.7	219.3	336.0	10K1	u
269	10.00	116.7	219.3	336.0	10K1	u
270	23.00	116.7	219.3	336.0	22K4	u
271	23.00	116.7	219.3	336.0	22K4	u
274	29.75	112.5	347.6	469.0	24K8	u
275	29.75	112.5	297.7	437.9	24K8	u
276	29.75	112.5	266.9	423.0	24K8	u
277	29.75	112.5	266.4	433.4	24K8	u
278	29.75	112.5	269.0	429.5	24K8	u
279	29.75	112.5	276.9	428.6	24K8	u
282	32.00	109.1	232.5	386.5	28K9	u
283	32.00	107.5	233.0	382.9	28K9	u
284	32.00	134.4	285.3	475.0	28K9	*u
285	43.00	118.8	253.8	421.3	32LH09	u
286	43.00	118.8	253.8	421.3	32LH09	u
287	43.00	118.8	253.8	421.3	32LH09	u
288	13.00	118.7	223.3	342.0	10K1	u
289	13.00	118.7	223.3	342.0	10K1	u
290	13.00	118.7	223.3	342.0	10K1	u
291	29.00	118.7	223.3	342.0	26K5	u
292	29.00	118.7	223.3	342.0	26K5	u
293	29.00	118.7	223.3	342.0	26K5	u
297	42.00	100.0	218.4	318.4	30K12	u
298	42.00	100.0	266.0	366.0	30K12	u
300	23.00	100.0	218.4	318.4	22K4	u
301	23.00	100.0	266.0	366.0	22K4	u
302	23.00	100.0	314.0	414.0	22K4	u
303	10.00	100.0	218.4	318.4	10K1	
304	10.00	100.0	266.0	366.0	10K1	
305	10.00	100.0	314.0	414.0	10K1	
306	33.00	100.0	233.4	364.8	30K12	u
307	33.00	100.0	271.1	388.3	30K12	u
308	33.00	100.0	315.0	420.6	30K12	u
309	39.00	100.0	230.2	360.0	30K12	u
310	39.00	100.0	270.1	386.3	30K12	u
311	39.00	100.0	315.0	420.2	30K12	u
312	32.00	91.8	255.3	361.0	28K9	u
313	32.00	91.6	292.2	388.3	28K9	u
314	10.00	91.7	251.4	343.2	10K1	
315	10.00	91.6	291.4	383.0	10K1	

Constant Shear Joists:



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Beam Summary

Page 11/11

09/03/20 09:39:19

Steel Code: AISC 360-16 LRFD

Joist #	Length	Wmax	Pmax	Vmax	Mmax	Joist	
299	42.00	414.0	0.0	8.7	91.3	30KCS5	u

* after Size denotes joist is inadequate.

u after Size denotes this size has been assigned by the User.



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Code Check Summary

09/03/20 09:46:42

Steel Code: AISC360-16 LRFD

CRITERIA:

Rigid End Zones: Ignore Effects
 Member Force Output: At Face of Joint
 P-Delta: Yes Scale Factor: 1.00
 Ground Level: Base
 Mesh Criteria :
 Max. Distance Between Nodes on Mesh Line (ft) : 4.00
 Merge Node Tolerance (in) : 0.0100
 Geometry Tolerance (in) : 0.0050
 Walls Out-of-plane Stiffness Not Included in Analysis.
 Sign considered for Dynamic Load Case Results.
 Rigid Links Included at Fixed Beam-to-Wall Locations
 Eigenvalue Analysis : Eigen Vectors (Subspace Iteration)

LOAD COMBINATION CRITERIA:

Snow Factor f2 Use Full Factor ($f2 = 0.7$) on Snow in Combination with Seismic
 Notional Loads Consider with all Combinations in direction of lateral load
 Live Load factor f1 (0.5 or 1.0) 0.500
 Sds (for Ev) 0.107
 RhoX 1.000
 RhoY 1.000

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Code Check Summary

Page 2/15

09/03/20 09:46:42

Steel Code: AISC360-16 LRFD

NR2

NOTIONAL

NL_AISC360_Rf_Y

LOAD COMBINATIONS: IBC 2018 / ASCE 7-16 LRFD

- 1 * 1.400 D + 1.400 ND1
- 2 * 1.400 D + 1.400 ND2
- 3 * 1.400 D - 1.400 ND1
- 4 * 1.400 D - 1.400 ND2
- 5 * 1.200 D + 1.200 ND1 + 1.600 Lp + 1.600 NL1 + 0.500 Sp + 0.500 NR1
- 6 * 1.200 D + 1.200 ND2 + 1.600 Lp + 1.600 NL2 + 0.500 Sp + 0.500 NR2
- 7 * 1.200 D - 1.200 ND1 + 1.600 Lp - 1.600 NL1 + 0.500 Sp - 0.500 NR1
- 8 * 1.200 D - 1.200 ND2 + 1.600 Lp - 1.600 NL2 + 0.500 Sp - 0.500 NR2
- 9 * 1.200 D + 1.200 ND1 + 1.600 Lp + 1.600 NL1
- 10 * 1.200 D + 1.200 ND2 + 1.600 Lp + 1.600 NL2
- 11 * 1.200 D - 1.200 ND1 + 1.600 Lp - 1.600 NL1
- 12 * 1.200 D - 1.200 ND2 + 1.600 Lp - 1.600 NL2
- 13 * 1.200 D + 1.200 ND1 + 0.500 Lp + 0.500 NL1 + 1.600 Sp + 1.600 NR1
- 14 * 1.200 D + 1.200 ND2 + 0.500 Lp + 0.500 NL2 + 1.600 Sp + 1.600 NR2
- 15 * 1.200 D - 1.200 ND1 + 0.500 Lp - 0.500 NL1 + 1.600 Sp - 1.600 NR1
- 16 * 1.200 D - 1.200 ND2 + 0.500 Lp - 0.500 NL2 + 1.600 Sp - 1.600 NR2
- 17 * 1.200 D - 1.200 ND1 + 1.600 Sp - 1.600 NR1
- 18 * 1.200 D - 1.200 ND2 + 1.600 Sp - 1.600 NR2
- 19 * 1.200 D + 1.200 ND1 + 1.600 Sp + 1.600 NR1
- 20 * 1.200 D + 1.200 ND2 + 1.600 Sp + 1.600 NR2
- 21 * 1.200 D + 1.200 ND1 + 1.600 Sp + 1.600 NR1 + 0.500 W1
- 22 * 1.200 D + 1.200 ND2 + 1.600 Sp + 1.600 NR2 + 0.500 W2
- 23 * 1.200 D + 1.200 ND1 + 1.600 Sp + 1.600 NR1 + 0.500 W3
- 24 * 1.200 D + 1.200 ND1 + 1.600 Sp + 1.600 NR1 + 0.500 W4
- 25 * 1.200 D + 1.200 ND2 + 1.600 Sp + 1.600 NR2 + 0.500 W5
- 26 * 1.200 D + 1.200 ND2 + 1.600 Sp + 1.600 NR2 + 0.500 W6
- 27 * 1.200 D + 0.634 ND1 + 1.019 ND2 + 1.600 Sp + 0.846 NR1 + 1.358 NR2 + 0.500 W7
- 28 * 1.200 D + 0.634 ND1 - 1.019 ND2 + 1.600 Sp + 0.846 NR1 - 1.358 NR2 + 0.500 W8
- 29 * 1.200 D + 0.672 ND1 + 0.994 ND2 + 1.600 Sp + 0.896 NR1 + 1.326 NR2 + 0.500 W9
- 30 * 1.200 D + 0.594 ND1 + 1.043 ND2 + 1.600 Sp + 0.792 NR1 + 1.390 NR2 + 0.500 W10
- 31 * 1.200 D + 0.672 ND1 - 0.994 ND2 + 1.600 Sp + 0.896 NR1 - 1.326 NR2 + 0.500 W11
- 32 * 1.200 D + 0.594 ND1 - 1.043 ND2 + 1.600 Sp + 0.792 NR1 - 1.390 NR2 + 0.500 W12
- 33 * 1.200 D - 1.200 ND1 + 1.600 Sp - 1.600 NR1 - 0.500 W1
- 34 * 1.200 D - 1.200 ND2 + 1.600 Sp - 1.600 NR2 - 0.500 W2
- 35 * 1.200 D - 1.200 ND1 + 1.600 Sp - 1.600 NR1 - 0.500 W3
- 36 * 1.200 D - 1.200 ND1 + 1.600 Sp - 1.600 NR1 - 0.500 W4
- 37 * 1.200 D - 1.200 ND2 + 1.600 Sp - 1.600 NR2 - 0.500 W5
- 38 * 1.200 D - 1.200 ND2 + 1.600 Sp - 1.600 NR2 - 0.500 W6
- 39 * 1.200 D - 0.634 ND1 - 1.019 ND2 + 1.600 Sp - 0.846 NR1 - 1.358 NR2 - 0.500 W7
- 40 * 1.200 D - 0.634 ND1 + 1.019 ND2 + 1.600 Sp - 0.846 NR1 + 1.358 NR2 - 0.500 W8
- 41 * 1.200 D - 0.672 ND1 - 0.994 ND2 + 1.600 Sp - 0.896 NR1 - 1.326 NR2 - 0.500 W9
- 42 * 1.200 D - 0.594 ND1 - 1.043 ND2 + 1.600 Sp - 0.792 NR1 - 1.390 NR2 - 0.500 W10
- 43 * 1.200 D - 0.672 ND1 + 0.994 ND2 + 1.600 Sp - 0.896 NR1 + 1.326 NR2 - 0.500 W11



RAM Structural System



Code Check Summary

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 3/15

09/03/20 09:46:42

Steel Code: AISC360-16 LRFD

44	*	1.200 D - 0.594 ND1 + 1.043 ND2 + 1.600 Sp - 0.792 NR1 + 1.390 NR2 - 0.500 W12
45	*	1.200 D + 1.200 ND1 + 0.500 Lp + 0.500 NL1 + 0.500 Sp + 0.500 NR1 + 1.000 W1
46	*	1.200 D + 1.200 ND2 + 0.500 Lp + 0.500 NL2 + 0.500 Sp + 0.500 NR2 + 1.000 W2
47	*	1.200 D + 1.200 ND1 + 0.500 Lp + 0.500 NL1 + 0.500 Sp + 0.500 NR1 + 1.000 W3
48	*	1.200 D + 1.200 ND1 + 0.500 Lp + 0.500 NL1 + 0.500 Sp + 0.500 NR1 + 1.000 W4
49	*	1.200 D + 1.200 ND2 + 0.500 Lp + 0.500 NL2 + 0.500 Sp + 0.500 NR2 + 1.000 W5
50	*	1.200 D + 1.200 ND2 + 0.500 Lp + 0.500 NL2 + 0.500 Sp + 0.500 NR2 + 1.000 W6
51	*	1.200 D + 0.634 ND1 + 1.019 ND2 + 0.500 Lp + 0.264 NL1 + 0.424 NL2 + 0.500 Sp + 0.264 NR1 + 0.424 NR2 + 1.000 W7
52	*	1.200 D + 0.634 ND1 - 1.019 ND2 + 0.500 Lp + 0.264 NL1 - 0.424 NL2 + 0.500 Sp + 0.264 NR1 - 0.424 NR2 + 1.000 W8
53	*	1.200 D + 0.672 ND1 + 0.994 ND2 + 0.500 Lp + 0.280 NL1 + 0.414 NL2 + 0.500 Sp + 0.280 NR1 + 0.414 NR2 + 1.000 W9
54	*	1.200 D + 0.594 ND1 + 1.043 ND2 + 0.500 Lp + 0.247 NL1 + 0.435 NL2 + 0.500 Sp + 0.247 NR1 + 0.435 NR2 + 1.000 W10
55	*	1.200 D + 0.672 ND1 - 0.994 ND2 + 0.500 Lp + 0.280 NL1 - 0.414 NL2 + 0.500 Sp + 0.280 NR1 - 0.414 NR2 + 1.000 W11
56	*	1.200 D + 0.594 ND1 - 1.043 ND2 + 0.500 Lp + 0.247 NL1 - 0.435 NL2 + 0.500 Sp + 0.247 NR1 - 0.435 NR2 + 1.000 W12
57	*	1.200 D - 1.200 ND1 + 0.500 Lp - 0.500 NL1 + 0.500 Sp - 0.500 NR1 - 1.000 W1
58	*	1.200 D - 1.200 ND2 + 0.500 Lp - 0.500 NL2 + 0.500 Sp - 0.500 NR2 - 1.000 W2
59	*	1.200 D - 1.200 ND1 + 0.500 Lp - 0.500 NL1 + 0.500 Sp - 0.500 NR1 - 1.000 W3
60	*	1.200 D - 1.200 ND1 + 0.500 Lp - 0.500 NL1 + 0.500 Sp - 0.500 NR1 - 1.000 W4
61	*	1.200 D - 1.200 ND2 + 0.500 Lp - 0.500 NL2 + 0.500 Sp - 0.500 NR2 - 1.000 W5
62	*	1.200 D - 1.200 ND2 + 0.500 Lp - 0.500 NL2 + 0.500 Sp - 0.500 NR2 - 1.000 W6
63	*	1.200 D - 0.634 ND1 - 1.019 ND2 + 0.500 Lp - 0.264 NL1 - 0.424 NL2 + 0.500 Sp - 0.264 NR1 - 0.424 NR2 - 1.000 W7
64	*	1.200 D - 0.634 ND1 + 1.019 ND2 + 0.500 Lp - 0.264 NL1 + 0.424 NL2 + 0.500 Sp - 0.264 NR1 + 0.424 NR2 - 1.000 W8
65	*	1.200 D - 0.672 ND1 - 0.994 ND2 + 0.500 Lp - 0.280 NL1 - 0.414 NL2 + 0.500 Sp - 0.280 NR1 - 0.414 NR2 - 1.000 W9
66	*	1.200 D - 0.594 ND1 - 1.043 ND2 + 0.500 Lp - 0.247 NL1 - 0.435 NL2 + 0.500 Sp - 0.247 NR1 - 0.435 NR2 - 1.000 W10
67	*	1.200 D - 0.672 ND1 + 0.994 ND2 + 0.500 Lp - 0.280 NL1 + 0.414 NL2 + 0.500 Sp - 0.280 NR1 + 0.414 NR2 - 1.000 W11
68	*	1.200 D - 0.594 ND1 + 1.043 ND2 + 0.500 Lp - 0.247 NL1 + 0.435 NL2 + 0.500 Sp - 0.247 NR1 + 0.435 NR2 - 1.000 W12
69	*	1.200 D + 1.200 ND1 + 0.500 Lp + 0.500 NL1 + 1.000 W1
70	*	1.200 D + 1.200 ND2 + 0.500 Lp + 0.500 NL2 + 1.000 W2
71	*	1.200 D + 1.200 ND1 + 0.500 Lp + 0.500 NL1 + 1.000 W3
72	*	1.200 D + 1.200 ND1 + 0.500 Lp + 0.500 NL1 + 1.000 W4
73	*	1.200 D + 1.200 ND2 + 0.500 Lp + 0.500 NL2 + 1.000 W5
74	*	1.200 D + 1.200 ND2 + 0.500 Lp + 0.500 NL2 + 1.000 W6
75	*	1.200 D + 0.634 ND1 + 1.019 ND2 + 0.500 Lp + 0.264 NL1 + 0.424 NL2 + 1.000 W7
76	*	1.200 D + 0.634 ND1 - 1.019 ND2 + 0.500 Lp + 0.264 NL1 - 0.424 NL2 + 1.000 W8
77	*	1.200 D + 0.672 ND1 + 0.994 ND2 + 0.500 Lp + 0.280 NL1 + 0.414 NL2 + 1.000 W9
78	*	1.200 D + 0.594 ND1 + 1.043 ND2 + 0.500 Lp + 0.247 NL1 + 0.435 NL2 + 1.000 W10



RAM Structural System



Code Check Summary

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 4/15

09/03/20 09:46:42

Steel Code: AISC360-16 LRFD

79	*	$1.200 D + 0.672 ND1 - 0.994 ND2 + 0.500 Lp + 0.280 NL1 - 0.414 NL2 + 1.000 W11$
80	*	$1.200 D + 0.594 ND1 - 1.043 ND2 + 0.500 Lp + 0.247 NL1 - 0.435 NL2 + 1.000 W12$
81	*	$1.200 D - 1.200 ND1 + 0.500 Lp - 0.500 NL1 - 1.000 W1$
82	*	$1.200 D - 1.200 ND2 + 0.500 Lp - 0.500 NL2 - 1.000 W2$
83	*	$1.200 D - 1.200 ND1 + 0.500 Lp - 0.500 NL1 - 1.000 W3$
84	*	$1.200 D - 1.200 ND1 + 0.500 Lp - 0.500 NL1 - 1.000 W4$
85	*	$1.200 D - 1.200 ND2 + 0.500 Lp - 0.500 NL2 - 1.000 W5$
86	*	$1.200 D - 1.200 ND2 + 0.500 Lp - 0.500 NL2 - 1.000 W6$
87	*	$1.200 D - 0.634 ND1 - 1.019 ND2 + 0.500 Lp - 0.264 NL1 - 0.424 NL2 - 1.000 W7$
88	*	$1.200 D - 0.634 ND1 + 1.019 ND2 + 0.500 Lp - 0.264 NL1 + 0.424 NL2 - 1.000 W8$
89	*	$1.200 D - 0.672 ND1 - 0.994 ND2 + 0.500 Lp - 0.280 NL1 - 0.414 NL2 - 1.000 W9$
90	*	$1.200 D - 0.594 ND1 - 1.043 ND2 + 0.500 Lp - 0.247 NL1 - 0.435 NL2 - 1.000 W10$
91	*	$1.200 D - 0.672 ND1 + 0.994 ND2 + 0.500 Lp - 0.280 NL1 + 0.414 NL2 - 1.000 W11$
92	*	$1.200 D - 0.594 ND1 + 1.043 ND2 + 0.500 Lp - 0.247 NL1 + 0.435 NL2 - 1.000 W12$
93	*	$1.200 D + 1.200 ND1 + 0.500 Sp + 0.500 NR1 + 1.000 W1$
94	*	$1.200 D + 1.200 ND2 + 0.500 Sp + 0.500 NR2 + 1.000 W2$
95	*	$1.200 D + 1.200 ND1 + 0.500 Sp + 0.500 NR1 + 1.000 W3$
96	*	$1.200 D + 1.200 ND1 + 0.500 Sp + 0.500 NR1 + 1.000 W4$
97	*	$1.200 D + 1.200 ND2 + 0.500 Sp + 0.500 NR2 + 1.000 W5$
98	*	$1.200 D + 1.200 ND2 + 0.500 Sp + 0.500 NR2 + 1.000 W6$
99	*	$1.200 D + 0.634 ND1 + 1.019 ND2 + 0.500 Sp + 0.264 NR1 + 0.424 NR2 + 1.000 W7$
100	*	$1.200 D + 0.634 ND1 - 1.019 ND2 + 0.500 Sp + 0.264 NR1 - 0.424 NR2 + 1.000 W8$
101	*	$1.200 D + 0.672 ND1 + 0.994 ND2 + 0.500 Sp + 0.280 NR1 + 0.414 NR2 + 1.000 W9$
102	*	$1.200 D + 0.594 ND1 + 1.043 ND2 + 0.500 Sp + 0.247 NR1 + 0.435 NR2 + 1.000 W10$
103	*	$1.200 D + 0.672 ND1 - 0.994 ND2 + 0.500 Sp + 0.280 NR1 - 0.414 NR2 + 1.000 W11$
104	*	$1.200 D + 0.594 ND1 - 1.043 ND2 + 0.500 Sp + 0.247 NR1 - 0.435 NR2 + 1.000 W12$
105	*	$1.200 D - 1.200 ND1 + 0.500 Sp - 0.500 NR1 - 1.000 W1$
106	*	$1.200 D - 1.200 ND2 + 0.500 Sp - 0.500 NR2 - 1.000 W2$
107	*	$1.200 D - 1.200 ND1 + 0.500 Sp - 0.500 NR1 - 1.000 W3$
108	*	$1.200 D - 1.200 ND1 + 0.500 Sp - 0.500 NR1 - 1.000 W4$
109	*	$1.200 D - 1.200 ND2 + 0.500 Sp - 0.500 NR2 - 1.000 W5$
110	*	$1.200 D - 1.200 ND2 + 0.500 Sp - 0.500 NR2 - 1.000 W6$
111	*	$1.200 D - 0.634 ND1 - 1.019 ND2 + 0.500 Sp - 0.264 NR1 - 0.424 NR2 - 1.000 W7$
112	*	$1.200 D - 0.634 ND1 + 1.019 ND2 + 0.500 Sp - 0.264 NR1 + 0.424 NR2 - 1.000 W8$
113	*	$1.200 D - 0.672 ND1 - 0.994 ND2 + 0.500 Sp - 0.280 NR1 - 0.414 NR2 - 1.000 W9$
114	*	$1.200 D - 0.594 ND1 - 1.043 ND2 + 0.500 Sp - 0.247 NR1 - 0.435 NR2 - 1.000 W10$
115	*	$1.200 D - 0.672 ND1 + 0.994 ND2 + 0.500 Sp - 0.280 NR1 + 0.414 NR2 - 1.000 W11$
116	*	$1.200 D - 0.594 ND1 + 1.043 ND2 + 0.500 Sp - 0.247 NR1 + 0.435 NR2 - 1.000 W12$
117	*	$1.200 D + 1.200 ND1 + 1.000 W1$
118	*	$1.200 D + 1.200 ND2 + 1.000 W2$
119	*	$1.200 D + 1.200 ND1 + 1.000 W3$
120	*	$1.200 D + 1.200 ND1 + 1.000 W4$
121	*	$1.200 D + 1.200 ND2 + 1.000 W5$
122	*	$1.200 D + 1.200 ND2 + 1.000 W6$
123	*	$1.200 D + 0.634 ND1 + 1.019 ND2 + 1.000 W7$
124	*	$1.200 D + 0.634 ND1 - 1.019 ND2 + 1.000 W8$



RAM Structural System



Code Check Summary

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 5/15

09/03/20 09:46:42

Steel Code: AISC360-16 LRFD

125	*	$1.200 D + 0.672 ND1 + 0.994 ND2 + 1.000 W9$
126	*	$1.200 D + 0.594 ND1 + 1.043 ND2 + 1.000 W10$
127	*	$1.200 D + 0.672 ND1 - 0.994 ND2 + 1.000 W11$
128	*	$1.200 D + 0.594 ND1 - 1.043 ND2 + 1.000 W12$
129	*	$1.200 D - 1.200 ND1 - 1.000 W1$
130	*	$1.200 D - 1.200 ND2 - 1.000 W2$
131	*	$1.200 D - 1.200 ND1 - 1.000 W3$
132	*	$1.200 D - 1.200 ND1 - 1.000 W4$
133	*	$1.200 D - 1.200 ND2 - 1.000 W5$
134	*	$1.200 D - 1.200 ND2 - 1.000 W6$
135	*	$1.200 D - 0.634 ND1 - 1.019 ND2 - 1.000 W7$
136	*	$1.200 D - 0.634 ND1 + 1.019 ND2 - 1.000 W8$
137	*	$1.200 D - 0.672 ND1 - 0.994 ND2 - 1.000 W9$
138	*	$1.200 D - 0.594 ND1 - 1.043 ND2 - 1.000 W10$
139	*	$1.200 D - 0.672 ND1 + 0.994 ND2 - 1.000 W11$
140	*	$1.200 D - 0.594 ND1 + 1.043 ND2 - 1.000 W12$
141	*	$0.900 D + 0.900 ND1 + 1.000 W1$
142	*	$0.900 D + 0.900 ND2 + 1.000 W2$
143	*	$0.900 D + 0.900 ND1 + 1.000 W3$
144	*	$0.900 D + 0.900 ND1 + 1.000 W4$
145	*	$0.900 D + 0.900 ND2 + 1.000 W5$
146	*	$0.900 D + 0.900 ND2 + 1.000 W6$
147	*	$0.900 D + 0.476 ND1 + 0.764 ND2 + 1.000 W7$
148	*	$0.900 D + 0.476 ND1 - 0.764 ND2 + 1.000 W8$
149	*	$0.900 D + 0.504 ND1 + 0.746 ND2 + 1.000 W9$
150	*	$0.900 D + 0.445 ND1 + 0.782 ND2 + 1.000 W10$
151	*	$0.900 D + 0.504 ND1 - 0.746 ND2 + 1.000 W11$
152	*	$0.900 D + 0.445 ND1 - 0.782 ND2 + 1.000 W12$
153	*	$0.900 D - 0.900 ND1 - 1.000 W1$
154	*	$0.900 D - 0.900 ND2 - 1.000 W2$
155	*	$0.900 D - 0.900 ND1 - 1.000 W3$
156	*	$0.900 D - 0.900 ND1 - 1.000 W4$
157	*	$0.900 D - 0.900 ND2 - 1.000 W5$
158	*	$0.900 D - 0.900 ND2 - 1.000 W6$
159	*	$0.900 D - 0.476 ND1 - 0.764 ND2 - 1.000 W7$
160	*	$0.900 D - 0.476 ND1 + 0.764 ND2 - 1.000 W8$
161	*	$0.900 D - 0.504 ND1 - 0.746 ND2 - 1.000 W9$
162	*	$0.900 D - 0.445 ND1 - 0.782 ND2 - 1.000 W10$
163	*	$0.900 D - 0.504 ND1 + 0.746 ND2 - 1.000 W11$
164	*	$0.900 D - 0.445 ND1 + 0.782 ND2 - 1.000 W12$
165	*	$1.221 D + 1.221 ND1 + 0.500 Lp + 0.500 NL1 + 0.700 Sp + 0.700 NR1 + 1.000 E1$
166	*	$1.221 D + 1.221 ND1 + 0.500 Lp + 0.500 NL1 + 0.700 Sp + 0.700 NR1 + 1.000 E2$
167	*	$1.221 D + 1.221 ND2 + 0.500 Lp + 0.500 NL2 + 0.700 Sp + 0.700 NR2 + 1.000 E3$
168	*	$1.221 D + 1.221 ND2 + 0.500 Lp + 0.500 NL2 + 0.700 Sp + 0.700 NR2 + 1.000 E4$
169	*	$1.221 D - 1.221 ND1 + 0.500 Lp - 0.500 NL1 + 0.700 Sp - 0.700 NR1 - 1.000 E1$
170	*	$1.221 D - 1.221 ND1 + 0.500 Lp - 0.500 NL1 + 0.700 Sp - 0.700 NR1 - 1.000 E2$



RAM Structural System



Code Check Summary

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 6/15

09/03/20 09:46:42

Steel Code: AISC360-16 LRFD

171	*	1.221 D - 1.221 ND2 + 0.500 Lp - 0.500 NL2 + 0.700 Sp - 0.700 NR2 - 1.000 E3
172	*	1.221 D - 1.221 ND2 + 0.500 Lp - 0.500 NL2 + 0.700 Sp - 0.700 NR2 - 1.000 E4
173	*	1.221 D + 1.221 ND1 + 0.500 Lp + 0.500 NL1 + 1.000 E1
174	*	1.221 D + 1.221 ND1 + 0.500 Lp + 0.500 NL1 + 1.000 E2
175	*	1.221 D + 1.221 ND2 + 0.500 Lp + 0.500 NL2 + 1.000 E3
176	*	1.221 D + 1.221 ND2 + 0.500 Lp + 0.500 NL2 + 1.000 E4
177	*	1.221 D - 1.221 ND1 + 0.500 Lp - 0.500 NL1 - 1.000 E1
178	*	1.221 D - 1.221 ND1 + 0.500 Lp - 0.500 NL1 - 1.000 E2
179	*	1.221 D - 1.221 ND2 + 0.500 Lp - 0.500 NL2 - 1.000 E3
180	*	1.221 D - 1.221 ND2 + 0.500 Lp - 0.500 NL2 - 1.000 E4
181	*	1.221 D + 1.221 ND1 + 0.700 Sp + 0.700 NR1 + 1.000 E1
182	*	1.221 D + 1.221 ND1 + 0.700 Sp + 0.700 NR1 + 1.000 E2
183	*	1.221 D + 1.221 ND2 + 0.700 Sp + 0.700 NR2 + 1.000 E3
184	*	1.221 D + 1.221 ND2 + 0.700 Sp + 0.700 NR2 + 1.000 E4
185	*	1.221 D - 1.221 ND1 + 0.700 Sp - 0.700 NR1 - 1.000 E1
186	*	1.221 D - 1.221 ND1 + 0.700 Sp - 0.700 NR1 - 1.000 E2
187	*	1.221 D - 1.221 ND2 + 0.700 Sp - 0.700 NR2 - 1.000 E3
188	*	1.221 D - 1.221 ND2 + 0.700 Sp - 0.700 NR2 - 1.000 E4
189	*	1.221 D + 1.221 ND1 + 1.000 E1
190	*	1.221 D + 1.221 ND1 + 1.000 E2
191	*	1.221 D + 1.221 ND2 + 1.000 E3
192	*	1.221 D + 1.221 ND2 + 1.000 E4
193	*	1.221 D - 1.221 ND1 - 1.000 E1
194	*	1.221 D - 1.221 ND1 - 1.000 E2
195	*	1.221 D - 1.221 ND2 - 1.000 E3
196	*	1.221 D - 1.221 ND2 - 1.000 E4
197	*	0.879 D + 0.879 ND1 + 1.000 E1
198	*	0.879 D + 0.879 ND1 + 1.000 E2
199	*	0.879 D + 0.879 ND2 + 1.000 E3
200	*	0.879 D + 0.879 ND2 + 1.000 E4
201	*	0.879 D - 0.879 ND1 - 1.000 E1
202	*	0.879 D - 0.879 ND1 - 1.000 E2
203	*	0.879 D - 0.879 ND2 - 1.000 E3
204	*	0.879 D - 0.879 ND2 - 1.000 E4

* = Load combination currently selected to use

Frame #0:**Level: ROOF - 129'-0"**

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
13	-0.67	-48.47	-0.08	-20.07	-0.02	42	0.59 H1-1b	50	W16X31

Frame #1:



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Code Check Summary

Page 7/15

09/03/20 09:46:42

Steel Code: AISC360-16 LRFD

Level: ROOF - 129'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
33	35.42	0.00	0.00	0.13	0.11	46	0.09 Axial	50	W8X48
35	42.50	-38.61	-4.26	5.57	0.58	188	0.25 H1-3a(H1-1b)	50	W8X48

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
10	-4.69	71.45	-0.03	14.80	0.00	16	0.29 H1-1b	50	W18X35

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
5	20.53	0.00	0.00	0.00	0.00	94	0.22 Axial	36	HSS5X5X5/16
6	24.73	0.00	0.00	0.00	0.00	58	0.26 Axial	36	HSS5X5X5/16

Level: LEVEL 2 - 115'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
33	83.31	-1.77	0.23	0.31	0.02	6	0.24 H1-1a	50	W8X48
35	143.55	7.69	0.69	-0.59	-0.05	8	0.44 H1-1a	50	W8X48

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
10	1.79	28.59	0.00	-37.14	0.00	6	0.15 Shear	50	W24X55

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
5	74.46	0.00	0.00	0.00	-0.00	58	0.85 Axial	36	HSS5X5X5/16
6	74.94	0.00	0.00	0.00	0.00	46	0.68 Axial	36	HSS6X6X1/4

Frame #2:**Level: ROOF - 129'-0"**

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
9	41.73	0.00	0.00	-0.26	0.06	15	0.11 Axial	50	W8X48
10	18.60	-6.82	-0.87	-0.47	-0.06	58	0.07 H1-1b	50	W8X48

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
51	-1.96	51.45	0.09	8.95	0.00	13	0.14 H1-1b	50	W18X50

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
11	10.18	0.00	0.00	-0.00	-0.00	55	0.12 Axial	36	HSS5X5X5/16



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Code Check Summary

Page 8/15

09/03/20 09:46:42

Steel Code: AISC360-16 LRFD

Brace	Pu	Mux	Muy	Vux	Vuy	LC	Interact.	Fy	Size
12	7.50	0.00	0.00	0.00	0.00	115	0.09 Axial	36	HSS5X5X5/16

Level: LEVEL 2 - 115'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
9	65.71	0.00	0.00	0.25	0.04	7	0.18 Axial	50	W8X48
10	36.77	0.00	0.00	0.18	-0.05	5	0.10 Axial	50	W8X48

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
51	-0.05	-21.25	0.00	-10.27	-0.00	7	0.11 H1-1b	50	W16X31

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
11	31.19	0.00	0.00	-0.00	-0.00	67	0.39 Axial	36	HSS5X5X5/16
12	31.98	0.00	0.00	0.00	-0.00	55	0.40 Axial	36	HSS5X5X5/16

Frame #4:**Level: ROOF - 129'-0"**

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
24	48.90	0.00	0.00	0.84	-0.03	13	0.12 Axial	50	W8X48
54	27.58	6.60	4.36	-0.93	-0.26	15	0.12 H1-1b	50	W8X48

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
248	-7.82	30.66	0.14	-5.77	-0.02	13	0.12 H1-1b	50	W16X40

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
19	16.54	0.00	0.00	0.00	-0.00	54	0.19 Axial	36	HSS5X5X5/16
20	15.84	0.00	0.00	-0.00	0.00	66	0.19 Axial	36	HSS5X5X5/16

Level: LEVEL 2 - 115'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
24	140.94	-0.15	0.11	0.25	-0.00	5	0.39 H1-1a	50	W8X48
55	82.51	-1.40	-0.79	0.49	0.03	7	0.24 H1-1a	50	W8X48

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
179	-0.02	-20.02	-0.00	-7.77	0.00	7	0.08 H1-1b	50	W18X35



RAM Structural System



Code Check Summary

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 9/15

09/03/20 09:46:42

Steel Code: AISC360-16 LRFD

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
19	34.37	0.00	0.00	0.00	0.00	57	0.43 Axial	36	HSS5X5X5/16
20	34.53	0.00	0.00	0.00	-0.00	45	0.43 Axial	36	HSS5X5X5/16

Frame #5:

Level: ROOF - 129'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
20	38.54	0.00	0.00	0.15	-0.01	25	0.10 Axial	50	W8X48
21	25.89	0.00	0.00	-0.11	0.12	61	0.07 Axial	50	W8X48

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
81	-1.73	91.04	0.04	16.56	0.00	16	0.45 H1-1b	50	W16X31

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
21	13.66	0.00	0.00	-0.00	0.00	97	0.14 Axial	36	HSS5X5X5/16
22	14.72	0.00	0.00	0.00	-0.00	109	0.15 Axial	36	HSS5X5X5/16

Level: LEVEL 2 - 115'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
20	80.28	-1.35	-0.19	0.08	0.01	6	0.23 H1-1a	50	W8X48
21	40.23	0.00	0.00	-0.25	0.08	8	0.11 Axial	50	W8X48

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
81	-0.72	-27.18	0.01	16.84	0.00	6	0.11 H1-1b	50	W18X35

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
21	61.93	0.00	0.00	0.00	-0.00	58	0.69 Axial	36	HSS5X5X5/16
22	61.43	0.00	0.00	0.00	0.00	46	0.69 Axial	36	HSS5X5X5/16

Frame #6:

Level: ROOF - 129'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
12	28.67	0.00	0.00	0.06	0.08	22	0.07 Axial	50	W8X48
13	32.62	0.00	0.00	-0.04	-0.01	34	0.08 Axial	50	W8X48



RAM Structural System



Code Check Summary

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 10/15

09/03/20 09:46:42

Steel Code: AISC360-16 LRFD

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
56	-1.90	77.70	0.03	-15.91	-0.01	14	0.39 H1-1b	50	W16X31

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
9	13.76	0.00	0.00	0.00	0.00	94	0.14 Axial	36	HSS5X5X5/16
10	12.81	0.00	0.00	-0.00	-0.00	106	0.13 Axial	36	HSS5X5X5/16

Level: LEVEL 2 - 115'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
12	50.00	0.00	0.00	0.17	0.05	6	0.14 Axial	50	W8X48
13	70.49	0.00	0.00	-0.16	0.00	8	0.19 Axial	50	W8X48

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
56	7.16	3.94	-0.04	2.23	0.00	46	0.03 H1-1b	50	W18X35

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
9	59.05	0.00	0.00	-0.00	0.00	58	0.64 Axial	36	HSS5X5X5/16
10	59.29	0.00	0.00	-0.00	-0.00	46	0.64 Axial	36	HSS5X5X5/16

Frame #7:

Level: CLERESTORY - 138'-6

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
50	23.11	8.51	36.69	-0.22	-5.30	28	0.23 H1-1b	50	W12X72
53	51.32	32.96	0.00	-5.22	-0.20	33	0.11 H1-3a(H1-1b)	50	W12X72

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
4	4.94	-150.64	-0.12	27.65	-0.03	15	0.23 H1-3a(H1-1b)	50	W24X68

Level: ROOF - 129'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
50	55.12	20.11	-10.17	2.48	-0.43	46	0.14 H1-1b	50	W12X72
53	104.77	0.00	0.00	-1.13	-0.30	15	0.14 Axial	50	W12X72



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Code Check Summary

Page 11/15

09/03/20 09:46:42

Steel Code: AISC360-16 LRFD

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
84	-12.75	89.02	-0.16	-10.79	0.04	14	0.15 H1-1b	50	W18X76

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
15	18.42	0.00	0.00	0.00	0.00	45	0.17 Axial	36	HSS6X6X5/16
16	15.42	0.00	0.00	0.00	-0.00	57	0.14 Axial	36	HSS6X6X5/16

Level: LEVEL 2 - 115'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
50	187.77	-0.23	12.74	0.99	-0.68	5	0.32 H1-1a	50	W12X72
53	191.52	1.51	-0.66	-0.34	-0.00	7	0.27 H1-1a	50	W12X72

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
84	-0.03	-38.30	-0.00	11.88	-0.00	9	0.22 H1-1b	50	W18X35

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
15	43.43	0.00	0.00	0.00	-0.00	57	0.42 Axial	36	HSS6X6X5/16
16	44.09	0.00	0.00	0.00	0.00	45	0.43 Axial	36	HSS6X6X5/16

Frame #8:**Level: CLERESTORY - 138'-6**

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
44	13.03	-18.89	-9.62	2.17	0.36	64	0.11 H1-1b	50	W12X72
46	51.32	33.83	-0.00	-5.40	0.07	33	0.11 H1-3a(H1-1b)	50	W12X72

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
1	0.91	-125.99	0.08	-20.92	-0.02	13	0.25 H1-3a(H1-1b)	50	W24X55

Level: ROOF - 129'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
44	32.61	16.96	2.67	1.75	0.26	46	0.08 H1-1b	50	W12X72
46	76.65	0.00	0.00	1.23	-0.33	13	0.10 Axial	50	W12X72



RAM Structural System



Code Check Summary

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 12/15

09/03/20 09:46:42

Steel Code: AISC360-16 LRFD

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
46	-2.53	44.40	-0.19	7.73	-0.05	13	0.40 H1-1b	50	W16X40

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
13	14.65	0.00	0.00	-0.00	-0.00	45	0.11 Axial	36	HSS6X6X5/16
14	17.25	0.00	0.00	0.00	0.00	57	0.13 Axial	36	HSS6X6X5/16

Level: LEVEL 2 - 115'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
44	64.00	0.00	0.00	-0.70	0.13	7	0.09 Axial	50	W12X72
46	109.09	0.00	0.00	-0.30	0.03	13	0.15 Axial	50	W12X72

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
46	0.29	31.65	-0.00	-13.32	-0.00	9	0.13 H1-3a(H1-1b)	50	W18X35

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
13	40.74	0.00	0.00	0.00	0.00	57	0.32 Axial	36	HSS6X6X5/16
14	40.74	0.00	0.00	0.00	-0.00	45	0.32 Axial	36	HSS6X6X5/16

Frame #9:

Level: ROOF - 129'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
30	71.59	-6.98	-31.47	0.50	2.96	16	0.50 H1-1b	50	W8X48
31	41.22	-3.25	-3.49	0.35	0.24	14	0.11 H1-1b	50	W8X48

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
11	-5.57	121.02	-0.49	20.56	0.04	15	0.51 H1-1b	50	W18X35

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
3	13.21	0.00	0.00	-0.00	-0.00	26	0.14 Axial	36	HSS5X5X5/16
4	16.35	0.00	0.00	0.00	0.00	38	0.17 Axial	36	HSS5X5X5/16

Level: LEVEL 2 - 115'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
30	182.62	2.26	2.62	-0.14	-0.18	8	0.54 H1-1a	50	W8X48



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Code Check Summary

Page 13/15

09/03/20 09:46:42

Steel Code: AISC360-16 LRFD

Col.	Pu	Mux	Muy	Vux	Vuy	LC	Interact.	Fy	Size
31	107.62	-2.34	0.14	0.17	-0.01	6	0.31 H1-1a	50	W8X48
Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
11	1.29	52.24	0.02	-38.03	0.02	6	0.15 Shear	50	W24X55
Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
3	71.33	0.00	0.00	0.00	-0.00	62	0.81 Axial	36	HSS5X5X5/16
4	71.45	0.00	0.00	-0.00	-0.00	50	0.81 Axial	36	HSS5X5X5/16

Frame #10:**Level: CLERESTORY - 138'-6**

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
49	11.56	30.79	0.03	-2.94	0.07	58	0.08 H1-3a(H1-1b)	50	W12X72

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
5	2.32	18.54	0.54	-6.36	-0.17	46	0.07 H1-1b	50	W24X55
6	-0.32	-37.77	0.63	7.33	0.21	58	0.12 H1-1b	50	W24X55

Level: ROOF - 129'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
49	21.63	17.76	-19.67	1.81	-1.75	46	0.16 H1-1b	50	W12X72

Level: LEVEL 2 - 115'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
49	82.25	0.43	21.88	-0.73	-1.02	6	0.18 H1-1b	50	W12X72

Frame #11:**Level: CLERESTORY - 138'-6**

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
47	20.55	-27.45	23.84	-3.28	-2.65	46	0.21 H1-1b	50	W12X72

Level: ROOF - 129'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
47	37.61	10.47	-3.75	1.05	-0.04	51	0.07 H1-1b	50	W12X72



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Code Check Summary

Page 14/15

09/03/20 09:46:42

Steel Code: AISC360-16 LRFD

Level: LEVEL 2 - 115'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
47	101.27	0.00	0.00	-0.72	-0.06	6	0.14 Axial	50	W12X72

Frame #12:**Level: CLERESTORY - 138'-6"**

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
2	4.54	-153.74	-0.05	27.95	-0.01	15	0.23 H1-3a(H1-1b)	50	W24X68

Frame #13:**Level: CLERESTORY - 138'-6"**

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
3	1.07	-124.49	0.05	-20.79	-0.01	13	0.25 H1-3a(H1-1b)	50	W24X55

Frame #14:**Level: CLERESTORY - 138'-6"**

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
40	12.49	14.90	-8.98	1.12	0.85	61	0.09 H1-1b	50	W12X72

Level: ROOF - 129'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
40	53.96	7.64	6.11	-2.51	-0.42	34	0.09 H1-1b	50	W12X72

Level: LEVEL 2 - 115'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
40	135.31	0.00	0.00	1.01	0.17	8	0.18 Axial	50	W12X72

Frame #15:**Level: CLERESTORY - 138'-6"**

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
42	9.82	-29.75	-0.01	2.45	-0.60	46	0.08 H1-3a(H1-1b)	50	W12X72



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Code Check Summary

Page 15/15

09/03/20 09:46:42

Steel Code: AISC360-16 LRFD

Level: ROOF - 129'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
42	27.18	-1.44	51.46	-2.01	2.77	8	0.30 H1-1b	50	W12X72

Level: LEVEL 2 - 115'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
42	84.00	-1.62	-47.21	0.09	3.15	8	0.32 H1-1b	50	W12X72

Frame #16:**Level: CLERESTORY - 138'-6"**

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
7	-0.36	-22.30	-0.42	-6.37	0.14	6	0.07 H1-1b	50	W24X55
8	-0.03	-31.99	-0.31	6.73	-0.11	58	0.10 H1-1b	50	W24X55



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

09/03/20 09:46:42

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

STEEL BEAM INFORMATION:**Beam Number: 13**

Level: ROOF - 129'-0"

Fy (ksi) = 50.00

Length (ft) = 19.00

Elastic Modulus (ksi) = 29000

Frame Number: 0

I-End (43.00,-79.00)

J-End (43.00,-60.00)

Beam Size = W16X31

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 2/211

09/03/20 09:46:42

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	3.62	0.00	-0.00	5.67	0.01	0.00
LC:	W2	D	D	D	W7	W1
Max @ j:	10.49	-0.00	0.00	6.03	0.01	0.00
LC:	W2	D	D	D	W2	W1
Maximum:	10.49	20.85	0.07	6.13	0.04	0.00
LC:	W2	D	W2	D	W2	W1
@ (ft):	15.83	4.75	12.67	15.84	9.50	15.83
Min @ i:	-2.68	0.00	-0.00	-0.00	-0.00	-0.12
LC:	W8	D	D	W2	W12	D
Min @ j:	-7.79	-0.00	0.00	-0.00	-0.02	-1.59
LC:	W8	D	D	W8	W8	D
Minimum:	-7.79	-19.25	-0.08	-6.55	-0.03	-1.59



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 3/211

09/03/20 09:46:42

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
LC:	W8	D	W2	D	W12	D
@ (ft):	15.83	15.84	12.67	15.83	12.67	15.83



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 4/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 33**Frame Number: 1**

Level Top: ROOF - 129'-0"

Column Line (43.00,-41.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 5/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	16.63	0.00	0.04	0.06	0.06	0.00
LC:	W2	W8	W1	D	Sp	W2
Max @ B:	16.63	0.69	0.19	0.06	0.06	0.00
LC:	W2	W6	W2	D	Sp	W2
Maximum:	16.63	0.69	0.19	0.06	0.06	0.00
LC:	W2	W6	W2	D	Sp	W2
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00
Min @ T:	-12.42	-0.31	-0.74	-0.03	-0.07	-0.00
LC:	W8	D	D	W8	W1	W11
Min @ B:	-12.42	-0.51	-1.37	-0.03	-0.07	-0.00
LC:	W8	W8	W1	W8	W1	W11
Minimum:	-12.42	-0.51	-1.37	-0.03	-0.07	-0.00
LC:	W8	W8	W1	W8	W1	W11
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 6/211
09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 35

Level Top: ROOF - 129'-0"

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Frame Number: 1

Column Line (43.00,-60.00)

Column Size = W8X48

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 7/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	22.33	0.00	0.04	1.87	0.20	0.00
LC:	D	W8	W1	D	Sp	W7
Max @ B:	22.33	5.65	0.63	1.87	0.20	0.00
LC:	D	Sp	Sp	D	Sp	W7
Maximum:	22.33	5.65	0.63	1.87	0.20	0.00
LC:	D	Sp	Sp	D	Sp	W7
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00
Min @ T:	-17.04	-20.71	-2.28	-0.03	-0.12	-0.00
LC:	W2	D	D	W8	W1	W11
Min @ B:	-17.04	-0.41	-1.57	-0.03	-0.12	-0.00
LC:	W2	W8	W1	W8	W1	W11
Minimum:	-17.04	-20.71	-2.28	-0.03	-0.12	-0.00
LC:	W2	D	D	W8	W1	W11
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 8/211

09/03/20 09:46:42

STEEL BEAM INFORMATION:**Beam Number: 10**

Level: ROOF - 129'-0"

Fy (ksi) = 50.00

Length (ft) = 19.00

Elastic Modulus (ksi) = 29000

Frame Number: 1

I-End (43.00,-60.00)

J-End (43.00,-41.00)

Beam Size = W18X35

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 9/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	0.36	0.00	-0.00	1.93	0.01	0.50
LC:	W6	D	D	D	W2	D
Max @ j:	7.38	-0.00	0.00	0.00	0.02	0.00
LC:	W2	D	D	W2	W2	W11
Maximum:	7.38	23.35	0.10	4.83	0.06	0.50
LC:	W2	D	W2	D	W2	D
@ (ft):	15.83	9.50	12.67	3.17	9.50	0.00
Min @ i:	-2.30	0.00	-0.00	-0.00	-0.01	-0.00
LC:	Sp	D	D	W8	D	W10
Min @ j:	-5.50	-0.00	0.00	-4.21	-0.02	-0.47
LC:	W8	D	D	D	W8	D
Minimum:	-5.50	-0.00	-0.10	-4.21	-0.06	-0.47
LC:	W8	W2	W2	D	W8	D
@ (ft):	15.83	15.84	6.34	19.00	9.50	15.83



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 10/211

09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 5

Story Top: ROOF - 129'-0"

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 16.92

Elastic Modulus (ksi) = 29000

Frame Number: 1

I-End (ft): (43.00,-60.00)

J-End (ft): (43.00,-50.50)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

Fixity

Major Axis:

Minor Axis:

Torsion:

Member Force Output:

P-Delta: Yes

Ground Level: Base

Top

Pin

Pin

Fix

At Centerline of Joint

Bottom

Pin

Pin

Fix

Scale Factor: 1.00

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 11/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	20.59	0.00	-0.00	0.00	0.00	0.02
LC:	W2	D	D	W8	W1	W2
Max @ B:	20.59	-0.00	0.00	0.00	0.00	0.02
LC:	W2	D	D	W8	W1	W2
Maximum:	20.59	0.00	-0.00	0.00	0.00	0.02
LC:	W2	D	D	W8	W1	W2
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-15.36	0.00	-0.00	-0.00	-0.00	-0.08
LC:	W8	D	D	W2	W6	D
Min @ B:	-15.36	-0.00	0.00	-0.00	-0.00	-0.08
LC:	W8	D	D	W2	W6	D
Minimum:	-15.36	0.00	-0.00	-0.00	-0.00	-0.08
LC:	W8	D	D	W2	W6	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 12/211
09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 6

Story Top: ROOF - 129'-0"

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 16.92

Elastic Modulus (ksi) = 29000

Frame Number: 1

I-End (ft): (43.00,-41.00)

J-End (ft): (43.00,-50.50)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 13/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	15.01	0.00	-0.00	0.00	0.00	0.08
LC:	W8	D	D	W8	W1	W1
Max @ B:	15.01	-0.00	0.00	0.00	0.00	0.08
LC:	W8	D	D	W8	W1	W1
Maximum:	15.01	0.00	-0.00	0.00	0.00	0.08
LC:	W8	D	D	W8	W1	W1
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-20.10	0.00	-0.00	-0.00	-0.00	0.00
LC:	W2	D	D	W2	W2	NR2
Min @ B:	-20.10	-0.00	0.00	-0.00	-0.00	0.00
LC:	W2	D	D	W2	W2	NR2
Minimum:	-20.10	0.00	-0.00	-0.00	-0.00	0.00
LC:	W2	D	D	W2	W2	NR2
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 14/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 33**Frame Number: 1**

Level Top: LEVEL 2 - 115'-0"

Column Line (43.00,-41.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 15/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	41.75	1.28	0.12	0.16	0.15	0.00
LC:	D	W8	D	W8	W1	W5
Max @ B:	41.75	-0.00	0.00	0.16	0.15	0.00
LC:	D	D	D	W8	W1	W5
Maximum:	41.75	1.28	0.12	0.16	0.15	0.00
LC:	D	W8	D	W8	W1	W5
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-12.62	-1.72	-0.04	-0.22	-0.04	-0.00
LC:	W8	W2	W10	W2	W5	W11
Min @ B:	-12.62	-0.00	0.00	-0.22	-0.04	-0.00
LC:	W8	D	D	W2	W5	W11
Minimum:	-12.62	-1.72	-0.04	-0.22	-0.04	-0.00
LC:	W8	W2	W10	W2	W5	W11
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 16/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 35**Frame Number: 1**

Level Top: LEVEL 2 - 115'-0"

Column Line (43.00,-60.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 17/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	65.19	3.28	0.32	0.02	0.06	0.00
LC:	D	D	D	W8	W1	W5
Max @ B:	65.19	0.00	0.00	0.02	0.06	0.00
LC:	D	D	D	W8	W1	W5
Maximum:	65.19	3.28	0.32	0.02	0.06	0.00
LC:	D	D	D	W8	W1	W5
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-17.13	-1.70	-0.06	-0.22	-0.02	-0.00
LC:	W2	W2	W4	D	D	W11
Min @ B:	-17.13	0.00	0.00	-0.22	-0.02	-0.00
LC:	W2	D	D	D	D	W11
Minimum:	-17.13	-1.70	-0.06	-0.22	-0.02	-0.00
LC:	W2	W2	W4	D	D	W11
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 18/211
09/03/20 09:46:42

STEEL BEAM INFORMATION:

Beam Number: 10

Level: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Length (ft) = 19.00

Elastic Modulus (ksi) = 29000

Frame Number: 1

I-End (43.00,-60.00)

J-End (43.00,-41.00)

Beam Size = W24X55

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 19/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	1.38	0.00	-0.00	4.05	0.00	0.00
LC:	W2	D	D	D	W2	Sp
Max @ j:	1.14	-0.00	0.00	0.81	0.01	0.01
LC:	W8	D	D	W2	W7	W1
Maximum:	4.66	21.86	0.03	15.19	0.02	0.01
LC:	W2	D	W2	D	W2	W1
@ (ft):	7.12	6.23	9.50	11.88	9.50	16.63
Min @ i:	-0.80	0.00	-0.00	-0.63	-0.00	-0.01
LC:	W12	D	D	W8	W8	W1
Min @ j:	-1.03	-0.00	0.00	-2.69	-0.00	-0.00
LC:	W2	D	D	D	W12	W5
Minimum:	-4.13	-23.44	-0.03	-15.41	-0.02	-0.01
LC:	W2	D	W2	D	W8	W1
@ (ft):	9.50	9.50	9.50	7.12	7.13	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 20/211

09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 5

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 17.76

Elastic Modulus (ksi) = 29000

Frame Number: 1

I-End (ft): (43.00,-50.50)

J-End (ft): (43.00,-60.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 21/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	29.84	0.00	-0.00	0.00	0.00	0.01
LC:	W8	D	D	W2	W5	W10
Max @ B:	29.84	-0.00	0.00	0.00	0.00	0.01
LC:	W8	D	D	W2	W5	W10
Maximum:	29.84	0.00	-0.00	0.00	0.00	0.01
LC:	W8	D	D	W2	W5	W10
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-40.33	0.00	-0.00	-0.00	-0.00	-0.01
LC:	W2	D	D	W8	W1	D
Min @ B:	-40.33	-0.00	0.00	-0.00	-0.00	-0.01
LC:	W2	D	D	W8	W1	D
Minimum:	-40.33	0.00	-0.00	-0.00	-0.00	-0.01
LC:	W2	D	D	W8	W1	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 22/211
09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 6

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 17.76

Elastic Modulus (ksi) = 29000

Frame Number: 1

I-End (ft): (43.00,-50.50)

J-End (ft): (43.00,-41.00)

Brace Size = HSS6X6X1/4

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 23/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	40.65	0.00	-0.00	0.00	0.00	0.02
LC:	W2	D	D	D	D	D
Max @ B:	40.65	-0.00	0.00	-0.00	-0.00	0.02
LC:	W2	D	D	D	D	D
Maximum:	40.65	0.00	-0.00	0.00	0.00	0.02
LC:	W2	D	D	D	D	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-30.07	0.00	-0.00	0.00	0.00	-0.01
LC:	W8	D	D	D	D	W11
Min @ B:	-30.07	-0.00	0.00	-0.00	-0.00	-0.01
LC:	W8	D	D	D	D	W11
Minimum:	-30.07	0.00	-0.00	0.00	0.00	-0.01
LC:	W8	D	D	D	D	W11
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 24/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 9Level Top: ROOF - 129'-0"
Bot: LEVEL 2 - 115'-0"**Frame Number: 2**

Column Line (85.00,0.00)

Fy (ksi) = 50.00

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Column Size = W8X48

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 25/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	16.15	0.18	0.00	0.20	0.04	0.00
LC:	D	D	W8	W2	D	W11
Max @ B:	16.15	4.06	0.51	0.20	0.04	0.00
LC:	D	W2	D	W2	D	W11
Maximum:	16.15	4.06	0.51	0.20	0.04	0.00
LC:	D	W2	D	W2	D	W11
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00
Min @ T:	-4.91	-0.07	-0.08	-0.15	-0.00	-0.00
LC:	W11	W2	D	W8	W12	W2
Min @ B:	-4.91	-3.14	-0.08	-0.15	-0.00	-0.00
LC:	W11	W8	W8	W8	W12	W2
Minimum:	-4.91	-3.14	-0.08	-0.15	-0.00	-0.00
LC:	W11	W8	W8	W8	W12	W2
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 26/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 10

Level Top: ROOF - 129'-0"

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Frame Number: 2

Column Line (108.00,0.00)

Column Size = W8X48

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 27/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	9.94	0.07	0.00	0.45	0.00	0.00
LC:	D	W8	W9	W2	W5	W7
Max @ B:	9.94	6.52	0.05	0.45	0.00	0.00
LC:	D	W2	W5	W2	W5	W7
Maximum:	9.94	6.52	0.05	0.45	0.00	0.00
LC:	D	W2	W5	W2	W5	W7
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00
Min @ T:	-2.24	-0.08	-0.00	-0.37	-0.04	-0.00
LC:	W5	W2	D	W8	D	W11
Min @ B:	-2.24	-5.36	-0.56	-0.37	-0.04	-0.00
LC:	W5	W8	D	W8	D	W11
Minimum:	-2.24	-5.36	-0.56	-0.37	-0.04	-0.00
LC:	W5	W8	D	W8	D	W11
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 28/211

09/03/20 09:46:42

STEEL BEAM INFORMATION:

Beam Number: 51

Level: ROOF - 129'-0"

Fy (ksi) = 50.00

Length (ft) = 23.00

Elastic Modulus (ksi) = 29000

Frame Number: 2

I-End (85.00,0.00)

J-End (108.00,0.00)

Beam Size = W18X50

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 29/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	0.28	0.00	-0.00	4.75	0.07	0.00
LC:	W12	D	D	D	W6	W8
Max @ j:	3.13	-0.00	0.00	0.00	0.04	0.01
LC:	W8	D	D	W8	W11	D
Maximum:	3.13	27.33	0.52	4.75	0.18	0.01
LC:	W8	D	W12	D	W12	D
@ (ft):	19.17	11.50	11.50	0.00	7.67	19.17
Min @ i:	-1.67	0.00	-0.00	-0.00	-0.08	-0.02
LC:	W9	D	D	W12	W12	D
Min @ j:	-2.42	-0.00	0.00	-4.75	-0.03	-0.00
LC:	W2	D	D	D	W5	W2
Minimum:	-2.42	-0.00	-0.57	-4.75	-0.13	-0.02
LC:	W2	Sp	W12	D	W6	D
@ (ft):	19.17	23.00	3.84	23.00	7.67	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 30/211

09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 11

Story Top: ROOF - 129'-0"

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 18.12

Elastic Modulus (ksi) = 29000

Frame Number: 2

I-End (ft): (85.00,0.00)

J-End (ft): (96.50,0.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 31/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	6.36	0.00	-0.00	0.00	0.00	0.11
LC:	W11	D	D	W11	W2	W2
Max @ B:	6.36	-0.00	0.00	0.00	0.00	0.11
LC:	W11	D	D	W11	W2	W2
Maximum:	6.36	0.00	-0.00	0.00	0.00	0.11
LC:	W11	D	D	W11	W2	W2
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-2.98	0.00	-0.00	-0.00	-0.00	-0.07
LC:	W5	D	D	W5	W8	W8
Min @ B:	-2.98	-0.00	0.00	-0.00	-0.00	-0.07
LC:	W5	D	D	W5	W8	W8
Minimum:	-2.98	0.00	-0.00	-0.00	-0.00	-0.07
LC:	W5	D	D	W5	W8	W8
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 32/211

09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 12

Story Top: ROOF - 129'-0"

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 18.12

Elastic Modulus (ksi) = 29000

Frame Number: 2

I-End (ft): (108.00,0.00)

J-End (ft): (96.50,0.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

Fixity

Major Axis:

Minor Axis:

Torsion:

Member Force Output:

P-Delta: Yes

Ground Level: Base

Top

Pin

Pin

Fix

At Centerline of Joint

Bottom

Pin

Pin

Fix

Scale Factor: 1.00

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 33/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	2.90	0.00	-0.00	0.00	0.00	0.11
LC:	W5	D	D	W5	W8	W8
Max @ B:	2.90	-0.00	0.00	0.00	0.00	0.11
LC:	W5	D	D	W5	W8	W8
Maximum:	2.90	0.00	-0.00	0.00	0.00	0.11
LC:	W5	D	D	W5	W8	W8
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-6.29	0.00	-0.00	-0.00	-0.00	-0.13
LC:	W11	D	D	W11	W2	W2
Min @ B:	-6.29	-0.00	0.00	-0.00	-0.00	-0.13
LC:	W11	D	D	W11	W2	W2
Minimum:	-6.29	0.00	-0.00	-0.00	-0.00	-0.13
LC:	W11	D	D	W11	W2	W2
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 34/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 9**Frame Number: 2**

Level Top: LEVEL 2 - 115'-0"

Column Line (85.00,0.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 35/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	30.45	2.46	0.37	0.17	0.03	0.00
LC:	D	W2	W11	W8	D	W12
Max @ B:	30.45	-0.00	0.00	0.17	0.03	0.00
LC:	D	D	D	W8	D	W12
Maximum:	30.45	2.46	0.37	0.17	0.03	0.00
LC:	D	W2	W11	W8	D	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-4.98	-1.90	-0.39	-0.22	-0.00	-0.00
LC:	W11	W8	D	W2	W11	W6
Min @ B:	-4.98	-0.00	0.00	-0.22	-0.00	-0.00
LC:	W11	D	D	W2	W11	W6
Minimum:	-4.98	-1.90	-0.39	-0.22	-0.00	-0.00
LC:	W11	W8	D	W2	W11	W6
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 36/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 10**Frame Number: 2**

Level Top: LEVEL 2 - 115'-0"

Column Line (108.00,0.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 37/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	18.34	1.61	0.54	0.13	0.00	0.00
LC:	D	W6	D	W8	W5	W12
Max @ B:	18.34	-0.00	0.00	0.13	0.00	0.00
LC:	D	D	D	W8	W5	W12
Maximum:	18.34	1.61	0.54	0.13	0.00	0.00
LC:	D	W6	D	W8	W5	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-2.04	-1.50	-0.18	-0.16	-0.04	-0.00
LC:	W5	W12	W5	W2	D	W6
Min @ B:	-2.04	-0.00	0.00	-0.16	-0.04	-0.00
LC:	W5	D	D	W2	D	W6
Minimum:	-2.04	-1.50	-0.18	-0.16	-0.04	-0.00
LC:	W5	W12	W5	W2	D	W6
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 38/211

09/03/20 09:46:42

STEEL BEAM INFORMATION:

Beam Number: 51

Level: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Length (ft) = 23.00

Elastic Modulus (ksi) = 29000

Frame Number: 2

I-End (85.00,0.00)

J-End (108.00,0.00)

Beam Size = W16X31

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 39/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	0.38	0.00	-0.00	2.81	0.00	0.01
LC:	W3	D	D	D	W9	W2
Max @ j:	0.36	-0.00	0.00	0.13	0.00	0.00
LC:	W5	D	D	W11	W9	W8
Maximum:	1.48	6.35	0.02	4.41	0.01	0.01
LC:	W3	D	W11	D	W11	W2
@ (ft):	8.62	4.47	11.50	11.50	8.63	0.00
Min @ i:	-0.03	0.00	-0.00	-0.05	-0.00	-0.01
LC:	W12	D	D	W5	W12	W8
Min @ j:	-1.61	-0.00	0.00	-2.48	-0.00	-0.00
LC:	W9	D	D	D	W5	W2
Minimum:	-2.77	-9.58	-0.02	-4.55	-0.01	-0.01
LC:	W9	D	W11	D	W5	W8
@ (ft):	11.50	11.50	8.63	11.50	8.63	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 40/211

09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 11

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 18.90

Elastic Modulus (ksi) = 29000

Frame Number: 2

I-End (ft): (96.50,0.00)

J-End (ft): (85.00,0.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 41/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	7.66	0.00	-0.00	0.00	0.00	0.03
LC:	W5	D	D	W5	W8	W8
Max @ B:	7.66	-0.00	0.00	0.00	0.00	0.03
LC:	W5	D	D	W5	W8	W8
Maximum:	7.66	0.00	-0.00	0.00	0.00	0.03
LC:	W5	D	D	W5	W8	W8
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-18.45	0.00	-0.00	-0.00	-0.00	-0.03
LC:	W11	D	D	W11	W2	W2
Min @ B:	-18.45	-0.00	0.00	-0.00	-0.00	-0.03
LC:	W11	D	D	W11	W2	W2
Minimum:	-18.45	0.00	-0.00	-0.00	-0.00	-0.03
LC:	W11	D	D	W11	W2	W2
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 42/211
09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 12

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 18.90

Elastic Modulus (ksi) = 29000

Frame Number: 2

I-End (ft): (96.50,0.00)

J-End (ft): (108.00,0.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 43/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	18.54	0.00	-0.00	0.00	0.00	0.03
LC:	W11	D	D	W5	W8	W2
Max @ B:	18.54	-0.00	0.00	0.00	0.00	0.03
LC:	W11	D	D	W5	W8	W2
Maximum:	18.54	0.00	-0.00	0.00	0.00	0.03
LC:	W11	D	D	W5	W8	W2
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-7.77	0.00	-0.00	-0.00	-0.00	-0.02
LC:	W5	D	D	W11	W2	W8
Min @ B:	-7.77	-0.00	0.00	-0.00	-0.00	-0.02
LC:	W5	D	D	W11	W2	W8
Minimum:	-7.77	0.00	-0.00	-0.00	-0.00	-0.02
LC:	W5	D	D	W11	W2	W8
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 44/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 24

Level Top: ROOF - 129'-0"

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Frame Number: 4

Column Line (118.00,-115.00)

Column Size = W8X48

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 45/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	17.60	0.00	0.00	0.74	0.00	0.00
LC:	Sp	W11	W10	W2	W11	W5
Max @ B:	17.60	10.32	0.05	0.74	0.00	0.00
LC:	Sp	W2	W11	W2	W11	W5
Maximum:	17.60	10.32	0.05	0.74	0.00	0.00
LC:	Sp	W2	W11	W2	W11	W5
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00
Min @ T:	-0.44	-0.66	-0.02	-0.50	-0.02	-0.00
LC:	W11	D	D	W8	D	W11
Min @ B:	-0.44	-6.95	-0.25	-0.50	-0.02	-0.00
LC:	W11	W8	D	W8	D	W11
Minimum:	-0.44	-6.95	-0.25	-0.50	-0.02	-0.00
LC:	W11	W8	D	W8	D	W11
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 46/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 54

Level Top: ROOF - 129'-0"

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Frame Number: 4

Column Line (95.00,-115.00)

Column Size = W8X48

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 47/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	9.94	2.21	1.46	0.50	0.01	0.00
LC:	Sp	D	D	W2	W8	W6
Max @ B:	9.94	7.32	0.07	0.50	0.01	0.00
LC:	Sp	W2	W8	W2	W8	W6
Maximum:	9.94	7.32	1.46	0.50	0.01	0.00
LC:	Sp	W2	D	W2	W8	W6
@ (ft):	0.00	14.00	0.00	0.00	0.00	0.00
Min @ T:	-4.67	-0.00	-0.00	-0.33	-0.13	-0.00
LC:	W10	W11	W11	W8	D	W1
Min @ B:	-4.67	-4.88	-0.49	-0.33	-0.13	-0.00
LC:	W10	W8	Sp	W8	D	W1
Minimum:	-4.67	-4.88	-0.49	-0.33	-0.13	-0.00
LC:	W10	W8	Sp	W8	D	W1
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 48/211

09/03/20 09:46:42

STEEL BEAM INFORMATION:

Beam Number: 248

Level: ROOF - 129'-0"

Fy (ksi) = 50.00

Length (ft) = 23.00

Elastic Modulus (ksi) = 29000

Frame Number: 4

I-End (95.00,-115.00)

J-End (118.00,-115.00)

Beam Size = W16X40

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 49/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	1.45	0.00	-0.00	1.85	0.04	0.31
LC:	W6	D	D	D	W12	D
Max @ j:	2.96	-0.00	0.00	0.00	0.03	0.00
LC:	W7	D	D	W10	W6	W11
Maximum:	2.96	11.83	0.28	1.85	0.04	0.40
LC:	W7	D	W10	D	W6	D
@ (ft):	19.17	12.14	3.84	0.00	15.34	3.83
Min @ i:	-3.27	0.00	-0.00	-0.00	-0.08	-0.00
LC:	D	D	D	W2	W6	W5
Min @ j:	-3.14	-0.00	0.00	-2.20	-0.03	-0.43
LC:	D	D	D	D	W12	D
Minimum:	-3.27	-0.00	-0.32	-2.20	-0.09	-0.43
LC:	D	D	W6	D	W10	D
@ (ft):	0.00	23.00	3.83	23.00	3.84	19.17



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 50/211

09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 19

Story Top: ROOF - 129'-0"

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 18.12

Elastic Modulus (ksi) = 29000

Frame Number: 4

I-End (ft): (95.00,-115.00)

J-End (ft): (106.50,-115.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

Fixity

Major Axis:

Minor Axis:

Torsion:

Member Force Output:

P-Delta: Yes

Ground Level: Base

Top

Pin

Pin

Pin

Bottom

Pin

Pin

Pin

At Centerline of Joint

Scale Factor: 1.00

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 51/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	6.04	0.00	-0.00	0.00	0.00	-0.00
LC:	W10	D	D	W10	W2	D
Max @ B:	6.04	-0.00	0.00	0.00	0.00	-0.00
LC:	W10	D	D	W10	W2	D
Maximum:	6.04	0.00	-0.00	0.00	0.00	-0.00
LC:	W10	D	D	W10	W2	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-0.57	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W11	D	D	W11	W8	D
Min @ B:	-0.57	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W11	D	D	W11	W8	D
Minimum:	-0.57	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W11	D	D	W11	W8	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 52/211
09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 20Story Top: ROOF - 129'-0"
Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 18.12

Elastic Modulus (ksi) = 29000

Frame Number: 4

I-End (ft): (118.00,-115.00)

J-End (ft): (106.50,-115.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 53/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	5.02	0.00	-0.00	0.00	0.00	-0.00
LC:	D	D	D	W11	W8	D
Max @ B:	5.02	-0.00	0.00	0.00	0.00	-0.00
LC:	D	D	D	W11	W8	D
Maximum:	5.02	0.00	-0.00	0.00	0.00	-0.00
LC:	D	D	D	W11	W8	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-5.99	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W10	D	D	D	W2	D
Min @ B:	-5.99	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W10	D	D	D	W2	D
Minimum:	-5.99	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W10	D	D	D	W2	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 54/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 24**Frame Number: 4**

Level Top: LEVEL 2 - 115'-0"

Column Line (118.00,-115.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 55/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	71.94	2.85	0.42	0.15	0.00	0.00
LC:	D	W2	W1	W8	W6	W5
Max @ B:	71.94	-0.00	0.00	0.15	0.00	0.00
LC:	D	D	D	W8	W6	W5
Maximum:	71.94	2.85	0.42	0.15	0.00	0.00
LC:	D	W2	W1	W8	W6	W5
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-0.39	-1.70	-0.10	-0.24	-0.01	-0.00
LC:	W6	W8	W6	W2	W1	W11
Min @ B:	-0.39	-0.00	0.00	-0.24	-0.01	-0.00
LC:	W6	D	D	W2	W1	W11
Minimum:	-0.39	-1.70	-0.10	-0.24	-0.01	-0.00
LC:	W6	W8	W6	W2	W1	W11
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 56/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 55**Frame Number: 4**

Level Top: LEVEL 2 - 115'-0"

Column Line (95.00,-115.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 57/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	40.32	3.35	0.31	0.28	0.04	0.00
LC:	D	W2	W10	W8	W10	W5
Max @ B:	40.32	-0.00	0.00	0.28	0.04	0.00
LC:	D	D	D	W8	W10	W5
Maximum:	40.32	3.35	0.31	0.28	0.04	0.00
LC:	D	W2	W10	W8	W10	W5
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-4.81	-2.08	-0.35	-0.40	-0.01	-0.00
LC:	W10	W8	D	W2	W6	W11
Min @ B:	-4.81	-0.00	0.00	-0.40	-0.01	-0.00
LC:	W10	D	D	W2	W6	W11
Minimum:	-4.81	-2.08	-0.35	-0.40	-0.01	-0.00
LC:	W10	W8	D	W2	W6	W11
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 58/211

09/03/20 09:46:42

STEEL BEAM INFORMATION:

Beam Number: 179

Level: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Length (ft) = 23.00

Elastic Modulus (ksi) = 29000

Frame Number: 4

I-End (95.00,-115.00)

J-End (118.00,-115.00)

Beam Size = W18X35

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 59/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	2.58	0.00	-0.00	2.05	0.00	0.01
LC:	W2	D	D	D	W11	W2
Max @ j:	2.49	-0.00	0.00	0.12	0.00	0.00
LC:	W2	D	D	W1	W6	W8
Maximum:	3.42	4.23	0.02	3.26	0.00	0.01
LC:	W10	D	W1	D	W6	W2
@ (ft):	8.62	4.15	11.50	11.50	17.25	0.00
Min @ i:	-1.67	0.00	-0.00	-0.02	-0.00	-0.01
LC:	W11	D	D	W6	W10	W8
Min @ j:	-2.90	-0.00	0.00	-1.84	-0.00	-0.00
LC:	W8	D	D	D	W8	W2
Minimum:	-3.99	-8.55	-0.02	-3.41	-0.01	-0.01
LC:	W8	D	W10	D	W1	W8
@ (ft):	11.50	11.50	8.62	11.50	8.63	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 60/211

09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 19

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 18.90

Elastic Modulus (ksi) = 29000

Frame Number: 4

I-End (ft): (106.50,-115.00)

J-End (ft): (95.00,-115.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 61/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	9.94	0.00	-0.00	0.00	0.00	-0.00
LC:	D	D	D	W10	W2	D
Max @ B:	9.94	-0.00	0.00	0.00	0.00	-0.00
LC:	D	D	D	W10	W2	D
Maximum:	9.94	0.00	-0.00	0.00	0.00	-0.00
LC:	D	D	D	W10	W2	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-15.98	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W10	D	D	W6	W8	D
Min @ B:	-15.98	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W10	D	D	W6	W8	D
Minimum:	-15.98	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W10	D	D	W6	W8	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 62/211

09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 20

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 18.90

Elastic Modulus (ksi) = 29000

Frame Number: 4

I-End (ft): (106.50,-115.00)

J-End (ft): (118.00,-115.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 63/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	16.08	0.00	-0.00	0.00	0.00	-0.00
LC:	W10	D	D	D	W8	D
Max @ B:	16.08	-0.00	0.00	0.00	0.00	-0.00
LC:	W10	D	D	D	W8	D
Maximum:	16.08	0.00	-0.00	0.00	0.00	-0.00
LC:	W10	D	D	D	W8	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-3.19	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W6	D	D	W10	W2	D
Min @ B:	-3.19	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W6	D	D	W10	W2	D
Minimum:	-3.19	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W6	D	D	W10	W2	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 64/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 20Level Top: ROOF - 129'-0"
Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Frame Number: 5

Column Line (180.75,-97.00)

Column Size = W8X48

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 65/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	13.12	0.00	0.01	0.06	0.01	0.01
LC:	D	W11	D	D	W6	W11
Max @ B:	13.12	0.87	0.27	0.06	0.01	0.01
LC:	D	D	W6	D	W6	W11
Maximum:	13.12	0.87	0.27	0.06	0.01	0.01
LC:	D	D	W6	D	W6	W11
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00
Min @ T:	-7.52	-0.00	-0.00	-0.05	-0.03	-0.01
LC:	W11	D	W11	W2	W12	W5
Min @ B:	-7.52	-0.57	-0.62	-0.05	-0.03	-0.01
LC:	W11	W2	W12	W2	W12	W5
Minimum:	-7.52	-0.57	-0.62	-0.05	-0.03	-0.01
LC:	W11	W2	W12	W2	W12	W5
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 66/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 21Level Top: ROOF - 129'-0"
Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Frame Number: 5

Column Line (180.75,-115.00)

Column Size = W8X48

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 67/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	8.78	0.00	0.01	0.05	0.14	0.01
LC:	D	D	D	W8	W2	W11
Max @ B:	8.78	0.67	1.94	0.05	0.14	0.01
LC:	D	W8	W2	W8	W2	W11
Maximum:	8.78	0.67	1.94	0.05	0.14	0.01
LC:	D	W8	W2	W8	W2	W11
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00
Min @ T:	-9.79	-0.00	-0.00	-0.05	-0.11	-0.02
LC:	W5	W5	W5	W2	W8	W5
Min @ B:	-9.79	-0.76	-1.54	-0.05	-0.11	-0.02
LC:	W5	W2	W8	W2	W8	W5
Minimum:	-9.79	-0.76	-1.54	-0.05	-0.11	-0.02
LC:	W5	W2	W8	W2	W8	W5
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 68/211

09/03/20 09:46:42

STEEL BEAM INFORMATION:

Beam Number: 81

Level: ROOF - 129'-0"

Fy (ksi) = 50.00

Length (ft) = 18.00

Elastic Modulus (ksi) = 29000

Frame Number: 5

I-End (180.75,-115.00)

J-End (180.75,-97.00)

Beam Size = W16X31

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 69/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	4.19	0.00	-0.00	5.60	0.03	0.00
LC:	W11	D	D	D	W5	W5
Max @ j:	0.36	-0.00	0.00	0.00	0.06	0.01
LC:	Lp	D	D	W5	W11	D
Maximum:	4.19	30.38	0.39	5.60	0.15	0.01
LC:	W11	Sp	W5	D	W11	D
@ (ft):	0.00	9.00	6.00	0.00	9.00	15.00
Min @ i:	-5.57	0.00	-0.00	-0.00	-0.02	-0.01
LC:	W5	D	D	W6	W11	D
Min @ j:	-1.14	-0.00	0.00	-5.60	-0.08	-0.00
LC:	Sp	D	D	D	W5	W11
Minimum:	-5.57	-0.00	-0.30	-5.60	-0.20	-0.01
LC:	W5	W5	W5	D	W5	D
@ (ft):	0.00	15.00	12.00	18.00	9.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 70/211

09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 21

Story Top: ROOF - 129'-0"

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 16.64

Elastic Modulus (ksi) = 29000

Frame Number: 5

I-End (ft): (180.75,-115.00)

J-End (ft): (180.75,-106.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

Fixity

Major Axis:

Minor Axis:

Torsion:

Member Force Output:

P-Delta: Yes

Ground Level: Base

Top

Pin

Pin

Pin

Bottom

Pin

Pin

Pin

At Centerline of Joint

Scale Factor: 1.00

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 71/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	11.64	0.00	-0.00	0.00	0.00	-0.00
LC:	W5	D	D	W11	W8	D
Max @ B:	11.64	-0.00	0.00	0.00	0.00	-0.00
LC:	W5	D	D	W11	W8	D
Maximum:	11.64	0.00	-0.00	0.00	0.00	-0.00
LC:	W5	D	D	W11	W8	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-8.58	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W11	D	D	W5	W2	D
Min @ B:	-8.58	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W11	D	D	W5	W2	D
Minimum:	-8.58	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W11	D	D	W5	W2	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 72/211
09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 22Story Top: ROOF - 129'-0"
Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 16.64

Elastic Modulus (ksi) = 29000

Frame Number: 5

I-End (ft): (180.75,-97.00)

J-End (ft): (180.75,-106.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 73/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	8.94	0.00	-0.00	0.00	0.00	-0.00
LC:	W11	D	D	W5	W6	D
Max @ B:	8.94	-0.00	0.00	0.00	0.00	-0.00
LC:	W11	D	D	W5	W6	D
Maximum:	8.94	0.00	-0.00	0.00	0.00	-0.00
LC:	W11	D	D	W5	W6	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-12.08	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W5	D	D	W11	W4	D
Min @ B:	-12.08	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W5	D	D	W11	W4	D
Minimum:	-12.08	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W5	D	D	W11	W4	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 74/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 20**Frame Number: 5**

Level Top: LEVEL 2 - 115'-0"

Column Line (180.75,-97.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 75/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	32.09	2.08	0.14	0.03	0.05	0.00
LC:	D	W11	W3	D	W1	W12
Max @ B:	32.09	-0.00	0.00	0.03	0.05	0.00
LC:	D	D	D	D	W1	W12
Maximum:	32.09	2.08	0.14	0.03	0.05	0.00
LC:	D	W11	W3	D	W1	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-7.57	-2.55	-0.10	-0.01	-0.01	-0.00
LC:	W11	W2	D	W8	W6	W6
Min @ B:	-7.57	-0.00	0.00	-0.01	-0.01	-0.00
LC:	W11	D	D	W8	W6	W6
Minimum:	-7.57	-2.55	-0.10	-0.01	-0.01	-0.00
LC:	W11	W2	D	W8	W6	W6
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 76/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 21**Frame Number: 5**

Level Top: LEVEL 2 - 115'-0"

Column Line (180.75,-115.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 77/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	17.34	2.00	1.08	0.16	0.05	0.00
LC:	D	W11	W2	W2	W8	W12
Max @ B:	17.34	0.00	0.00	0.16	0.05	0.00
LC:	D	D	D	W2	W8	W12
Maximum:	17.34	2.00	1.08	0.16	0.05	0.00
LC:	D	W11	W2	W2	W8	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-10.02	-2.49	-0.77	-0.13	-0.07	-0.00
LC:	W5	W2	W8	W11	W2	W6
Min @ B:	-10.02	0.00	0.00	-0.13	-0.07	-0.00
LC:	W5	D	D	W11	W2	W6
Minimum:	-10.02	-2.49	-0.77	-0.13	-0.07	-0.00
LC:	W5	W2	W8	W11	W2	W6
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 78/211

09/03/20 09:46:42

STEEL BEAM INFORMATION:

Beam Number: 81

Level: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Length (ft) = 18.00

Elastic Modulus (ksi) = 29000

Frame Number: 5

I-End (180.75,-115.00)

J-End (180.75,-97.00)

Beam Size = W18X35

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Bentley

Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 79/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	0.43	0.00	-0.00	1.75	0.00	0.01
LC:	W5	D	D	D	W11	W2
Max @ j:	4.55	-0.00	0.00	0.71	0.01	0.00
LC:	W8	D	D	W2	W8	W10
Maximum:	7.22	7.12	0.08	6.04	0.05	0.01
LC:	W8	Lp	W2	Lp	W11	W2
@ (ft):	9.00	12.21	11.25	11.25	9.00	0.00
Min @ i:	-0.28	0.00	-0.00	-0.54	-0.00	-0.00
LC:	W11	D	D	W11	W2	W8
Min @ j:	-5.35	-0.00	0.00	-1.83	-0.01	-0.00
LC:	W2	D	D	D	W2	D
Minimum:	-8.75	-10.29	-0.08	-6.02	-0.06	-0.00
LC:	W2	D	W2	Lp	W2	W8
@ (ft):	9.00	9.00	11.25	6.75	9.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 80/211

09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 21

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 17.49

Elastic Modulus (ksi) = 29000

Frame Number: 5

I-End (ft): (180.75,-106.00)

J-End (ft): (180.75,-115.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 81/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	35.56	0.00	-0.00	0.00	0.00	-0.00
LC:	W11	D	D	W2	W6	D
Max @ B:	35.56	-0.00	0.00	0.00	0.00	-0.00
LC:	W11	D	D	W2	W6	D
Maximum:	35.56	0.00	-0.00	0.00	0.00	-0.00
LC:	W11	D	D	W2	W6	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-44.33	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W2	D	D	W11	W1	D
Min @ B:	-44.33	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W2	D	D	W11	W1	D
Minimum:	-44.33	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W2	D	D	W11	W1	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 82/211
09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 22

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 17.49

Elastic Modulus (ksi) = 29000

Frame Number: 5

I-End (ft): (180.75,-106.00)

J-End (ft): (180.75,-97.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 83/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	43.95	0.00	-0.00	0.00	0.00	-0.00
LC:	W2	D	D	W11	W1	D
Max @ B:	43.95	-0.00	0.00	0.00	0.00	-0.00
LC:	W2	D	D	W11	W1	D
Maximum:	43.95	0.00	-0.00	0.00	0.00	-0.00
LC:	W2	D	D	W11	W1	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-35.26	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W11	D	D	W2	W6	D
Min @ B:	-35.26	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W11	D	D	W2	W6	D
Minimum:	-35.26	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W11	D	D	W2	W6	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 84/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 12

Level Top: ROOF - 129'-0"

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Frame Number: 6

Column Line (151.00,0.00)

Column Size = W8X48

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 85/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	11.62	0.00	0.06	0.03	0.05	0.01
LC:	D	W11	W11	W8	W8	W11
Max @ B:	11.62	0.38	0.74	0.03	0.05	0.01
LC:	D	W8	W8	W8	W8	W11
Maximum:	11.62	0.38	0.74	0.03	0.05	0.01
LC:	D	W8	W8	W8	W8	W11
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00
Min @ T:	-8.00	-0.00	-0.05	-0.04	-0.08	-0.01
LC:	W11	D	W5	W2	W7	W2
Min @ B:	-8.00	-0.58	-1.24	-0.04	-0.08	-0.01
LC:	W11	W2	W7	W2	W7	W2
Minimum:	-8.00	-0.58	-1.24	-0.04	-0.08	-0.01
LC:	W11	W2	W7	W2	W7	W2
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 86/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 13

Level Top: ROOF - 129'-0"

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Frame Number: 6

Column Line (151.00,-16.00)

Column Size = W8X48

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 87/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	11.17	0.00	0.05	0.00	0.01	0.01
LC:	D	W11	W2	W3	W5	W8
Max @ B:	11.17	0.10	0.23	0.00	0.01	0.01
LC:	D	W5	W5	W3	W5	W8
Maximum:	11.17	0.10	0.23	0.00	0.01	0.01
LC:	D	W5	W5	W3	W5	W8
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00
Min @ T:	-9.20	-0.00	-0.03	-0.02	-0.04	-0.01
LC:	W2	D	W8	D	W11	W2
Min @ B:	-9.20	-0.26	-0.65	-0.02	-0.04	-0.01
LC:	W2	D	W11	D	W11	W2
Minimum:	-9.20	-0.26	-0.65	-0.02	-0.04	-0.01
LC:	W2	D	W11	D	W11	W2
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 88/211

09/03/20 09:46:42

STEEL BEAM INFORMATION:

Beam Number: 56

Level: ROOF - 129'-0"

Fy (ksi) = 50.00

Length (ft) = 16.00

Elastic Modulus (ksi) = 29000

Frame Number: 6

I-End (151.00,-16.00)

J-End (151.00,0.00)

Beam Size = W16X31

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 89/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	0.67	0.00	-0.00	5.23	0.03	0.00
LC:	W6	D	D	D	W8	W2
Max @ j:	4.33	-0.00	0.00	0.00	0.03	0.00
LC:	W2	D	D	W5	W5	W2
Maximum:	4.33	26.21	0.45	5.22	0.15	0.00
LC:	W2	Sp	W11	D	W11	W2
@ (ft):	12.00	8.00	12.00	0.00	4.00	12.00
Min @ i:	-0.98	0.00	-0.00	-0.00	-0.03	-0.00
LC:	Sp	D	D	W11	W2	W8
Min @ j:	-3.58	-0.00	0.00	-5.23	-0.03	-0.00
LC:	W8	D	D	Sp	W11	W8
Minimum:	-3.58	-0.00	-0.44	-5.23	-0.17	-0.00
LC:	W8	W11	W5	Sp	W2	W8
@ (ft):	12.00	4.00	12.00	16.00	4.00	12.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 90/211
09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 9Story Top: ROOF - 129'-0"
Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 16.12

Elastic Modulus (ksi) = 29000

Frame Number: 6

I-End (ft): (151.00,-16.00)

J-End (ft): (151.00,-8.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

Fixity Major Axis:
Minor Axis:
Torsion:

Member Force Output:

P-Delta: Yes

Ground Level: Base

Top

Pin

Pin

Fix

At Centerline of Joint

Bottom

Pin

Pin

Fix

Scale Factor: 1.00

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 91/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	10.59	0.00	-0.00	0.00	0.00	0.07
LC:	W2	D	D	W11	W11	W8
Max @ B:	10.59	-0.00	0.00	0.00	0.00	0.07
LC:	W2	D	D	W11	W11	W8
Maximum:	10.59	0.00	-0.00	0.00	0.00	0.07
LC:	W2	D	D	W11	W11	W8
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-9.41	0.00	-0.00	-0.00	-0.00	-0.11
LC:	W11	D	D	W2	W5	W2
Min @ B:	-9.41	-0.00	0.00	-0.00	-0.00	-0.11
LC:	W11	D	D	W2	W5	W2
Minimum:	-9.41	0.00	-0.00	-0.00	-0.00	-0.11
LC:	W11	D	D	W2	W5	W2
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 92/211
09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 10Story Top: ROOF - 129'-0"
Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 16.12

Elastic Modulus (ksi) = 29000

Frame Number: 6

I-End (ft): (151.00,0.00)

J-End (ft): (151.00,-8.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 93/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	9.22	0.00	-0.00	0.00	0.00	0.12
LC:	W11	D	D	W2	W12	W11
Max @ B:	9.22	-0.00	0.00	0.00	0.00	0.12
LC:	W11	D	D	W2	W12	W11
Maximum:	9.22	0.00	-0.00	0.00	0.00	0.12
LC:	W11	D	D	W2	W12	W11
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-10.28	0.00	-0.00	-0.00	-0.00	-0.10
LC:	W2	D	D	W11	W7	W5
Min @ B:	-10.28	-0.00	0.00	-0.00	-0.00	-0.10
LC:	W2	D	D	W11	W7	W5
Minimum:	-10.28	0.00	-0.00	-0.00	-0.00	-0.10
LC:	W2	D	D	W11	W7	W5
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 94/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:**Column Number: 12****Frame Number: 6**

Level Top: LEVEL 2 - 115'-0"

Column Line (151.00,0.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 95/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	26.72	1.71	0.56	0.13	0.04	0.00
LC:	D	W8	W8	W2	W2	W12
Max @ B:	26.72	-0.00	0.00	0.13	0.04	0.00
LC:	D	D	D	W2	W2	W12
Maximum:	26.72	1.71	0.56	0.13	0.04	0.00
LC:	D	W8	W8	W2	W2	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-8.17	-2.30	-0.67	-0.10	-0.03	-0.00
LC:	W11	W2	W2	W8	W8	W6
Min @ B:	-8.17	-0.00	0.00	-0.10	-0.03	-0.00
LC:	W11	D	D	W8	W8	W6
Minimum:	-8.17	-2.30	-0.67	-0.10	-0.03	-0.00
LC:	W11	W2	W2	W8	W8	W6
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 96/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 13**Frame Number: 6**

Level Top: LEVEL 2 - 115'-0"

Column Line (151.00,-16.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 97/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	35.05	2.15	0.12	0.15	0.01	0.00
LC:	D	W8	W1	W2	W11	W12
Max @ B:	35.05	0.00	0.00	0.15	0.01	0.00
LC:	D	D	D	W2	W11	W12
Maximum:	35.05	2.15	0.12	0.15	0.01	0.00
LC:	D	W8	W1	W2	W11	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-9.26	-2.85	-0.04	-0.11	-0.00	-0.00
LC:	W2	W2	W5	W8	W5	W6
Min @ B:	-9.26	0.00	0.00	-0.11	-0.00	-0.00
LC:	W2	D	D	W8	W5	W6
Minimum:	-9.26	-2.85	-0.04	-0.11	-0.00	-0.00
LC:	W2	W2	W5	W8	W5	W6
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 98/211

09/03/20 09:46:42

STEEL BEAM INFORMATION:

Beam Number: 56

Level: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Length (ft) = 16.00

Elastic Modulus (ksi) = 29000

Frame Number: 6

I-End (151.00,-16.00)

J-End (151.00,0.00)

Beam Size = W18X35

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 99/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	5.11	0.00	-0.00	1.17	0.00	0.00
LC:	W2	D	D	D	W8	W2
Max @ j:	0.60	-0.00	0.00	0.45	0.00	0.00
LC:	W11	D	D	W2	W8	W7
Maximum:	6.83	1.92	0.03	1.59	0.01	0.00
LC:	W2	D	W8	D	W8	W7
@ (ft):	4.00	12.00	8.00	8.00	4.00	12.00
Min @ i:	-3.75	0.00	-0.00	-0.33	-0.00	-0.00
LC:	W8	D	D	W8	W2	W8
Min @ j:	-0.71	-0.00	0.00	-1.17	-0.00	-0.00
LC:	W2	D	D	D	W2	W12
Minimum:	-5.01	-1.79	-0.04	-1.56	-0.02	-0.00
LC:	W8	W2	W2	D	W2	W8
@ (ft):	4.00	12.00	8.00	8.00	4.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 100/211
09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 9

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 17.00

Elastic Modulus (ksi) = 29000

Frame Number: 6

I-End (ft): (151.00,-8.00)

J-End (ft): (151.00,-16.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 101/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	30.35	0.00	-0.00	0.00	0.00	0.01
LC:	W8	D	D	W8	W1	W1
Max @ B:	30.35	-0.00	0.00	0.00	0.00	0.01
LC:	W8	D	D	W8	W1	W1
Maximum:	30.35	0.00	-0.00	0.00	0.00	0.01
LC:	W8	D	D	W8	W1	W1
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-39.20	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W2	D	D	W2	W5	E4
Min @ B:	-39.20	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W2	D	D	W2	W5	E4
Minimum:	-39.20	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W2	D	D	W2	W5	E4
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 102/211
09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 10

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 17.00

Elastic Modulus (ksi) = 29000

Frame Number: 6

I-End (ft): (151.00,-8.00)

J-End (ft): (151.00,0.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 103/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	39.48	0.00	-0.00	0.00	0.00	0.01
LC:	W2	D	D	W2	W5	W12
Max @ B:	39.48	-0.00	0.00	0.00	0.00	0.01
LC:	W2	D	D	W2	W5	W12
Maximum:	39.48	0.00	-0.00	0.00	0.00	0.01
LC:	W2	D	D	W2	W5	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-30.57	0.00	-0.00	-0.00	-0.00	-0.02
LC:	W8	D	D	W8	W1	W9
Min @ B:	-30.57	-0.00	0.00	-0.00	-0.00	-0.02
LC:	W8	D	D	W8	W1	W9
Minimum:	-30.57	0.00	-0.00	-0.00	-0.00	-0.02
LC:	W8	D	D	W8	W1	W9
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 104/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:**Column Number: 50****Frame Number: 7**Level Top: CLERESTORY -
138'-6"

Column Line (151.00,-79.00)

Bot: ROOF - 129'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 9.50

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	11.80	0.00
	Minor:	11.85	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 105/211

09/03/20 09:46:42

NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	10.76	13.88	14.99	0.60	0.56	0.00
LC:	D	W8	D	W6	W6	W11
Max @ B:	10.76	8.23	2.08	0.60	0.56	0.00
LC:	D	W11	W6	W6	W6	W11
Maximum:	10.76	13.88	14.99	0.60	0.56	0.00
LC:	D	W8	D	W6	W6	W11
@ (ft):	0.98	0.98	0.99	0.98	0.99	0.98
Min @ T:	-1.73	-16.97	-2.72	-0.74	-1.93	-0.01
LC:	W2	W2	W6	W8	D	W7
Min @ B:	-1.73	-15.24	-3.92	-0.74	-1.93	-0.01
LC:	W2	W5	W1	W8	D	W7
Minimum:	-1.73	-16.97	-3.92	-0.74	-1.93	-0.01
LC:	W2	W2	W1	W8	D	W7
@ (ft):	0.98	0.98	9.50	0.98	0.99	0.98



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force EnvelopePage 106/211
09/03/20 09:46:42**STEEL COLUMN INFORMATION:****Column Number: 53****Frame Number: 7**Level Top: CLERESTORY -
138'-6"

Column Line (118.00,-79.00)

Bot: ROOF - 129'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 0.00

Length (ft) = 9.50

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	11.85	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 107/211

09/03/20 09:46:42

NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	22.93	10.95	0.00	2.67	0.65	0.00
LC:	D	D	W8	W1	W8	W5
Max @ B:	22.93	9.75	5.98	2.67	0.65	0.00
LC:	D	W1	W8	W1	W8	W5
Maximum:	22.93	10.95	5.98	2.67	0.65	0.00
LC:	D	D	W8	W1	W8	W5
@ (ft):	0.99	0.99	9.50	0.99	0.00	0.99
Min @ T:	-0.21	-13.10	-0.00	-1.31	-0.98	-0.00
LC:	W1	W1	W7	D	W2	W11
Min @ B:	-0.21	-4.95	-9.11	-1.31	-0.98	-0.00
LC:	W1	W6	W2	D	W2	W11
Minimum:	-0.21	-13.10	-9.11	-1.31	-0.98	-0.00
LC:	W1	W1	W2	D	W2	W11
@ (ft):	0.99	0.99	9.50	0.99	0.00	0.99



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 108/211
09/03/20 09:46:42

STEEL BEAM INFORMATION:

Beam Number: 4

Level: CLERESTORY - 138'-6

Fy (ksi) = 50.00

Length (ft) = 33.00

Elastic Modulus (ksi) = 29000

Frame Number: 7

I-End (118.00,-79.00)

J-End (151.00,-79.00)

Beam Size = W24X68

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 109/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	2.04	8.80	0.45	11.15	0.21	0.00
LC:	W6	W1	W8	D	W2	W7
Max @ j:	1.89	3.28	0.73	0.22	0.27	0.00
LC:	D	W6	W2	W6	W2	W7
Maximum:	2.04	50.68	0.73	11.15	0.27	0.00
LC:	W6	D	W2	D	W2	W7
@ (ft):	0.00	17.16	33.00	0.51	29.70	3.30
Min @ i:	-1.91	-59.27	-0.65	-0.49	-0.16	-0.00
LC:	W8	D	W2	W1	W8	W8
Min @ j:	-0.28	-16.90	-0.72	-8.34	-0.21	-0.00
LC:	W6	D	W8	D	W8	W12
Minimum:	-1.91	-59.25	-0.72	-8.34	-0.21	-0.00
LC:	W8	D	W8	D	W8	W8
@ (ft):	0.00	0.51	33.00	33.00	29.70	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 110/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 50**Frame Number: 7**

Level Top: ROOF - 129'-0"

Column Line (151.00,-79.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 111/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	31.04	8.32	2.08	2.38	0.39	0.00
LC:	D	W11	W6	W5	W1	W12
Max @ B:	31.04	19.47	1.43	2.38	0.39	0.00
LC:	D	W2	W1	W5	W1	W12
Maximum:	31.04	19.47	2.08	2.38	0.39	0.00
LC:	D	W2	W6	W5	W1	W12
@ (ft):	0.00	14.00	0.00	0.00	0.00	0.00
Min @ T:	-0.53	-15.36	-3.92	-1.41	-0.42	-0.00
LC:	W6	W5	W1	W11	D	W6
Min @ B:	-0.53	-12.46	-7.35	-1.41	-0.42	-0.00
LC:	W6	W8	D	W11	D	W6
Minimum:	-0.53	-15.36	-7.35	-1.41	-0.42	-0.00
LC:	W6	W5	D	W11	D	W6
@ (ft):	0.00	0.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 112/211
09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 53**Frame Number: 7**

Level Top: ROOF - 129'-0"

Column Line (118.00,-79.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 0.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 113/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	40.08	9.75	6.08	0.45	1.43	0.00
LC:	D	W1	W8	W6	W2	W12
Max @ B:	40.08	1.32	10.93	0.45	1.43	0.00
LC:	D	W6	W2	W6	W2	W12
Maximum:	40.08	9.75	10.93	0.45	1.43	0.00
LC:	D	W1	W2	W6	W2	W12
@ (ft):	0.00	0.00	14.00	0.00	0.00	0.00
Min @ T:	-5.35	-4.95	-9.25	-0.95	-0.95	-0.00
LC:	W1	W6	W2	W1	W8	W6
Min @ B:	-5.35	-3.47	-7.32	-0.95	-0.95	-0.00
LC:	W1	W1	W8	W1	W8	W6
Minimum:	-5.35	-4.95	-9.25	-0.95	-0.95	-0.00
LC:	W1	W6	W2	W1	W8	W6
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 114/211
09/03/20 09:46:42

STEEL BEAM INFORMATION:

Beam Number: 84

Level: ROOF - 129'-0"

Fy (ksi) = 50.00

Length (ft) = 33.00

Elastic Modulus (ksi) = 29000

Frame Number: 7

I-End (118.00,-79.00)

J-End (151.00,-79.00)

Beam Size = W18X76

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 115/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	0.95	0.00	-0.00	4.23	0.24	0.00
LC:	W8	D	D	D	W8	W6
Max @ j:	2.11	-0.00	0.00	0.00	0.58	0.03
LC:	W1	D	D	W8	W5	D
Maximum:	2.52	35.03	1.06	4.23	0.58	0.03
LC:	W11	D	W8	D	W5	D
@ (ft):	19.80	16.50	26.40	0.00	29.70	23.10
Min @ i:	-4.46	0.00	-0.00	-0.00	-0.38	-0.13
LC:	D	D	D	W6	W2	D
Min @ j:	-4.06	-0.00	0.00	-4.25	-0.22	-0.00
LC:	D	D	D	D	W11	W12
Minimum:	-4.46	-0.00	-1.91	-4.25	-0.38	-0.13
LC:	D	D	W5	D	W2	D
@ (ft):	0.00	33.00	26.40	33.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 116/211
09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 15Story Top: ROOF - 129'-0"
Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 21.64

Elastic Modulus (ksi) = 29000

Frame Number: 7

I-End (ft): (118.00,-79.00)

J-End (ft): (134.50,-79.00)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 117/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	7.94	0.00	-0.00	0.00	0.00	0.19
LC:	W1	D	D	D	W8	W2
Max @ B:	7.94	-0.00	0.00	0.00	0.00	0.19
LC:	W1	D	D	D	W8	W2
Maximum:	7.94	0.00	-0.00	0.00	0.00	0.19
LC:	W1	D	D	D	W8	W2
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	0.01	0.00	-0.00	-0.00	-0.00	-0.13
LC:	NL2	D	D	W1	W2	W8
Min @ B:	0.01	-0.00	0.00	-0.00	-0.00	-0.13
LC:	NL2	D	D	W1	W2	W8
Minimum:	0.01	0.00	-0.00	-0.00	-0.00	-0.13
LC:	NL2	D	D	W1	W2	W8
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 118/211
09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 16Story Top: ROOF - 129'-0"
Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 21.64

Elastic Modulus (ksi) = 29000

Frame Number: 7

I-End (ft): (151.00,-79.00)

J-End (ft): (134.50,-79.00)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 119/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	3.48	0.00	-0.00	0.00	0.00	0.15
LC:	D	D	D	W1	W2	W8
Max @ B:	3.48	-0.00	0.00	0.00	0.00	0.15
LC:	D	D	D	W1	W2	W8
Maximum:	3.48	0.00	-0.00	0.00	0.00	0.15
LC:	D	D	D	W1	W2	W8
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-7.81	0.00	-0.00	0.00	-0.00	-0.18
LC:	W1	D	D	NL2	W8	W2
Min @ B:	-7.81	-0.00	0.00	0.00	-0.00	-0.18
LC:	W1	D	D	NL2	W8	W2
Minimum:	-7.81	0.00	-0.00	0.00	-0.00	-0.18
LC:	W1	D	D	NL2	W8	W2
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 120/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 50**Frame Number: 7**

Level Top: LEVEL 2 - 115'-0"

Column Line (151.00,-79.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 121/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	92.31	12.25	7.29	0.59	0.02	0.00
LC:	D	W5	D	W8	W6	W12
Max @ B:	92.31	-0.00	0.00	0.59	0.02	0.00
LC:	D	D	D	W8	W6	W12
Maximum:	92.31	12.25	7.29	0.59	0.02	0.00
LC:	D	W5	D	W8	W6	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-0.63	-7.22	-0.37	-0.95	-0.49	-0.00
LC:	W6	W11	W6	W2	D	W9
Min @ B:	-0.63	-0.00	0.00	-0.95	-0.49	-0.00
LC:	W6	D	D	W2	D	W9
Minimum:	-0.63	-7.22	-0.37	-0.95	-0.49	-0.00
LC:	W6	W11	W6	W2	D	W9
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 122/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 53**Frame Number: 7**

Level Top: LEVEL 2 - 115'-0"

Column Line (118.00,-79.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 0.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 123/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	98.57	1.23	5.14	0.26	0.23	0.00
LC:	D	W6	W2	W1	W8	W5
Max @ B:	98.57	0.00	0.00	0.26	0.23	0.00
LC:	D	D	D	W1	W8	W5
Maximum:	98.57	1.23	5.14	0.26	0.23	0.00
LC:	D	W6	W2	W1	W8	W5
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-5.31	-3.93	-3.28	-0.08	-0.36	-0.00
LC:	W1	W1	W8	W6	W2	W6
Min @ B:	-5.31	0.00	0.00	-0.08	-0.36	-0.00
LC:	W1	D	D	W6	W2	W6
Minimum:	-5.31	-3.93	-3.28	-0.08	-0.36	-0.00
LC:	W1	W1	W8	W6	W2	W6
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 124/211

09/03/20 09:46:42

STEEL BEAM INFORMATION:

Beam Number: 84

Level: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Length (ft) = 33.00

Elastic Modulus (ksi) = 29000

Frame Number: 7

I-End (118.00,-79.00)

J-End (151.00,-79.00)

Beam Size = W18X35

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 125/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	1.88	0.00	-0.00	2.29	0.00	0.01
LC:	W8	D	D	D	W8	W2
Max @ j:	1.35	-0.00	0.00	0.09	0.00	0.01
LC:	W6	D	D	W11	W8	W8
Maximum:	3.59	10.81	0.04	5.16	0.03	0.01
LC:	W1	D	W2	D	W2	W2
@ (ft):	13.75	26.89	30.25	16.50	27.50	0.00
Min @ i:	-1.43	0.00	-0.00	-0.01	-0.00	-0.01
LC:	W2	D	D	W12	W2	W8
Min @ j:	-1.87	-0.00	0.00	-3.92	-0.00	-0.01
LC:	W8	D	D	D	W6	W2
Minimum:	-3.19	-16.80	-0.05	-5.01	-0.03	-0.01
LC:	W7	D	W2	D	W8	W2
@ (ft):	16.50	16.50	27.50	16.50	27.50	30.25



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 126/211
09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 15

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 22.30

Elastic Modulus (ksi) = 29000

Frame Number: 7

I-End (ft): (134.50,-79.00)

J-End (ft): (118.00,-79.00)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 127/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	12.71	0.00	-0.00	0.00	0.00	0.03
LC:	D	D	D	W1	W2	W8
Max @ B:	12.71	-0.00	0.00	0.00	0.00	0.03
LC:	D	D	D	W1	W2	W8
Maximum:	12.71	0.00	-0.00	0.00	0.00	0.03
LC:	D	D	D	W1	W2	W8
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-19.90	0.00	-0.00	-0.00	-0.00	-0.04
LC:	W1	D	D	W6	W8	W2
Min @ B:	-19.90	-0.00	0.00	-0.00	-0.00	-0.04
LC:	W1	D	D	W6	W8	W2
Minimum:	-19.90	0.00	-0.00	-0.00	-0.00	-0.04
LC:	W1	D	D	W6	W8	W2
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 128/211
09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 16

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 22.30

Elastic Modulus (ksi) = 29000

Frame Number: 7

I-End (ft): (134.50,-79.00)

J-End (ft): (151.00,-79.00)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 129/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	20.02	0.00	-0.00	0.00	0.00	0.04
LC:	W1	D	D	D	W8	W2
Max @ B:	20.02	-0.00	0.00	0.00	0.00	0.04
LC:	W1	D	D	D	W8	W2
Maximum:	20.02	0.00	-0.00	0.00	0.00	0.04
LC:	W1	D	D	D	W8	W2
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-0.06	0.00	-0.00	-0.00	-0.00	-0.03
LC:	W6	D	D	W1	W2	W11
Min @ B:	-0.06	-0.00	0.00	-0.00	-0.00	-0.03
LC:	W6	D	D	W1	W2	W11
Minimum:	-0.06	0.00	-0.00	-0.00	-0.00	-0.03
LC:	W6	D	D	W1	W2	W11
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force EnvelopePage 130/211
09/03/20 09:46:42**STEEL COLUMN INFORMATION:****Column Number: 44****Frame Number: 8**Level Top: CLERESTORY -
138'-6"

Column Line (95.00,-41.00)

Bot: ROOF - 129'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 9.50

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	11.80	0.00
	Minor:	11.80	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 131/211

09/03/20 09:46:42

NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	6.68	16.08	5.35	1.98	0.40	0.01
LC:	D	W8	W1	W2	D	W7
Max @ B:	6.68	4.42	0.64	1.98	0.40	0.01
LC:	D	W8	W5	W2	D	W7
Maximum:	6.68	16.08	5.35	1.98	0.40	0.01
LC:	D	W8	W1	W2	D	W7
@ (ft):	0.98	0.98	0.98	0.98	0.98	0.98
Min @ T:	-1.89	-23.00	-3.38	-1.37	-1.04	-0.00
LC:	W8	W2	D	W8	W9	D
Min @ B:	-1.89	-7.08	-3.54	-1.37	-1.04	-0.00
LC:	W8	W7	W9	W8	W9	D
Minimum:	-1.89	-23.00	-3.54	-1.37	-1.04	-0.00
LC:	W8	W2	W9	W8	W9	D
@ (ft):	0.98	0.98	9.50	0.98	0.98	0.98



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 132/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 46**Frame Number: 8**Level Top: CLERESTORY -
138'-6"

Column Line (118.00,-41.00)

Bot: ROOF - 129'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 0.00

Length (ft) = 9.50

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	11.85	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 133/211

09/03/20 09:46:42

NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	23.09	12.08	0.01	2.43	0.21	0.01
LC:	D	D	W8	W9	W12	W8
Max @ B:	23.09	8.85	1.80	2.43	0.21	0.01
LC:	D	W9	W12	W9	W12	W8
Maximum:	23.09	12.08	1.80	2.43	0.21	0.01
LC:	D	D	W12	W9	W12	W8
@ (ft):	0.99	0.99	9.50	0.99	0.00	0.99
Min @ T:	-0.03	-12.23	-0.01	-1.65	-0.15	-0.01
LC:	W5	W1	W2	D	W6	W6
Min @ B:	-0.03	-1.92	-1.11	-1.65	-0.15	-0.01
LC:	W5	D	W9	D	W6	W6
Minimum:	-0.03	-12.23	-1.11	-1.65	-0.15	-0.01
LC:	W5	W1	W9	D	W6	W6
@ (ft):	0.99	0.99	9.50	0.99	0.00	0.99



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 134/211

09/03/20 09:46:42

STEEL BEAM INFORMATION:

Beam Number: 1

Level: CLERESTORY - 138'-6

Fy (ksi) = 50.00

Length (ft) = 23.00

Elastic Modulus (ksi) = 29000

Frame Number: 8

I-End (95.00,-41.00)

J-End (118.00,-41.00)

Beam Size = W24X55

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 135/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	0.37	6.36	0.43	4.08	0.19	0.00
LC:	D	W1	W2	D	W8	W8
Max @ j:	1.64	1.22	0.19	0.11	0.06	0.00
LC:	W8	W5	W8	W5	W8	W8
Maximum:	1.64	16.85	0.43	4.08	0.19	0.00
LC:	W8	D	W2	D	W8	W8
@ (ft):	19.17	7.35	0.00	0.00	0.00	19.17
Min @ i:	-0.74	-3.77	-0.61	-0.63	-0.15	-0.01
LC:	W7	D	W8	W9	W2	W2
Min @ j:	-1.61	-48.74	-0.14	-8.26	-0.03	-0.01
LC:	W2	D	W2	D	W2	W2
Minimum:	-1.61	-48.74	-0.61	-8.26	-0.15	-0.01
LC:	W2	D	W8	D	W2	W2
@ (ft):	19.17	22.49	0.00	22.49	0.00	19.17



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 136/211
09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 44**Frame Number: 8**

Level Top: ROOF - 129'-0"

Column Line (95.00,-41.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 137/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	16.49	4.51	0.64	1.60	0.34	0.00
LC:	D	W8	W5	W2	W9	D
Max @ B:	16.49	16.20	1.68	1.60	0.34	0.00
LC:	D	W2	D	W2	W9	D
Maximum:	16.49	16.20	1.68	1.60	0.34	0.00
LC:	D	W2	D	W2	W9	D
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00
Min @ T:	-8.53	-7.16	-3.54	-1.12	-0.06	-0.00
LC:	W8	W7	W9	W8	W5	W9
Min @ B:	-8.53	-11.23	-0.20	-1.12	-0.06	-0.00
LC:	W8	W8	W5	W8	W5	W9
Minimum:	-8.53	-11.23	-3.54	-1.12	-0.06	-0.00
LC:	W8	W8	W9	W8	W5	W9
@ (ft):	0.00	14.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 138/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 46**Frame Number: 8**

Level Top: ROOF - 129'-0"

Column Line (118.00,-41.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 0.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 139/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	30.58	8.85	1.85	0.22	0.34	0.00
LC:	D	W9	W12	D	W2	W2
Max @ B:	30.58	1.20	5.52	0.22	0.34	0.00
LC:	D	D	W2	D	W2	W2
Maximum:	30.58	8.85	5.52	0.22	0.34	0.00
LC:	D	W9	W2	D	W2	W2
@ (ft):	0.00	0.00	14.00	0.00	0.00	0.00
Min @ T:	-2.33	-1.92	-1.19	-0.84	-0.39	-0.01
LC:	W5	D	W9	W9	W8	W8
Min @ B:	-2.33	-2.78	-4.73	-0.84	-0.39	-0.01
LC:	W5	W1	W8	W9	W8	W8
Minimum:	-2.33	-2.78	-4.73	-0.84	-0.39	-0.01
LC:	W5	W1	W8	W9	W8	W8
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force EnvelopePage 140/211
09/03/20 09:46:42**STEEL BEAM INFORMATION:****Beam Number: 46**

Level: ROOF - 129'-0"

Fy (ksi) = 50.00

Length (ft) = 23.00

Elastic Modulus (ksi) = 29000

Frame Number: 8

I-End (95.00,-41.00)

J-End (118.00,-41.00)

Beam Size = W16X40

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 141/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	1.12	0.00	-0.00	2.70	0.03	0.01
LC:	W2	D	D	D	W5	D
Max @ j:	1.66	-0.00	0.00	0.00	0.04	0.00
LC:	W1	D	D	W7	W6	W11
Maximum:	1.66	15.51	0.39	2.70	0.08	0.01
LC:	W1	D	W8	D	W4	D
@ (ft):	19.17	11.50	7.67	0.00	3.84	0.00
Min @ i:	-1.91	0.00	-0.00	-0.00	-0.13	-0.00
LC:	W8	D	D	W5	W1	W5
Min @ j:	-1.35	-0.00	0.00	-2.69	-0.05	-0.00
LC:	Sp	D	D	D	W8	D
Minimum:	-1.91	-0.00	-0.48	-2.69	-0.13	-0.01
LC:	W8	D	W1	D	W1	D
@ (ft):	0.00	23.00	3.83	23.00	0.00	7.67



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 142/211
09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 13Story Top: ROOF - 129'-0"
Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 18.12

Elastic Modulus (ksi) = 29000

Frame Number: 8

I-End (ft): (95.00,-41.00)

J-End (ft): (106.50,-41.00)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 143/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	9.64	0.00	-0.00	0.00	0.00	0.20
LC:	W1	D	D	W1	W2	W2
Max @ B:	9.64	-0.00	0.00	0.00	0.00	0.20
LC:	W1	D	D	W1	W2	W2
Maximum:	9.64	0.00	-0.00	0.00	0.00	0.20
LC:	W1	D	D	W1	W2	W2
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-2.63	0.00	-0.00	-0.00	-0.00	-0.15
LC:	W5	D	D	D	W8	W8
Min @ B:	-2.63	-0.00	0.00	-0.00	-0.00	-0.15
LC:	W5	D	D	D	W8	W8
Minimum:	-2.63	0.00	-0.00	-0.00	-0.00	-0.15
LC:	W5	D	D	D	W8	W8
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 144/211
09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 14

Story Top: ROOF - 129'-0"

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 18.12

Elastic Modulus (ksi) = 29000

Frame Number: 8

I-End (ft): (118.00,-41.00)

J-End (ft): (106.50,-41.00)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 145/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	3.60	0.00	-0.00	0.00	0.00	0.09
LC:	Sp	D	D	D	W8	W8
Max @ B:	3.60	-0.00	0.00	0.00	0.00	0.09
LC:	Sp	D	D	D	W8	W8
Maximum:	3.60	0.00	-0.00	0.00	0.00	0.09
LC:	Sp	D	D	D	W8	W8
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-9.62	0.00	-0.00	-0.00	-0.00	-0.17
LC:	W1	D	D	W1	W2	W2
Min @ B:	-9.62	-0.00	0.00	-0.00	-0.00	-0.17
LC:	W1	D	D	W1	W2	W2
Minimum:	-9.62	0.00	-0.00	-0.00	-0.00	-0.17
LC:	W1	D	D	W1	W2	W2
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 146/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 44**Frame Number: 8**

Level Top: LEVEL 2 - 115'-0"

Column Line (95.00,-41.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 147/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	31.28	8.98	1.47	0.45	0.12	0.00
LC:	D	W2	W1	W8	D	W5
Max @ B:	31.28	0.00	0.00	0.45	0.12	0.00
LC:	D	D	D	W8	D	W5
Maximum:	31.28	8.98	1.47	0.45	0.12	0.00
LC:	D	W2	W1	W8	D	W5
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-8.77	-5.95	-1.73	-0.67	-0.07	-0.00
LC:	W8	W8	D	W2	W1	W11
Min @ B:	-8.77	0.00	0.00	-0.67	-0.07	-0.00
LC:	W8	D	D	W2	W1	W11
Minimum:	-8.77	-5.95	-1.73	-0.67	-0.07	-0.00
LC:	W8	W8	D	W2	W1	W11
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 148/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 46**Frame Number: 8**

Level Top: LEVEL 2 - 115'-0"

Column Line (118.00,-41.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 0.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 149/211
09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kip	kip-ft	kip-ft	kip	kip	kip-ft
Max @ T:	54.07	0.81	1.49	0.22	0.15	0.00
LC:	D	W5	W2	W1	W8	W12
Max @ B:	54.07	0.00	0.00	0.22	0.15	0.00
LC:	D	D	D	W1	W8	W12
Maximum:	54.07	0.81	1.49	0.22	0.15	0.00
LC:	D	W5	W2	W1	W8	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-2.52	-3.71	-1.55	-0.05	-0.16	-0.00
LC:	W5	W1	W8	W5	W2	W6
Min @ B:	-2.52	0.00	0.00	-0.05	-0.16	-0.00
LC:	W5	D	D	W5	W2	W6
Minimum:	-2.52	-3.71	-1.55	-0.05	-0.16	-0.00
LC:	W5	W1	W8	W5	W2	W6
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 150/211
09/03/20 09:46:42

STEEL BEAM INFORMATION:

Beam Number: 46

Level: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Length (ft) = 23.00

Elastic Modulus (ksi) = 29000

Frame Number: 8

I-End (95.00,-41.00)

J-End (118.00,-41.00)

Beam Size = W18X35

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 151/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	1.12	0.00	-0.00	3.59	0.00	0.01
LC:	W1	D	D	D	W2	W2
Max @ j:	0.13	-0.00	0.00	0.24	0.00	0.00
LC:	W6	D	D	W8	W2	W8
Maximum:	3.57	13.97	0.05	3.69	0.03	0.01
LC:	W1	D	W8	D	W2	W2
@ (ft):	8.62	5.75	8.63	11.50	5.75	0.00
Min @ i:	-0.00	0.00	-0.00	-0.10	-0.00	-0.01
LC:	NR1	D	D	W6	W8	W8
Min @ j:	-0.17	-0.00	0.00	-1.58	-0.00	-0.00
LC:	W12	D	D	D	W8	W2
Minimum:	-2.39	-11.36	-0.05	-5.86	-0.03	-0.01
LC:	W8	D	W2	D	W8	W8
@ (ft):	11.50	11.50	5.75	11.50	8.63	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 152/211
09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 13

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 18.90

Elastic Modulus (ksi) = 29000

Frame Number: 8

I-End (ft): (106.50,-41.00)

J-End (ft): (95.00,-41.00)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 153/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	9.61	0.00	-0.00	0.00	0.00	0.04
LC:	D	D	D	W1	W2	W8
Max @ B:	9.61	-0.00	0.00	0.00	0.00	0.04
LC:	D	D	D	W1	W2	W8
Maximum:	9.61	0.00	-0.00	0.00	0.00	0.04
LC:	D	D	D	W1	W2	W8
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-22.47	0.00	-0.00	-0.00	-0.00	-0.05
LC:	W1	D	D	W5	W8	W2
Min @ B:	-22.47	-0.00	0.00	-0.00	-0.00	-0.05
LC:	W1	D	D	W5	W8	W2
Minimum:	-22.47	0.00	-0.00	-0.00	-0.00	-0.05
LC:	W1	D	D	W5	W8	W2
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 154/211
09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 14

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 18.90

Elastic Modulus (ksi) = 29000

Frame Number: 8

I-End (ft): (106.50,-41.00)

J-End (ft): (118.00,-41.00)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 155/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	22.52	0.00	-0.00	0.00	0.00	0.04
LC:	W1	D	D	W5	W8	W2
Max @ B:	22.52	-0.00	0.00	0.00	0.00	0.04
LC:	W1	D	D	W5	W8	W2
Maximum:	22.52	0.00	-0.00	0.00	0.00	0.04
LC:	W1	D	D	W5	W8	W2
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-5.86	0.00	-0.00	-0.00	-0.00	-0.03
LC:	W5	D	D	W1	W2	W8
Min @ B:	-5.86	-0.00	0.00	-0.00	-0.00	-0.03
LC:	W5	D	D	W1	W2	W8
Minimum:	-5.86	0.00	-0.00	-0.00	-0.00	-0.03
LC:	W5	D	D	W1	W2	W8
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 156/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 30**Frame Number: 9**

Level Top: ROOF - 129'-0"

Column Line (0.00,-79.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 157/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	25.61	0.00	0.07	0.19	1.00	0.00
LC:	D	W12	W4	Sp	D	W6
Max @ B:	25.61	0.45	3.22	0.19	1.00	0.00
LC:	D	Sp	D	Sp	D	W6
Maximum:	25.61	0.45	3.22	0.19	1.00	0.00
LC:	D	Sp	D	Sp	D	W6
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00
Min @ T:	-5.53	-2.38	-10.74	-0.03	-0.13	-0.00
LC:	W6	D	D	W2	W4	W12
Min @ B:	-5.53	-0.66	-2.07	-0.03	-0.13	-0.00
LC:	W6	Lp	W1	W2	W4	W12
Minimum:	-5.53	-2.38	-10.74	-0.03	-0.13	-0.00
LC:	W6	D	D	W2	W4	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 158/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 31**Frame Number: 9**

Level Top: ROOF - 129'-0"

Column Line (0.00,-60.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 159/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	14.83	0.00	0.06	0.14	0.09	0.00
LC:	D	W12	W1	D	D	W6
Max @ B:	14.83	0.81	0.16	0.14	0.09	0.00
LC:	D	D	W6	D	D	W6
Maximum:	14.83	0.81	0.16	0.14	0.09	0.00
LC:	D	D	W6	D	D	W6
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00
Min @ T:	-5.41	-1.10	-1.18	-0.03	-0.17	-0.00
LC:	W12	D	D	W7	W1	W8
Min @ B:	-5.41	-0.44	-2.28	-0.03	-0.17	-0.00
LC:	W12	W7	W1	W7	W1	W8
Minimum:	-5.41	-1.10	-2.28	-0.03	-0.17	-0.00
LC:	W12	D	W1	W7	W1	W8
@ (ft):	0.00	0.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 160/211
09/03/20 09:46:42

STEEL BEAM INFORMATION:

Beam Number: 11

Level: ROOF - 129'-0"

Fy (ksi) = 50.00

Length (ft) = 19.00

Elastic Modulus (ksi) = 29000

Frame Number: 9

I-End (0.00,-79.00)

J-End (0.00,-60.00)

Beam Size = W18X35

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 161/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	1.90	0.00	-0.00	7.23	0.08	1.17
LC:	W12	D	D	D	W4	D
Max @ j:	1.50	-0.00	0.00	0.00	0.02	0.00
LC:	W6	D	D	W9	W9	W11
Maximum:	1.90	39.89	0.25	7.23	0.10	1.20
LC:	W12	D	W4	D	W9	D
@ (ft):	0.00	9.50	3.17	0.00	12.67	3.17
Min @ i:	-2.19	0.00	-0.00	-0.00	-0.04	-0.00
LC:	Sp	D	D	W12	W3	W10
Min @ j:	-2.47	-0.00	0.00	-7.05	-0.02	-1.48
LC:	Sp	D	D	D	W12	D
Minimum:	-2.47	-0.00	-0.20	-7.05	-0.11	-1.48
LC:	Sp	D	W12	D	W12	D
@ (ft):	15.83	19.00	15.83	19.00	12.67	15.83



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 162/211
09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 3Story Top: ROOF - 129'-0"
Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 16.92

Elastic Modulus (ksi) = 29000

Frame Number: 9

I-End (ft): (0.00,-79.00)

J-End (ft): (0.00,-69.50)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 163/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	6.69	0.00	-0.00	0.00	-0.00	0.02
LC:	W6	D	D	W6	NL2	W6
Max @ B:	6.69	-0.00	0.00	0.00	-0.00	0.02
LC:	W6	D	D	W6	NL2	W6
Maximum:	6.69	0.00	-0.00	0.00	-0.00	0.02
LC:	W6	D	D	W6	NL2	W6
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-6.48	0.00	-0.00	-0.00	-0.00	-0.29
LC:	W12	D	D	D	W1	D
Min @ B:	-6.48	-0.00	0.00	-0.00	-0.00	-0.29
LC:	W12	D	D	D	W1	D
Minimum:	-6.48	0.00	-0.00	-0.00	-0.00	-0.29
LC:	W12	D	D	D	W1	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 164/211
09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 4Story Top: ROOF - 129'-0"
Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 16.92

Elastic Modulus (ksi) = 29000

Frame Number: 9

I-End (ft): (0.00,-60.00)

J-End (ft): (0.00,-69.50)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 165/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	6.53	0.00	-0.00	0.00	0.00	0.10
LC:	W12	D	D	W12	W1	W1
Max @ B:	6.53	-0.00	0.00	0.00	0.00	0.10
LC:	W12	D	D	W12	W1	W1
Maximum:	6.53	0.00	-0.00	0.00	0.00	0.10
LC:	W12	D	D	W12	W1	W1
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-6.68	0.00	-0.00	-0.00	-0.00	0.00
LC:	W6	D	D	W6	W2	NL2
Min @ B:	-6.68	-0.00	0.00	-0.00	-0.00	0.00
LC:	W6	D	D	W6	W2	NL2
Minimum:	-6.68	0.00	-0.00	-0.00	-0.00	0.00
LC:	W6	D	D	W6	W2	NL2
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 166/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 30**Frame Number: 9**

Level Top: LEVEL 2 - 115'-0"

Column Line (0.00,-79.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 167/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	87.96	1.71	1.09	0.02	0.10	0.00
LC:	D	W12	D	W7	W1	W5
Max @ B:	87.96	0.00	0.00	0.02	0.10	0.00
LC:	D	D	D	W7	W1	W5
Maximum:	87.96	1.71	1.09	0.02	0.10	0.00
LC:	D	W12	D	W7	W1	W5
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-5.74	-2.31	-0.51	-0.05	-0.07	-0.00
LC:	W6	W2	W4	Lp	D	W11
Min @ B:	-5.74	0.00	0.00	-0.05	-0.07	-0.00
LC:	W6	D	D	Lp	D	W11
Minimum:	-5.74	-2.31	-0.51	-0.05	-0.07	-0.00
LC:	W6	W2	W4	Lp	D	W11
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 168/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 31**Frame Number: 9**

Level Top: LEVEL 2 - 115'-0"

Column Line (0.00,-60.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 169/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	53.40	1.81	0.14	0.07	0.07	0.00
LC:	D	W12	Sp	W2	W1	W5
Max @ B:	53.40	-0.00	0.00	0.07	0.07	0.00
LC:	D	D	D	W2	W1	W5
Maximum:	53.40	1.81	0.14	0.07	0.07	0.00
LC:	D	W12	Sp	W2	W1	W5
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-5.63	-2.37	-0.41	-0.05	-0.01	-0.00
LC:	W12	W2	W1	W12	Sp	W11
Min @ B:	-5.63	-0.00	0.00	-0.05	-0.01	-0.00
LC:	W12	D	D	W12	Sp	W11
Minimum:	-5.63	-2.37	-0.41	-0.05	-0.01	-0.00
LC:	W12	W2	W1	W12	Sp	W11
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 170/211
09/03/20 09:46:42

STEEL BEAM INFORMATION:

Beam Number: 11

Level: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Length (ft) = 19.00

Elastic Modulus (ksi) = 29000

Frame Number: 9

I-End (0.00,-79.00)

J-End (0.00,-60.00)

Beam Size = W24X55

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 171/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	3.48	0.00	-0.00	3.48	0.01	0.00
LC:	W2	D	D	D	W2	Sp
Max @ j:	2.30	-0.00	0.00	0.84	0.01	0.00
LC:	W12	D	D	W6	W2	D
Maximum:	8.12	19.46	0.14	13.21	0.09	0.01
LC:	W2	Lp	W2	D	W2	D
@ (ft):	7.13	6.23	9.50	11.88	7.13	7.13
Min @ i:	-2.63	0.00	-0.00	-0.67	-0.01	-0.00
LC:	W8	D	D	W12	W8	W1
Min @ j:	-3.43	-0.00	0.00	-2.95	-0.00	-0.00
LC:	W9	D	D	D	W12	W6
Minimum:	-7.68	-24.07	-0.14	-13.78	-0.07	-0.00
LC:	W2	D	W2	Lp	W12	W4
@ (ft):	9.50	9.50	9.50	7.13	7.13	2.38



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 172/211
09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 3

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 17.76

Elastic Modulus (ksi) = 29000

Frame Number: 9

I-End (ft): (0.00,-69.50)

J-End (ft): (0.00,-79.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 173/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	27.34	0.00	-0.00	0.00	0.00	0.02
LC:	W12	D	D	W6	W6	W1
Max @ B:	27.34	-0.00	0.00	0.00	0.00	0.02
LC:	W12	D	D	W6	W6	W1
Maximum:	27.34	0.00	-0.00	0.00	0.00	0.02
LC:	W12	D	D	W6	W6	W1
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-34.45	0.00	-0.00	-0.00	-0.00	-0.01
LC:	W6	D	D	W12	W1	Sp
Min @ B:	-34.45	-0.00	0.00	-0.00	-0.00	-0.01
LC:	W6	D	D	W12	W1	Sp
Minimum:	-34.45	0.00	-0.00	-0.00	-0.00	-0.01
LC:	W6	D	D	W12	W1	Sp
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 174/211
09/03/20 09:46:42

STEEL BRACE INFORMATION:

Brace Number: 4

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 17.76

Elastic Modulus (ksi) = 29000

Frame Number: 9

I-End (ft): (0.00,-69.50)

J-End (ft): (0.00,-60.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 175/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	34.44	0.00	-0.00	0.00	0.00	0.01
LC:	W6	D	D	W6	W6	Sp
Max @ B:	34.44	-0.00	0.00	0.00	0.00	0.01
LC:	W6	D	D	W6	W6	Sp
Maximum:	34.44	0.00	-0.00	0.00	0.00	0.01
LC:	W6	D	D	W6	W6	Sp
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-27.27	0.00	-0.00	-0.00	-0.00	-0.02
LC:	W12	D	D	W12	W1	W1
Min @ B:	-27.27	-0.00	0.00	-0.00	-0.00	-0.02
LC:	W12	D	D	W12	W1	W1
Minimum:	-27.27	0.00	-0.00	-0.00	-0.00	-0.02
LC:	W12	D	D	W12	W1	W1
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 176/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:**Column Number: 49****Frame Number: 10**Level Top: CLERESTORY -
138'-6"

Column Line (151.00,-60.00)

Bot: ROOF - 129'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 9.50

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	11.80	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 177/211

09/03/20 09:46:42

NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	6.85	21.62	0.01	2.65	0.31	0.00
LC:	D	W8	D	W2	W7	W1
Max @ B:	6.85	4.52	2.99	2.65	0.31	0.00
LC:	D	W11	W7	W2	W7	W1
Maximum:	6.85	21.62	2.99	2.65	0.31	0.00
LC:	D	W8	W7	W2	W7	W1
@ (ft):	0.98	0.98	9.50	0.98	0.00	0.98
Min @ T:	-0.90	-29.31	-0.00	-2.02	-0.02	-0.00
LC:	W5	W2	W5	W8	W11	D
Min @ B:	-0.90	-7.36	-0.18	-2.02	-0.02	-0.00
LC:	W5	W5	W11	W8	W11	D
Minimum:	-0.90	-29.31	-0.18	-2.02	-0.02	-0.00
LC:	W5	W2	W11	W8	W11	D
@ (ft):	0.98	0.98	9.50	0.98	0.00	0.98



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 178/211
09/03/20 09:46:42

STEEL BEAM INFORMATION:

Beam Number: 5

Level: CLERESTORY - 138'-6

Fy (ksi) = 50.00

Length (ft) = 19.00

Elastic Modulus (ksi) = 29000

Frame Number: 10

I-End (151.00,-79.00)

J-End (151.00,-60.00)

Beam Size = W24X55

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 179/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	0.91	16.45	0.61	1.61	0.22	0.01
LC:	W5	W2	W2	D	W8	D
Max @ j:	2.47	9.79	0.14	1.32	0.05	0.01
LC:	W2	W8	W7	W8	W1	D
Maximum:	2.47	16.45	0.61	1.61	0.22	0.01
LC:	W2	W2	W2	D	W8	D
@ (ft):	15.83	0.51	0.51	0.51	0.51	15.83
Min @ i:	-0.28	-13.93	-0.59	-1.62	-0.20	-0.00
LC:	W6	W8	W8	W2	W2	W5
Min @ j:	-1.55	-12.61	0.00	-2.94	-0.02	-0.00
LC:	W8	W2	NL2	D	W6	W5
Minimum:	-1.55	-13.93	-0.59	-2.94	-0.20	-0.00
LC:	W8	W8	W8	D	W2	W5
@ (ft):	15.83	0.51	0.51	18.49	0.51	12.67



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 180/211
09/03/20 09:46:42

STEEL BEAM INFORMATION:

Beam Number: 6

Level: CLERESTORY - 138'-6

Fy (ksi) = 50.00

Length (ft) = 19.00

Elastic Modulus (ksi) = 29000

Frame Number: 10

I-End (151.00,-60.00)

J-End (151.00,-41.00)

Beam Size = W24X55

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force EnvelopePage 181/211
09/03/20 09:46:42**MEMBER FORCE MAXIMA AND MINIMA**

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	0.52	17.19	0.22	2.97	0.03	0.00
LC:	W5	W2	W7	D	W11	W2
Max @ j:	2.37	18.97	0.35	1.74	0.09	0.00
LC:	W2	W8	W8	W8	W8	W2
Maximum:	2.37	18.97	0.35	2.97	0.09	0.00
LC:	W2	W8	W8	D	W8	W2
@ (ft):	15.83	18.49	18.49	0.51	15.84	0.00
Min @ i:	-0.28	-12.24	-0.02	-2.50	-0.11	-0.01
LC:	W1	W8	W11	W2	W7	D
Min @ j:	-1.35	-27.84	-0.59	-2.50	-0.22	-0.01
LC:	W8	W2	W2	W2	W7	D
Minimum:	-1.35	-27.84	-0.59	-2.50	-0.22	-0.01
LC:	W8	W2	W2	W2	W7	D
@ (ft):	15.83	18.49	18.49	0.51	15.84	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 182/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 49**Frame Number: 10**

Level Top: ROOF - 129'-0"

Column Line (151.00,-60.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 183/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	13.49	4.52	2.99	1.60	0.00	0.00
LC:	D	W11	W7	W5	W11	W5
Max @ B:	13.49	16.51	-0.01	1.60	0.00	0.00
LC:	D	W2	NL2	W5	W11	W5
Maximum:	13.49	16.51	2.99	1.60	0.00	0.00
LC:	D	W2	W7	W5	W11	W5
@ (ft):	0.00	14.00	0.00	0.00	0.00	0.00
Min @ T:	-0.90	-7.36	-0.18	-1.08	-1.00	-0.00
LC:	W5	W5	W11	W8	D	W11
Min @ B:	-0.90	-11.46	-12.32	-1.08	-1.00	-0.00
LC:	W5	W8	D	W8	D	W11
Minimum:	-0.90	-11.46	-12.32	-1.08	-1.00	-0.00
LC:	W5	W8	D	W8	D	W11
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 184/211
09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 49**Frame Number: 10**

Level Top: LEVEL 2 - 115'-0"

Column Line (151.00,-60.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 185/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	39.33	9.38	11.47	0.47	0.11	0.00
LC:	D	W2	D	W8	W7	W5
Max @ B:	39.33	0.00	0.00	0.47	0.11	0.00
LC:	D	D	D	W8	W7	W5
Maximum:	39.33	9.38	11.47	0.47	0.11	0.00
LC:	D	W2	D	W8	W7	W5
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-0.85	-6.25	-1.31	-0.70	-0.76	-0.00
LC:	W5	W8	W7	W2	D	W11
Min @ B:	-0.85	0.00	0.00	-0.70	-0.76	-0.00
LC:	W5	D	D	W2	D	W11
Minimum:	-0.85	-6.25	-1.31	-0.70	-0.76	-0.00
LC:	W5	W8	W7	W2	D	W11
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 186/211
09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 47**Frame Number: 11**Level Top: CLERESTORY -
138'-6"

Column Line (151.00,-41.00)

Bot: ROOF - 129'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 9.50

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	11.80	0.00
	Minor:	11.85	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 187/211

09/03/20 09:46:42

NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	10.61	18.00	12.88	3.01	0.45	0.01
LC:	D	W8	D	W2	W8	W8
Max @ B:	10.61	2.22	3.16	3.01	0.45	0.01
LC:	D	W11	W8	W2	W8	W8
Maximum:	10.61	18.00	12.88	3.01	0.45	0.01
LC:	D	W8	D	W2	W8	W8
@ (ft):	0.98	0.98	0.99	0.98	0.99	0.98
Min @ T:	-1.65	-26.16	-1.03	-1.89	-1.61	-0.01
LC:	W8	W2	W12	W8	D	W2
Min @ B:	-1.65	-1.29	-1.23	-1.89	-1.61	-0.01
LC:	W8	W5	W6	W8	D	W2
Minimum:	-1.65	-26.16	-1.23	-1.89	-1.61	-0.01
LC:	W8	W2	W6	W8	D	W2
@ (ft):	0.98	0.98	9.50	0.98	0.99	0.98



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 188/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 47**Frame Number: 11**

Level Top: ROOF - 129'-0"

Column Line (151.00,-41.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 189/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	20.61	2.22	3.16	0.84	0.11	0.01
LC:	D	W11	W8	W5	W6	W5
Max @ B:	20.61	12.34	0.39	0.84	0.11	0.01
LC:	D	W2	W2	W5	W6	W5
Maximum:	20.61	12.34	3.16	0.84	0.11	0.01
LC:	D	W2	W8	W5	W6	W5
@ (ft):	0.00	14.00	0.00	0.00	0.00	0.00
Min @ T:	-1.65	-1.29	-1.23	-0.73	-0.35	-0.00
LC:	W8	W5	W6	W8	W8	W11
Min @ B:	-1.65	-9.46	-2.14	-0.73	-0.35	-0.00
LC:	W8	W8	W8	W8	W8	W11
Minimum:	-1.65	-9.46	-2.14	-0.73	-0.35	-0.00
LC:	W8	W8	W8	W8	W8	W11
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 190/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 47**Frame Number: 11**

Level Top: LEVEL 2 - 115'-0"

Column Line (151.00,-41.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 191/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	51.44	7.19	0.54	0.51	0.12	0.00
LC:	D	W2	D	W8	W8	W5
Max @ B:	51.44	0.00	0.00	0.51	0.12	0.00
LC:	D	D	D	W8	W8	W5
Maximum:	51.44	7.19	0.54	0.51	0.12	0.00
LC:	D	W2	D	W8	W8	W5
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-1.79	-5.52	-0.87	-0.66	-0.04	-0.00
LC:	W8	W8	W8	W2	D	W11
Min @ B:	-1.79	0.00	0.00	-0.66	-0.04	-0.00
LC:	W8	D	D	W2	D	W11
Minimum:	-1.79	-5.52	-0.87	-0.66	-0.04	-0.00
LC:	W8	W8	W8	W2	D	W11
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 192/211
09/03/20 09:46:42

STEEL BEAM INFORMATION:

Beam Number: 2

Level: CLERESTORY - 138'-6

Fy (ksi) = 50.00

Length (ft) = 33.00

Elastic Modulus (ksi) = 29000

Frame Number: 12

I-End (118.00,-41.00)

J-End (151.00,-41.00)

Beam Size = W24X68

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force EnvelopePage 193/211
09/03/20 09:46:42**MEMBER FORCE MAXIMA AND MINIMA**

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	1.76	6.45	0.18	11.28	0.05	0.01
LC:	D	W1	W12	D	W9	W2
Max @ j:	1.61	1.39	0.72	0.08	0.24	0.01
LC:	D	W12	W7	W5	W2	W2
Maximum:	1.76	51.18	0.72	11.28	0.24	0.01
LC:	D	D	W7	D	W2	W2
@ (ft):	0.00	17.82	33.00	0.51	29.70	0.00
Min @ i:	-2.82	-60.90	-0.18	-0.24	-0.04	-0.00
LC:	W7	D	W6	W9	W12	W8
Min @ j:	-0.60	-14.48	-0.42	-8.21	-0.19	-0.00
LC:	W3	D	W8	D	W11	W8
Minimum:	-2.82	-60.88	-0.42	-8.21	-0.19	-0.00
LC:	W7	D	W8	D	W11	W8
@ (ft):	0.00	0.51	33.00	33.00	29.70	3.30



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 194/211

09/03/20 09:46:42

STEEL BEAM INFORMATION:**Beam Number: 3**

Level: CLERESTORY - 138'-6

Fy (ksi) = 50.00

Length (ft) = 23.00

Elastic Modulus (ksi) = 29000

Frame Number: 13

I-End (95.00,-79.00)

J-End (118.00,-79.00)

Beam Size = W24X55

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 195/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	0.96	2.23	0.61	4.11	0.04	0.00
LC:	W4	W5	W7	D	W8	W8
Max @ j:	2.57	3.32	0.40	0.24	0.12	0.00
LC:	W7	W6	W8	W6	W8	W8
Maximum:	2.57	16.53	0.60	4.11	0.12	0.00
LC:	W7	D	W7	D	W8	W8
@ (ft):	19.17	7.35	0.00	0.00	19.17	15.33
Min @ i:	-0.17	-4.34	-0.08	-0.36	-0.19	-0.00
LC:	W5	D	W11	W12	W7	W7
Min @ j:	-0.05	-48.53	-0.62	-8.23	-0.21	-0.00
LC:	W11	D	W2	D	W2	W7
Minimum:	-0.17	-48.53	-0.62	-8.23	-0.21	-0.00
LC:	W5	D	W2	D	W2	W7
@ (ft):	0.00	22.49	22.49	22.49	19.17	19.17



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 196/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:**Column Number: 40****Frame Number: 14**Level Top: CLERESTORY -
138'-6"

Column Line (95.00,-79.00)

Bot: ROOF - 129'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 9.50

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	11.80	0.00
	Minor:	11.80	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 197/211

09/03/20 09:46:42

NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	6.68	13.48	1.83	0.83	0.37	0.00
LC:	D	W8	W5	W7	D	W2
Max @ B:	6.68	9.06	2.97	0.83	0.37	0.00
LC:	D	W8	W1	W7	D	W2
Maximum:	6.68	13.48	2.97	0.83	0.37	0.00
LC:	D	W8	W1	W7	D	W2
@ (ft):	0.98	0.98	9.50	0.98	0.98	0.98
Min @ T:	-1.70	-18.51	-3.98	-0.60	-0.40	-0.00
LC:	W2	W2	D	W12	W5	W8
Min @ B:	-1.70	-13.18	-1.60	-0.60	-0.40	-0.00
LC:	W2	W2	W5	W12	W5	W8
Minimum:	-1.70	-18.51	-3.98	-0.60	-0.40	-0.00
LC:	W2	W2	D	W12	W5	W8
@ (ft):	0.98	0.98	0.98	0.98	0.98	0.98



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 198/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 40**Frame Number: 14**

Level Top: ROOF - 129'-0"

Column Line (95.00,-79.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 199/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	21.52	9.06	2.97	2.29	0.16	0.00
LC:	D	W8	W1	W2	W5	W5
Max @ B:	21.52	19.83	0.70	2.29	0.16	0.00
LC:	D	W2	W5	W2	W5	W5
Maximum:	21.52	19.83	2.97	2.29	0.16	0.00
LC:	D	W2	W1	W2	W5	W5
@ (ft):	0.00	14.00	0.00	0.00	0.00	0.00
Min @ T:	-1.70	-13.18	-1.60	-1.57	-0.36	-0.00
LC:	W2	W2	W5	W8	W1	W4
Min @ B:	-1.70	-13.64	-2.35	-1.57	-0.36	-0.00
LC:	W2	W8	W1	W8	W1	W4
Minimum:	-1.70	-13.64	-2.35	-1.57	-0.36	-0.00
LC:	W2	W8	W1	W8	W1	W4
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 200/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 40**Frame Number: 14**

Level Top: LEVEL 2 - 115'-0"

Column Line (95.00,-79.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 201/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	68.08	11.51	0.59	0.62	0.10	0.00
LC:	D	W2	W5	W8	W1	W5
Max @ B:	68.08	-0.00	0.00	0.62	0.10	0.00
LC:	D	D	D	W8	W1	W5
Maximum:	68.08	11.51	0.59	0.62	0.10	0.00
LC:	D	W2	W5	W8	W1	W5
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-2.00	-7.58	-1.47	-0.91	-0.03	-0.00
LC:	W2	W8	D	W2	W5	W11
Min @ B:	-2.00	-0.00	0.00	-0.91	-0.03	-0.00
LC:	W2	D	D	W2	W5	W11
Minimum:	-2.00	-7.58	-1.47	-0.91	-0.03	-0.00
LC:	W2	W8	D	W2	W5	W11
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 202/211
09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 42**Frame Number: 15**Level Top: CLERESTORY -
138'-6"

Column Line (95.00,-60.00)

Bot: ROOF - 129'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 9.50

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	11.80	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 203/211

09/03/20 09:46:42

NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	6.62	20.24	0.00	2.32	0.30	0.00
LC:	D	W8	W11	W2	W1	W12
Max @ B:	6.62	5.78	2.84	2.32	0.30	0.00
LC:	D	W8	W1	W2	W1	W12
Maximum:	6.62	20.24	2.84	2.32	0.30	0.00
LC:	D	W8	W1	W2	W1	W12
@ (ft):	0.98	0.98	9.50	0.98	0.00	0.98
Min @ T:	-0.43	-28.34	-0.01	-1.69	-0.36	-0.00
LC:	W2	W2	D	W8	D	W9
Min @ B:	-0.43	-8.44	-3.39	-1.69	-0.36	-0.00
LC:	W2	W2	D	W8	D	W9
Minimum:	-0.43	-28.34	-3.39	-1.69	-0.36	-0.00
LC:	W2	W2	D	W8	D	W9
@ (ft):	0.98	0.98	9.50	0.98	0.00	0.98



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 204/211
09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 42**Frame Number: 15**

Level Top: ROOF - 129'-0"

Column Line (95.00,-60.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 205/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	13.20	5.78	2.84	1.87	1.89	0.00
LC:	D	W8	W1	W2	D	W7
Max @ B:	13.20	18.20	24.07	1.87	1.89	0.00
LC:	D	W2	D	W2	D	W7
Maximum:	13.20	18.20	24.07	1.87	1.89	0.00
LC:	D	W2	D	W2	D	W7
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00
Min @ T:	-0.43	-8.44	-2.30	-1.28	-0.38	-0.00
LC:	W2	W2	D	W8	W1	W11
Min @ B:	-0.43	-12.48	-2.64	-1.28	-0.38	-0.00
LC:	W2	W8	W1	W8	W1	W11
Minimum:	-0.43	-12.48	-2.64	-1.28	-0.38	-0.00
LC:	W2	W8	W1	W8	W1	W11
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 206/211

09/03/20 09:46:42

STEEL COLUMN INFORMATION:

Column Number: 42**Frame Number: 15**

Level Top: LEVEL 2 - 115'-0"

Column Line (95.00,-60.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 207/211

09/03/20 09:46:42

NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	41.59	9.66	0.10	0.44	1.62	0.00
LC:	D	W2	W5	W8	D	W5
Max @ B:	41.59	-0.00	0.00	0.44	1.62	0.00
LC:	D	D	D	W8	D	W5
Maximum:	41.59	9.66	0.10	0.44	1.62	0.00
LC:	D	W2	W5	W8	D	W5
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-0.41	-6.33	-24.32	-0.67	-0.01	-0.00
LC:	W2	W8	D	W2	W5	W11
Min @ B:	-0.41	-0.00	0.00	-0.67	-0.01	-0.00
LC:	W2	D	D	W2	W5	W11
Minimum:	-0.41	-6.33	-24.32	-0.67	-0.01	-0.00
LC:	W2	W8	D	W2	W5	W11
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 208/211

09/03/20 09:46:42

STEEL BEAM INFORMATION:

Beam Number: 7

Level: CLERESTORY - 138'-6

Fy (ksi) = 50.00

Length (ft) = 19.00

Elastic Modulus (ksi) = 29000

Frame Number: 16

I-End (95.00,-79.00)

J-End (95.00,-60.00)

Beam Size = W24X55

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 209/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	0.31	18.23	0.07	1.75	0.22	0.00
LC:	W12	W2	W11	D	W7	W1
Max @ j:	1.76	9.92	0.20	1.29	0.08	0.00
LC:	W2	W8	W1	W8	W7	W1
Maximum:	1.76	18.23	0.20	1.75	0.22	0.00
LC:	W2	W2	W1	D	W7	W1
@ (ft):	15.83	0.51	18.49	0.51	0.51	3.17
Min @ i:	-0.39	-13.33	-0.50	-1.75	-0.02	-0.00
LC:	W3	W8	W7	W2	W11	D
Min @ j:	-0.57	-13.23	-0.18	-2.86	-0.08	-0.00
LC:	W8	W2	D	D	D	D
Minimum:	-0.57	-13.32	-0.50	-2.86	-0.08	-0.00
LC:	W8	W8	W7	D	D	D
@ (ft):	15.83	0.51	0.51	18.49	15.84	15.83



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 210/211
09/03/20 09:46:42

STEEL BEAM INFORMATION:

Beam Number: 8

Level: CLERESTORY - 138'-6

Fy (ksi) = 50.00

Length (ft) = 19.00

Elastic Modulus (ksi) = 29000

Frame Number: 16

I-End (95.00,-60.00)

J-End (95.00,-41.00)

Beam Size = W24X55

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTIONAL	NL_AISC360_DL_X
ND2	NOTIONAL	NL_AISC360_DL_Y
NL1	NOTIONAL	NL_AISC360_LL_X
NL2	NOTIONAL	NL_AISC360_LL_Y
NR1	NOTIONAL	NL_AISC360_Rf_X
NR2	NOTIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area A

Building Code: IBC

Member Force Envelope

Page 211/211

09/03/20 09:46:42

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	0.87	15.38	0.20	2.82	0.08	0.00
LC:	W12	W2	W1	D	D	D
Max @ j:	1.48	16.66	0.36	1.51	0.13	0.00
LC:	W2	W8	W2	W8	W2	D
Maximum:	1.48	16.66	0.36	2.82	0.13	0.00
LC:	W2	W8	W2	D	W2	D
@ (ft):	15.83	18.49	18.49	0.51	15.84	0.00
Min @ i:	-0.20	-10.54	-0.19	-2.18	-0.08	-0.00
LC:	W2	W8	D	W2	W8	W5
Min @ j:	-0.79	-23.83	-0.50	-2.18	-0.22	-0.00
LC:	W8	W2	W8	W2	W8	W5
Minimum:	-0.79	-23.83	-0.50	-2.18	-0.22	-0.00
LC:	W8	W2	W8	W2	W8	W5
@ (ft):	15.83	18.49	18.49	0.51	15.84	15.83



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Gravity Column Design Summary

09/03/20 09:46:42

Steel Code: AISC360-16 LRFD

DEMAND/CAPACITY LIMIT FOR STRENGTH : 1.000

Column Line A.2-5

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	59.1	25.4	6.6	1	0.48 Eq H1-1a	90.0	50	W8X35
LEVEL 2 - 115'-0"	143.0	20.8	5.4	1	0.77 Eq H1-1a	90.0	50	W8X35

Column Line A.2-3

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	59.3	5.4	6.3	2	0.34 Eq H1-1a	90.0	50	W8X35
LEVEL 2 - 115'-0"	161.7	6.0	7.4	1	0.77 Eq H1-1a	90.0	50	W8X35

Column Line A.2-1.1

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	43.0	-16.1	15.5	1	0.32 Eq H1-1b	90.0	50	W8X48
LEVEL 2 - 115'-0"	146.2	-14.3	13.5	1	0.61 Eq H1-1a	90.0	50	W8X48

Column Line A.3-1

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	33.4	-9.8	8.1	1	0.27 Eq H1-1b	90.0	50	W8X35
LEVEL 2 - 115'-0"	79.4	-6.1	7.6	1	0.46 Eq H1-1a	90.0	50	W8X35

Column Line C-5

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	56.5	23.2	-5.7	10	0.44 Eq H1-1a	90.0	50	W8X35
LEVEL 2 - 115'-0"	157.6	23.4	-3.9	1	0.82 Eq H1-1a	90.0	50	W8X35

Column Line C-4

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	52.8	-19.6	-8.9	4	0.28 Eq H1-1b	90.0	50	W8X48
LEVEL 2 - 115'-0"	232.5	-9.7	-7.7	1	0.76 Eq H1-1a	90.0	50	W8X48

Column Line C-2

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	29.5	3.1	-7.6	5	0.20 Eq H1-1b	90.0	50	W8X35
LEVEL 2 - 115'-0"	100.8	0.8	-6.5	10	0.49 Eq H1-1a	90.0	50	W8X35



RAM Structural System



Gravity Column Design Summary

RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 2/5

09/03/20 09:46:42

Steel Code: AISC360-16 LRFD

Column Line C-1.1

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	57.1	11.1	-7.5	9	0.39 Eq H1-1a	90.0	50	W8X35
LEVEL 2 - 115'-0"	126.2	0.2	-9.2	1	0.62 Eq H1-1a	90.0	50	W8X35

Column Line C-1

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	57.1	-16.7	-6.2	1	0.41 Eq H1-1a	90.0	50	W8X35
LEVEL 2 - 115'-0"	94.2	-5.8	-7.3	1	0.51 Eq H1-1a	90.0	50	W8X35

Column Line D-5

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	33.7	21.2	3.6	2	0.28 Eq H1-1b	90.0	50	W8X35
LEVEL 2 - 115'-0"	123.3	18.5	3.2	6	0.65 Eq H1-1a	90.0	50	W8X35

Column Line D-4

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	40.1	-15.4	4.0	3	0.15 Eq H1-3b	90.0	50	W8X48
LEVEL 2 - 115'-0"	154.2	-10.4	3.4	6	0.51 Eq H1-1a	90.0	50	W8X48

Column Line D-3.2

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	27.6	3.8	4.4	2	0.15 Eq H1-1b	90.0	50	W8X35
LEVEL 2 - 115'-0"	106.8	0.0	3.7	6	0.46 Eq H1-1a	90.0	50	W8X35

Column Line D-3

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	23.1	-6.7	4.3	3	0.16 Eq H1-1b	90.0	50	W8X35
LEVEL 2 - 115'-0"	86.6	-4.3	3.6	6	0.41 Eq H1-1a	90.0	50	W8X35

Column Line D-2

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	26.1	-4.0	3.9	6	0.14 Eq H1-1b	90.0	50	W8X35
LEVEL 2 - 115'-0"	61.8	-3.5	2.9	6	0.30 Eq H1-1a	90.0	50	W8X35



RAM Structural System



Gravity Column Design Summary

RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 3/5

09/03/20 09:46:42

Steel Code: AISC360-16 LRFD

Column Line E-5

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	31.7	19.4	-3.3	5	0.26 Eq H1-1b	90.0	50	W8X35
LEVEL 2 - 115'-0"	112.8	16.7	-2.5	1	0.56 Eq H1-3b	90.0	50	W8X35

Column Line E-4

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	38.2	-14.3	-4.4	4	0.18 Eq H1-1b	90.0	50	W8X48
LEVEL 2 - 115'-0"	144.8	-9.5	-3.8	10	0.48 Eq H1-1a	90.0	50	W8X48

Column Line E-3.2

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	27.2	-3.7	-4.8	4	0.11 Eq H1-1b	90.0	50	W8X48
LEVEL 2 - 115'-0"	102.2	0.0	-4.0	10	0.32 Eq H1-1a	90.0	50	W8X48

Column Line E-3

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	22.2	-5.1	-4.1	4	0.26 Eq H1-1b	90.0	50	W8X24
LEVEL 2 - 115'-0"	91.1	-2.1	-3.9	1	0.84 Eq H1-1a	90.0	50	W8X24

Column Line E-2

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	23.8	4.2	-5.6	17	0.17 Eq H1-1b	90.0	50	W8X35
LEVEL 2 - 115'-0"	101.5	0.1	3.8	6	0.44 Eq H1-1a	90.0	50	W8X35

Column Line E-1.1

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	56.3	9.1	5.9	8	0.35 Eq H1-1a	90.0	50	W8X35
LEVEL 2 - 115'-0"	124.4	0.7	8.7	1	0.61 Eq H1-1a	90.0	50	W8X35

Column Line F-2

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	52.1	15.1	2.6	6	0.18 Eq H1-1b	90.0	50	W8X48
LEVEL 2 - 115'-0"	175.4	16.5	-2.2	10	0.58 Eq H1-1a	90.0	50	W8X48



RAM Structural System



Gravity Column Design Summary

RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 4/5

09/03/20 09:46:42

Steel Code: AISC360-16 LRFD

Column Line F-1

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	42.6	-24.6	5.1	3	0.25 Eq H1-1b	90.0	50	W8X48
LEVEL 2 - 115'-0"	146.3	-21.3	4.4	6	0.55 Eq H1-1a	90.0	50	W8X48

Column Line G-5

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	65.6	26.4	-2.0	3	0.33 Eq H1-3b	90.0	50	W8X35
LEVEL 2 - 115'-0"	133.7	17.7	-3.1	10	0.68 Eq H1-1a	90.0	50	W8X35

Column Line G-2

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	24.5	2.8	-5.3	5	0.24 Eq H1-1b	90.0	50	W8X28
LEVEL 2 - 115'-0"	80.1	0.8	-4.9	10	0.38 Eq H1-1a	90.0	50	W8X35

Column Line H-5

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
LEVEL 2 - 115'-0"	109.7	50.8	5.3	6	0.85 Eq H1-1a	90.0	50	W8X35

Column Line H-4

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	23.0	-18.1	7.0	3	0.30 Eq H1-1b	90.0	50	W8X35
LEVEL 2 - 115'-0"	184.2	-11.9	7.5	6	0.90 Eq H1-1a	90.0	50	W8X35

Column Line H-3.1

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	38.1	-5.8	5.1	3	0.20 Eq H1-1b	90.0	50	W8X35
LEVEL 2 - 115'-0"	140.0	-0.9	4.3	6	0.61 Eq H1-1a	90.0	50	W8X35

Column Line H-2

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	37.4	-12.5	5.1	6	0.25 Eq H1-1b	90.0	50	W8X35
LEVEL 2 - 115'-0"	94.5	-11.4	3.6	6	0.49 Eq H1-1a	90.0	50	W8X35

Column Line H.6-4

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size



RAM Structural System



Gravity Column Design Summary

RAM Steel 17.01.01.05

DataBase: Area A

Building Code: IBC

Page 5/5

09/03/20 09:46:42

Steel Code: AISC360-16 LRFD

ROOF - 129'-0"	21.3	-6.8	-6.1	4	0.29 Eq H1-1b	90.0	50	W8X28
LEVEL 2 - 115'-0"	80.6	-6.3	-6.4	10	0.45 Eq H1-1a	90.0	50	W8X35

Column Line J-4

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	30.5	13.7	-2.6	3	0.16 Eq H1-3b	90.0	50	W8X35
LEVEL 2 - 115'-0"	74.1	11.2	-2.0	1	0.39 Eq H1-3b	90.0	50	W8X35

Column Line J-3.1

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	42.1	-5.0	-6.3	4	0.22 Eq H1-1b	90.0	50	W8X35
LEVEL 2 - 115'-0"	135.2	-0.7	-5.5	1	0.60 Eq H1-1a	90.0	50	W8X35

Column Line J-2

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	37.0	-13.5	-6.4	1	0.28 Eq H1-1b	90.0	50	W8X35
LEVEL 2 - 115'-0"	89.0	-10.8	-4.8	1	0.49 Eq H1-1a	90.0	50	W8X35



RAM Foundation v17.01.01.05

DataBase: Area A

Building Code: IBC

Spread Footing Design Summary

Date: 09/03/20 09:33:29

Design Code: ACI318-02

Grid	Orientation Col/Foot	Dimensions (ft)			f'c/fy ksi	Bottom Reinforcement		Top Reinforcement	
		Length	Width	Thick		Parallel to Length	Parallel to Width	Parallel to Length	Parallel to Width
(C - 1)	90.00/90.00	8.00	8.00	3.00	4.00/60.00	15-#6	15-#6	None	None
(A.3 - 1)	90.00/90.00	6.00	6.00	3.00	4.00/60.00	11-#6	11-#6	None	None
(A.2 - 1.1)	90.00/90.00	8.00	8.00	3.00	4.00/60.00	15-#6	15-#6	None	None
(C - 1.1)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(A.2 - 3)	90.00/90.00	8.00	8.00	3.00	4.00/60.00	15-#6	15-#6	None	None
(C - 2)	90.00/90.00	6.00	6.00	2.00	4.00/60.00	16-#4	16-#4	None	None
(C - 3)	90.00/90.00	10.00	10.00	2.00	4.00/60.00	12-#6	12-#6	12-#6	0-#3
(D - 3)	90.00/90.00	6.00	6.00	2.00	4.00/60.00	16-#4	16-#4	None	None
(D - 2)	90.00/90.00	6.00	6.00	2.00	4.00/60.00	16-#4	16-#4	None	None
(E - 3)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(E - 2)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(E - 1.1)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(E - 1)	90.00/90.00	8.00	8.00	3.00	4.00/60.00	15-#6	15-#6	None	None
(E.8 - 1)	90.00/90.00	8.00	8.00	3.00	4.00/60.00	15-#6	15-#6	None	None
(F - 1)	90.00/90.00	8.00	8.00	3.00	4.00/60.00	15-#6	15-#6	None	None
(G - 1)	90.00/90.00	8.00	8.00	3.00	4.00/60.00	15-#6	15-#6	15-#6	15-#6
(G - 1.1)	90.00/90.00	8.00	8.00	3.00	4.00/60.00	15-#6	15-#6	15-#6	15-#6
(G - 2)	90.00/90.00	6.00	6.00	3.00	4.00/60.00	11-#6	11-#6	None	None
(H - 2)	90.00/90.00	8.00	8.00	3.00	4.00/60.00	22-#6	22-#6	None	None
(G - 3)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(F - 2)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(F - 3)	0.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(E.3 - 3)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(E.3 - 3.2)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(E - 3.2)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(D - 3.2)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(C - 3.2)	90.00/90.00	10.00	10.00	2.00	4.00/60.00	12-#6	12-#6	None	None
(A.2 - 3.2)	90.00/90.00	10.00	10.00	3.00	4.00/60.00	18-#6	18-#6	None	None
(A.2 - 4)	90.00/90.00	12.00	12.00	3.00	4.00/60.00	15-#6	15-#6	None	None
(C - 4)	90.00/90.00	10.00	10.00	2.00	4.00/60.00	12-#6	12-#6	None	None

*

*



RAM Structural System



RAM Foundation v17.01.01.05

DataBase: Area A

Building Code: IBC

Spread Footing Design Summary

Page 2/2

Date: 09/03/20 09:33:29

Design Code: ACI318-02

(D - 4)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(E - 4)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(E.3 - 4)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(F - 4)	0.00/90.00	10.00	10.00	2.00	4.00/60.00	12-#6	12-#6	None	None
(G - 4)	90.00/90.00	10.00	10.00	2.00	4.00/60.00	12-#6	12-#6	None	None
(G - 3.2)	90.00/90.00	6.00	6.00	2.00	4.00/60.00	16-#4	16-#4	None	None
(H - 3.1)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(H - 4)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(H.6 - 4)	90.00/90.00	6.00	6.00	3.00	4.00/60.00	11-#6	11-#6	None	None
(J - 4)	90.00/90.00	6.00	6.00	3.00	4.00/60.00	11-#6	11-#6	None	None
(J - 3.1)	90.00/90.00	8.00	8.00	3.00	4.00/60.00	15-#6	15-#6	None	None
(J - 2)	90.00/90.00	6.00	6.00	3.00	4.00/60.00	11-#6	11-#6	None	None
(H.6 - 5)	90.00/90.00	10.00	10.00	3.00	4.00/60.00	18-#6	18-#6	18-#6	18-#6
(H.6 - 4.5)	90.00/90.00	10.00	10.00	3.00	4.00/60.00	18-#6	18-#6	18-#6	18-#6
(H - 5)	90.00/90.00	10.00	10.00	3.00	4.00/60.00	25-#6	25-#6	None	None
(G - 5)	90.00/90.00	10.00	10.00	3.00	4.00/60.00	18-#6	18-#6	None	None
(F - 5)	90.00/90.00	10.00	10.00	3.00	4.00/60.00	18-#6	18-#6	None	None
(E.3 - 5)	90.00/90.00	8.00	8.00	3.00	4.00/60.00	15-#6	15-#6	None	None
(E - 5)	90.00/90.00	12.00	12.00	3.00	4.00/60.00	22-#6	22-#6	None	None
(D - 5)	90.00/90.00	10.00	10.00	3.00	4.00/60.00	22-#6	22-#6	None	None
(C - 5)	90.00/90.00	10.00	10.00	3.00	4.00/60.00	18-#6	18-#6	None	None
(A.2 - 5)	90.00/90.00	8.00	8.00	3.00	4.00/60.00	15-#6	15-#6	None	None

Note: Number between () in reinforcement is quantity of bars in center strip of rectangular footing

* - indicates that the Spread Footing design fails



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Reaction Summary

08/28/20 11:23:44

Steel Code: AISC 360-16 LRFD

STEEL BEAM REACTION SUMMARY:

LOAD COMBINATIONS

1.40DL + 0.00LL

1.20DL + 1.60LL

Floor Type: LEVEL 2 - 115'-0"

Beam No.	Beam Size	Supports (ft)		Unfactored(kips)			Factored (kips)	
		X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
173	HSS12X3X3/16	13.00	0.00	2.5	0.0	0.0	3.5	0.0
		43.00	0.00	2.5	0.0	0.0	3.5	0.0
174	HSS12X12X3/8	13.00	-27.00	2.8	0.0	0.0	3.9	0.0
		13.00	0.00	2.8	0.0	0.0	3.9	0.0
175	W16X26	0.00	-27.00	3.4	2.3	0.0	7.8	0.0
		13.00	-27.00	3.4	2.3	0.0	7.8	0.0
176	W21X44	13.00	-27.00	8.9	5.7	0.0	19.9	0.0
		43.00	-27.00	12.1	7.9	0.0	27.3	0.0
177	W21X44	43.00	-27.00	16.0	14.6	0.0	42.6	0.0
		43.00	0.00	23.6	23.9	0.0	66.5	0.0
178	W14X22	43.00	0.00	3.2	2.0	0.0	7.0	0.0
		56.00	0.00	3.2	2.0	0.0	7.0	0.0
179	W21X50	56.00	-27.00	22.5	16.4	-0.4	53.3	0.0
		56.00	0.00	22.2	16.5	-0.6	53.0	0.0
180	W14X22	43.00	-27.00	3.9	3.7	0.0	10.6	0.0
		56.00	-27.00	3.9	3.7	0.0	10.6	0.0
181	W24X55	0.00	-58.00	37.5	21.0	0.0	78.5	0.0
		0.00	-27.00	37.9	20.2	0.0	77.8	0.0
183	W24X76	0.00	-113.00	43.7	21.4	0.0	86.6	0.0
		0.00	-77.00	43.7	21.4	0.0	86.6	0.0
184	W16X26	0.00	-113.00	3.8	2.7	0.0	8.9	0.0
		13.00	-113.00	3.8	2.7	0.0	8.9	0.0
185	W21X44	13.00	-113.00	10.1	6.8	0.0	22.9	0.0
		43.00	-113.00	14.1	9.5	0.0	32.0	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Reaction Summary

08/28/20 11:23:44

Steel Code: AISC 360-16 LRFD

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
186	W24X55	43.00	-143.00	28.3	27.9	0.0	78.6	0.0
		43.00	-113.00	17.0	15.3	0.0	44.9	0.0
187	HSS12X3X3/16	13.00	-143.00	2.5	0.0	0.0	3.5	0.0
		13.00	-113.00	2.5	0.0	0.0	3.5	0.0
188	W24X76	43.00	-58.00	38.3	22.9	0.0	82.6	0.0
		43.00	-27.00	38.9	23.0	0.0	83.4	0.0
189	W24X55	43.00	-77.00	19.6	15.3	0.0	48.0	0.0
		43.00	-58.00	19.6	15.3	0.0	48.0	0.0
190	W24X76	43.00	-113.00	44.3	25.1	0.0	93.4	0.0
		43.00	-77.00	44.3	25.1	0.0	93.4	0.0
191	W21X50	56.00	-58.00	27.8	18.5	0.0	63.0	0.0
		56.00	-27.00	28.2	18.8	0.0	63.9	0.0
192	W18X35	56.00	-77.00	14.2	12.0	0.0	36.2	0.0
		56.00	-58.00	14.2	12.0	0.0	36.2	0.0
193	W24X62	56.00	-113.00	32.5	21.8	0.0	73.9	0.0
		56.00	-77.00	32.5	23.5	0.0	76.6	0.0
194	W24X62	56.00	-143.00	24.9	18.0	-0.8	58.7	0.0
		56.00	-113.00	25.5	17.7	-0.3	59.0	0.0
197	W21X50	85.00	-58.00	25.9	17.6	0.0	59.3	0.0
		85.00	-27.00	26.3	17.8	0.0	60.1	0.0
198	W18X35	85.00	-77.00	13.2	11.4	0.0	34.2	0.0
		85.00	-58.00	13.2	11.4	0.0	34.2	0.0
199	W24X55	85.00	-113.00	30.5	20.9	0.0	70.1	0.0
		85.00	-77.00	30.5	22.6	0.0	72.8	0.0
200	W24X76	85.00	-143.00	37.6	22.7	0.0	81.4	0.0
		85.00	-113.00	37.6	22.7	0.0	81.4	0.0
201	W18X35	85.00	-27.00	14.8	14.2	0.0	40.4	0.0
		118.00	-27.00	12.7	11.6	0.0	33.8	0.0
202	W14X22	95.00	-39.00	5.3	4.9	0.0	14.2	0.0
		95.00	-27.00	5.3	4.9	0.0	14.2	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Reaction Summary

08/28/20 11:23:44

Steel Code: AISC 360-16 LRFD

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
205	W18X35	118.00	-39.00	9.0	8.4	0.0	24.2	0.0
		118.00	-27.00	9.0	8.4	0.0	24.2	0.0
206	W16X26	95.00	-58.00	3.5	3.2	0.0	9.3	0.0
		95.00	-39.00	3.5	3.2	0.0	9.3	0.0
207	W16X31	85.00	-58.00	3.3	3.2	0.0	9.0	0.0
		95.00	-58.00	3.3	3.2	0.0	9.0	0.0
208	W14X22	85.00	-77.00	3.2	3.1	0.0	8.8	0.0
		95.00	-77.00	3.2	3.1	0.0	8.8	0.0
209	W18X35	95.00	-77.00	10.4	7.8	0.0	24.9	0.0
		118.00	-77.00	7.9	5.4	0.0	18.2	0.0
210	W18X35	118.00	-39.00	10.8	7.4	0.0	24.9	0.0
		151.00	-39.00	15.5	11.2	0.0	36.5	0.0
211	W16X26	151.00	-58.00	5.5	5.1	0.0	14.8	0.0
		151.00	-39.00	5.3	4.9	0.0	14.3	0.0
212	W18X35	151.00	-77.00	11.9	10.3	0.0	30.8	0.0
		151.00	-58.00	13.3	11.7	0.0	34.6	0.0
213	W18X35	118.00	-77.00	10.6	7.6	0.0	24.9	0.0
		151.00	-77.00	10.6	7.6	0.0	24.9	0.0
214	W14X22	145.25	-58.00	2.0	1.9	0.0	5.4	0.0
		151.00	-58.00	2.0	1.9	0.0	5.4	0.0
218	W24X76	118.00	-113.00	44.2	25.4	0.0	93.7	0.0
		118.00	-77.00	44.2	25.4	0.0	93.7	0.0
219	W24X62	151.00	-113.00	33.3	20.9	0.0	73.5	0.0
		151.00	-77.00	33.3	20.9	0.0	73.5	0.0
221	W24X76	118.00	-143.00	39.9	23.7	0.0	85.9	0.0
		118.00	-113.00	39.9	23.7	0.0	85.9	0.0
222	W18X35	85.00	0.00	9.5	7.1	0.0	22.7	0.0
		118.00	0.00	9.5	6.5	0.0	21.8	0.0
223	W18X35	118.00	0.00	9.5	6.4	0.0	21.6	0.0
		151.00	0.00	9.5	6.4	0.0	21.6	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Reaction Summary

08/28/20 11:23:44

Steel Code: AISC 360-16 LRFD

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
224	W14X22	151.00	0.00	2.8	1.9	0.0	6.5	0.0
		161.00	0.00	2.8	1.9	0.0	6.5	0.0
225	W18X35	161.00	-27.00	8.4	5.7	0.0	19.3	0.0
		161.00	0.00	8.4	5.7	0.0	19.3	0.0
226	W16X31	118.00	-27.00	11.0	10.3	0.0	29.8	0.0
		151.00	-27.00	11.0	10.3	0.0	29.8	0.0
227	W14X22	151.00	-27.00	3.3	3.2	0.0	9.1	0.0
		161.00	-27.00	3.3	3.2	0.0	9.1	0.0
228	W18X35	161.00	-27.00	8.6	5.6	0.0	19.2	0.0
		193.00	-27.00	8.6	5.6	0.0	19.3	0.0
229	W21X44	193.00	-52.00	22.3	13.1	0.0	47.8	0.0
		193.00	-27.00	22.8	13.5	0.0	48.9	0.0
230	W21X44	193.00	-77.00	22.5	13.2	0.0	48.1	0.0
		193.00	-52.00	22.8	13.4	0.0	48.8	0.0
232	W21X44	161.00	-52.00	20.9	15.2	0.0	49.4	0.0
		161.00	-27.00	21.4	15.7	0.0	50.8	0.0
234	W21X44	161.00	-77.00	21.1	15.4	0.0	49.9	0.0
		161.00	-52.00	21.5	15.6	0.0	50.7	0.0
235	W16X26	161.00	-77.00	16.8	7.6	0.0	32.3	0.0
		180.75	-77.00	16.8	7.6	0.0	32.3	0.0
236	W14X22	180.75	-77.00	3.3	2.2	0.0	7.5	0.0
		193.00	-77.00	3.3	2.3	0.0	7.6	0.0
237	W14X22	151.00	-77.00	3.5	3.4	0.0	9.6	0.0
		161.00	-77.00	3.5	3.4	0.0	9.6	0.0
240	W27X84	161.00	-113.00	41.7	25.0	0.0	90.0	0.0
		161.00	-77.00	41.7	25.0	0.0	90.0	0.0
241	W14X22	151.00	-113.00	3.8	3.7	0.0	10.4	0.0
		161.00	-113.00	3.8	3.7	0.0	10.4	0.0
242	W16X26	161.00	-113.00	5.8	5.0	0.0	15.0	0.0
		180.75	-113.00	5.8	5.0	0.0	14.9	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Reaction Summary

08/28/20 11:23:44

Steel Code: AISC 360-16 LRFD

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
243	W18X35	161.00	-143.00	9.3	6.4	0.0	21.3	0.0
		161.00	-113.00	9.3	6.4	0.0	21.4	0.0
244	W16X31	56.00	-113.00	11.1	10.4	0.0	30.0	0.0
		85.00	-113.00	11.1	10.4	0.0	30.0	0.0
246	W16X31	118.00	-113.00	12.6	11.3	0.0	33.2	0.0
		151.00	-113.00	12.6	11.3	0.0	33.2	0.0
247	W16X31	56.00	-27.00	9.7	9.2	0.0	26.4	0.0
		85.00	-27.00	9.7	9.2	0.0	26.4	0.0
248	W16X31	56.00	-58.00	9.6	9.2	0.0	26.2	0.0
		85.00	-58.00	9.6	9.2	0.0	26.2	0.0
249	W16X31	56.00	-77.00	10.3	11.1	0.0	30.1	0.0
		85.00	-77.00	10.3	11.1	0.0	30.1	0.0
250	W14X22	43.00	-77.00	4.5	4.4	0.0	12.5	0.0
		56.00	-77.00	4.5	4.4	0.0	12.5	0.0
251	W14X22	43.00	-58.00	4.3	4.1	0.0	11.7	0.0
		56.00	-58.00	4.3	4.1	0.0	11.7	0.0
252	W24X55	0.00	-58.00	14.8	15.4	0.0	42.3	0.0
		43.00	-58.00	14.8	13.9	0.0	40.0	0.0
253	W24X55	0.00	-77.00	15.7	14.5	0.0	42.2	0.0
		43.00	-77.00	15.7	13.6	0.0	40.6	0.0
254	W16X26	95.00	-77.00	5.4	5.0	0.0	14.5	0.0
		95.00	-58.00	5.4	5.0	0.0	14.5	0.0
256	W14X22	100.75	-58.00	2.6	0.9	0.0	4.6	0.0
		100.75	-39.00	2.6	0.9	0.0	4.6	0.0
257	W14X22	100.75	-77.00	4.5	2.8	0.0	9.8	0.0
		100.75	-58.00	4.5	2.8	0.0	9.8	0.0
258	W16X31	95.00	-58.00	14.5	11.0	0.0	35.0	0.0
259	W18X35	151.00	-65.24	3.3	3.2	0.0	9.1	0.0
		161.00	-65.24	3.3	3.2	0.0	9.1	0.0
260	W18X35	151.00	-65.24	10.2	6.7	-0.0	22.9	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Reaction Summary

08/28/20 11:23:44

Steel Code: AISC 360-16 LRFD

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
261	W24X62	118.00	-27.00	36.0	23.3	0.0	80.4	0.0
		118.00	0.00	36.0	23.3	0.0	80.4	0.0
262	W24X55	151.00	-27.00	23.5	16.5	0.0	54.7	0.0
		151.00	0.00	23.5	16.5	0.0	54.7	0.0
263	W16X26	0.00	-143.00	3.3	2.2	0.0	7.5	0.0
		13.00	-143.00	3.3	2.2	0.0	7.5	0.0
264	W16X31	13.00	-143.00	7.7	5.0	0.0	17.3	0.0
		43.00	-143.00	7.7	5.0	0.0	17.3	0.0
265	W14X22	43.00	-143.00	3.3	3.2	0.0	9.1	0.0
		56.00	-143.00	3.3	3.2	0.0	9.1	0.0
266	W16X31	56.00	-143.00	10.0	9.5	0.0	27.3	0.0
		85.00	-143.00	10.0	9.5	0.0	27.3	0.0
267	W18X35	85.00	-143.00	15.5	13.1	0.0	39.6	0.0
		118.00	-143.00	13.3	11.3	0.0	34.0	0.0
268	W18X35	118.00	-143.00	11.7	10.7	0.0	31.2	0.0
		151.00	-143.00	11.7	10.7	0.0	31.2	0.0
269	W14X22	151.00	-143.00	3.5	3.4	0.0	9.6	0.0
		161.00	-143.00	3.5	3.4	0.0	9.6	0.0
270	W18X35	161.00	-143.00	8.6	5.6	0.0	19.2	0.0
		193.00	-143.00	8.6	5.6	0.0	19.3	0.0
271	W21X44	193.00	-168.00	22.3	13.1	0.0	47.8	0.0
		193.00	-143.00	22.8	13.5	0.0	48.9	0.0
272	W21X44	193.00	-193.00	22.5	13.2	0.0	48.1	0.0
		193.00	-168.00	22.8	13.4	0.0	48.8	0.0
273	W14X22	180.75	-193.00	3.3	2.2	0.0	7.5	0.0
		193.00	-193.00	3.3	2.3	0.0	7.6	0.0
274	W21X50	151.00	-228.00	11.3	6.5	0.0	24.0	0.0
		180.75	-228.00	10.1	7.1	0.0	23.6	0.0
277	W18X35	118.00	-228.00	9.7	6.6	0.0	22.2	0.0
		151.00	-228.00	9.7	6.6	0.0	22.2	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Reaction Summary

08/28/20 11:23:44

Steel Code: AISC 360-16 LRFD

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
278	W24X55	0.00	-228.00	13.0	8.7	0.0	29.6	0.0
		43.00	-228.00	13.0	9.4	0.0	30.7	0.0
279	W14X22	43.00	-228.00	3.6	2.5	0.0	8.3	0.0
		56.00	-228.00	3.6	2.5	0.0	8.3	0.0
280	W16X31	56.00	-228.00	8.2	5.6	0.0	18.7	0.0
		85.00	-228.00	8.2	5.6	0.0	18.7	0.0
281	W24X55	0.00	-174.00	37.4	19.1	0.0	75.5	0.0
		0.00	-143.00	38.3	19.6	0.0	77.3	0.0
283	W24X76	0.00	-228.00	42.6	21.9	0.0	86.1	0.0
		0.00	-193.00	42.6	21.5	0.0	85.5	0.0
284	W21X50	56.00	-174.00	27.8	18.5	0.0	62.9	0.0
		56.00	-143.00	28.6	19.0	0.0	64.6	0.0
285	W18X35	56.00	-193.00	14.2	12.0	0.0	36.2	0.0
		56.00	-174.00	14.2	12.0	0.0	36.2	0.0
287	W24X76	43.00	-174.00	38.3	22.5	0.0	81.9	0.0
		43.00	-143.00	39.4	23.1	0.0	84.2	0.0
288	W24X55	43.00	-193.00	19.6	18.3	0.0	52.8	0.0
		43.00	-174.00	19.6	18.3	0.0	52.8	0.0
289	W24X76	43.00	-228.00	43.3	31.9	0.0	103.0	0.0
		43.00	-193.00	43.0	29.1	0.0	98.2	0.0
290	W24X55	0.00	-193.00	15.5	13.2	0.0	39.8	0.0
		43.00	-193.00	15.5	14.0	0.0	41.1	0.0
291	W24X55	0.00	-174.00	14.8	12.8	0.0	38.3	0.0
		43.00	-174.00	14.8	13.6	0.0	39.5	0.0
292	W14X22	43.00	-174.00	4.3	4.1	0.0	11.7	0.0
		56.00	-174.00	4.3	4.1	0.0	11.7	0.0
293	W14X22	43.00	-193.00	4.6	4.5	0.0	12.8	0.0
		56.00	-193.00	4.6	4.5	0.0	12.8	0.0
294	W16X31	56.00	-193.00	10.5	10.0	0.0	28.6	0.0
		85.00	-193.00	10.5	10.0	0.0	28.6	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Reaction Summary

08/28/20 11:23:44

Steel Code: AISC 360-16 LRFD

No.	Size	X	Y	DL	+LL	-LL	+TOTAL	-TOTAL
295	W16X31	56.00	-174.00	9.6	9.2	0.0	26.3	0.0
		85.00	-174.00	9.6	9.2	0.0	26.3	0.0
296	W21X50	85.00	-174.00	25.9	17.6	0.0	59.2	0.0
		85.00	-143.00	26.4	17.9	0.0	60.4	0.0
297	W24X68	85.00	-193.00	13.6	11.4	0.0	34.5	0.0
		85.00	-174.00	13.6	11.4	0.0	34.5	0.0
298	W24X55	85.00	-228.00	29.7	24.3	0.0	74.4	0.0
		85.00	-193.00	29.0	23.3	0.0	72.0	0.0
299	W16X31	85.00	-174.00	3.3	3.2	0.0	9.1	0.0
		95.00	-174.00	3.3	3.2	0.0	9.1	0.0
300	W16X26	95.00	-174.00	5.4	5.0	0.0	14.5	0.0
		95.00	-155.00	5.4	5.0	0.0	14.5	0.0
303	W16X26	95.00	-193.00	5.4	5.0	0.0	14.5	0.0
		95.00	-174.00	5.4	5.0	0.0	14.5	0.0
304	W14X22	85.00	-193.00	3.4	3.3	0.0	9.5	0.0
		95.00	-193.00	3.4	3.3	0.0	9.5	0.0
305	W18X35	95.00	-193.00	11.0	8.3	0.0	26.5	0.0
		118.00	-193.00	8.5	6.0	0.0	19.8	0.0
306	W18X35	118.00	-155.00	10.8	7.4	0.0	24.9	0.0
		151.00	-155.00	15.5	11.2	0.0	36.5	0.0
307	W18X35	118.00	-155.00	9.0	8.4	0.0	24.3	0.0
		118.00	-143.00	9.0	8.4	0.0	24.3	0.0
308	W21X50	151.00	-155.00	7.1	6.4	0.0	18.8	0.0
		151.00	-143.00	7.1	6.4	0.0	18.8	0.0
309	W16X26	151.00	-174.00	5.5	5.1	0.0	14.8	0.0
		151.00	-155.00	5.3	4.9	0.0	14.3	0.0
310	W24X55	161.00	-168.00	21.0	15.2	0.0	49.6	0.0
		161.00	-143.00	21.6	15.7	0.0	50.9	0.0
313	W14X22	151.00	-193.00	3.4	3.3	0.0	9.5	0.0
		161.00	-193.00	3.4	3.3	0.0	9.5	0.0



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Beam Summary

08/28/20 11:23:44

Steel Code: AISC 360-16 LRFD

STEEL BEAM DESIGN SUMMARY:

Demand/Capacity Limits for: Strength: 1.000 Deflection: 1.000

Floor Type: CLERESTORY-128'-6"

Bm #	Length ft	+Mu kip-ft	-Mu kip-ft	Φ Mn kip-ft	Fy ksi	Beam Size	Studs

Floor Type: ROOF - 129'-0"

Bm #	Length ft	+Mu kip-ft	-Mu kip-ft	Φ Mn kip-ft	Fy ksi	Beam Size	Studs
173	30.00	71.4	0.0	249.4	50.0	W18X35 u	
174	27.00	216.4	0.0	398.0	50.0	W21X48 u	
175	13.00	12.2	0.0	124.5	50.0	W14X22 u	
176	30.00	63.2	0.0	165.8	50.0	W16X26 u	
177	27.00	243.9	0.0	357.8	50.0	W21X44 u	
178	13.00	13.1	0.0	124.5	50.0	W14X22 u	
179	27.00	233.7	0.0	357.8	50.0	W21X44 u	
180	13.00	10.0	0.0	124.5	50.0	W14X22 u	
181	31.00	412.1	0.0	750.0	50.0	W24X76 u	
183	36.00	537.2	0.0	1061.3	50.0	W30X90 u	
184	13.00	14.2	0.0	124.5	50.0	W14X22 u	
185	30.00	69.7	0.0	165.8	50.0	W16X26 u	
186	30.00	244.8	0.0	357.8	50.0	W21X44 u	
187	30.00	248.8	0.0	502.5	50.0	W24X55 u	
188	31.00	342.6	0.0	398.0	50.0	W21X48 u	
189	19.00	127.9	0.0	165.8	50.0	W16X26 u	
190	36.00	442.1	0.0	568.7	50.0	W24X62 u	
191	31.00	243.2	0.0	357.8	50.0	W21X44 u	
192	19.00	95.9	0.0	165.8	50.0	W16X26 u	
193	36.00	317.0	0.0	493.8	50.0	W24X55 u	
194	30.00	227.4	0.0	357.8	50.0	W21X44 u	
198	19.00	95.0	0.0	165.8	50.0	W16X26 u	
199	36.00	301.4	0.0	493.8	50.0	W24X55 u	
200	30.00	322.2	0.0	412.5	50.0	W21X50 u	
201	33.00	114.1	0.0	249.4	50.0	W18X35 u	
202	12.00	35.9	0.0	165.8	50.0	W16X26 u	
203	10.00	7.7	0.0	124.5	50.0	W14X22 u	
205	12.00	60.9	0.0	165.8	50.0	W16X26 u	
206	19.00	48.7	0.0	165.8	50.0	W16X26 u	
207	10.00	8.3	0.0	124.5	50.0	W14X22 u	
208	10.00	8.6	0.0	124.5	50.0	W14X22 u	
209	23.00	48.3	0.0	165.8	50.0	W16X26 u	
211	19.00	48.3	0.0	165.8	50.0	W16X26 u	
212	19.00	48.7	0.0	165.8	50.0	W16X26 u	
213	33.00	102.3	0.0	357.8	50.0	W21X44 u	



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Beam Summary

Page 2/19

08/28/20 11:23:44

Steel Code: AISC 360-16 LRFD

Bm #	Length	+Mu	-Mu	ΦMn	Fy	Beam Size	Studs
218	36.00	425.8	0.0	568.9	50.0	W24X62	u
219	36.00	491.3	0.0	663.8	50.0	W24X68	u
221	30.00	340.8	0.0	412.5	50.0	W21X50	u
222	33.00	87.8	0.0	357.8	50.0	W21X44	u
223	33.00	87.8	0.0	357.8	50.0	W21X44	u
224	10.00	7.7	0.0	124.5	50.0	W14X22	u
225	27.00	178.8	0.0	249.4	50.0	W18X35	u
226	33.00	64.5	0.0	165.8	50.0	W16X26	u
227	10.00	5.9	0.0	124.5	50.0	W14X22	u
228	32.00	232.3	0.0	357.8	50.0	W21X44	u
229	25.00	230.0	0.0	357.8	50.0	W21X44	u
230	25.00	224.4	0.0	355.2	50.0	W21X44	u
232	25.00	197.6	0.0	249.4	50.0	W18X35	u
233	10.00	7.3	0.0	124.5	50.0	W14X22	u
234	25.00	193.0	0.0	246.5	50.0	W18X35	u
235	19.75	35.1	0.0	124.5	50.0	W14X22	u
236	12.25	12.0	0.0	124.5	50.0	W14X22	u
237	10.00	8.6	0.0	124.5	50.0	W14X22	u
244	29.00	58.9	0.0	124.5	50.0	W14X22	u
247	29.00	49.8	0.0	124.5	50.0	W14X22	u
249	29.00	73.5	0.0	165.8	50.0	W16X26	u
250	13.00	11.6	0.0	124.5	50.0	W14X22	u
252	43.00	138.2	0.0	357.8	50.0	W21X44	u
253	43.00	142.7	0.0	357.8	50.0	W21X44	u
254	19.00	48.7	0.0	165.8	50.0	W16X26	u
261	27.00	353.2	0.0	412.5	50.0	W21X50	u
262	27.00	238.7	0.0	357.8	50.0	W21X44	u
263	13.00	12.2	0.0	124.5	50.0	W14X22	u
264	30.00	61.7	0.0	165.8	50.0	W16X26	u
265	13.00	10.6	0.0	124.5	50.0	W14X22	u
266	29.00	52.6	0.0	124.5	50.0	W14X22	u
267	33.00	118.5	0.0	249.4	50.0	W18X35	u
268	33.00	68.1	0.0	165.8	50.0	W16X26	u
271	25.00	229.2	0.0	357.8	50.0	W21X44	u
272	25.00	222.7	0.0	354.9	50.0	W21X44	u
273	12.25	12.0	0.0	124.5	50.0	W14X22	u
274	29.75	75.1	0.0	249.4	50.0	W18X35	u
278	43.00	178.0	0.0	663.8	50.0	W24X68	u
279	13.00	14.9	0.0	124.5	50.0	W14X22	u
280	29.00	74.7	0.0	249.4	50.0	W18X35	u
281	31.00	412.1	0.0	750.0	50.0	W24X76	u
284	31.00	243.2	0.0	357.8	50.0	W21X44	u
285	19.00	95.9	0.0	165.8	50.0	W16X26	u
287	31.00	342.6	0.0	398.0	50.0	W21X48	u
288	19.00	127.9	0.0	165.8	50.0	W16X26	u



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Beam Summary

Page 3/19

08/28/20 11:23:44

Steel Code: AISC 360-16 LRFD

Bm #	Length	+Mu	-Mu	ΦMn	Fy	Beam Size	Studs
289	35.00	533.7	0.0	663.8	50.0	W24X68 u	
290	43.00	141.1	0.0	357.8	50.0	W21X44 u	
291	43.00	138.2	0.0	357.8	50.0	W21X44 u	
293	13.00	11.4	0.0	124.5	50.0	W14X22 u	
294	29.00	57.2	0.0	165.8	50.0	W16X26 u	
296	31.00	240.1	0.0	357.8	50.0	W21X44 u	
297	19.00	95.0	0.0	165.8	50.0	W16X26 u	
298	35.00	377.9	0.0	502.5	50.0	W24X55 u	
299	10.00	8.3	0.0	124.5	50.0	W14X22 u	
300	19.00	48.7	0.0	165.8	50.0	W16X26 u	
301	10.00	7.7	0.0	124.5	50.0	W14X22 u	
303	19.00	48.7	0.0	165.8	50.0	W16X26 u	
304	10.00	8.5	0.0	124.5	50.0	W14X22 u	
305	23.00	47.6	0.0	165.8	50.0	W16X26 u	
307	12.00	62.2	0.0	165.8	50.0	W16X26 u	
308	12.00	47.9	0.0	165.8	50.0	W16X26 u	
309	19.00	47.5	0.0	165.8	50.0	W16X26 u	
310	25.00	202.9	0.0	249.4	50.0	W18X35 u	
311	10.00	7.0	0.0	124.5	50.0	W14X22 u	
312	10.00	9.4	0.0	124.5	50.0	W14X22 u	
313	10.00	8.5	0.0	124.5	50.0	W14X22 u	
314	19.00	48.7	0.0	165.8	50.0	W16X26 u	
315	25.00	191.3	0.0	246.3	50.0	W18X35 u	
316	19.75	34.6	0.0	124.5	50.0	W14X22 u	
317	33.00	100.9	0.0	357.8	50.0	W21X44 u	
325	35.00	541.9	0.0	663.8	50.0	W24X68 u	
326	35.00	609.6	0.0	750.0	50.0	W24X76 u	
327	12.00	47.3	0.0	165.8	50.0	W16X26 u	
328	10.00	9.4	0.0	124.5	50.0	W14X22 u	
329	12.00	36.7	0.0	165.8	50.0	W16X26 u	
380	32.00	85.2	0.0	165.8	50.0	W16X26 u	
383	10.00	8.3	0.0	92.6	50.0	W12X19 u	
384	10.00	8.3	0.0	92.6	50.0	W12X19 u	
385	10.00	8.3	0.0	92.6	50.0	W12X19 u	
414	10.00	8.3	0.0	92.6	50.0	W12X19 u	
415	10.00	8.3	0.0	92.6	50.0	W12X19 u	
416	10.00	8.3	0.0	92.6	50.0	W12X19 u	
475	10.00	8.3	0.0	92.6	50.0	W12X19 u	
476	10.00	8.3	0.0	92.6	50.0	W12X19 u	
477	10.00	8.3	0.0	92.6	50.0	W12X19 u	
524	10.00	8.3	0.0	92.6	50.0	W12X19 u	
525	10.00	8.3	0.0	92.6	50.0	W12X19 u	
526	10.00	8.3	0.0	92.6	50.0	W12X19 u	
529	32.00	86.5	0.0	249.4	50.0	W18X35 u	
530	36.00	264.9	0.0	494.7	50.0	W24X55 u	



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Beam Summary

Page 4/19

08/28/20 11:23:44

Steel Code: AISC 360-16 LRFD

Bm #	Length	+Mu	-Mu	ΦMn	Fy	Beam Size	Studs
546	10.00	7.0	0.0	124.5	50.0	W14X22 u	
548	13.00	10.9	0.0	124.5	50.0	W14X22 u	
549	15.00	55.9	0.0	193.6	50.0	W16X31 u	
550	20.00	173.4	0.0	202.5	50.0	W16X31 u	
551	35.00	331.5	0.0	502.5	50.0	W24X55 u	
552	13.00	11.8	0.0	124.5	50.0	W14X22 u	
581	23.00	46.2	0.0	165.8	50.0	W16X26 u	
587	33.00	95.0	0.0	165.8	50.0	W16X26 u	
594	10.00	8.7	0.0	124.5	50.0	W14X22 u	
625	23.00	46.2	0.0	75.4	50.0	W12X16 u	
631	33.00	96.7	0.0	165.8	50.0	W16X26 u	
638	33.00	81.2	0.0	165.8	50.0	W16X26 u	
639	10.00	6.8	0.0	92.6	50.0	W12X19 u	
640	23.00	38.5	0.0	65.3	50.0	W12X14 u	
641	10.00	6.8	0.0	92.6	50.0	W12X19 u	
642	29.00	51.7	0.0	165.8	50.0	W16X26 u	
643	13.00	10.3	0.0	124.5	50.0	W14X22 u	
644	43.00	141.7	0.0	357.8	50.0	W21X44 u	
645	32.00	76.0	0.0	165.8	50.0	W16X26 u	
670	10.00	8.3	0.0	92.6	50.0	W12X19 u	
671	10.00	8.3	0.0	92.6	50.0	W12X19 u	
672	10.00	8.3	0.0	92.6	50.0	W12X19 u	
678	10.00	7.6	0.0	92.6	50.0	W12X19 u	
679	10.00	7.6	0.0	92.6	50.0	W12X19 u	
680	10.00	9.0	0.0	92.6	50.0	W12X19 u	
681	32.00	89.3	0.0	165.8	50.0	W16X26 u	
682	32.00	75.0	0.0	249.4	50.0	W18X35 u	
683	29.00	51.7	0.0	165.8	50.0	W16X26 u	
684	13.00	10.3	0.0	124.5	50.0	W14X22 u	
685	43.00	141.7	0.0	357.8	50.0	W21X44 u	
686	10.00	9.0	0.0	92.6	50.0	W12X19 u	
687	10.00	7.5	0.0	92.6	50.0	W12X19 u	
688	10.00	6.8	0.0	92.6	50.0	W12X19 u	
695	33.00	81.2	0.0	165.8	50.0	W16X26 u	
696	33.00	65.9	0.0	124.5	50.0	W14X22 u	
697	23.00	39.4	0.0	165.8	50.0	W16X26 u	
698	23.00	31.4	0.0	65.3	50.0	W12X14 u	
699	10.00	6.8	0.0	92.6	50.0	W12X19 u	
700	10.00	5.9	0.0	92.6	50.0	W12X19 u	
717	19.75	30.7	0.0	202.5	50.0	W16X31 u	
718	27.00	160.7	0.0	357.8	50.0	W21X44 u	
723	10.00	8.3	0.0	92.6	50.0	W12X19 u	
724	10.00	8.3	0.0	92.6	50.0	W12X19 u	
725	10.00	8.3	0.0	92.6	50.0	W12X19 u	
726	43.00	207.7	0.0	398.0	50.0	W21X48 u	



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Beam Summary

Page 5/19

08/28/20 11:23:44

Steel Code: AISC 360-16 LRFD

Bm #	Length	+Mu	-Mu	ΦMn	Fy	Beam Size	Studs
730	13.00	18.4	0.0	124.5	50.0	W14X22 u	
734	29.00	92.4	0.0	165.8	50.0	W16X26 u	
738	10.00	11.0	0.0	124.5	50.0	W14X22 u	
742	23.00	58.0	0.0	124.5	50.0	W14X22 u	
746	33.00	121.8	0.0	249.4	50.0	W18X35 u	
750	29.75	97.3	0.0	165.8	50.0	W16X26 u	
755	29.75	210.1	0.0	502.5	50.0	W24X55 u	
756	30.00	191.2	0.0	502.5	50.0	W24X55 u	
828	30.00	192.3	0.0	502.5	50.0	W24X55 u	
839	10.00	6.2	0.0	124.5	50.0	W14X22 u	
840	32.00	255.8	0.0	502.5	50.0	W24X55 u	
853	29.00	75.7	0.0	165.8	50.0	W16X26 u	
855	10.29	16.0	0.0	165.8	50.0	W16X26 u	
858	20.00	28.6	0.0	165.8	50.0	W16X26 u	
860	9.00	0.0	0.0	6.2	50.0	HSS4X2X1/8	
861	9.00	0.0	0.0	6.2	50.0	HSS4X2X1/8	
862	9.00	0.0	0.0	6.2	50.0	HSS4X2X1/8	

Floor Type: LEVEL 2 - 115'-0"

Bm #	Length ft	+Mu kip-ft	-Mu kip-ft	ΦMn kip-ft	Fy ksi	Beam Size	Studs
173	30.00	26.3	0.0	64.1	50.0	HSS12X3X3/16 u	
174	27.00	26.1	0.0	235.8	50.0	HSS12X12X3/8 u	
175	13.00	25.2	0.0	256.5	50.0	W16X26 u	12
176	30.00	162.5	0.0	537.2	50.0	W21X44 u	23
177	27.00	456.8	0.0	537.8	50.0	W21X44 u	20
178	13.00	22.9	0.0	195.1	50.0	W14X22 u	10
179	27.00	459.1	0.0	615.8	50.0	W21X50 u	18
180	13.00	34.6	0.0	196.2	50.0	W14X22 u	10
181	31.00	707.0	0.0	880.2	50.0	W24X55 u	50
183	36.00	911.4	0.0	1244.9	50.0	W24X76 u	64
184	13.00	28.8	0.0	256.5	50.0	W16X26 u	12
185	30.00	189.6	0.0	538.4	50.0	W21X44 u	23
186	30.00	493.5	0.0	745.5	50.0	W24X55 u	34
187	30.00	26.3	0.0	64.1	50.0	HSS12X3X3/16 u	
188	31.00	772.5	0.0	1235.3	50.0	W24X76 u	65
189	19.00	303.0	0.0	828.2	50.0	W24X55 u	30
190	36.00	1006.2	0.0	1291.8	50.0	W24X76 u	67
191	31.00	591.4	0.0	737.7	50.0	W21X50 u	43
192	19.00	228.8	0.0	418.7	50.0	W18X35 u	18
193	36.00	805.1	0.0	1006.8	50.0	W24X62 u	54
194	30.00	562.7	0.0	843.7	50.0	W24X62 u	22
197	31.00	556.3	0.0	737.7	50.0	W21X50 u	43
198	19.00	215.8	0.0	418.7	50.0	W18X35 u	18
199	36.00	761.5	0.0	928.1	50.0	W24X55 u	46



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Beam Summary

Page 6/19

08/28/20 11:23:44

Steel Code: AISC 360-16 LRFD

Bm #	Length	+Mu	-Mu	ΦMn	Fy	Beam Size	Studs
200	30.00	810.9	0.0	1081.6	50.0	W24X76 u	28
201	33.00	321.4	0.0	483.1	50.0	W18X35 u	51
202	12.00	84.9	0.0	196.0	50.0	W14X22 u	8
205	12.00	144.6	0.0	372.5	50.0	W18X35 u	12
206	19.00	58.4	0.0	289.6	50.0	W16X26 u	14
207	10.00	22.6	0.0	309.8	50.0	W16X31 u	16
208	10.00	21.9	0.0	195.6	50.0	W14X22 u	10
209	23.00	123.3	0.0	415.5	50.0	W18X35 u	30
210	33.00	230.9	0.0	451.2	50.0	W18X35 u	38
211	19.00	92.2	0.0	262.1	50.0	W16X26 u	14
212	19.00	252.3	0.0	402.9	50.0	W18X35 u	16
213	33.00	205.6	0.0	450.5	50.0	W18X35 u	30
214	5.75	7.8	0.0	124.5	50.0	W14X22 u	
218	36.00	1008.9	0.0	1267.0	50.0	W24X76 u	60
219	36.00	791.2	0.0	1052.1	50.0	W24X62 u	54
221	30.00	855.1	0.0	1081.6	50.0	W24X76 u	28
222	33.00	181.6	0.0	448.0	50.0	W18X35 u	32
223	33.00	178.2	0.0	448.0	50.0	W18X35 u	30
224	10.00	16.2	0.0	194.4	50.0	W14X22 u	10
225	27.00	162.6	0.0	373.7	50.0	W18X35 u	12
226	33.00	245.5	0.0	378.3	50.0	W16X31 u	28
227	10.00	22.6	0.0	195.6	50.0	W14X22 u	10
228	32.00	154.2	0.0	446.3	50.0	W18X35 u	30
229	25.00	383.3	0.0	537.5	50.0	W21X44 u	17
230	25.00	383.5	0.0	537.5	50.0	W21X44 u	16
232	25.00	415.4	0.0	540.7	50.0	W21X44 u	17
234	25.00	412.5	0.0	540.7	50.0	W21X44 u	16
235	19.75	159.4	0.0	259.1	50.0	W16X26 u	12
236	12.25	23.2	0.0	194.9	50.0	W14X22 u	10
237	10.00	24.0	0.0	195.6	50.0	W14X22 u	10
240	36.00	929.4	0.0	1537.4	50.0	W27X84 u	70
241	10.00	26.1	0.0	195.6	50.0	W14X22 u	10
242	19.75	73.9	0.0	257.8	50.0	W16X26 u	13
243	30.00	200.2	0.0	374.0	50.0	W18X35 u	12
244	29.00	217.4	0.0	312.1	50.0	W16X31 u	14
246	33.00	274.2	0.0	379.4	50.0	W16X31 u	28
247	29.00	191.6	0.0	311.9	50.0	W16X31 u	14
248	29.00	190.3	0.0	311.8	50.0	W16X31 u	14
249	29.00	218.2	0.0	312.0	50.0	W16X31 u	14
250	13.00	40.6	0.0	196.2	50.0	W14X22 u	10
251	13.00	38.0	0.0	196.2	50.0	W14X22 u	10
252	43.00	435.7	0.0	882.9	50.0	W24X55 u	52
253	43.00	440.5	0.0	884.4	50.0	W24X55 u	52
254	19.00	91.2	0.0	289.6	50.0	W16X26 u	14
256	19.00	22.0	0.0	196.3	50.0	W14X22 u	8



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Beam Summary

Page 7/19

08/28/20 11:23:44

Steel Code: AISC 360-16 LRFD

Bm #	Length	+Mu	-Mu	ΦMn	Fy	Beam Size	Studs
257	19.00	54.7	0.0	221.8	50.0	W14X22 u	12
258	5.75	0.0	-142.1	185.9	50.0	W16X31 u	
259	10.00	22.7	0.0	366.4	50.0	W18X35 u	16
260	5.75	0.0	-106.7	231.8	50.0	W18X35 u	
261	27.00	721.5	0.0	842.9	50.0	W24X62 u	22
262	27.00	490.0	0.0	749.3	50.0	W24X55 u	20
263	13.00	24.2	0.0	256.5	50.0	W16X26 u	12
264	30.00	129.8	0.0	309.9	50.0	W16X31 u	14
265	13.00	29.7	0.0	196.2	50.0	W14X22 u	10
266	29.00	197.7	0.0	311.9	50.0	W16X31 u	14
267	33.00	319.0	0.0	478.8	50.0	W18X35	48
268	33.00	257.2	0.0	454.7	50.0	W18X35 u	30
269	10.00	24.0	0.0	195.6	50.0	W14X22 u	10
270	32.00	154.2	0.0	446.3	50.0	W18X35 u	30
271	25.00	383.3	0.0	554.3	50.0	W21X44 u	18
272	25.00	383.5	0.0	537.5	50.0	W21X44 u	16
273	12.25	23.2	0.0	194.9	50.0	W14X22 u	10
274	29.75	184.7	0.0	608.9	50.0	W21X50 u	24
277	33.00	183.0	0.0	448.5	50.0	W18X35 u	30
278	43.00	319.8	0.0	868.6	50.0	W24X55 u	51
279	13.00	27.1	0.0	195.1	50.0	W14X22 u	10
280	29.00	135.9	0.0	310.5	50.0	W16X31 u	14
281	31.00	690.0	0.0	887.7	50.0	W24X55 u	50
283	35.00	878.6	0.0	1242.6	50.0	W24X76 u	65
284	31.00	590.9	0.0	737.7	50.0	W21X50	43
285	19.00	228.8	0.0	418.7	50.0	W18X35 u	18
287	31.00	768.8	0.0	1235.3	50.0	W24X76 u	65
288	19.00	333.2	0.0	828.2	50.0	W24X55 u	30
289	35.00	1062.8	0.0	1239.9	50.0	W24X76 u	67
290	43.00	429.8	0.0	884.1	50.0	W24X55 u	51
291	43.00	413.8	0.0	882.9	50.0	W24X55 u	51
292	13.00	38.0	0.0	196.2	50.0	W14X22 u	10
293	13.00	41.5	0.0	196.2	50.0	W14X22 u	10
294	29.00	207.4	0.0	312.0	50.0	W16X31 u	14
295	29.00	190.4	0.0	311.8	50.0	W16X31 u	14
296	31.00	556.1	0.0	737.7	50.0	W21X50 u	43
297	19.00	217.6	0.0	1032.0	50.0	W24X68 u	36
298	35.00	780.7	0.0	899.6	50.0	W24X55 u	46
299	10.00	22.6	0.0	309.8	50.0	W16X31 u	16
300	19.00	91.2	0.0	289.6	50.0	W16X26 u	14
303	19.00	91.2	0.0	289.6	50.0	W16X26 u	14
304	10.00	23.7	0.0	195.6	50.0	W14X22 u	10
305	23.00	132.2	0.0	400.6	50.0	W18X35 u	25
306	33.00	230.9	0.0	451.2	50.0	W18X35 u	38
307	12.00	144.9	0.0	372.5	50.0	W18X35 u	12



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Beam Summary

Page 8/19

08/28/20 11:23:44

Steel Code: AISC 360-16 LRFD

Bm #	Length	+Mu	-Mu	ΦMn	Fy	Beam Size	Studs
308	12.00	111.9	0.0	609.5	50.0	W21X50 u	18
309	19.00	92.2	0.0	262.1	50.0	W16X26 u	14
310	25.00	416.4	0.0	785.6	50.0	W24X55 u	24
313	10.00	23.7	0.0	195.6	50.0	W14X22 u	10
314	19.00	252.3	0.0	402.9	50.0	W18X35 u	16
315	25.00	413.5	0.0	748.8	50.0	W24X55 u	20
316	19.75	157.9	0.0	259.1	50.0	W16X26 u	12
317	33.00	201.7	0.0	450.2	50.0	W18X35 u	30
319	10.00	22.7	0.0	366.4	50.0	W18X35 u	16
321	5.75	0.0	-106.7	231.8	50.0	W18X35 u	
322	5.75	0.0	-142.6	185.9	50.0	W16X31 u	
323	19.00	54.7	0.0	209.9	50.0	W14X22 u	10
324	19.00	54.7	0.0	106.0	50.0	W14X22 u	
325	35.00	984.3	0.0	1265.8	50.0	W24X76 u	66
326	35.00	1295.4	0.0	1543.6	50.0	W27X84 u	72
340	10.00	22.5	0.0	195.6	50.0	W14X22 u	10
341	10.00	22.5	0.0	195.6	50.0	W14X22 u	10
342	5.75	7.4	0.0	124.5	50.0	W14X22 u	
343	5.75	7.4	0.0	124.5	50.0	W14X22 u	
351	32.00	231.1	0.0	378.3	50.0	W16X31 u	28
352	32.00	231.1	0.0	378.3	50.0	W16X31 u	28
355	19.75	113.9	0.0	259.1	50.0	W16X26 u	12
356	19.75	113.9	0.0	259.1	50.0	W16X26 u	12
357	19.75	113.9	0.0	259.1	50.0	W16X26 u	12
358	19.75	113.9	0.0	259.1	50.0	W16X26 u	12
359	10.00	25.5	0.0	195.6	50.0	W14X22 u	10
360	10.00	25.5	0.0	195.6	50.0	W14X22 u	10
361	10.00	25.5	0.0	195.6	50.0	W14X22 u	10
362	10.00	25.5	0.0	195.6	50.0	W14X22 u	10
363	33.00	269.8	0.0	379.3	50.0	W16X31 u	28
364	33.00	269.8	0.0	379.3	50.0	W16X31 u	28
365	33.00	269.8	0.0	379.3	50.0	W16X31 u	28
366	33.00	269.8	0.0	379.3	50.0	W16X31 u	28
371	29.00	190.3	0.0	311.8	50.0	W16X31 u	14
372	29.00	190.3	0.0	311.8	50.0	W16X31 u	14
373	13.00	38.0	0.0	196.2	50.0	W14X22 u	10
374	13.00	38.0	0.0	196.2	50.0	W14X22 u	10
375	13.00	43.1	0.0	196.2	50.0	W14X22 u	10
376	13.00	43.1	0.0	196.2	50.0	W14X22 u	10
377	13.00	43.1	0.0	196.2	50.0	W14X22 u	10
378	13.00	43.1	0.0	196.2	50.0	W14X22 u	10
379	29.00	213.9	0.0	312.1	50.0	W16X31 u	14
380	29.00	213.9	0.0	312.1	50.0	W16X31 u	14
381	29.00	213.9	0.0	312.1	50.0	W16X31 u	14
382	29.00	231.0	0.0	312.1	50.0	W16X31 u	14



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Beam Summary

Page 9/19

08/28/20 11:23:44

Steel Code: AISC 360-16 LRFD

Bm #	Length	+Mu	-Mu	ΦMn	Fy	Beam Size	Studs
383	43.00	435.9	0.0	882.9	50.0	W24X55 u	52
384	43.00	435.9	0.0	882.9	50.0	W24X55 u	52
385	43.00	442.0	0.0	885.8	50.0	W24X55 u	50
386	43.00	442.0	0.0	885.8	50.0	W24X55 u	50
387	43.00	442.0	0.0	885.8	50.0	W24X55 u	50
388	43.00	442.0	0.0	885.8	50.0	W24X55 u	50
392	29.00	220.8	0.0	312.1	50.0	W16X31 u	14
393	29.00	220.8	0.0	312.1	50.0	W16X31 u	14
394	29.00	220.8	0.0	312.1	50.0	W16X31 u	14
395	33.00	279.2	0.0	455.6	50.0	W18X35 u	30
396	33.00	279.2	0.0	455.6	50.0	W18X35 u	30
397	33.00	279.2	0.0	455.6	50.0	W18X35 u	30
398	33.00	278.6	0.0	379.6	50.0	W16X31	28
399	33.00	278.6	0.0	379.6	50.0	W16X31	28
400	33.00	278.6	0.0	379.6	50.0	W16X31	28
401	10.00	26.4	0.0	66.9	50.0	W8X10 u	6
402	10.00	26.6	0.0	195.6	50.0	W14X22 u	10
403	10.00	26.6	0.0	195.6	50.0	W14X22 u	10
416	43.00	428.1	0.0	882.9	50.0	W24X55 u	52
417	43.00	428.1	0.0	882.9	50.0	W24X55 u	52
418	13.00	38.0	0.0	196.2	50.0	W14X22 u	10
419	13.00	38.0	0.0	196.2	50.0	W14X22 u	10
420	29.00	190.3	0.0	311.8	50.0	W16X31 u	14
421	29.00	190.3	0.0	311.8	50.0	W16X31 u	14
430	43.00	463.3	0.0	885.2	50.0	W24X55 u	52
431	43.00	463.0	0.0	885.2	50.0	W24X55 u	52
432	43.00	443.3	0.0	885.2	50.0	W24X55 u	51
433	43.00	432.4	0.0	885.2	50.0	W24X55 u	50
438	33.00	264.6	0.0	455.1	50.0	W18X35 u	30
439	33.00	264.6	0.0	455.1	50.0	W18X35 u	30
440	33.00	264.6	0.0	455.1	50.0	W18X35 u	30
441	33.00	264.6	0.0	455.1	50.0	W18X35 u	30
442	29.75	291.6	0.0	626.6	50.0	W21X50 u	27
443	29.75	291.6	0.0	626.6	50.0	W21X50 u	27
444	29.75	291.6	0.0	626.6	50.0	W21X50 u	27
445	29.75	291.6	0.0	626.6	50.0	W21X50 u	27
449	32.00	231.1	0.0	378.3	50.0	W16X31 u	28
450	32.00	231.1	0.0	378.3	50.0	W16X31 u	28
451	33.00	234.4	0.0	453.6	50.0	W18X35 u	30
457	5.75	7.4	0.0	124.5	50.0	W14X22 u	
458	5.75	7.4	0.0	124.5	50.0	W14X22 u	
459	10.00	22.5	0.0	195.6	50.0	W14X22 u	10
460	10.00	22.5	0.0	195.6	50.0	W14X22 u	10
465	5.75	7.8	0.0	124.5	50.0	W14X22 u	
470	29.00	202.6	0.0	312.0	50.0	W16X31 u	14



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Beam Summary

Page 10/19

08/28/20 11:23:44

Steel Code: AISC 360-16 LRFD

Bm #	Length	+Mu	-Mu	ΦMn	Fy	Beam Size	Studs
471	29.00	202.6	0.0	312.0	50.0	W16X31 u	14
472	29.00	202.6	0.0	312.0	50.0	W16X31 u	14
473	33.00	269.8	0.0	454.7	50.0	W18X35 u	32
474	33.00	269.8	0.0	454.7	50.0	W18X35 u	32
475	33.00	269.8	0.0	454.7	50.0	W18X35 u	32
476	33.00	257.2	0.0	454.7	50.0	W18X35 u	30
477	33.00	257.2	0.0	454.7	50.0	W18X35 u	30
478	33.00	257.2	0.0	454.7	50.0	W18X35 u	30
479	10.00	24.0	0.0	195.6	50.0	W14X22 u	10
480	10.00	24.0	0.0	195.6	50.0	W14X22 u	10
481	10.00	24.0	0.0	195.6	50.0	W14X22 u	10
483	10.00	20.9	0.0	195.6	50.0	W14X22 u	10
484	10.00	20.9	0.0	195.6	50.0	W14X22 u	10
485	12.00	111.7	0.0	412.5	50.0	W21X50 u	
487	33.00	233.8	0.0	377.8	50.0	W16X31 u	28
488	23.00	112.8	0.0	197.1	50.0	W14X22 u	10
490	12.00	83.8	0.0	372.5	50.0	W18X35 u	12
491	23.00	112.8	0.0	197.1	50.0	W14X22 u	10
493	35.00	772.0	0.0	889.2	50.0	W24X55 u	48
494	15.00	169.2	0.0	373.5	50.0	W18X35 u	12
495	13.00	42.5	0.0	196.2	50.0	W14X22 u	10
496	29.00	211.2	0.0	312.0	50.0	W16X31 u	14
497	20.00	250.8	0.0	419.0	50.0	W18X35 u	18
498	29.00	220.8	0.0	312.1	50.0	W16X31 u	14
499	13.00	44.9	0.0	196.2	50.0	W14X22 u	10
501	29.00	200.2	0.0	312.0	50.0	W16X31 u	14
502	29.00	200.2	0.0	312.0	50.0	W16X31 u	14
503	13.00	40.0	0.0	196.2	50.0	W14X22 u	10
504	13.00	40.0	0.0	196.2	50.0	W14X22 u	10
505	10.00	28.3	0.0	195.6	50.0	W14X22 u	10
506	10.00	28.3	0.0	195.6	50.0	W14X22 u	10
507	10.00	28.3	0.0	195.6	50.0	W14X22 u	10
508	10.00	26.5	0.0	124.5	50.0	W14X22 u	
509	23.00	139.5	0.0	381.6	50.0	W18X35 u	17
510	23.00	139.5	0.0	381.6	50.0	W18X35 u	17
511	23.00	139.5	0.0	381.6	50.0	W18X35 u	17
512	23.00	135.9	0.0	381.6	50.0	W18X35 u	17
513	10.00	18.4	0.0	194.4	50.0	W14X22 u	10
515	36.00	655.6	0.0	900.2	50.0	W24X55 u	40
516	10.00	24.0	0.0	195.6	50.0	W14X22 u	10
518	23.00	113.2	0.0	259.4	50.0	W16X26 u	12
519	23.00	113.2	0.0	259.4	50.0	W16X26 u	12
520	23.00	113.2	0.0	259.4	50.0	W16X26 u	12
521	23.00	113.2	0.0	259.4	50.0	W16X26 u	12
522	23.00	113.2	0.0	259.4	50.0	W16X26 u	12



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Beam Summary

Page 11/19

08/28/20 11:23:44

Steel Code: AISC 360-16 LRFD

Bm #	Length	+Mu	-Mu	ΦMn	Fy	Beam Size	Studs
523	10.00	21.3	0.0	195.6	50.0	W14X22 u	10
524	10.00	21.3	0.0	195.6	50.0	W14X22 u	10
525	10.00	21.3	0.0	195.6	50.0	W14X22 u	10
526	10.00	21.3	0.0	195.6	50.0	W14X22 u	10
527	10.00	21.3	0.0	195.6	50.0	W14X22 u	10
528	32.00	219.8	0.0	377.8	50.0	W16X31 u	28
529	10.00	21.3	0.0	195.6	50.0	W14X22 u	10
530	10.00	22.2	0.0	195.6	50.0	W14X22 u	10
531	32.00	228.8	0.0	378.2	50.0	W16X31 u	28
532	32.00	228.8	0.0	378.2	50.0	W16X31 u	28
533	10.00	22.2	0.0	195.6	50.0	W14X22 u	10
534	10.00	23.5	0.0	195.6	50.0	W14X22 u	10
535	32.00	225.8	0.0	378.0	50.0	W16X31 u	28
536	32.00	235.8	0.0	378.5	50.0	W16X31 u	28
537	10.00	23.1	0.0	195.6	50.0	W14X22 u	10
538	5.75	7.3	0.0	124.5	50.0	W14X22 u	
539	5.75	7.6	0.0	124.5	50.0	W14X22 u	
540	10.00	22.5	0.0	195.6	50.0	W14X22 u	10
541	10.00	21.3	0.0	195.6	50.0	W14X22 u	10
542	5.75	7.4	0.0	124.5	50.0	W14X22 u	
543	10.00	22.5	0.0	195.6	50.0	W14X22 u	10
544	5.75	7.4	0.0	124.5	50.0	W14X22 u	
545	29.00	190.2	0.0	311.8	50.0	W16X31 u	14
546	29.00	190.4	0.0	311.8	50.0	W16X31 u	14
547	13.00	38.0	0.0	196.2	50.0	W14X22 u	10
548	43.00	400.1	0.0	882.9	50.0	W24X55 u	50
549	43.00	399.9	0.0	882.8	50.0	W24X55 u	50
550	13.00	38.0	0.0	196.2	50.0	W14X22 u	10
551	13.00	38.0	0.0	196.2	50.0	W14X22 u	10
552	13.00	36.0	0.0	196.2	50.0	W14X22 u	10
553	29.00	190.2	0.0	311.8	50.0	W16X31 u	14
554	29.00	180.5	0.0	311.7	50.0	W16X31 u	14
555	43.00	399.9	0.0	882.8	50.0	W24X55 u	50
556	43.00	383.7	0.0	881.5	50.0	W24X55 u	50
557	32.00	219.8	0.0	377.8	50.0	W16X31 u	28
558	32.00	228.8	0.0	378.2	50.0	W16X31 u	28
559	10.00	22.2	0.0	195.6	50.0	W14X22 u	10
560	10.00	21.3	0.0	195.6	50.0	W14X22 u	10
561	10.00	21.9	0.0	195.6	50.0	W14X22 u	10
562	10.00	21.3	0.0	195.6	50.0	W14X22 u	10
563	29.00	190.2	0.0	311.8	50.0	W16X31 u	14
564	29.00	190.4	0.0	311.8	50.0	W16X31 u	14
565	29.00	185.5	0.0	311.8	50.0	W16X31 u	14
566	13.00	38.0	0.0	196.2	50.0	W14X22 u	10
567	13.00	38.0	0.0	196.2	50.0	W14X22 u	10



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Beam Summary

Page 12/19

08/28/20 11:23:44

Steel Code: AISC 360-16 LRFD

Bm #	Length	+Mu	-Mu	ΦMn	Fy	Beam Size	Studs
568	13.00	37.1	0.0	196.2	50.0	W14X22 u	10
569	43.00	418.1	0.0	882.8	50.0	W24X55 u	52
570	43.00	400.1	0.0	882.9	50.0	W24X55 u	50
571	43.00	392.0	0.0	882.2	50.0	W24X55 u	50
572	43.00	383.7	0.0	881.5	50.0	W24X55 u	50
573	29.00	180.5	0.0	311.7	50.0	W16X31 u	14
574	13.00	36.0	0.0	196.2	50.0	W14X22 u	10
576	32.00	235.8	0.0	378.5	50.0	W16X31 u	28
577	32.00	228.8	0.0	378.2	50.0	W16X31 u	28
578	10.00	23.1	0.0	195.6	50.0	W14X22 u	10
579	10.00	22.2	0.0	195.6	50.0	W14X22 u	10
580	5.75	7.6	0.0	124.5	50.0	W14X22 u	
581	5.75	7.3	0.0	124.5	50.0	W14X22 u	
582	32.00	225.8	0.0	378.0	50.0	W16X31 u	28
583	10.00	23.5	0.0	195.6	50.0	W14X22 u	10
584	13.00	33.1	0.0	124.5	50.0	W14X22 u	
585	13.00	33.1	0.0	124.5	50.0	W14X22 u	
586	5.50	0.0	-57.4				
	13.00	18.5	-57.4	249.4	50.0	W18X35 u	
587	13.00	31.6	0.0	124.5	50.0	W14X22 u	
588	16.50	36.1	0.0	235.9	50.0	W18X35 u	
589	5.50	5.9	0.0	124.5	50.0	W14X22 u	
590	5.50	5.9	0.0	124.5	50.0	W14X22 u	
591	13.00	37.6	0.0	196.2	50.0	W14X22 u	10
592	13.00	32.1	0.0	196.2	50.0	W14X22 u	10
593	13.00	32.1	0.0	196.2	50.0	W14X22 u	10
594	13.00	32.1	0.0	196.2	50.0	W14X22 u	10
595	5.50	0.0	-72.6				
	13.00	13.0	-72.6	249.4	50.0	W18X35 u	
596	13.00	26.2	0.0	196.2	50.0	W14X22 u	10
597	21.32	65.2	0.0	372.8	50.0	W18X35 u	12
598	5.50	5.7	0.0	124.5	50.0	W14X22 u	
599	5.50	5.7	0.0	124.5	50.0	W14X22 u	
600	5.50	5.7	0.0	124.5	50.0	W14X22 u	
601	10.00	22.5	0.0	124.5	50.0	W14X22 u	
602	10.00	22.5	0.0	124.5	50.0	W14X22 u	
603	10.00	21.3	0.0	124.5	50.0	W14X22 u	
604	26.24	112.6	0.0	261.6	50.0	W16X26 u	10
605	26.24	112.6	0.0	156.4	50.0	W16X26	
606	7.00	8.8	0.0	194.4	50.0	W14X22 u	8
607	7.00	8.8	0.0	194.4	50.0	W14X22 u	8
608	7.00	8.8	0.0	194.4	50.0	W14X22 u	8
609	7.00	8.8	0.0	194.4	50.0	W14X22 u	8
610	7.00	8.8	0.0	194.4	50.0	W14X22 u	8



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Beam Summary

Page 13/19

08/28/20 11:23:44

Steel Code: AISC 360-16 LRFD

* after Size denotes beam failed stress/capacity criteria.

after Size denotes beam failed deflection criteria.

u after Size denotes this size has been assigned by the User.



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Beam Summary

Page 14/19

08/28/20 11:23:44

Steel Code: AISC 360-16 LRFD

JOIST SELECTION SUMMARY:

Demand/Capacity Limits for: Strength: 1.000 Deflection: 1.000

Floor Type: CLERESTORY-128'-6"

Standard Joists:

Joist #	Length	WDL	WLL	WTL	Joist	
17	38.00	143.7	265.6	409.3	30K10	u
18	38.00	143.7	265.6	409.3	30K10	u
19	38.00	143.7	265.6	409.3	30K10	u
20	38.00	137.5	256.3	393.8	30K10	u
21	38.00	137.5	256.3	393.8	30K10	u
22	38.00	137.5	256.3	393.8	30K10	u
23	38.00	137.5	256.3	393.8	30K10	u
24	38.00	137.5	256.3	393.8	30K10	u
25	38.00	137.5	256.3	393.8	30K10	u
26	38.00	137.5	256.3	393.8	30K10	u
27	38.00	137.5	256.3	393.8	30K10	u
28	38.00	137.5	256.3	393.8	30K10	u
29	38.00	137.5	256.3	393.8	30K10	u
30	38.00	143.7	265.6	409.3	30K10	u
31	38.00	143.7	265.6	409.3	30K10	u
32	38.00	143.7	265.6	409.3	30K10	u
33	38.00	140.6	260.9	401.6	30K10	u
34	38.00	140.6	260.9	401.6	30K10	u

Floor Type: ROOF - 129'-0"

Standard Joists:

Joist #	Length	WDL	WLL	WTL	Joist	
248	29.00	118.7	223.3	342.0	26K5	u
251	13.00	118.7	223.3	342.0	10K1	u
292	13.00	118.7	223.3	342.0	10K1	u
295	29.00	118.7	223.3	342.0	26K5	u
376	32.00	118.8	355.4	534.0	28K9	*u
377	32.00	118.8	328.3	478.7	28K9	*u
378	32.00	118.8	300.8	455.9	28K9	*u
411	29.00	118.7	223.3	342.0	26K5	u
412	29.00	118.7	223.3	342.0	26K5	u
413	29.00	118.7	223.3	342.0	26K5	u
417	13.00	118.7	223.3	342.0	10K1	u
418	13.00	118.7	223.3	342.0	10K1	u
419	13.00	118.7	223.3	342.0	10K1	u
420	43.00	118.8	253.8	421.3	32LH09	u
421	43.00	118.8	253.8	421.3	32LH09	u
422	43.00	118.8	253.8	421.3	32LH09	u



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Beam Summary

Page 15/19

08/28/20 11:23:44

Steel Code: AISC 360-16 LRFD

Joist #	Length	WDL	WLL	WTL	Joist	
482	32.00	118.8	355.4	534.0	28K10	*u
483	32.00	118.8	328.3	478.7	28K9	*u
484	32.00	118.8	300.8	455.9	28K9	*u
505	29.00	118.7	223.3	342.0	26K5	u
506	29.00	118.7	223.3	342.0	26K5	u
507	29.00	118.7	223.3	342.0	26K5	u
508	13.00	118.7	223.3	342.0	10K1	u
509	13.00	118.7	223.3	342.0	10K1	u
510	13.00	118.7	223.3	342.0	10K1	u
516	43.00	118.8	253.8	421.3	32LH09	u
517	43.00	118.8	253.8	421.3	32LH09	u
518	43.00	118.8	253.8	421.3	32LH09	u
556	43.00	112.5	246.6	402.8	32LH09	u
557	43.00	125.0	264.8	441.1	32LH09	u
558	43.00	125.0	264.8	441.1	32LH09	u
559	13.00	125.0	235.0	360.0	10K1	u
560	13.00	125.0	235.0	360.0	10K1	u
567	29.00	112.5	221.1	333.6	26K5	u
568	29.00	125.0	235.0	360.0	26K5	u
569	29.00	125.0	235.0	360.0	26K5	u
573	10.00	112.5	221.3	333.8	10K1	u
574	10.00	125.0	244.6	369.6	10K1	u
575	10.00	125.0	295.5	457.2	10K1	u
579	23.00	112.5	221.3	333.8	22K4	u
580	23.00	125.0	244.6	369.6	22K4	u
585	33.00	112.5	221.8	334.3	30K7	u
586	33.00	125.0	244.6	369.6	30K7	u
591	29.75	112.5	271.3	431.1	28K7	u
592	29.75	125.0	299.1	481.7	28K7	*u
593	29.75	125.0	307.5	476.7	28K7	*u
596	43.00	128.6	342.2	567.5	32LH10	u
597	43.00	128.6	319.1	520.1	32LH10	u
598	43.00	128.6	291.3	464.8	32LH10	u
599	43.00	128.6	273.3	453.7	32LH09	u
600	43.00	128.6	271.1	452.4	32LH09	u
601	43.00	128.6	271.1	452.4	32LH09	u
602	13.00	128.6	241.7	370.3	10K1	u
603	13.00	128.6	241.7	370.3	10K1	u
604	13.00	128.6	241.7	370.3	10K1	u
605	13.00	128.6	241.7	370.3	10K1	u
606	13.00	128.6	241.7	370.3	10K1	u
607	13.00	128.6	241.7	370.3	10K1	u
608	29.00	128.6	241.7	370.3	26K5	u
609	29.00	128.6	241.7	370.3	26K5	u
610	29.00	128.6	241.7	370.3	26K5	u



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Beam Summary

Page 16/19

08/28/20 11:23:44

Steel Code: AISC 360-16 LRFD

Joist #	Length	WDL	WLL	WTL	Joist	
611	29.00	128.6	241.7	370.3	26K5	u
614	10.00	128.6	241.7	370.3	10K1	u
615	10.00	128.6	241.7	370.3	10K1	u
616	10.00	128.6	241.7	370.3	10K1	u
617	10.00	128.6	241.7	370.3	10K1	u
618	10.00	128.6	250.1	378.7	10K1	u
619	10.00	128.6	300.7	465.6	10K1	u
620	23.00	128.6	241.7	370.3	22K4	u
621	23.00	128.6	241.7	370.3	22K4	u
622	23.00	128.6	241.7	370.3	22K4	u
623	23.00	128.6	241.7	370.3	22K4	u
624	23.00	128.6	250.1	378.7	22K4	u
626	33.00	128.6	241.7	370.3	26K7	u
627	33.00	128.6	241.7	370.3	26K7	u
628	33.00	128.6	241.7	370.3	26K7	u
629	33.00	128.6	241.7	370.3	26K7	u
630	33.00	128.6	250.1	378.7	26K7	u
632	29.75	128.6	306.0	498.4	30K12	*u
633	29.75	128.6	306.0	498.4	30K12	*u
634	29.75	128.6	306.0	498.4	30K12	*u
635	29.75	128.6	306.0	498.4	30K12	*u
636	29.75	128.6	307.3	496.1	30K12	*u
637	29.75	128.6	315.7	490.1	30K12	*u
646	32.00	100.0	284.0	417.3	28K9	u
647	32.00	100.0	302.7	456.9	28K9	u
648	10.00	100.0	211.1	311.1	10K1	u
649	33.00	100.0	211.1	311.1	26K5	u
650	23.00	100.0	211.1	311.1	18K3	u
651	10.00	100.0	211.1	311.1	10K1	u
652	29.00	100.0	188.0	288.0	26K5	u
653	29.00	100.0	188.0	288.0	26K5	u
654	13.00	100.0	188.0	288.0	10K1	u
655	13.00	100.0	188.0	288.0	10K1	u
656	43.00	100.0	260.5	426.7	32LH08	u
657	43.00	100.0	273.4	451.9	32LH08	u
658	43.00	118.8	267.4	429.4	32LH09	u
659	43.00	118.8	254.4	421.6	32LH09	u
660	43.00	118.8	253.8	421.3	32LH09	u
661	13.00	118.7	223.3	342.0	10K1	u
662	13.00	118.7	223.3	342.0	10K1	u
663	13.00	118.7	223.3	342.0	10K1	u
664	29.00	118.7	223.3	342.0	26K5	u
665	29.00	118.7	223.3	342.0	26K5	u
666	29.00	118.7	223.3	342.0	26K5	u
676	32.00	108.3	263.2	409.8	28K9	u



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Beam Summary

Page 17/19

08/28/20 11:23:44

Steel Code: AISC 360-16 LRFD

Joist #	Length	WDL	WLL	WTL	Joist	
677	32.00	108.4	252.7	404.9	28K9	u
689	32.00	108.3	249.9	405.9	28K9	u
690	32.00	108.4	251.1	403.9	28K9	u
691	32.00	100.0	283.4	400.7	28K9	u
692	32.00	100.0	321.0	426.9	28K9	u
693	10.00	100.0	278.0	378.0	10K1	u
694	10.00	100.0	222.0	347.6	10K1	u
701	29.00	100.0	188.0	288.0	26K5	u
702	29.00	100.0	188.0	288.0	26K5	u
703	13.00	100.0	188.0	288.0	10K1	u
704	13.00	100.0	188.0	288.0	10K1	u
705	43.00	100.0	260.5	426.7	32LH10	u
706	43.00	100.0	273.4	451.9	32LH10	u
707	32.00	134.4	316.8	503.7	28K9	*u
708	43.00	118.8	267.4	429.4	32LH09	u
709	43.00	118.8	254.4	421.6	32LH09	u
710	43.00	118.8	253.8	421.3	32LH09	u
711	13.00	118.7	223.3	342.0	10K1	u
712	13.00	118.7	223.3	342.0	10K1	u
713	13.00	118.7	223.3	342.0	10K1	u
714	29.00	118.7	223.3	342.0	26K5	u
715	29.00	118.7	223.3	342.0	26K5	u
716	29.00	118.7	223.3	342.0	26K5	u
727	43.00	100.0	385.9	485.9	32LH10	u
728	43.00	100.0	313.6	424.1	32LH09	u
729	43.00	100.0	256.3	379.1	32LH09	u
731	13.00	100.0	386.5	486.5	12K1	u
732	13.00	100.0	318.7	418.7	10K1	u
733	13.00	100.0	250.5	350.5	10K1	u
735	29.00	100.0	387.9	487.9	26K7	u
736	29.00	100.0	320.1	420.1	26K7	u
737	29.00	100.0	252.1	352.1	26K5	u
739	10.00	100.0	388.4	488.4	10K1	u
740	10.00	100.0	320.6	420.6	10K1	u
741	10.00	100.0	252.6	352.6	10K1	u
743	23.00	100.0	389.4	489.4	22K4	u
744	23.00	100.0	321.6	421.6	22K4	u
745	23.00	100.0	253.8	353.8	22K4	u
747	33.00	100.0	391.0	491.0	30K12	u
748	33.00	100.0	323.2	423.2	30K7	u
749	33.00	100.0	255.4	355.4	30K7	u
751	29.75	100.0	391.8	491.8	28K9	u
752	29.75	100.0	314.6	427.4	28K7	u
753	29.75	100.0	266.6	391.9	28K7	u
762	33.00	125.0	235.0	360.0	26K7	u



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Beam Summary

Page 18/19

08/28/20 11:23:44

Steel Code: AISC 360-16 LRFD

Joist #	Length	WDL	WLL	WTL	Joist	
763	33.00	125.0	235.0	360.0	26K7	u
764	33.00	125.0	235.0	360.0	26K7	u
765	33.00	125.0	235.0	360.0	26K7	u
766	33.00	125.0	235.0	360.0	26K7	u
767	33.00	125.0	235.0	360.0	26K7	u
768	33.00	125.0	235.0	360.0	26K7	u
769	33.00	125.0	235.0	360.0	26K7	u
770	33.00	125.0	235.0	360.0	26K7	u
771	33.00	125.0	235.0	360.0	26K7	u
772	29.00	125.0	235.0	360.0	26K5	u
773	29.00	125.0	235.0	360.0	26K5	u
774	29.00	125.0	235.0	360.0	26K5	u
775	29.00	125.0	235.0	360.0	26K5	u
776	29.00	125.0	235.0	360.0	26K5	u
777	13.00	125.0	235.0	360.0	10K1	u
778	13.00	125.0	235.0	360.0	10K1	u
779	13.00	125.0	235.0	360.0	10K1	u
780	13.00	125.0	235.0	360.0	10K1	u
781	13.00	125.0	235.0	360.0	10K1	u
792	19.75	112.5	309.0	475.7	22K4	u
793	19.75	112.5	310.0	474.3	22K4	u
794	19.75	112.5	316.8	464.1	22K4	u
795	19.75	112.5	335.7	468.0	22K4	u
796	19.75	112.5	368.3	488.3	22K4	u
797	10.00	112.5	212.7	325.2	12K1	u
798	10.00	112.5	236.2	348.7	12K1	u
799	10.00	112.5	279.0	391.5	12K1	u
800	10.00	112.5	322.4	434.9	12K1	u
801	10.00	112.5	365.8	478.3	12K1	u
802	33.00	112.5	212.7	325.2	30K7	u
803	33.00	112.5	236.2	348.7	30K7	u
804	33.00	112.5	279.0	391.5	30K7	u
805	33.00	112.5	322.4	434.9	30K7	u
806	33.00	112.5	365.8	478.3	30K12	u
807	33.00	112.5	212.7	325.2	30K7	u
808	33.00	112.5	236.2	348.7	30K7	u
809	33.00	112.5	279.0	391.5	30K7	u
810	33.00	112.5	322.4	434.9	30K7	u
811	33.00	112.5	365.8	478.3	30K12	u
812	29.00	112.5	212.7	325.2	30K7	u
813	29.00	112.5	236.2	348.7	30K7	u
814	29.00	112.5	279.0	391.5	30K7	u
815	29.00	112.5	322.4	434.9	30K7	u
816	29.00	112.5	365.8	478.3	30K7	u
817	13.00	112.5	212.7	325.2	12K1	u



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Beam Summary

Page 19/19

08/28/20 11:23:44

Steel Code: AISC 360-16 LRFD

Joist #	Length	WDL	WLL	WTL	Joist	
818	13.00	112.5	236.2	348.7	12K1	u
819	13.00	112.5	279.0	391.5	12K1	u
820	13.00	112.5	322.4	434.9	12K1	u
821	13.00	112.5	365.8	478.3	12K1	u
822	30.00	112.5	267.3	433.6	30K7	u
823	30.00	112.5	276.0	428.8	30K7	u
824	30.00	112.5	297.6	439.9	30K7	u
825	30.00	112.5	328.6	458.1	30K7	u
826	30.00	112.5	367.0	485.1	30K7	u
834	10.00	125.0	235.0	360.0	10K1	u
835	10.00	125.0	235.0	360.0	10K1	u
836	10.00	125.0	235.0	360.0	10K1	u
837	10.00	125.0	235.0	360.0	10K1	u
838	10.00	125.0	235.0	360.0	10K1	u
841	30.00	107.1	254.3	413.8	28K6	u
842	30.00	107.1	254.3	413.8	28K6	u
843	30.00	107.1	254.3	413.8	28K6	u
844	30.00	107.1	254.3	413.8	28K6	u
845	30.00	107.1	254.3	413.8	28K6	u
846	30.00	107.1	254.3	413.8	28K6	u
847	19.75	107.1	293.0	451.4	22K4	u
848	19.75	107.1	294.3	453.0	22K4	u
849	19.75	107.1	294.3	453.0	22K4	u
850	19.75	107.1	294.3	453.0	22K4	u
851	19.75	107.1	294.3	453.0	22K4	u
852	19.75	107.1	294.3	453.0	22K4	u

* after Size denotes joist is inadequate.

u after Size denotes this size has been assigned by the User.



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Code Check Summary

09/03/20 10:39:50

Steel Code: AISC360-16 LRFD

CRITERIA:

Rigid End Zones: Ignore Effects
 Member Force Output: At Face of Joint
 P-Delta: Yes Scale Factor: 1.00
 Ground Level: Base
 Mesh Criteria :
 Max. Distance Between Nodes on Mesh Line (ft) : 4.00
 Merge Node Tolerance (in) : 0.0100
 Geometry Tolerance (in) : 0.0050
 Walls Out-of-plane Stiffness Not Included in Analysis.
 Sign considered for Dynamic Load Case Results.
 Rigid Links Included at Fixed Beam-to-Wall Locations
 Eigenvalue Analysis : Eigen Vectors (Subspace Iteration)

LOAD COMBINATION CRITERIA:

Snow Factor f2 Use Full Factor ($f2 = 0.7$) on Snow in Combination with Seismic
 Notional Loads Consider with all Combinations in direction of lateral load
 Live Load factor f1 (0.5 or 1.0) 0.500
 Sds (for Ev) 0.107
 RhoX 1.000
 RhoY 1.000

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Code Check Summary

Page 2/20

09/03/20 10:39:50

Steel Code: AISC360-16 LRFD

NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

LOAD COMBINATIONS: IBC 2018 / ASCE 7-16 LRFD

1	*	1.400 D + 1.400 ND1
2	*	1.400 D + 1.400 ND2
3	*	1.400 D - 1.400 ND1
4	*	1.400 D - 1.400 ND2
5	*	1.200 D + 1.200 ND1 + 1.600 Lp + 1.600 NL1 + 0.500 Sp + 0.500 NR1
6	*	1.200 D + 1.200 ND2 + 1.600 Lp + 1.600 NL2 + 0.500 Sp + 0.500 NR2
7	*	1.200 D - 1.200 ND1 + 1.600 Lp - 1.600 NL1 + 0.500 Sp - 0.500 NR1
8	*	1.200 D - 1.200 ND2 + 1.600 Lp - 1.600 NL2 + 0.500 Sp - 0.500 NR2
9	*	1.200 D + 1.200 ND1 + 1.600 Lp + 1.600 NL1
10	*	1.200 D + 1.200 ND2 + 1.600 Lp + 1.600 NL2
11	*	1.200 D - 1.200 ND1 + 1.600 Lp - 1.600 NL1
12	*	1.200 D - 1.200 ND2 + 1.600 Lp - 1.600 NL2
13	*	1.200 D + 1.200 ND1 + 1.600 Ln + 1.600 NL1
14	*	1.200 D + 1.200 ND2 + 1.600 Ln + 1.600 NL2
15	*	1.200 D - 1.200 ND1 + 1.600 Ln - 1.600 NL1
16	*	1.200 D - 1.200 ND2 + 1.600 Ln - 1.600 NL2
17	*	1.200 D + 1.200 ND1 + 0.500 Lp + 0.500 NL1 + 1.600 Sp + 1.600 NR1
18	*	1.200 D + 1.200 ND2 + 0.500 Lp + 0.500 NL2 + 1.600 Sp + 1.600 NR2
19	*	1.200 D - 1.200 ND1 + 0.500 Lp - 0.500 NL1 + 1.600 Sp - 1.600 NR1
20	*	1.200 D - 1.200 ND2 + 0.500 Lp - 0.500 NL2 + 1.600 Sp - 1.600 NR2
21	*	1.200 D - 1.200 ND1 + 1.600 Sp - 1.600 NR1
22	*	1.200 D - 1.200 ND2 + 1.600 Sp - 1.600 NR2
23	*	1.200 D + 1.200 ND1 + 1.600 Sp + 1.600 NR1
24	*	1.200 D + 1.200 ND2 + 1.600 Sp + 1.600 NR2
25	*	1.200 D + 1.200 ND1 + 1.600 Sp + 1.600 NR1 + 0.500 W1
26	*	1.200 D + 1.200 ND2 + 1.600 Sp + 1.600 NR2 + 0.500 W2
27	*	1.200 D + 1.200 ND1 + 1.600 Sp + 1.600 NR1 + 0.500 W3
28	*	1.200 D + 1.200 ND1 + 1.600 Sp + 1.600 NR1 + 0.500 W4
29	*	1.200 D + 1.200 ND2 + 1.600 Sp + 1.600 NR2 + 0.500 W5
30	*	1.200 D + 1.200 ND2 + 1.600 Sp + 1.600 NR2 + 0.500 W6
31	*	1.200 D + 0.818 ND1 + 0.878 ND2 + 1.600 Sp + 1.091 NR1 + 1.171 NR2 + 0.500 W7
32	*	1.200 D + 0.818 ND1 - 0.878 ND2 + 1.600 Sp + 1.091 NR1 - 1.171 NR2 + 0.500 W8
33	*	1.200 D + 0.817 ND1 + 0.879 ND2 + 1.600 Sp + 1.089 NR1 + 1.172 NR2 + 0.500 W9
34	*	1.200 D + 0.819 ND1 + 0.877 ND2 + 1.600 Sp + 1.092 NR1 + 1.170 NR2 + 0.500 W10
35	*	1.200 D + 0.819 ND1 - 0.877 ND2 + 1.600 Sp + 1.092 NR1 - 1.170 NR2 + 0.500 W11
36	*	1.200 D + 0.817 ND1 - 0.879 ND2 + 1.600 Sp + 1.089 NR1 - 1.172 NR2 + 0.500 W12
37	*	1.200 D - 1.200 ND1 + 1.600 Sp - 1.600 NR1 - 0.500 W1
38	*	1.200 D - 1.200 ND2 + 1.600 Sp - 1.600 NR2 - 0.500 W2
39	*	1.200 D - 1.200 ND1 + 1.600 Sp - 1.600 NR1 - 0.500 W3
40	*	1.200 D - 1.200 ND1 + 1.600 Sp - 1.600 NR1 - 0.500 W4
41	*	1.200 D - 1.200 ND2 + 1.600 Sp - 1.600 NR2 - 0.500 W5
42	*	1.200 D - 1.200 ND2 + 1.600 Sp - 1.600 NR2 - 0.500 W6



RAM Structural System



Code Check Summary

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 3/20

09/03/20 10:39:50

Steel Code: AISC360-16 LRFD

43	*	1.200 D - 0.818 ND1 - 0.878 ND2 + 1.600 Sp - 1.091 NR1 - 1.171 NR2 - 0.500 W7
44	*	1.200 D - 0.818 ND1 + 0.878 ND2 + 1.600 Sp - 1.091 NR1 + 1.171 NR2 - 0.500 W8
45	*	1.200 D - 0.817 ND1 - 0.879 ND2 + 1.600 Sp - 1.089 NR1 - 1.172 NR2 - 0.500 W9
46	*	1.200 D - 0.819 ND1 - 0.877 ND2 + 1.600 Sp - 1.092 NR1 - 1.170 NR2 - 0.500 W10
47	*	1.200 D - 0.819 ND1 + 0.877 ND2 + 1.600 Sp - 1.092 NR1 + 1.170 NR2 - 0.500 W11
48	*	1.200 D - 0.817 ND1 + 0.879 ND2 + 1.600 Sp - 1.089 NR1 + 1.172 NR2 - 0.500 W12
49	*	1.200 D + 1.200 ND1 + 0.500 Lp + 0.500 NL1 + 0.500 Sp + 0.500 NR1 + 1.000 W1
50	*	1.200 D + 1.200 ND2 + 0.500 Lp + 0.500 NL2 + 0.500 Sp + 0.500 NR2 + 1.000 W2
51	*	1.200 D + 1.200 ND1 + 0.500 Lp + 0.500 NL1 + 0.500 Sp + 0.500 NR1 + 1.000 W3
52	*	1.200 D + 1.200 ND1 + 0.500 Lp + 0.500 NL1 + 0.500 Sp + 0.500 NR1 + 1.000 W4
53	*	1.200 D + 1.200 ND2 + 0.500 Lp + 0.500 NL2 + 0.500 Sp + 0.500 NR2 + 1.000 W5
54	*	1.200 D + 1.200 ND2 + 0.500 Lp + 0.500 NL2 + 0.500 Sp + 0.500 NR2 + 1.000 W6
55	*	1.200 D + 0.818 ND1 + 0.878 ND2 + 0.500 Lp + 0.341 NL1 + 0.366 NL2 + 0.500 Sp + 0.341 NR1 + 0.366 NR2 + 1.000 W7
56	*	1.200 D + 0.818 ND1 - 0.878 ND2 + 0.500 Lp + 0.341 NL1 - 0.366 NL2 + 0.500 Sp + 0.341 NR1 - 0.366 NR2 + 1.000 W8
57	*	1.200 D + 0.817 ND1 + 0.879 ND2 + 0.500 Lp + 0.340 NL1 + 0.366 NL2 + 0.500 Sp + 0.340 NR1 + 0.366 NR2 + 1.000 W9
58	*	1.200 D + 0.819 ND1 + 0.877 ND2 + 0.500 Lp + 0.341 NL1 + 0.366 NL2 + 0.500 Sp + 0.341 NR1 + 0.366 NR2 + 1.000 W10
59	*	1.200 D + 0.819 ND1 - 0.877 ND2 + 0.500 Lp + 0.341 NL1 - 0.366 NL2 + 0.500 Sp + 0.341 NR1 - 0.366 NR2 + 1.000 W11
60	*	1.200 D + 0.817 ND1 - 0.879 ND2 + 0.500 Lp + 0.340 NL1 - 0.366 NL2 + 0.500 Sp + 0.340 NR1 - 0.366 NR2 + 1.000 W12
61	*	1.200 D - 1.200 ND1 + 0.500 Lp - 0.500 NL1 + 0.500 Sp - 0.500 NR1 - 1.000 W1
62	*	1.200 D - 1.200 ND2 + 0.500 Lp - 0.500 NL2 + 0.500 Sp - 0.500 NR2 - 1.000 W2
63	*	1.200 D - 1.200 ND1 + 0.500 Lp - 0.500 NL1 + 0.500 Sp - 0.500 NR1 - 1.000 W3
64	*	1.200 D - 1.200 ND1 + 0.500 Lp - 0.500 NL1 + 0.500 Sp - 0.500 NR1 - 1.000 W4
65	*	1.200 D - 1.200 ND2 + 0.500 Lp - 0.500 NL2 + 0.500 Sp - 0.500 NR2 - 1.000 W5
66	*	1.200 D - 1.200 ND2 + 0.500 Lp - 0.500 NL2 + 0.500 Sp - 0.500 NR2 - 1.000 W6
67	*	1.200 D - 0.818 ND1 - 0.878 ND2 + 0.500 Lp - 0.341 NL1 - 0.366 NL2 + 0.500 Sp - 0.341 NR1 - 0.366 NR2 - 1.000 W7
68	*	1.200 D - 0.818 ND1 + 0.878 ND2 + 0.500 Lp - 0.341 NL1 + 0.366 NL2 + 0.500 Sp - 0.341 NR1 + 0.366 NR2 - 1.000 W8
69	*	1.200 D - 0.817 ND1 - 0.879 ND2 + 0.500 Lp - 0.340 NL1 - 0.366 NL2 + 0.500 Sp - 0.340 NR1 - 0.366 NR2 - 1.000 W9
70	*	1.200 D - 0.819 ND1 - 0.877 ND2 + 0.500 Lp - 0.341 NL1 - 0.366 NL2 + 0.500 Sp - 0.341 NR1 - 0.366 NR2 - 1.000 W10
71	*	1.200 D - 0.819 ND1 + 0.877 ND2 + 0.500 Lp - 0.341 NL1 + 0.366 NL2 + 0.500 Sp - 0.341 NR1 + 0.366 NR2 - 1.000 W11
72	*	1.200 D - 0.817 ND1 + 0.879 ND2 + 0.500 Lp - 0.340 NL1 + 0.366 NL2 + 0.500 Sp - 0.340 NR1 + 0.366 NR2 - 1.000 W12
73	*	1.200 D + 1.200 ND1 + 0.500 Lp + 0.500 NL1 + 1.000 W1
74	*	1.200 D + 1.200 ND2 + 0.500 Lp + 0.500 NL2 + 1.000 W2
75	*	1.200 D + 1.200 ND1 + 0.500 Lp + 0.500 NL1 + 1.000 W3
76	*	1.200 D + 1.200 ND1 + 0.500 Lp + 0.500 NL1 + 1.000 W4
77	*	1.200 D + 1.200 ND2 + 0.500 Lp + 0.500 NL2 + 1.000 W5



RAM Structural System



Code Check Summary

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 4/20

09/03/20 10:39:50

Steel Code: AISC360-16 LRFD

78	*	$1.200 D + 1.200 ND2 + 0.500 Lp + 0.500 NL2 + 1.000 W6$
79	*	$1.200 D + 0.818 ND1 + 0.878 ND2 + 0.500 Lp + 0.341 NL1 + 0.366 NL2 + 1.000 W7$
80	*	$1.200 D + 0.818 ND1 - 0.878 ND2 + 0.500 Lp + 0.341 NL1 - 0.366 NL2 + 1.000 W8$
81	*	$1.200 D + 0.817 ND1 + 0.879 ND2 + 0.500 Lp + 0.340 NL1 + 0.366 NL2 + 1.000 W9$
82	*	$1.200 D + 0.819 ND1 + 0.877 ND2 + 0.500 Lp + 0.341 NL1 + 0.366 NL2 + 1.000 W10$
83	*	$1.200 D + 0.819 ND1 - 0.877 ND2 + 0.500 Lp + 0.341 NL1 - 0.366 NL2 + 1.000 W11$
84	*	$1.200 D + 0.817 ND1 - 0.879 ND2 + 0.500 Lp + 0.340 NL1 - 0.366 NL2 + 1.000 W12$
85	*	$1.200 D - 1.200 ND1 + 0.500 Lp - 0.500 NL1 - 1.000 W1$
86	*	$1.200 D - 1.200 ND2 + 0.500 Lp - 0.500 NL2 - 1.000 W2$
87	*	$1.200 D - 1.200 ND1 + 0.500 Lp - 0.500 NL1 - 1.000 W3$
88	*	$1.200 D - 1.200 ND1 + 0.500 Lp - 0.500 NL1 - 1.000 W4$
89	*	$1.200 D - 1.200 ND2 + 0.500 Lp - 0.500 NL2 - 1.000 W5$
90	*	$1.200 D - 1.200 ND2 + 0.500 Lp - 0.500 NL2 - 1.000 W6$
91	*	$1.200 D - 0.818 ND1 - 0.878 ND2 + 0.500 Lp - 0.341 NL1 - 0.366 NL2 - 1.000 W7$
92	*	$1.200 D - 0.818 ND1 + 0.878 ND2 + 0.500 Lp - 0.341 NL1 + 0.366 NL2 - 1.000 W8$
93	*	$1.200 D - 0.817 ND1 - 0.879 ND2 + 0.500 Lp - 0.340 NL1 - 0.366 NL2 - 1.000 W9$
94	*	$1.200 D - 0.819 ND1 - 0.877 ND2 + 0.500 Lp - 0.341 NL1 - 0.366 NL2 - 1.000 W10$
95	*	$1.200 D - 0.819 ND1 + 0.877 ND2 + 0.500 Lp - 0.341 NL1 + 0.366 NL2 - 1.000 W11$
96	*	$1.200 D - 0.817 ND1 + 0.879 ND2 + 0.500 Lp - 0.340 NL1 + 0.366 NL2 - 1.000 W12$
97	*	$1.200 D + 1.200 ND1 + 0.500 Ln + 0.500 NL1 + 1.000 W1$
98	*	$1.200 D + 1.200 ND2 + 0.500 Ln + 0.500 NL2 + 1.000 W2$
99	*	$1.200 D + 1.200 ND1 + 0.500 Ln + 0.500 NL1 + 1.000 W3$
100	*	$1.200 D + 1.200 ND1 + 0.500 Ln + 0.500 NL1 + 1.000 W4$
101	*	$1.200 D + 1.200 ND2 + 0.500 Ln + 0.500 NL2 + 1.000 W5$
102	*	$1.200 D + 1.200 ND2 + 0.500 Ln + 0.500 NL2 + 1.000 W6$
103	*	$1.200 D + 0.818 ND1 + 0.878 ND2 + 0.500 Ln + 0.341 NL1 + 0.366 NL2 + 1.000 W7$
104	*	$1.200 D + 0.818 ND1 - 0.878 ND2 + 0.500 Ln + 0.341 NL1 - 0.366 NL2 + 1.000 W8$
105	*	$1.200 D + 0.817 ND1 + 0.879 ND2 + 0.500 Ln + 0.340 NL1 + 0.366 NL2 + 1.000 W9$
106	*	$1.200 D + 0.819 ND1 + 0.877 ND2 + 0.500 Ln + 0.341 NL1 + 0.366 NL2 + 1.000 W10$
107	*	$1.200 D + 0.819 ND1 - 0.877 ND2 + 0.500 Ln + 0.341 NL1 - 0.366 NL2 + 1.000 W11$
108	*	$1.200 D + 0.817 ND1 - 0.879 ND2 + 0.500 Ln + 0.340 NL1 - 0.366 NL2 + 1.000 W12$
109	*	$1.200 D - 1.200 ND1 + 0.500 Ln - 0.500 NL1 - 1.000 W1$
110	*	$1.200 D - 1.200 ND2 + 0.500 Ln - 0.500 NL2 - 1.000 W2$
111	*	$1.200 D - 1.200 ND1 + 0.500 Ln - 0.500 NL1 - 1.000 W3$
112	*	$1.200 D - 1.200 ND1 + 0.500 Ln - 0.500 NL1 - 1.000 W4$
113	*	$1.200 D - 1.200 ND2 + 0.500 Ln - 0.500 NL2 - 1.000 W5$
114	*	$1.200 D - 1.200 ND2 + 0.500 Ln - 0.500 NL2 - 1.000 W6$
115	*	$1.200 D - 0.818 ND1 - 0.878 ND2 + 0.500 Ln - 0.341 NL1 - 0.366 NL2 - 1.000 W7$
116	*	$1.200 D - 0.818 ND1 + 0.878 ND2 + 0.500 Ln - 0.341 NL1 + 0.366 NL2 - 1.000 W8$
117	*	$1.200 D - 0.817 ND1 - 0.879 ND2 + 0.500 Ln - 0.340 NL1 - 0.366 NL2 - 1.000 W9$
118	*	$1.200 D - 0.819 ND1 - 0.877 ND2 + 0.500 Ln - 0.341 NL1 - 0.366 NL2 - 1.000 W10$
119	*	$1.200 D - 0.819 ND1 + 0.877 ND2 + 0.500 Ln - 0.341 NL1 + 0.366 NL2 - 1.000 W11$
120	*	$1.200 D - 0.817 ND1 + 0.879 ND2 + 0.500 Ln - 0.340 NL1 + 0.366 NL2 - 1.000 W12$
121	*	$1.200 D + 1.200 ND1 + 0.500 Sp + 0.500 NR1 + 1.000 W1$
122	*	$1.200 D + 1.200 ND2 + 0.500 Sp + 0.500 NR2 + 1.000 W2$
123	*	$1.200 D + 1.200 ND1 + 0.500 Sp + 0.500 NR1 + 1.000 W3$



RAM Structural System



Code Check Summary

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 5/20

09/03/20 10:39:50

Steel Code: AISC360-16 LRFD

124	*	$1.200 D + 1.200 ND1 + 0.500 Sp + 0.500 NR1 + 1.000 W4$
125	*	$1.200 D + 1.200 ND2 + 0.500 Sp + 0.500 NR2 + 1.000 W5$
126	*	$1.200 D + 1.200 ND2 + 0.500 Sp + 0.500 NR2 + 1.000 W6$
127	*	$1.200 D + 0.818 ND1 + 0.878 ND2 + 0.500 Sp + 0.341 NR1 + 0.366 NR2 + 1.000 W7$
128	*	$1.200 D + 0.818 ND1 - 0.878 ND2 + 0.500 Sp + 0.341 NR1 - 0.366 NR2 + 1.000 W8$
129	*	$1.200 D + 0.817 ND1 + 0.879 ND2 + 0.500 Sp + 0.340 NR1 + 0.366 NR2 + 1.000 W9$
130	*	$1.200 D + 0.819 ND1 + 0.877 ND2 + 0.500 Sp + 0.341 NR1 + 0.366 NR2 + 1.000 W10$
131	*	$1.200 D + 0.819 ND1 - 0.877 ND2 + 0.500 Sp + 0.341 NR1 - 0.366 NR2 + 1.000 W11$
132	*	$1.200 D + 0.817 ND1 - 0.879 ND2 + 0.500 Sp + 0.340 NR1 - 0.366 NR2 + 1.000 W12$
133	*	$1.200 D - 1.200 ND1 + 0.500 Sp - 0.500 NR1 - 1.000 W1$
134	*	$1.200 D - 1.200 ND2 + 0.500 Sp - 0.500 NR2 - 1.000 W2$
135	*	$1.200 D - 1.200 ND1 + 0.500 Sp - 0.500 NR1 - 1.000 W3$
136	*	$1.200 D - 1.200 ND1 + 0.500 Sp - 0.500 NR1 - 1.000 W4$
137	*	$1.200 D - 1.200 ND2 + 0.500 Sp - 0.500 NR2 - 1.000 W5$
138	*	$1.200 D - 1.200 ND2 + 0.500 Sp - 0.500 NR2 - 1.000 W6$
139	*	$1.200 D - 0.818 ND1 - 0.878 ND2 + 0.500 Sp - 0.341 NR1 - 0.366 NR2 - 1.000 W7$
140	*	$1.200 D - 0.818 ND1 + 0.878 ND2 + 0.500 Sp - 0.341 NR1 + 0.366 NR2 - 1.000 W8$
141	*	$1.200 D - 0.817 ND1 - 0.879 ND2 + 0.500 Sp - 0.340 NR1 - 0.366 NR2 - 1.000 W9$
142	*	$1.200 D - 0.819 ND1 - 0.877 ND2 + 0.500 Sp - 0.341 NR1 - 0.366 NR2 - 1.000 W10$
143	*	$1.200 D - 0.819 ND1 + 0.877 ND2 + 0.500 Sp - 0.341 NR1 + 0.366 NR2 - 1.000 W11$
144	*	$1.200 D - 0.817 ND1 + 0.879 ND2 + 0.500 Sp - 0.340 NR1 + 0.366 NR2 - 1.000 W12$
145	*	$1.200 D + 1.200 ND1 + 1.000 W1$
146	*	$1.200 D + 1.200 ND2 + 1.000 W2$
147	*	$1.200 D + 1.200 ND1 + 1.000 W3$
148	*	$1.200 D + 1.200 ND1 + 1.000 W4$
149	*	$1.200 D + 1.200 ND2 + 1.000 W5$
150	*	$1.200 D + 1.200 ND2 + 1.000 W6$
151	*	$1.200 D + 0.818 ND1 + 0.878 ND2 + 1.000 W7$
152	*	$1.200 D + 0.818 ND1 - 0.878 ND2 + 1.000 W8$
153	*	$1.200 D + 0.817 ND1 + 0.879 ND2 + 1.000 W9$
154	*	$1.200 D + 0.819 ND1 + 0.877 ND2 + 1.000 W10$
155	*	$1.200 D + 0.819 ND1 - 0.877 ND2 + 1.000 W11$
156	*	$1.200 D + 0.817 ND1 - 0.879 ND2 + 1.000 W12$
157	*	$1.200 D - 1.200 ND1 - 1.000 W1$
158	*	$1.200 D - 1.200 ND2 - 1.000 W2$
159	*	$1.200 D - 1.200 ND1 - 1.000 W3$
160	*	$1.200 D - 1.200 ND1 - 1.000 W4$
161	*	$1.200 D - 1.200 ND2 - 1.000 W5$
162	*	$1.200 D - 1.200 ND2 - 1.000 W6$
163	*	$1.200 D - 0.818 ND1 - 0.878 ND2 - 1.000 W7$
164	*	$1.200 D - 0.818 ND1 + 0.878 ND2 - 1.000 W8$
165	*	$1.200 D - 0.817 ND1 - 0.879 ND2 - 1.000 W9$
166	*	$1.200 D - 0.819 ND1 - 0.877 ND2 - 1.000 W10$
167	*	$1.200 D - 0.819 ND1 + 0.877 ND2 - 1.000 W11$
168	*	$1.200 D - 0.817 ND1 + 0.879 ND2 - 1.000 W12$
169	*	$0.900 D + 0.900 ND1 + 1.000 W1$



RAM Structural System



Code Check Summary

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 6/20

09/03/20 10:39:50

Steel Code: AISC360-16 LRFD

170	*	$0.900 D + 0.900 ND2 + 1.000 W2$
171	*	$0.900 D + 0.900 ND1 + 1.000 W3$
172	*	$0.900 D + 0.900 ND1 + 1.000 W4$
173	*	$0.900 D + 0.900 ND2 + 1.000 W5$
174	*	$0.900 D + 0.900 ND2 + 1.000 W6$
175	*	$0.900 D + 0.613 ND1 + 0.659 ND2 + 1.000 W7$
176	*	$0.900 D + 0.613 ND1 - 0.659 ND2 + 1.000 W8$
177	*	$0.900 D + 0.613 ND1 + 0.659 ND2 + 1.000 W9$
178	*	$0.900 D + 0.614 ND1 + 0.658 ND2 + 1.000 W10$
179	*	$0.900 D + 0.614 ND1 - 0.658 ND2 + 1.000 W11$
180	*	$0.900 D + 0.613 ND1 - 0.659 ND2 + 1.000 W12$
181	*	$0.900 D - 0.900 ND1 - 1.000 W1$
182	*	$0.900 D - 0.900 ND2 - 1.000 W2$
183	*	$0.900 D - 0.900 ND1 - 1.000 W3$
184	*	$0.900 D - 0.900 ND1 - 1.000 W4$
185	*	$0.900 D - 0.900 ND2 - 1.000 W5$
186	*	$0.900 D - 0.900 ND2 - 1.000 W6$
187	*	$0.900 D - 0.613 ND1 - 0.659 ND2 - 1.000 W7$
188	*	$0.900 D - 0.613 ND1 + 0.659 ND2 - 1.000 W8$
189	*	$0.900 D - 0.613 ND1 - 0.659 ND2 - 1.000 W9$
190	*	$0.900 D - 0.614 ND1 - 0.658 ND2 - 1.000 W10$
191	*	$0.900 D - 0.614 ND1 + 0.658 ND2 - 1.000 W11$
192	*	$0.900 D - 0.613 ND1 + 0.659 ND2 - 1.000 W12$
193	*	$1.221 D + 1.221 ND1 + 0.500 Lp + 0.500 NL1 + 0.700 Sp + 0.700 NR1 + 1.000 E1$
194	*	$1.221 D + 1.221 ND1 + 0.500 Lp + 0.500 NL1 + 0.700 Sp + 0.700 NR1 + 1.000 E2$
195	*	$1.221 D + 1.221 ND2 + 0.500 Lp + 0.500 NL2 + 0.700 Sp + 0.700 NR2 + 1.000 E3$
196	*	$1.221 D + 1.221 ND2 + 0.500 Lp + 0.500 NL2 + 0.700 Sp + 0.700 NR2 + 1.000 E4$
197	*	$1.221 D - 1.221 ND1 + 0.500 Lp - 0.500 NL1 + 0.700 Sp - 0.700 NR1 - 1.000 E1$
198	*	$1.221 D - 1.221 ND1 + 0.500 Lp - 0.500 NL1 + 0.700 Sp - 0.700 NR1 - 1.000 E2$
199	*	$1.221 D - 1.221 ND2 + 0.500 Lp - 0.500 NL2 + 0.700 Sp - 0.700 NR2 - 1.000 E3$
200	*	$1.221 D - 1.221 ND2 + 0.500 Lp - 0.500 NL2 + 0.700 Sp - 0.700 NR2 - 1.000 E4$
201	*	$1.221 D + 1.221 ND1 + 0.500 Lp + 0.500 NL1 + 1.000 E1$
202	*	$1.221 D + 1.221 ND1 + 0.500 Lp + 0.500 NL1 + 1.000 E2$
203	*	$1.221 D + 1.221 ND2 + 0.500 Lp + 0.500 NL2 + 1.000 E3$
204	*	$1.221 D + 1.221 ND2 + 0.500 Lp + 0.500 NL2 + 1.000 E4$
205	*	$1.221 D - 1.221 ND1 + 0.500 Lp - 0.500 NL1 - 1.000 E1$
206	*	$1.221 D - 1.221 ND1 + 0.500 Lp - 0.500 NL1 - 1.000 E2$
207	*	$1.221 D - 1.221 ND2 + 0.500 Lp - 0.500 NL2 - 1.000 E3$
208	*	$1.221 D - 1.221 ND2 + 0.500 Lp - 0.500 NL2 - 1.000 E4$
209	*	$1.221 D + 1.221 ND1 + 0.500 Ln + 0.500 NL1 + 1.000 E1$
210	*	$1.221 D + 1.221 ND1 + 0.500 Ln + 0.500 NL1 + 1.000 E2$
211	*	$1.221 D + 1.221 ND2 + 0.500 Ln + 0.500 NL2 + 1.000 E3$
212	*	$1.221 D + 1.221 ND2 + 0.500 Ln + 0.500 NL2 + 1.000 E4$
213	*	$1.221 D - 1.221 ND1 + 0.500 Ln - 0.500 NL1 - 1.000 E1$
214	*	$1.221 D - 1.221 ND1 + 0.500 Ln - 0.500 NL1 - 1.000 E2$
215	*	$1.221 D - 1.221 ND2 + 0.500 Ln - 0.500 NL2 - 1.000 E3$



RAM Structural System



Code Check Summary

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 7/20

09/03/20 10:39:50

Steel Code: AISC360-16 LRFD

216	*	1.221 D - 1.221 ND2 + 0.500 Ln - 0.500 NL2 - 1.000 E4
217	*	1.221 D + 1.221 ND1 + 0.700 Sp + 0.700 NR1 + 1.000 E1
218	*	1.221 D + 1.221 ND1 + 0.700 Sp + 0.700 NR1 + 1.000 E2
219	*	1.221 D + 1.221 ND2 + 0.700 Sp + 0.700 NR2 + 1.000 E3
220	*	1.221 D + 1.221 ND2 + 0.700 Sp + 0.700 NR2 + 1.000 E4
221	*	1.221 D - 1.221 ND1 + 0.700 Sp - 0.700 NR1 - 1.000 E1
222	*	1.221 D - 1.221 ND1 + 0.700 Sp - 0.700 NR1 - 1.000 E2
223	*	1.221 D - 1.221 ND2 + 0.700 Sp - 0.700 NR2 - 1.000 E3
224	*	1.221 D - 1.221 ND2 + 0.700 Sp - 0.700 NR2 - 1.000 E4
225	*	1.221 D + 1.221 ND1 + 1.000 E1
226	*	1.221 D + 1.221 ND1 + 1.000 E2
227	*	1.221 D + 1.221 ND2 + 1.000 E3
228	*	1.221 D + 1.221 ND2 + 1.000 E4
229	*	1.221 D - 1.221 ND1 - 1.000 E1
230	*	1.221 D - 1.221 ND1 - 1.000 E2
231	*	1.221 D - 1.221 ND2 - 1.000 E3
232	*	1.221 D - 1.221 ND2 - 1.000 E4
233	*	0.879 D + 0.879 ND1 + 1.000 E1
234	*	0.879 D + 0.879 ND1 + 1.000 E2
235	*	0.879 D + 0.879 ND2 + 1.000 E3
236	*	0.879 D + 0.879 ND2 + 1.000 E4
237	*	0.879 D - 0.879 ND1 - 1.000 E1
238	*	0.879 D - 0.879 ND1 - 1.000 E2
239	*	0.879 D - 0.879 ND2 - 1.000 E3
240	*	0.879 D - 0.879 ND2 - 1.000 E4

* = Load combination currently selected to use

Frame #0:

Level: ROOF - 129'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
91	73.90	0.00	0.00	-0.13	-0.12	17	0.19 Axial	50	W8X48
135	40.02	0.00	0.00	-0.01	-0.09	17	0.14 Axial	50	W8X35

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
197	-0.82	194.08	-0.12	-21.82	0.03	20	0.55 H1-1b	50	W21X44
210	-2.78	79.60	-0.08	9.65	0.00	19	0.27 H1-1b	50	W21X44
246	-1.82	49.28	0.19	-7.30	-0.01	32	0.40 H1-1b	50	W16X26
277	-0.95	80.77	-0.74	-20.91	-0.00	28	0.28 H1-1b	50	W21X44
283	-0.07	498.12	0.02	58.19	0.00	20	0.33 H1-1b	50	W30X124
306	-2.45	79.72	-0.35	-9.71	-0.07	20	0.28 H1-1b	50	W21X44



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Code Check Summary

Page 8/20

09/03/20 10:39:50

Steel Code: AISC360-16 LRFD

Level: LEVEL 2 - 115'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
91	156.63	-0.40	-0.07	0.42	0.16	6	0.43 H1-1a	50	W8X48
135	130.28	0.46	-0.84	0.11	-0.07	6	0.51 H1-1a	50	W8X35
140	84.11	-0.64	21.68	0.68	-1.06	8	0.18 H1-1b	50	W12X72

Frame #1:**Level: ROOF - 129'-0"**

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
72	59.47	0.00	0.00	0.12	-0.02	30	0.15 Axial	50	W8X48
73	67.27	0.00	0.00	-0.12	-0.01	42	0.17 Axial	50	W8X48

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
182	-8.18	110.37	-0.05	-17.99	-0.02	20	0.45 H1-1b	50	W18X35

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
25	22.50	0.00	0.00	-0.00	-0.00	54	0.24 Axial	36	HSS5X5X5/16
26	24.06	0.00	0.00	0.00	0.00	66	0.26 Axial	36	HSS5X5X5/16

Level: LEVEL 2 - 115'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
72	160.58	-1.91	-0.17	0.14	-0.01	6	0.45 H1-1a	50	W8X48
73	171.05	1.19	-0.09	-0.13	0.01	8	0.47 H1-1a	50	W8X48

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
182	0.84	20.18	0.01	-35.98	0.01	6	0.14 Shear	50	W24X55

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
23	70.99	0.00	0.00	0.00	-0.00	62	0.81 Axial	36	HSS5X5X5/16
24	70.67	0.00	0.00	0.00	0.00	50	0.80 Axial	36	HSS5X5X5/16

Frame #2:**Level: ROOF - 129'-0"**

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
89	59.35	0.00	0.00	0.10	-0.02	30	0.15 Axial	50	W8X48
90	67.26	0.00	0.00	-0.05	-0.31	42	0.17 Axial	50	W8X48



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Code Check Summary

Page 9/20

09/03/20 10:39:50

Steel Code: AISC360-16 LRFD

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
282	-9.92	110.37	-0.03	-17.99	-0.01	20	0.45 H1-1b	50	W18X35

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
23	28.82	0.00	0.00	0.00	0.00	54	0.31 Axial	36	HSS5X5X5/16
24	29.72	0.00	0.00	0.00	-0.00	66	0.28 Axial	36	HSS5X5X3/8

Level: LEVEL 2 - 115'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
89	142.63	-1.22	0.27	0.11	0.03	6	0.40 H1-1a	50	W8X48
90	158.57	0.65	0.25	-0.08	-0.01	8	0.44 H1-1a	50	W8X48

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
282	0.53	14.86	0.01	-32.69	0.00	6	0.13 Shear	50	W24X55

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
25	79.08	0.00	0.00	-0.00	0.00	66	0.78 Axial	36	HSS5X5X3/8
26	78.01	0.00	0.00	-0.00	-0.00	54	0.77 Axial	36	HSS5X5X3/8

Frame #3:**Level: ROOF - 129'-0"**

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
67	44.53	0.00	0.00	0.35	0.01	18	0.11 Axial	50	W8X48
68	67.52	0.00	0.00	-0.26	-0.04	20	0.17 Axial	50	W8X48

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
239	3.53	308.44	0.05	-30.69	-0.02	20	0.34 H1-3a(H1-1b)	50	W27X84

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
15	-22.38	0.00	0.00	-0.00	0.00	89	0.11 Axial	36	HSS6X6X5/16
16	-24.00	0.00	0.00	0.00	0.00	77	0.12 Axial	36	HSS6X6X5/16

Level: LEVEL 2 - 115'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
67	94.38	-4.62	-0.26	0.30	0.02	6	0.28 H1-1a	50	W8X48



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Code Check Summary

Page 10/20

09/03/20 10:39:50

Steel Code: AISC360-16 LRFD

Col.	Pu	Mux	Muy	Vux	Vuy	LC	Interact.	Fy	Size
68	88.85	3.53	-0.02	-0.24	-0.00	8	0.26 H1-1a	50	W8X48
Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
239	-0.45	-116.25	0.01	-34.86	-0.00	8	0.23 H1-1b	50	W24X55
Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
17	61.26	0.00	0.00	-0.00	0.00	62	0.64 Axial	36	HSS6X6X5/16
18	60.81	0.00	0.00	0.00	0.00	50	0.64 Axial	36	HSS6X6X5/16

Frame #4:**Level: ROOF - 129'-0"**

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
95	67.64	0.00	0.00	0.30	-0.03	25	0.17 Axial	50	W8X48
151	30.86	0.00	0.00	-0.40	0.01	61	0.08 Axial	50	W8X48
Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
547	-10.21	30.35	0.03	-5.28	-0.02	7	0.26 H1-1b	50	W16X40
Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
11	35.60	0.00	0.00	0.00	-0.00	49	0.42 Axial	36	HSS5X5X5/16
12	41.85	0.00	0.00	-0.00	0.00	61	0.49 Axial	36	HSS5X5X5/16

Level: LEVEL 2 - 115'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
95	231.08	-0.04	-0.09	0.09	0.01	5	0.63 H1-1a	50	W8X48
152	82.31	-0.04	-0.54	0.32	0.03	7	0.23 H1-1a	50	W8X48
Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
517	1.40	-28.97	-0.00	11.56	-0.00	5	0.12 H1-3a(H1-1b)	50	W18X35
Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
11	64.62	0.00	0.00	0.00	-0.00	61	0.80 Axial	36	HSS5X5X5/16
12	64.28	0.00	0.00	0.00	0.00	49	0.80 Axial	36	HSS5X5X5/16

Frame #5:



Code Check Summary

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 11/20

09/03/20 10:39:50

Steel Code: AISC360-16 LRFD

Level: ROOF - 129'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
96	83.43	2.31	-0.64	0.20	-0.04	18	0.23 H1-1a	50	W8X48
97	41.43	0.00	0.00	-0.17	-0.05	38	0.11 Axial	50	W8X48

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
220	-0.45	188.34	0.03	-21.13	0.01	20	0.28 H1-1b	50	W24X68

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
27	-25.02	0.00	0.00	0.00	-0.00	86	0.12 Axial	36	HSS6X6X5/16
28	17.03	0.00	0.00	-0.00	0.00	134	0.15 Axial	36	HSS6X6X5/16

Level: LEVEL 2 - 115'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
96	174.36	-1.89	-0.00	0.13	0.00	6	0.48 H1-1a	50	W8X48
97	94.72	2.92	0.17	-0.19	-0.01	8	0.27 H1-1a	50	W8X48

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
220	-0.31	89.47	-0.00	22.19	0.00	10	0.16 H1-1b	50	W24X62

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
29	78.42	0.00	0.00	0.00	-0.00	62	0.71 Axial	36	HSS6X6X5/16
30	78.22	0.00	0.00	0.00	0.00	50	0.71 Axial	36	HSS6X6X5/16

Frame #6:

Level: ROOF - 129'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
80	49.28	-0.67	16.56	0.16	-1.59	18	0.26 H1-1b	50	W8X48
81	59.56	1.94	45.72	-0.36	-4.14	20	0.62 H1-1b	50	W8X48

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
275	9.48	338.65	0.89	39.78	0.99	20	0.38 H1-3a(H1-1b)	50	W27X84

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
17	-30.44	0.00	0.00	-0.00	-0.00	89	0.15 Axial	36	HSS6X6X5/16



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Code Check Summary

Page 12/20

09/03/20 10:39:50

Steel Code: AISC360-16 LRFD

Brace	Pu	Mux	Muy	Vux	Vuy	LC	Interact.	Fy	Size
18	-30.28	0.00	0.00	-0.00	0.00	77	0.15 Axial	36	HSS6X6X5/16

Level: LEVEL 2 - 115'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
80	108.46	-3.28	-1.44	0.21	0.07	6	0.33 H1-1a	50	W8X48
81	100.47	3.55	-5.19	-0.24	0.26	8	0.34 H1-1a	50	W8X48

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
275	1.15	-155.11	-0.02	-53.74	-0.01	6	0.17 H1-3a(H1-1b)	50	W27X84

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
15	73.37	0.00	0.00	0.00	-0.00	62	0.75 Axial	36	HSS6X6X5/16
16	72.90	0.00	0.00	0.00	0.00	50	0.74 Axial	36	HSS6X6X5/16

Frame #7:**Level: ROOF - 129'-0"**

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
83	70.05	-59.70	-24.93	5.56	2.46	17	0.70 H1-1b	50	W8X48
153	41.05	0.00	0.00	-0.91	0.02	40	0.10 Axial	50	W8X48

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
595	-9.42	32.64	-1.28	6.45	0.01	18	0.21 H1-1b	50	W18X50

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
21	29.47	0.00	0.00	0.00	-0.00	52	0.34 Axial	36	HSS5X5X5/16
22	31.29	0.00	0.00	-0.00	0.00	64	0.37 Axial	36	HSS5X5X5/16

Level: LEVEL 2 - 115'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
83	147.47	6.97	1.62	-0.73	-0.07	17	0.45 H1-1a	50	W8X48
151	105.97	-0.82	-0.58	0.63	0.04	7	0.30 H1-1a	50	W8X48

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
514	0.87	-23.53	0.01	-9.24	-0.00	5	0.10 H1-3a(H1-1b)	50	W18X35



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Code Check Summary

Page 13/20

09/03/20 10:39:50

Steel Code: AISC360-16 LRFD

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
21	60.87	0.00	0.00	0.00	0.00	61	0.76 Axial	36	HSS5X5X5/16
22	61.06	0.00	0.00	0.00	-0.00	49	0.76 Axial	36	HSS5X5X5/16

Frame #8:**Level: ROOF - 129'-0"**

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
56	35.90	0.00	0.00	-0.21	0.04	39	0.09 Axial	50	W8X48

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
195	-4.12	60.57	-0.08	-8.35	0.03	17	0.51 H1-1b	50	W18X50

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
1	16.20	0.00	0.00	0.00	-0.00	51	0.22 Axial	36	HSS5X5X5/16
2	15.00	0.00	0.00	-0.00	0.00	71	0.21 Axial	36	HSS5X5X5/16

Level: LEVEL 2 - 115'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
56	82.27	-0.94	-0.90	0.22	0.03	7	0.24 H1-1a	50	W8X48

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
195	-0.32	-28.12	-0.00	10.11	-0.00	9	0.13 H1-1b	50	W18X35

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
1	48.33	0.00	0.00	-0.00	0.00	61	0.71 Axial	36	HSS5X5X5/16
2	49.34	0.00	0.00	0.00	-0.00	49	0.72 Axial	36	HSS5X5X5/16

Frame #9:**Level: ROOF - 129'-0"**

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
57	60.70	0.00	0.00	0.30	-0.04	31	0.15 Axial	50	W8X48
132	73.25	0.00	0.00	-0.28	-0.03	38	0.19 Axial	50	W8X48

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
196	3.54	284.88	-0.02	-38.82	-0.02	18	0.43 H1-3a(H1-1b)	50	W24X68



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Code Check Summary

Page 14/20

09/03/20 10:39:50

Steel Code: AISC360-16 LRFD

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
3	22.09	0.00	0.00	-0.00	-0.00	122	0.18 Axial	36	HSS6X6X5/16
4	-36.27	0.00	0.00	0.00	0.00	74	0.17 Axial	36	HSS6X6X5/16

Level: LEVEL 2 - 115'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
57	94.57	-4.89	0.37	0.32	-0.02	6	0.29 H1-1a	50	W8X48
132	180.93	2.70	0.13	-0.18	-0.01	8	0.51 H1-1a	50	W8X48

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
196	0.20	122.44	0.00	31.25	0.00	12	0.18 H1-3a(H1-1b)	50	W24X68

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
3	90.63	0.00	0.00	0.00	-0.00	62	0.78 Axial	36	HSS6X6X5/16
4	91.32	0.00	0.00	0.00	0.00	50	0.78 Axial	36	HSS6X6X5/16

Frame #10:**Level: CLERESTORY-138'-6"**

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
138	39.85	69.49	-0.00	-8.54	0.07	61	0.19 H1-3a(H1-1b)	50	W12X72

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
1	0.56	-129.30	0.00	-21.03	-0.00	17	0.26 H1-3a(H1-1b)	50	W24X55
2	3.30	-153.93	0.01	27.64	-0.01	19	0.27 H1-3a(H1-1b)	50	W24X62

Level: ROOF - 129'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
138	77.93	31.85	-0.88	3.87	-0.15	49	0.13 H1-1b	50	W12X72

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
204	-5.28	38.34	0.12	-6.67	-0.04	17	0.34 H1-1b	50	W16X40



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Code Check Summary

Page 15/20

09/03/20 10:39:50

Steel Code: AISC360-16 LRFD

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
5	33.26	0.00	0.00	-0.00	0.00	49	0.25 Axial	36	HSS6X6X5/16
6	33.85	0.00	0.00	0.00	-0.00	61	0.26 Axial	36	HSS6X6X5/16

Level: LEVEL 2 - 115'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
138	113.58	0.00	0.00	-0.63	0.03	25	0.15 Axial	50	W12X72
141	104.60	0.00	0.00	-1.08	-0.12	6	0.14 Axial	50	W12X72

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
204	0.30	29.57	-0.00	-12.85	-0.00	9	0.12 H1-3a(H1-1b)	50	W18X35

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
5	59.40	0.00	0.00	0.00	0.00	61	0.47 Axial	36	HSS6X6X5/16
6	58.61	0.00	0.00	0.00	-0.00	49	0.47 Axial	36	HSS6X6X5/16

Frame #11:**Level: CLERESTORY-138'-6"**

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
146	40.11	47.19	0.00	-4.12	0.02	61	0.14 H1-3a(H1-1b)	50	W12X72

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
5	0.68	-131.32	-0.02	-21.09	0.00	17	0.26 H1-3a(H1-1b)	50	W24X55
6	2.58	-151.26	-0.03	27.63	-0.01	19	0.27 H1-3a(H1-1b)	50	W24X62

Level: ROOF - 129'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
146	111.25	0.00	0.00	0.63	-0.09	18	0.15 Axial	50	W12X72

Level: LEVEL 2 - 115'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
146	207.16	0.33	-0.07	-0.57	-0.01	5	0.28 H1-1a	50	W12X72



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Code Check Summary

Page 16/20

09/03/20 10:39:50

Steel Code: AISC360-16 LRFD

Frame #12:**Level: CLERESTORY-138'-6"**

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
140	11.70	-44.03	0.03	4.14	0.28	50	0.12 H1-3a(H1-1b)	50	W12X72
141	21.63	-26.89	38.12	2.60	-3.35	55	0.29 H1-1b	50	W12X72
143	15.64	-31.63	32.36	-4.42	-1.48	55	0.26 H1-1b	50	W12X72

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
3	2.07	-39.47	0.82	7.41	0.28	62	0.08 H1-3a(H1-1b)	50	W24X55
4	1.15	-44.43	1.04	-8.30	-0.33	50	0.09 H1-3a(H1-1b)	50	W24X55

Level: ROOF - 129'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
140	21.80	-14.57	-21.29	-0.02	-2.19	56	0.17 H1-1b	50	W12X72
141	38.61	5.74	-19.15	1.59	-0.47	49	0.14 H1-1b	50	W12X72
143	61.10	-8.19	-14.11	0.71	-0.58	56	0.14 H1-1b	50	W12X72

Level: LEVEL 2 - 115'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
143	203.39	-0.33	11.51	0.43	-0.63	8	0.33 H1-1a	50	W12X72

Frame #13:**Level: CLERESTORY-138'-6"**

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
133	15.63	-31.32	-20.81	4.35	0.52	68	0.20 H1-1b	50	W12X72
134	10.90	41.26	-0.01	-4.23	-0.31	62	0.11 H1-3a(H1-1b)	50	W12X72
137	13.97	21.19	-16.12	-3.03	0.71	67	0.15 H1-1b	50	W12X72

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
7	-0.38	-30.98	-0.45	7.72	-0.29	69	0.10 H1-1b	50	W24X55
8	2.80	-34.63	-1.00	-7.08	0.34	50	0.07 H1-3a(H1-1b)	50	W24X55



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Code Check Summary

Page 17/20

09/03/20 10:39:50

Steel Code: AISC360-16 LRFD

Level: ROOF - 129'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
133	41.16	18.23	12.17	-1.22	-1.01	68	0.14 H1-1b	50	W12X72
134	27.28	-1.02	48.04	-0.11	3.91	7	0.28 H1-1b	50	W12X72
137	35.53	12.27	5.32	-0.78	-0.26	72	0.08 H1-1b	50	W12X72

Level: LEVEL 2 - 115'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
133	75.05	0.00	0.00	0.22	0.38	61	0.10 Axial	50	W12X72
134	86.83	-1.52	-42.71	0.09	2.85	7	0.29 H1-1b	50	W12X72
137	134.22	0.00	0.00	0.53	0.04	8	0.18 Axial	50	W12X72

Frame #14:**Level: CLERESTORY-138'-6"**

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
117	11.89	47.33	-0.01	3.58	-0.39	62	0.12 H1-3a(H1-1b)	50	W12X72

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
13	-0.60	48.30	-0.68	8.63	-0.24	62	0.16 H1-1b	50	W24X55
14	-0.12	-28.01	0.88	-7.24	0.28	138	0.08 H1-1b	50	W24X55

Level: ROOF - 129'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
117	27.67	-2.63	53.18	-2.16	2.97	8	0.31 H1-1b	50	W12X72

Level: LEVEL 2 - 115'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
117	84.45	-2.44	-46.82	1.48	2.31	8	0.32 H1-1b	50	W12X72

Frame #15:**Level: CLERESTORY-138'-6"**

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
99	13.02	50.82	0.04	-5.23	-0.22	62	0.13 H1-3a(H1-1b)	50	W12X72



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Code Check Summary

Page 18/20

09/03/20 10:39:50

Steel Code: AISC360-16 LRFD

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
11	-0.40	55.02	1.06	9.46	0.36	62	0.19 H1-1b	50	W24X55
12	3.34	-41.94	1.17	-7.65	-0.38	50	0.09 H1-3a(H1-1b)	50	W24X55

Level: ROOF - 129'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
99	21.30	13.92	-21.70	-0.33	-2.06	50	0.17 H1-1b	50	W12X72

Level: LEVEL 2 - 115'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
99	84.37	-0.28	22.48	0.60	-1.29	8	0.18 H1-1b	50	W12X72

Frame #16:**Level: CLERESTORY-138'-6"**

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
98	22.63	-36.46	40.77	-6.30	-1.69	55	0.33 H1-1b	50	W12X72
106	39.86	70.30	0.00	-8.65	-0.04	61	0.20 H1-3a(H1-1b)	50	W12X72
114	10.23	30.34	-23.88	-4.55	1.15	67	0.21 H1-1b	50	W12X72

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
9	0.67	-127.76	-0.04	-20.91	-0.02	17	0.25 H1-3a(H1-1b)	50	W24X55
10	3.59	-154.93	-0.05	27.69	-0.02	19	0.27 H1-3a(H1-1b)	50	W24X62

Level: ROOF - 129'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
98	41.13	21.66	-17.81	2.16	0.13	55	0.18 H1-1b	50	W12X72
106	74.26	27.26	6.10	3.93	0.01	55	0.14 H1-3b	50	W12X72
114	47.25	4.97	15.08	1.06	0.83	61	0.13 H1-1b	50	W12X72

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
302	-4.07	38.34	-0.25	-6.67	-0.07	17	0.34 H1-1b	50	W16X40



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Code Check Summary

Page 19/20

09/03/20 10:39:50

Steel Code: AISC360-16 LRFD

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
13	36.55	0.00	0.00	-0.00	-0.00	49	0.28 Axial	36	HSS6X6X5/16
14	34.91	0.00	0.00	0.00	-0.00	61	0.27 Axial	36	HSS6X6X5/16

Level: LEVEL 2 - 115'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
98	103.81	0.00	0.00	-0.17	-0.01	6	0.14 Axial	50	W12X72
106	115.42	0.00	0.00	-0.74	-0.02	25	0.16 Axial	50	W12X72
114	65.77	-11.58	-5.61	1.07	0.19	67	0.10 H1-1b	50	W12X72

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
302	-0.93	31.72	0.01	-13.77	0.00	11	0.13 H1-1b	50	W18X35

Brace #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
13	66.16	0.00	0.00	0.00	-0.00	61	0.53 Axial	36	HSS6X6X5/16
14	65.71	0.00	0.00	0.00	0.00	49	0.52 Axial	36	HSS6X6X5/16

Frame #17:**Level: CLERESTORY-138'-6"**

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
100	20.60	18.27	36.93	2.81	-0.97	56	0.26 H1-1b	50	W12X72
107	40.09	48.40	-0.00	-4.17	0.24	61	0.14 H1-3a(H1-1b)	50	W12X72
118	9.78	-24.74	-17.08	2.38	1.70	68	0.16 H1-1b	50	W12X72

Beam #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
15	2.85	-150.81	0.18	27.56	-0.08	19	0.27 H1-3a(H1-1b)	50	W24X62
16	0.81	-131.24	0.18	-21.03	0.07	17	0.26 H1-3a(H1-1b)	50	W24X55

Level: ROOF - 129'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
100	58.42	20.70	-14.22	1.74	-1.19	50	0.17 H1-1b	50	W12X72
107	117.60	0.00	0.00	-1.24	-1.15	17	0.15 Axial	50	W12X72
118	40.23	-37.89	1.71	-3.47	0.11	62	0.12 H1-3a(H1-1b)	50	W12X72



RAM Structural System



Code Check Summary

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 20/20

09/03/20 10:39:50

Steel Code: AISC360-16 LRFD

Level: LEVEL 2 - 115'-0"

Col. #	Pu kip	Mux kip-ft	Muy kip-ft	Vux kip	Vuy kip	LC	Interact.	Fy ksi	Size
100	256.49	0.23	13.23	-1.06	-0.43	5	0.41 H1-1a	50	W12X72
107	210.08	-1.94	-1.70	0.66	0.52	8	0.30 H1-1a	50	W12X72
118	150.47	-3.85	-2.51	1.92	0.11	8	0.23 H1-1a	50	W12X72



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

09/03/20 10:39:50

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

STEEL COLUMN INFORMATION:

Column Number: 91**Frame Number: 0**

Level Top: ROOF - 129'-0"

Column Line (0.00,-228.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 2/349

09/03/20 10:39:50

Minor:

0.00

0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	25.20	0.00	0.03	0.10	0.04	0.01
LC:	Sp	Sp	W2	W12	W11	W6
Max @ B:	25.20	1.22	0.64	0.10	0.04	0.01
LC:	Sp	W12	W11	W12	W11	W6
Maximum:	25.20	1.22	0.64	0.10	0.04	0.01
LC:	Sp	W12	W11	W12	W11	W6
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 3/349

09/03/20 10:39:50

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
Min @ T:	-0.00	-0.00	-0.02	-0.11	-0.13	-0.01
LC:	W6	W6	W8	W2	W10	W12
Min @ B:	-0.00	-1.35	-3.37	-0.11	-0.13	-0.01
LC:	W6	W2	W4	W2	W10	W12
Minimum:	-0.00	-1.35	-3.37	-0.11	-0.13	-0.01
LC:	W6	W2	W4	W2	W10	W12
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 4/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 135**Frame Number: 0**

Level Top: ROOF - 129'-0"

Column Line (85.00,-58.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W8X35

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 5/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	14.28	0.00	0.00	0.02	0.01	0.00
LC:	D	Lp	W1	W1	W6	W7
Max @ B:	14.28	0.56	0.16	0.02	0.01	0.00
LC:	D	W7	W6	W1	W6	W7
Maximum:	14.28	0.56	0.16	0.02	0.01	0.00
LC:	D	W7	W6	W1	W6	W7
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00
Min @ T:	-0.00	-0.00	-0.00	-0.01	-0.04	-0.00
LC:	W1	W2	W6	E4	D	E4
Min @ B:	-0.00	-0.26	-1.45	-0.01	-0.04	-0.00
LC:	W1	W12	W1	E4	D	E4
Minimum:	-0.00	-0.26	-1.45	-0.01	-0.04	-0.00
LC:	W1	W12	W1	E4	D	E4
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 6/349

09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 197

Level: ROOF - 129'-0"

Fy (ksi) = 50.00

Length (ft) = 31.00

Elastic Modulus (ksi) = 29000

Frame Number: 0

I-End (85.00,-58.00)

J-End (85.00,-27.00)

Beam Size = W21X44

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 7/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	5.45	0.00	-0.00	7.49	0.01	0.00
LC:	W2	D	D	D	W3	W6
Max @ j:	20.29	-0.00	0.00	0.00	0.02	0.00
LC:	W2	D	D	W1	W2	W6
Maximum:	20.29	67.88	0.43	7.49	0.13	0.00
LC:	W2	D	W8	D	W2	W6
@ (ft):	27.12	14.21	11.63	0.00	11.63	0.00
Min @ i:	-3.69	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W8	D	D	W8	W6	W1
Min @ j:	-15.02	-0.00	0.00	-7.72	-0.02	-0.00
LC:	W8	D	D	D	W8	W1
Minimum:	-15.02	-0.00	-0.50	-7.72	-0.24	-0.00
LC:	W8	D	W8	D	W8	W1
@ (ft):	27.12	31.00	15.50	31.00	11.63	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 8/349

09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 210

Level: ROOF - 129'-0"

Fy (ksi) = 50.00

Length (ft) = 33.00

Elastic Modulus (ksi) = 29000

Frame Number: 0

I-End (118.00,-39.00)

J-End (151.00,-39.00)

Beam Size = W21X44

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 9/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	-0.00	0.00	-0.00	3.62	0.02	0.00
LC:	Ln	D	D	D	W8	W11
Max @ j:	0.78	-0.00	0.00	0.00	0.01	0.00
LC:	W5	D	D	W1	D	W11
Maximum:	1.04	29.84	0.75	3.62	0.24	0.00
LC:	W5	D	W1	D	W7	W11
@ (ft):	19.80	16.50	29.70	0.00	26.40	29.70
Min @ i:	-12.03	0.00	-0.00	-0.00	-0.02	-0.00
LC:	W1	D	D	W5	W7	W10
Min @ j:	-8.01	-0.00	0.00	-3.62	-0.23	-0.00
LC:	W1	D	D	D	W1	W10
Minimum:	-12.03	-0.00	-0.35	-3.62	-0.23	-0.00
LC:	W1	W1	W7	D	W1	W10
@ (ft):	0.00	29.70	26.40	33.00	29.70	29.70



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 10/349

09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 246

Level: ROOF - 129'-0"

Fy (ksi) = 50.00

Length (ft) = 33.00

Elastic Modulus (ksi) = 29000

Frame Number: 0

I-End (118.00,-113.00)

J-End (151.00,-113.00)

Beam Size = W16X26

INPUT PARAMETERS:

Fixity Major Axis:

Minor Axis:

Torsion:

Rigid End Zone (in):

I-End

Pin

Pin

Fix

0.00

J-End

Pin

Pin

Fix

0.00 (Ignore)

Member Force Output:

P-Delta: Yes

Ground Level: Base

At Face of Joint

Scale Factor: 1.00

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 11/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	1.28	0.00	-0.00	2.52	0.01	0.00
LC:	D	D	D	D	W6	W2
Max @ j:	1.31	-0.00	0.00	0.00	0.10	0.00
LC:	W5	D	D	W1	W2	W2
Maximum:	1.31	20.82	0.30	2.52	0.10	0.00
LC:	W5	D	W8	D	W2	W2
@ (ft):	29.70	16.50	29.70	0.00	29.70	0.00
Min @ i:	-13.67	0.00	-0.00	0.00	-0.00	-0.00
LC:	W1	D	D	Ln	W3	W8
Min @ j:	-3.77	-0.00	0.00	-2.52	-0.09	-0.00
LC:	W8	D	D	D	W8	W8
Minimum:	-13.67	-0.00	-0.33	-2.52	-0.09	-0.00
LC:	W1	W1	W2	D	W8	W8
@ (ft):	0.00	29.70	29.70	33.00	29.70	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 12/349

09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 277

Level: ROOF - 129'-0"

Fy (ksi) = 50.00

Length (ft) = 33.00

Elastic Modulus (ksi) = 29000

Frame Number: 0

I-End (118.00,-228.00)

J-End (151.00,-228.00)

Beam Size = W21X44

INPUT PARAMETERS:

Fixity Major Axis:

Minor Axis:

Torsion:

Rigid End Zone (in):

I-End

Pin

Pin

Fix

0.00

J-End

Pin

Pin

Fix

0.00 (Ignore)

Member Force Output:

P-Delta: Yes

Ground Level: Base

At Face of Joint

Scale Factor: 1.00

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 13/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	7.83	0.00	-0.00	0.00	0.02	25.97
LC:	W2	D	D	W10	W11	Sp
Max @ j:	3.78	-0.00	0.00	0.00	0.17	20.35
LC:	W2	D	D	W2	W5	Sp
Maximum:	7.89	29.78	0.43	3.64	0.17	26.85
LC:	W2	Sp	W6	Sp	W5	Sp
@ (ft):	3.30	19.80	29.70	3.30	29.70	3.30
Min @ i:	-13.66	0.00	-0.00	-1.00	-0.09	-0.00
LC:	W12	D	D	Sp	Sp	W8
Min @ j:	-4.95	-0.00	0.00	-7.32	-0.10	-0.00
LC:	W8	D	D	Sp	W6	W8
Minimum:	-13.66	-4.55	-0.56	-7.32	-0.21	-0.00
LC:	W12	Sp	W5	Sp	W12	W8
@ (ft):	0.00	3.30	29.70	33.00	26.40	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 14/349
09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 283

Level: ROOF - 129'-0"

Fy (ksi) = 50.00

Length (ft) = 35.00

Elastic Modulus (ksi) = 29000

Frame Number: 0

I-End (0.00,-228.00)

J-End (0.00,-193.00)

Beam Size = W30X124

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 15/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	1.22	0.00	-0.00	19.97	0.29	0.02
LC:	W6	D	D	Sp	W12	W8
Max @ j:	8.64	-0.00	0.00	0.00	0.85	0.02
LC:	W6	D	D	W6	W4	W8
Maximum:	8.64	173.36	3.14	19.97	0.85	0.02
LC:	W6	D	W3	Sp	W4	W8
@ (ft):	31.50	16.86	31.50	0.00	31.50	31.50
Min @ i:	-1.04	0.00	-0.00	-0.00	-0.28	-0.03
LC:	W12	D	D	W12	W6	W2
Min @ j:	-6.83	-0.00	0.00	-18.45	-0.90	-0.03
LC:	W12	D	D	D	W3	W2
Minimum:	-6.83	-0.00	-2.98	-18.45	-0.90	-0.03
LC:	W12	D	W4	D	W3	W2
@ (ft):	31.50	35.00	31.50	35.00	31.50	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 16/349

09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 306

Level: ROOF - 129'-0"

Fy (ksi) = 50.00

Length (ft) = 33.00

Elastic Modulus (ksi) = 29000

Frame Number: 0

I-End (118.00,-155.00)

J-End (151.00,-155.00)

Beam Size = W21X44

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 17/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	0.20	0.00	-0.00	3.62	0.05	0.00
LC:	E4	D	D	D	W2	W6
Max @ j:	-0.00	-0.00	0.00	0.00	0.24	0.00
LC:	Ln	D	D	W7	W11	W6
Maximum:	0.20	29.88	1.69	3.62	0.33	0.01
LC:	E4	D	W7	D	W7	Sp
@ (ft):	0.00	16.50	29.70	0.00	26.40	26.40
Min @ i:	-12.16	0.00	-0.00	-0.00	-0.04	-0.00
LC:	W1	D	D	W5	W8	Sp
Min @ j:	-8.49	-0.00	0.00	-3.64	-0.51	-0.01
LC:	W7	D	D	D	W7	Sp
Minimum:	-12.16	-0.00	-0.78	-3.64	-0.51	-0.01
LC:	W1	W7	W11	D	W7	Sp
@ (ft):	0.00	29.70	29.70	33.00	29.70	29.70



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 18/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 91**Frame Number: 0**

Level Top: LEVEL 2 - 115'-0"

Column Line (0.00,-228.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 19/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	81.47	2.12	0.61	0.38	0.19	0.00
LC:	D	W12	W11	W2	W7	W10
Max @ B:	81.47	4.30	1.18	0.38	0.19	0.00
LC:	D	W2	W6	W2	W7	W10
Maximum:	81.47	4.30	1.18	0.38	0.19	0.00
LC:	D	W2	W6	W2	W7	W10
@ (ft):	0.00	15.00	15.00	0.00	0.00	0.00
Min @ T:	-0.05	-2.25	-1.85	-0.35	-0.06	-0.00
LC:	W6	W2	W7	W12	W11	W11
Min @ B:	-0.05	-4.02	-1.02	-0.35	-0.06	-0.00
LC:	W6	W12	W8	W12	W11	W11
Minimum:	-0.05	-4.02	-1.85	-0.35	-0.06	-0.00
LC:	W6	W12	W7	W12	W11	W11
@ (ft):	0.00	15.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 20/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 135**Frame Number: 0**

Level Top: LEVEL 2 - 115'-0"

Column Line (85.00,-58.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W8X35

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 21/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	64.81	1.43	0.90	0.08	0.12	0.00
LC:	D	W8	W1	W2	W1	W12
Max @ B:	64.81	2.59	0.06	0.08	0.12	0.00
LC:	D	W2	W5	W2	W1	W12
Maximum:	64.81	2.59	0.90	0.08	0.12	0.00
LC:	D	W2	W1	W2	W1	W12
@ (ft):	0.00	15.00	0.00	0.00	0.00	0.00
Min @ T:	-0.52	-1.81	-0.06	-0.07	-0.06	-0.00
LC:	W1	W2	W5	W8	D	W6
Min @ B:	-0.52	-1.99	-0.87	-0.07	-0.06	-0.00
LC:	W1	W8	W1	W8	D	W6
Minimum:	-0.52	-1.99	-0.87	-0.07	-0.06	-0.00
LC:	W1	W8	W1	W8	D	W6
@ (ft):	0.00	15.00	15.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 22/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 140**Frame Number: 0**

Level Top: LEVEL 2 - 115'-0"

Column Line (151.00,-58.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 23/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	39.26	9.59	11.29	0.65	0.10	0.00
LC:	D	W5	D	W11	W7	W12
Max @ B:	39.26	-0.00	0.00	0.65	0.10	0.00
LC:	D	D	D	W11	W7	W12
Maximum:	39.26	9.59	11.29	0.65	0.10	0.00
LC:	D	W5	D	W11	W7	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-0.85	-9.78	-1.47	-0.64	-0.75	-0.00
LC:	W8	W11	W7	W5	D	W6
Min @ B:	-0.85	-0.00	0.00	-0.64	-0.75	-0.00
LC:	W8	D	D	W5	D	W6
Minimum:	-0.85	-9.78	-1.47	-0.64	-0.75	-0.00
LC:	W8	W11	W7	W5	D	W6
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 24/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 72**Frame Number: 1**

Level Top: ROOF - 129'-0"

Column Line (0.00,-58.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 25/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	20.33	0.00	0.00	0.05	0.03	0.01
LC:	D	W12	W3	W6	W2	W6
Max @ B:	20.33	0.63	0.48	0.05	0.03	0.01
LC:	D	W6	W2	W6	W2	W6
Maximum:	20.33	0.63	0.48	0.05	0.03	0.01
LC:	D	W6	W2	W6	W2	W6
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00
Min @ T:	-9.89	-0.00	-0.00	-0.04	-0.22	-0.00
LC:	W12	Sp	W4	W12	W1	W8
Min @ B:	-9.89	-0.60	-3.08	-0.04	-0.22	-0.00
LC:	W12	W12	W1	W12	W1	W8
Minimum:	-9.89	-0.60	-3.08	-0.04	-0.22	-0.00
LC:	W12	W12	W1	W12	W1	W8
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 26/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 73

Level Top: ROOF - 129'-0"

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Frame Number: 1

Column Line (0.00,-77.00)

Column Size = W8X48

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 27/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	23.64	0.00	0.00	0.01	0.00	0.01
LC:	D	W12	W4	W4	W5	W9
Max @ B:	23.64	0.33	0.13	0.01	0.00	0.01
LC:	D	W6	W5	W4	W5	W9
Maximum:	23.64	0.33	0.13	0.01	0.00	0.01
LC:	D	W6	W5	W4	W5	W9
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00
Min @ T:	-10.54	-0.00	-0.00	-0.05	-0.10	-0.01
LC:	W6	Sp	W3	D	W1	W12
Min @ B:	-10.54	-0.66	-2.84	-0.05	-0.10	-0.01
LC:	W6	D	W1	D	W1	W12
Minimum:	-10.54	-0.66	-2.84	-0.05	-0.10	-0.01
LC:	W6	D	W1	D	W1	W12
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 28/349

09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 182

Level: ROOF - 129'-0"

Fy (ksi) = 50.00

Length (ft) = 19.00

Elastic Modulus (ksi) = 29000

Frame Number: 1

I-End (0.00,-77.00)

J-End (0.00,-58.00)

Beam Size = W18X35

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 29/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	3.56	0.00	-0.00	6.27	0.13	0.00
LC:	W12	D	D	Sp	W4	W3
Max @ j:	3.24	-0.00	0.00	0.00	0.03	0.00
LC:	W6	D	D	W6	W6	W3
Maximum:	3.56	39.23	0.44	6.27	0.16	0.00
LC:	W12	Sp	W12	Sp	W6	W3
@ (ft):	0.00	9.50	3.17	0.00	6.34	15.83
Min @ i:	-2.80	0.00	-0.00	-0.00	-0.12	-0.00
LC:	D	D	D	W12	W3	W4
Min @ j:	-3.03	-0.00	0.00	-6.27	-0.05	-0.00
LC:	D	D	D	Sp	W12	W4
Minimum:	-3.03	-0.00	-0.39	-6.27	-0.19	-0.00
LC:	D	Sp	W9	Sp	W12	W4
@ (ft):	15.83	19.00	3.17	19.00	12.67	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 30/349

09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 25

Story Top: ROOF - 129'-0"

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 16.92

Elastic Modulus (ksi) = 29000

Frame Number: 1

I-End (ft): (0.00,-77.00)

J-End (ft): (0.00,-67.50)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

Fixity

Major Axis:

Minor Axis:

Torsion:

Member Force Output:

P-Delta: Yes

Ground Level: Base

Top

Pin

Pin

Pin

Bottom

Pin

Pin

Pin

At Centerline of Joint

Scale Factor: 1.00

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 31/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	12.73	0.00	-0.00	0.00	0.00	-0.00
LC:	W6	D	D	W6	W2	D
Max @ B:	12.73	-0.00	0.00	0.00	0.00	-0.00
LC:	W6	D	D	W6	W2	D
Maximum:	12.73	0.00	-0.00	0.00	0.00	-0.00
LC:	W6	D	D	W6	W2	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-11.87	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W12	D	D	W12	W1	D
Min @ B:	-11.87	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W12	D	D	W12	W1	D
Minimum:	-11.87	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W12	D	D	W12	W1	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 32/349

09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 26

Story Top: ROOF - 129'-0"
 Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 16.92

Elastic Modulus (ksi) = 29000

Frame Number: 1

I-End (ft): (0.00,-58.00)

J-End (ft): (0.00,-67.50)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 33/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	11.95	0.00	-0.00	0.00	0.00	-0.00
LC:	W12	D	D	W12	W1	D
Max @ B:	11.95	-0.00	0.00	0.00	0.00	-0.00
LC:	W12	D	D	W12	W1	D
Maximum:	11.95	0.00	-0.00	0.00	0.00	-0.00
LC:	W12	D	D	W12	W1	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-12.67	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W6	D	D	W6	W2	D
Min @ B:	-12.67	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W6	D	D	W6	W2	D
Minimum:	-12.67	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W6	D	D	W6	W2	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 34/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 72**Frame Number: 1**

Level Top: LEVEL 2 - 115'-0"

Column Line (0.00,-58.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 35/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	76.81	1.96	0.34	0.06	0.12	0.00
LC:	D	W12	W6	W2	W1	W12
Max @ B:	76.81	-0.00	0.00	0.06	0.12	0.00
LC:	D	D	D	W2	W1	W12
Maximum:	76.81	1.96	0.34	0.06	0.12	0.00
LC:	D	W12	W6	W2	W1	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-10.13	-2.07	-0.68	-0.05	-0.02	-0.00
LC:	W12	W2	W8	W12	W2	W6
Min @ B:	-10.13	-0.00	0.00	-0.05	-0.02	-0.00
LC:	W12	D	D	W12	W2	W6
Minimum:	-10.13	-2.07	-0.68	-0.05	-0.02	-0.00
LC:	W12	W2	W8	W12	W2	W6
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 36/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 73**Frame Number: 1**

Level Top: LEVEL 2 - 115'-0"

Column Line (0.00,-77.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 37/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	87.25	1.53	0.15	0.08	0.25	0.00
LC:	D	W12	W2	W12	W1	W12
Max @ B:	87.25	0.00	0.00	0.08	0.25	0.00
LC:	D	D	D	W12	W1	W12
Maximum:	87.25	1.53	0.15	0.08	0.25	0.00
LC:	D	W12	W2	W12	W1	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-10.70	-1.68	-0.59	-0.08	-0.01	-0.00
LC:	W6	W2	W1	W6	W5	W6
Min @ B:	-10.70	0.00	0.00	-0.08	-0.01	-0.00
LC:	W6	D	D	W6	W5	W6
Minimum:	-10.70	-1.68	-0.59	-0.08	-0.01	-0.00
LC:	W6	W2	W1	W6	W5	W6
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 38/349

09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 182

Level: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Length (ft) = 19.00

Elastic Modulus (ksi) = 29000

Frame Number: 1

I-End (0.00,-77.00)

J-End (0.00,-58.00)

Beam Size = W24X55

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 39/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	2.63	0.00	-0.00	2.67	0.01	0.00
LC:	W2	D	D	D	W2	Sp
Max @ j:	2.21	-0.00	0.00	1.00	0.01	0.00
LC:	W12	D	D	W6	W2	W8
Maximum:	5.21	15.89	0.08	12.85	0.06	0.00
LC:	W2	Lp	W2	D	W2	W1
@ (ft):	7.12	6.23	9.50	11.88	7.13	14.25
Min @ i:	-2.26	0.00	-0.00	-0.76	-0.01	-0.00
LC:	W12	D	D	W12	W12	W1
Min @ j:	-2.20	-0.00	0.00	-2.43	-0.01	-0.00
LC:	W2	D	D	D	W12	W2
Minimum:	-4.61	-24.84	-0.07	-13.06	-0.06	-0.00
LC:	W12	D	W12	D	W12	W1
@ (ft):	7.12	9.50	9.50	7.12	7.13	2.38



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 40/349

09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 23

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 17.76

Elastic Modulus (ksi) = 29000

Frame Number: 1

I-End (ft): (0.00,-67.50)

J-End (ft): (0.00,-77.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

Fixity

Major Axis:

Minor Axis:

Torsion:

Member Force Output:

P-Delta: Yes

Ground Level: Base

Top

Pin

Pin

Pin

At Centerline of Joint

Bottom

Pin

Pin

Pin

Scale Factor: 1.00

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 41/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	30.32	0.00	-0.00	0.00	0.00	-0.00
LC:	W12	D	D	W2	W5	D
Max @ B:	30.32	-0.00	0.00	0.00	0.00	-0.00
LC:	W12	D	D	W2	W5	D
Maximum:	30.32	0.00	-0.00	0.00	0.00	-0.00
LC:	W12	D	D	W2	W5	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-31.61	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W2	D	D	W12	W1	D
Min @ B:	-31.61	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W2	D	D	W12	W1	D
Minimum:	-31.61	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W2	D	D	W12	W1	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 42/349

09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 24

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 17.76

Elastic Modulus (ksi) = 29000

Frame Number: 1

I-End (ft): (0.00,-67.50)

J-End (ft): (0.00,-58.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

Fixity

Major Axis:

Minor Axis:

Torsion:

Member Force Output:

P-Delta: Yes

Ground Level: Base

Top

Pin

Pin

Pin

At Centerline of Joint

Bottom

Pin

Pin

Pin

Scale Factor: 1.00

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 43/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	31.59	0.00	-0.00	0.00	0.00	-0.00
LC:	W2	D	D	W12	W1	D
Max @ B:	31.59	-0.00	0.00	0.00	0.00	-0.00
LC:	W2	D	D	W12	W1	D
Maximum:	31.59	0.00	-0.00	0.00	0.00	-0.00
LC:	W2	D	D	W12	W1	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-30.16	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W12	D	D	W2	W5	D
Min @ B:	-30.16	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W12	D	D	W2	W5	D
Minimum:	-30.16	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W12	D	D	W2	W5	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 44/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 89**Frame Number: 2**

Level Top: ROOF - 129'-0"

Column Line (0.00,-174.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 45/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	19.47	0.00	0.00	0.04	0.02	0.01
LC:	D	W12	W11	W6	W2	W2
Max @ B:	19.47	0.84	0.64	0.04	0.02	0.01
LC:	D	W6	W2	W6	W2	W2
Maximum:	19.47	0.84	0.64	0.04	0.02	0.01
LC:	D	W6	W2	W6	W2	W2
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00
Min @ T:	-11.00	-0.00	-0.01	-0.03	-0.10	-0.01
LC:	W12	Sp	Sp	W12	W1	W11
Min @ B:	-11.00	-0.67	-3.34	-0.03	-0.10	-0.01
LC:	W12	W12	W1	W12	W1	W11
Minimum:	-11.00	-0.67	-3.34	-0.03	-0.10	-0.01
LC:	W12	W12	W1	W12	W1	W11
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 46/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 90**Frame Number: 2**

Level Top: ROOF - 129'-0"

Column Line (0.00,-193.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 47/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	22.31	0.00	0.02	0.04	0.01	0.01
LC:	D	Sp	W8	W6	W6	W9
Max @ B:	22.31	0.59	0.11	0.04	0.01	0.01
LC:	D	W6	W6	W6	W6	W9
Maximum:	22.31	0.59	0.11	0.04	0.01	0.01
LC:	D	W6	W6	W6	W6	W9
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00
Min @ T:	-12.99	-0.00	-0.03	-0.03	-0.26	-0.01
LC:	W6	W6	W2	D	W4	W12
Min @ B:	-12.99	-0.44	-3.62	-0.03	-0.26	-0.01
LC:	W6	D	W4	D	W4	W12
Minimum:	-12.99	-0.44	-3.62	-0.03	-0.26	-0.01
LC:	W6	D	W4	D	W4	W12
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 48/349
09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 282

Level: ROOF - 129'-0"

Fy (ksi) = 50.00

Length (ft) = 19.00

Elastic Modulus (ksi) = 29000

Frame Number: 2

I-End (0.00,-193.00)

J-End (0.00,-174.00)

Beam Size = W18X35

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 49/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	0.62	0.00	-0.00	6.27	0.27	0.00
LC:	W6	D	D	Sp	W4	Sp
Max @ j:	5.48	-0.00	0.00	0.00	0.04	0.00
LC:	W6	D	D	W6	W9	W11
Maximum:	5.48	39.23	0.87	6.27	0.27	0.00
LC:	W6	Sp	W4	Sp	W4	Sp
@ (ft):	15.83	9.50	3.17	0.00	0.00	0.00
Min @ i:	-3.62	0.00	-0.00	-0.00	-0.28	-0.00
LC:	D	D	D	W12	W3	W2
Min @ j:	-4.14	-0.00	0.00	-6.27	-0.05	-0.00
LC:	W12	D	D	Sp	W12	Sp
Minimum:	-4.14	-0.00	-0.89	-6.27	-0.28	-0.00
LC:	W12	W6	W3	Sp	W3	Sp
@ (ft):	15.83	15.84	3.17	19.00	0.00	15.83



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 50/349

09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 23

Story Top: ROOF - 129'-0"

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 16.92

Elastic Modulus (ksi) = 29000

Frame Number: 2

I-End (ft): (0.00,-193.00)

J-End (ft): (0.00,-183.50)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 51/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	15.70	0.00	-0.00	0.00	0.00	-0.00
LC:	W6	D	D	W12	W4	D
Max @ B:	15.70	-0.00	0.00	0.00	0.00	-0.00
LC:	W6	D	D	W12	W4	D
Maximum:	15.70	0.00	-0.00	0.00	0.00	-0.00
LC:	W6	D	D	W12	W4	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-12.73	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W12	D	D	W6	W6	D
Min @ B:	-12.73	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W12	D	D	W6	W6	D
Minimum:	-12.73	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W12	D	D	W6	W6	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 52/349

09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 24

Story Top: ROOF - 129'-0"

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 16.92

Elastic Modulus (ksi) = 29000

Frame Number: 2

I-End (ft): (0.00,-174.00)

J-End (ft): (0.00,-183.50)

Brace Size = HSS5X5X3/8

INPUT PARAMETERS:

Fixity

Major Axis:

Minor Axis:

Torsion:

Member Force Output:

P-Delta: Yes

Ground Level: Base

Top

Pin

Pin

Pin

Bottom

Pin

Pin

Pin

At Centerline of Joint

Scale Factor: 1.00

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 53/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	13.30	0.00	-0.00	0.00	0.00	-0.00
LC:	W12	D	D	W6	W6	D
Max @ B:	13.30	-0.00	0.00	0.00	0.00	-0.00
LC:	W12	D	D	W6	W6	D
Maximum:	13.30	0.00	-0.00	0.00	0.00	-0.00
LC:	W12	D	D	W6	W6	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-16.33	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W6	D	D	W12	W1	D
Min @ B:	-16.33	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W6	D	D	W12	W1	D
Minimum:	-16.33	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W6	D	D	W12	W1	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 54/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 89**Frame Number: 2**

Level Top: LEVEL 2 - 115'-0"

Column Line (0.00,-174.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 55/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	75.69	1.76	0.16	0.04	0.25	0.00
LC:	D	W12	D	W12	W1	W12
Max @ B:	75.69	-0.00	0.00	0.04	0.25	0.00
LC:	D	D	D	W12	W1	W12
Maximum:	75.69	1.76	0.16	0.04	0.25	0.00
LC:	D	W12	D	W12	W1	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-11.24	-1.84	-0.68	-0.06	-0.04	-0.00
LC:	W12	W2	W4	W6	W6	W9
Min @ B:	-11.24	-0.00	0.00	-0.06	-0.04	-0.00
LC:	W12	D	D	W6	W6	W9
Minimum:	-11.24	-1.84	-0.68	-0.06	-0.04	-0.00
LC:	W12	W2	W4	W6	W6	W9
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 56/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 90**Frame Number: 2**

Level Top: LEVEL 2 - 115'-0"

Column Line (0.00,-193.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 57/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	84.34	1.48	0.14	0.05	0.15	0.00
LC:	D	W12	D	W2	W4	W12
Max @ B:	84.34	0.00	0.00	0.05	0.15	0.00
LC:	D	D	D	W2	W4	W12
Maximum:	84.34	1.48	0.14	0.05	0.15	0.00
LC:	D	W12	D	W2	W4	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-13.12	-1.66	-1.18	-0.04	-0.01	-0.00
LC:	W6	W2	W4	W12	D	W9
Min @ B:	-13.12	0.00	0.00	-0.04	-0.01	-0.00
LC:	W6	D	D	W12	D	W9
Minimum:	-13.12	-1.66	-1.18	-0.04	-0.01	-0.00
LC:	W6	W2	W4	W12	D	W9
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 58/349

09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 282

Level: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Length (ft) = 19.00

Elastic Modulus (ksi) = 29000

Frame Number: 2

I-End (0.00,-193.00)

J-End (0.00,-174.00)

Beam Size = W24X55

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 59/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	2.55	0.00	-0.00	2.62	0.01	0.00
LC:	W2	D	D	D	W2	Sp
Max @ j:	2.52	-0.00	0.00	1.06	0.01	0.00
LC:	W12	D	D	W6	W2	W8
Maximum:	5.09	14.13	0.08	12.99	0.07	0.00
LC:	W2	D	W2	D	W2	W1
@ (ft):	7.12	6.23	9.50	11.88	7.13	14.25
Min @ i:	-2.37	0.00	-0.00	-0.65	-0.01	-0.00
LC:	W12	D	D	W12	W12	W4
Min @ j:	-2.68	-0.00	0.00	-2.35	-0.01	-0.00
LC:	W2	D	D	D	W12	W2
Minimum:	-5.19	-26.33	-0.08	-13.23	-0.07	-0.00
LC:	W2	D	W2	D	W12	W4
@ (ft):	9.50	9.50	7.13	7.12	7.13	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 60/349

09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 25

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 17.76

Elastic Modulus (ksi) = 29000

Frame Number: 2

I-End (ft): (0.00,-183.50)

J-End (ft): (0.00,-193.00)

Brace Size = HSS5X5X3/8

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 61/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	34.02	0.00	-0.00	0.00	0.00	-0.00
LC:	W12	D	D	W12	W1	D
Max @ B:	34.02	-0.00	0.00	0.00	0.00	-0.00
LC:	W12	D	D	W12	W1	D
Maximum:	34.02	0.00	-0.00	0.00	0.00	-0.00
LC:	W12	D	D	W12	W1	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-37.07	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W6	D	D	W6	W6	D
Min @ B:	-37.07	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W6	D	D	W6	W6	D
Minimum:	-37.07	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W6	D	D	W6	W6	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 62/349

09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 26

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 17.76

Elastic Modulus (ksi) = 29000

Frame Number: 2

I-End (ft): (0.00,-183.50)

J-End (ft): (0.00,-174.00)

Brace Size = HSS5X5X3/8

INPUT PARAMETERS:

Fixity

Major Axis:

Minor Axis:

Torsion:

Member Force Output:

P-Delta: Yes

Ground Level: Base

Top

Pin

Pin

Pin

Bottom

Pin

Pin

Pin

At Centerline of Joint

Scale Factor: 1.00

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 63/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	36.42	0.00	-0.00	0.00	0.00	-0.00
LC:	W6	D	D	W6	W6	D
Max @ B:	36.42	-0.00	0.00	0.00	0.00	-0.00
LC:	W6	D	D	W6	W6	D
Maximum:	36.42	0.00	-0.00	0.00	0.00	-0.00
LC:	W6	D	D	W6	W6	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-33.40	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W12	D	D	W12	W1	D
Min @ B:	-33.40	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W12	D	D	W12	W1	D
Minimum:	-33.40	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W12	D	D	W12	W1	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 64/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 67**Frame Number: 3**

Level Top: ROOF - 129'-0"

Column Line (180.75,-77.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 65/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	15.76	0.00	0.01	0.13	0.01	0.01
LC:	D	W8	W10	D	D	W11
Max @ B:	15.76	1.84	0.07	0.13	0.01	0.01
LC:	D	D	W6	D	D	W11
Maximum:	15.76	1.84	0.07	0.13	0.01	0.01
LC:	D	D	W6	D	D	W11
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00
Min @ T:	-8.21	-0.00	-0.00	-0.02	-0.06	-0.01
LC:	W11	Sp	W11	W7	W1	W5
Min @ B:	-8.21	-0.28	-2.49	-0.02	-0.06	-0.01
LC:	W11	W11	W1	W7	W1	W5
Minimum:	-8.21	-0.28	-2.49	-0.02	-0.06	-0.01
LC:	W11	W11	W1	W7	W1	W5
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 66/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 68Level Top: ROOF - 129'-0"
Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Frame Number: 3

Column Line (180.75,-113.00)

Column Size = W8X48

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output: At Face of Joint
P-Delta: Yes Scale Factor: 1.00
Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 67/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	22.94	0.01	0.00	0.00	0.02	0.00
LC:	D	Sp	W11	NR2	W5	W11
Max @ B:	22.94	0.00	0.21	0.00	0.02	0.00
LC:	D	NR2	W5	NR2	W5	W11
Maximum:	22.94	0.01	0.21	0.00	0.02	0.00
LC:	D	Sp	W5	NR2	W5	W11
@ (ft):	0.00	0.00	14.00	0.00	0.00	0.00
Min @ T:	-8.23	-0.00	-0.01	-0.09	-0.09	-0.01
LC:	W5	W5	W10	D	W1	W5
Min @ B:	-8.23	-1.27	-1.21	-0.09	-0.09	-0.01
LC:	W5	D	W1	D	W1	W5
Minimum:	-8.23	-1.27	-1.21	-0.09	-0.09	-0.01
LC:	W5	D	W1	D	W1	W5
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 68/349
09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 239

Level: ROOF - 129'-0"

Fy (ksi) = 50.00

Length (ft) = 36.00

Elastic Modulus (ksi) = 29000

Frame Number: 3

I-End (180.75,-113.00)

J-End (180.75,-77.00)

Beam Size = W27X84

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 69/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	8.11	0.00	-0.00	10.82	0.01	0.01
LC:	W11	D	D	Sp	D	W10
Max @ j:	5.45	-0.00	0.00	0.00	0.21	0.01
LC:	Lp	D	D	W2	W4	W10
Maximum:	8.11	110.56	2.58	10.82	0.58	0.01
LC:	W11	Sp	W11	Sp	W11	W10
@ (ft):	0.00	18.33	28.80	0.00	25.20	32.40
Min @ i:	-8.35	0.00	-0.00	0.00	-0.01	-0.01
LC:	W5	D	D	Ln	W4	D
Min @ j:	-3.10	-0.00	0.00	-10.85	-0.26	-0.00
LC:	W8	D	D	Sp	W3	W11
Minimum:	-8.35	-0.00	-2.52	-10.85	-0.56	-0.01
LC:	W5	Sp	W10	Sp	W10	D
@ (ft):	0.00	36.00	28.80	36.00	25.20	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 70/349
09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 15Story Top: ROOF - 129'-0"
Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 22.80

Elastic Modulus (ksi) = 29000

Frame Number: 3

I-End (ft): (180.75,-113.00)

J-End (ft): (180.75,-95.00)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 71/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	13.41	0.00	-0.00	0.00	0.00	-0.00
LC:	W5	D	D	W11	W1	D
Max @ B:	13.41	-0.00	0.00	0.00	0.00	-0.00
LC:	W5	D	D	W11	W1	D
Maximum:	13.41	0.00	-0.00	0.00	0.00	-0.00
LC:	W5	D	D	W11	W1	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-12.82	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W11	D	D	W5	W2	D
Min @ B:	-12.82	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W11	D	D	W5	W2	D
Minimum:	-12.82	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W11	D	D	W5	W2	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 72/349

09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 16

Story Top: ROOF - 129'-0"
 Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 22.80

Elastic Modulus (ksi) = 29000

Frame Number: 3

I-End (ft): (180.75,-77.00)

J-End (ft): (180.75,-95.00)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 73/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	13.38	0.00	-0.00	0.00	0.00	-0.00
LC:	W11	D	D	D	D	D
Max @ B:	13.38	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W11	D	D	D	D	D
Maximum:	13.38	0.00	-0.00	0.00	0.00	-0.00
LC:	W11	D	D	D	D	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-14.03	0.00	-0.00	0.00	0.00	-0.00
LC:	W5	D	D	D	D	D
Min @ B:	-14.03	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W5	D	D	D	D	D
Minimum:	-14.03	0.00	-0.00	0.00	0.00	-0.00
LC:	W5	D	D	D	D	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 74/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 67**Frame Number: 3**

Level Top: LEVEL 2 - 115'-0"

Column Line (180.75,-77.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 75/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	42.32	0.90	0.31	0.11	0.13	0.00
LC:	D	W11	W11	D	W1	W12
Max @ B:	42.32	-0.00	0.00	0.11	0.13	0.00
LC:	D	D	D	D	W1	W12
Maximum:	42.32	0.90	0.31	0.11	0.13	0.00
LC:	D	W11	W11	D	W1	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-8.11	-1.66	-0.23	-0.02	0.00	-0.00
LC:	W11	D	W5	W5	Ln	W6
Min @ B:	-8.11	-0.00	0.00	-0.02	0.00	-0.00
LC:	W11	D	D	W5	Ln	W6
Minimum:	-8.11	-1.66	-0.23	-0.02	0.00	-0.00
LC:	W11	D	W5	W5	Ln	W6
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 76/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 68**Frame Number: 3**

Level Top: LEVEL 2 - 115'-0"

Column Line (180.75,-113.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 77/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	35.39	1.26	0.13	0.07	0.02	0.00
LC:	D	D	W5	W2	W8	W12
Max @ B:	35.39	0.00	0.00	0.07	0.02	0.00
LC:	D	D	D	W2	W8	W12
Maximum:	35.39	1.26	0.13	0.07	0.02	0.00
LC:	D	D	W5	W2	W8	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-8.28	-1.08	-0.22	-0.08	-0.01	-0.00
LC:	W5	W2	W11	D	W5	W6
Min @ B:	-8.28	0.00	0.00	-0.08	-0.01	-0.00
LC:	W5	D	D	D	W5	W6
Minimum:	-8.28	-1.08	-0.22	-0.08	-0.01	-0.00
LC:	W5	W2	W11	D	W5	W6
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 78/349

09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 239

Level: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Length (ft) = 36.00

Elastic Modulus (ksi) = 29000

Frame Number: 3

I-End (180.75,-113.00)

J-End (180.75,-77.00)

Beam Size = W24X55

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 79/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	0.41	0.00	-0.00	4.40	0.00	0.00
LC:	W5	D	D	D	W11	D
Max @ j:	1.94	-0.00	0.00	0.38	0.00	0.01
LC:	W11	D	D	W2	W11	W1
Maximum:	4.20	31.67	0.06	12.60	0.02	0.01
LC:	W11	Lp	W2	Lp	W11	W1
@ (ft):	18.00	7.33	15.00	21.00	15.00	33.00
Min @ i:	-0.19	0.00	-0.00	-0.25	-0.00	-0.01
LC:	W11	D	D	W11	W7	W1
Min @ j:	-4.42	-0.00	0.00	-4.01	-0.01	-0.00
LC:	W7	D	D	D	W7	D
Minimum:	-7.44	-41.61	-0.06	-12.71	-0.03	-0.01
LC:	W2	D	W2	Lp	W2	W1
@ (ft):	18.00	18.00	15.00	15.00	15.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 80/349

09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 17

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 23.43

Elastic Modulus (ksi) = 29000

Frame Number: 3

I-End (ft): (180.75,-95.00)

J-End (ft): (180.75,-113.00)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 81/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	24.39	0.00	-0.00	0.00	0.00	-0.00
LC:	W11	D	D	W11	W1	D
Max @ B:	24.39	-0.00	0.00	0.00	0.00	-0.00
LC:	W11	D	D	W11	W1	D
Maximum:	24.39	0.00	-0.00	0.00	0.00	-0.00
LC:	W11	D	D	W11	W1	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-30.97	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W2	D	D	W2	W5	D
Min @ B:	-30.97	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W2	D	D	W2	W5	D
Minimum:	-30.97	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W2	D	D	W2	W5	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 82/349

09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 18

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 23.43

Elastic Modulus (ksi) = 29000

Frame Number: 3

I-End (ft): (180.75,-95.00)

J-End (ft): (180.75,-77.00)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

Fixity

Major Axis:

Minor Axis:

Torsion:

Member Force Output:

P-Delta: Yes

Ground Level: Base

Top

Pin

Pin

Pin

Bottom

Pin

Pin

Pin

At Centerline of Joint

Scale Factor: 1.00

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 83/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	30.51	0.00	-0.00	0.00	0.00	-0.00
LC:	W2	D	D	D	D	D
Max @ B:	30.51	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W2	D	D	D	D	D
Maximum:	30.51	0.00	-0.00	0.00	0.00	-0.00
LC:	W2	D	D	D	D	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-23.90	0.00	-0.00	0.00	0.00	-0.00
LC:	W11	D	D	D	D	D
Min @ B:	-23.90	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W11	D	D	D	D	D
Minimum:	-23.90	0.00	-0.00	0.00	0.00	-0.00
LC:	W11	D	D	D	D	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 84/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 95**Frame Number: 4**

Level Top: ROOF - 129'-0"

Column Line (118.00,-113.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 85/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	21.20	0.00	0.00	0.29	-0.00	0.00
LC:	D	W6	W1	W2	Ln	D
Max @ B:	21.20	4.00	-0.00	0.29	-0.00	0.00
LC:	D	W2	Ln	W2	Ln	D
Maximum:	21.20	4.00	0.00	0.29	-0.00	0.00
LC:	D	W2	W1	W2	Ln	D
@ (ft):	0.00	14.00	0.00	0.00	0.00	0.00
Min @ T:	0.00	-0.00	-0.00	-0.19	-0.05	-0.00
LC:	Ln	W5	D	W8	W1	W7
Min @ B:	0.00	-2.62	-0.63	-0.19	-0.05	-0.00
LC:	Ln	W8	W1	W8	W1	W7
Minimum:	0.00	-2.62	-0.63	-0.19	-0.05	-0.00
LC:	Ln	W8	W1	W8	W1	W7
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 86/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:**Column Number: 151****Frame Number: 4**

Level Top: ROOF - 129'-0"

Column Line (95.00,-113.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 87/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	6.14	0.00	0.00	0.36	0.01	0.00
LC:	D	W12	Sp	W2	D	W12
Max @ B:	6.14	5.09	0.12	0.36	0.01	0.00
LC:	D	W2	D	W2	D	W12
Maximum:	6.14	5.09	0.12	0.36	0.01	0.00
LC:	D	W2	D	W2	D	W12
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00
Min @ T:	-18.30	-0.00	0.00	-0.22	-0.05	-0.00
LC:	W1	W6	Ln	W8	W1	W7
Min @ B:	-18.30	-3.05	-0.65	-0.22	-0.05	-0.00
LC:	W1	W8	W1	W8	W1	W7
Minimum:	-18.30	-3.05	-0.65	-0.22	-0.05	-0.00
LC:	W1	W8	W1	W8	W1	W7
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 88/349

09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 547

Level: ROOF - 129'-0"

Fy (ksi) = 50.00

Length (ft) = 23.00

Elastic Modulus (ksi) = 29000

Frame Number: 4

I-End (95.00,-113.00)

J-End (118.00,-113.00)

Beam Size = W16X40

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 89/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	-0.00	0.00	-0.00	1.92	0.01	0.00
LC:	Ln	D	D	D	W8	W6
Max @ j:	0.48	-0.00	0.00	0.00	0.03	0.00
LC:	W12	D	D	W1	W2	W6
Maximum:	0.48	11.04	0.11	1.92	0.06	0.00
LC:	W12	D	W8	D	W6	W6
@ (ft):	19.17	11.50	15.34	0.00	11.50	0.00
Min @ i:	-9.18	0.00	-0.00	0.00	-0.02	-0.00
LC:	W1	D	D	Ln	W7	W12
Min @ j:	-4.25	-0.00	0.00	-1.92	-0.02	-0.00
LC:	D	D	D	D	W8	W12
Minimum:	-9.18	-0.00	-0.15	-1.92	-0.04	-0.00
LC:	W1	D	W6	D	W8	W12
@ (ft):	0.00	23.00	15.34	23.00	11.50	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 90/349

09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 11

Story Top: ROOF - 129'-0"
 Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 18.12

Elastic Modulus (ksi) = 29000

Frame Number: 4

I-End (ft): (95.00,-113.00)

J-End (ft): (106.50,-113.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 91/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	23.69	0.00	-0.00	0.00	0.00	-0.00
LC:	W1	D	D	W1	W2	D
Max @ B:	23.69	-0.00	0.00	0.00	0.00	-0.00
LC:	W1	D	D	W1	W2	D
Maximum:	23.69	0.00	-0.00	0.00	0.00	-0.00
LC:	W1	D	D	W1	W2	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	0.00	0.00	-0.00	0.00	-0.00	-0.00
LC:	Ln	D	D	Ln	W8	D
Min @ B:	0.00	-0.00	0.00	0.00	-0.00	-0.00
LC:	Ln	D	D	Ln	W8	D
Minimum:	0.00	0.00	-0.00	0.00	-0.00	-0.00
LC:	Ln	D	D	Ln	W8	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 92/349

09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 12

Story Top: ROOF - 129'-0"

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 18.12

Elastic Modulus (ksi) = 29000

Frame Number: 4

I-End (ft): (118.00,-113.00)

J-End (ft): (106.50,-113.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 93/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	9.04	0.00	-0.00	-0.00	0.00	-0.00
LC:	D	D	D	Ln	W8	D
Max @ B:	9.04	-0.00	0.00	-0.00	0.00	-0.00
LC:	D	D	D	Ln	W8	D
Maximum:	9.04	0.00	-0.00	-0.00	0.00	-0.00
LC:	D	D	D	Ln	W8	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-24.32	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W1	D	D	W1	W2	D
Min @ B:	-24.32	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W1	D	D	W1	W2	D
Minimum:	-24.32	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W1	D	D	W1	W2	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 94/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 95**Frame Number: 4**

Level Top: LEVEL 2 - 115'-0"

Column Line (118.00,-113.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 95/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	121.40	0.81	0.71	0.05	0.01	0.00
LC:	D	W2	W1	W8	D	W12
Max @ B:	121.40	-0.00	0.00	0.05	0.01	0.00
LC:	D	D	D	W8	D	W12
Maximum:	121.40	0.81	0.71	0.05	0.01	0.00
LC:	D	W2	W1	W8	D	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	0.00	-0.40	-0.08	-0.08	-0.01	-0.00
LC:	Ln	W8	D	W2	W1	W9
Min @ B:	0.00	-0.00	0.00	-0.08	-0.01	-0.00
LC:	Ln	D	D	W2	W1	W9
Minimum:	0.00	-0.40	-0.08	-0.08	-0.01	-0.00
LC:	Ln	W8	D	W2	W1	W9
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 96/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 152**Frame Number: 4**

Level Top: LEVEL 2 - 115'-0"

Column Line (95.00,-113.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 97/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	40.07	1.17	0.48	0.20	0.24	0.00
LC:	D	W2	W1	W8	W1	W12
Max @ B:	40.07	-0.00	0.00	0.20	0.24	0.00
LC:	D	D	D	W8	W1	W12
Maximum:	40.07	1.17	0.48	0.20	0.24	0.00
LC:	D	W2	W1	W8	W1	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-18.33	-0.51	-0.24	-0.30	-0.00	-0.00
LC:	W1	W8	D	W2	W6	W9
Min @ B:	-18.33	-0.00	0.00	-0.30	-0.00	-0.00
LC:	W1	D	D	W2	W6	W9
Minimum:	-18.33	-0.51	-0.24	-0.30	-0.00	-0.00
LC:	W1	W8	D	W2	W6	W9
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 98/349

09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 517

Level: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Length (ft) = 23.00

Elastic Modulus (ksi) = 29000

Frame Number: 4

I-End (95.00,-113.00)

J-End (118.00,-113.00)

Beam Size = W18X35

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 99/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	0.70	0.00	-0.00	2.26	0.00	0.01
LC:	W1	D	D	D	W6	W2
Max @ j:	0.05	-0.00	0.00	0.23	0.00	0.00
LC:	W6	D	D	W1	W7	W8
Maximum:	2.48	4.81	0.01	4.25	0.01	0.01
LC:	W1	D	W7	D	W7	W2
@ (ft):	8.62	18.85	20.13	11.50	17.25	0.00
Min @ i:	-0.18	0.00	-0.00	-0.01	-0.00	-0.00
LC:	W2	D	D	Sp	W3	W8
Min @ j:	-0.52	-0.00	0.00	-2.41	-0.00	-0.01
LC:	W1	D	D	D	W11	W2
Minimum:	-2.30	-10.69	-0.01	-4.21	-0.00	-0.01
LC:	W1	D	W7	D	W11	W2
@ (ft):	11.50	11.50	17.25	11.50	17.25	20.13



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 100/349

09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 11

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 18.90

Elastic Modulus (ksi) = 29000

Frame Number: 4

I-End (ft): (106.50,-113.00)

J-End (ft): (95.00,-113.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 101/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	13.82	0.00	-0.00	0.00	0.00	-0.00
LC:	D	D	D	W1	W2	D
Max @ B:	13.82	-0.00	0.00	0.00	0.00	-0.00
LC:	D	D	D	W1	W2	D
Maximum:	13.82	0.00	-0.00	0.00	0.00	-0.00
LC:	D	D	D	W1	W2	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-37.53	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W1	D	D	W6	W8	D
Min @ B:	-37.53	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W1	D	D	W6	W8	D
Minimum:	-37.53	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W1	D	D	W6	W8	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 102/349
09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 12

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 18.90

Elastic Modulus (ksi) = 29000

Frame Number: 4

I-End (ft): (106.50,-113.00)

J-End (ft): (118.00,-113.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

Fixity

Major Axis:

Minor Axis:

Torsion:

Member Force Output:

P-Delta: Yes

Ground Level: Base

Top

Pin

Pin

Pin

Bottom

Pin

Pin

Pin

At Centerline of Joint

Scale Factor: 1.00

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 103/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	36.95	0.00	-0.00	0.00	0.00	-0.00
LC:	W1	D	D	D	W8	D
Max @ B:	36.95	-0.00	0.00	0.00	0.00	-0.00
LC:	W1	D	D	D	W8	D
Maximum:	36.95	0.00	-0.00	0.00	0.00	-0.00
LC:	W1	D	D	D	W8	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-0.51	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W6	D	D	W1	W2	D
Min @ B:	-0.51	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W6	D	D	W1	W2	D
Minimum:	-0.51	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W6	D	D	W1	W2	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 104/349
09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 96**Frame Number: 5**

Level Top: ROOF - 129'-0"

Column Line (151.00,-113.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 105/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	31.96	0.00	0.01	0.10	0.00	0.00
LC:	D	Sp	Sp	D	NL1	W5
Max @ B:	31.96	1.48	-0.00	0.10	0.00	0.00
LC:	D	D	Ln	D	NL1	W5
Maximum:	31.96	1.48	0.01	0.10	0.00	0.00
LC:	D	D	Sp	D	NL1	W5
@ (ft):	0.00	14.00	0.00	0.00	0.00	0.00
Min @ T:	-8.33	-0.00	-0.00	-0.01	-0.03	-0.00
LC:	W8	W8	W4	W8	W1	W1
Min @ B:	-8.33	-0.29	-0.77	-0.01	-0.03	-0.00
LC:	W8	W8	W1	W8	W1	W1
Minimum:	-8.33	-0.29	-0.77	-0.01	-0.03	-0.00
LC:	W8	W8	W1	W8	W1	W1
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 106/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 97**Frame Number: 5**

Level Top: ROOF - 129'-0"

Column Line (151.00,-143.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 107/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	17.15	0.01	0.07	0.03	0.00	0.00
LC:	D	Sp	Sp	W2	W5	W5
Max @ B:	17.15	0.47	0.03	0.03	0.00	0.00
LC:	D	W2	W5	W2	W5	W5
Maximum:	17.15	0.47	0.07	0.03	0.00	0.00
LC:	D	W2	Sp	W2	W5	W5
@ (ft):	0.00	14.00	0.00	0.00	0.00	0.00
Min @ T:	-11.42	-0.00	-0.00	-0.08	-0.06	-0.00
LC:	W2	W2	W5	D	W1	W11
Min @ B:	-11.42	-1.08	-0.98	-0.08	-0.06	-0.00
LC:	W2	D	W1	D	W1	W11
Minimum:	-11.42	-1.08	-0.98	-0.08	-0.06	-0.00
LC:	W2	D	W1	D	W1	W11
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 108/349

09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 220

Level: ROOF - 129'-0"

Fy (ksi) = 50.00

Length (ft) = 30.00

Elastic Modulus (ksi) = 29000

Frame Number: 5

I-End (151.00,-143.00)

J-End (151.00,-113.00)

Beam Size = W24X68

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 109/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	4.40	0.00	-0.00	7.75	0.03	0.00
LC:	W8	D	D	D	W8	W5
Max @ j:	7.39	-0.00	0.00	0.00	0.14	0.01
LC:	W2	D	D	W2	W5	Sp
Maximum:	7.39	68.17	1.09	7.75	0.16	0.01
LC:	W2	D	W8	D	W8	Sp
@ (ft):	26.25	15.00	26.25	0.00	22.50	22.50
Min @ i:	-6.00	0.00	-0.00	-0.00	-0.02	-0.04
LC:	W2	D	D	W11	W2	Sp
Min @ j:	-4.93	-0.00	0.00	-7.75	-0.29	-0.00
LC:	W8	D	D	D	W8	W4
Minimum:	-6.00	-0.00	-0.54	-7.75	-0.29	-0.04
LC:	W2	D	W2	D	W8	Sp
@ (ft):	0.00	30.00	26.25	30.00	26.25	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 110/349

09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 27

Story Top: ROOF - 129'-0"

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 20.52

Elastic Modulus (ksi) = 29000

Frame Number: 5

I-End (ft): (151.00,-143.00)

J-End (ft): (151.00,-128.00)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 111/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	16.73	0.00	-0.00	0.00	0.00	-0.00
LC:	W2	D	D	W2	E4	D
Max @ B:	16.73	-0.00	0.00	0.00	0.00	-0.00
LC:	W2	D	D	W2	E4	D
Maximum:	16.73	0.00	-0.00	0.00	0.00	-0.00
LC:	W2	D	D	W2	E4	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-12.31	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W8	D	D	W8	W1	D
Min @ B:	-12.31	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W8	D	D	W8	W1	D
Minimum:	-12.31	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W8	D	D	W8	W1	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 112/349

09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 28

Story Top: ROOF - 129'-0"

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 20.52

Elastic Modulus (ksi) = 29000

Frame Number: 5

I-End (ft): (151.00,-113.00)

J-End (ft): (151.00,-128.00)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

Fixity

Major Axis:

Minor Axis:

Torsion:

Member Force Output:

P-Delta: Yes

Ground Level: Base

Top

Pin

Pin

Pin

Bottom

Pin

Pin

Pin

At Centerline of Joint

Scale Factor: 1.00

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 113/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	12.21	0.00	-0.00	0.00	0.00	-0.00
LC:	W8	D	D	W8	W1	D
Max @ B:	12.21	-0.00	0.00	0.00	0.00	-0.00
LC:	W8	D	D	W8	W1	D
Maximum:	12.21	0.00	-0.00	0.00	0.00	-0.00
LC:	W8	D	D	W8	W1	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-16.56	0.00	-0.00	-0.00	0.00	-0.00
LC:	W2	D	D	W2	Ln	D
Min @ B:	-16.56	-0.00	0.00	-0.00	0.00	-0.00
LC:	W2	D	D	W2	Ln	D
Minimum:	-16.56	0.00	-0.00	-0.00	0.00	-0.00
LC:	W2	D	D	W2	Ln	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 114/349
09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 96**Frame Number: 5**

Level Top: LEVEL 2 - 115'-0"

Column Line (151.00,-113.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 115/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	89.07	0.97	0.62	0.07	0.04	0.00
LC:	D	W8	W1	D	W1	W12
Max @ B:	89.07	-0.00	0.00	0.07	0.04	0.00
LC:	D	D	D	D	W1	W12
Maximum:	89.07	0.97	0.62	0.07	0.04	0.00
LC:	D	W8	W1	D	W1	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-8.31	-1.35	-0.02	-0.02	-0.00	-0.00
LC:	W8	W2	W6	W8	D	W9
Min @ B:	-8.31	-0.00	0.00	-0.02	-0.00	-0.00
LC:	W8	D	D	W8	D	W9
Minimum:	-8.31	-1.35	-0.02	-0.02	-0.00	-0.00
LC:	W8	W2	W6	W8	D	W9
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 116/349
09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 97**Frame Number: 5**

Level Top: LEVEL 2 - 115'-0"

Column Line (151.00,-143.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 117/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	46.98	1.40	0.42	0.05	0.03	0.00
LC:	D	D	W1	W2	W1	W12
Max @ B:	46.98	0.00	0.00	0.05	0.03	0.00
LC:	D	D	D	W2	W1	W12
Maximum:	46.98	1.40	0.42	0.05	0.03	0.00
LC:	D	D	W1	W2	W1	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-11.13	-1.42	-0.09	-0.09	-0.01	-0.00
LC:	W2	W2	W6	D	D	W9
Min @ B:	-11.13	0.00	0.00	-0.09	-0.01	-0.00
LC:	W2	D	D	D	D	W9
Minimum:	-11.13	-1.42	-0.09	-0.09	-0.01	-0.00
LC:	W2	W2	W6	D	D	W9
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 118/349

09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 220

Level: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Length (ft) = 30.00

Elastic Modulus (ksi) = 29000

Frame Number: 5

I-End (151.00,-143.00)

J-End (151.00,-113.00)

Beam Size = W24X62

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 119/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	0.86	0.00	-0.00	4.40	0.00	-0.00
LC:	W5	D	D	D	W5	Ln
Max @ j:	0.94	-0.00	0.00	0.26	0.00	0.01
LC:	W11	D	D	W2	W8	W1
Maximum:	4.44	38.87	0.01	9.77	0.01	0.01
LC:	W2	D	W5	D	W5	W1
@ (ft):	11.25	22.50	11.25	15.00	7.50	26.25
Min @ i:	-0.63	0.00	-0.00	-0.15	-0.00	-0.01
LC:	W8	D	D	W8	W4	W1
Min @ j:	-1.08	-0.00	0.00	-4.57	-0.00	-0.00
LC:	W7	D	D	D	W6	W5
Minimum:	-4.40	-34.58	-0.01	-9.69	-0.01	-0.01
LC:	W2	D	W5	D	W6	W1
@ (ft):	15.00	15.00	11.25	15.00	22.50	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 120/349

09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 29

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 21.21

Elastic Modulus (ksi) = 29000

Frame Number: 5

I-End (ft): (151.00,-128.00)

J-End (ft): (151.00,-143.00)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 121/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	24.61	0.00	-0.00	0.00	0.00	-0.00
LC:	W8	D	D	W2	W6	D
Max @ B:	24.61	-0.00	0.00	0.00	0.00	-0.00
LC:	W8	D	D	W2	W6	D
Maximum:	24.61	0.00	-0.00	0.00	0.00	-0.00
LC:	W8	D	D	W2	W6	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-33.91	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W2	D	D	W8	W1	D
Min @ B:	-33.91	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W2	D	D	W8	W1	D
Minimum:	-33.91	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W2	D	D	W8	W1	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 122/349
09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 30

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 21.21

Elastic Modulus (ksi) = 29000

Frame Number: 5

I-End (ft): (151.00,-128.00)

J-End (ft): (151.00,-113.00)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 123/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	34.02	0.00	-0.00	0.00	0.00	-0.00
LC:	W2	D	D	W8	W1	D
Max @ B:	34.02	-0.00	0.00	0.00	0.00	-0.00
LC:	W2	D	D	W8	W1	D
Maximum:	34.02	0.00	-0.00	0.00	0.00	-0.00
LC:	W2	D	D	W8	W1	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-24.65	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W8	D	D	W2	W6	D
Min @ B:	-24.65	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W8	D	D	W2	W6	D
Minimum:	-24.65	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W8	D	D	W2	W6	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 124/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 80Level Top: ROOF - 129'-0"
Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Frame Number: 6

Column Line (180.75,-193.00)

Column Size = W8X48

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 125/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	18.66	0.00	5.89	0.12	0.01	0.01
LC:	D	W8	Sp	D	W11	W11
Max @ B:	18.66	1.45	0.24	0.12	0.01	0.01
LC:	D	D	W11	D	W11	W11
Maximum:	18.66	1.45	5.89	0.12	0.01	0.01
LC:	D	D	Sp	D	W11	W11
@ (ft):	0.00	14.00	0.00	0.00	0.00	0.00
Min @ T:	-5.69	-0.24	-0.01	-0.03	-0.57	-0.01
LC:	W11	Sp	W11	W7	Sp	W2
Min @ B:	-5.69	-0.34	-3.10	-0.03	-0.57	-0.01
LC:	W11	W7	W10	W7	Sp	W2
Minimum:	-5.69	-0.34	-3.10	-0.03	-0.57	-0.01
LC:	W11	W7	W10	W7	Sp	W2
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 126/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 81**Frame Number: 6**

Level Top: ROOF - 129'-0"

Column Line (180.75,-228.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 127/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	21.15	0.69	16.18	0.01	0.09	0.01
LC:	D	Sp	Sp	W11	W2	W8
Max @ B:	21.15	0.18	1.27	0.01	0.09	0.01
LC:	D	W11	W2	W11	W2	W8
Maximum:	21.15	0.69	16.18	0.01	0.09	0.01
LC:	D	Sp	Sp	W11	W2	W8
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-7.78	-0.00	-0.01	-0.17	-1.46	-0.02
LC:	W5	W2	W2	D	Sp	W2
Min @ B:	-7.78	-1.68	-4.28	-0.17	-1.46	-0.02
LC:	W5	D	Sp	D	Sp	W2
Minimum:	-7.78	-1.68	-4.28	-0.17	-1.46	-0.02
LC:	W5	D	Sp	D	Sp	W2
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 128/349

09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 275

Level: ROOF - 129'-0"

Fy (ksi) = 50.00

Length (ft) = 35.00

Elastic Modulus (ksi) = 29000

Frame Number: 6

I-End (180.75,-228.00)

J-End (180.75,-193.00)

Beam Size = W27X84

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 129/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	8.21	0.00	-0.00	15.50	0.35	0.01
LC:	D	D	D	Sp	Sp	W2
Max @ j:	8.05	-0.00	0.00	0.00	0.38	6.16
LC:	D	D	D	Ln	W4	Sp
Maximum:	8.21	128.11	2.20	15.50	0.54	6.16
LC:	D	Sp	W11	Sp	W11	Sp
@ (ft):	0.00	15.91	28.00	0.00	24.50	31.50
Min @ i:	-8.65	0.00	-0.00	-0.00	-0.16	-13.12
LC:	W5	D	D	W6	W11	Sp
Min @ j:	-2.65	-0.00	0.00	-11.76	-0.42	-0.01
LC:	W8	D	D	Sp	W3	W11
Minimum:	-8.65	-0.00	-2.47	-11.76	-0.60	-13.12
LC:	W5	Sp	W10	Sp	W10	Sp
@ (ft):	0.00	35.00	28.00	35.00	24.50	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 130/349

09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 17

Story Top: ROOF - 129'-0"

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 22.41

Elastic Modulus (ksi) = 29000

Frame Number: 6

I-End (ft): (180.75,-228.00)

J-End (ft): (180.75,-210.50)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 131/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	12.45	0.00	-0.00	0.00	0.00	-0.00
LC:	W5	D	D	W11	W12	D
Max @ B:	12.45	-0.00	0.00	0.00	0.00	-0.00
LC:	W5	D	D	W11	W12	D
Maximum:	12.45	0.00	-0.00	0.00	0.00	-0.00
LC:	W5	D	D	W11	W12	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-10.70	0.00	-0.00	-0.00	-0.00	-0.00
LC:	D	D	D	D	W2	D
Min @ B:	-10.70	-0.00	0.00	-0.00	-0.00	-0.00
LC:	D	D	D	D	W2	D
Minimum:	-10.70	0.00	-0.00	-0.00	-0.00	-0.00
LC:	D	D	D	D	W2	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 132/349

09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 18

Story Top: ROOF - 129'-0"

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 22.41

Elastic Modulus (ksi) = 29000

Frame Number: 6

I-End (ft): (180.75,-193.00)

J-End (ft): (180.75,-210.50)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

Fixity

Major Axis:

Minor Axis:

Torsion:

Member Force Output:

P-Delta: Yes

Ground Level: Base

Top

Pin

Pin

Pin

At Centerline of Joint

Bottom

Pin

Pin

Pin

Scale Factor: 1.00

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 133/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	9.10	0.00	-0.00	0.00	0.00	-0.00
LC:	W11	D	D	W5	D	D
Max @ B:	9.10	-0.00	0.00	0.00	0.00	-0.00
LC:	W11	D	D	W5	D	D
Maximum:	9.10	0.00	-0.00	0.00	0.00	-0.00
LC:	W11	D	D	W5	D	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-13.07	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W5	D	D	D	W10	D
Min @ B:	-13.07	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W5	D	D	D	W10	D
Minimum:	-13.07	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W5	D	D	D	W10	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 134/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 80**Frame Number: 6**

Level Top: LEVEL 2 - 115'-0"

Column Line (180.75,-193.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 135/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	49.13	0.93	0.38	0.09	0.14	0.00
LC:	D	W11	W8	D	W1	W12
Max @ B:	49.13	-0.00	0.00	0.09	0.14	0.00
LC:	D	D	D	D	W1	W12
Maximum:	49.13	0.93	0.38	0.09	0.14	0.00
LC:	D	W11	W8	D	W1	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-5.68	-1.28	-0.72	-0.02	-0.00	-0.00
LC:	W11	D	D	W5	W6	W9
Min @ B:	-5.68	-0.00	0.00	-0.02	-0.00	-0.00
LC:	W11	D	D	W5	W6	W9
Minimum:	-5.68	-1.28	-0.72	-0.02	-0.00	-0.00
LC:	W11	D	D	W5	W6	W9
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 136/349
09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 81**Frame Number: 6**

Level Top: LEVEL 2 - 115'-0"

Column Line (180.75,-228.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 137/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	41.94	1.37	0.65	0.06	0.18	0.00
LC:	D	D	W5	W2	Sp	W12
Max @ B:	41.94	0.00	0.00	0.06	0.18	0.00
LC:	D	D	D	W2	Sp	W12
Maximum:	41.94	1.37	0.65	0.06	0.18	0.00
LC:	D	D	W5	W2	Sp	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-7.87	-1.17	-2.66	-0.09	-0.04	-0.00
LC:	W5	W2	Sp	D	W2	W6
Min @ B:	-7.87	0.00	0.00	-0.09	-0.04	-0.00
LC:	W5	D	D	D	W2	W6
Minimum:	-7.87	-1.17	-2.66	-0.09	-0.04	-0.00
LC:	W5	W2	Sp	D	W2	W6
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 138/349
09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 275

Level: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Length (ft) = 35.00

Elastic Modulus (ksi) = 29000

Frame Number: 6

I-End (180.75,-228.00)

J-End (180.75,-193.00)

Beam Size = W27X84

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 139/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	0.50	0.00	-0.00	8.14	0.00	0.02
LC:	W5	D	D	D	W11	W2
Max @ j:	5.02	-0.00	0.00	0.35	0.03	0.03
LC:	W11	D	D	W10	W11	W10
Maximum:	8.70	56.75	0.15	20.89	0.08	0.03
LC:	W11	D	W2	D	W11	W10
@ (ft):	17.50	27.87	17.50	17.50	17.50	32.08
Min @ i:	-0.26	0.00	-0.00	-0.26	-0.02	-0.04
LC:	W11	D	D	W11	Sp	Sp
Min @ j:	-6.70	-0.00	0.00	-8.23	-0.05	-0.01
LC:	W2	D	D	D	W2	Lp
Minimum:	-11.12	-61.25	-0.13	-20.91	-0.09	-0.04
LC:	W2	D	W2	D	W2	Sp
@ (ft):	17.50	17.50	20.42	17.50	17.50	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 140/349
09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 15

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 23.05

Elastic Modulus (ksi) = 29000

Frame Number: 6

I-End (ft): (180.75,-210.50)

J-End (ft): (180.75,-228.00)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 141/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	24.14	0.00	-0.00	0.00	0.00	-0.00
LC:	D	D	D	D	W6	D
Max @ B:	24.14	-0.00	0.00	0.00	0.00	-0.00
LC:	D	D	D	D	W6	D
Maximum:	24.14	0.00	-0.00	0.00	0.00	-0.00
LC:	D	D	D	D	W6	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-31.47	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W2	D	D	W11	W1	D
Min @ B:	-31.47	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W2	D	D	W11	W1	D
Minimum:	-31.47	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W2	D	D	W11	W1	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 142/349

09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 16

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 23.05

Elastic Modulus (ksi) = 29000

Frame Number: 6

I-End (ft): (180.75,-210.50)

J-End (ft): (180.75,-193.00)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 143/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	30.93	0.00	-0.00	0.00	0.00	-0.00
LC:	W2	D	D	D	W1	D
Max @ B:	30.93	-0.00	0.00	0.00	0.00	-0.00
LC:	W2	D	D	D	W1	D
Maximum:	30.93	0.00	-0.00	0.00	0.00	-0.00
LC:	W2	D	D	D	W1	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-23.76	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W11	D	D	W2	W6	D
Min @ B:	-23.76	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W11	D	D	W2	W6	D
Minimum:	-23.76	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W11	D	D	W2	W6	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 144/349
09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 83**Frame Number: 7**

Level Top: ROOF - 129'-0"

Column Line (118.00,-228.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 145/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	28.71	0.00	0.00	1.87	0.91	0.00
LC:	Sp	W6	W10	Sp	Sp	Sp
Max @ B:	28.71	14.24	3.84	1.87	0.91	0.00
LC:	Sp	W2	Sp	Sp	Sp	Sp
Maximum:	28.71	14.24	3.84	1.87	0.91	0.00
LC:	Sp	W2	Sp	Sp	Sp	Sp
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00
Min @ T:	-3.23	-21.33	-8.91	-0.53	-0.03	-0.00
LC:	W6	Sp	Sp	W8	W4	W7
Min @ B:	-3.23	-7.93	-0.56	-0.53	-0.03	-0.00
LC:	W6	W8	W4	W8	W4	W7
Minimum:	-3.23	-21.33	-8.91	-0.53	-0.03	-0.00
LC:	W6	Sp	Sp	W8	W4	W7
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 146/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 153**Frame Number: 7**

Level Top: ROOF - 129'-0"

Column Line (95.00,-228.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 147/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	14.61	0.00	0.01	0.88	0.01	0.00
LC:	Sp	W5	Sp	W2	Lp	Sp
Max @ B:	14.61	12.35	0.14	0.88	0.01	0.00
LC:	Sp	W2	Lp	W2	Lp	Sp
Maximum:	14.61	12.35	0.14	0.88	0.01	0.00
LC:	Sp	W2	Lp	W2	Lp	Sp
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00
Min @ T:	-14.67	-0.58	-0.00	-0.48	-0.02	-0.01
LC:	W4	Sp	W11	W8	W4	W10
Min @ B:	-14.67	-6.70	-0.30	-0.48	-0.02	-0.01
LC:	W4	W8	W4	W8	W4	W10
Minimum:	-14.67	-6.70	-0.30	-0.48	-0.02	-0.01
LC:	W4	W8	W4	W8	W4	W10
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 148/349
09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 595

Level: ROOF - 129'-0"

Fy (ksi) = 50.00

Length (ft) = 23.00

Elastic Modulus (ksi) = 29000

Frame Number: 7

I-End (95.00,-228.00)

J-End (118.00,-228.00)

Beam Size = W18X50

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 149/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	4.15	0.00	-0.00	2.27	0.06	0.45
LC:	W6	D	D	Sp	W12	Sp
Max @ j:	6.23	-0.00	0.00	0.00	0.12	0.03
LC:	W2	D	D	W1	Sp	Sp
Maximum:	6.23	11.47	0.58	2.27	0.12	0.45
LC:	W2	Sp	W10	Sp	Sp	Sp
@ (ft):	19.17	10.22	3.84	0.00	19.17	0.00
Min @ i:	-8.33	0.00	-0.00	-0.00	-0.19	-0.00
LC:	W12	D	D	W2	W6	W5
Min @ j:	-4.08	-0.00	0.00	-1.30	-0.07	-0.00
LC:	W8	D	D	Sp	W12	W5
Minimum:	-8.33	-0.00	-0.72	-1.62	-0.22	-0.58
LC:	W12	W2	W6	Sp	W10	Sp
@ (ft):	0.00	7.67	3.83	19.17	7.67	15.33



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 150/349

09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 21

Story Top: ROOF - 129'-0"

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 18.12

Elastic Modulus (ksi) = 29000

Frame Number: 7

I-End (ft): (95.00,-228.00)

J-End (ft): (106.50,-228.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 151/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	18.98	0.00	-0.00	0.00	0.00	-0.00
LC:	W4	D	D	W4	W2	D
Max @ B:	18.98	-0.00	0.00	0.00	0.00	-0.00
LC:	W4	D	D	W4	W2	D
Maximum:	18.98	0.00	-0.00	0.00	0.00	-0.00
LC:	W4	D	D	W4	W2	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-3.68	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W6	D	D	W6	W8	D
Min @ B:	-3.68	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W6	D	D	W6	W8	D
Minimum:	-3.68	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W6	D	D	W6	W8	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 152/349

09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 22

Story Top: ROOF - 129'-0"

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 18.12

Elastic Modulus (ksi) = 29000

Frame Number: 7

I-End (ft): (118.00,-228.00)

J-End (ft): (106.50,-228.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

Fixity

Major Axis:

Minor Axis:

Torsion:

Member Force Output:

P-Delta: Yes

Ground Level: Base

Top

Pin

Pin

Pin

Bottom

Pin

Pin

Pin

At Centerline of Joint

Scale Factor: 1.00

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 153/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	5.31	0.00	-0.00	0.00	0.00	-0.00
LC:	D	D	D	W6	W8	D
Max @ B:	5.31	-0.00	0.00	0.00	0.00	-0.00
LC:	D	D	D	W6	W8	D
Maximum:	5.31	0.00	-0.00	0.00	0.00	-0.00
LC:	D	D	D	W6	W8	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-19.46	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W4	D	D	W4	W2	D
Min @ B:	-19.46	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W4	D	D	W4	W2	D
Minimum:	-19.46	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W4	D	D	W4	W2	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 154/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 83**Frame Number: 7**

Level Top: LEVEL 2 - 115'-0"

Column Line (118.00,-228.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 155/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	71.93	5.88	0.89	0.25	0.01	0.00
LC:	D	W2	W1	W8	W4	W12
Max @ B:	71.93	0.00	0.00	0.25	0.01	0.00
LC:	D	D	D	W8	W4	W12
Maximum:	71.93	5.88	0.89	0.25	0.01	0.00
LC:	D	W2	W1	W8	W4	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-3.62	-3.06	-0.27	-0.45	-0.04	-0.00
LC:	W6	W8	W6	W2	D	W9
Min @ B:	-3.62	0.00	0.00	-0.45	-0.04	-0.00
LC:	W6	D	D	W2	D	W9
Minimum:	-3.62	-3.06	-0.27	-0.45	-0.04	-0.00
LC:	W6	W8	W6	W2	D	W9
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 156/349
09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 151**Frame Number: 7**

Level Top: LEVEL 2 - 115'-0"

Column Line (95.00,-228.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 157/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	38.98	7.33	0.66	0.31	0.05	0.00
LC:	D	W2	W1	W8	W1	W12
Max @ B:	38.98	-0.00	0.00	0.31	0.05	0.00
LC:	D	D	D	W8	W1	W12
Maximum:	38.98	7.33	0.66	0.31	0.05	0.00
LC:	D	W2	W1	W8	W1	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-14.70	-3.76	-0.22	-0.57	-0.02	-0.00
LC:	W4	W8	D	W2	W6	W9
Min @ B:	-14.70	-0.00	0.00	-0.57	-0.02	-0.00
LC:	W4	D	D	W2	W6	W9
Minimum:	-14.70	-3.76	-0.22	-0.57	-0.02	-0.00
LC:	W4	W8	D	W2	W6	W9
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 158/349
09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 514

Level: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Length (ft) = 23.00

Elastic Modulus (ksi) = 29000

Frame Number: 7

I-End (95.00,-228.00)

J-End (118.00,-228.00)

Beam Size = W18X35

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 159/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	2.14	0.00	-0.00	2.12	0.00	0.01
LC:	W10	D	D	D	W6	W2
Max @ j:	1.72	-0.00	0.00	0.37	0.00	0.00
LC:	W6	D	D	W1	W6	W8
Maximum:	4.03	6.04	0.03	3.76	0.01	0.01
LC:	W10	D	W1	D	W6	W2
@ (ft):	8.62	20.13	8.63	11.50	8.63	0.00
Min @ i:	-0.02	0.00	-0.00	-0.08	-0.00	-0.01
LC:	W11	D	D	W6	W1	W8
Min @ j:	-2.47	-0.00	0.00	-2.95	-0.00	-0.00
LC:	W8	D	D	D	W12	W2
Minimum:	-4.11	-9.58	-0.03	-3.75	-0.02	-0.01
LC:	W12	D	W1	D	W1	W8
@ (ft):	11.50	11.50	8.62	11.50	8.63	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 160/349

09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 21

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 18.90

Elastic Modulus (ksi) = 29000

Frame Number: 7

I-End (ft): (106.50,-228.00)

J-End (ft): (95.00,-228.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

Fixity

Major Axis:

Minor Axis:

Torsion:

Member Force Output:

P-Delta: Yes

Ground Level: Base

Top

Pin

Pin

Pin

Bottom

Pin

Pin

Pin

At Centerline of Joint

Scale Factor: 1.00

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 161/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	11.82	0.00	-0.00	0.00	0.00	-0.00
LC:	W6	D	D	W1	W2	D
Max @ B:	11.82	-0.00	0.00	0.00	0.00	-0.00
LC:	W6	D	D	W1	W2	D
Maximum:	11.82	0.00	-0.00	0.00	0.00	-0.00
LC:	W6	D	D	W1	W2	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-39.29	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W1	D	D	W6	W8	D
Min @ B:	-39.29	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W1	D	D	W6	W8	D
Minimum:	-39.29	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W1	D	D	W6	W8	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 162/349
09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 22

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 18.90

Elastic Modulus (ksi) = 29000

Frame Number: 7

I-End (ft): (106.50,-228.00)

J-End (ft): (118.00,-228.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

Fixity

Major Axis:

Minor Axis:

Torsion:

Member Force Output:

P-Delta: Yes

Ground Level: Base

Top

Pin

Pin

Pin

At Centerline of Joint

Bottom

Pin

Pin

Pin

Scale Factor: 1.00

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 163/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	38.82	0.00	-0.00	0.00	0.00	-0.00
LC:	W1	D	D	W6	W8	D
Max @ B:	38.82	-0.00	0.00	0.00	0.00	-0.00
LC:	W1	D	D	W6	W8	D
Maximum:	38.82	0.00	-0.00	0.00	0.00	-0.00
LC:	W1	D	D	W6	W8	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-11.23	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W6	D	D	W1	W2	D
Min @ B:	-11.23	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W6	D	D	W1	W2	D
Minimum:	-11.23	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W6	D	D	W1	W2	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 164/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 56**Frame Number: 8**

Level Top: ROOF - 129'-0"

Column Line (56.00,0.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 165/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	12.19	0.00	0.00	0.20	0.04	0.01
LC:	Sp	W8	W11	W2	D	W3
Max @ B:	12.19	3.26	0.53	0.20	0.04	0.01
LC:	Sp	W2	D	W2	D	W3
Maximum:	12.19	3.26	0.53	0.20	0.04	0.01
LC:	Sp	W2	D	W2	D	W3
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00
Min @ T:	-7.59	-0.00	-0.00	-0.18	-0.01	-0.00
LC:	W3	W2	D	W8	W11	W6
Min @ B:	-7.59	-2.97	-0.20	-0.18	-0.01	-0.00
LC:	W3	W8	W11	W8	W11	W6
Minimum:	-7.59	-2.97	-0.20	-0.18	-0.01	-0.00
LC:	W3	W8	W11	W8	W11	W6
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 166/349
09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 195

Level: ROOF - 129'-0"

Fy (ksi) = 50.00

Length (ft) = 29.00

Elastic Modulus (ksi) = 29000

Frame Number: 8

I-End (56.00,0.00)

J-End (85.00,0.00)

Beam Size = W18X50

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 167/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	0.59	0.00	-0.00	3.18	0.01	0.00
LC:	W5	D	D	D	W12	W2
Max @ j:	4.80	-0.00	0.00	0.00	0.17	0.00
LC:	W9	D	D	W8	W8	W2
Maximum:	4.80	23.02	0.78	3.17	0.32	0.00
LC:	W9	D	W11	D	W7	W2
@ (ft):	25.37	14.50	21.75	0.00	21.75	0.00
Min @ i:	-2.90	0.00	-0.00	-0.00	-0.02	-0.00
LC:	W1	D	D	W12	W7	W8
Min @ j:	-1.75	-0.00	0.00	-3.18	-0.17	-0.00
LC:	Sp	D	D	D	W2	W8
Minimum:	-2.90	-0.00	-0.72	-3.18	-0.17	-0.00
LC:	W1	D	W2	D	W8	W8
@ (ft):	0.00	29.00	21.75	29.00	21.75	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 168/349
09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 1Story Top: ROOF - 129'-0"
Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 20.16

Elastic Modulus (ksi) = 29000

Frame Number: 8

I-End (ft): (56.00,0.00)

J-End (ft): (70.50,0.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 169/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	10.92	0.00	-0.00	0.00	0.00	-0.00
LC:	W3	D	D	W9	W2	D
Max @ B:	10.92	-0.00	0.00	0.00	0.00	-0.00
LC:	W3	D	D	W9	W2	D
Maximum:	10.92	0.00	-0.00	0.00	0.00	-0.00
LC:	W3	D	D	W9	W2	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-1.68	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W5	D	D	Sp	W8	D
Min @ B:	-1.68	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W5	D	D	Sp	W8	D
Minimum:	-1.68	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W5	D	D	Sp	W8	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 170/349
09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 2Story Top: ROOF - 129'-0"
Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 20.16

Elastic Modulus (ksi) = 29000

Frame Number: 8

I-End (ft): (85.00,0.00)

J-End (ft): (70.50,0.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Building Code: IBC

RAM Frame 17.01.01.05

DataBase: Area B & C

Member Force Envelope

Page 171/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	3.70	0.00	-0.00	0.00	0.00	-0.00
LC:	W5	D	D	W12	W8	D
Max @ B:	3.70	-0.00	0.00	0.00	0.00	-0.00
LC:	W5	D	D	W12	W8	D
Maximum:	3.70	0.00	-0.00	0.00	0.00	-0.00
LC:	W5	D	D	W12	W8	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-11.13	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W11	D	D	W9	W2	D
Min @ B:	-11.13	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W11	D	D	W9	W2	D
Minimum:	-11.13	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W11	D	D	W9	W2	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 172/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 56**Frame Number: 8**

Level Top: LEVEL 2 - 115'-0"

Column Line (56.00,0.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 173/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	39.47	1.07	0.67	0.15	0.05	0.00
LC:	D	W2	W1	W8	W9	W12
Max @ B:	39.47	-0.00	0.00	0.15	0.05	0.00
LC:	D	D	D	W8	W9	W12
Maximum:	39.47	1.07	0.67	0.15	0.05	0.00
LC:	D	W2	W1	W8	W9	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-7.61	-1.18	-0.46	-0.17	-0.00	-0.00
LC:	W3	W8	D	W2	W5	W6
Min @ B:	-7.61	-0.00	0.00	-0.17	-0.00	-0.00
LC:	W3	D	D	W2	W5	W6
Minimum:	-7.61	-1.18	-0.46	-0.17	-0.00	-0.00
LC:	W3	W8	D	W2	W5	W6
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 174/349
09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 195

Level: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Length (ft) = 29.00

Elastic Modulus (ksi) = 29000

Frame Number: 8

I-End (56.00,0.00)

J-End (85.00,0.00)

Beam Size = W18X35

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 175/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	1.32	0.00	-0.00	2.48	0.00	0.00
LC:	W3	D	D	D	W1	W2
Max @ j:	0.54	-0.00	0.00	0.21	0.00	0.00
LC:	W5	D	D	W9	W1	W12
Maximum:	3.31	7.70	0.03	4.40	0.02	0.00
LC:	W1	D	W9	D	W9	D
@ (ft):	10.88	23.56	14.50	14.50	14.50	7.25
Min @ i:	-0.06	0.00	-0.00	-0.01	-0.00	-0.00
LC:	W5	D	D	W5	W5	W8
Min @ j:	-2.85	-0.00	0.00	-2.50	-0.00	-0.00
LC:	W1	D	D	D	W5	W2
Minimum:	-4.88	-12.18	-0.03	-4.37	-0.00	-0.00
LC:	W1	D	W9	D	W5	W8
@ (ft):	14.50	14.50	14.50	14.50	25.38	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 176/349

09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 1

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 20.86

Elastic Modulus (ksi) = 29000

Frame Number: 8

I-End (ft): (70.50,0.00)

J-End (ft): (56.00,0.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 177/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	8.59	0.00	-0.00	0.00	0.00	-0.00
LC:	D	D	D	W5	W8	D
Max @ B:	8.59	-0.00	0.00	0.00	0.00	-0.00
LC:	D	D	D	W5	W8	D
Maximum:	8.59	0.00	-0.00	0.00	0.00	-0.00
LC:	D	D	D	W5	W8	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-31.34	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W1	D	D	W1	W2	D
Min @ B:	-31.34	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W1	D	D	W1	W2	D
Minimum:	-31.34	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W1	D	D	W1	W2	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 178/349

09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 2

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 20.86

Elastic Modulus (ksi) = 29000

Frame Number: 8

I-End (ft): (70.50,0.00)

J-End (ft): (85.00,0.00)

Brace Size = HSS5X5X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 179/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	31.88	0.00	-0.00	0.00	0.00	-0.00
LC:	W1	D	D	D	W8	D
Max @ B:	31.88	-0.00	0.00	0.00	0.00	-0.00
LC:	W1	D	D	D	W8	D
Maximum:	31.88	0.00	-0.00	0.00	0.00	-0.00
LC:	W1	D	D	D	W8	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-2.57	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W5	D	D	W1	Lp	D
Min @ B:	-2.57	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W5	D	D	W1	Lp	D
Minimum:	-2.57	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W5	D	D	W1	Lp	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 180/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 57**Frame Number: 9**

Level Top: ROOF - 129'-0"

Column Line (85.00,0.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 181/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	20.54	0.00	0.00	0.12	0.01	0.00
LC:	D	W2	W2	D	W2	W3
Max @ B:	20.54	1.70	0.14	0.12	0.01	0.00
LC:	D	D	W2	D	W2	W3
Maximum:	20.54	1.70	0.14	0.12	0.01	0.00
LC:	D	D	W2	D	W2	W3
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00
Min @ T:	-9.22	-0.00	-0.00	-0.03	-0.03	-0.00
LC:	W12	W8	W1	W8	D	W2
Min @ B:	-9.22	-0.58	-0.38	-0.03	-0.03	-0.00
LC:	W12	W8	D	W8	D	W2
Minimum:	-9.22	-0.58	-0.38	-0.03	-0.03	-0.00
LC:	W12	W8	D	W8	D	W2
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 182/349
09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 132**Frame Number: 9**

Level Top: ROOF - 129'-0"

Column Line (85.00,-27.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 183/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	27.22	0.00	0.00	0.07	0.04	0.00
LC:	D	W8	W11	W7	W2	W7
Max @ B:	27.22	0.94	0.51	0.07	0.04	0.00
LC:	D	W7	W2	W7	W2	W7
Maximum:	27.22	0.94	0.51	0.07	0.04	0.00
LC:	D	W7	W2	W7	W2	W7
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00
Min @ T:	-18.16	-0.00	-0.00	-0.12	-0.08	-0.00
LC:	W2	D	W2	D	W8	W12
Min @ B:	-18.16	-1.70	-1.22	-0.12	-0.08	-0.00
LC:	W2	D	W8	D	W8	W12
Minimum:	-18.16	-1.70	-1.22	-0.12	-0.08	-0.00
LC:	W2	D	W8	D	W8	W12
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 184/349

09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 196

Level: ROOF - 129'-0"

Fy (ksi) = 50.00

Length (ft) = 27.00

Elastic Modulus (ksi) = 29000

Frame Number: 9

I-End (85.00,-27.00)

J-End (85.00,0.00)

Beam Size = W24X68

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 185/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	4.57	0.00	-0.00	11.20	0.04	0.00
LC:	W2	D	D	Sp	W9	W2
Max @ j:	14.45	-0.00	0.00	0.00	0.39	0.00
LC:	W2	D	D	W2	W2	W2
Maximum:	14.45	106.04	2.07	11.20	0.39	0.00
LC:	W2	Sp	W8	Sp	W2	W2
@ (ft):	23.63	13.50	23.63	3.38	23.63	0.00
Min @ i:	-3.70	0.00	-0.00	-0.00	-0.02	-0.00
LC:	W8	D	D	W8	W12	W1
Min @ j:	-10.41	-0.00	0.00	-15.26	-0.61	-0.00
LC:	W8	D	D	Sp	W8	W1
Minimum:	-10.41	-0.00	-1.37	-15.26	-0.61	-0.00
LC:	W8	W2	W2	Sp	W8	W1
@ (ft):	23.63	23.63	23.63	22.70	23.63	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 186/349

09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 3

Story Top: ROOF - 129'-0"

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 19.45

Elastic Modulus (ksi) = 29000

Frame Number: 9

I-End (ft): (85.00,-27.00)

J-End (ft): (85.00,-13.50)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 187/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	25.23	0.00	-0.00	0.00	0.00	-0.00
LC:	W2	D	D	W2	W2	D
Max @ B:	25.23	-0.00	0.00	0.00	0.00	-0.00
LC:	W2	D	D	W2	W2	D
Maximum:	25.23	0.00	-0.00	0.00	0.00	-0.00
LC:	W2	D	D	W2	W2	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-17.95	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W8	D	D	W8	W1	D
Min @ B:	-17.95	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W8	D	D	W8	W1	D
Minimum:	-17.95	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W8	D	D	W8	W1	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 188/349
09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 4Story Top: ROOF - 129'-0"
Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 19.45

Elastic Modulus (ksi) = 29000

Frame Number: 9

I-End (ft): (85.00,0.00)

J-End (ft): (85.00,-13.50)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 189/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	18.26	0.00	-0.00	0.00	0.00	-0.00
LC:	W8	D	D	W8	W9	D
Max @ B:	18.26	-0.00	0.00	0.00	0.00	-0.00
LC:	W8	D	D	W8	W9	D
Maximum:	18.26	0.00	-0.00	0.00	0.00	-0.00
LC:	W8	D	D	W8	W9	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-24.20	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W2	D	D	W2	W12	D
Min @ B:	-24.20	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W2	D	D	W2	W12	D
Minimum:	-24.20	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W2	D	D	W2	W12	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 190/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 57**Frame Number: 9**

Level Top: LEVEL 2 - 115'-0"

Column Line (85.00,0.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 191/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	42.72	1.15	0.70	0.14	0.01	0.00
LC:	D	W8	W1	D	W2	W12
Max @ B:	42.72	-0.00	0.00	0.14	0.01	0.00
LC:	D	D	D	D	W2	W12
Maximum:	42.72	1.15	0.70	0.14	0.01	0.00
LC:	D	W8	W1	D	W2	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-9.42	-2.05	-0.18	-0.04	-0.02	-0.00
LC:	W12	D	W5	W8	D	W6
Min @ B:	-9.42	-0.00	0.00	-0.04	-0.02	-0.00
LC:	W12	D	D	W8	D	W6
Minimum:	-9.42	-2.05	-0.18	-0.04	-0.02	-0.00
LC:	W12	D	W5	W8	D	W6
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 192/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 132**Frame Number: 9**

Level Top: LEVEL 2 - 115'-0"

Column Line (85.00,-27.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W8X48

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 193/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	87.26	1.14	0.43	0.02	0.04	0.00
LC:	D	D	W1	W2	W1	W12
Max @ B:	87.26	0.00	0.00	0.02	0.04	0.00
LC:	D	D	D	W2	W1	W12
Maximum:	87.26	1.14	0.43	0.02	0.04	0.00
LC:	D	D	W1	W2	W1	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-18.00	-1.19	-0.13	-0.08	-0.00	-0.00
LC:	W2	W2	W5	D	D	W6
Min @ B:	-18.00	0.00	0.00	-0.08	-0.00	-0.00
LC:	W2	D	D	D	D	W6
Minimum:	-18.00	-1.19	-0.13	-0.08	-0.00	-0.00
LC:	W2	W2	W5	D	D	W6
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 194/349
09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 196

Level: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Length (ft) = 27.00

Elastic Modulus (ksi) = 29000

Frame Number: 9

I-End (85.00,-27.00)

J-End (85.00,0.00)

Beam Size = W24X68

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 195/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	0.97	0.00	-0.00	6.48	0.00	0.00
LC:	W2	D	D	D	W5	W2
Max @ j:	0.81	-0.00	0.00	0.43	0.00	0.00
LC:	W8	D	D	W2	D	W11
Maximum:	3.93	48.34	0.04	12.55	0.00	0.00
LC:	W2	D	W9	D	W12	W2
@ (ft):	10.13	20.25	16.88	13.50	6.75	0.00
Min @ i:	-0.98	0.00	-0.00	-0.30	-0.00	-0.01
LC:	W8	D	D	W8	W11	W8
Min @ j:	-0.48	-0.00	0.00	-6.57	-0.01	-0.00
LC:	W2	D	D	D	W9	W5
Minimum:	-3.57	-37.46	-0.04	-12.53	-0.03	-0.01
LC:	W2	D	W9	D	W9	W8
@ (ft):	13.50	13.50	20.25	13.50	16.88	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 196/349

09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 3

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 20.18

Elastic Modulus (ksi) = 29000

Frame Number: 9

I-End (ft): (85.00,-13.50)

J-End (ft): (85.00,-27.00)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

Fixity

Major Axis:

Minor Axis:

Torsion:

Member Force Output:

P-Delta: Yes

Ground Level: Base

Top

Pin

Pin

Pin

Bottom

Pin

Pin

Pin

At Centerline of Joint

Scale Factor: 1.00

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 197/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	29.46	0.00	-0.00	0.00	0.00	-0.00
LC:	W8	D	D	W2	W5	D
Max @ B:	29.46	-0.00	0.00	0.00	0.00	-0.00
LC:	W8	D	D	W2	W5	D
Maximum:	29.46	0.00	-0.00	0.00	0.00	-0.00
LC:	W8	D	D	W2	W5	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-38.56	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W2	D	D	W8	W1	D
Min @ B:	-38.56	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W2	D	D	W8	W1	D
Minimum:	-38.56	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W2	D	D	W8	W1	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 198/349
09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 4

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 20.18

Elastic Modulus (ksi) = 29000

Frame Number: 9

I-End (ft): (85.00,-13.50)

J-End (ft): (85.00,0.00)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 199/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	39.28	0.00	-0.00	0.00	0.00	-0.00
LC:	W2	D	D	W8	W1	D
Max @ B:	39.28	-0.00	0.00	0.00	0.00	-0.00
LC:	W2	D	D	W8	W1	D
Maximum:	39.28	0.00	-0.00	0.00	0.00	-0.00
LC:	W2	D	D	W8	W1	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-28.93	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W8	D	D	W2	W5	D
Min @ B:	-28.93	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W8	D	D	W2	W5	D
Minimum:	-28.93	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W8	D	D	W2	W5	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 200/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 138**Frame Number: 10**

Level Top:
CLERESTORY-138'-6"
Bot: ROOF - 129'-0"

Column Line (118.00,-39.00)

Fy (ksi) = 50.00
Elastic Modulus (ksi) = 29000
Orientation (deg) = 0.00

Column Size = W12X72

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	11.85	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output: At Face of Joint
P-Delta: Yes Scale Factor: 1.00
Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 201/349

09/03/20 10:39:50

ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	23.28	11.00	0.01	6.49	0.13	0.01
LC:	D	D	W8	W1	W6	W10
Max @ B:	23.28	36.16	2.28	6.49	0.13	0.01
LC:	D	W1	W6	W1	W6	W10
Maximum:	23.28	36.16	2.28	6.49	0.13	0.01
LC:	D	W1	W6	W1	W6	W10
@ (ft):	0.99	14.00	14.00	0.99	0.00	0.99
Min @ T:	-0.09	-48.98	-0.01	-1.08	-0.08	-0.00
LC:	W5	W1	W2	D	W3	W6
Min @ B:	-0.09	-5.21	-1.20	-1.08	-0.08	-0.00
LC:	W5	W5	W3	D	W3	W6
Minimum:	-0.09	-48.98	-1.20	-1.08	-0.08	-0.00
LC:	W5	W1	W3	D	W3	W6
@ (ft):	0.99	0.99	14.00	0.99	0.00	0.99



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 202/349
09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 1

Level: CLERESTORY-138'-6"

Fy (ksi) = 50.00

Length (ft) = 23.00

Elastic Modulus (ksi) = 29000

Frame Number: 10

I-End (95.00,-39.00)

J-End (118.00,-39.00)

Beam Size = W24X55

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 203/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	0.23	22.19	0.96	3.94	0.52	0.00
LC:	D	W1	W2	D	W8	W8
Max @ j:	4.45	3.48	0.18	0.28	0.08	0.00
LC:	W8	W5	W8	W5	W8	W8
Maximum:	4.45	22.18	0.96	3.94	0.52	0.00
LC:	W8	W1	W2	D	W8	W8
@ (ft):	19.17	0.00	0.00	0.00	0.00	19.17
Min @ i:	-1.26	-2.97	-1.64	-2.17	-0.33	-0.01
LC:	W7	D	W8	W1	W2	W2
Min @ j:	-3.28	-50.07	-0.11	-8.31	-0.04	-0.01
LC:	W2	D	W5	D	W5	W2
Minimum:	-3.28	-50.07	-1.64	-8.31	-0.33	-0.01
LC:	W2	D	W8	D	W2	W2
@ (ft):	19.17	22.49	0.00	22.49	0.00	19.17



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 204/349
09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 2

Level: CLERESTORY-138'-6"

Fy (ksi) = 50.00

Length (ft) = 33.00

Elastic Modulus (ksi) = 29000

Frame Number: 10

I-End (118.00,-39.00)

J-End (151.00,-39.00)

Beam Size = W24X62

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 205/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	1.23	26.97	0.03	11.10	0.08	0.01
LC:	D	W1	W12	D	W1	W2
Max @ j:	1.58	2.71	1.36	0.19	0.43	0.01
LC:	W8	W5	W7	W5	W7	W2
Maximum:	1.63	49.93	1.36	11.10	0.43	0.01
LC:	W8	D	W7	D	W7	W2
@ (ft):	23.10	17.82	33.00	0.51	29.70	0.00
Min @ i:	-4.92	-60.70	-0.12	-1.49	-0.04	-0.01
LC:	W7	D	W7	W1	W5	W8
Min @ j:	-0.75	-21.56	-0.36	-8.04	-0.26	-0.01
LC:	W5	W1	W11	D	W11	W8
Minimum:	-4.92	-60.68	-0.38	-8.04	-0.26	-0.01
LC:	W7	D	W5	D	W11	W8
@ (ft):	0.00	0.51	26.40	33.00	29.70	3.30



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 206/349
09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 138**Frame Number: 10**

Level Top: ROOF - 129'-0"

Column Line (118.00,-39.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 0.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 207/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	31.81	36.16	2.28	0.48	0.15	0.00
LC:	D	W1	W6	W5	W3	W5
Max @ B:	31.81	1.72	4.42	0.48	0.15	0.00
LC:	D	D	W2	W5	W3	W5
Maximum:	31.81	36.16	4.42	0.48	0.15	0.00
LC:	D	W1	W2	W5	W3	W5
@ (ft):	0.00	0.00	14.00	0.00	0.00	0.00
Min @ T:	0.00	-5.21	-1.20	-3.22	-0.18	-0.01
LC:	Ln	W5	W3	W1	W8	W11
Min @ B:	0.00	-8.40	-4.54	-3.22	-0.18	-0.01
LC:	Ln	W1	W8	W1	W8	W11
Minimum:	0.00	-8.40	-4.54	-3.22	-0.18	-0.01
LC:	Ln	W1	W8	W1	W8	W11
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 208/349
09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 204

Level: ROOF - 129'-0"

Fy (ksi) = 50.00

Length (ft) = 23.00

Elastic Modulus (ksi) = 29000

Frame Number: 10

I-End (95.00,-39.00)

J-End (118.00,-39.00)

Beam Size = W16X40

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 209/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	-0.00	0.00	-0.00	2.47	0.21	0.00
LC:	Ln	D	D	D	W2	W11
Max @ j:	0.69	-0.00	0.00	0.00	0.01	0.00
LC:	W5	D	D	W1	W3	W11
Maximum:	0.69	14.23	0.95	2.47	0.34	0.00
LC:	W5	D	W2	D	W8	W11
@ (ft):	19.17	11.50	3.84	0.00	3.84	19.17
Min @ i:	-7.83	0.00	-0.00	-0.00	-0.27	-0.00
LC:	W1	D	D	W2	W8	W10
Min @ j:	-4.51	-0.00	0.00	-2.47	-0.01	-0.00
LC:	W1	D	D	D	W12	W10
Minimum:	-7.83	-0.00	-1.05	-2.47	-0.27	-0.00
LC:	W1	W1	W8	D	W8	W10
@ (ft):	0.00	19.17	3.83	23.00	0.00	19.17



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 210/349
09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 5Story Top: ROOF - 129'-0"
Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 18.12

Elastic Modulus (ksi) = 29000

Frame Number: 10

I-End (ft): (95.00,-39.00)

J-End (ft): (106.50,-39.00)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 211/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	26.26	0.00	-0.00	0.00	0.00	-0.00
LC:	W1	D	D	W1	W2	D
Max @ B:	26.26	-0.00	0.00	0.00	0.00	-0.00
LC:	W1	D	D	W1	W2	D
Maximum:	26.26	0.00	-0.00	0.00	0.00	-0.00
LC:	W1	D	D	W1	W2	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	0.00	0.00	-0.00	-0.00	-0.00	-0.00
LC:	Ln	D	D	D	W8	D
Min @ B:	0.00	-0.00	0.00	-0.00	-0.00	-0.00
LC:	Ln	D	D	D	W8	D
Minimum:	0.00	0.00	-0.00	-0.00	-0.00	-0.00
LC:	Ln	D	D	D	W8	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 212/349
09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 6

Story Top: ROOF - 129'-0"

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 18.12

Elastic Modulus (ksi) = 29000

Frame Number: 10

I-End (ft): (118.00,-39.00)

J-End (ft): (106.50,-39.00)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 213/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	2.82	0.00	-0.00	0.00	0.00	-0.00
LC:	Sp	D	D	Lp	W8	D
Max @ B:	2.82	-0.00	0.00	0.00	0.00	-0.00
LC:	Sp	D	D	Lp	W8	D
Maximum:	2.82	0.00	-0.00	0.00	0.00	-0.00
LC:	Sp	D	D	Lp	W8	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-27.66	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W1	D	D	W1	W2	D
Min @ B:	-27.66	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W1	D	D	W1	W2	D
Minimum:	-27.66	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W1	D	D	W1	W2	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 214/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 138**Frame Number: 10**

Level Top: LEVEL 2 - 115'-0"

Column Line (118.00,-39.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 0.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 215/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	55.14	1.36	2.35	0.51	0.22	0.00
LC:	D	W5	W2	W1	W8	W12
Max @ B:	55.14	0.00	0.00	0.51	0.22	0.00
LC:	D	D	D	W1	W8	W12
Maximum:	55.14	1.36	2.35	0.51	0.22	0.00
LC:	D	W5	W2	W1	W8	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-0.06	-8.70	-2.66	-0.09	-0.22	-0.00
LC:	W5	W1	W8	W5	W2	W9
Min @ B:	-0.06	0.00	0.00	-0.09	-0.22	-0.00
LC:	W5	D	D	W5	W2	W9
Minimum:	-0.06	-8.70	-2.66	-0.09	-0.22	-0.00
LC:	W5	W1	W8	W5	W2	W9
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 216/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 141**Frame Number: 10**

Level Top: LEVEL 2 - 115'-0"

Column Line (151.00,-39.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 217/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	53.16	12.30	2.87	1.05	0.05	0.00
LC:	D	W5	W1	W11	W3	W12
Max @ B:	53.16	0.00	0.00	1.05	0.05	0.00
LC:	D	D	D	W11	W3	W12
Maximum:	53.16	12.30	2.87	1.05	0.05	0.00
LC:	D	W5	W1	W11	W3	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-0.98	-13.85	-0.51	-0.99	-0.07	-0.00
LC:	W11	W11	W5	W2	D	W6
Min @ B:	-0.98	0.00	0.00	-0.99	-0.07	-0.00
LC:	W11	D	D	W2	D	W6
Minimum:	-0.98	-13.85	-0.51	-0.99	-0.07	-0.00
LC:	W11	W11	W5	W2	D	W6
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 218/349

09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 204

Level: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Length (ft) = 23.00

Elastic Modulus (ksi) = 29000

Frame Number: 10

I-End (95.00,-39.00)

J-End (118.00,-39.00)

Beam Size = W18X35

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 219/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	1.60	0.00	-0.00	4.52	0.00	0.00
LC:	W1	D	D	D	W4	W2
Max @ j:	0.35	-0.00	0.00	0.09	0.00	0.00
LC:	W4	D	D	E1	W5	W8
Maximum:	4.79	12.37	0.02	4.52	0.01	0.00
LC:	W1	D	W1	D	W4	W2
@ (ft):	8.62	5.11	11.50	0.00	5.75	0.00
Min @ i:	-0.44	0.00	-0.00	-0.17	-0.00	-0.00
LC:	W5	D	D	W8	W5	W8
Min @ j:	-0.32	-0.00	0.00	-1.64	-0.00	-0.00
LC:	E1	D	D	D	W11	W2
Minimum:	-1.09	-11.08	-0.02	-5.54	-0.01	-0.00
LC:	W5	D	W4	D	W1	W8
@ (ft):	8.62	11.50	5.75	11.50	14.38	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 220/349

09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 5

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 18.90

Elastic Modulus (ksi) = 29000

Frame Number: 10

I-End (ft): (106.50,-39.00)

J-End (ft): (95.00,-39.00)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 221/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	9.32	0.00	-0.00	0.00	0.00	-0.00
LC:	D	D	D	W1	W2	D
Max @ B:	9.32	-0.00	0.00	0.00	0.00	-0.00
LC:	D	D	D	W1	W2	D
Maximum:	9.32	0.00	-0.00	0.00	0.00	-0.00
LC:	D	D	D	W1	W2	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-40.78	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W1	D	D	W5	W8	D
Min @ B:	-40.78	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W1	D	D	W5	W8	D
Minimum:	-40.78	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W1	D	D	W5	W8	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 222/349
09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 6

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 18.90

Elastic Modulus (ksi) = 29000

Frame Number: 10

I-End (ft): (106.50,-39.00)

J-End (ft): (118.00,-39.00)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Bentley

Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 223/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	39.45	0.00	-0.00	0.00	0.00	-0.00
LC:	W1	D	D	D	W8	D
Max @ B:	39.45	-0.00	0.00	0.00	0.00	-0.00
LC:	W1	D	D	D	W8	D
Maximum:	39.45	0.00	-0.00	0.00	0.00	-0.00
LC:	W1	D	D	D	W8	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-2.11	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W5	D	D	W1	W2	D
Min @ B:	-2.11	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W5	D	D	W1	W2	D
Minimum:	-2.11	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W5	D	D	W1	W2	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 224/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 146**Frame Number: 11**

Level Top:

Column Line (118.00,-77.00)

CLERESTORY-138'-6"

Bot: ROOF - 129'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 0.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	11.85	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 225/349

09/03/20 10:39:50

ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	23.30	9.39	0.01	2.74	0.36	0.01
LC:	D	D	W8	W1	W2	W10
Max @ B:	23.30	7.54	5.83	2.74	0.36	0.01
LC:	D	W12	W2	W1	W2	W10
Maximum:	23.30	9.39	5.83	2.74	0.36	0.01
LC:	D	D	W2	W1	W2	W10
@ (ft):	0.99	0.99	14.00	0.99	0.00	0.99
Min @ T:	-0.09	-30.07	-0.02	-0.76	-0.32	-0.00
LC:	W6	W1	W2	D	W8	W11
Min @ B:	-0.09	-4.43	-5.13	-0.76	-0.32	-0.00
LC:	W6	W6	W8	D	W8	W11
Minimum:	-0.09	-30.07	-5.13	-0.76	-0.32	-0.00
LC:	W6	W1	W8	D	W8	W11
@ (ft):	0.99	0.99	14.00	0.99	0.00	0.99



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 226/349

09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 5

Level: CLERESTORY-138'-6"

Fy (ksi) = 50.00

Length (ft) = 23.00

Elastic Modulus (ksi) = 29000

Frame Number: 11

I-End (95.00,-77.00)

J-End (118.00,-77.00)

Beam Size = W24X55

INPUT PARAMETERS:

Fixity Major Axis:

Minor Axis:

Torsion:

Rigid End Zone (in):

I-End

Fix

Fix

Fix

0.00

J-End

Fix

Fix

Fix

0.00 (Ignore)

Member Force Output:

P-Delta: Yes

Ground Level: Base

At Face of Joint

Scale Factor: 1.00

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 227/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	0.78	13.91	1.34	3.91	0.15	0.01
LC:	W6	W1	W7	D	W8	W8
Max @ j:	3.53	2.85	0.02	0.21	0.05	0.01
LC:	W7	W6	W2	W6	W6	W8
Maximum:	3.53	16.32	1.34	3.91	0.15	0.01
LC:	W7	D	W7	D	W8	W8
@ (ft):	19.17	6.39	0.00	0.00	0.00	15.33
Min @ i:	-0.43	-3.25	-0.27	-1.36	-0.47	-0.01
LC:	W3	D	W8	W1	W6	W2
Min @ j:	-1.25	-50.90	-0.06	-8.34	-0.05	-0.01
LC:	W11	D	W8	D	W8	W2
Minimum:	-1.25	-50.90	-0.63	-8.34	-0.47	-0.01
LC:	W11	D	W6	D	W6	W2
@ (ft):	19.17	22.49	3.83	22.49	0.00	19.17



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 228/349

09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 6

Level: CLERESTORY-138'-6"

Fy (ksi) = 50.00

Length (ft) = 33.00

Elastic Modulus (ksi) = 29000

Frame Number: 11

I-End (118.00,-77.00)

J-End (151.00,-77.00)

Beam Size = W24X62

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 229/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	3.24	14.91	0.11	11.10	0.07	0.01
LC:	W2	W1	W5	D	W8	W2
Max @ j:	1.01	1.58	1.25	0.11	0.55	0.01
LC:	D	W6	W5	W6	W5	W2
Maximum:	3.32	50.94	1.25	11.10	0.55	0.01
LC:	W2	D	W5	D	W5	W2
@ (ft):	6.60	17.82	33.00	0.51	29.70	0.00
Min @ i:	-3.17	-59.63	-0.07	-0.87	-0.10	-0.01
LC:	W8	D	W11	W1	W5	W8
Min @ j:	-0.24	-13.41	-1.05	-8.05	-0.34	-0.01
LC:	W11	D	W8	D	W8	W8
Minimum:	-3.17	-59.61	-1.05	-8.05	-0.34	-0.01
LC:	W8	D	W8	D	W8	W8
@ (ft):	0.00	0.51	33.00	33.00	29.70	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 230/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 146**Frame Number: 11**

Level Top: ROOF - 129'-0"

Column Line (118.00,-77.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 0.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 231/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	43.08	7.54	5.83	0.56	0.31	0.00
LC:	D	W12	W2	W9	W8	D
Max @ B:	43.08	11.49	2.19	0.56	0.31	0.00
LC:	D	W1	W2	W9	W8	D
Maximum:	43.08	11.49	5.83	0.56	0.31	0.00
LC:	D	W1	W2	W9	W8	D
@ (ft):	0.00	14.00	0.00	0.00	0.00	0.00
Min @ T:	-0.09	-4.43	-5.13	-0.15	-0.29	-0.01
LC:	W6	W6	W8	W12	W2	W1
Min @ B:	-0.09	-0.28	-1.11	-0.15	-0.29	-0.01
LC:	W6	Sp	W8	W12	W2	W1
Minimum:	-0.09	-4.43	-5.13	-0.15	-0.29	-0.01
LC:	W6	W6	W8	W12	W2	W1
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 232/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 146**Frame Number: 11**

Level Top: LEVEL 2 - 115'-0"

Column Line (118.00,-77.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 0.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 233/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	106.94	7.92	0.53	0.01	0.02	0.00
LC:	D	W1	W7	Sp	W11	W12
Max @ B:	106.94	0.00	0.00	0.01	0.02	0.00
LC:	D	D	D	Sp	W11	W12
Maximum:	106.94	7.92	0.53	0.01	0.02	0.00
LC:	D	W1	W7	Sp	W11	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-0.00	-0.19	-0.10	-0.55	-0.05	-0.00
LC:	W6	Sp	W11	W1	W7	W9
Min @ B:	-0.00	0.00	0.00	-0.55	-0.05	-0.00
LC:	W6	D	D	W1	W7	W9
Minimum:	-0.00	-0.19	-0.10	-0.55	-0.05	-0.00
LC:	W6	Sp	W11	W1	W7	W9
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 234/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 140**Frame Number: 12**

Level Top:
CLERESTORY-138'-6"
Bot: ROOF - 129'-0"

Column Line (151.00,-58.00)

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	11.80	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 235/349

09/03/20 10:39:50

ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	7.10	30.05	0.02	4.03	0.14	0.01
LC:	D	W11	D	W2	D	W10
Max @ B:	7.10	11.58	1.82	4.03	0.14	0.01
LC:	D	W7	D	W2	D	W10
Maximum:	7.10	30.05	1.82	4.03	0.14	0.01
LC:	D	W11	D	W2	D	W10
@ (ft):	0.98	0.98	14.00	0.98	0.00	0.98
Min @ T:	-1.00	-42.64	-0.00	-2.59	-0.05	-0.01
LC:	W11	W2	W5	W11	W8	W11
Min @ B:	-1.00	-4.29	-1.26	-2.59	-0.05	-0.01
LC:	W11	W11	W8	W11	W8	W11
Minimum:	-1.00	-42.64	-1.26	-2.59	-0.05	-0.01
LC:	W11	W2	W8	W11	W8	W11
@ (ft):	0.98	0.98	14.00	0.98	0.00	0.98



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 236/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:**Column Number: 141****Frame Number: 12**

Level Top:
CLERESTORY-138'-6"
Bot: ROOF - 129'-0"

Column Line (151.00,-39.00)

Fy (ksi) = 50.00
Elastic Modulus (ksi) = 29000
Orientation (deg) = 90.00

Column Size = W12X72

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	11.80	0.00
	Minor:	11.85	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output: At Face of Joint
P-Delta: Yes Scale Factor: 1.00
Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 237/349

09/03/20 10:39:50

ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	10.75	17.65	19.14	2.53	0.32	0.01
LC:	D	W11	W1	W7	W5	W8
Max @ B:	10.75	7.22	1.80	2.53	0.32	0.01
LC:	D	W7	W5	W7	W5	W8
Maximum:	10.75	17.65	19.14	2.53	0.32	0.01
LC:	D	W11	W1	W7	W5	W8
@ (ft):	0.98	0.98	0.99	0.98	0.99	0.98
Min @ T:	-0.60	-28.95	-2.40	-0.95	-2.44	-0.00
LC:	W11	W2	W5	W11	W1	W6
Min @ B:	-0.60	-0.52	-12.69	-0.95	-2.44	-0.00
LC:	W11	E3	W1	W11	W1	W6
Minimum:	-0.60	-28.95	-12.69	-0.95	-2.44	-0.00
LC:	W11	W2	W1	W11	W1	W6
@ (ft):	0.98	0.98	14.00	0.98	0.99	0.98



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 238/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 143**Frame Number: 12**

Level Top:
CLERESTORY-138'-6"
Bot: ROOF - 129'-0"

Column Line (151.00,-77.00)

Fy (ksi) = 50.00
Elastic Modulus (ksi) = 29000
Orientation (deg) = 90.00

Column Size = W12X72

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	11.80	0.00
	Minor:	11.85	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output: At Face of Joint
P-Delta: Yes Scale Factor: 1.00
Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 239/349

09/03/20 10:39:50

ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	10.72	28.90	12.39	4.29	0.20	0.00
LC:	D	W11	D	W2	W6	W12
Max @ B:	10.72	17.80	1.16	4.29	0.20	0.00
LC:	D	W2	W6	W2	W6	W12
Maximum:	10.72	28.90	12.39	4.29	0.20	0.00
LC:	D	W11	D	W2	W6	W12
@ (ft):	0.98	0.98	0.99	0.98	0.99	0.98
Min @ T:	-3.50	-38.02	-1.39	-3.17	-1.20	-0.00
LC:	W2	W2	W6	W11	W1	W6
Min @ B:	-3.50	-12.37	-3.72	-3.17	-1.20	-0.00
LC:	W2	W11	W10	W11	W1	W6
Minimum:	-3.50	-38.02	-3.72	-3.17	-1.20	-0.00
LC:	W2	W2	W10	W11	W1	W6
@ (ft):	0.98	0.98	14.00	0.98	0.99	0.98



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 240/349
09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 3

Level: CLERESTORY-138'-6"

Fy (ksi) = 50.00

Length (ft) = 19.00

Elastic Modulus (ksi) = 29000

Frame Number: 12

I-End (151.00,-58.00)

J-End (151.00,-39.00)

Beam Size = W24X55

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 241/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	2.04	19.52	0.17	2.91	0.06	0.00
LC:	W11	W2	W7	D	W11	W6
Max @ j:	1.47	17.72	0.34	1.69	0.00	0.00
LC:	W2	W11	W11	W11	W12	W6
Maximum:	2.04	19.52	0.46	2.91	0.08	0.00
LC:	W11	W2	W11	D	W11	W6
@ (ft):	0.00	0.51	15.83	0.51	9.50	0.00
Min @ i:	-2.43	-12.61	-0.02	-2.76	-0.09	-0.01
LC:	W7	W11	W11	W2	W2	D
Min @ j:	-0.21	-30.00	-1.12	-2.76	-0.46	-0.01
LC:	W12	W2	W7	W2	W7	D
Minimum:	-2.43	-30.00	-1.12	-2.76	-0.46	-0.01
LC:	W7	W2	W7	W2	W7	D
@ (ft):	0.00	18.49	18.49	0.51	15.84	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 242/349
09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 4

Level: CLERESTORY-138'-6"

Fy (ksi) = 50.00

Length (ft) = 19.00

Elastic Modulus (ksi) = 29000

Frame Number: 12

I-End (151.00,-77.00)

J-End (151.00,-58.00)

Beam Size = W24X55

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 243/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	2.27	40.41	1.05	2.69	0.36	0.01
LC:	W11	W2	W2	W11	W8	D
Max @ j:	1.23	17.74	0.10	2.69	0.05	0.01
LC:	W5	W11	W8	W11	W11	D
Maximum:	2.27	40.41	1.05	2.69	0.36	0.01
LC:	W11	W2	W2	W11	W8	D
@ (ft):	0.00	0.51	0.51	6.34	0.51	15.83
Min @ i:	-2.76	-30.64	-0.86	-3.57	-0.34	-0.00
LC:	W2	W11	W8	W2	W2	W5
Min @ j:	-0.51	-23.84	-0.06	-3.57	-0.08	-0.00
LC:	W1	W2	W2	W2	W2	W5
Minimum:	-2.76	-30.64	-0.86	-3.57	-0.34	-0.00
LC:	W2	W11	W8	W2	W2	W5
@ (ft):	0.00	0.51	0.51	15.84	0.51	3.17



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 244/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 140**Frame Number: 12**

Level Top: ROOF - 129'-0"

Column Line (151.00,-58.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 245/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	13.74	11.58	1.82	0.34	-0.00	0.00
LC:	D	W7	D	W5	Ln	W12
Max @ B:	13.74	14.61	-0.00	0.34	-0.00	0.00
LC:	D	W2	Ln	W5	Ln	W12
Maximum:	13.74	14.61	1.82	0.34	-0.00	0.00
LC:	D	W2	D	W5	Ln	W12
@ (ft):	0.00	14.00	0.00	0.00	0.00	0.00
Min @ T:	-1.00	-4.29	-1.26	-0.72	-1.00	-0.00
LC:	W11	W11	W8	W8	D	W2
Min @ B:	-1.00	-14.42	-12.21	-0.72	-1.00	-0.00
LC:	W11	W11	D	W8	D	W2
Minimum:	-1.00	-14.42	-12.21	-0.72	-1.00	-0.00
LC:	W11	W11	D	W8	D	W2
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 246/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 141**Frame Number: 12**

Level Top: ROOF - 129'-0"

Column Line (151.00,-39.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 247/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	21.16	7.22	1.80	0.85	1.20	0.00
LC:	D	W7	W5	W5	W1	W12
Max @ B:	21.16	17.18	3.22	0.85	1.20	0.00
LC:	D	W5	W1	W5	W1	W12
Maximum:	21.16	17.18	3.22	0.85	1.20	0.00
LC:	D	W5	W1	W5	W1	W12
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00
Min @ T:	-0.60	-0.52	-12.69	-1.51	-0.17	-0.00
LC:	W11	E3	W1	W8	W5	W9
Min @ B:	-0.60	-18.89	-0.54	-1.51	-0.17	-0.00
LC:	W11	W11	W5	W8	W5	W9
Minimum:	-0.60	-18.89	-12.69	-1.51	-0.17	-0.00
LC:	W11	W11	W1	W8	W5	W9
@ (ft):	0.00	14.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 248/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 143**Frame Number: 12**

Level Top: ROOF - 129'-0"

Column Line (151.00,-77.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 249/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	32.47	17.80	1.16	0.28	0.08	0.00
LC:	D	W2	W6	W11	W10	W8
Max @ B:	32.47	8.89	-0.00	0.28	0.08	0.00
LC:	D	W2	Ln	W11	W10	W8
Maximum:	32.47	17.80	1.16	0.28	0.08	0.00
LC:	D	W2	W6	W11	W10	W8
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-3.50	-12.37	-3.72	-0.67	-0.50	-0.00
LC:	W2	W11	W10	W7	D	W7
Min @ B:	-3.50	-8.44	-7.97	-0.67	-0.50	-0.00
LC:	W2	W11	D	W7	D	W7
Minimum:	-3.50	-12.37	-7.97	-0.67	-0.50	-0.00
LC:	W2	W11	D	W7	D	W7
@ (ft):	0.00	0.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 250/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 143**Frame Number: 12**

Level Top: LEVEL 2 - 115'-0"

Column Line (151.00,-77.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 251/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	97.90	5.67	6.85	0.40	0.12	0.00
LC:	D	W5	D	W11	W1	W12
Max @ B:	97.90	-0.00	0.00	0.40	0.12	0.00
LC:	D	D	D	W11	W1	W12
Maximum:	97.90	5.67	6.85	0.40	0.12	0.00
LC:	D	W5	D	W11	W1	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-3.63	-5.65	-1.02	-0.41	-0.46	-0.00
LC:	W2	W11	W1	W5	D	W6
Min @ B:	-3.63	-0.00	0.00	-0.41	-0.46	-0.00
LC:	W2	D	D	W5	D	W6
Minimum:	-3.63	-5.65	-1.02	-0.41	-0.46	-0.00
LC:	W2	W11	W1	W5	D	W6
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 252/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 133**Frame Number: 13**

Level Top:
CLERESTORY-138'-6"
Bot: ROOF - 129'-0"

Column Line (95.00,-39.00)

Fy (ksi) = 50.00
Elastic Modulus (ksi) = 29000
Orientation (deg) = 90.00

Column Size = W12X72

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	11.80	0.00
	Minor:	11.80	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output: At Face of Joint
P-Delta: Yes Scale Factor: 1.00
Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 253/349

09/03/20 10:39:50

ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	6.84	28.62	19.65	4.11	0.34	0.01
LC:	D	W8	W1	W2	W5	W1
Max @ B:	6.84	19.00	1.99	4.11	0.34	0.01
LC:	D	W2	W5	W2	W5	W1
Maximum:	6.84	28.62	19.65	4.11	0.34	0.01
LC:	D	W8	W1	W2	W5	W1
@ (ft):	0.98	0.98	0.98	0.98	0.98	0.98
Min @ T:	-4.40	-34.62	-2.73	-3.56	-2.57	-0.00
LC:	W8	W2	D	W8	W1	W6
Min @ B:	-4.40	-17.79	-14.02	-3.56	-2.57	-0.00
LC:	W8	W8	W1	W8	W1	W6
Minimum:	-4.40	-34.62	-14.02	-3.56	-2.57	-0.00
LC:	W8	W2	W1	W8	W1	W6
@ (ft):	0.98	0.98	14.00	0.98	0.98	0.98



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 254/349
09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 134**Frame Number: 13**Level Top:
CLERESTORY-138'-6"
Bot: ROOF - 129'-0"

Column Line (95.00,-58.00)

Fy (ksi) = 50.00
Elastic Modulus (ksi) = 29000
Orientation (deg) = 90.00

Column Size = W12X72

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	11.80	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output: At Face of Joint
P-Delta: Yes Scale Factor: 1.00
Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 255/349

09/03/20 10:39:50

ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	6.78	34.56	0.02	4.17	0.03	0.01
LC:	D	W8	W1	W2	E1	W12
Max @ B:	6.78	14.39	0.39	4.17	0.03	0.01
LC:	D	W2	E1	W2	E1	W12
Maximum:	6.78	34.56	0.39	4.17	0.03	0.01
LC:	D	W8	E1	W2	E1	W12
@ (ft):	0.98	0.98	14.00	0.98	0.00	0.98
Min @ T:	-0.58	-40.30	-0.00	-3.76	-0.22	-0.01
LC:	W2	W2	D	W8	D	W6
Min @ B:	-0.58	-14.76	-3.02	-3.76	-0.22	-0.01
LC:	W2	W8	D	W8	D	W6
Minimum:	-0.58	-40.30	-3.02	-3.76	-0.22	-0.01
LC:	W2	W2	D	W8	D	W6
@ (ft):	0.98	0.98	14.00	0.98	0.00	0.98



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 256/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 137**Frame Number: 13**

Level Top:

Column Line (95.00,-77.00)

CLERESTORY-138'-6"

Bot: ROOF - 129'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	11.80	0.00
	Minor:	11.80	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 257/349

09/03/20 10:39:50

ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	6.83	25.31	12.67	2.88	0.30	0.00
LC:	D	W8	W1	W2	D	W5
Max @ B:	6.83	9.20	1.29	2.88	0.30	0.00
LC:	D	W2	W6	W2	D	W5
Maximum:	6.83	25.31	12.67	2.88	0.30	0.00
LC:	D	W8	W1	W2	D	W5
@ (ft):	0.98	0.98	0.98	0.98	0.98	0.98
Min @ T:	-2.83	-28.32	-2.95	-2.81	-1.25	-0.00
LC:	W7	W2	D	W8	W1	W11
Min @ B:	-2.83	-11.86	-4.80	-2.81	-1.25	-0.00
LC:	W7	W12	W10	W8	W1	W11
Minimum:	-2.83	-28.32	-4.80	-2.81	-1.25	-0.00
LC:	W7	W2	W10	W8	W1	W11
@ (ft):	0.98	0.98	14.00	0.98	0.98	0.98



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 258/349

09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 7

Level: CLERESTORY-138'-6"

Fy (ksi) = 50.00

Length (ft) = 19.00

Elastic Modulus (ksi) = 29000

Frame Number: 13

I-End (95.00,-58.00)

J-End (95.00,-39.00)

Beam Size = W24X55

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 259/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	2.44	22.22	0.15	2.76	0.11	0.00
LC:	W8	W2	W8	D	W2	D
Max @ j:	3.05	30.75	0.82	2.70	0.29	0.00
LC:	W2	W8	W2	W8	W2	D
Maximum:	3.05	30.75	0.82	2.76	0.29	0.00
LC:	W2	W8	W2	D	W2	D
@ (ft):	15.83	18.49	18.49	0.51	15.84	0.00
Min @ i:	-0.66	-17.70	-0.13	-3.29	-0.09	-0.01
LC:	W2	W8	W2	W2	W8	W1
Min @ j:	-2.07	-36.98	-1.36	-3.29	-0.59	-0.01
LC:	W8	W2	W8	W2	W8	W1
Minimum:	-2.07	-36.98	-1.36	-3.29	-0.59	-0.01
LC:	W8	W2	W8	W2	W8	W1
@ (ft):	15.83	18.49	18.49	0.51	15.84	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 260/349

09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 8

Level: CLERESTORY-138'-6"

Fy (ksi) = 50.00

Length (ft) = 19.00

Elastic Modulus (ksi) = 29000

Frame Number: 13

I-End (95.00,-77.00)

Beam Size = W24X55

J-End (95.00,-58.00)

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 261/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	2.15	29.77	0.27	2.49	0.50	0.01
LC:	W8	W2	W8	W8	W7	W1
Max @ j:	2.75	17.90	0.11	2.49	0.10	0.01
LC:	W7	W8	W9	W8	W2	W1
Maximum:	2.75	29.76	0.53	2.49	0.50	0.01
LC:	W7	W2	W12	W8	W7	W1
@ (ft):	15.83	0.51	3.17	15.84	0.51	15.83
Min @ i:	-1.38	-26.81	-1.11	-2.72	-0.07	-0.00
LC:	W2	W8	W7	W2	W11	D
Min @ j:	-0.57	-19.09	-0.11	-2.75	-0.11	-0.00
LC:	W8	W2	D	D	W12	D
Minimum:	-1.38	-26.80	-1.11	-2.75	-0.11	-0.00
LC:	W2	W8	W7	D	W12	D
@ (ft):	0.00	0.51	0.51	18.49	15.84	15.83



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 262/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 133**Frame Number: 13**

Level Top: ROOF - 129'-0"

Column Line (95.00,-39.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 263/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	13.09	19.00	1.99	1.14	1.28	0.01
LC:	D	W2	W5	W8	W1	W2
Max @ B:	13.09	6.00	3.84	1.14	1.28	0.01
LC:	D	W7	W1	W8	W1	W2
Maximum:	13.09	19.00	3.84	1.14	1.28	0.01
LC:	D	W2	W1	W8	W1	W2
@ (ft):	0.00	0.00	14.00	0.00	0.00	0.00
Min @ T:	-22.75	-17.79	-14.02	-1.05	-0.19	-0.01
LC:	W1	W8	W1	W2	W5	W8
Min @ B:	-22.75	-2.00	-0.73	-1.05	-0.19	-0.01
LC:	W1	W12	W5	W2	W5	W8
Minimum:	-22.75	-17.79	-14.02	-1.05	-0.19	-0.01
LC:	W1	W8	W1	W2	W5	W8
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 264/349
09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 134**Frame Number: 13**

Level Top: ROOF - 129'-0"

Column Line (95.00,-58.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 265/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	13.42	14.39	0.39	0.73	1.81	0.01
LC:	D	W2	E1	W8	D	W2
Max @ B:	13.42	8.30	22.26	0.73	1.81	0.01
LC:	D	W7	D	W8	D	W2
Maximum:	13.42	14.39	22.26	0.73	1.81	0.01
LC:	D	W2	D	W8	D	W2
@ (ft):	0.00	0.00	14.00	0.00	0.00	0.00
Min @ T:	-0.58	-14.76	-3.02	-0.44	-0.24	-0.01
LC:	W2	W8	D	W2	W3	W8
Min @ B:	-0.58	-4.60	-4.12	-0.44	-0.24	-0.01
LC:	W2	W8	W1	W2	W3	W8
Minimum:	-0.58	-14.76	-4.12	-0.44	-0.24	-0.01
LC:	W2	W8	W1	W2	W3	W8
@ (ft):	0.00	0.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 266/349
09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 137**Frame Number: 13**

Level Top: ROOF - 129'-0"

Column Line (95.00,-77.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 267/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	21.02	9.20	1.29	0.63	0.23	0.01
LC:	D	W2	W6	W4	W10	W2
Max @ B:	21.02	10.20	0.09	0.63	0.23	0.01
LC:	D	W2	W5	W4	W10	W2
Maximum:	21.02	10.20	1.29	0.63	0.23	0.01
LC:	D	W2	W6	W4	W10	W2
@ (ft):	0.00	14.00	0.00	0.00	0.00	0.00
Min @ T:	-2.83	-11.86	-4.80	-0.09	-0.25	-0.01
LC:	W7	W12	W10	D	W11	W8
Min @ B:	-2.83	-5.91	-4.33	-0.09	-0.25	-0.01
LC:	W7	W8	W1	D	W11	W8
Minimum:	-2.83	-11.86	-4.80	-0.09	-0.25	-0.01
LC:	W7	W12	W10	D	W11	W8
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 268/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 133**Frame Number: 13**

Level Top: LEVEL 2 - 115'-0"

Column Line (95.00,-39.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 269/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	33.37	2.93	3.58	0.04	0.09	0.00
LC:	D	W1	W1	E4	D	W12
Max @ B:	33.37	-0.00	0.00	0.04	0.09	0.00
LC:	D	D	D	E4	D	W12
Maximum:	33.37	2.93	3.58	0.04	0.09	0.00
LC:	D	W1	W1	E4	D	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-22.58	-0.65	-1.32	-0.20	-0.24	-0.00
LC:	W1	E4	D	W1	W1	W6
Min @ B:	-22.58	-0.00	0.00	-0.20	-0.24	-0.00
LC:	W1	D	D	W1	W1	W6
Minimum:	-22.58	-0.65	-1.32	-0.20	-0.24	-0.00
LC:	W1	E4	D	W1	W1	W6
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 270/349
09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 134**Frame Number: 13**

Level Top: LEVEL 2 - 115'-0"

Column Line (95.00,-58.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 271/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	43.09	4.38	0.41	0.13	1.47	0.00
LC:	D	W7	W6	W8	D	W12
Max @ B:	43.09	-0.00	0.00	0.13	1.47	0.00
LC:	D	D	D	W8	D	W12
Maximum:	43.09	4.38	0.41	0.13	1.47	0.00
LC:	D	W7	W6	W8	D	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-0.49	-1.93	-22.08	-0.29	-0.03	-0.00
LC:	W2	W8	D	W7	W6	W6
Min @ B:	-0.49	-0.00	0.00	-0.29	-0.03	-0.00
LC:	W2	D	D	W7	W6	W6
Minimum:	-0.49	-1.93	-22.08	-0.29	-0.03	-0.00
LC:	W2	W8	D	W7	W6	W6
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 272/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 137**Frame Number: 13**

Level Top: LEVEL 2 - 115'-0"

Column Line (95.00,-77.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 273/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	67.97	5.74	0.20	0.25	0.14	0.00
LC:	D	W7	E2	W8	W1	W12
Max @ B:	67.97	-0.00	0.00	0.25	0.14	0.00
LC:	D	D	D	W8	W1	W12
Maximum:	67.97	5.74	0.20	0.25	0.14	0.00
LC:	D	W7	E2	W8	W1	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-3.10	-2.77	-0.78	-0.46	-0.00	-0.00
LC:	W7	W8	W3	W2	W5	W6
Min @ B:	-3.10	-0.00	0.00	-0.46	-0.00	-0.00
LC:	W7	D	D	W2	W5	W6
Minimum:	-3.10	-2.77	-0.78	-0.46	-0.00	-0.00
LC:	W7	W8	W3	W2	W5	W6
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 274/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 117**Frame Number: 14**

Level Top:

Column Line (95.00,-174.00)

CLERESTORY-138'-6"

Bot: ROOF - 129'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	11.80	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 275/349

09/03/20 10:39:50

ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	6.91	35.82	0.02	3.53	0.08	0.01
LC:	D	W8	W1	W2	W4	W12
Max @ B:	6.91	1.40	0.86	3.53	0.08	0.01
LC:	D	W6	W12	W2	W4	W12
Maximum:	6.91	35.82	0.86	3.53	0.08	0.01
LC:	D	W8	W12	W2	W4	W12
@ (ft):	0.98	0.98	14.00	0.98	0.00	0.98
Min @ T:	-1.32	-45.94	-0.01	-3.15	-0.23	-0.01
LC:	W2	W2	D	W12	D	W6
Min @ B:	-1.32	-7.34	-3.19	-3.15	-0.23	-0.01
LC:	W2	W12	D	W12	D	W6
Minimum:	-1.32	-45.94	-3.19	-3.15	-0.23	-0.01
LC:	W2	W2	D	W12	D	W6
@ (ft):	0.98	0.98	14.00	0.98	0.00	0.98



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 276/349
09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 13

Level: CLERESTORY-138'-6"

Fy (ksi) = 50.00

Length (ft) = 19.00

Elastic Modulus (ksi) = 29000

Frame Number: 14

I-End (95.00,-174.00)

J-End (95.00,-155.00)

Beam Size = W24X55

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 277/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	1.84	26.40	0.18	3.00	0.08	0.00
LC:	W12	W2	W12	W8	W2	D
Max @ j:	3.49	35.09	0.69	3.00	0.24	0.00
LC:	W2	W8	W2	W8	W2	D
Maximum:	3.49	35.09	0.69	3.00	0.24	0.00
LC:	W2	W8	W2	W8	W2	D
@ (ft):	15.83	18.49	18.49	0.51	15.84	0.00
Min @ i:	-0.12	-18.87	-0.11	-4.06	-0.09	-0.01
LC:	Lp	W8	D	W2	W12	W1
Min @ j:	-2.22	-46.60	-1.25	-4.06	-0.55	-0.01
LC:	W8	W2	W8	W2	W8	W1
Minimum:	-2.22	-46.60	-1.25	-4.06	-0.55	-0.01
LC:	W8	W2	W8	W2	W8	W1
@ (ft):	15.83	18.49	18.49	0.51	15.84	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 278/349
09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 14

Level: CLERESTORY-138'-6"

Fy (ksi) = 50.00

Length (ft) = 19.00

Elastic Modulus (ksi) = 29000

Frame Number: 14

I-End (95.00,-193.00)

J-End (95.00,-174.00)

Beam Size = W24X55

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 279/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	1.53	29.81	0.15	2.41	0.45	0.01
LC:	W12	W2	W8	W8	W7	W1
Max @ j:	3.24	17.25	0.10	2.41	0.07	0.01
LC:	W2	W8	W7	W8	W2	W1
Maximum:	3.24	29.81	0.52	2.41	0.45	0.01
LC:	W2	W2	W12	W8	W7	W1
@ (ft):	15.83	0.51	3.17	15.84	0.51	15.83
Min @ i:	-0.28	-26.06	-1.00	-2.74	-0.02	-0.00
LC:	W5	W8	W7	W2	W11	D
Min @ j:	-0.72	-19.51	-0.11	-2.81	-0.06	-0.00
LC:	W8	W2	D	D	W8	D
Minimum:	-0.72	-26.05	-1.00	-2.81	-0.10	-0.00
LC:	W8	W8	W7	D	W12	D
@ (ft):	15.83	0.51	0.51	18.49	6.34	15.83



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 280/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 117**Frame Number: 14**

Level Top: ROOF - 129'-0"

Column Line (95.00,-174.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 281/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	13.56	1.40	0.86	1.93	2.00	0.00
LC:	D	W6	W12	W2	D	W2
Max @ B:	13.56	29.09	24.67	1.93	2.00	0.00
LC:	D	W2	D	W2	D	W2
Maximum:	13.56	29.09	24.67	1.93	2.00	0.00
LC:	D	W2	D	W2	D	W2
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00
Min @ T:	-1.32	-7.34	-3.17	-0.78	-0.35	-0.00
LC:	W2	W12	D	W11	W4	W12
Min @ B:	-1.32	-17.07	-4.88	-0.78	-0.35	-0.00
LC:	W2	W8	W4	W11	W4	W12
Minimum:	-1.32	-17.07	-4.88	-0.78	-0.35	-0.00
LC:	W2	W8	W4	W11	W4	W12
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 282/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 117**Frame Number: 14**

Level Top: LEVEL 2 - 115'-0"

Column Line (95.00,-174.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 283/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	41.89	19.26	0.18	0.78	1.61	0.00
LC:	D	W2	W5	W8	D	W12
Max @ B:	41.89	-0.00	0.00	0.78	1.61	0.00
LC:	D	D	D	W8	D	W12
Maximum:	41.89	19.26	0.18	0.78	1.61	0.00
LC:	D	W2	W5	W8	D	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-1.24	-11.06	-24.18	-1.34	-0.01	-0.00
LC:	W2	W8	D	W2	W5	W9
Min @ B:	-1.24	-0.00	0.00	-1.34	-0.01	-0.00
LC:	W2	D	D	W2	W5	W9
Minimum:	-1.24	-11.06	-24.18	-1.34	-0.01	-0.00
LC:	W2	W8	D	W2	W5	W9
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 284/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 99**Frame Number: 15**

Level Top:
CLERESTORY-138'-6"
Bot: ROOF - 129'-0"

Column Line (151.00,-174.00)

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	11.80	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 285/349

09/03/20 10:39:50

ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	7.40	30.37	0.02	4.82	0.32	0.01
LC:	D	W11	D	W2	W2	W10
Max @ B:	7.40	15.07	4.48	4.82	0.32	0.01
LC:	D	W2	W2	W2	W2	W10
Maximum:	7.40	30.37	4.48	4.82	0.32	0.01
LC:	D	W11	W2	W2	W2	W10
@ (ft):	0.98	0.98	14.00	0.98	0.00	0.98
Min @ T:	-1.59	-48.13	-0.00	-3.06	-0.29	-0.01
LC:	W2	W2	W2	W11	W11	W11
Min @ B:	-1.59	-9.73	-4.34	-3.06	-0.29	-0.01
LC:	W2	W11	W11	W11	W11	W11
Minimum:	-1.59	-48.13	-4.34	-3.06	-0.29	-0.01
LC:	W2	W2	W11	W11	W11	W11
@ (ft):	0.98	0.98	14.00	0.98	0.00	0.98



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 286/349

09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 11

Level: CLERESTORY-138'-6"

Fy (ksi) = 50.00

Length (ft) = 19.00

Elastic Modulus (ksi) = 29000

Frame Number: 15

I-End (151.00,-174.00)

J-End (151.00,-155.00)

Beam Size = W24X55

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 287/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	0.42	28.76	0.27	3.12	0.13	0.00
LC:	W11	W2	W2	D	W11	W2
Max @ j:	4.52	30.67	0.49	2.69	0.05	0.00
LC:	W2	W8	W11	W8	W8	W2
Maximum:	4.52	30.67	0.51	3.12	0.13	0.00
LC:	W2	W8	W11	D	W11	W2
@ (ft):	15.83	18.49	15.83	0.51	0.51	0.00
Min @ i:	-1.23	-17.63	-0.16	-4.37	-0.17	-0.01
LC:	W1	W8	W11	W2	W2	D
Min @ j:	-2.47	-49.86	-1.26	-4.37	-0.51	-0.01
LC:	W8	W2	W7	W2	W7	D
Minimum:	-2.47	-49.86	-1.26	-4.37	-0.51	-0.01
LC:	W8	W2	W7	W2	W7	D
@ (ft):	15.83	18.49	18.49	0.51	15.84	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 288/349

09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 12

Level: CLERESTORY-138'-6"

Fy (ksi) = 50.00

Length (ft) = 19.00

Elastic Modulus (ksi) = 29000

Frame Number: 15

I-End (151.00,-193.00)

J-End (151.00,-174.00)

Beam Size = W24X55

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 289/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	0.84	29.67	1.19	1.90	0.40	0.01
LC:	W11	W2	W2	W11	W8	D
Max @ j:	3.92	13.41	0.08	1.90	0.02	0.01
LC:	W2	W11	W10	W11	D	D
Maximum:	3.92	29.67	1.19	1.90	0.40	0.01
LC:	W2	W2	W2	W11	W8	D
@ (ft):	15.83	0.51	0.51	0.51	0.51	15.83
Min @ i:	-1.04	-20.66	-0.96	-2.79	-0.39	-0.00
LC:	W7	W11	W8	W2	W2	W5
Min @ j:	-2.45	-20.44	-0.03	-3.02	-0.05	-0.00
LC:	W8	W2	W11	D	W7	W5
Minimum:	-2.45	-20.66	-0.96	-3.02	-0.39	-0.00
LC:	W8	W11	W8	D	W2	W5
@ (ft):	15.83	0.51	0.51	18.49	0.51	12.67



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 290/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 99**Frame Number: 15**

Level Top: ROOF - 129'-0"

Column Line (151.00,-174.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 291/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	13.82	15.07	4.48	0.16	0.38	0.01
LC:	D	W2	W2	W11	W11	W8
Max @ B:	13.82	13.27	0.95	0.16	0.38	0.01
LC:	D	W2	W11	W11	W11	W8
Maximum:	13.82	15.07	4.48	0.16	0.38	0.01
LC:	D	W2	W2	W11	W11	W8
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-1.59	-9.73	-4.34	-0.52	-0.95	-0.01
LC:	W2	W11	W11	W4	D	W2
Min @ B:	-1.59	-9.32	-11.81	-0.52	-0.95	-0.01
LC:	W2	W8	D	W4	D	W2
Minimum:	-1.59	-9.73	-11.81	-0.52	-0.95	-0.01
LC:	W2	W11	D	W4	D	W2
@ (ft):	0.00	0.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 292/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 99**Frame Number: 15**

Level Top: LEVEL 2 - 115'-0"

Column Line (151.00,-174.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 293/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	39.35	8.33	11.63	0.40	0.22	0.00
LC:	D	W2	D	W8	W7	W12
Max @ B:	39.35	-0.00	0.00	0.40	0.22	0.00
LC:	D	D	D	W8	W7	W12
Maximum:	39.35	8.33	11.63	0.40	0.22	0.00
LC:	D	W2	D	W8	W7	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-1.52	-5.81	-2.88	-0.58	-0.78	-0.00
LC:	W2	W8	W7	W2	D	W9
Min @ B:	-1.52	-0.00	0.00	-0.58	-0.78	-0.00
LC:	W2	D	D	W2	D	W9
Minimum:	-1.52	-5.81	-2.88	-0.58	-0.78	-0.00
LC:	W2	W8	W7	W2	D	W9
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 294/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 98**Frame Number: 16**

Level Top:

Column Line (151.00,-155.00)

CLERESTORY-138'-6"

Bot: ROOF - 129'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	11.80	0.00
	Minor:	11.85	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 295/349

09/03/20 10:39:50

ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	10.51	28.66	18.98	5.74	-0.00	0.01
LC:	D	W8	W1	W2	Ln	W8
Max @ B:	10.51	28.52	-0.00	5.74	-0.00	0.01
LC:	D	W2	Ln	W2	Ln	W8
Maximum:	10.51	28.66	18.98	5.74	-0.00	0.01
LC:	D	W8	W1	W2	Ln	W8
@ (ft):	0.98	0.98	0.99	0.98	0.99	0.98
Min @ T:	-1.89	-46.45	0.00	-3.46	-2.41	-0.01
LC:	W11	W2	Ln	W11	W1	W2
Min @ B:	-1.89	-16.82	-12.62	-3.46	-2.41	-0.01
LC:	W11	W11	W1	W11	W1	W2
Minimum:	-1.89	-46.45	-12.62	-3.46	-2.41	-0.01
LC:	W11	W2	W1	W11	W1	W2
@ (ft):	0.98	0.98	14.00	0.98	0.99	0.98



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force EnvelopePage 296/349
09/03/20 10:39:50**STEEL COLUMN INFORMATION:****Column Number: 106****Frame Number: 16**Level Top:
CLERESTORY-138'-6"
Bot: ROOF - 129'-0"

Column Line (118.00,-155.00)

Fy (ksi) = 50.00
Elastic Modulus (ksi) = 29000
Orientation (deg) = 0.00

Column Size = W12X72

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	11.85	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output: At Face of Joint
P-Delta: Yes Scale Factor: 1.00
Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 297/349

09/03/20 10:39:50

ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	23.26	11.88	0.02	6.38	0.57	0.01
LC:	D	D	W8	W1	W2	W12
Max @ B:	23.26	35.43	9.14	6.38	0.57	0.01
LC:	D	W1	W2	W1	W2	W12
Maximum:	23.26	35.43	9.14	6.38	0.57	0.01
LC:	D	W1	W2	W1	W2	W12
@ (ft):	0.99	14.00	14.00	0.99	0.00	0.99
Min @ T:	0.00	-48.25	-0.02	-1.21	-0.42	-0.00
LC:	Ln	W1	W2	D	W8	W6
Min @ B:	0.00	-3.86	-6.61	-1.21	-0.42	-0.00
LC:	Ln	D	W8	D	W8	W6
Minimum:	0.00	-48.25	-6.61	-1.21	-0.42	-0.00
LC:	Ln	W1	W8	D	W8	W6
@ (ft):	0.99	0.99	14.00	0.99	0.00	0.99



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 298/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 114**Frame Number: 16**

Level Top:
CLERESTORY-138'-6"
Bot: ROOF - 129'-0"

Column Line (95.00,-155.00)

Fy (ksi) = 50.00
Elastic Modulus (ksi) = 29000
Orientation (deg) = 90.00

Column Size = W12X72

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	11.80	0.00
	Minor:	11.80	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output: At Face of Joint
P-Delta: Yes Scale Factor: 1.00
Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 299/349

09/03/20 10:39:50

ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	6.81	33.07	19.23	4.44	0.28	0.01
LC:	D	W8	W1	W2	D	W7
Max @ B:	6.81	13.49	0.67	4.44	0.28	0.01
LC:	D	W2	Sp	W2	D	W7
Maximum:	6.81	33.07	19.23	4.44	0.28	0.01
LC:	D	W8	W1	W2	D	W7
@ (ft):	0.98	0.98	0.98	0.98	0.98	0.98
Min @ T:	-4.26	-44.30	-3.08	-3.61	-2.52	-0.00
LC:	W8	W2	D	W8	W1	Sp
Min @ B:	-4.26	-14.97	-13.57	-3.61	-2.52	-0.00
LC:	W8	W12	W1	W8	W1	Sp
Minimum:	-4.26	-44.30	-13.57	-3.61	-2.52	-0.00
LC:	W8	W2	W1	W8	W1	Sp
@ (ft):	0.98	0.98	14.00	0.98	0.98	0.98



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 300/349

09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 9

Level: CLERESTORY-138'-6"

Fy (ksi) = 50.00

Length (ft) = 23.00

Elastic Modulus (ksi) = 29000

Frame Number: 16

I-End (95.00,-155.00)

Beam Size = W24X55

J-End (118.00,-155.00)

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 301/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	0.27	21.72	0.82	3.98	0.47	0.01
LC:	D	W1	W2	D	W8	W8
Max @ j:	4.12	-0.00	0.17	-0.00	0.12	0.01
LC:	W8	Ln	W7	Ln	W7	W8
Maximum:	4.12	21.71	0.82	3.98	0.47	0.01
LC:	W8	W1	W2	D	W8	W8
@ (ft):	19.17	0.00	0.00	0.00	0.00	19.17
Min @ i:	-1.62	-3.36	-1.51	-2.12	-0.28	-0.01
LC:	W7	D	W8	W1	W2	W2
Min @ j:	-2.93	-49.47	-0.04	-8.27	-0.03	-0.01
LC:	W2	D	W8	D	W12	W2
Minimum:	-2.93	-49.47	-1.51	-8.27	-0.28	-0.01
LC:	W2	D	W8	D	W2	W2
@ (ft):	19.17	22.49	0.00	22.49	0.00	19.17



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 302/349

09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 10

Level: CLERESTORY-138'-6"

Fy (ksi) = 50.00

Length (ft) = 33.00

Elastic Modulus (ksi) = 29000

Frame Number: 16

I-End (118.00,-155.00)

J-End (151.00,-155.00)

Beam Size = W24X62

INPUT PARAMETERS:

Fixity Major Axis:

Minor Axis:

Torsion:

Rigid End Zone (in):

I-End

Fix

Fix

Fix

0.00

J-End

Fix

Fix

Fix

0.00 (Ignore)

Member Force Output:

P-Delta: Yes

Ground Level: Base

At Face of Joint

Scale Factor: 1.00

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 303/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	1.35	26.81	0.16	11.12	0.13	0.01
LC:	D	W1	W2	D	W8	W2
Max @ j:	1.41	-0.00	1.53	-0.00	0.48	0.01
LC:	W4	Ln	W7	Ln	W7	W2
Maximum:	1.67	49.94	1.53	11.12	0.48	0.01
LC:	W8	D	W7	D	W7	W2
@ (ft):	16.50	18.15	33.00	0.51	29.70	0.00
Min @ i:	-5.67	-61.08	-0.17	-1.48	-0.12	-0.01
LC:	W7	D	W8	W1	W2	W8
Min @ j:	-0.45	-21.37	-0.55	-8.02	-0.32	-0.01
LC:	W5	W1	W11	D	W11	W8
Minimum:	-5.67	-61.06	-0.55	-8.02	-0.32	-0.01
LC:	W7	D	W11	D	W11	W8
@ (ft):	0.00	0.51	33.00	33.00	29.70	3.30



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 304/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 98**Frame Number: 16**

Level Top: ROOF - 129'-0"

Column Line (151.00,-155.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 305/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	20.99	28.52	-0.00	1.02	1.16	0.00
LC:	D	W2	Ln	W11	W1	Sp
Max @ B:	20.99	3.89	3.29	1.02	1.16	0.00
LC:	D	W2	W1	W11	W1	Sp
Maximum:	20.99	28.52	3.29	1.02	1.16	0.00
LC:	D	W2	W1	W11	W1	Sp
@ (ft):	0.00	0.00	14.00	0.00	0.00	0.00
Min @ T:	-1.89	-16.82	-12.62	-1.80	-0.00	-0.00
LC:	W11	W11	W1	W2	Ln	W7
Min @ B:	-1.89	-3.66	-0.00	-1.80	-0.00	-0.00
LC:	W11	W8	Ln	W2	Ln	W7
Minimum:	-1.89	-16.82	-12.62	-1.80	-0.00	-0.00
LC:	W11	W11	W1	W2	Ln	W7
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 306/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 106**Frame Number: 16**

Level Top: ROOF - 129'-0"

Column Line (118.00,-155.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 0.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 307/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	32.62	35.43	9.14	0.42	0.40	0.00
LC:	D	W1	W2	D	W8	Sp
Max @ B:	32.62	2.02	1.87	0.42	0.40	0.00
LC:	D	D	W2	D	W8	Sp
Maximum:	32.62	35.43	9.14	0.42	0.40	0.00
LC:	D	W1	W2	D	W8	Sp
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-0.33	-3.86	-6.61	-3.13	-0.52	-0.00
LC:	W2	D	W8	W1	W2	W7
Min @ B:	-0.33	-8.42	-1.05	-3.13	-0.52	-0.00
LC:	W2	W1	W8	W1	W2	W7
Minimum:	-0.33	-8.42	-6.61	-3.13	-0.52	-0.00
LC:	W2	W1	W8	W1	W2	W7
@ (ft):	0.00	14.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 308/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 114**Frame Number: 16**

Level Top: ROOF - 129'-0"

Column Line (95.00,-155.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 309/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	12.85	13.49	0.67	0.92	1.23	0.00
LC:	D	W2	Sp	W10	W1	Sp
Max @ B:	12.85	19.61	3.60	0.92	1.23	0.00
LC:	D	W2	W1	W10	W1	Sp
Maximum:	12.85	19.61	3.60	0.92	1.23	0.00
LC:	D	W2	W1	W10	W1	Sp
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00
Min @ T:	-24.54	-14.97	-13.57	-0.15	-0.07	-0.00
LC:	W1	W12	W1	W11	Sp	W7
Min @ B:	-24.54	-10.55	-0.31	-0.15	-0.07	-0.00
LC:	W1	W8	Sp	W11	Sp	W7
Minimum:	-24.54	-14.97	-13.57	-0.15	-0.07	-0.00
LC:	W1	W12	W1	W11	Sp	W7
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 310/349

09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 302

Level: ROOF - 129'-0"

Fy (ksi) = 50.00

Length (ft) = 23.00

Elastic Modulus (ksi) = 29000

Frame Number: 16

I-End (95.00,-155.00)

J-End (118.00,-155.00)

Beam Size = W16X40

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 311/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	0.17	0.00	-0.00	2.47	0.21	0.00
LC:	E4	D	D	D	W2	W6
Max @ j:	0.39	-0.00	0.00	0.00	0.02	0.00
LC:	W12	D	D	W7	W8	W6
Maximum:	0.39	14.23	0.81	2.47	0.21	0.00
LC:	W12	D	W2	D	W4	W6
@ (ft):	19.17	11.50	3.83	0.00	3.84	0.00
Min @ i:	-7.85	0.00	-0.00	-0.00	-0.30	-0.00
LC:	W1	D	D	W5	W8	W12
Min @ j:	-5.18	-0.00	0.00	-2.47	-0.04	-0.00
LC:	W7	D	D	D	W2	W12
Minimum:	-7.85	-0.00	-1.14	-2.47	-0.30	-0.00
LC:	W1	W7	W8	D	W8	W12
@ (ft):	0.00	19.17	3.83	23.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 312/349

09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 13

Story Top: ROOF - 129'-0"

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 18.12

Elastic Modulus (ksi) = 29000

Frame Number: 16

I-End (ft): (95.00,-155.00)

J-End (ft): (106.50,-155.00)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 313/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	28.63	0.00	-0.00	0.00	0.00	-0.00
LC:	W1	D	D	W1	W2	D
Max @ B:	28.63	-0.00	0.00	0.00	0.00	-0.00
LC:	W1	D	D	W1	W2	D
Maximum:	28.63	0.00	-0.00	0.00	0.00	-0.00
LC:	W1	D	D	W1	W2	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-0.56	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W6	D	D	D	W8	D
Min @ B:	-0.56	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W6	D	D	D	W8	D
Minimum:	-0.56	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W6	D	D	D	W8	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 314/349
09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 14Story Top: ROOF - 129'-0"
Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 36.00

Length (ft) = 18.12

Elastic Modulus (ksi) = 29000

Frame Number: 16

I-End (ft): (118.00,-155.00)

J-End (ft): (106.50,-155.00)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 315/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	2.84	0.00	-0.00	0.00	0.00	-0.00
LC:	Sp	D	D	D	W8	D
Max @ B:	2.84	-0.00	0.00	0.00	0.00	-0.00
LC:	Sp	D	D	D	W8	D
Maximum:	2.84	0.00	-0.00	0.00	0.00	-0.00
LC:	Sp	D	D	D	W8	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-29.92	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W1	D	D	W1	W2	D
Min @ B:	-29.92	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W1	D	D	W1	W2	D
Minimum:	-29.92	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W1	D	D	W1	W2	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 316/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 98**Frame Number: 16**

Level Top: LEVEL 2 - 115'-0"

Column Line (151.00,-155.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 317/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	52.85	0.71	3.05	0.11	0.00	0.00
LC:	D	W5	W1	W8	Ln	W12
Max @ B:	52.85	0.00	0.00	0.11	0.00	0.00
LC:	D	D	D	W8	Ln	W12
Maximum:	52.85	0.71	3.05	0.11	0.00	0.00
LC:	D	W5	W1	W8	Ln	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-1.81	-1.36	-0.00	-0.09	-0.13	-0.00
LC:	W11	W4	Ln	W5	W1	W9
Min @ B:	-1.81	0.00	0.00	-0.09	-0.13	-0.00
LC:	W11	D	D	W5	W1	W9
Minimum:	-1.81	-1.36	-0.00	-0.09	-0.13	-0.00
LC:	W11	W4	Ln	W5	W1	W9
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 318/349
09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 106**Frame Number: 16**

Level Top: LEVEL 2 - 115'-0"

Column Line (118.00,-155.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 0.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 319/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	55.95	1.03	0.23	0.59	0.01	0.00
LC:	D	D	D	W1	W8	W12
Max @ B:	55.95	0.00	0.00	0.59	0.01	0.00
LC:	D	D	D	W1	W8	W12
Maximum:	55.95	1.03	0.23	0.59	0.01	0.00
LC:	D	D	D	W1	W8	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-0.51	-9.22	-0.17	-0.07	-0.03	-0.00
LC:	W2	W1	W3	D	W6	W6
Min @ B:	-0.51	0.00	0.00	-0.07	-0.03	-0.00
LC:	W2	D	D	D	W6	W6
Minimum:	-0.51	-9.22	-0.17	-0.07	-0.03	-0.00
LC:	W2	W1	W3	D	W6	W6
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 320/349
09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 114**Frame Number: 16**

Level Top: LEVEL 2 - 115'-0"

Column Line (95.00,-155.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 321/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	32.40	12.49	3.43	0.56	0.11	0.00
LC:	D	W2	W1	W8	D	W12
Max @ B:	32.40	-0.00	0.00	0.56	0.11	0.00
LC:	D	D	D	W8	D	W12
Maximum:	32.40	12.49	3.43	0.56	0.11	0.00
LC:	D	W2	W1	W8	D	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-24.55	-6.28	-1.69	-1.02	-0.06	-0.00
LC:	W1	W8	D	W2	W6	W9
Min @ B:	-24.55	-0.00	0.00	-1.02	-0.06	-0.00
LC:	W1	D	D	W2	W6	W9
Minimum:	-24.55	-6.28	-1.69	-1.02	-0.06	-0.00
LC:	W1	W8	D	W2	W6	W9
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 322/349

09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 302

Level: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Length (ft) = 23.00

Elastic Modulus (ksi) = 29000

Frame Number: 16

I-End (95.00,-155.00)

Beam Size = W18X35

J-End (118.00,-155.00)

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 323/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	1.37	0.00	-0.00	3.41	0.00	0.01
LC:	W4	D	D	D	W6	W2
Max @ j:	0.69	-0.00	0.00	0.30	0.00	0.00
LC:	W6	D	D	W12	W6	W8
Maximum:	4.67	13.69	0.03	3.82	0.02	0.01
LC:	W1	D	W1	D	W6	W2
@ (ft):	8.62	5.75	11.50	11.50	5.75	0.00
Min @ i:	-0.05	0.00	-0.00	-0.23	-0.00	-0.01
LC:	Lp	D	D	W6	W3	W8
Min @ j:	-0.57	-0.00	0.00	-1.61	-0.00	-0.00
LC:	W12	D	D	D	W1	W2
Minimum:	-2.51	-11.53	-0.03	-5.93	-0.02	-0.01
LC:	W12	D	W8	D	W8	W8
@ (ft):	11.50	11.50	11.50	11.50	8.63	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 324/349
09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 13

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 18.90

Elastic Modulus (ksi) = 29000

Frame Number: 16

I-End (ft): (106.50,-155.00)

J-End (ft): (95.00,-155.00)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

Fixity

Major Axis:

Minor Axis:

Torsion:

Member Force Output:

P-Delta: Yes

Ground Level: Base

Top

Pin

Pin

Pin

At Centerline of Joint

Bottom

Pin

Pin

Pin

Scale Factor: 1.00

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 325/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	9.46	0.00	-0.00	0.00	0.00	-0.00
LC:	D	D	D	W1	W2	D
Max @ B:	9.46	-0.00	0.00	0.00	0.00	-0.00
LC:	D	D	D	W1	W2	D
Maximum:	9.46	0.00	-0.00	0.00	0.00	-0.00
LC:	D	D	D	W1	W2	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-46.82	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W1	D	D	W6	W8	D
Min @ B:	-46.82	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W1	D	D	W6	W8	D
Minimum:	-46.82	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W1	D	D	W6	W8	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 326/349
09/03/20 10:39:50

STEEL BRACE INFORMATION:

Brace Number: 14

Story Top: LEVEL 2 - 115'-0"

Bot: Base

Fy (ksi) = 36.00

Length (ft) = 18.90

Elastic Modulus (ksi) = 29000

Frame Number: 16

I-End (ft): (106.50,-155.00)

J-End (ft): (118.00,-155.00)

Brace Size = HSS6X6X5/16

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Pin	Pin
	Minor Axis:	Pin	Pin
	Torsion:	Pin	Pin
Member Force Output:		At Centerline of Joint	
P-Delta:	Yes	Scale Factor:	1.00
Ground Level:	Base		

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



Member Force Envelope

RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 327/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	45.63	0.00	-0.00	0.00	0.00	-0.00
LC:	W1	D	D	W6	W8	D
Max @ B:	45.63	-0.00	0.00	0.00	0.00	-0.00
LC:	W1	D	D	W6	W8	D
Maximum:	45.63	0.00	-0.00	0.00	0.00	-0.00
LC:	W1	D	D	W6	W8	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-6.05	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W6	D	D	W1	W2	D
Min @ B:	-6.05	-0.00	0.00	-0.00	-0.00	-0.00
LC:	W6	D	D	W1	W2	D
Minimum:	-6.05	0.00	-0.00	-0.00	-0.00	-0.00
LC:	W6	D	D	W1	W2	D
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 328/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 100**Frame Number: 17**

Level Top:
CLERESTORY-138'-6"
Bot: ROOF - 129'-0"

Column Line (151.00,-193.00)

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	11.80	0.00
	Minor:	11.85	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 329/349

09/03/20 10:39:50

ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	10.66	19.85	13.31	2.30	1.06	0.00
LC:	D	W11	W8	W2	W2	W10
Max @ B:	10.66	5.47	7.65	2.30	1.06	0.00
LC:	D	W4	W2	W2	W2	W10
Maximum:	10.66	19.85	13.31	2.30	1.06	0.00
LC:	D	W11	W8	W2	W2	W10
@ (ft):	0.98	0.98	0.99	0.98	0.99	0.98
Min @ T:	-3.15	-28.83	-6.29	-1.81	-1.59	-0.01
LC:	W2	W2	W6	W11	W8	W11
Min @ B:	-3.15	-3.78	-7.40	-1.81	-1.59	-0.01
LC:	W2	W11	W8	W11	W8	W11
Minimum:	-3.15	-28.83	-7.40	-1.81	-1.59	-0.01
LC:	W2	W2	W8	W11	W8	W11
@ (ft):	0.98	0.98	14.00	0.98	0.99	0.98



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 330/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:**Column Number: 107****Frame Number: 17**

Level Top:
CLERESTORY-138'-6"
Bot: ROOF - 129'-0"

Column Line (118.00,-193.00)

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 0.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	11.85	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 331/349

09/03/20 10:39:50

ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	23.26	11.28	0.01	2.90	0.17	0.01
LC:	D	W6	W8	W1	W8	W12
Max @ B:	23.26	9.71	2.04	2.90	0.17	0.01
LC:	D	W8	W11	W1	W8	W12
Maximum:	23.26	11.28	2.04	2.90	0.17	0.01
LC:	D	W6	W11	W1	W8	W12
@ (ft):	0.99	0.99	14.00	0.99	0.00	0.99
Min @ T:	-0.06	-31.36	-0.01	-1.64	-0.52	-0.01
LC:	W6	W1	W2	W6	W2	W6
Min @ B:	-0.06	-10.13	-6.60	-1.64	-0.52	-0.01
LC:	W6	W6	W2	W6	W2	W6
Minimum:	-0.06	-31.36	-6.60	-1.64	-0.52	-0.01
LC:	W6	W1	W2	W6	W2	W6
@ (ft):	0.99	0.99	14.00	0.99	0.00	0.99



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 332/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 118**Frame Number: 17**

Level Top:
CLERESTORY-138'-6"
Bot: ROOF - 129'-0"

Column Line (95.00,-193.00)

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	11.80	0.00
	Minor:	11.80	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 333/349

09/03/20 10:39:50

ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	6.79	25.35	12.53	1.66	0.56	0.00
LC:	D	W8	W1	W6	W6	W5
Max @ B:	6.79	3.38	3.22	1.66	0.56	0.00
LC:	D	W11	W6	W6	W6	W5
Maximum:	6.79	25.35	12.53	1.66	0.56	0.00
LC:	D	W8	W1	W6	W6	W5
@ (ft):	0.98	0.98	0.98	0.98	0.98	0.98
Min @ T:	-2.62	-29.68	-4.04	-2.21	-1.19	-0.00
LC:	W7	W2	W6	W12	W1	W11
Min @ B:	-2.62	-10.54	-3.79	-2.21	-1.19	-0.00
LC:	W7	W10	W8	W12	W1	W11
Minimum:	-2.62	-29.68	-4.04	-2.21	-1.19	-0.00
LC:	W7	W2	W6	W12	W1	W11
@ (ft):	0.98	0.98	0.98	0.98	0.98	0.98



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 334/349
09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 15

Level: CLERESTORY-138'-6"

Fy (ksi) = 50.00

Length (ft) = 33.00

Elastic Modulus (ksi) = 29000

Frame Number: 17

I-End (118.00,-193.00)

J-End (151.00,-193.00)

Beam Size = W24X62

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 335/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	3.68	15.86	0.19	11.07	0.11	0.00
LC:	W2	W1	W8	D	W2	W2
Max @ j:	1.11	7.25	1.40	0.42	0.58	0.00
LC:	D	W2	W2	W6	W5	W2
Maximum:	3.68	50.57	1.40	11.07	0.58	0.00
LC:	W2	D	W2	D	W5	W2
@ (ft):	0.00	17.82	33.00	0.51	29.70	3.30
Min @ i:	-3.53	-59.63	-0.38	-0.93	-0.05	-0.00
LC:	W8	D	W2	W1	W8	W8
Min @ j:	-0.49	-14.88	-1.16	-8.07	-0.37	-0.00
LC:	W6	W8	W8	D	W8	W8
Minimum:	-3.53	-59.60	-1.16	-8.07	-0.37	-0.00
LC:	W8	D	W8	D	W8	W8
@ (ft):	0.00	0.51	33.00	33.00	29.70	3.30



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 336/349
09/03/20 10:39:50

STEEL BEAM INFORMATION:

Beam Number: 16

Level: CLERESTORY-138'-6"

Fy (ksi) = 50.00

Length (ft) = 23.00

Elastic Modulus (ksi) = 29000

Frame Number: 17

I-End (95.00,-193.00)

J-End (118.00,-193.00)

Beam Size = W24X55

INPUT PARAMETERS:

		I-End	J-End
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Rigid End Zone (in):		0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y
NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 337/349

09/03/20 10:39:50

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ i:	0.99	13.71	1.22	3.93	0.11	0.00
LC:	W6	W1	W7	D	W12	W8
Max @ j:	3.31	6.09	0.15	0.47	0.03	0.00
LC:	W7	W6	W8	W6	W11	W8
Maximum:	3.31	15.99	1.21	3.93	0.11	0.00
LC:	W7	D	W7	D	W12	W8
@ (ft):	19.17	6.71	0.00	0.00	0.00	19.17
Min @ i:	-0.63	-4.59	-0.13	-1.37	-0.42	-0.00
LC:	W8	W6	W8	W1	W6	W2
Min @ j:	-0.95	-50.97	-0.38	-8.32	-0.11	-0.00
LC:	W11	D	W2	D	W5	W2
Minimum:	-0.95	-50.97	-0.58	-8.32	-0.42	-0.00
LC:	W11	D	W6	D	W6	W2
@ (ft):	19.17	22.49	3.83	22.49	0.00	19.17



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 338/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 100**Frame Number: 17**

Level Top: ROOF - 129'-0"

Column Line (151.00,-193.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 339/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	33.37	5.47	7.65	1.29	0.54	0.01
LC:	D	W4	W2	W2	W8	W11
Max @ B:	33.37	19.97	1.32	1.29	0.54	0.01
LC:	D	W2	W11	W2	W8	W11
Maximum:	33.37	19.97	7.65	1.29	0.54	0.01
LC:	D	W2	W2	W2	W8	W11
@ (ft):	0.00	14.00	0.00	0.00	0.00	0.00
Min @ T:	-3.15	-3.78	-7.40	-0.75	-0.89	-0.01
LC:	W2	W11	W8	W8	W2	W2
Min @ B:	-3.15	-12.27	-6.83	-0.75	-0.89	-0.01
LC:	W2	W8	D	W8	W2	W2
Minimum:	-3.15	-12.27	-7.40	-0.75	-0.89	-0.01
LC:	W2	W8	W8	W8	W2	W2
@ (ft):	0.00	14.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 340/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 107**Frame Number: 17**

Level Top: ROOF - 129'-0"

Column Line (118.00,-193.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 0.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 341/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	42.98	9.71	2.04	1.03	1.40	0.00
LC:	D	W8	W11	W6	W2	D
Max @ B:	42.98	11.54	14.15	1.03	1.40	0.00
LC:	D	W4	W2	W6	W2	D
Maximum:	42.98	11.54	14.15	1.03	1.40	0.00
LC:	D	W4	W2	W6	W2	D
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00
Min @ T:	-0.06	-10.13	-6.60	-0.30	-0.63	-0.01
LC:	W6	W6	W2	W8	W8	W1
Min @ B:	-0.06	-0.93	-7.49	-0.30	-0.63	-0.01
LC:	W6	Sp	W8	W8	W8	W1
Minimum:	-0.06	-10.13	-7.49	-0.30	-0.63	-0.01
LC:	W6	W6	W8	W8	W8	W1
@ (ft):	0.00	0.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 342/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 118**Frame Number: 17**

Level Top: ROOF - 129'-0"

Column Line (95.00,-193.00)

Bot: LEVEL 2 - 115'-0"

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 14.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Fix
	Minor Axis:	Fix	Fix
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 343/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	20.79	3.38	3.22	2.91	0.15	0.00
LC:	D	W11	W6	W2	W8	W2
Max @ B:	20.79	33.56	0.44	2.91	0.15	0.00
LC:	D	W2	D	W2	W8	W2
Maximum:	20.79	33.56	3.22	2.91	0.15	0.00
LC:	D	W2	W6	W2	W8	W2
@ (ft):	0.00	14.00	0.00	0.00	0.00	0.00
Min @ T:	-2.62	-10.54	-3.79	-1.23	-0.34	-0.00
LC:	W7	W10	W8	W8	W6	W12
Min @ B:	-2.62	-18.93	-5.06	-1.23	-0.34	-0.00
LC:	W7	W8	W4	W8	W6	W12
Minimum:	-2.62	-18.93	-5.06	-1.23	-0.34	-0.00
LC:	W7	W8	W4	W8	W6	W12
@ (ft):	0.00	14.00	14.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 344/349
09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 100**Frame Number: 17**

Level Top: LEVEL 2 - 115'-0"

Column Line (151.00,-193.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 345/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	122.71	14.42	7.65	0.62	0.24	0.00
LC:	D	W2	D	W8	W7	W12
Max @ B:	122.71	0.00	0.00	0.62	0.24	0.00
LC:	D	D	D	W8	W7	W12
Maximum:	122.71	14.42	7.65	0.62	0.24	0.00
LC:	D	W2	D	W8	W7	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-3.39	-8.70	-2.99	-1.02	-0.51	-0.00
LC:	W2	W8	W2	W2	D	W6
Min @ B:	-3.39	0.00	0.00	-1.02	-0.51	-0.00
LC:	W2	D	D	W2	D	W6
Minimum:	-3.39	-8.70	-2.99	-1.02	-0.51	-0.00
LC:	W2	W8	W2	W2	D	W6
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 346/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 107**Frame Number: 17**

Level Top: LEVEL 2 - 115'-0"

Column Line (118.00,-193.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 0.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 347/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	105.75	8.15	8.17	0.05	0.28	0.00
LC:	D	W7	W2	D	W8	W12
Max @ B:	105.75	-0.00	0.00	0.05	0.28	0.00
LC:	D	D	D	D	W8	W12
Maximum:	105.75	8.15	8.17	0.05	0.28	0.00
LC:	D	W7	W2	D	W8	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-0.04	-0.79	-4.11	-0.55	-0.55	-0.00
LC:	W11	D	W8	W7	W2	W9
Min @ B:	-0.04	-0.00	0.00	-0.55	-0.55	-0.00
LC:	W11	D	D	W7	W2	W9
Minimum:	-0.04	-0.79	-4.11	-0.55	-0.55	-0.00
LC:	W11	D	W8	W7	W2	W9
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 348/349

09/03/20 10:39:50

STEEL COLUMN INFORMATION:

Column Number: 118**Frame Number: 17**

Level Top: LEVEL 2 - 115'-0"

Column Line (95.00,-193.00)

Bot: Base

Fy (ksi) = 50.00

Column Size = W12X72

Elastic Modulus (ksi) = 29000

Orientation (deg) = 90.00

Length (ft) = 15.00

INPUT PARAMETERS:

		Top	Bottom
Fixity	Major Axis:	Fix	Pin
	Minor Axis:	Fix	Pin
	Torsion:	Fix	Fix
Joint Face Dist (in):			
	Major:	0.00	0.00
	Minor:	0.00	0.00
Rigid End Zone (in):			
	Major:	0.00	0.00 (Ignore)
	Minor:	0.00	0.00 (Ignore)

Member Force Output:

At Face of Joint

P-Delta: Yes

Scale Factor: 1.00

Ground Level: Base

LOAD CASE DEFINITIONS:

D	DeadLoad	RAMUSER
Lp	PosLiveLoad	RAMUSER
Ln	NegLiveLoad	RAMUSER
Sp	PosSnowLoad	RAMUSER
W1	WIND	Wind_ASCE716_1_X
W2	WIND	Wind_ASCE716_1_Y
W3	WIND	Wind_ASCE716_2_X+E
W4	WIND	Wind_ASCE716_2_X-E
W5	WIND	Wind_ASCE716_2_Y+E
W6	WIND	Wind_ASCE716_2_Y-E
W7	WIND	Wind_ASCE716_3_X+Y
W8	WIND	Wind_ASCE716_3_X-Y
W9	WIND	Wind_ASCE716_4_X+Y_CW
W10	WIND	Wind_ASCE716_4_X+Y_CCW
W11	WIND	Wind_ASCE716_4_X-Y_CW
W12	WIND	Wind_ASCE716_4_X-Y_CCW
E1	SEISMIC	EQ_ASCE716_X_+E_F
E2	SEISMIC	EQ_ASCE716_X_-E_F
E3	SEISMIC	EQ_ASCE716_Y_+E_F
E4	SEISMIC	EQ_ASCE716_Y_-E_F
ND1	NOTATIONAL	NL_AISC360_DL_X
ND2	NOTATIONAL	NL_AISC360_DL_Y



RAM Structural System



RAM Frame 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Member Force Envelope

Page 349/349

09/03/20 10:39:50

NL1	NOTATIONAL	NL_AISC360_LL_X
NL2	NOTATIONAL	NL_AISC360_LL_Y
NR1	NOTATIONAL	NL_AISC360_Rf_X
NR2	NOTATIONAL	NL_AISC360_Rf_Y

MEMBER FORCE MAXIMA AND MINIMA

	P	Mmajor	Mminor	Vmajor	Vminor	Tors
	kips	kip-ft	kip-ft	kips	kips	kip-ft
Max @ T:	66.53	23.18	0.19	0.95	0.25	0.00
LC:	D	W2	W5	W8	W4	W12
Max @ B:	66.53	-0.00	0.00	0.95	0.25	0.00
LC:	D	D	D	W8	W4	W12
Maximum:	66.53	23.18	0.19	0.95	0.25	0.00
LC:	D	W2	W5	W8	W4	W12
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00
Min @ T:	-2.98	-12.61	-1.41	-1.69	0.00	-0.00
LC:	W7	W8	D	W2	Ln	W9
Min @ B:	-2.98	-0.00	0.00	-1.69	0.00	-0.00
LC:	W7	D	D	W2	Ln	W9
Minimum:	-2.98	-12.61	-1.41	-1.69	0.00	-0.00
LC:	W7	W8	D	W2	Ln	W9
@ (ft):	0.00	0.00	0.00	0.00	0.00	0.00



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Gravity Column Design Summary

08/31/20 17:27:12

Steel Code: AISC360-16 LRFD

DEMAND/CAPACITY LIMIT FOR STRENGTH : 1.000

Column Line A.2-11

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	47.5	-23.9	1.8	2	0.25 Eq H1-3b	90.0	50	W8X35
LEVEL 2 - 115'-0"	112.9	-18.7	1.5	1	0.56 Eq H1-3b	90.0	50	W8X35

Column Line A.2-10

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	53.3	26.8	2.0	3	0.28 Eq H1-3b	90.0	50	W8X35
LEVEL 2 - 115'-0"	127.0	21.0	1.8	1	0.62 Eq H1-3b	90.0	50	W8X35

Column Line A.2-7

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	47.5	-23.9	1.8	2	0.25 Eq H1-3b	90.0	50	W8X35
LEVEL 2 - 115'-0"	113.3	-18.7	1.6	1	0.57 Eq H1-3b	90.0	50	W8X35

Column Line B-11

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	34.3	13.7	3.2	6	0.22 Eq H1-1b	90.0	50	W8X35
LEVEL 2 - 115'-0"	54.8	0.8	1.9	6	0.24 Eq H1-1a	90.0	50	W8X35

Column Line B-10

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	35.3	-13.7	3.6	6	0.23 Eq H1-1b	90.0	50	W8X35
LEVEL 2 - 115'-0"	56.1	-0.8	3.9	6	0.28 Eq H1-1a	90.0	50	W8X35

Column Line B-7

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	32.2	12.4	3.3	6	0.21 Eq H1-1b	90.0	50	W8X35
LEVEL 2 - 115'-0"	53.6	0.9	2.8	1	0.25 Eq H1-1a	90.0	50	W8X35

Column Line B-6

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	33.3	-15.1	5.2	1	0.11 Eq H1-3b	90.0	50	W10X49
LEVEL 2 - 115'-0"	40.5	0.0	0.0	1	0.09 Eq Axial	90.0	50	W10X49



RAM Structural System



Gravity Column Design Summary

RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 2/8

08/31/20 17:27:12

Steel Code: AISC360-16 LRFD

Column Line C-14

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	74.4	32.3	-7.3	10	0.35 Eq H1-1b	90.0	50	W8X48
LEVEL 2 - 115'-0"	176.0	25.8	-5.8	10	0.66 Eq H1-1a	90.0	50	W8X48

Column Line C-13

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	53.8	-19.4	-8.0	4	0.27 Eq H1-1b	90.0	50	W8X48
LEVEL 2 - 115'-0"	223.7	-11.6	-6.4	1	0.73 Eq H1-1a	90.0	50	W8X48

Column Line C-12.2

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	48.4	15.1	-7.8	5	0.23 Eq H1-1b	90.0	50	W8X48
LEVEL 2 - 115'-0"	198.2	7.5	-6.9	10	0.65 Eq H1-1a	90.0	50	W8X48

Column Line C-11

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	52.0	-12.5	-2.7	4	0.17 Eq H1-1b	90.0	50	W8X48
LEVEL 2 - 115'-0"	206.9	-2.0	-2.3	10	0.60 Eq H1-1a	90.0	50	W8X48

Column Line C-10

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	55.5	19.2	-5.5	5	0.24 Eq H1-1b	90.0	50	W8X48
LEVEL 2 - 115'-0"	198.5	13.1	-4.9	10	0.66 Eq H1-1a	90.0	50	W8X48

Column Line C-9

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	52.5	-18.4	-7.4	4	0.25 Eq H1-1b	90.0	50	W8X48
LEVEL 2 - 115'-0"	205.8	-12.0	-6.5	10	0.69 Eq H1-1a	90.0	50	W8X48

Column Line C-8.2

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	48.4	15.3	-7.3	5	0.23 Eq H1-1b	90.0	50	W8X48
LEVEL 2 - 115'-0"	190.8	9.1	-6.4	10	0.63 Eq H1-1a	90.0	50	W8X48



RAM Structural System



Gravity Column Design Summary

RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 3/8

08/31/20 17:27:12

Steel Code: AISC360-16 LRFD

Column Line C-7

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	51.1	-16.7	-4.7	4	0.21 Eq H1-1b	90.0	50	W8X48
LEVEL 2 - 115'-0"	180.5	-10.7	-4.2	10	0.59 Eq H1-1a	90.0	50	W8X48

Column Line C-6

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	37.7	-15.0	-3.6	10	0.24 Eq H1-1b	90.0	50	W8X35
LEVEL 2 - 115'-0"	99.1	-15.9	0.8	1	0.50 Eq H1-1a	90.0	50	W8X35

Column Line D-14

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	38.0	14.6	4.2	6	0.25 Eq H1-1b	90.0	50	W8X35
LEVEL 2 - 115'-0"	77.0	8.3	2.9	6	0.39 Eq H1-1a	90.0	50	W8X35

Column Line 56.00ft--208.00ft

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	28.8	-7.0	4.9	3	0.20 Eq H1-1b	90.0	50	W10X33
LEVEL 2 - 115'-0"	101.5	-3.8	4.1	6	0.53 Eq H1-1a	90.0	50	W10X33

Column Line D-13

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	25.6	6.6	4.9	2	0.19 Eq H1-1b	90.0	50	W10X33
LEVEL 2 - 115'-0"	96.4	3.4	4.0	6	0.50 Eq H1-1a	90.0	50	W10X33

Column Line D-12.2

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	35.6	11.4	4.2	2	0.22 Eq H1-1b	90.0	50	W8X35
LEVEL 2 - 115'-0"	138.6	6.9	3.5	6	0.63 Eq H1-1a	90.0	50	W8X35

Column Line D-11

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	43.6	-8.1	4.6	3	0.15 Eq H1-1b	90.0	50	W8X48
LEVEL 2 - 115'-0"	167.2	-1.6	4.0	6	0.50 Eq H1-1a	90.0	50	W8X48



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Gravity Column Design Summary

Page 4/8

08/31/20 17:27:12

Steel Code: AISC360-16 LRFD

Column Line D-10

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	46.7	10.3	4.9	2	0.17 Eq H1-1b	90.0	50	W8X48
LEVEL 2 - 115'-0"	182.0	3.8	4.2	6	0.56 Eq H1-1a	90.0	50	W8X48

Column Line D-9

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	39.9	-15.8	6.1	3	0.21 Eq H1-1b	90.0	50	W8X48
LEVEL 2 - 115'-0"	165.8	-10.9	5.5	6	0.56 Eq H1-1a	90.0	50	W8X48

Column Line D-8.2

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	35.8	11.7	4.2	2	0.13 Eq H1-3b	90.0	50	W8X48
LEVEL 2 - 115'-0"	139.1	7.1	3.6	6	0.45 Eq H1-1a	90.0	50	W8X48

Column Line D-7

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	42.9	-8.8	4.3	3	0.15 Eq H1-1b	90.0	50	W8X48
LEVEL 2 - 115'-0"	161.4	-2.8	3.7	6	0.49 Eq H1-1a	90.0	50	W8X48

Column Line E-14

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	50.8	21.9	-4.4	10	0.33 Eq H1-1b	90.0	50	W8X35
LEVEL 2 - 115'-0"	124.1	17.8	-2.0	1	0.61 Eq H1-3b	90.0	50	W8X35

Column Line E-13

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	38.8	-14.3	-5.0	4	0.19 Eq H1-1b	90.0	50	W8X48
LEVEL 2 - 115'-0"	150.6	-9.9	-4.3	10	0.50 Eq H1-1a	90.0	50	W8X48

Column Line E-12.2

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	34.7	10.6	-4.6	5	0.22 Eq H1-1b	90.0	50	W8X35
LEVEL 2 - 115'-0"	132.0	6.3	-3.9	10	0.61 Eq H1-1a	90.0	50	W8X35



RAM Structural System



Gravity Column Design Summary

RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Page 5/8

08/31/20 17:27:12

Steel Code: AISC360-16 LRFD

Column Line E-11

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	56.5	12.1	5.3	2	0.20 Eq H1-1b	90.0	50	W8X48
LEVEL 2 - 115'-0"	220.2	5.6	2.7	1	0.66 Eq H1-1a	90.0	50	W8X48

Column Line E-10

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	52.2	-10.9	-5.1	4	0.18 Eq H1-1b	90.0	50	W8X48
LEVEL 2 - 115'-0"	203.3	-3.2	-4.4	10	0.62 Eq H1-1a	90.0	50	W8X48

Column Line E-9

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	38.5	-15.0	-6.5	4	0.21 Eq H1-1b	90.0	50	W8X48
LEVEL 2 - 115'-0"	157.3	-10.4	-5.9	10	0.54 Eq H1-1a	90.0	50	W8X48

Column Line F-11

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	47.9	20.0	2.1	2	0.18 Eq H1-3b	90.0	50	W8X48
LEVEL 2 - 115'-0"	177.3	15.7	-2.9	10	0.59 Eq H1-1a	90.0	50	W8X48

Column Line F-7

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	48.3	16.8	-2.7	17	0.18 Eq H1-3b	90.0	50	W8X48
LEVEL 2 - 115'-0"	169.7	14.3	-3.0	10	0.56 Eq H1-1a	90.0	50	W8X48

Column Line F-6

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	59.6	-22.3	0.5	2	0.30 Eq H1-3b	90.0	50	W8X35
LEVEL 2 - 115'-0"	147.1	-18.9	-0.2	1	0.69 Eq H1-1a	90.0	50	W8X35

Column Line G-14

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	85.1	36.7	1.3	3	0.31 Eq H1-3b	90.0	50	W8X48
LEVEL 2 - 115'-0"	207.0	31.1	1.1	1	0.70 Eq H1-3b	90.0	50	W8X48



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Gravity Column Design Summary

Page 6/8

08/31/20 17:27:12

Steel Code: AISC360-16 LRFD

Column Line G-7

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	31.5	13.1	-5.5	5	0.26 Eq H1-1b	90.0	50	W10X33
LEVEL 2 - 115'-0"	115.8	9.6	-4.7	10	0.63 Eq H1-1a	90.0	50	W10X33

Column Line G-6

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	37.9	-16.6	-4.4	10	0.27 Eq H1-1b	90.0	50	W10X33
LEVEL 2 - 115'-0"	96.4	-14.1	-3.6	10	0.56 Eq H1-1a	90.0	50	W10X33

Column Line H-13

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	23.4	12.1	7.4	2	0.26 Eq H1-1b	90.0	50	W8X35
LEVEL 2 - 115'-0"	104.2	10.3	6.7	6	0.57 Eq H1-1a	90.0	50	W8X35

Column Line H-12.1

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	39.5	-5.4	5.0	3	0.20 Eq H1-1b	90.0	50	W8X35
LEVEL 2 - 115'-0"	143.7	-0.3	4.3	6	0.62 Eq H1-1a	90.0	50	W8X35

Column Line H-11

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	59.0	-5.8	8.4	6	0.37 Eq H1-1a	90.0	50	W8X35
LEVEL 2 - 115'-0"	120.9	-6.8	2.8	6	0.55 Eq H1-1a	90.0	50	W8X35

Column Line H-10

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
LEVEL 2 - 115'-0"	129.4	37.4	5.6	6	0.83 Eq H1-1a	90.0	50	W8X35

Column Line H-9

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	23.6	-17.3	7.5	3	0.30 Eq H1-1b	90.0	50	W8X35
LEVEL 2 - 115'-0"	184.2	-11.1	8.0	6	0.90 Eq H1-1a	90.0	50	W8X35

Column Line H-8.1

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Gravity Column Design Summary

Page 7/8

08/31/20 17:27:12

Steel Code: AISC360-16 LRFD

ROOF - 129'-0"	39.6	-5.4	5.0	3	0.20 Eq H1-1b	90.0	50	W8X35
LEVEL 2 - 115'-0"	143.5	-0.3	4.3	6	0.61 Eq H1-1a	90.0	50	W8X35

Column Line H-7

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	43.0	-8.9	7.3	15	0.27 Eq H1-1b	90.0	50	W8X35
LEVEL 2 - 115'-0"	116.2	-7.2	2.8	6	0.54 Eq H1-1a	90.0	50	W8X35

Column Line H-6

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	28.2	-10.7	1.5	2	0.15 Eq H1-3b	90.0	50	W8X35
LEVEL 2 - 115'-0"	44.7	0.0	0.0	1	0.17 Eq Axial	90.0	50	W8X35

Column Line H.6-6

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	24.1	-12.5	-3.9	1	0.09 Eq H1-1b	90.0	50	HSS12X12X3/8
LEVEL 2 - 115'-0"	25.1	-6.5	-2.0	1	0.06 Eq H1-1b	90.0	50	HSS12X12X3/8

Column Line J-13

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	31.9	15.3	-1.9	3	0.17 Eq H1-3b	90.0	50	W8X35
LEVEL 2 - 115'-0"	76.2	11.7	-1.7	1	0.40 Eq H1-1a	90.0	50	W8X35

Column Line J-12.1

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	62.3	-1.5	-5.2	3	0.31 Eq H1-1a	90.0	50	W8X35
LEVEL 2 - 115'-0"	147.8	-0.2	-5.4	1	0.65 Eq H1-1a	90.0	50	W8X35

Column Line J-11

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	50.2	-15.7	-11.4	1	0.40 Eq H1-1b	90.0	50	W8X35
LEVEL 2 - 115'-0"	97.2	-11.4	-4.2	1	0.51 Eq H1-1a	90.0	50	W8X35

Column Line J-9

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	32.0	15.3	-1.9	3	0.17 Eq H1-3b	90.0	50	W8X35



RAM Structural System



RAM Steel 17.01.01.05

DataBase: Area B & C

Building Code: IBC

Gravity Column Design Summary

Page 8/8

08/31/20 17:27:12

Steel Code: AISC360-16 LRFD

LEVEL 2 - 115'-0"	76.3	11.7	-1.7	1	0.40	Eq H1-1a	90.0	50	W8X35

Column Line J-8.1

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	62.7	-1.5	-5.1	3	0.31 Eq H1-1a	90.0	50	W8X35
LEVEL 2 - 115'-0"	148.0	-0.2	-5.4	1	0.65 Eq H1-1a	90.0	50	W8X35

Column Line J-7

Level	Pu	Mux	Muy	LC	Interaction Eq.	Angle	Fy	Size
ROOF - 129'-0"	48.4	-15.7	-10.4	1	0.38 Eq H1-1b	90.0	50	W8X35
LEVEL 2 - 115'-0"	96.0	-11.4	-4.2	1	0.51 Eq H1-1a	90.0	50	W8X35



RAM Foundation v17.01.01.05

DataBase: Area B & C

Building Code: IBC

Spread Footing Design Summary

Date: 09/03/20 10:52:56

Design Code: ACI318-02

Grid	Orientation Col/Foot	Dimensions (ft)			f'c/fy ksi	Bottom Reinforcement		Top Reinforcement	
		Length	Width	Thick		Parallel to Length	Parallel to Width	Parallel to Length	Parallel to Width
(A.2 - 14)	90.00/90.00	11.00	11.00	3.00	4.00/60.00	11-#8	11-#8	None	None
(A.2 - 13)	90.00/90.00	12.00	12.00	3.00	4.00/60.00	12-#8	12-#8	None	None
(A.2 - 12.2)	90.00/90.00	12.00	12.00	3.00	4.00/60.00	12-#8	12-#8	None	None
(A.2 - 11)	90.00/90.00	8.00	8.00	3.00	4.00/60.00	11-#7	11-#7	None	None
(A.2 - 10)	90.00/90.00	8.00	8.00	3.00	4.00/60.00	11-#7	11-#7	None	None
(A.2 - 9)	90.00/90.00	12.00	12.00	3.00	4.00/60.00	12-#8	12-#8	None	None
(A.2 - 8.2)	90.00/90.00	12.00	12.00	3.00	4.00/60.00	12-#8	12-#8	None	None
(A.2 - 7)	90.00/90.00	8.00	8.00	3.00	4.00/60.00	11-#7	11-#7	None	None
(B - 11)	90.00/90.00	6.00	6.00	3.00	4.00/60.00	11-#6	11-#6	None	None
(B - 10)	90.00/90.00	6.00	6.00	3.00	4.00/60.00	11-#6	11-#6	None	None
(B - 7)	90.00/90.00	6.00	6.00	3.00	4.00/60.00	11-#6	11-#6	None	None
(B - 6)	90.00/90.00	10.00	10.00	3.00	4.00/60.00	13-#7	13-#7	None	None
(C - 14)	90.00/90.00	12.00	12.00	3.00	4.00/60.00	12-#8	12-#8	None	None
(C - 13)	90.00/90.00	10.00	10.00	2.00	4.00/60.00	9-#7	9-#7	None	None
(C - 12.2)	90.00/90.00	10.00	10.00	2.00	4.00/60.00	9-#7	9-#7	None	None
(C - 11)	90.00/90.00	10.00	10.00	2.00	4.00/60.00	9-#7	9-#7	None	None
(C - 10)	90.00/90.00	10.00	10.00	2.00	4.00/60.00	9-#7	9-#7	None	None
(C - 9)	90.00/90.00	10.00	10.00	2.00	4.00/60.00	9-#7	9-#7	None	None
(C - 8.2)	90.00/90.00	10.00	10.00	2.00	4.00/60.00	9-#7	9-#7	None	None
(C - 7)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(C - 6)	90.00/90.00	6.00	6.00	3.00	4.00/60.00	11-#6	11-#6	None	None
(D - 14)	90.00/90.00	10.00	10.00	3.00	4.00/60.00	13-#7	13-#7	None	None
(56.00 - -208.00)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(D - 13)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(D - 12.2)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(D - 11)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(D - 10)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(D - 9)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(D - 8.2)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(D - 7)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None



Spread Footing Design Summary

						Ld Co			
(D - 6)	90.00/90.00	10.00	10.00	3.00	4.00/60.00	13-#7	13-#7	0-#3	13-#7
(E - 14)	90.00/90.00	12.00	12.00	3.00	4.00/60.00	12-#8	12-#8	None	None
(E - 13)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(E - 12.2)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(E - 11)	90.00/90.00	10.00	10.00	2.00	4.00/60.00	9-#7	9-#7	None	None
(E - 10)	90.00/90.00	10.00	10.00	3.00	4.00/60.00	13-#7	13-#7	None	None
(E - 9)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(E - 8.2)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(E - 7)	90.00/90.00	12.00	12.00	2.00	4.00/60.00	11-#7	11-#7	None	None
(E - 6)	90.00/90.00	12.00	12.00	3.00	4.00/60.00	12-#8	12-#8	12-#8	12-#8
(E.3 - 14)	90.00/90.00	10.00	10.00	3.00	4.00/60.00	13-#7	13-#7	13-#7	13-#7
(E.3 - 13)	90.00/90.00	8.00	8.00	3.00	4.00/60.00	15-#6	15-#6	None	None
(E.3 - 12.2)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(E.3 - 12)	90.00/90.00	12.00	12.00	2.00	4.00/60.00	11-#7	11-#7	11-#7	11-#7
(E.3 - 10)	90.00/90.00	10.00	10.00	2.00	4.00/60.00	9-#7	9-#7	9-#7	9-#7
(E.3 - 9)	90.00/90.00	8.00	8.00	3.00	4.00/60.00	15-#6	15-#6	None	None
(E.3 - 8.2)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(E.3 - 8)	90.00/90.00	10.00	10.00	3.00	4.00/60.00	13-#7	13-#7	13-#7	13-#7
(F - 14)	90.00/90.00	12.00	12.00	3.00	4.00/60.00	12-#8	12-#8	None	None
(F - 13)	0.00/ 0.00	10.00	10.00	2.00	4.00/60.00	9-#7	9-#7	None	None
(F - 12)	0.00/ 0.00	10.00	10.00	2.00	4.00/60.00	9-#7	9-#7	9-#7	9-#7
(F - 11)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(F - 10)	90.00/90.00	12.00	12.00	2.00	4.00/60.00	11-#7	11-#7	None	None
(F - 9)	0.00/ 0.00	10.00	10.00	2.00	4.00/60.00	9-#7	9-#7	None	None
(F - 8)	0.00/ 0.00	10.00	10.00	2.00	4.00/60.00	9-#7	9-#7	9-#7	0-#3
(F - 7)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(F - 6)	90.00/90.00	8.00	8.00	3.00	4.00/60.00	11-#7	11-#7	None	None
(G - 14)	90.00/90.00	14.00	14.00	3.00	4.00/60.00	11-#9	11-#9	None	None
(G - 13)	90.00/90.00	10.00	10.00	2.00	4.00/60.00	9-#7	9-#7	None	None
(G - 12.2)	90.00/90.00	6.00	6.00	3.00	4.00/60.00	16-#5	16-#5	None	None
(G - 12)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(G - 11)	90.00/90.00	10.00	10.00	2.00	4.00/60.00	9-#7	9-#7	None	None
(G - 10)	90.00/90.00	12.00	12.00	2.00	4.00/60.00	11-#7	11-#7	None	None



RAM Foundation v17.01.01.05

DataBase: Area B & C

Building Code: IBC

Spread Footing Design Summary

Page 3/3

Date: 09/03/20 10:52:56

Design Code: ACI318-02

								Ld Co	
(G - 9)	90.00/90.00	10.00	10.00	2.00	4.00/60.00	13-#7	13-#7	None	None
(G - 8.2)	90.00/90.00	6.00	6.00	3.00	4.00/60.00	16-#5	16-#5	None	None
(G - 8)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(G - 7)	90.00/90.00	10.00	10.00	2.00	4.00/60.00	9-#7	9-#7	None	None
(G - 6)	90.00/90.00	10.00	10.00	3.00	4.00/60.00	13-#7	13-#7	None	None
(H - 13)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(H - 12.1)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(H - 11)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(H - 10)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(H - 9)	90.00/90.00	8.00	8.00	2.00	4.00/60.00	10-#6	10-#6	None	None
(H - 8.1)	90.00/90.00	8.00	8.00	3.00	4.00/60.00	15-#6	15-#6	None	None
(H - 7)	90.00/90.00	8.00	8.00	3.00	4.00/60.00	11-#7	11-#7	None	None
(H - 6)	90.00/90.00	6.00	6.00	3.00	4.00/60.00	11-#6	11-#6	None	None
(H.6 - 14)	90.00/90.00	13.00	13.00	3.00	4.00/60.00	17-#7	17-#7	None	None
(H.6 - 13)	90.00/90.00	10.00	10.00	3.00	4.00/60.00	13-#7	13-#7	None	None
(H.6 - 10)	90.00/90.00	10.00	10.00	3.00	4.00/60.00	13-#7	13-#7	None	None
(H.6 - 9)	90.00/90.00	10.00	10.00	3.00	4.00/60.00	13-#7	13-#7	None	None
(H.6 - 6)	90.00/90.00	10.00	10.00	3.00	4.00/60.00	13-#7	13-#7	None	None
(J - 13)	90.00/90.00	6.00	6.00	3.00	4.00/60.00	11-#6	11-#6	None	None
(J - 12.1)	90.00/90.00	8.00	8.00	3.00	4.00/60.00	15-#6	15-#6	None	None
(J - 11)	90.00/90.00	8.00	8.00	3.00	4.00/60.00	11-#7	11-#7	None	None
(J - 9)	90.00/90.00	6.00	6.00	3.00	4.00/60.00	11-#6	11-#6	None	None
(J - 8.1)	90.00/90.00	8.00	8.00	3.00	4.00/60.00	15-#6	15-#6	None	None
(J - 7)	90.00/90.00	8.00	8.00	3.00	4.00/60.00	11-#7	11-#7	None	None

Note: Number between () in reinforcement is quantity of bars in center strip of rectangular footing

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Company:
Address:
Phone | Fax: |
Design: Pilaster
Fastening point:

Page: 1
Specifier:
E-Mail:
Date: 8/31/2020

Specifier's comments:

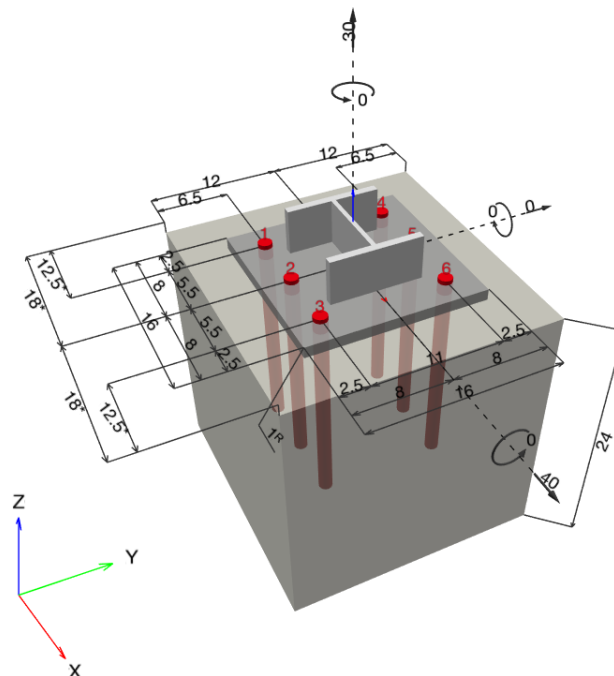
1 Input data

Anchor type and diameter:	Hex Head ASTM F 1554 GR. 36 1 1/4
Item number:	not available
Effective embedment depth:	$h_{ef} = 18.000$ in.
Material:	ASTM F 1554
Proof:	Design Method ACI 318-14 / CIP
Stand-off installation:	$e_b = 0.000$ in. (no stand-off); $t = 1.000$ in.
Anchor plate ^R :	$l_x \times l_y \times t = 16.000$ in. $\times$ 16.000 in. $\times$ 1.000 in.;
Profile:	W shape (AISC), W8X48; (L x W x T x FT) = 8.500 in. $\times$ 8.110 in. $\times$ 0.400 in. $\times$ 0.685 in.
Base material:	cracked concrete, 3000, $f'_c = 3,000$ psi; $h = 24.000$ in.
Reinforcement:	tension: condition A, shear: condition A; anchor reinforcement: tension, shear edge reinforcement: > No. 4 bar with stirrups



^R - The anchor calculation is based on a rigid anchor plate assumption.

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



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Company:
Address:
Phone | Fax: |
Design: Pilaster
Fastening point:

Page: 2
Specifier:
E-Mail:
Date: 8/31/2020

1.1 Design results

Case	Description	Forces [kip] / Moments [ft.kip]	Seismic	Max. Util. Anchor [%]
1	Combination 1	N = 30.000; $V_x = 40.000$; $V_y = 0.000$; $M_x = 0.00000$; $M_y = 0.00000$; $M_z = 0.00000$;	no	77

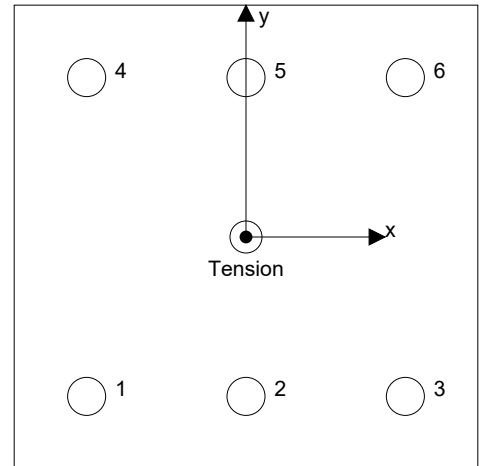
2 Load case/Resulting anchor forces

Anchor reactions [kip]

Tension force: (+Tension, -Compression)

Anchor	Tension force	Shear force	Shear force x	Shear force y
1	5.000	6.667	6.667	0.000
2	5.000	6.667	6.667	0.000
3	5.000	6.667	6.667	0.000
4	5.000	6.667	6.667	0.000
5	5.000	6.667	6.667	0.000
6	5.000	6.667	6.667	0.000

max. concrete compressive strain: - [%]
max. concrete compressive stress: - [psi]
resulting tension force in (x/y)=(0.000/0.000): 30.000 [kip]
resulting compression force in (x/y)=(0.000/0.000): 0.000 [kip]



Anchor forces are calculated based on the assumption of a rigid anchor plate.

3 Tension load

	Load N_{ua} [kip]	Capacity ϕN_n [kip]	Utilization $\beta_N = N_{ua}/\phi N_n$	Status
Steel Strength*	5.000	42.151	12	OK
Pullout Strength*	5.000	30.526	17	OK
Concrete Breakout Failure** ¹	N/A	N/A	N/A	N/A
Concrete Side-Face Blowout, direction y+**	15.000	73.831	21	OK

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

¹ Tension Anchor Reinforcement has been selected!

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Company:

Address:

Phone | Fax:

Design:

Fastening point:

|
Pilaster

Page:

Specifier:

E-Mail:

Date:

3

8/31/2020

3.1 Steel Strength

$$N_{sa} = A_{se,N} f_{uta} \quad \text{ACI 318-14 Eq. (17.4.1.2)}$$

$$\phi N_{sa} \geq N_{ua} \quad \text{ACI 318-14 Table 17.3.1.1}$$

Variables

$A_{se,N}$ [in. ²]	f_{uta} [psi]
0.97	58,000

Calculations

N_{sa} [kip]
56.202

Results

N_{sa} [kip]	ϕ_{steel}	ϕN_{sa} [kip]	N_{ua} [kip]
56.202	0.750	42.151	5.000

3.2 Pullout Strength

$$N_{pN} = \psi_{c,p} N_p \quad \text{ACI 318-14 Eq. (17.4.3.1)}$$

$$N_p = 8 A_{brg} f'_c \quad \text{ACI 318-14 Eq. (17.4.3.4)}$$

$$\phi N_{pN} \geq N_{ua} \quad \text{ACI 318-14 Table 17.3.1.1}$$

Variables

$\psi_{c,p}$	A_{brg} [in. ²]	λ_a	f'_c [psi]
1.000	1.82	1.000	3,000

Calculations

N_p [kip]
43.608

Results

N_{pn} [kip]	$\phi_{concrete}$	ϕN_{pn} [kip]	N_{ua} [kip]
43.608	0.700	30.526	5.000

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Company:	Page: 4
Address:	Specifier:
Phone Fax:	E-Mail:
Design: Pilaster	Date: 8/31/2020
Fastening point:	

3.3 Concrete Side-Face Blowout, direction y+

$$N_{sb} = 160 c_{a1} \sqrt{A_{brg}} \lambda_a \sqrt{f'_c} \quad \text{ACI 318-14 Eq. (17.4.4.1)}$$

$$N_{sbg} = \alpha_{group} N_{sb} \quad \text{ACI 318-14 Eq. (17.4.4.2)}$$

$$\phi N_{sbg} \geq N_{ua} \quad \text{ACI 318-14 Table 17.3.1.1}$$

$$\alpha_{group} = \left(1 + \frac{s}{6 c_{a1}} \right) \quad \text{see ACI 318-14, Section 17.4.4.2, Eq. (17.4.4.2)}$$

Variables

c_{a1} [in.]	c_{a2} [in.]	A_{brg} [in. ²]	λ_a	f'_c [psi]	s [in.]
6.500	12.500	-0.00	1.000	3,000	11.000

Calculations

α_{group}	N_{sb} [kip]
1.282	76.784

Results

N_{sbg} [kip]	$\phi_{concrete}$	ϕN_{sbg} [kip]	$N_{ua,edge}$ [kip]
98.441	0.750	73.831	15.000



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Company:		Page:	5
Address:		Specifier:	
Phone Fax:		E-Mail:	
Design:	Pilaster	Date:	8/31/2020
Fastening point:			

4 Shear load

	Load V_{ua} [kip]	Capacity ϕV_n [kip]	Utilization $\beta_v = V_{ua} / \phi V_n$	Status
Steel Strength*	6.667	21.919	31	OK
Steel failure (with lever arm)*	N/A	N/A	N/A	N/A
Pryout Strength**	40.000	52.388	77	OK
Concrete edge failure in direction ** ¹	N/A	N/A	N/A	N/A

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

¹ Shear Anchor Reinforcement has been selected!

4.1 Steel Strength

$$V_{sa} = 0.6 A_{se,V} f_{uta} \quad \text{ACI 318-14 Eq. (17.5.1.2b)}$$

$$\phi V_{steel} \geq V_{ua} \quad \text{ACI 318-14 Table 17.3.1.1}$$

Variables

$A_{se,V}$ [in. ²]	f_{uta} [psi]
0.97	58,000

Calculations

V_{sa} [kip]
33.721

Results

V_{sa} [kip]	ϕ_{steel}	ϕV_{sa} [kip]	V_{ua} [kip]
33.721	0.650	21.919	6.667

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Company:

Address:

Phone | Fax:

Design:

Fastening point:

|
Pilaster

Page:

Specifier:

E-Mail:

Date:

6

8/31/2020

4.2 Pryout Strength

$$V_{cp} = k_{cp} \left[\left(\frac{A_{Nc}}{A_{Nc0}} \right) \psi_{ec,N} \psi_{ed,N} \psi_{c,N} \psi_{cp,N} N_b \right] \quad \text{ACI 318-14 Eq. (17.5.3.1b)}$$

$$\phi V_{cp} \geq V_{ua} \quad \text{ACI 318-14 Table 17.3.1.1}$$

$$A_{Nc} \text{ see ACI 318-14, Section 17.4.2.1, Fig. R 17.4.2.1(b)}$$

$$A_{Nc0} = 9 h_{ef}^2 \quad \text{ACI 318-14 Eq. (17.4.2.1c)}$$

$$\psi_{ec,N} = \left(\frac{1}{1 + \frac{2 e_{c1,N}}{3 h_{ef}}} \right) \leq 1.0 \quad \text{ACI 318-14 Eq. (17.4.2.4)}$$

$$\psi_{ed,N} = 0.7 + 0.3 \left(\frac{c_{a,min}}{1.5 h_{ef}} \right) \leq 1.0 \quad \text{ACI 318-14 Eq. (17.4.2.5b)}$$

$$\psi_{cp,N} = \text{MAX} \left(\frac{c_{a,min}}{c_{ac}}, \frac{1.5 h_{ef}}{c_{ac}} \right) \leq 1.0 \quad \text{ACI 318-14 Eq. (17.4.2.7b)}$$

$$N_b = k_c \lambda_a \sqrt{f'_c} h_{ef}^{1.5} \quad \text{ACI 318-14 Eq. (17.4.2.2a)}$$

Variables

k_{cp}	h_{ef} [in.]	$e_{c1,N}$ [in.]	$e_{c2,N}$ [in.]	$c_{a,min}$ [in.]
2	8.333	0.000	0.000	6.500
$\psi_{c,N}$	c_{ac} [in.]	k_c	λ_a	f'_c [psi]
1.000	-	24	1.000	3,000

Calculations

A_{Nc} [in. ²]	A_{Nc0} [in. ²]	$\psi_{ec1,N}$	$\psi_{ec2,N}$	$\psi_{ed,N}$	$\psi_{cp,N}$	N_b [kip]
864.00	625.00	1.000	1.000	0.856	1.000	31.623

Results

V_{cp} [kip]	$\phi_{concrete}$	ϕV_{cp} [kip]	V_{ua} [kip]
74.841	0.700	52.388	40.000

5 Combined tension and shear loads

β_N	β_V	ζ	Utilization β_{NV} [%]	Status
0.203	0.764	5/3	71	OK

$$\beta_{NV} = \beta_N^\zeta + \beta_V^\zeta \leq 1$$



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Company:		Page:	7
Address:		Specifier:	
Phone Fax:		E-Mail:	
Design:	Pilaster	Date:	8/31/2020
Fastening point:			

6 Warnings

- The anchor design methods in PROFIS Engineering require rigid anchor plates per current regulations (AS 5216:2018, ETAG 001/Annex C, EOTA TR029 etc.). This means load re-distribution on the anchors due to elastic deformations of the anchor plate are not considered - the anchor plate is assumed to be sufficiently stiff, in order not to be deformed when subjected to the design loading. PROFIS Engineering calculates the minimum required anchor plate thickness with CBFEM to limit the stress of the anchor plate based on the assumptions explained above. The proof if the rigid anchor plate assumption is valid is not carried out by PROFIS Engineering. Input data and results must be checked for agreement with the existing conditions and for plausibility!
- User is responsible for evaluating the hole bearing capacity in case of shear forces.
- Condition A applies where the potential concrete failure surfaces are crossed by supplementary reinforcement proportioned to tie the potential concrete failure prism into the structural member. Condition B applies where such supplementary reinforcement is not provided, or where pullout or pryout strength governs.
- For additional information about ACI 318 strength design provisions, please go to <https://submittals.us.hilti.com/PROFISAnchorDesignGuide/>
- The design of Anchor Reinforcement is beyond the scope of PROFIS Engineering. Refer to ACI 318-14, Section 17.4.2.9 for information about Anchor Reinforcement.
- The design of Anchor Reinforcement is beyond the scope of PROFIS Engineering. Refer to ACI 318-14, Section 17.5.2.9 for information about Anchor Reinforcement.
- Anchor Reinforcement has been selected as a design option, calculations should be compared with PROFIS Engineering calculations.

Fastening meets the design criteria!

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Company:		Page:	8
Address:		Specifier:	
Phone Fax:		E-Mail:	
Design:	Pilaster	Date:	8/31/2020
Fastening point:			

7 Anchor plate and concrete bearing stress check

	Load	Capacity	Utilization [%]	Status
Concentric Compression	N/A	N/A	N/A	N/A
Concrete bearing	N/A	N/A	N/A	N/A
Tension Interface	5,587.95 [ft.lb/ft.]	8,099.99 [ft.lb/ft.]	69	OK
Uniaxial Moment (Strong Axis)	N/A	N/A	N/A	N/A
Uniaxial Moment (Weak Axis)	N/A	N/A	N/A	N/A

7.1 Plate bending, tension (per AISC DG1, sections 3.2, 3.3)

$$m = \frac{N - 0.95d}{2}$$

$$n = \frac{B - 0.80b_f}{2}$$

$$M_{pl} = \frac{T_{u1} \cdot x_1}{b_{eff1}} + \frac{T_{u2} \cdot x_2}{b_{eff2}}$$

$$\phi M_n = \phi \cdot F_y \cdot \frac{t_p^2}{4}$$

$$M_{pl} \leq \phi M_n$$

Variables

B [in.]	N [in.]	d [in.]	b _f [in.]	F _y [psi]
16.000	16.000	8.500	8.110	36,000
φ	t _p [in.]	P _u [kip]	M _u [ft.kip]	
0.900	1.000	30.000	0.00000	

Calculations

m [in.]	n [in.]	
3.962	4.756	
T _{u1} [kip]	x ₁ [in.]	b _{eff1} [in.]
5.000	4.037	6.538
T _{u2} [kip]	x ₂ [in.]	b _{eff2} [in.]
5.000	1.462	2.925

Results

M _n [ft.lb/ft.]	φ	φ M _n [ft.lb/ft.]	M _{pl} [ft.lb/ft.]
8,999.99	0.900	8,099.99	5,587.95

8 Installation data

Profile: W shape (AISC), W8X48; (L x W x T x FT) = 8.500 in. x 8.110 in. x 0.400 in. x 0.685 in.

Hole diameter in the fixture: $d_f = 1.312$ in.

Plate thickness (input): 1.000 in.

Anchor type and diameter: Hex Head ASTM F 1554 GR.
36 1 1/4

Item number: not available

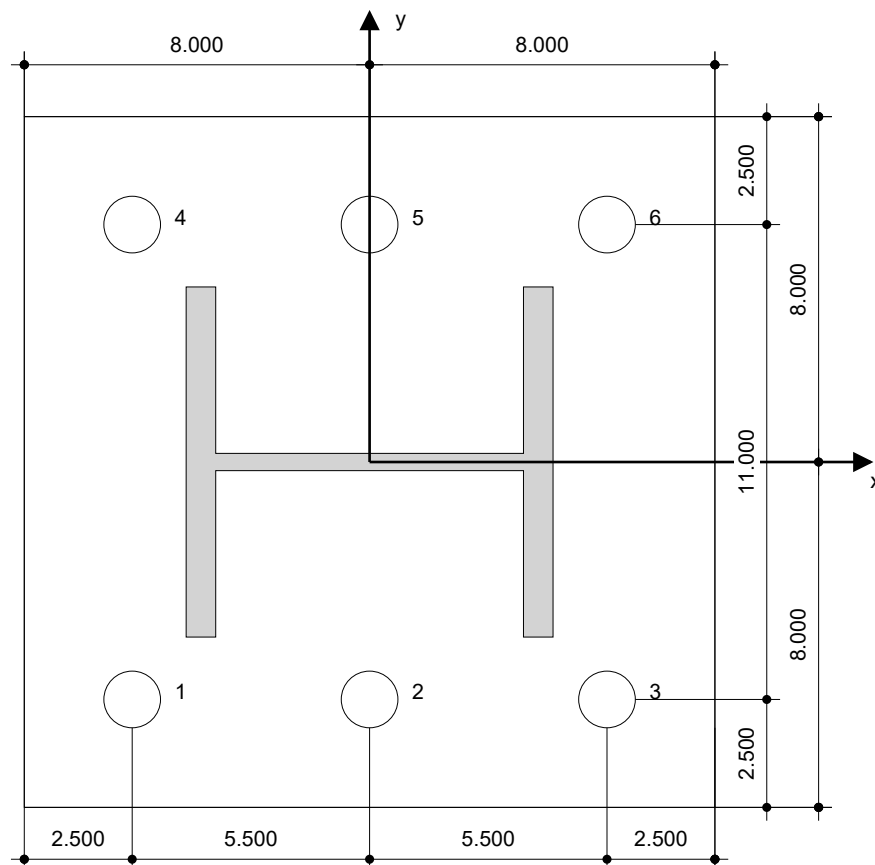
Installation torque: -

Hole diameter in the base material: - in.

Hole depth in the base material: 18.000 in.

Minimum thickness of the base material: 19.344 in.

Hilti Hex Head headed stud anchor with 18 in embedment, 1 1/4, Steel galvanized, installation per instruction for use



Coordinates Anchor in.

Anchor	x	y	c-x	c+x	c-y	c+y	Anchor	x	y	c-x	c+x	c-y	c+y
1	-5.500	-5.500	12.500	23.500	6.500	17.500	4	-5.500	5.500	12.500	23.500	17.500	6.500
2	0.000	-5.500	18.000	18.000	6.500	17.500	5	0.000	5.500	18.000	18.000	17.500	6.500
3	5.500	-5.500	23.500	12.500	6.500	17.500	6	5.500	5.500	23.500	12.500	17.500	6.500



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Company:		Page:	10
Address:		Specifier:	
Phone Fax:		E-Mail:	
Design:	Pilaster	Date:	8/31/2020
Fastening point:			

9 Remarks; Your Cooperation Duties

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Design: Typical BF
Fastening point:

Page: 1
Specifier:
E-Mail:
Date: 8/31/2020

Specifier's comments:

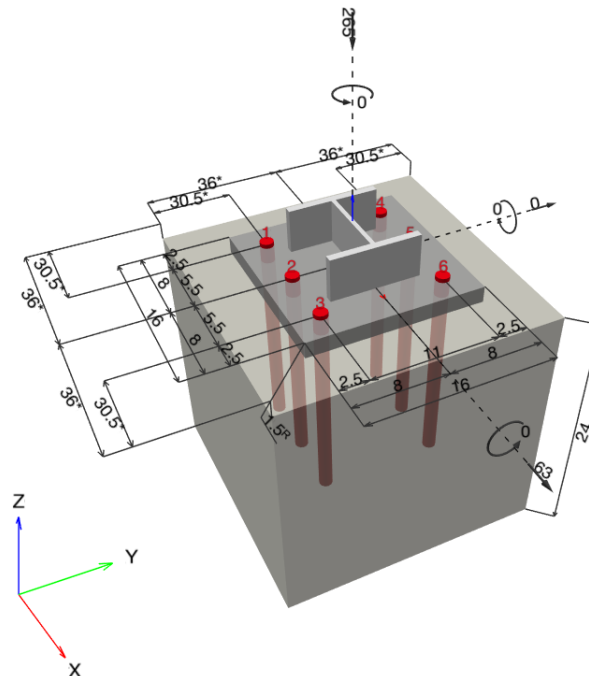
1 Input data

Anchor type and diameter:	Hex Head ASTM F 1554 GR. 36 1 1/4
Item number:	not available
Effective embedment depth:	$h_{ef} = 18.000$ in.
Material:	ASTM F 1554
Proof:	Design Method ACI 318-14 / CIP
Stand-off installation:	$e_b = 0.000$ in. (no stand-off); $t = 1.500$ in.
Anchor plate ^R :	$l_x \times l_y \times t = 16.000$ in. x 16.000 in. x 1.500 in.;
Profile:	W shape (AISC), W8X48; (L x W x T x FT) = 8.500 in. x 8.110 in. x 0.400 in. x 0.685 in.
Base material:	cracked concrete, 3000, $f'_c = 3,000$ psi; $h = 24.000$ in.
Reinforcement:	tension: condition A, shear: condition A; anchor reinforcement: shear edge reinforcement: > No. 4 bar



^R - The anchor calculation is based on a rigid anchor plate assumption.

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



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Address:
Phone | Fax: |
Design: Typical BF
Fastening point:

Page: 2
Specifier:
E-Mail:
Date: 8/31/2020

1.1 Design results

Case	Description	Forces [kip] / Moments [ft.kip]	Seismic	Max. Util. Anchor [%]
1	Combination 1	N = -265.000; V _x = 63.000; V _y = 0.000; M _x = 0.00000; M _y = 0.00000; M _z = 0.00000;	no	48

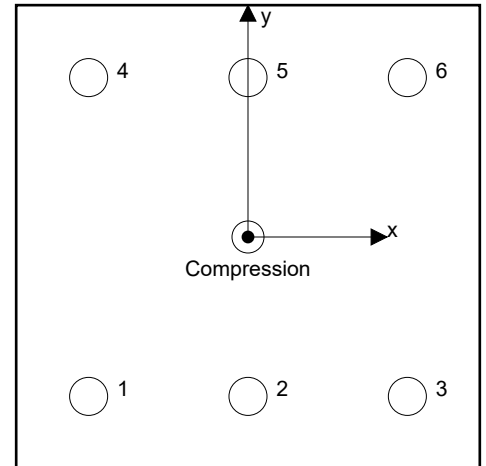
2 Load case/Resulting anchor forces

Anchor reactions [kip]

Tension force: (+Tension, -Compression)

Anchor	Tension force	Shear force	Shear force x	Shear force y
1	0.000	10.500	10.500	0.000
2	0.000	10.500	10.500	0.000
3	0.000	10.500	10.500	0.000
4	0.000	10.500	10.500	0.000
5	0.000	10.500	10.500	0.000
6	0.000	10.500	10.500	0.000

max. concrete compressive strain: 0.00 [%]
max. concrete compressive stress: 1,035 [psi]
resulting tension force in (x/y)=(0.000/0.000): 0.000 [kip]
resulting compression force in (x/y)=(0.000/0.000): 265.000 [kip]



Anchor forces are calculated based on the assumption of a rigid anchor plate.

3 Tension load

	Load N _{ua} [kip]	Capacity ϕ N _n [kip]	Utilization $\beta_N = N_{ua}/\phi N_n$	Status
Steel Strength*	N/A	N/A	N/A	N/A
Pullout Strength*	N/A	N/A	N/A	N/A
Concrete Breakout Failure**	N/A	N/A	N/A	N/A
Concrete Side-Face Blowout, direction **	N/A	N/A	N/A	N/A

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

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Company:		Page:	3
Address:		Specifier:	
Phone Fax:		E-Mail:	
Design:	Typical BF	Date:	8/31/2020
Fastening point:			

4 Shear load

	Load V_{ua} [kip]	Capacity ϕV_n [kip]	Utilization $\beta_v = V_{ua} / \phi V_n$	Status
Steel Strength*	10.500	21.919	48	OK
Steel failure (with lever arm)*	N/A	N/A	N/A	N/A
Pryout Strength**	63.000	219.770	29	OK
Concrete edge failure in direction ** ¹	N/A	N/A	N/A	N/A

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

¹ Shear Anchor Reinforcement has been selected!

4.1 Steel Strength

$$V_{sa} = 0.6 A_{se,V} f_{uta} \quad \text{ACI 318-14 Eq. (17.5.1.2b)}$$

$$\phi V_{steel} \geq V_{ua} \quad \text{ACI 318-14 Table 17.3.1.1}$$

Variables

$A_{se,V}$ [in. ²]	f_{uta} [psi]
0.97	58,000

Calculations

V_{sa} [kip]
33.721

Results

V_{sa} [kip]	ϕ_{steel}	ϕV_{sa} [kip]	V_{ua} [kip]
33.721	0.650	21.919	10.500

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Address:
Phone | Fax: |
Design: Typical BF
Fastening point:

Page: 4
Specifier:
E-Mail:
Date: 8/31/2020

4.2 Pryout Strength

$$V_{cp} = k_{cp} \left[\left(\frac{A_{Nc}}{A_{Nc0}} \right) \psi_{ec,N} \psi_{ed,N} \psi_{c,N} \psi_{cp,N} N_b \right] \quad \text{ACI 318-14 Eq. (17.5.3.1b)}$$

$$\phi V_{cp} \geq V_{ua} \quad \text{ACI 318-14 Table 17.3.1.1}$$

$$A_{Nc} \text{ see ACI 318-14, Section 17.4.2.1, Fig. R 17.4.2.1(b)}$$

$$A_{Nc0} = 9 h_{ef}^2 \quad \text{ACI 318-14 Eq. (17.4.2.1c)}$$

$$\psi_{ec,N} = \left(\frac{1}{1 + \frac{2 e_N}{3 h_{ef}}} \right) \leq 1.0 \quad \text{ACI 318-14 Eq. (17.4.2.4)}$$

$$\psi_{ed,N} = 0.7 + 0.3 \left(\frac{c_{a,min}}{1.5 h_{ef}} \right) \leq 1.0 \quad \text{ACI 318-14 Eq. (17.4.2.5b)}$$

$$\psi_{cp,N} = \text{MAX} \left(\frac{c_{a,min}}{c_{ac}}, \frac{1.5 h_{ef}}{c_{ac}} \right) \leq 1.0 \quad \text{ACI 318-14 Eq. (17.4.2.7b)}$$

$$N_b = 16 \lambda_a \sqrt{f'_c} h_{ef}^{5/3} \quad \text{ACI 318-14 Eq. (17.4.2.2b)}$$

Variables

k_{cp}	h_{ef} [in.]	$e_{c1,N}$ [in.]	$e_{c2,N}$ [in.]	$c_{a,min}$ [in.]
2	18.000	0.000	0.000	30.500
$\psi_{c,N}$	c_{ac} [in.]	k_c	λ_a	f'_c [psi]
1.000	-	16	1.000	3,000

Calculations

A_{Nc} [in. ²]	A_{Nc0} [in. ²]	$\psi_{ec1,N}$	$\psi_{ec2,N}$	$\psi_{ed,N}$	$\psi_{cp,N}$	N_b [kip]
4,225.00	2,916.00	1.000	1.000	1.000	1.000	108.343

Results

V_{cp} [kip]	$\phi_{concrete}$	ϕV_{cp} [kip]	V_{ua} [kip]
313.957	0.700	219.770	63.000



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Company:		Page:	5
Address:		Specifier:	
Phone Fax:		E-Mail:	
Design:	Typical BF	Date:	8/31/2020
Fastening point:			

5 Warnings

- The anchor design methods in PROFIS Engineering require rigid anchor plates per current regulations (AS 5216:2018, ETAG 001/Annex C, EOTA TR029 etc.). This means load re-distribution on the anchors due to elastic deformations of the anchor plate are not considered - the anchor plate is assumed to be sufficiently stiff, in order not to be deformed when subjected to the design loading. PROFIS Engineering calculates the minimum required anchor plate thickness with CBFEM to limit the stress of the anchor plate based on the assumptions explained above. The proof if the rigid anchor plate assumption is valid is not carried out by PROFIS Engineering. Input data and results must be checked for agreement with the existing conditions and for plausibility!
- User is responsible for evaluating the hole bearing capacity in case of shear forces.
- Condition A applies where the potential concrete failure surfaces are crossed by supplementary reinforcement proportioned to tie the potential concrete failure prism into the structural member. Condition B applies where such supplementary reinforcement is not provided, or where pullout or pryout strength governs.
- For additional information about ACI 318 strength design provisions, please go to <https://submittals.us.hilti.com/PROFISAnchorDesignGuide/>
- The design of Anchor Reinforcement is beyond the scope of PROFIS Engineering. Refer to ACI 318-14, Section 17.5.2.9 for information about Anchor Reinforcement.
- Anchor Reinforcement has been selected as a design option, calculations should be compared with PROFIS Engineering calculations.

Fastening meets the design criteria!

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Company:

Address:

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Design:

Fastening point:

Typical BF

Page:

Specifier:

E-Mail:

Date:

6

8/31/2020

6 Anchor plate and concrete bearing stress check

	Load	Capacity	Utilization [%]	Status
Concentric Compression	11,707.38 [ft.lb/ft.]	18,224.98 [ft.lb/ft.]	65	OK
Concrete bearing	1,035 [psi]	3,315 [psi]	32	OK
Tension Interface	N/A	N/A	N/A	N/A
Uniaxial Moment (Strong Axis)	N/A	N/A	N/A	N/A
Uniaxial Moment (Weak Axis)	N/A	N/A	N/A	N/A

6.1 Concrete bearing check (per AISC DG1, section 3.1.1)

$$A_1 = B \cdot N$$

$$A_2 = L \cdot W$$

$$f_{pu(max)} = \phi \left(0.85f_c \sqrt{\frac{A_2}{A_1}} \right), \sqrt{\frac{A_2}{A_1}} \leq 2$$

$$f_{pu} = \frac{P_u}{BN}$$

$$f_{pu} \leq f_{p(max)}$$

Variables

B [in.]	N [in.]	L [in.]	W [in.]	f_c' [psi]	ϕ	P_u [kip]
16.000	16.000	72.000	72.000	3,000	0.650	265.000

Calculations

A_1 [in. ²]	A_2 [in. ²]
256.00	5,184.00

Results

f_{pu} [psi]	$f_{pu(max)}$ [psi]
1,035	3,315

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Company:

Address:

Phone | Fax:

Design:

Fastening point:

|
Typical BF

Page:

Specifier:

E-Mail:

Date:

7

8/31/2020

6.2 Plate bending, compression (per AISC DG1, sections 3.1.2, 3.1.3)

$$A_1 = B \cdot N$$

$$A_2 = L \cdot W$$

$$P_p = 0.85 f_c A_1 \sqrt{\frac{A_2}{A_1}}, \sqrt{\frac{A_2}{A_1}} \leq 2$$

$$X = \left\{ \frac{4db_f}{(d + b_f)^2} \right\} \frac{P_u}{\phi_c P_p}$$

$$\lambda = \frac{2\sqrt{X}}{1 + \sqrt{1 - X}} \leq 1$$

$$m = \frac{N - 0.95d}{2}$$

$$n = \frac{B - 0.80b_f}{2}$$

$$\lambda n' = \lambda \frac{\sqrt{db_f}}{4}$$

$$l = \max(m, n, \lambda n')$$

$$f_{pu} = \frac{P_u}{BN}$$

$$M_{pl} = \frac{f_{pu} \cdot l^2}{2}$$

$$\phi M_n = \phi \cdot F_y \cdot \frac{t_b^2}{4}$$

$$M_{pl} \leq \phi M_n$$

Variables

B [in.]	N [in.]	L [in.]	W [in.]	d [in.]
16.000	16.000	72.000	72.000	8.500
b _f [in.]	F _y [psi]	φ	t _p [in.]	P _u ' [kip]
8.110	36,000	0.900	1.500	265.000

Calculations

A ₁ [in. ²]	A ₂ [in. ²]	P _p [kip]	X	λ
256.00	5,184.00	848.640	0.480	0.805
m [in.]	n [in.]	λ n' [in.]	l [in.]	f _{pu} [psi]
3.962	4.756	1.671	4.756	1,035

Results

M _n [ft.lb/ft.]	φ	φ M _n [ft.lb/ft.]	M _{pl} [ft.lb/ft.]
20,249.98	0.900	18,224.98	11,707.38

7 Installation data

Profile: W shape (AISC), W8X48; (L x W x T x FT) = 8.500 in. x 8.110 in. x 0.400 in. x 0.685 in.

Hole diameter in the fixture: $d_f = 1.312$ in.

Plate thickness (input): 1.500 in.

Anchor type and diameter: Hex Head ASTM F 1554 GR.
36 1 1/4

Item number: not available

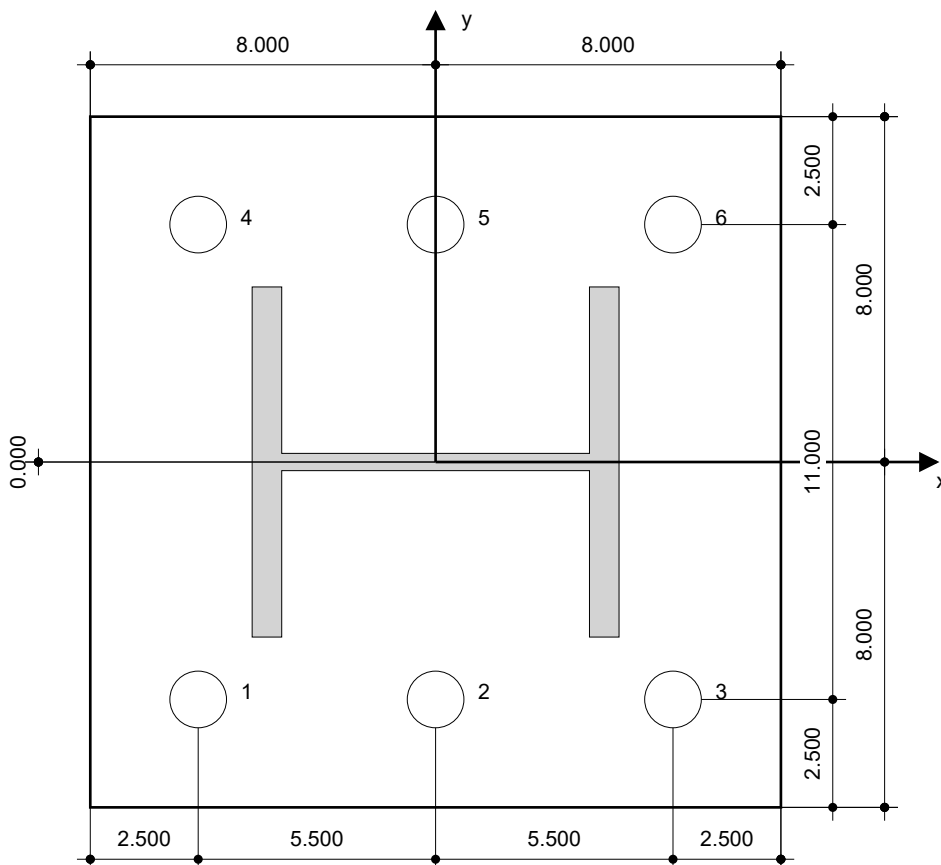
Installation torque: -

Hole diameter in the base material: - in.

Hole depth in the base material: 18.000 in.

Minimum thickness of the base material: 19.344 in.

Hilti Hex Head headed stud anchor with 18 in embedment, 1 1/4, Steel galvanized, installation per instruction for use



Coordinates Anchor in.

Anchor	x	y	c _{-x}	c _{+x}	c _{-y}	c _{+y}	Anchor	x	y	c _{-x}	c _{+x}	c _{-y}	c _{+y}
1	-5.500	-5.500	30.500	41.500	30.500	41.500	4	-5.500	5.500	30.500	41.500	41.500	30.500
2	0.000	-5.500	36.000	36.000	30.500	41.500	5	0.000	5.500	36.000	36.000	41.500	30.500
3	5.500	-5.500	41.500	30.500	30.500	41.500	6	5.500	5.500	41.500	30.500	41.500	30.500



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Company:		Page:	9
Address:		Specifier:	
Phone Fax:		E-Mail:	
Design:	Typical BF	Date:	8/31/2020
Fastening point:			

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Date | 8/28/20
 Project | LMS
 Project # | 13-20102-00
 Page | 161
 Computed by | DSS Checked by |

HSS SPAN - 23'-0"

LOAD - $16\frac{1}{2}' \times 2 \times 10\text{psf} = 330\text{plf}$ STUD KILL

$2\frac{1}{2}' \times 15\text{psf} = 40\text{plf}$ DESK

$2\frac{1}{2}' \times 100\text{psf} = 250\text{plf}$ DESK LL

620plf (850plf)

$M_{Ux} = 56\text{Kft}$ $Z = 16\text{in}^3$

$\delta = L/240 = 1.15$ SAY $LL\delta = \frac{1}{2}$

$I = 117\text{in}^4$ or 110in^4

Horiz $\rightarrow 5 \times 13/2 = 35\text{plf}$ (50plf)

$M_{Uy} = 3.3$ $Z = 1\text{in}^3$

$\delta = L/360 = 0.7$ SAY $\frac{3}{8}$

$I = 20\text{in}^4$

Torsion $\rightarrow$

$0.33 \times \frac{8}{12} = 0.22\text{Kft/ft}$
 $0.29 \times \frac{18}{12} = 0.44\text{Kft/ft}$

$T_U = 0.968\text{Kft} \times 23/2 = 11.1\text{Kft}$

HSS $10 \times 6 \times \frac{3}{8}$

$\phi T_n = \frac{0.9(37.9)(0.6)(46)}{12} = 78\text{Kft}$

Date | 8/28/20
Project | LSM5
Project # | 13-20102-00
Page | 10 of 1
Computed by | DJS
Checked by |

CMU WALL @ FIRE WALL AREA

HEIGHT - 33'-0"

SPSF INTERNAL PRESSURE -

$$M = 33^2 \times 5/8 = 0.68 \text{ k-ft}$$

BUILD OUT 5x13

$$\sim 25 \text{ ft} @ 15 \text{ psf} + 15 \text{ psf} \times 5 (\text{FOR MEP})$$

$$\sim 450 \text{ plf} \times e$$
$$e \sim 4 \text{ ft} = 1.8 \text{ K-ft}$$

$$\text{TOTAL MOMENT} = 25 \text{ k-ft}$$

$$\text{TRY \# 5c16} \quad A_s = 0.232 \text{ in}^2/\text{ft}$$

$$f'_m = 2000 \quad n = 16.1 \quad \rho = 0.0081$$

$$K = 0.33 \quad j = 0.89$$

$$f_m = 1172 \text{ psi} \quad \underline{N/G}$$

$$(2) 5c8 \rightarrow d = 5.31 \quad A_s = 0.465 \text{ in}^2/\text{ft}$$

$$\rho = 0.0073 \quad K = 0.38 \quad j = 0.87$$

$$f_m = 536 \text{ psi} \quad f_s = 13,960 \text{ psi}$$

$$V = (5/1000) \times 33/2 + 1.8 \text{ k-ft} / 33 = 0.14 \text{ k/ft}$$

Date | 8/28/20
Project | LSMS
Project # | 13-70102-00
Page | 1 of 1
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HSS C LERESTORY -

MAX SPAN - 33'-0"

WIND TRIB - 4'-0"

$$\begin{aligned} 33 \times 33 / 3 &= 363 \\ 33 \times 4 &= 132 \end{aligned}$$

C&C WIND -

$$h = 35'$$

$$\begin{aligned} -62.8 \text{ psf} \times 0.64 &= 40.2 \text{ psf} \text{ (FACTORED)} \\ 34.3 \text{ psf} \times 0.72 &= 24.7 \text{ psf} \text{ (FACTORED)} \end{aligned}$$

$$0.6 \times 40.2 = 24.1 \text{ psf (SERVICE)}$$

$$24.1 \times 4 = 96 \text{ plf} \rightarrow 0.7(96) = 67 \text{ plf}$$

$$\delta = 2/360 = 1.1 \text{ HOLD TO } 3/4'$$

$$I = 118 \text{ in}^4 \text{ OR } 85 \text{ in}^4$$

HSS 10x8x3/8 LSH

Date | 8/11/20
 Project | LSMS
 Project # | 1320102-00
 Page | 1021
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HSS @ STOREFRONT

WIND - C&C WIND

$$27'-0" \text{ SPAN} \quad 27 \times 27/3 = 243 \text{ sf}$$

$$27' \times 24 1/2 = 324 \text{ sf}$$

$$26.9 \text{ psf} \times 1.4 = 37.7 \text{ psf} \quad \text{FACTORED}$$

$$22.6 \text{ psf}$$

HORIZ LOAD - $W = 0.27 \text{ klf}$ $U = 0.45 \text{ klf}$

$$M_U = 41.2 \text{ kft}$$

$$V_U = 6.0 \text{ k}$$

$$Z = 119$$

$$\delta = 2/360 = 0.9 \text{ SAY } 1/2"$$

$$I = 222 \text{ in}^4$$

VERT LOAD - $15' \times 15 \text{ psf} = 225 \text{ plf}$
 315 plf FACTORED

$$M_U = 28 \text{ kft}$$

$$V_U = 4.3 \text{ k}$$

$$Z \sim 8.1 \text{ in}^3$$

$$I \sim 248 \text{ in}^4$$

$$\delta = 3/8$$

HSS $12 \times 10 \times 3/8$

OR $12 \times 12 \times 5/16$

Date | 8/28/20
 Project | LSM3
 Project # | 13-20102-00
 Page | 1081
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Elevate the human experience
 through design

ENTRY →

STUD HT = 16"

HT TO T.O. GLASS = 10'-0"

104.4 #

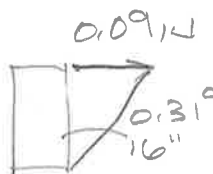


24.1 p/f SERVICE

$$M = 139 \text{ #ft} + 21.4 \text{ #ft} = 160.6 \text{ #ft} \quad (1927 \text{ #in})$$

$$V = 136 \text{ #}$$

$\delta = ?$ SAY 0.1 in



LL600-118
 6 #12; PATTERN 3

SAY 354,427 in #/RAD

$$1927 \text{ in #} / 354,427 \text{ in #/RAD} = 0.0054 \text{ RAD}$$

$$0.0054 \text{ RAD} = 0.31^\circ$$

$$\delta \sim 0.09 \text{ in} \quad \underline{\underline{OK}}$$

StiffClip® CL

Floor Tie

The Steel Network, Inc.

www.steelnetwork.com

1-888-474-4876



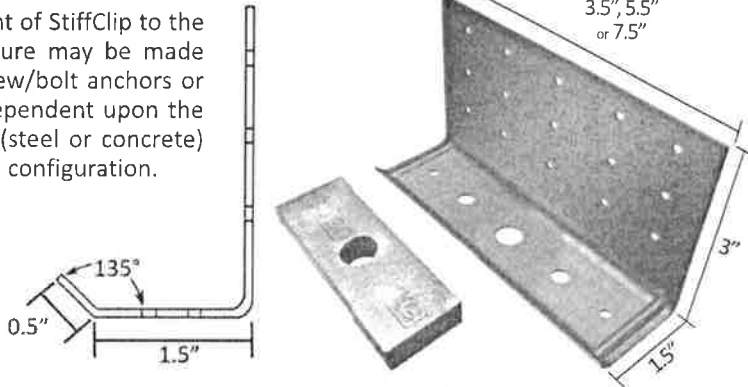
Material Composition

68mil Clip: ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, 68mil minimum thickness (14 gauge, 0.0713" design thickness) with ASTM A653/A653M G90 (Z275) hot dipped galvanized coating.

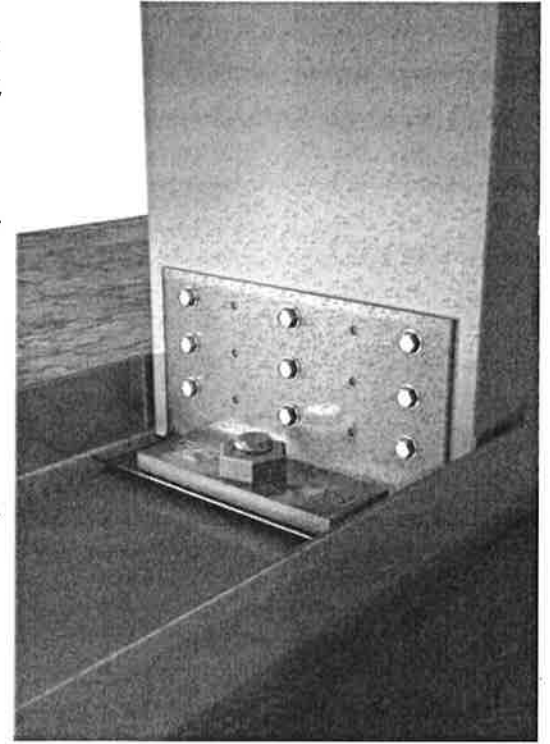
118mil Clip: ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, 118mil minimum thickness (10 gauge, 0.1242" design thickness) with ASTM A653/A653M G90 (Z275) hot dipped galvanized coating.

"H" Plate: ½" steel, ASTM A36, 36ksi min yield, 58-80ksi min tensile, with ASTM B633 Type II Yellow Zinc Coating, or Paint, or Equivalent.

The attachment of StiffClip to the primary structure may be made with PAFs, screw/bolt anchors or weld and is dependent upon the base material (steel or concrete) and the design configuration.



CL (H) Plate



US Patent #7,533,508

StiffClip CL Allowable Loads

StiffClip® CL362/400, Recommended Allowable Load (lbs and inches): F1, F2, F3, M1 & Stiffness																
Stud		CL362/400-68					CL362/400-118					CL362/400-118 (H)				
Thickness	Yield	4 #12 Screws, Pattern 1					4 #12 Screws, Pattern 1					9 #12 Screws, Pattern 2				
Mils (ga)	Strength (ksi)	F1 (lbs)	F2 (lbs)	F3 (lbs)	M1 (in-lbs)	Stiffness (in-lbs/rad)	F1 (lbs)	F2 (lbs)	F3 (lbs)	M1 (in-lbs)	Stiffness (in-lbs/rad)	F1 (lbs)	F2 (lbs)	F3 (lbs)	M1 (in-lbs)	Stiffness (in-lbs/rad)
33 (20)	33	191	535	754	1,108	108,054	191	535	754	1,108	297,793	286	980	1,696	1,653	457,277
33 (20)	50	275	773	1,089	1,601		275	773	1,089	1,601		413	1,415	2,450	2,388	
43 (18)	33	248	796	1,122	1,649		248	796	1,122	1,649		373	1,458	2,524	2,460	
43 (18)	50	359	1,150	1,151	1,804		359	1,150	1,620	2,383		538	2,107	3,646	3,554	
54 (16)	33	312	1,120	1,151	1,804		312	1,120	1,577	2,319		468	2,050	3,549	3,459	
54 (16)	50	450	1,617	1,151	1,804		450	1,617	2,225	3,350		676	2,961	5,126	4,996	
68 (14)	50	567	1,917	1,151	1,804		567	2,287	2,225	3,936		851	4,187	5,713	6,716	
97 (12)	50	809	1,917	1,151	1,804		809	2,411	2,225	3,936		1,214	4,415	5,713	6,716	
118 (10)	50	856	1,917	1,151	1,804		856	2,411	2,225	3,936		1,284	4,415	5,713	6,716	
Max Allowable Clip Load		1,416	1,917	1,151	1,804		2,423	4,107	2,225	3,936		2,598	4,978	5,713	6,716	

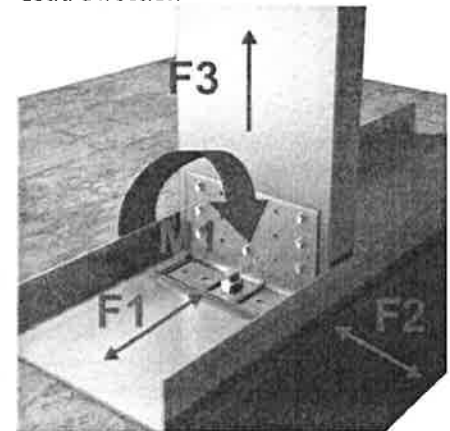
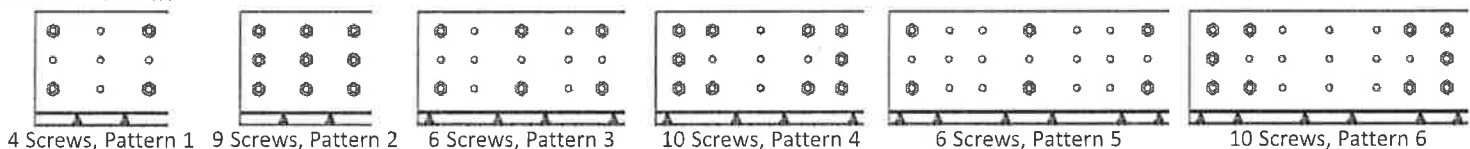
StiffClip® CL600, Recommended Allowable Load (lbs and inches): F1, F2, F3, M1 & Stiffness																
Stud		CL600-68					CL600-118					CL600-118 (H)				
Thickness	Yield	6 #12 Screws, Pattern 3					6 #12 Screws, Pattern 3					10 #12 Screws, Pattern 4				
Mils (ga)	Strength (ksi)	F1 (lbs)	F2 (lbs)	F3 (lbs)	M1 (in-lbs)	Stiffness (in-lbs/rad)	F1 (lbs)	F2 (lbs)	F3 (lbs)	M1 (in-lbs)	Stiffness (in-lbs/rad)	F1 (lbs)	F2 (lbs)	F3 (lbs)	M1 (in-lbs)	Stiffness (in-lbs/rad)
33 (20)	33	286	874	1,067	1,713	160,215	286	874	1,130	1,713	354,427	381	1,481	1,884	3,140	525,127
33 (20)	50	413	1,263	1,067	2,435		413	1,263	1,633	2,475		550	2,139	2,722	4,537	
43 (18)	33	373	1,301	1,067	2,435		373	1,301	1,682	2,549		497	2,204	2,804	4,673	
43 (18)	50	538	1,880	1,067	2,435		538	1,880	2,225	3,683		718	3,184	4,051	6,755	
54 (16)	33	468	1,830	1,067	2,435		468	1,830	2,225	3,585		624	3,099	3,943	6,571	
54 (16)	50	676	2,510	1,067	2,435		676	2,642	2,225	5,177		901	4,476	5,695	7,306	
68 (14)	50	851	2,510	1,067	2,435		851	3,736	2,225	5,702		1,134	6,329	6,007	7,306	
97 (12)	50	1,214	2,510	1,067	2,435		1,214	3,939	2,225	5,702		1,618	6,455	6,007	7,306	
118 (10)	50	1,284	2,510	1,067	2,435		1,284	3,939	2,225	5,702		1,712	6,455	6,007	7,306	
Max Allowable Clip Load		1,421	2,510	1,067	2,435		2,580	4,107	2,225	5,702		4,158	6,455	6,007	7,306	

****StiffClip CL Allowable Load tables and important notes continued on next page.**

StiffClip® CL800, Recommended Allowable Load (lbs and inches): F1, F2, F3, M1 & Stiffness																
Stud		CL800-68					CL800-118					CL800-118 (H)				
Thickness Mils (ga)	Yield Strength (ksi)	6 #12 Screws, Pattern 5					6 #12 Screws, Pattern 5					10 #12 Screws, Pattern 6				
		F1 (lbs)	F2 (lbs)	F3 (lbs)	M1 (in-lbs)	Stiffness (in-lbs/rad)	F1 (lbs)	F2 (lbs)	F3 (lbs)	M1 (in-lbs)	Stiffness (in-lbs/rad)	F1 (lbs)	F2 (lbs)	F3 (lbs)	M1 (in-lbs)	Stiffness (in-lbs/rad)
33 (20)	33	286	976	1,077	2,479	190,670	286	976	1,130	2,479	548,677	381	1,664	1,884	4,710	696,515
33 (20)	50	413	1,410	1,077	2,860		413	1,410	1,633	3,582		550	2,404	2,722	6,805	
43 (18)	33	373	1,452	1,077	2,860		373	1,452	1,682	3,689		497	2,476	2,804	7,010	
43 (18)	50	538	2,098	1,077	2,860		538	2,098	2,431	5,330		718	3,577	4,051	10,128	
54 (16)	33	468	2,042	1,077	2,860		468	2,042	2,366	5,188		624	3,482	3,943	9,858	
54 (16)	50	676	2,662	1,077	2,860		676	2,950	2,666	7,493		901	5,029	5,695	11,143	
68 (14)	50	851	2,662	1,077	2,860		851	4,171	2,666	8,229		1,134	7,110	7,446	11,143	
97 (12)	50	1,214	2,662	1,077	2,860		1,214	4,398	2,666	8,229		1,618	7,497	7,446	11,143	
118 (10)	50	1,284	2,662	1,077	2,860		1,284	4,398	2,666	8,229		1,712	7,497	7,446	11,143	
Max Allowable Clip Load		1,435	2,662	1,077	2,860		3,356	6,410	2,666	8,229		4,816	8,274	7,446	11,143	

Notes:

- StiffClip CL resists vertical, horizontal, and torsional loads.
- Allowable load tables incorporate eccentric loading of fasteners. Values with welded connection may increase.
- Fasten within ¾" from the angle heel (centerline of the 1½" leg), using pre-drilled holes.
- Center hole is 0.563" in diameter for ½" anchor. Middle guide holes are 0.313" in diameter. Outer guide holes and guide holes in 3" leg are 0.141" in diameter.
- Guide holes are in place for fastener installation efficiency. All guide holes may not require fasteners. Fastener amount determined by the designer. Screw fasteners should be symmetrically placed in guide holes. Refer to screw pattern diagrams below for placement.
- Loads listed reflect force in a single direction. When multiple loads react on the connection, it is the responsibility of the designer to check the interaction of forces.
- Allowable loads have not been increased for wind, seismic, or other factors.
- Torsional effects are considered on screw group for F2 & F3 allowable loads. It is assumed that half of the torsional moment is taken by the connection to the structure and half is taken by the connection to the stud.
- M1 loads are reported as Max. Load divided by a Factor of Safety. M1 loads maybe limited by the Serviceability Load calculated as Clip Stiffness times the Serviceability Limit in radians.
- Stiffness is the Allowable Clip Moment divided by the clip rotation measured at Half the Max Allowable Clip Moment.

Load Direction**Screw Patterns****Nomenclature**

To specify StiffClip CL on drawings, multiply stud depth by 100, followed by the appropriate material thickness, based on strength required (see load tables). The StiffClip CL118(H) utilizes a plate in the 1½" leg (shown on page 1).

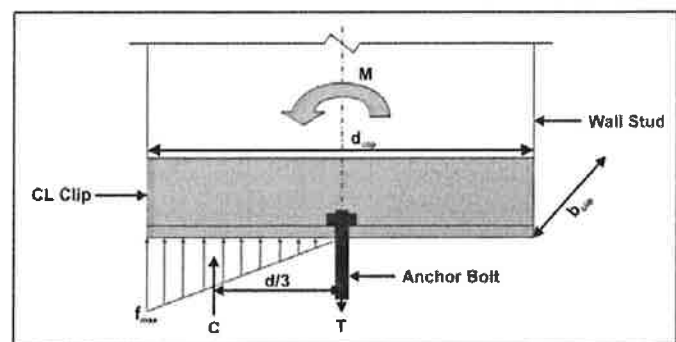
Example: 6" stud, uplift load of 650lbs

Designate: StiffClip® CL600-68

Anchor Bolt Design

The following equation for tension force in the anchor is derived using the assumed bearing stress distribution shown in the figure to the right. This assumed stress distribution provides a conservative anchor force approximation.

$$T = \frac{M}{(2/3)(d_{clip}/2)} = \frac{3M}{d_{clip}}$$



StiffClip CL Series
Blast and Seismic Design data
www.steelnetwork.com

** For more information or to review a copy of this report, please visit our website at <http://www.steelnetwork.com/Site/TechnicalData>

Project: Project Name
 Subject: Spread Footing Design
 Date: 9/4/2020

Project Number:
 Computed by:
 Page:

SPREAD FOOTING DESIGN: PER ACI 318-14 and 2018 IBC

Pa = SPREAD FOOTING CAPACITY, KIPS
 f'c = CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS, PSI
 Fy = REINFORCING STEEL YIELD STRENGTH, PSI
 Qa = SAFE NET ALLOWABLE SOIL BEARING PRESSURE, PSF
 B = WIDTH OF FOOTING, FT.
 A = BEARING AREA OF FOOTING, BxB, SQ.FT.
 c = MINIMUM COLUMN DIMENSION, IN.
 h = DEPTH OF FOOTING, IN.
 CLR = CLR DISTANCE, 3"
 d = DEPTH TO REINFORCEMENT, d = h - CLR - 1/2", IN.
 LF = LOAD FACTOR FOR CONCRETE DESIGN
 Qu = FOOTING BEARING PRESSURE UNDER OVERLOAD, Qa x LF, PSF

FOOTING CAPACITY BASED ON SOIL BEARING PRESSURE:

$$Pa = A \times Qa$$

TWO- WAY SHEAR: CRITICAL SECTION d/2 FROM FACE OF COLUMN

DETERMINE d REQUIRED FOR Pa ABOVE.

$$vc = 4 \times \text{SQRT}(f'c)$$

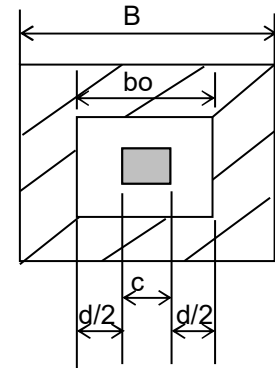
$$Vu = Qu (A - (bo/12)^2)$$

$$\Phi Vc = \Phi \times vc \times 4 \times bo \times d$$

$$Vu = \Phi Vc$$

bo = c + d, (USE hmin. INITIALLY,
 THEN USE d FROM PREVIOUS
 FOOTING, TO CALC. d).
 $\Phi = 0.75$

$$d_2 = Qu (A - (bo/12)^2) / (\Phi \times vc \times 4 \times bo)$$



ONE WAY SHEAR: ON CRITICAL SECTION d FROM FACE OF COLUMN

DETERMINE d REQUIRED FOR Pa ABOVE

$$vc = 2 \times \text{SQRT}(f'c)$$

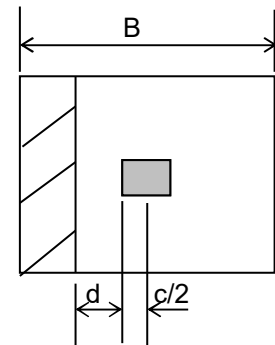
$$Vu = Qu (B \times (B/2 - d/12 - c/(2 \times 12)))$$

$$\Phi Vc = \Phi \times vc \times B \times 12 \times d \quad \Phi = 0.75$$

$$Vu = \Phi Vc$$

$$d_1 = Qu (B \times (B/2 - d/12 - c/(2 \times 12))) / (\Phi \times vc \times B \times 12)$$

$\nearrow$ (USE hmin. INITIALLY,
 THEN USE d FROM PREVIOUS
 FOOTING, TO CALC. d).



AREA OF STEEL REQUIRED: CRITICAL SECTION AT FACE OF COLUMN

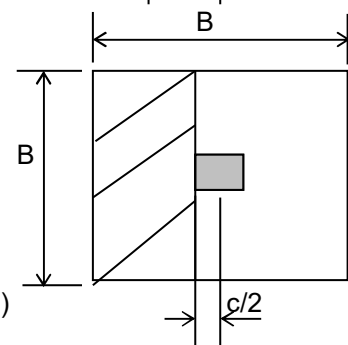
$$Mu = 1/2 \times Qu \times B \times (B/2 - c/24)^2 \quad \Phi = 0.90$$

$$Ru_{REQD.} = Mu / (\Phi \times B \times d^2) \quad m = Fy / (.85 \times f'c)$$

$$As_{REQD.} = B \times 12 \times d \times (1/m) \times (1 - \text{SQRT}(1 - 2 \times m \times Ru / Fy))$$

$$\Phi Mn = \Phi \times As \times Fy \times (d - a/2) / 12 \quad a = As \times Fy / (.85 \times f'c \times B \times 12)$$

$$Mu \leq \Phi Mn$$



Project: LSMS
 Subject: Spread Footing Design
 Date: 9/4/2020

Project Number:
 Computed by:
 Page:

SPREAD FOOTING DESIGN: PER ACI 318-14 AND 2018 IBC

$f'_c = 4000$ PSI $LF = 1.5$
 $F_y = 60,000$ PSI $CLR = 3$ IN.
 $Q_a = 2500$ PSF $h_{MIN} = 18$ IN.
 $c = 8$ IN.

SPREAD FOOTING BEARING CAPACITY & REINFORCEMENT

	SIZE	B FT.	h IN.	h min in	Pa KIPS	REINFORCEMENT (NO. BARS)					As _{REQD} IN. ²	Ftg Wt Kips	Reinf Layers 1 or 2
						# 4	# 5	# 6	# 7	# 8			
F4	4'-0" SQ.	4	36	18	40.0	8	6	4	3	2	1.555	7.2	2
F5	5'-0" SQ.	5	36	18	62.5	10	7	5	4	3	1.944	11.25	2
F6	6'-0" SQ.	6	36	18	90.0	12	8	6	4	3	2.333	16.2	2
F7	7'-0" SQ.	7	36	18	122.5	14	9	7	5	4	2.722	22.05	2
F8	8'-0" SQ.	8	36	18	160.0	16	11	8	6	4	3.110	28.8	2
F9	9'-0" SQ.	9	36	18	202.5	18	12	8	6	5	3.499	36.45	2
F10	10'-0" SQ.	10	36	18	250.0	20	13	9	7	5	3.888	45	2
F11	11'-0" SQ.	13	36	23	422.5	33	21	15	11	9	6.409	76.05	2
F12	12'-0" SQ.	16	36	34	640.0	63	40	28	21	16	12.270	115.2	2

Exterior

FTG DIM	FTG WT
3	2.03
5	11.25
6	16.20
7	22.05
8	28.80
9	36.45
10	45.00
13	76.05
16	115.20

Project: Project Name
 Subject: Spread Footing Design
 Date: 9/4/2020

Project Number:
 Computed by:
 Page:

SPREAD FOOTING DESIGN: PER ACI 318-14 AND 2018 IBC

P_a = SPREAD FOOTING CAPACITY, KIPS
 f'_c = CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS, PSI
 F_y = REINFORCING STEEL YIELD STRENGTH, PSI
 Q_a = SAFE NET ALLOWABLE SOIL BEARING PRESSURE, PSF
 B = WIDTH OF FOOTING, FT.
 A = BEARING AREA OF FOOTING, $B \times B$, SQ.FT.
 c = MINIMUM COLUMN DIMENSION, IN.
 h = DEPTH OF FOOTING, IN.
 CLR = CLR DISTANCE, 3"
 d = DEPTH TO REINFORCEMENT, $d = h - \text{CLR} - 1/2"$, IN.
 LF = LOAD FACTOR FOR CONCRETE DESIGN
 Q_u = FOOTING BEARING PRESSURE UNDER OVERLOAD, $Q_a \times \text{LF}$, PSF

FOOTING CAPACITY BASED ON SOIL BEARING PRESSURE:

$$P_a = A \times Q_a$$

TWO- WAY SHEAR: CRITICAL SECTION $d/2$ FROM FACE OF COLUMN

DETERMINE d REQUIRED FOR P_a ABOVE.

$$v_c = 4 \times \text{SQRT}(f'_c)$$

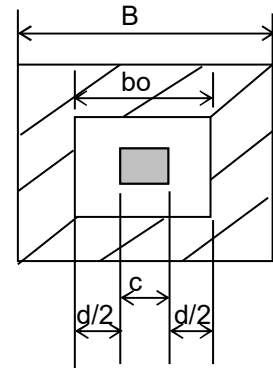
$$V_u = Q_u (A - (b_o/12)^2)$$

$$\Phi V_c = \Phi \times v_c \times 4 \times b_o \times d$$

$$V_u = \Phi V_c$$

$b_o = c + d$, (USE $h_{\min}$. INITIALLY,
 THEN USE d FROM PREVIOUS
 FOOTING, TO CALC. d).
 $\Phi = 0.75$

$$d_2 = Q_u (A - (b_o/12)^2) / (\Phi \times v_c \times 4 \times b_o)$$



ONE WAY SHEAR: ON CRITICAL SECTION d FROM FACE OF COLUMN

DETERMINE d REQUIRED FOR P_a ABOVE

$$v_c = 2 \times \text{SQRT}(f'_c)$$

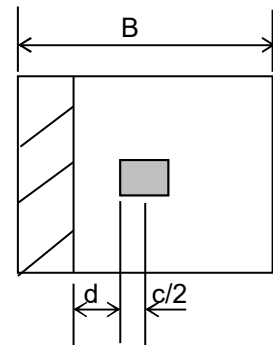
$$V_u = Q_u (B \times (B/2 - d/12 - c/(2 \times 12)))$$

$$\Phi V_c = \Phi \times v_c \times B \times 12 \times d \quad \Phi = 0.75$$

$$V_u = \Phi V_c$$

$$d_1 = Q_u (B \times (B/2 - d/12 - c/(2 \times 12))) / (\Phi \times v_c \times B \times 12)$$

$\nearrow$ (USE $h_{\min}$. INITIALLY,
 THEN USE d FROM PREVIOUS
 FOOTING, TO CALC. d).



AREA OF STEEL REQUIRED: CRITICAL SECTION AT FACE OF COLUMN

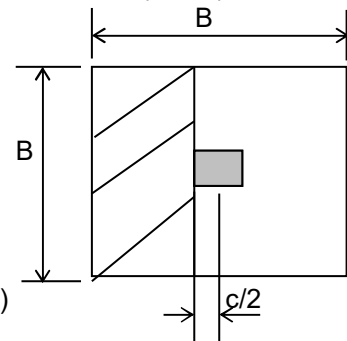
$$M_u = 1/2 \times Q_u \times B \times (B/2 - c/24)^2 \quad \Phi = 0.90$$

$$R_{u\text{REQD.}} = M_u / (\Phi \times B \times d^2) \quad m = F_y / (.85 \times f'_c)$$

$$A_{s\text{REQD.}} = B \times 12 \times d \times (1/m) \times (1 - \text{SQRT}(1 - 2 \times m \times R_u / F_y))$$

$$\Phi M_n = \Phi \times A_s \times F_y \times (d - a/2) / 12 \quad a = A_s \times F_y / (.85 \times f'_c \times B \times 12)$$

$$M_u \leq \Phi M_n$$



Project: LSMS
 Subject: Spread Footing Design
 Date: 9/4/2020

Project Number:
 Computed by:
 Page:

SPREAD FOOTING DESIGN: PER ACI 318-14 AND 2018 IBC

$f'_c = 4000$ PSI $LF = 1.5$
 $F_y = 60,000$ PSI $CLR = 3$ IN.
 $Q_a = 2500$ PSF $h_{MIN} = 18$ IN.
 $c = 8$ IN.

SPREAD FOOTING BEARING CAPACITY & REINFORCEMENT

	SIZE	B FT.	h IN.	h min in	Pa KIPS	REINFORCEMENT (NO. BARS)					As _{REQD} IN. ²	Ftg Wt Kips	Reinf Layers 1 or 2
						# 4	# 5	# 6	# 7	# 8			
F4	4'-0" SQ.	4	24	18	40.0	6	4	3	2	2	1.037	4.8	2
F5	5'-0" SQ.	5	24	18	62.5	7	5	3	3	2	1.296	7.5	2
F6	6'-0" SQ.	6	24	18	90.0	8	6	4	3	2	1.555	10.8	2
F7	7'-0" SQ.	7	24	18	122.5	10	6	5	4	3	1.814	14.7	2
F8	8'-0" SQ.	8	24	18	160.0	12	8	5	4	3	2.208	19.2	2
F9	9'-0" SQ.	9	24	18	202.5	17	11	8	6	5	3.217	24.3	2
F10	10'-0" SQ.	10	24	20	250.0	23	15	11	8	6	4.499	30	2
F11	11'-0" SQ.	11	24	24	302.5	32	20	14	11	8	6.089	36.3	2
F12	12'-0" SQ.	12	30	28	360.0	32	21	14	11	8	6.146	54	2

Interior	
FTG DIM	FTG WT
3	2.03
5	7.50
6	10.80
7	14.70
8	19.20
9	24.30
10	30.00
11	36.30
12	54.00



**GEOTECHNICAL EXPLORATION
AND
FOUNDATION RECOMMENDATIONS**

LEE'S SUMMIT MIDDLE SCHOOL #4 - REVISED
Lee's Summit, Missouri

CFS Project No. 20-1074

Prepared for:

Lee's Summit R-7 School District
301 NE Tudor Road
Lee's Summit, Missouri 64086
June 8, 2020



Prepared by:
Cook, Flatt & Strobel Engineers, P.A.

SYNOPSIS

A subsurface exploration and an evaluation were performed at the planned Lee's Summit Middle School #4 project site to provide geotechnical engineering related recommendations for design and construction of the proposed project.

Exploratory soil borings have been drilled and a laboratory testing program was conducted on selected soil samples. The data has been analyzed based upon the project information provided DLR Group and the project team.

The results of this exploration and analysis indicate conventional spread and continuous wall footings appear to be a suitable foundation system for support of the proposed structure. However, to mitigate the risk of total and differential settlement exceeding the tolerable limits, surcharging of the building subgrade will be necessary after completion of grading operations and prior to additional loading. Alternatively, if time restrictions prohibit surcharging of the building footprint, rammed aggregate piers (RAPs) or concrete drilled piers can be utilized to support the planned structure.

Detailed analysis of subsurface conditions, any alternate foundation types, and pertinent design recommendations are included, herein.

Groundwater conditions are not expected to cause any major difficulties. These conditions will be further discussed in the report. Please note, groundwater levels should be expected to fluctuate based on seasonal changes and precipitation events.

TABLE OF CONTENTS

1	Introduction	1
1.1	Purpose.....	1
1.2	Scope of Services	1
1.3	General.....	1
2	Project Description	2
2.1	Site Description	2
2.2	Site Geology	2
3	Subsurface Exploration	3
3.1	Scope of Work	3
3.2	Drilling and Sampling Procedures	3
3.3	Field Tests and Measurements.....	4
3.4	Subsurface Conditions	4
3.5	Groundwater Conditions	4
4	Laboratory Testing.....	5
5	Geotechnical Concerns	5
6	Earthwork & Site Development.....	6
6.1	Site Preparation.....	6
6.2	Grading.....	6
6.3	Excavations & Trenches.....	8
6.4	Drainage and Dewatering	8
6.5	Landscaping	9
7	Geotechnical Engineering Recommendations	9
7.1	Foundations Recommendations.....	9
7.2	Slab on Grade Recommendations	12
7.3	Lateral Earth Pressures	13
7.4	Synthetic Turf Fields & Athletic Track Recommendations.....	14
7.5	Pavement Recommendations.....	15
8	General Comments	18

Appendix A: Figures

Figure 1 – Project Location

Figure 2 – Boring Location Plan

Appendix B: Boring Logs

Appendix C: Portland Cement Stabilization

Geotechnical Exploration and Foundation Recommendations

LEE'S SUMMIT MIDDLE SCHOOL #4 - REVISED LEE'S SUMMIT, MISSOURI

Project Number: 20-1074

May 19, 2020

1 INTRODUCTION

1.1 PURPOSE

The purpose of this geotechnical exploration was to evaluate the underlying materials at the proposed Lee's Summit Middle School #4 project site, and based upon this information, provide geotechnical engineering related recommendations for design and construction of the planned project. This exploration was performed in accordance with the requirements outlined by the project team and the Lee's Summit R-7 School district's request for proposal (RFP) number R19/20-04 titled "Geotechnical 7 Construction Testing Services" and dated March 17, 2020.

This report includes geotechnical recommendations and considerations pertaining to site development, foundation support, concrete slab on grade, pavement construction, and synthetic turf field and athletic tack subgrade support. Also, included in this report are earthwork, construction and drainage considerations associated with the proposed project.

1.2 SCOPE OF SERVICES

This exploration and analysis include an engineering reconnaissance of the planned site, a subsurface exploration as outlined below, a field and laboratory testing program, and an engineering analysis and evaluation of the subsurface materials.

The scope of services did not include any environmental assessment for wetlands or hazardous materials in the soil, surface water, groundwater, air, or surrounding area. Any statement in this report or on the boring logs regarding odors, colors, or unusual or suspicious items is strictly for the information of the client.

1.3 GENERAL

The general subsurface conditions used in this analysis are based upon an interpolation of the subsurface data between the borings; varying conditions may be encountered between boring locations. If deviations from the noted subsurface conditions are encountered during construction, they should be brought to the attention of the Geotechnical Engineer.

The recommendations submitted for the proposed structure are based on the available soil information and the preliminary design details. Any revision in the plans for the proposed structure from those

described in this report should be brought to the attention of the Geotechnical Engineer to determine if changes in the foundation recommendations are required.

The Geotechnical Engineer warrants that the findings, recommendations, specifications, and professional advice contained, herein, have been presented after being prepared in accordance with generally accepted professional engineering practice in the fields of foundation engineering, soil mechanics and engineering geology. No other warranties are implied or expressed.

After the plans and specifications are complete, it is recommended that the Geotechnical Engineer be provided the opportunity to review the final design and specifications, in order to verify that the earthwork and foundation recommendations are properly interpreted and implemented.

2 PROJECT DESCRIPTION

CFS Engineers understands the planned project consists of constructing a new, approximately 125,000 square feet, two-story, slab on grade middle school in Lee's Summit, Missouri with a finish floor elevation of 1011 feet above sea level. The middle school will be a combination of structural steel framing and structural concrete masonry unit (CMU) walls with anticipated typical wall and column loads on the order of five (5) kips per linear foot (klf) and 250 kips, respectively. A heavily loaded auxiliary gym (shelter area) is included in the school design with increased wall loads on the order of 12 to 15 klf.

In addition to the school building, the project comprises 4 new baseball fields with an associated concession stand building, a new football field with an athletic track, two (2) mechanically stabilized earth (MSE) retaining walls, one (1) concrete cast-in-place retaining wall, and associated parking and drive lanes. CFS understands the football field and/or baseball fields will consist of synthetic turf surfaces.

CFS understands the southeast portion of the planned structure will require fill depths on the order of approximately eleven (11) feet while the northwest corner of the planned structure will require approximately five (5) feet of cut to achieve the desired construction elevation.

If any changes to the project occur, please notify CFS to allow for review of these changes and, if necessary, amend this report.

2.1 SITE DESCRIPTION

Currently, the planned site is an agricultural field that slopes downward from the northwest to the southeast. The project site is located south of the intersection of SE Bailey Road and Country Lane in Lee's Summit, Missouri. The planned site is approximately 1,000 feet wide by 2,000 feet long. It is bounded by SE Bailey Road to the north and a tree row to the east and south. The western border is a row of residential homes.

2.2 SITE GEOLOGY

Jackson County is located in the Central Lowland province of the Interior Plains and is near the middle of an approximate 150 mile-wide, north-south trending band of Pennsylvanian-Age Rocks that is located in western Missouri and eastern Kansas. Generally, the rock beds exhibit a subtle prevailing dip to the west-northwest of about 10 feet per mile. The region is underlain by rock units of the Pennsylvanian

System, Missourian Series (Kansas City Group, Lansing Group, and Pleasanton Group) in the Time Stratigraphic Unit age classification.

3 SUBSURFACE EXPLORATION

Based on the project information as outlined above, CFS Engineers conducted a field exploration to determine the underlying materials at the proposed project site and to establish their engineering characteristics.

3.1 SCOPE OF WORK

This geotechnical exploration consisted of drilling thirty (30) borings throughout the planned project site. Structural borings had a planned termination depth of twenty (20) feet beneath existing grade while pavement and synthetic turf field borings had a planned termination depth of five (5) feet beneath existing grade. The borings were advanced to their planned depths or auger refusal, whichever occurred first. Fifteen (15) structural borings were drilled in the planned school's footprint, one (1) structural boring was drilled at the planned concession stand, six (6) structural borings were drilled along the retaining walls' alignment, and eight (8) pavement/turf borings were drilled in the parking and field areas. The boring locations can be seen on the Boring Location Plan included in Appendix A.

The boring locations were surveyed in the field by Cook, Flatt & Strobel Engineers. The elevation and location of the borings can be seen on the boring logs in Appendix B.

Boring logs representing the materials encountered in the borings are included in Appendix B. The boring logs represent the CFS Engineers' interpretation of the field logs combined with laboratory observations and testing of the samples. The stratification boundaries indicated on the boring logs were based on field observations, an extrapolation of information obtained by examining samples from the borings, and comparisons of soils and/or bedrock types with similar engineering characteristic. As such, the boundaries between subsurface strata should be expected to vary from the logs to some extent.

The depth to groundwater, if encountered, was recorded in each test boring during drilling and can be seen in Section 3.5, Groundwater Conditions. After completion of drilling, sampling, and field testing, the excavations were backfilled with auger cuttings.

3.2 DRILLING AND SAMPLING PROCEDURES

The auger borings were drilled using a truck mounted SIMCO 2400 drill rig equipped with a rotary head. 3.25-inch solid-stem augers were used to drill the holes. During drilling, field logs were created and maintained by CFS personnel to catalog the materials encountered.

Representative samples were obtained during drilling using split-barrel sampling procedures in general accordance with the procedures for "Standard Test Methods for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils" (ASTM D 1586).

Upon completion of drilling, the samples were then sealed and returned to CFS's laboratory for further examination, classification, and testing. The samples recovered were identified, classified, and evaluated by a Geotechnical Engineer.

3.3 FIELD TESTS AND MEASUREMENTS

During the soil boring procedure, Standard Penetration Tests (SPT) were performed at pre-determined intervals to obtain the standard penetration value of the soil as outlined in the ASTM D1586 test method. The standard penetration value (N) is defined as the number of blows of a 140-pound hammer falling 30 inches, required to advance the split-barrel sampler one foot into the soil. The sampler is lowered to the bottom of the previously cleaned drill hole and advanced by blows from the hammer.

The number of blows is recorded for each of three successive increments of six inches penetration. The "N" value is then obtained by adding the second and third incremental numbers. The results of the standard penetration test are shown on the Boring Logs and indicate the relative density of cohesionless soils and comparative consistency of cohesive soils, and thereby provide a basis for estimating the relative strength and compressibility of the soil profile components.

The Standard Penetration Test (SPT) was also used to evaluate the consistency of the in-situ materials. The N-values for the site's materials were found to range from 3 to 40 blows/foot.

3.4 SUBSURFACE CONDITIONS

The materials encountered in the test borings have been visually classified according to the Unified Soil Classification System (USCS). They are described on the Boring Logs in Appendix B. The results of the field tests, water level observations, and laboratory tests are presented on the Boring Logs (Appendix B).

The following presents a general summary of the major strata encountered during this subsurface exploration and includes a discussion of field and laboratory tests conducted. Specific subsurface conditions encountered—including field tests, lab tests, and water level observations—at the boring locations are also presented on the individual boring logs found in Appendix B of this report.

3.4.1 Overburden Material

Approximately twelve (12) inches of topsoil was encountered at the surface of the borings. The topsoil was generally underlain by gray-brown and gray fat clay (CH) with consistencies ranging from medium stiff to stiff. The fat clay material continued to the refusal material, occasionally taking on a shaley characteristic.

3.4.2 Refusal Materials

Auger refusal on highly weathered shale and limestone was encountered throughout the borings below the soil overburden. Some sandstone was encountered prior to refusal in some of the borings. Auger refusal was encountered at depths ranging from 7.0 to 18.75 feet beneath existing grade.

3.5 GROUNDWATER CONDITIONS

Free water was encountered during drilling in borings B1, B13 and B27 at depths of 19.5, 8.5, and 13.5, respectively. The remaining borings stayed dry and no free water was encountered at the time of drilling.

Please note, the reported groundwater levels reflect the conditions observed at the time the borings were drilled. Groundwater levels should be expected to fluctuate with changes in grading, precipitation changes and seasonal changes. The water levels included in this report do not indicate a permanent

groundwater condition. Additionally, the materials encountered during this exploration are, generally, low permeable soils.

4 LABORATORY TESTING

Upon completion of drilling, the samples were returned to CFS's laboratory located in Kansas City, Kansas for laboratory testing. A supplemental laboratory testing program was conducted to evaluate additional engineering characteristics of the in-situ soils necessary in analyzing the behavior of the support systems for the proposed building.

The laboratory testing program included the following tests:

- Supplementary visual classification (ASTM D2488) of all samples,
- Water content (ASTM D2216) of all samples, and
- Atterberg limit tests (ASTM D4318) on a selected sample.

The results of the laboratory testing program can be seen in on the boring logs in Appendix B. The Atterberg limits can be seen in the following table.

Table 1: Atterberg Limits Results

Boring ID	Sample #	Moisture Content (%)	Atterberg Limits			USCS Classification
			Liquid Limit	Plastic limit	Plasticity Index	
B1	SS2	25.0	40	22	18	LEAN CLAY (CL)
B9	SS1	23.0	38	13	25	LEAN CLAY (CL)
B16	SS1	30.0	53	25	28	FAT CLAY (CH)
B25	SS2		46	19	27	LEAN TO FAT CLAY (CL/CH)
B29	SS1		55	23	32	FAT CLAY (CH)
B30	SS1		55	21	34	FAT CLAY (CH)

Based on the Atterberg limits, the gray-brown overburden material classifies as Lean Clay (CL), Lean to Fat Clay (CL/CH), and Fat Clay (CH) and is considered highly expansive. To limit the risk of differential slab movements, all concrete slabs on grade should be constructed in accordance with Section 7.2, "Slab On Grade" of this report.

5 GEOTECHNICAL CONCERNS

The following geotechnical concerns are based upon the subsurface materials encountered during this exploration and CFS's understanding of the project as described in Section 2, Project Description of this report. If any changes to the planned structure's location, loading or elevations occur, CFS must be allowed to review these changes, and if necessary, issue amendments to this report and its recommendations.

1. *Significant Fill Amounts:* CFS understands fill amounts of five (5) to eleven (11) feet are scheduled across the southern half of the planned new structure, while approximately four (4) feet of cut is planned in the northwest corner of the building footprint. To mitigate the risk of settlement from

the induced load attributed to the planned fill depths and to allow for utilization of shallow foundations, CFS recommends the entire building pad be surcharged upon completion of grading. The recommended surcharge load should consist of a minimum of a five (5) feet-thick layer of compacted clay soil (wet density of 120 lbs/ft³) and should remain in place for a minimum of two (2) months to allow for consolidation of the overburden materials prior to constructing the school. Settlement monitoring plates should be installed to track the consolidation process. See Section 7.1.1 for settlement monitoring recommendations. Alternatively, if time restrictions prohibit surcharging of the building footprint, rammed aggregate piers (RAPs) or concrete drilled piers can be utilized to support the planned structure.

2. *Expansive Clay Soils*: Expansive clay soils were encountered during this exploration. The on-site materials are NOT suitable for direct support of concrete slabs. All slabs on grade should be supported by a minimum 24-in-thick mat of low volume change material (LVC) constructed in accordance with Section 7.2, Slab on Grade Recommendations of this report.

6 EARTHWORK & SITE DEVELOPMENT

6.1 SITE PREPARATION

Prior to filling, the grass and topsoil should be stripped from all structural areas and be stockpiled for later use in landscape areas or it should be wasted. Any trees and shrubs should be properly removed including the entirety of the root ball and root systems. The upper 12-inches of the subgrade should be moisture conditioned and recompacted, as necessary, to provide a stable subgrade upon which to begin placement of engineered fill.

Upon completion of stripping and prior to filling, the newly exposed subgrade should be evaluated by a qualified professional for stability by means of proofrolling. The proofroll should be conducted using a fully loaded, tandem axle dump truck weighing in excess of 20 tons. Any soft or unsuitable areas identified during the proofroll should be corrected by means of additional moisture conditioning and recompacting, or removal and replacement with an acceptable material.

Additionally, although not encountered during this exploration, any undocumented fill encountered during construction should be completely removed from beneath the structure footprint. Undocumented fill is any foreign material that was placed or dumped in an uncontrolled manner (i.e. no records of testing exist from the time of placement). Undocumented fill is inconsistent and unpredictable in nature, and it should not be used in support of any structures or foundation systems.

6.2 GRADING

6.2.1 Suitable Fill Material

All general and structural fill should be free of debris and defined by ASTM 2487 as CH, CL, ML, GW, GP, SM, SW, SC, and SP. The onsite soils tend to meet this requirement; however, please note that CH (fat clay) classification materials should NOT be used as structural fill within two (2) feet of the finished grade supporting the building slab and within ten (10) feet laterally outside of the building footprint. Fat clays (CH) with Liquid Limits of greater than 55 should not be used in the upper one (1) foot beneath the pavement or athletic track without being treated with cement as outlined later in this report.

6.2.2 Unsuitable Fill Material

The on-site topsoil contains organic material and is unsuitable for use as structural fill. Unsuitable materials are those defined by ASTM 2487 as MH, OL, OH, and PT.

6.2.3 Engineered Fill Placement

CFS understands fill amounts on the order of five (5) to eleven (11) feet are scheduled across the southern portion of the planned new structure. To mitigate the risk of differential settlement attributed to long term consolidation of the engineered fill, any structural fill beneath the planned structure, which exceeds four (4) feet in depth, must be compacted to 98% of the materials dry unit weight as determined by standard Proctor ASTM 698. For the upper four (4) feet of building subgrade, engineered fill should be compacted to a minimum of 95% of the materials dry unit weight as determined by standard Proctor ASTM 698.

Structural fill materials should be free of organic matter. Moisture contents should be within 0% and +4% of the optimum for soils with a liquid limit of greater than 40, and +/-3% of the optimum for soils with a liquid limit of less than 40. Maximum dry density and optimum moisture content should be determined by the Standard Proctor test (ASTM D 698).

Fill should be placed in six (6) inch lifts (compacted thickness) in mass fill areas, and as needed to obtain the proper compaction in utility trenches and behind walls.

Structural fill should extend a minimum of five (5) feet laterally in all directions beyond the planned structure footprint and a minimum of two (2) feet beyond any pavement lines.

A representative of the Geotechnical Engineer should monitor filling operations on a full-time basis. A sufficient number of density tests should be taken to verify that the specified compaction is obtained. See Table 3 below for required testing frequency.

Table 2: Density Testing Frequency

Location or Area	Standard Proctor Density (ASTM D 698)	Testing Frequency One per lift per ...
Building Walkways	95%	20,000 sf
Retaining Walls	95%	1,000 sf
Trenches	95%	150 lf
Lawn or Unimproved Areas	92%	20,000 sf
General Building and Pavement Subgrades (*)	95%	10,000 sf
Out-Parcels	95%	20,000 sf
*If RAPs are utilized in accordance with Section 7, compaction requirements increase to 98% for fill areas exceeding 4-feet in depth.		

6.3 EXCAVATIONS & TRENCHES

All temporary slopes and excavations should conform to Occupational Safety and Health Administration (OSHA) Standards for the Construction Industry (29 CFR Part 1926, Subpart P). Excavations at this site are *expected* to be made in "Type B" clayey soil. Soil types should be verified in the field by a competent individual.

All excavations should be kept dry during subgrade preparation. Storm water runoff should be controlled and removed to prevent severe erosion of the subgrade and eliminate free standing water. Subgrade that has been rendered unsuitable from erosion or excessive wetting should be removed and replaced with controlled fill.

Trenches should be excavated so that pipes and culverts can be laid straight at uniform grade between the terminal elevations. Trench width should provide adequate working space and sidewall clearances. Trench subgrade should be removed and replaced with controlled fill if found to be wet, soft, loose, or frozen. Trench sub-grades should be compacted above 95% of the maximum dry density in accordance with ASTM D 698 at moisture contents between -3% to +3% of the optimum moisture content.

Granular bedding materials for pipes, such as well-graded sand or gravel, may be used provided that the bottom of the trench is graded so that water flows away from building

Bedding material should be graded to provide a continuous support beneath all points of the pipe and joints. Embedment material should be deposited and compacted uniformly and simultaneous on each side of the pipe to prevent lateral displacement. Compacted control fill material will be required for the full depth of the trench above the embedment material except in area landscape area with the compaction may be reduced to 90% Standard Proctor ASTM D 698. No backfill should be deposited or compacted in standing water.

Precautions should be taken by the contractor to avoid undermining the newly constructed foundations/rammed aggregate piers. Shoring and excavations supports may need to be designed to account for the existing building loads.

Permanent slopes greater than 3 horizontals to 1 vertical should not be used unless additional testing and slope analysis is performed.

6.4 DRAINAGE AND DEWATERING

Normal seasonal weather conditions should be anticipated and planned for during earthwork. It is recommended that the Contractor determine the actual groundwater levels at the site at the time of the construction activities to assess the impact groundwater may have on construction. Water should not be allowed to collect in the foundation excavation, on floor slab areas, or on prepared subgrades of the construction area either during or after construction. Undercut or excavated areas should be sloped toward one corner to facilitate removal of collected rainwater, groundwater, or surface runoff. Positive site drainage should be provided to reduce infiltration of surface water around the perimeter of the building and beneath the floor slabs. The grades should be sloped away from the building and surface drainage should be collected and discharged such that water is not permitted to infiltrate the backfill and floor slab areas of the building.

The site should be graded such that positive drainage (normally 2% minimum) is provided away from any structures. Where sidewalks or paving do not immediately adjoin the building, protective slopes of at least 5% for a minimum of 10 feet from the perimeter walls are recommended. Roof drains and downpours should also be directed away from the building. Open-graded stone is not recommended for use under sidewalks unless the stone is adequately drained to prevent collection of water under the walks.

The site should also be graded to avoid water flows, concentrations, or pools behind retaining walls, curbs or similar structures. When swales are designed at the top of the walls, proper line and slope should be considered to avoid any flow down behind walls. Special attention is needed for sources of storm water from slopes, building roofs, gutter downspouts and paved areas draining to one point.

In paved areas where seasonal water potentially accumulates behind curbs, gutters and planters ensure concrete extends 6-inches into impervious material to reduce seepage under the curbs, saturating and weakening the pavement subgrade.

Perforated plastic pipes should be placed on the backfilled side of the walls near the bottom and day-lighted. Six inches of open graded crushed rock wrapped with geo-textile fabric should be placed behind the walls up to a depth of two feet below the finished grade. As an alternative to the open graded crushed rock, a manufactured geo-composite sheet drain such as Mirafi G100N, Contech C-Drain, or equivalent, may be used in conjunction with the perforated pipe.

6.5 LANDSCAPING

Landscaping and irrigation should be limited adjacent to buildings and pavements to reduce the potential for large moisture changes. Trees and large bushes can develop intricate root systems that can draw moisture from the subgrade, resulting in shrinkage of the bearing material during dry periods of the year. Desiccation of bearing material below foundations may result in foundation settlement.

Landscaped areas near pavements and sidewalks should include a drainage system that prevents over saturation of the subgrade beneath asphalt and concrete surfaces. Drainage systems in irrigation areas should be incorporated into the storm drain system.

7 GEOTECHNICAL ENGINEERING RECOMMENDATIONS

7.1 FOUNDATIONS RECOMMENDATIONS

Based on CFS's understand of the planned project and the large amount of fill planned beneath the proposed school, three (3) independent foundation alternatives have been provided for a cost analysis. Please note, to accommodate a shallow foundation system either surcharging of the building pad or a ground improvement system such as rammed aggregate piers prior to loading is required. If neither option is desirable, concrete drilled piers can be used to support the planned structure.

Please note, the concession stand can be supported on shallow foundations designed and constructed as outlined below without the need for surcharging of the building pad.

7.1.1 Shallow Foundations (Spread and Continuous Wall Footings)

Conventional spread and continuous wall footings are, generally, most economical when the existing soil conditions allow them to be founded at shallow depths on existing materials. Based on the materials encountered during this exploration, it is CFS Engineers' opinion that the planned structure can be supported by a shallow foundation system, such as spread and/or trench footings bearing in native clay soils and engineered fill given the building pad has been surcharged prior to loading in accordance with this report.

CFS understands five (5) to eleven (11) feet of fill is scheduled across the southern half of the planned new structure. To mitigate the risk of differential settlement from the induced load attributed to the planned fill depths, and to allow for utilization of shallow foundations, CFS recommends the entire building pad be surcharged upon completion of grading. The recommended surcharge load should consist of a minimum five (5) feet-thick layer of compacted clay soil (wet density of 120 lbs/ft³) and should remain in place for a minimum of two (2) months to allow for consolidation of the overburden materials prior to constructing the building. Topsoil is considered a suitable material for surcharging. A settlement monitoring program as outlined below should be conducted in conjunction with surcharging.

Prior to placement of fill on the building pad, five (5) settlement plates should be installed uniformly across the pad at existing grade as directed by the Geotechnical Engineer. Rigid steel settlement plates should be a minimum of two (2) feet by two (2) feet. A rod(s) should be located in the center of the plate that extends above the proposed fill. The rod should be encapsulated by a 2 inch diameter PVC pipe to permit free movement of the plate and rod. The rods should be painted for visibility and protected from construction traffic. Settlement/movement of the plates should be performed initially prior to fill placement and twice per week by the project registered surveyor. Settlement plate elevations should be surveyed and evaluated until movement is within tolerable limits as determined by the Geotechnical Engineer.

Additionally, it is recommended that spread and trench footings have a minimum width of 24 and 16-inches, respectively. Footings should be suitably reinforced to reduce the effects of differential movement that may occur due to variations in the properties of the supporting soils. Top and bottom reinforcing steel is recommended for continuous wall footings to reduce differential settlement due to possible varying bearing capacities of the existing fill soils.

Every effort should be made to keep the footing excavations dry as the soils will tend to soften when exposed to free water. Footing bottoms should be free of loose soil and concrete should be placed as soon as possible to prevent drying of the foundation soils.

7.1.1.1 *Bearing Capacity Analysis*

The bearing capacity of the subsurface materials was evaluated from the results of the field and laboratory tests. Based on this information, shallow foundation systems bearing on the surcharged subgrade, and constructed as recommended above, can be proportioned for a maximum allowable soil bearing capacity of 2,500 psf.

A representative of the Geotechnical Engineer should test the soils in the footing excavations to verify the design soils bearing pressure. If undercutting of any footing is required to reach design bearing

capacity backfill of the undercut footing should be done with a closed grade stone (such as KDOT AB-3) or lean concrete. If compacted structural fill is used to back fill the excavation, widening of the excavation one-half (1/2) the depth of the excavation on either side should be performed. The structural fill should be compacted to at least 95% of the material's maximum dry density within -2 to 3% of the optimum moisture content as determined by ASTM D-698.

Based on the seasonal freeze-thaw cycles associated with the project site, shallow foundation systems should bear a minimum of 36-inches beneath the ground surface for adequate frost protection.

7.1.1.2 Settlement Analysis

To help mitigate the risk of differential foundation movements such as settlement, the foundation system should bear on the engineered fill and native clay soils that have been surcharged appropriately. For spread and/or trench footings designed in accordance with these recommendations, total settlements of less than 1-inch and differential settlements of less than 3/4-inches can be anticipated.

7.1.2 Foundation Alternative 1: Rammed Aggregate Piers

In lieu of surcharging, the existing conditions and planned project are such that a ground improvement system such as rammed aggregate piers (RAPs) are a suitable and recommended method to support conventional spread footings and the floor slab of the proposed building. Please note, CFS recommends RAPs be utilized to strengthen the in-situ soils located beneath the southern portion of the planned structure (including slab on grade area) where the scheduled amount of fill will exceed four (4) feet in depth.

Please note, to mitigate the risk of differential settlement attributed to long term consolidation of the engineered fill, any structural fill beneath the planned structure, which exceeds four (4) feet in depth, must be compacted to 98% of the materials dry unit weight as determined by ASTM 698. For the upper four (4) feet of building subgrade, engineered fill should be compacted to a minimum of 95% of the materials dry unit weight as determined by ASTM 698.

RAPs are used to improve the load carrying capacity of soils by ramming aggregate into the unstable subgrade. Generally, a hole is first drilled into the subgrade and successive layers of aggregate are placed and driven into the unstable soils forming an "aggregate bulb" at the base, and thus providing lateral and vertical strengthening of the existing materials. RAPs are a patented design-build intermediate foundation system. The respective companies should be contacted to design the foundation system.

Although final design and analysis must be conducted by RAPs contractor/engineer, typical bearing capacities achieved by this rammed aggregate piers are on the order of 3,000 to 5,000 pounds per square foot (psf) with settlements on the order of 1-inch for total settlement and ½-inch for differential settlement.

In conjunction with the recommended ground improvement system, it is recommended that spread and trench footings be designed and constructed as outlined in Section 7.1.1.

7.1.3 Foundation Alternative 2: Concrete Drilled Piers

In lieu of rammed aggregate piers and surcharging the building pad, a deep foundation system such as drilled concrete piers can be utilized to support the foundation system and slab on grade. A structural slab beneath may be required to achieve this. Drilled piers are used most advantageously where a soft or unsuitable soil strata overlies a hard foundation material. Soil conditions and the magnitude of the proposed loads indicate that drilled piers would be a suitable foundation system.

Limestone and shale bedrock were encountered throughout this exploration at relatively shallow depths (Reference the boring logs in Appendix B). Drilled piers should bear on competent limestone using a maximum allowable end bearing pressure of 20 kips per square foot (ksf). Drilled piers should extend through all upper broken limestone and shale layers and be socketed a minimum of two (2) feet or one (1) pier diameter, whichever is more, into competent limestone. Piers should be suitably reinforced to resist lateral movement. A representative of the geotechnical engineer should be in the field to evaluate embedment and a suitable bearing stratum has been reached. Down hole inspection is not anticipated to be required by the inspector.

Please note, shallow groundwater and wet, soft soils were and are often encountered above the restrictive bearing layer (rock). The contractor should have equipment onsite to dewater the pier excavation and/or prevent sloughing of wet, soft soils into the excavation in case it becomes necessary. Temporary steel casing may be required in some holes to prevent sloughing of the upper soils and to permit down-hole cleaning and inspection (if required). Conventional drilling equipment with bullet nose rock teeth is expected to be able to penetrate the upper soils and reach the bearing surface. Coring is not expected to be required to reach the limestone.

A minimum shaft diameter of 30 inches is recommended to facilitate clean out and inspection. Drilling of test holes is not required, however the contractor should provide a price for tests holes should rock conditions dictate further investigation to confirm design parameters. The bottom of the hole should be free of water and loose soils prior to placement of reinforcing steel and concrete.

To help mitigate the risk of differential foundation movements such as settlement, a uniform bearing condition should exist beneath the entirety of the foundation system for a given structure. For a drilled pier foundation system, total settlements of less than ½ -inch and differential settlements of less than ½ -inch can be anticipated.

7.1.4 Seismic Analysis

The typical profile at this site consists of soil to a depth of six (6) to 18 feet where bedrock /was encountered. The seismic properties of the soil were interpolated from the standard penetration test values. A Seismic Site Class "C" was determined for this site. In addition, there is no significant risk of liquefaction or mass movement of the on-site soils due to a seismic event.

7.2 SLAB ON GRADE RECOMMENDATIONS

CFS recommends all concrete slabs on grade be supported by a minimum of 24-inches of Low Volume Change (LVC) material. LVC material should consist of lean clay (CL), KDOT AB3, crushed limestone

screenings or equivalent. A low volume change material is defined as a material with a liquid limit less than 45 and a plasticity index less than 25. The subgrade can be constructed as outlined below.

1. Cut the subgrade to a minimum depth of 24-inches beneath the planned bottom of slab elevation.
2. Twenty (20) inches of a compacted LCV material should be placed atop the exposed slab subgrade. The LVC should be placed in lifts no greater than 8-inches-thick (compacted thickness) and compacted to 95% of the maximum dry density as determined by ASTM 698. Limestone based LVC material should be compacted at a moisture content sufficient to achieve the desired compaction, and lean clay (CL) material should be compacted at a moisture content between 0 and +4% of optimum.
3. A 4-inch-thick layer of open graded stone (ASTM C33 or equivalent material) should be placed atop the 20-inches of compacted LVC material to return the subgrade to the original bottom of slab elevation. The open-graded stone will ease construction and provide a capillary break between the LVC and concrete slab.

Every floor slab should be evaluated to determine if a vapor retarder under the concrete floor is required. The slab designer should refer to ACI 302 and/or ACI 360 for procedures regarding the use and placement of a vapor retarder.

To reduce the effects of differential movement, slabs-on-grade should not be rigidly connected to columns, walls, or foundations unless it is designed to withstand the additional resultant forces. Floor slabs should not extend beneath exterior doors or over foundation grade beams, unless saw cut at the beam after construction. Expansion joints may be used to allow unrestrained vertical movement of the slabs. The floor slabs should be designed to have an adequate number of joints to reduce cracking resulting from differential movement and shrinkage. CFS suggests joints be provided on a minimum spacing of twelve (12) feet on center. For additional recommendations refer to the ACI Design Manual. The requirements for the slab reinforcement should be established by the designer based on experience and the intended slab use.

7.3 LATERAL EARTH PRESSURES

Lateral earth pressures are determined by multiplying the vertical applied pressure by the appropriate lateral earth pressure coefficient. If the foundation walls are rigidly attached to the building and not free to rotate or deflect at the top, CFS recommends designing the walls for the *at-rest* earth pressure coefficient. Walls that are permitted to rotate and deflect at the top can be designed for the *active* lateral earth pressure condition. Horizontal loads acting on shallow foundations are resisted by friction along the foundation base and by *passive* pressure against the footing face that is perpendicular to the line of applied force.

Table 3: Earth Pressure and Friction Coefficients

	Active (K _a)	Passive (K _p)	At-Rest (K _o)	Allowable Base Friction	Unit Weight (pcf)
Open-graded crushed limestone	0.27	3.69	0.43	0.47	130-140
In-situ lean clay soils	0.40	2.5	0.68	0.32	95-115
In-situ fat clay soils	0.49	2.04	0.66	0.24	90-110
Lean clay – conditioned and compacted	0.32	3.12	0.48	0.35	95-115
Fat clay – conditioned and compacted	0.45	2.2	0.63	0.27	90-110

These earth pressure coefficients do not include the effect of surcharge loads, hydrostatic loading, or a sloping backfill. Nor do they incorporate a factor of safety. Also, these earth pressure coefficients do not account for high lateral pressures that may result from volume changes when expansive clay soils are used as backfill behind walls with unbalanced fill depths. In addition, any disturbed soils that are relied upon to provide some level of passive resistance should be placed in lifts not exceeding six (6) inches in thickness and compacted to a minimum density of 95% of the Standard Proctor (ASTM D698) maximum dry density at a moisture content within +/- 3% of the optimum moisture content. It is recommended that a representative of CFS should verify the compaction of any such materials relied upon to provide passive pressure.

The actual earth pressure on the walls will vary according to material types and backfill materials used and how the backfill is compacted. If the backfill conditions are different than the ones used above, CFS should be notified so the recommendations can be modified. The buildup of water behind a wall will increase the lateral pressure imposed on below-grade walls. Adequate drainage should be provided behind any below grade walls as described in this report. The walls should also be designed for appropriate surcharge pressures such as adjacent traffic, interior building floor slab loads, and construction equipment.

7.4 SYNTHETIC TURF FIELDS & ATHLETIC TRACK RECOMMENDATIONS

CFS understands the project requirements include restricting the synthetic turf fields to less than ½-inch of vertical movement, if possible, and little to no movement tolerance for the athletic track. The in-situ materials encountered beneath the planned synthetic turf fields and the athletic track, generally, consist of Fat Clay (CH) materials. Fat clay is considered highly expansive, and as such, is susceptible to significant volume changes with changes in moisture. To limit movements to tolerable amounts, it is recommended that the synthetic turf fields and the athletic track be supported by a minimum 9-inch-thick Portland cement stabilized subgrade. Where possible, the cement stabilized subgrade layers should extend at least five (5) feet beyond all boundary lines. The surfaces should be sloped accordingly to allow for proper shedding of all water during a precipitation event. Proper drainage and dewatering

measures should be implemented to prevent water infiltration of the subgrade. Additionally, the track and turf manufacturers should be consulted prior to construction and CFS should be allowed to review final design to evaluate potential geotechnical related concerns. Reference Table 4 for the recommended thicknesses of the athletic track.

Table 4: Athletic Track Section

Recommended Thicknesses (inches)	
APWA Type 3-01 AC Surface	2
APWA Type 1-01 AC Base	3
Portland Cement Stabilized Subgrade	9

Portland cement should be thoroughly mixed with the existing subgrade materials to the recommended depths given above at a concentration of 5% by dry unit weight of the in-situ materials dry unit weight. Water should be added, as necessary, to hydrate the cement. The mixture should be compacted to a minimum of 98% of the combined materials dry unit weight at a moisture content between 0 and +3% of the optimum moisture content as determined by ASTM D698. The specified compaction should be achieved within two (2) hours of the materials being combined and hydrated.

It is recommended that the subgrade be hydrated daily and protected from drying for the first five (5) days after stabilization occurs. Additionally, CFS recommends microcracking of the subgrade be completed by a vibratory, sheep's foot roller 36 to 48 hours after completion of stabilization. Microcracking will reduce the risk of water conduits forming in the subgrade as a result of shrinkage cracks that may develop during the cement curing period. Except for water trucks and microcracking equipment, the subgrade should be protected from all loading and construction traffic for a minimum of five (5) days. Reference Appendix C for more information on cement stabilization.

7.5 PAVEMENT RECOMMENDATIONS

The pavement sections presented below are considered typical and minimum for the report basis parameters. The client should be aware that thinner pavement sections might result in increased maintenance costs and lower than anticipated pavement life. The pavement area subgrade consists of moisture sensitive soils.

The soils expected beneath the pavement are fine silty sands to clayey silts to silty clays. Should the clayey silts to silty clays be the pavement subgrade, they tend to expand and contract with changes in moisture and weather conditions and are very moisture susceptible, losing strength quickly. The on-site silts and clays can be stabilized with 5% by weight Portland Type 1/2 Cement for a depth of nine (9) inches, constructed as outlined in Section 7.4, to extend the life of the pavement.

Table 5: Recommended Light Duty Pavement Sections (Parking lots)

Recommended Thicknesses (inches)			
Asphalt		Concrete	
APWA Type 3-01 AC Surface	2	Concrete	5
APWA Type 1-01 AC Base	3	Aggregate Base Course	4
Aggregate Base Course	6	Moisture Conditioned & Recompacted Subgrade (Section 7.4.4)	12
Moisture Conditioned & Recompacted Subgrade (Section 7.4.4)	12		

Table 6: Heavy Duty Pavement Thicknesses (Truck areas and drives)

Recommended Thicknesses (inches)			
Asphalt		Concrete	
APWA Type 3-01 AC Surface	2	Concrete	7
APWA Type 1-01 AC Base	6	Aggregate Base Course	4
Aggregate Base Course	6	Moisture Conditioned & Recompacted Subgrade (Section 7.4.4)	12
Moisture Conditioned & Recompacted Subgrade (Section 7.4.4)	12		

Note: When base is to be placed in the fall and surface in the spring, APWA Type 2-01 is recommended to improve performance of base due to lower permeability. Eight (8) inches of concrete and four (4) inches of base rock is recommended for trash and/or recycling dumpster areas.

7.5.1 Asphalt Pavement Construction

The granular base course should be built at least 2 feet wider than the pavement on each side to support the tracks of the slip form paver. This extra width is structurally beneficial for wheel loads applied at pavement edge.

Asphalt cement (bitumen) used in the manufacture of asphalt pavement should conform to the Performance Grading system. In the project area, the provincial grade asphalt binder course is PG 64-22. The asphaltic mix for conventional roadway should be designed for 4% air voids. During production, the voids can be expected to vary $\pm 1\%$ of the design value of 4%. Under these conditions, the minimum allowable VMA for base and surface course shall be 12% and 14%, respectively.

Immediately after spreading, each course of the pavement mixture should be compacted by rolling. The initial or "breakdown" rolling shall be accomplished with a steel-wheeled vibratory roller. The motion of the roller should be slow enough at all times to avoid displacement of the hot mixture. The surface of the mixture after compaction should be smooth and true to established section and grade. The completed asphalt concrete paving should have a density equal to or greater than 95% for the base and 96% for the surface of theoretical density.

All asphaltic concrete mix designs and Marshall Characteristics should be submitted to our office and reviewed in order to determine if they are consistent with the recommendations given in this report.

All materials to be employed and field operations required in connection with the pavement reconstruction should follow requirements and procedural details as per APWA 2001. In addition, representative of CFS should observe and monitor the pavement construction to assure satisfactory compliance with our engineering recommendations.

7.5.2 Concrete Pavement Construction

The pavement on this site will be subjected to freeze-thaw cycles. Sufficient air entrainment in the range of 6% to 8% is required to provide freeze-thaw durability in the concrete. Concrete with a 28-day specified compressive strength of 4,000 psi is recommended. The concrete mix should contain at least 564 pounds of concrete per cubic yard. A mixture with a maximum slump of 4 inch +/- 1 inch is acceptable. If a water-reducing admixture is specified, slump can be higher. For better performance and crack control, synthetic fiber reinforcement such as Fibermesh® 300 is recommended for the concrete instead of welded wire mesh. Add synthetic fiber reinforcement to concrete mixture in accordance with manufacturer's instructions.

7.5.3 Pavement Subgrade Preparation

The upper 12 inches of exposed subgrade, extended a minimum of two (2) feet laterally beyond all pavement lines, should be moisture conditioned and recompact, as necessary, to pass a proofroll evaluation as described in Section 6.1, "Site preparation" of this report.

Any localized soft, wet, or loose areas identified during the proof rolling should be repaired prior to paving. Fill material should be placed in loose lifts up to a maximum of eight (8) inches in thickness and compacted to at least 95% of the maximum dry density in accordance with ASTM D698 at moisture contents outlined in the Earthwork section. Construction traffic, including foot traffic, should be minimized to prevent unnecessary disturbance of the pavement subgrade. Disturbed areas, as verified by CFS's geotechnical engineer, should be removed and replaced with properly compacted material.

Fat clays (CH) with Liquid Limits of greater than 55 should not be used in the upper one (1) foot beneath the pavement without being treated with a nine (9) inch layer of cement as outlined previously in this report. Consideration should be given to treating all non-LVC clays so as to extend the life of the pavement, improve performance and reduce maintenance costs.

The granular base should be placed in loose lifts up to a maximum of twelve (12) inches in thickness a minimum lateral distance of two (2) feet beyond the pavement, and compacted to at least 98% of the maximum dry density in accordance with ASTM D698.

If open graded stone is used under the pavement, the pavement subgrade should be graded to provide positive drainage of the granular base section. Provision should be made to provide drainage into the storm water system. The use of a granular blanket drain near storm water inlets that provides weep holes from the drain to the inlets is recommended.

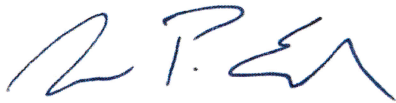
8 GENERAL COMMENTS

When the plans and specifications are complete, or if significant changes are made in the character or location of the proposed building, a consultation should be arranged to review the changes with respect to the prevailing soil conditions. At that time, it may be necessary to submit supplementary recommendations.

It is recommended that the services of Cook, Flatt & Strobel Engineers be engaged to test and evaluate the compaction of any additional fill materials and to test and evaluate the bearing value of the soils in the footing excavations.

Respectfully submitted,

COOK, FLATT & STROBEL ENGINEERS, P.A.

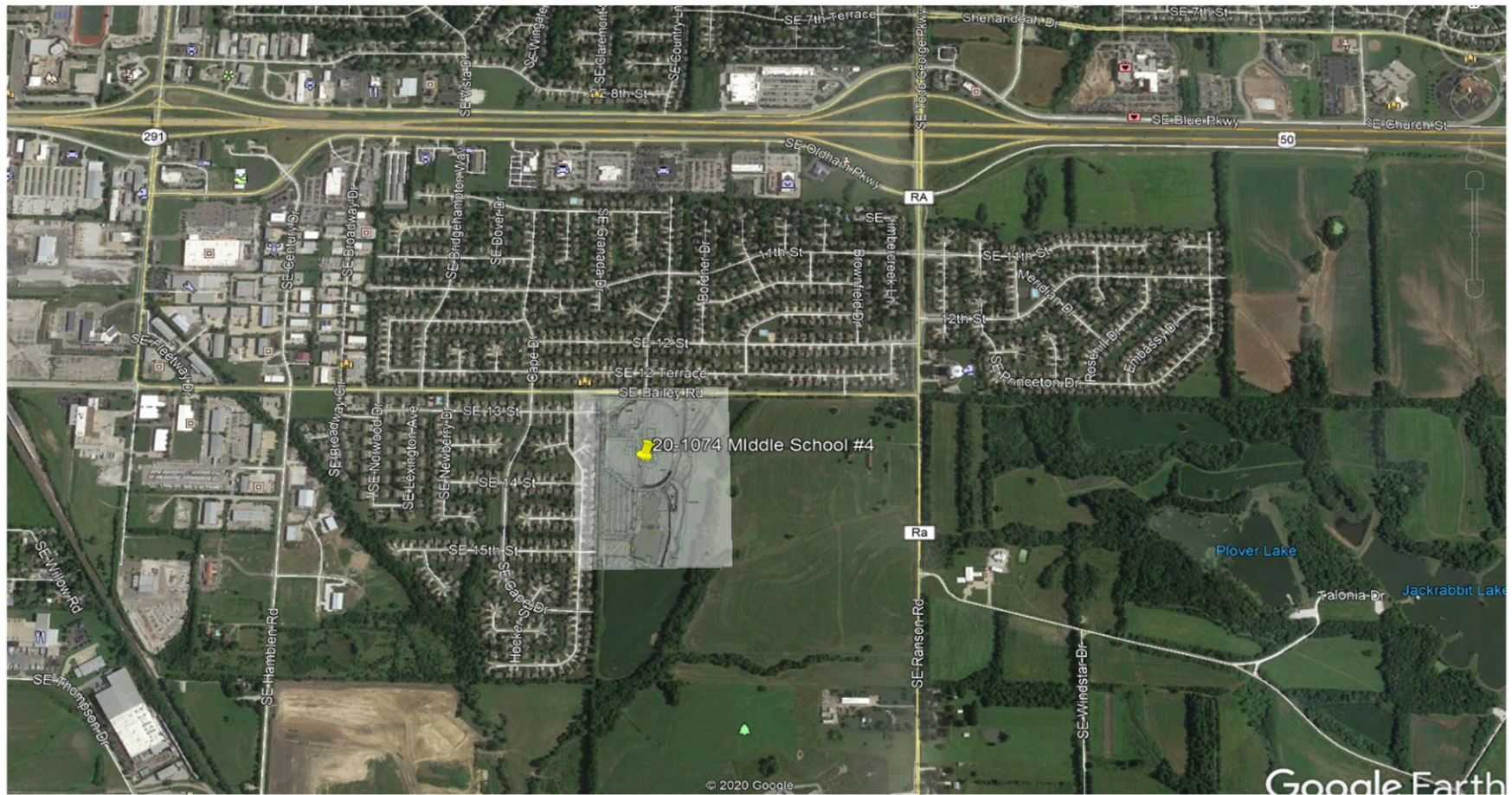


Jacob Engler, P.E.
Geotechnical Engineer



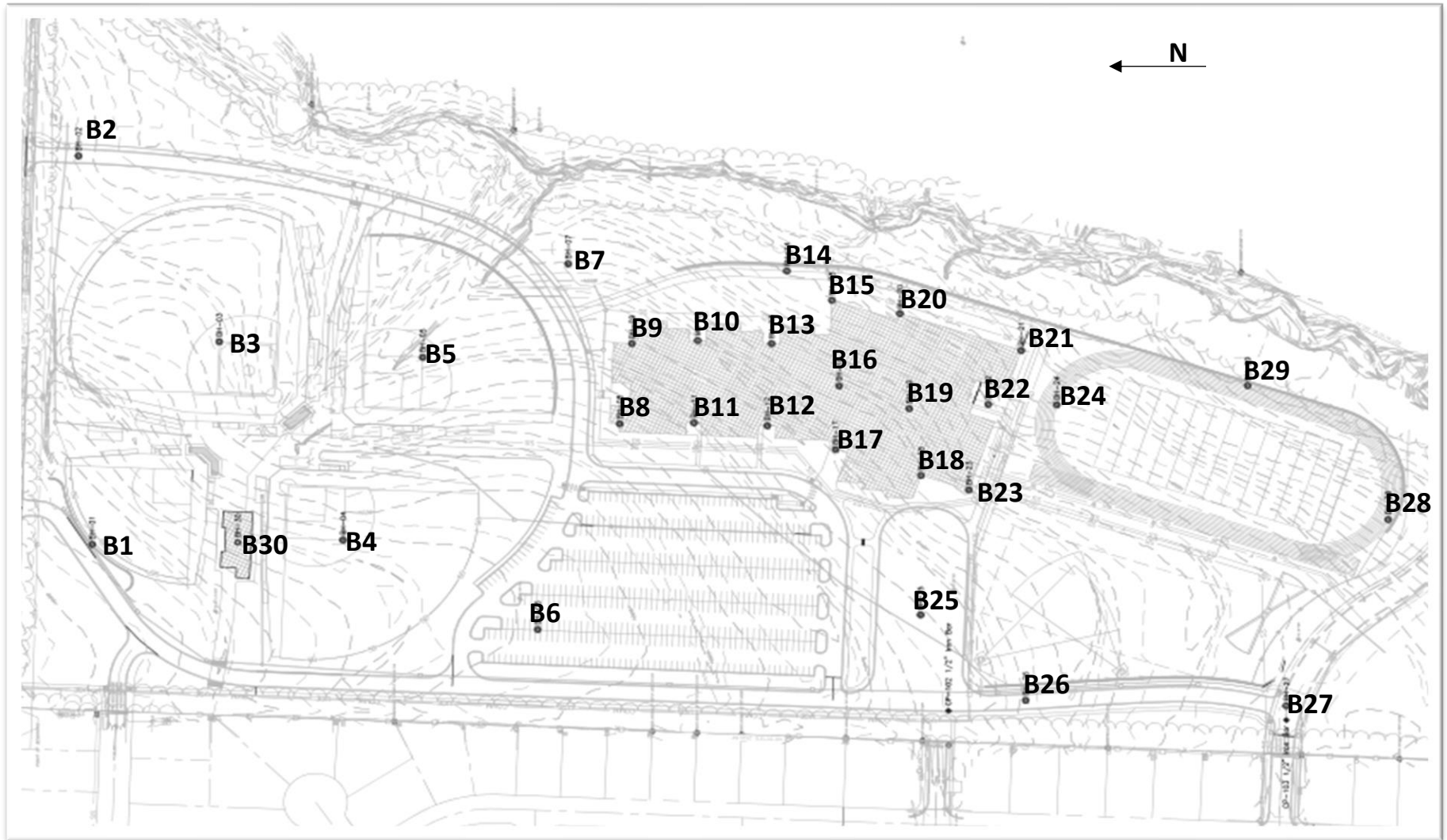
Adam McEachron, P.E.
Senior Geotechnical Engineer

Appendix A: Figures



1100 W. Cambridge Circle Dr, Ste 700
Kansas City, Kansas 66103

Project:	LEE'S SUMMIT MIDDLE SCHOOL #4	Project #:	20-1074	Figure 1:	SITE LOCATION PLAN
Project Location:	Lee's Summit, MO	Comments:			
Client:	Lee's Summit R7 School District				
Date:	5/19/2020				



1100 W. Cambridge Circle Dr, Ste 700
Kansas City, Kansas 66103

Project: **LEE'S SUMMIT MIDDLE
SCHOOL #4**

Project Location: Lee's Summit, MO

Client: Lee's Summit R7 School District

Date: 5/19/2020

Project #: 20-1074

Comments:

Figure 2: **BORING LOCATION
PLAN**

Appendix B: Boring Logs



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BORING NUMBER B1

PAGE 1 OF 1

CLIENT	Lee's Summit R-7 School District	PROJECT NAME	Lee's Summit Middle School #4
PROJECT NUMBER	20-1074	PROJECT LOCATION	Lee's Summit, Missouri
DATE STARTED	04/30/20	COMPLETED	04/30/20
DRILLING CONTRACTOR	CFS Engineers	GROUND ELEVATION	1027.142 ft
DRILLING METHOD	3.25-inch Continuous Flight	HOLE SIZE	3.25 inches
LOGGED BY	TP	CHECKED BY	JE
NOTES			
		GROUND WATER LEVELS:	
		AT TIME OF DRILLING	--- Not Recorded
		AT END OF DRILLING	--- Not Recorded
		AFTER DRILLING	18.50 ft / Elev 1008.64 ft

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		TOPSOIL with vegetation										
		(CL) gray-brown, medium stiff LEAN CLAY with iron nodules	SPT 1	100	2-3-4 (7)			26				
		(CH) gray-brown and gray mottled reddish brown, medium stiff FAT CLAY with iron nodules										
5			SPT 2	100	2-3-4 (7)			25	40	22	18	
			SPT 3	100	2-3-4 (7)			22				
10		stiff below 8.5'	SPT 4	100	2-4-5 (9)			27				
15			SPT 5	100	3-5-6 (11)			22				
		tan, highly weathered SANDSTONE, clayey										
			SPT 6	100	50/3"							
Refusal at 18.8 feet. Bottom of borehole at 18.8 feet.												

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CLIENT Lee's Summit R-7 School District

PROJECT NAME Lee's Summit Middle School #4

PROJECT NUMBER 20-1074

PROJECT LOCATION Lee's Summit, Missouri

DATE STARTED 04/30/20 COMPLETED 04/30/20

GROUND ELEVATION 1012.351 ft HOLE SIZE 3.25 inches

DRILLING CONTRACTOR CFS Engineers

GROUND WATER LEVELS:

DRILLING METHOD 3.25-inch Continuous Flight

AT TIME OF DRILLING --- No Free Water Encountered

LOGGED BY TP CHECKED BY JE

AT END OF DRILLING --- No Free Water Encountered

NOTES

AFTER DRILLING --- No Free Water Encountered

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		TOPSOIL with vegetation										
		(CH) gray-brown and gray mottled reddish brown, medium stiff FAT CLAY with iron nodules	SPT 1	100	1-2-4 (6)	3.25		25				
			SPT 2	100	2-3-4 (7)	2		27				
5												

Bottom of borehole at 5.0 feet.



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CLIENT Lee's Summit R-7 School District

PROJECT NAME Lee's Summit Middle School #4

PROJECT NUMBER 20-1074

PROJECT LOCATION Lee's Summit, Missouri

DATE STARTED 04/30/20 COMPLETED 04/30/20

GROUND ELEVATION 1016.143 ft HOLE SIZE 3.25 inches

DRILLING CONTRACTOR CFS Engineers

GROUND WATER LEVELS:

DRILLING METHOD 3.25-inch Continuous Flight

AT TIME OF DRILLING --- No Free Water Encountered

LOGGED BY TP CHECKED BY JE

AT END OF DRILLING --- No Free Water Encountered

NOTES

AFTER DRILLING --- No Free Water Encountered

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		TOPSOIL with vegetation										
		(CH) gray-brown and gray, medium stiff FAT CLAY with iron nodules	SPT 1	94	1-2-4 (6)	3.5		27				
			SPT 2	100	2-3-4 (7)	4.25		25				
5												

Bottom of borehole at 5.0 feet.



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BORING NUMBER B4

PAGE 1 OF 1

CLIENT Lee's Summit R-7 School District

PROJECT NAME Lee's Summit Middle School #4

PROJECT NUMBER 20-1074

PROJECT LOCATION Lee's Summit, Missouri

DATE STARTED 04/30/20 COMPLETED 04/30/20

GROUND ELEVATION 1022.37 ft HOLE SIZE 3.25 inches

DRILLING CONTRACTOR CFS Engineers

GROUND WATER LEVELS:

DRILLING METHOD 3.25-inch Continuous Flight

AT TIME OF DRILLING --- No Free Water Encountered

LOGGED BY TP CHECKED BY JE

AT END OF DRILLING --- No Free Water Encountered

NOTES

AFTER DRILLING --- No Free Water Encountered

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DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		TOPSOIL with vegetation										
		(CH) gray-brown, medium stiff FAT CLAY with iron nodules	SPT 1	94	1-3-4 (7)	3.25		26				
		gray-brown, gray and reddish brown below 3.5'	SPT 2	100	1-3-4 (7)	3.25		27				
5			SPT 3	100	2-2-4 (6)	3.25		23				
			SPT 4	100	2-3-4 (7)	4.25		25				
10												
		trace of fine sand below 13.5'	SPT 5	100	3-4-20 (24)	2.25		28				
15		tan, hard, highly weathered SANDSTONE										

Refusal at 15.0 feet.
Bottom of borehole at 15.0 feet.



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CLIENT Lee's Summit R-7 School District

PROJECT NAME Lee's Summit Middle School #4

PROJECT NUMBER 20-1074

PROJECT LOCATION Lee's Summit, Missouri

DATE STARTED 04/30/20 COMPLETED 04/30/20

GROUND ELEVATION 1010.145 ft HOLE SIZE 3.25 inches

DRILLING CONTRACTOR CFS Engineers

GROUND WATER LEVELS:

DRILLING METHOD 3.25-inch Continuous Flight

AT TIME OF DRILLING --- No Free Water Encountered

LOGGED BY TP CHECKED BY JE

AT END OF DRILLING --- No Free Water Encountered

NOTES

AFTER DRILLING --- No Free Water Encountered

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		TOPSOIL with vegetation										
		(CH) gray-brown and gray, medium stiff FAT CLAY with iron nodules	SPT 1	97	2-4-4 (8)	3.25		22				
			SPT 2	100	2-2-4 (6)			17				
5												

Bottom of borehole at 5.0 feet.



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CLIENT Lee's Summit R-7 School District

PROJECT NAME Lee's Summit Middle School #4

PROJECT NUMBER 20-1074

PROJECT LOCATION Lee's Summit, Missouri

DATE STARTED 04/30/20 COMPLETED 04/30/20

GROUND ELEVATION 1021.25 ft HOLE SIZE 3.25 inches

DRILLING CONTRACTOR CFS Engineers

GROUND WATER LEVELS:

DRILLING METHOD 3.25-inch Continuous Flight

AT TIME OF DRILLING --- No Free Water Encountered

LOGGED BY TP CHECKED BY JE

AT END OF DRILLING --- No Free Water Encountered

NOTES

AFTER DRILLING --- No Free Water Encountered

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		TOPSOIL with vegetation										
		(CH) dark gray-brown, medium stiff FAT CLAY with iron nodules	SPT 1	94	2-2-4 (6)	2.5		29				
		gray-brown, gray and reddish brown below 3.5'	SPT 2	100	2-2-4 (6)	3		27				
5		Bottom of borehole at 5.0 feet.										



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CLIENT Lee's Summit R-7 School District

PROJECT NAME Lee's Summit Middle School #4

PROJECT NUMBER 20-1074

PROJECT LOCATION Lee's Summit, Missouri

DATE STARTED 05/10/20 COMPLETED 05/10/20

GROUND ELEVATION 1005.888 ft HOLE SIZE 3.25 inches

DRILLING CONTRACTOR CFS Engineers

GROUND WATER LEVELS:

DRILLING METHOD 3.25-inch Continuous Flight

AT TIME OF DRILLING --- No Free Water Encountered

LOGGED BY TP CHECKED BY JE

AT END OF DRILLING --- No Free Water Encountered

NOTES

AFTER DRILLING --- No Free Water Encountered

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		TOPSOIL with vegetation										
		(CH) dark gray-brown, medium stiff FAT CLAY with iron nodules	SPT 1	89	2-3-5 (8)	3		25				
		gray-brown, gray and reddish brown below 3.5'	SPT 2	89	2-3-4 (7)	2.75		25				
5												

Bottom of borehole at 5.0 feet.



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BORING NUMBER B8

PAGE 1 OF 1

CLIENT Lee's Summit R-7 School District

PROJECT NAME Lee's Summit Middle School #4

PROJECT NUMBER 20-1074

PROJECT LOCATION Lee's Summit, Missouri

DATE STARTED 04/30/20 COMPLETED 04/30/20

GROUND ELEVATION 1015.079 ft HOLE SIZE 3.25 inches

DRILLING CONTRACTOR CFS Engineers

GROUND WATER LEVELS:

DRILLING METHOD 3.25-inch Continuous Flight

AT TIME OF DRILLING --- No Free Water Encountered

LOGGED BY TP CHECKED BY JE

AT END OF DRILLING --- No Free Water Encountered

NOTES

AFTER DRILLING --- No Free Water Encountered

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		TOPSOIL with vegetation										
		(CH) gray-brown, stiff FAT CLAY with iron nodules	SPT 1	100	2-3-5 (8)	3		26				
		gray-brown, gray and reddish brown, medium stiff below 3.5'	SPT 2	100	2-3-4 (7)	3.5		20				
5		stiff below 6'	SPT 3	100	2-3-5 (8)	4.5		25				
		medium stiff below 8.5'	SPT 4	100	2-2-3 (5)	3.5		25				
10		trace of fine sand below 13.5'	SPT 5	88	3-5-50/5"	4.5		22				
15		highly weathered SANDSTONE highly weathered LIMESTONE										

Refusal at 15.2 feet.
Bottom of borehole at 15.2 feet.

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CLIENT Lee's Summit R-7 School District

PROJECT NAME Lee's Summit Middle School #4

PROJECT NUMBER 20-1074

PROJECT LOCATION Lee's Summit, Missouri

DATE STARTED 05/10/20 COMPLETED 05/10/20

GROUND ELEVATION 1009.821 ft HOLE SIZE 3.25 inches

DRILLING CONTRACTOR CFS Engineers

GROUND WATER LEVELS:

DRILLING METHOD 3.25-inch Continuous Flight

AT TIME OF DRILLING --- No Free Water Encountered

LOGGED BY TP CHECKED BY JE

AT END OF DRILLING --- No Free Water Encountered

NOTES

AFTER DRILLING --- No Free Water Encountered

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DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		TOPSOIL with vegetation										
		(CL) gray-brown, medium stiff LEAN CLAY with iron nodules	SPT 1	100	2-4-5 (9)	3.5		23	38	13	25	
		(CH) gray-brown, gray and reddish brown, stiff FAT CLAY with iron nodules	SPT 2	100	2-3-5 (8)	4.25		21				
5			SPT 3	100	2-3-5 (8)	4.5		25				
			SPT 4	100	2-3-12 (15)	4.5		23				
10		highly weathered limestone fragments below 10'										
		highly weathered LIMESTONE										

Refusal at 10.5 feet.
Bottom of borehole at 10.5 feet.



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BORING NUMBER B11

PAGE 1 OF 1

CLIENT Lee's Summit R-7 School District

PROJECT NAME Lee's Summit Middle School #4

PROJECT NUMBER 20-1074

PROJECT LOCATION Lee's Summit, Missouri

DATE STARTED 04/30/20 COMPLETED 04/30/20

GROUND ELEVATION 1014.085 ft HOLE SIZE 3.25 inches

DRILLING CONTRACTOR CFS Engineers

GROUND WATER LEVELS:

DRILLING METHOD 3.25-inch Continuous Flight

AT TIME OF DRILLING --- No Free Water Encountered

LOGGED BY TP CHECKED BY JE

AT END OF DRILLING --- No Free Water Encountered

NOTES

AFTER DRILLING --- No Free Water Encountered

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		TOPSOIL with vegetation										
		(CH) dark gray-brown, medium stiff FAT CLAY with iron nodules	SPT 1	78	2-3-4 (7)	2.5		27				
		gray-brown, gray and reddish brown, stiff below 3.5'	SPT 2	100	2-3-5 (8)	2.75		25				
5			SPT 3	100	2-3-5 (8)	4		21				
			SPT 4	100	2-3-4 (7)	2.5		32				
10												
		highly weathered LIMESTONE	SPT 5	100	3-50/1"	3.5		27				

Refusal at 14.3 feet.
Bottom of borehole at 14.3 feet.



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CLIENT Lee's Summit R-7 School District

PROJECT NAME Lee's Summit Middle School #4

PROJECT NUMBER 20-1074

PROJECT LOCATION Lee's Summit, Missouri

DATE STARTED 05/07/20 COMPLETED 05/07/20

GROUND ELEVATION 1010.193 ft HOLE SIZE 3.25 inches

DRILLING CONTRACTOR CFS Engineers

GROUND WATER LEVELS:

DRILLING METHOD 3.25-inch Continuous Flight

AT TIME OF DRILLING --- No Free Water Encountered

LOGGED BY TP CHECKED BY JE

AT END OF DRILLING --- No Free Water Encountered

NOTES

AFTER DRILLING --- No Free Water Encountered

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		TOPSOIL with vegetation										
		(CH) gray-brown, medium stiff FAT CLAY with iron nodules	SPT 1	100	1-2-4 (6)	3		28				
5		gray-brown, gray and reddish brown below 3.5'	SPT 2	100	2-2-3 (5)	3		23				
			SPT 3	100	2-2-4 (6)	2.25		31				
10			SPT 4	100	2-3-4 (7)	2.25		29				

Refusal at 13.5 feet.
Bottom of borehole at 13.5 feet.



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Kansas City, Kansas 66103

CLIENT Lee's Summit R-7 School District

PROJECT NAME Lee's Summit Middle School #4

PROJECT NUMBER 20-1074

PROJECT LOCATION Lee's Summit, Missouri

DATE STARTED 05/10/20 COMPLETED 05/10/20

GROUND ELEVATION 1004.54 ft HOLE SIZE 3.25 inches

DRILLING CONTRACTOR CFS Engineers

GROUND WATER LEVELS:

DRILLING METHOD 3.25-inch Continuous Flight

AT TIME OF DRILLING --- Not Recorded

LOGGED BY TP CHECKED BY JE

AT END OF DRILLING --- Not Recorded

NOTES

▼ AFTER DRILLING 8.50 ft / Elev 996.04 ft

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		TOPSOIL with vegetation										
		(CH) gray-brown, stiff FAT CLAY with iron nodules	SPT 1	100	2-4-4 (8)	3.75		22				
		gray-brown, gray and reddish brown below 3.5'	SPT 2	100	2-3-6 (9)	4.25		23				
5		medium stiff below 6'	SPT 3	100	1-3-4 (7)	4.25		25				
			SPT 4	100	1-2-3 (5)	2.5		34				
10												
		tan and gray, highly weathered SHALE	SPT 5	100	9-13-15 (28)			23				
15												
		highly weathered LIMESTONE										
Refusal at 18.0 feet. Bottom of borehole at 18.0 feet.												

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CLIENT Lee's Summit R-7 School District

PROJECT NAME Lee's Summit Middle School #4

PROJECT NUMBER 20-1074

PROJECT LOCATION Lee's Summit, Missouri

DATE STARTED 05/10/20 COMPLETED 05/10/20

GROUND ELEVATION 999.561 ft HOLE SIZE 3.25 inches

DRILLING CONTRACTOR CFS Engineers

GROUND WATER LEVELS:

DRILLING METHOD 3.25-inch Continuous Flight

AT TIME OF DRILLING --- No Free Water Encountered

LOGGED BY TP CHECKED BY JE

AT END OF DRILLING --- No Free Water Encountered

NOTES

AFTER DRILLING --- No Free Water Encountered

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		TOPSOIL with vegetation										
		(CH) dark gray-brown, medium stiff FAT CLAY with iron nodules	SPT 1	78	1-3-3 (6)	2.5		29				
		gray-brown, gray and reddish brown below 3.5'	SPT 2	94	2-2-3 (5)	3		26				
5			SPT 3	100	2-2-4 (6)	3.5		26				
		stiff and shaley below 8.5'	SPT 4	100	2-4-8 (12)			27				
10												
		highly weathered LIMESTONE										

Refusal at 13.2 feet.
Bottom of borehole at 13.2 feet.



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CLIENT Lee's Summit R-7 School District

PROJECT NAME Lee's Summit Middle School #4

PROJECT NUMBER 20-1074

PROJECT LOCATION Lee's Summit, Missouri

DATE STARTED 05/10/20 COMPLETED 05/10/20

GROUND ELEVATION 999.6 ft HOLE SIZE 3.25 inches

DRILLING CONTRACTOR CFS Engineers

GROUND WATER LEVELS:

DRILLING METHOD 3.25-inch Continuous Flight

AT TIME OF DRILLING --- No Free Water Encountered

LOGGED BY TP CHECKED BY JE

AT END OF DRILLING --- No Free Water Encountered

NOTES

AFTER DRILLING --- No Free Water Encountered

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DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		TOPSOIL with vegetation										
		(CH) dark gray-brown, medium stiff FAT CLAY with iron nodules	SPT 1	97	2-3-4 (7)	3.5		26				
		gray-brown, gray and reddish brown below 3.5'	SPT 2	89	1-2-3 (5)	2.75		29				
5			SPT 3	100	2-2-3 (5)	2.75		34				
		shaley below 8.5'	SPT 4	94	2-3-4 (7)	4.5+		30				
10												

Refusal at 13.0 feet.
Bottom of borehole at 13.0 feet.

CLIENT Lee's Summit R-7 School District

PROJECT NUMBER 20-1074

DATE STARTED 05/10/20 **COMPLETED** 05/10/20

DRILLING CONTRACTOR CFS Engineers

DRILLING METHOD 3.25-inch Continuous Flight

LOGGED BY TP CHECKED BY JE

NOTES

PROJECT NAME Lee's Summit Middle School #4

PROJECT LOCATION Lee's Summit, Missouri

GROUND ELEVATION 1005.259 ft **HOLE SIZE** 3.25 inches

GROUND WATER LEVELS:

AT TIME OF DRILLING --- No Free Water Encountered

AT END OF DRILLING --- No Free Water Encountered

AFTER DRILLING --- No Free Water Encountered

[illegible]



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BORING NUMBER B17

PAGE 1 OF 1

CLIENT	Lee's Summit R-7 School District	PROJECT NAME	Lee's Summit Middle School #4
PROJECT NUMBER	20-1074	PROJECT LOCATION	Lee's Summit, Missouri
DATE STARTED	05/07/20	COMPLETED	05/07/20
GROUND ELEVATION	1008.754 ft	HOLE SIZE	3.25 inches
DRILLING CONTRACTOR	CFS Engineers	GROUND WATER LEVELS:	
DRILLING METHOD	3.25-inch Continuous Flight	AT TIME OF DRILLING --- No Free Water Encountered	
LOGGED BY	TP	AT END OF DRILLING --- No Free Water Encountered	
CHECKED BY	JE	AFTER DRILLING --- No Free Water Encountered	
NOTES			

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		TOPSOIL with vegetation										
		(CH) gray-brown, medium stiff FAT CLAY with iron nodules	SPT 1	89	2-3-3 (6)	3		28				
		gray-brown, gray and reddish brown, stiff below 3.5'	SPT 2	100	2-4-6 (10)	3		24				
5		medium stiff below 6'	SPT 3	100	2-3-4 (7)	2.5		27				
			SPT 4	100	1-3-4 (7)	3.5		25				
10		trace of fine sand below 13.5'	SPT 5	100	2-2-4 (6)	2		40				
15		shaley below 15'										
		tan, highly weathered SHALE	SPT 6	100	8-13-16 (29)			27				
20												

Bottom of borehole at 20.0 feet.



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CLIENT Lee's Summit R-7 School District

PROJECT NAME Lee's Summit Middle School #4

PROJECT NUMBER 20-1074

PROJECT LOCATION Lee's Summit, Missouri

DATE STARTED 05/07/20 COMPLETED 05/07/20

GROUND ELEVATION 1005.996 ft HOLE SIZE 3.25 inches

DRILLING CONTRACTOR CFS Engineers

GROUND WATER LEVELS:

DRILLING METHOD 3.25-inch Continuous Flight

AT TIME OF DRILLING --- No Free Water Encountered

LOGGED BY TP CHECKED BY JE

AT END OF DRILLING --- No Free Water Encountered

NOTES

AFTER DRILLING --- No Free Water Encountered

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		TOPSOIL with vegetation										
		(CH) gray-brown, medium stiff FAT CLAY with iron nodules	SPT 1	78	1-3-3 (6)	3.75		27				
		gray-brown, gray and reddish brown, stiff below 3.5'	SPT 2	100	2-3-5 (8)	3.75		22				
5			SPT 3	100	3-3-6 (9)	3.25		23				
		medium stiff below 8.5'	SPT 4	100	3-3-4 (7)	2.75		25				
10			SPT 5	100	2-4-5 (9)	3.75		29				
15		shaley below 13.5'										
		Refusal at 18.5 feet. Bottom of borehole at 18.5 feet.										

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CLIENT Lee's Summit R-7 School District

PROJECT NAME Lee's Summit Middle School #4

PROJECT NUMBER 20-1074

PROJECT LOCATION Lee's Summit, Missouri

DATE STARTED 05/07/20 COMPLETED 05/07/20

GROUND ELEVATION 996.623 ft HOLE SIZE 3.25 inches

DRILLING CONTRACTOR CFS Engineers

GROUND WATER LEVELS:

DRILLING METHOD 3.25-inch Continuous Flight

AT TIME OF DRILLING --- No Free Water Encountered

LOGGED BY TP CHECKED BY JE

AT END OF DRILLING --- No Free Water Encountered

NOTES

AFTER DRILLING --- No Free Water Encountered

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DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		TOPSOIL with vegetation										
		(CH) gray-brown, medium stiff FAT CLAY with iron nodules	SPT 1	100	1-2-3 (5)	2.5		26				
5		gray-brown, gray and reddish brown, stiff below 3.5'	SPT 2	89	1-2-4 (6)	3		29				
			SPT 3	100	2-3-5 (8)	3.75		25				
10		gray-brown, highly weathered SHALE	SPT 4	100	2-4-35 (39)	3.5		30				

Refusal at 12.0 feet.
Bottom of borehole at 12.0 feet.



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CLIENT Lee's Summit R-7 School District

PROJECT NAME Lee's Summit Middle School #4

PROJECT NUMBER 20-1074

PROJECT LOCATION Lee's Summit, Missouri

DATE STARTED 05/07/20 COMPLETED 05/07/20

GROUND ELEVATION 1001.695 ft HOLE SIZE 3.25 inches

DRILLING CONTRACTOR CFS Engineers

GROUND WATER LEVELS:

DRILLING METHOD 3.25-inch Continuous Flight

AT TIME OF DRILLING --- No Free Water Encountered

LOGGED BY TP CHECKED BY JE

AT END OF DRILLING --- No Free Water Encountered

NOTES

AFTER DRILLING --- No Free Water Encountered

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		TOPSOIL with vegetation										
		(CH) dark gray-brown, medium stiff FAT CLAY with iron nodules	SPT 1	78	1-2-3 (5)	3.5		30				
5		gray-brown, gray and reddish brown, stiff below 3.5'	SPT 2	89	2-4-6 (10)	3.75		22				
			SPT 3	100	2-5-6 (11)	3.75		23				
10			SPT 4	100	2-3-5 (8)	3.25		28				
		highly weathered LIMESTONE										

Refusal at 13.0 feet.
Bottom of borehole at 13.0 feet.



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CLIENT Lee's Summit R-7 School District

PROJECT NAME Lee's Summit Middle School #4

PROJECT NUMBER 20-1074

PROJECT LOCATION Lee's Summit, Missouri

DATE STARTED 05/07/20 COMPLETED 05/07/20

GROUND ELEVATION 997.526 ft HOLE SIZE 3.25 inches

DRILLING CONTRACTOR CFS Engineers

GROUND WATER LEVELS:

DRILLING METHOD 3.25-inch Continuous Flight

AT TIME OF DRILLING --- No Free Water Encountered

LOGGED BY TP CHECKED BY JE

AT END OF DRILLING --- No Free Water Encountered

NOTES

AFTER DRILLING --- No Free Water Encountered

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DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		TOPSOIL with vegetation										
		(CH) gray-brown, medium stiff FAT CLAY with iron nodules	SPT 1	83	1-3-4 (7)	2.75		26				
		gray-brown, gray and reddish brown below 3.5'	SPT 2	100	2-2-4 (6)	3.25		27				
5		stiff below 6'	SPT 3	100	2-3-5 (8)	2.5		25				
		shaley below 10'	SPT 4	100	2-3-10 (13)	4		26				
10												

Refusal at 12.0 feet.
Bottom of borehole at 12.0 feet.



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CLIENT Lee's Summit R-7 School District

PROJECT NAME Lee's Summit Middle School #4

PROJECT NUMBER 20-1074

PROJECT LOCATION Lee's Summit, Missouri

DATE STARTED 05/11/20 COMPLETED 05/11/20

GROUND ELEVATION 1011.671 ft HOLE SIZE 3.25 inches

DRILLING CONTRACTOR CFS Engineers

GROUND WATER LEVELS:

DRILLING METHOD 3.25-inch Continuous Flight

AT TIME OF DRILLING --- No Free Water Encountered

LOGGED BY TP CHECKED BY JE

AT END OF DRILLING --- No Free Water Encountered

NOTES

AFTER DRILLING --- No Free Water Encountered

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DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		TOPSOIL with vegetation										
		(CH) gray-brown, medium stiff LEAN TO FAT CLAY with iron nodules	SPT 1	100	2-3-4 (7)	3.5		26				
		gray-brown, gray and reddish brown, stiff below 3.5'	SPT 2	100	2-4-5 (9)	3.5		27	43	19	24	
5												

Bottom of borehole at 5.0 feet.



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CLIENT Lee's Summit R-7 School District

PROJECT NAME Lee's Summit Middle School #4

PROJECT NUMBER 20-1074

PROJECT LOCATION Lee's Summit, Missouri

DATE STARTED 05/11/20 COMPLETED 05/11/20

GROUND ELEVATION 1000.457 ft HOLE SIZE 3.25 inches

DRILLING CONTRACTOR CFS Engineers

GROUND WATER LEVELS:

DRILLING METHOD 3.25-inch Continuous Flight

AT TIME OF DRILLING --- Not Recorded

LOGGED BY TP CHECKED BY JE

AT END OF DRILLING --- Not Recorded

NOTES

▼ AFTER DRILLING 13.50 ft / Elev 986.96 ft

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		TOPSOIL with vegetation										
		(CH) dark gray-brown, medium stiff FAT CLAY with iron nodules	SPT 1	100	1-3-3 (6)	2.25		30				
		gray-brown, gray and reddish brown, stiff below 3.5'	SPT 2	100	2-4-5 (9)	3.25		27				
5		medium stiff below 6'	SPT 3	100	2-2-4 (6)	2.75		28				
		stiff below 8.5'	SPT 4	100	2-4-4 (8)	3.25		29				
10												
		tan, weathered SHALE	SPT 5	100	50			13				
Refusal at 14.0 feet. Bottom of borehole at 14.0 feet.												



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CLIENT Lee's Summit R-7 School District

PROJECT NAME Lee's Summit Middle School #4

PROJECT NUMBER 20-1074

PROJECT LOCATION Lee's Summit, Missouri

DATE STARTED 05/07/20 COMPLETED 05/07/20

GROUND ELEVATION 993.991 ft HOLE SIZE 3.25 inches

DRILLING CONTRACTOR CFS Engineers

GROUND WATER LEVELS:

DRILLING METHOD 3.25-inch Continuous Flight

AT TIME OF DRILLING --- No Free Water Encountered

LOGGED BY TP CHECKED BY JE

AT END OF DRILLING --- No Free Water Encountered

NOTES

AFTER DRILLING --- No Free Water Encountered

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DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		TOPSOIL with vegetation										
		(CH) reddish brown, stiff LEAN TO FAT CLAY	SPT 1	94	2-3-5 (8)	2.5		23				
		hard, highly weathered LIMESTONE fragments and CLAY	SPT 2	100	14-10-15 (25)			30				
5		orangish brown, very stiff, highly weathered SANDSTONE with clay seams	SPT 3	100	6-10-8 (18)			38				
		tan, very stiff, highly weathered SHALE	SPT 4	100	3-10-13 (23)			21				
10												

Refusal at 11.0 feet.
Bottom of borehole at 11.0 feet.



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CLIENT Lee's Summit R-7 School District

PROJECT NAME Lee's Summit Middle School #4

PROJECT NUMBER 20-1074

PROJECT LOCATION Lee's Summit, Missouri

DATE STARTED 05/07/20 COMPLETED 05/07/20

GROUND ELEVATION 988.686 ft HOLE SIZE 3.25 inches

DRILLING CONTRACTOR CFS Engineers

GROUND WATER LEVELS:

DRILLING METHOD 3.25-inch Continuous Flight

AT TIME OF DRILLING --- No Free Water Encountered

LOGGED BY TP CHECKED BY JE

AT END OF DRILLING --- No Free Water Encountered

NOTES

AFTER DRILLING --- No Free Water Encountered

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DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		TOPSOIL with vegetation										
		(CH) gray-brown, medium stiff FAT CLAY with iron nodules	SPT 1	83	1-3-4 (7)	2		31	55	23	32	
		gray-brown, gray and reddish brown, stiff below 3.5'	SPT 2	83	2-3-5 (8)	3		30				
5		highly weathered LIMESTONE										

Refusal at 7.0 feet.
Bottom of borehole at 7.0 feet.



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CLIENT Lee's Summit R-7 School District

PROJECT NAME Lee's Summit Middle School #4

PROJECT NUMBER 20-1074

PROJECT LOCATION Lee's Summit, Missouri

DATE STARTED 04/30/20 COMPLETED 04/30/20

GROUND ELEVATION 1022.919 ft HOLE SIZE 3.25 inches

DRILLING CONTRACTOR CFS Engineers

GROUND WATER LEVELS:

DRILLING METHOD 3.25-inch Continuous Flight

AT TIME OF DRILLING --- No Free Water Encountered

LOGGED BY TP CHECKED BY JE

AT END OF DRILLING --- No Free Water Encountered

NOTES

AFTER DRILLING --- No Free Water Encountered

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		TOPSOIL with vegetation										
		(CH) gray-brown, medium stiff FAT CLAY with iron nodules	SPT 1	97	1-3-4 (7)	3.75		24	55	21	34	
5		gray-brown, gray and reddish brown below 3.5'	SPT 2	100	1-3-4 (7)	2.5		22				
		stiff below 6'	SPT 3	100	2-4-5 (9)	3.5		22				
10			SPT 4	100	3-3-4 (7)	4		28				
		shaley below 13.5'										
		orangish-brown, hard, highly weathered SANDSTONE	SPT 5	100	3-50	3.25		29				

Refusal at 14.5 feet.
Bottom of borehole at 14.5 feet.

Appendix C: Portland Cement Stabilization

GUIDELINE FOR CEMENT STABILIZATION

Cement stabilized soils should not be constructed without the presence of the geotechnical engineer's designated representative.

MATERIALS. The material used in stabilization should meet the chemical and physical characteristics of Type I cement ASTM C150. Cement should be kept free from moisture prior to use. Cement stored on the project should be placed in weatherproof bins or buildings with adequate protection from ground dampness.

CONSTRUCTION. The cement stabilized soil should be constructed as described herein. The cement should be spread uniformly across the prepared soil surface at the full application rate by using an agricultural seed spreader, mechanical bulk cement spreader, or other equipment acceptable to the geotechnical engineer's designated representative.

Cement stabilized material should be placed in approximately horizontal layers not to exceed 9 inches in uncompacted thickness.

Subgrade Preparation. Prior to the beginning of cement treatment, the Contractor should construct the subgrade to an elevation which will provide a subgrade surface conforming to the contract documents upon completion of the cement treatment.

The clay soils should be scarified and pulverized prior to application of the cement. A disc should be used to break up the surface of the material to be stabilized. The mixer or tiller should be used for the full depth of stabilization to break up the clay.

Application. Cement should be spread only on those areas where mixing operations can be completed during the same working day. Mixing and spreading should not be performed during freezing temperatures. When the temperature is below 40 degrees F, the completed stabilized fill should be protected against freezing by a sufficient covering of straw, or by other approved methods. Any areas of completed stabilized subgrade course that are damaged by freezing, rainfall, or other weather conditions should be repaired by the contractor.

The cement should be applied with an approved spreader at an application rate that has been established by the geotechnical engineer, based on laboratory tests with the site soils.

The cement should be distributed at a uniform rate and in such a manner to prevent the scattering of cement by wind. Cement should not be added when wind or weather conditions are not favorable in the opinion of the geotechnical engineer's designated representative. A motor grader should not be used to spread the cement.

Mixing. The cement, material, and required water should be thoroughly mixed, blended, and pulverized by approved road mixers or by a depth-controlled rotary tiller. Except as provided hereinafter, the Contractor should continue mixing and drying the

GUIDELINE FOR CEMENT STABILIZATION

soil until all material will pass a 1/2-inch screen. Scarifying and mixing should be controlled to provide uniform depth within 0.1 ft of the depth specified. If, in the opinion of the geotechnical engineer's designated representative the material was mixed to a depth greater than indicated on the drawing or as specified herein, additional cement should be added to achieve the desired application rate. If in the opinion of the geotechnical engineer's designated representative, the material was mixed to a depth less than indicated on the drawing or specified, the material should be remixed.

Moisture content of the mixture should be determined in preparation for final mixing. Moisture in the mixture following final mixing should not be less than the water content determined to be optimum based on dry weight of soil and should not exceed the optimum water content by more than 5 percentage points. Water may be added in increments as large as the equipment will permit; however, such increment of water should be partially incorporated in the mix to avoid concentration of water near the surface. After the last increment of water has been added, mixing should be continued until the water is uniformly distributed throughout the full depth of the mixture, including satisfactory moisture distribution along the edges of the section.

Compaction. The cement stabilized subgrade should be compacted in accordance with the requirements for controlled fill. The compaction should be a minimum of 95% of the maximum density in accordance with ASTM D698 and within +0% to +5% of the optimum moisture content of the cement-stabilized soil.

Not more than 60 minutes should elapse between the time of final mixing and the beginning of compaction.

Protection and Curing. The Contractor should protect the finished treated subgrade from rapid drying, for 7 days, by sprinkling with water as often as is necessary to prevent drying of the surface of the cement-treated subgrade, or by application of the overlying base course. The Contractor should not allow any vehicles or operations which will distort the surface onto the treated surface during the curing period.