Butler Manufacturing™

1540 Genessee Street
Kansas City, MO 64102

STRUCTURAL DESIGN DATA

Project: LSMO Water Utilites
Name: MAR Building Solutions
Order #: 24-007756-01
Jobsite: 1200 Hamblen Road

City, State: Lees Summit, Missouri 64002
County: Jackson
Country: United States

Designer: Ethan Henderson
Supervising Engineer: Alan Jungnitsch

TABLE OF CONTENTS

This document has been electronically signed and sealed by Alan Jungnitsch, PE using my Digital Signature with PE seal affixed. Printed copies of this document are not considered signed and sealed, and the signature must be verified on any electronic copy
2024.05.01 15:51:08-05'00'

05/01/2024

Building Loading - Expanded Report

Shape: Alternate 3

Shape Alternate 3 is set as an existing shape.

Shape: Alternate 3 ADDITION

Loads and Codes - Shape: Alternate 3 ADDITION

City: Lees Summit **County:** Jackson **State:** Missouri **Country:** United States
Building Code: 2018 International Building Code
Building Risk/Occupancy Category: II (Standard Occupancy Structure)
Structural: 16AISC - ASD
Cold Form: 16AISI - ASD
Rainfall: I: 7.00 inches per hour
f'c: 3000.00 psi Concrete

Dead and Collateral Loads

Collateral Gravity:10.00 psf
Collateral Uplift: 0.00 psf
Frame Weight (assumed for seismic):2.50 psf

Side	Type	Mag	Units	Shape	Applied to	Description
A	D	2.463	psf	Entire	Frm	Covering Weight - 24 MR-24 1.20 + Secondary Weight 1.26 : Roof: A
A	D	1.200	psf	Entire	Pur	Covering Weight - 24 MR-24 1.20 : Roof: A

Roof Live Load

Roof Live Load: 20.00 psf Not Reducible

Wind Load

Wind Speed: Vult: 115.00 (Vasd: 89.08) mph
Wind Enclosure: Partially Enclosed
Solidity Ratio: 20.0%
Frame Width Factor: Kb: 1.5850
Shielding Factor: Ks: 0.6690
Height Used: 17/8/8 (Type: Eave)
Base Elevation: 0/0/0
Site Elevation: 1024.0 ft
Primary Zone Strip Width: 2a: 6/0/0

Topographic Factor: Kzt: 1.0000
Directionality Factor: Kd: 0.8500
Ground Elevation Factor: Ke: 0.9636
Primaries
Primaries Wind Exposure: C - Kz: 0.879
Velocity Pressure: qz: 24.38 psf

Gust Factor: G: 1.0000
Least Horiz. Dimension: 21/6/0

NOT Windborne Debris Region
Parts / Portions Zone Strip Width:
Walls, a: 3/0/0
Roof(s), 0.6h: 10/7/8

The 'Envelope Procedure' is Used
Parts and Portions
Parts Wind Exposure Factor: 0.879
Velocity Pressure (C&C): qz:24.38 psf

Snow Load

Ground Snow Load: pg: 20.00 psf
Flat Roof Snow: pf: 16.80 psf
Design Snow (Sloped): ps: 16.80 psf
Specified Minimum Roof Snow: 20.00 psf (Code)
Snow Accumulation Factor: 1.000
Snow Importance: Is: 1.000
Ground / Roof Conversion: 0.70

Rain Surcharge: 0.00
Exposure Factor: 2 Partially Exposed Ce: 1.00
Thermal Factor: Unheated - Ct: 1.20
Obstructed or Not Slippery
Slope Reduction: Cs: 1.00
Slope Used: 2.331 deg. (0.4884:12)

Seismic Load

Lateral Force Resisting Systems using Equivalent Force Procedure
Mapped MCE Acceleration: Ss: 12.00 %g
Mapped MCE Acceleration: S1: 7.00 %g
Site Class: Stiff soil (D) - Default
Seismic Importance: Ie: 1.000
Design Acceleration Parameter: Sds: 0.1280
Design Acceleration Parameter: Sd1: 0.1120
Seismic Design Category:: A
% Snow Used in Seismic: 0.00
Seismic Snow Load: 0.00 psf
Diaphragm Condition: Flexible
Fundamental Period Height Used: 18/1/12

Transverse Direction Parameters
System NOT detailed for Seismic
Redundancy Factor: Rho: 1.00
Fundamental Period: Ta: 0.2846
R-Factor: 3.00
Overstrength Factor: Omega: 2.50
Deflection Amplification Factor: Cd: 3.00
Base Shear: V: 0.0100 x W

Longitudinal Direction Parameters
System NOT detailed for Seismic
Redundancy Factor: Rho: 1.00
Fundamental Period: Ta: 0.1758
R-Factor: 3.00
Overstrength Factor: Omega: 2.50
Deflection Amplification Factor: Cd: 3.00

Base Shear: V: 0.0100 x W

Side	Type	Mag	Units	Shape	Applied to	Description
2	E	0.014	psf	Rect	Frm Brc	Seismic: Covering Weight - 26 Shadowall Unpunched 0.92 + Secondary Weight 0.49 : Wall: 2
2	E	0.001	psf	Rect	Frm Brc	Seismic: Covering Weight - 0.10 NBBMC - Masonry : Wall: 2
3	E	0.009	psf	Entire	Frm Brc	Seismic: Covering Weight - 26 Shadowall Unpunched 0.92 : Wall: 3
3	E	0.001	psf	Rect	Frm Brc	Seismic: Covering Weight - 0.10 NBBMC - Masonry : Wall: 3
3	E	0.005	psf	Spec	Frm Brc	Seismic: Secondary Weight 0.50 : Wall: 3
4	E	0.012	psf	Rect	Frm Brc	Seismic: Covering Weight - 26 Shadowall Unpunched 0.92 + Secondary Weight 0.24 : Wall: 4
A	E	0.150	psf	Entire	Frm	Seismic: Covering Weight - 24 MR-24 1.20 + Secondary Weight 1.26 + (Includes 10.000 Collateral 2.500 Frame Weight) : Roof: A
A	E	0.150	psf	Entire	Brc	Seismic: Covering Weight - 24 MR-24 1.20 + Secondary Weight 1.26 + (Includes 10.000 Collateral 2.500 Frame Weight) : Roof: A

Deflection Conditions
Frames are vertically supporting:Metal Roof Purlins and Panels
Frames are laterally supporting:Metal Wall Girts and Panels
Purlins are supporting:Metal Roof Panels
Girts are supporting:Metal Wall Panels

Design Load Combinations - Framing

No.	Origin	Factor	Application	Description
1	System	1.000	1.0 D + 1.0 CG + 1.0 L>	D + CG + L>
2	System	1.000	1.0 D + 1.0 CG + 1.0 <L	D + CG + <L
3	System	1.000	1.0 D + 1.0 CG + 1.0 SMS>	D + CG + SMS>
4	System	1.000	1.0 D + 1.0 CG + 1.0 <SMS	D + CG + <SMS
5	System	1.000	1.0 D + 1.0 CG + 0.6 W1>	D + CG + W1>
6	System	1.000	1.0 D + 1.0 CG + 0.6 <W1	D + CG + <W1
7	System	1.000	1.0 D + 1.0 CG + 0.6 W2>	D + CG + W2>
8	System	1.000	1.0 D + 1.0 CG + 0.6 <W2	D + CG + <W2
9	System	1.000	1.0 D + 1.0 CG + 0.6 WPL	D + CG + WPL
10	System	1.000	1.0 D + 1.0 CG + 0.6 WPR	D + CG + WPR
11	System	1.000	0.6 MW	MW - Wall: 1
12	System	1.000	0.6 MW	MW - Wall: 2
13	System	1.000	0.6 MW	MW - Wall: 3
14	System	1.000	0.6 MW	MW - Wall: 4
15	System	1.000	0.6 D + 0.6 CU + 0.6 W1>	D + CU + W1>
16	System	1.000	0.6 D + 0.6 CU + 0.6 <W1	D + CU + <W1
17	System	1.000	0.6 D + 0.6 CU + 0.6 W2>	D + CU + W2>
18	System	1.000	0.6 D + 0.6 CU + 0.6 <W2	D + CU + <W2
19	System	1.000	0.6 D + 0.6 CU + 0.6 WPL	D + CU + WPL
20	System	1.000	0.6 D + 0.6 CU + 0.6 WPR	D + CU + WPR
21	System	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 W1>	D + CG + L + W1>
22	System	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 <W1	D + CG + L + <W1
23	System	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 W2>	D + CG + L + W2>
24	System	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 <W2	D + CG + L + <W2
25	System	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPL	D + CG + L + WPL
26	System	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPR	D + CG + L + WPR
27	System	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W1>	D + CG + S + W1>
28	System	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W1	D + CG + S + <W1
29	System	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W2>	D + CG + S + W2>
30	System	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W2	D + CG + S + <W2
31	System	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPL	D + CG + S + WPL
32	System	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPR	D + CG + S + WPR
33	System	1.000	1.0 D + 1.0 CG + 0.7 E> + 0.7 EG+	D + CG + E> + EG+
34	System	1.000	1.0 D + 1.0 CG + 0.7 <E + 0.7 EG+	D + CG + <E + EG+
35	System	1.000	0.6 D + 0.6 CU + 0.7 E> + 0.7 EG-	D + CU + E> + EG-
36	System	1.000	0.6 D + 0.6 CU + 0.7 <E + 0.7 EG-	D + CU + <E + EG-
37	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPR + 0.6 WB1>	D + CG + WPR + WB1>
38	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPR + 0.6 WB1>	D + CU + WPR + WB1>
39	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPR + 0.45 WB1>	D + CG + L + WPR + WB1>
40	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPR + 0.45 WB1>	D + CG + S + WPR + WB1>
41	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPR + 0.6 <WB1	D + CG + WPR + <WB1
42	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPR + 0.6 <WB1	D + CU + WPR + <WB1

43	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPR + 0.45 <WB1	D + CG + L + WPR + <WB1
44	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPR + 0.45 <WB1	D + CG + S + WPR + <WB1
45	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPR + 0.6 WB2>	D + CG + WPR + WB2>
46	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPR + 0.6 WB2>	D + CU + WPR + WB2>
47	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPR + 0.45 WB2>	D + CG + L + WPR + WB2>
48	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPR + 0.45 WB2>	D + CG + S + WPR + WB2>
49	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPR + 0.6 <WB2	D + CG + WPR + <WB2
50	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPR + 0.6 <WB2	D + CU + WPR + <WB2
51	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPR + 0.45 <WB2	D + CG + L + WPR + <WB2
52	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPR + 0.45 <WB2	D + CG + S + WPR + <WB2
53	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPL + 0.6 WB3>	D + CG + WPL + WB3>
54	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPL + 0.6 WB3>	D + CU + WPL + WB3>
55	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPL + 0.45 WB3>	D + CG + L + WPL + WB3>
56	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPL + 0.45 WB3>	D + CG + S + WPL + WB3>
57	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPL + 0.6 <WB3	D + CG + WPL + <WB3
58	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPL + 0.6 <WB3	D + CU + WPL + <WB3
59	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPL + 0.45 <WB3	D + CG + L + WPL + <WB3
60	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPL + 0.45 <WB3	D + CG + S + WPL + <WB3
61	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPL + 0.6 WB4>	D + CG + WPL + WB4>
62	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPL + 0.6 WB4>	D + CU + WPL + WB4>
63	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPL + 0.45 WB4>	D + CG + L + WPL + WB4>
64	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPL + 0.45 WB4>	D + CG + S + WPL + WB4>
65	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPL + 0.6 <WB4	D + CG + WPL + <WB4
66	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPL + 0.6 <WB4	D + CU + WPL + <WB4
67	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPL + 0.45 <WB4	D + CG + L + WPL + <WB4
68	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPL + 0.45 <WB4	D + CG + S + WPL + <WB4
69	System Derived	1.000	0.6 MWB	MWB - Wall: 1
70	System Derived	1.000	0.6 MWB	MWB - Wall: 2
71	System Derived	1.000	0.6 MWB	MWB - Wall: 3
72	System Derived	1.000	0.6 MWB	MWB - Wall: 4
73	System Derived	1.000	1.0 D + 1.0 CG + 0.7 EB> + 0.7 EG+	D + CG + EB> + EG+
74	System Derived	1.000	0.6 D + 0.6 CU + 0.7 EB> + 0.7 EG-	D + CU + EB> + EG-
75	System Derived	1.000	1.0 D + 1.0 CG + 0.7 <EB + 0.7 EG+	D + CG + <EB + EG+
76	System Derived	1.000	0.6 D + 0.6 CU + 0.7 <EB + 0.7 EG-	D + CU + <EB + EG-

Design Load Combinations - Bracing

No.	Origin	Factor	Application	Description
1	System	1.000	1.0 D + 0.6 W1>	D + W1>
2	System	1.000	1.0 D + 0.6 <W1	D + <W1
3	System	1.000	1.0 D + 0.6 W2>	D + W2>
4	System	1.000	1.0 D + 0.6 <W2	D + <W2
5	System	1.000	1.0 D + 0.6 W3>	D + W3>
6	System	1.000	1.0 D + 0.6 <W3	D + <W3
7	System	1.000	1.0 D + 0.6 W4>	D + W4>
8	System	1.000	1.0 D + 0.6 <W4	D + <W4
9	System	1.000	0.6 MW	MW - Wall: 1
10	System	1.000	0.6 MW	MW - Wall: 2
11	System	1.000	0.6 MW	MW - Wall: 3
12	System	1.000	0.6 MW	MW - Wall: 4
13	System	1.000	1.0 D + 0.7 E>	D + E>
14	System	1.000	1.0 D + 0.7 <E	D + <E
15	System Derived	1.000	1.0 D + 1.0 CG + 0.6 W1>	D + CG + W1>
16	System Derived	1.000	1.0 D + 1.0 CG + 0.6 <W1	D + CG + <W1
17	System Derived	1.000	1.0 D + 1.0 CG + 0.6 W2>	D + CG + W2>
18	System Derived	1.000	1.0 D + 1.0 CG + 0.6 <W2	D + CG + <W2
19	System Derived	1.000	1.0 D + 1.0 CG + 0.6 W3>	D + CG + W3>
20	System Derived	1.000	1.0 D + 1.0 CG + 0.6 <W3	D + CG + <W3
21	System Derived	1.000	1.0 D + 1.0 CG + 0.6 W4>	D + CG + W4>
22	System Derived	1.000	1.0 D + 1.0 CG + 0.6 <W4	D + CG + <W4
23	System Derived	1.000	0.6 D + 0.6 CU + 0.6 W1>	D + CU + W1>
24	System Derived	1.000	0.6 D + 0.6 CU + 0.6 <W1	D + CU + <W1
25	System Derived	1.000	0.6 D + 0.6 CU + 0.6 W2>	D + CU + W2>
26	System Derived	1.000	0.6 D + 0.6 CU + 0.6 <W2	D + CU + <W2
27	System Derived	1.000	0.6 D + 0.6 CU + 0.6 W3>	D + CU + W3>
28	System Derived	1.000	0.6 D + 0.6 CU + 0.6 <W3	D + CU + <W3
29	System Derived	1.000	0.6 D + 0.6 CU + 0.6 W4>	D + CU + W4>
30	System Derived	1.000	0.6 D + 0.6 CU + 0.6 <W4	D + CU + <W4

31	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W1>	D + CG + S + W1>
32	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W1	D + CG + S + <W1
33	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W2>	D + CG + S + W2>
34	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W2	D + CG + S + <W2
35	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W3>	D + CG + S + W3>
36	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W3	D + CG + S + <W3
37	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W4>	D + CG + S + W4>
38	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W4	D + CG + S + <W4
39	System Derived	1.000	1.0 D + 1.0 CG + 0.7 E> + 0.7 EG+	D + CG + E> + EG+
40	System Derived	1.000	1.0 D + 1.0 CG + 0.7 <E + 0.7 EG+	D + CG + <E + EG+
41	System Derived	1.000	0.6 D + 0.6 CG + 0.7 E> + 0.7 EG-	D + CG + E> + EG-
42	System Derived	1.000	0.6 D + 0.6 CG + 0.7 <E + 0.7 EG-	D + CG + <E + EG-

Design Load Combinations - Purlin

No.	Origin	Factor	Application	Description
1	System	1.000	1.0 D + 1.0 CG + 1.0 L	D + CG + L
2	System	1.000	1.0 D + 1.0 CG + 1.0 SMS	D + CG + SMS
3	System	1.000	1.0 D + 1.0 CG + 1.0 PF1	D + CG + PF1(Span 1)
4	System	1.000	1.0 D + 1.0 CG + 1.0 PF1	D + CG + PF1(Span 2)
5	System Derived	1.000	1.0 D + 1.0 CG + 0.6 W1> + 0.6 WB1>	D + CG + W1> + WB1>
6	System Derived	1.000	1.0 D + 1.0 CG + 0.6 <W2 + 0.6 WB1>	D + CG + <W2 + WB1>
7	System Derived	1.000	0.6 D + 0.6 CU + 0.6 W1> + 0.6 WB1>	D + CU + W1> + WB1>
8	System Derived	1.000	0.6 D + 0.6 CU + 0.6 <W2 + 0.6 WB1>	D + CU + <W2 + WB1>
9	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 W1> + 0.45 WB1>	D + CG + L + W1> + WB1>
10	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 <W2 + 0.45 WB1>	D + CG + L + <W2 + WB1>
11	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W1> + 0.45 WB1>	D + CG + S + W1> + WB1>
12	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W2 + 0.45 WB1>	D + CG + S + <W2 + WB1>
13	System Derived	1.000	1.0 D + 1.0 CG + 0.6 W1> + 0.6 <WB1	D + CG + W1> + <WB1
14	System Derived	1.000	1.0 D + 1.0 CG + 0.6 <W2 + 0.6 <WB1	D + CG + <W2 + <WB1
15	System Derived	1.000	0.6 D + 0.6 CU + 0.6 W1> + 0.6 <WB1	D + CU + W1> + <WB1
16	System Derived	1.000	0.6 D + 0.6 CU + 0.6 <W2 + 0.6 <WB1	D + CU + <W2 + <WB1
17	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 W1> + 0.45 <WB1	D + CG + L + W1> + <WB1
18	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 <W2 + 0.45 <WB1	D + CG + L + <W2 + <WB1
19	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W1> + 0.45 <WB1	D + CG + S + W1> + <WB1
20	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W2 + 0.45 <WB1	D + CG + S + <W2 + <WB1
21	System Derived	1.000	1.0 D + 1.0 CG + 0.6 W1> + 0.6 WB2>	D + CG + W1> + WB2>
22	System Derived	1.000	1.0 D + 1.0 CG + 0.6 <W2 + 0.6 WB2>	D + CG + <W2 + WB2>
23	System Derived	1.000	0.6 D + 0.6 CU + 0.6 W1> + 0.6 WB2>	D + CU + W1> + WB2>
24	System Derived	1.000	0.6 D + 0.6 CU + 0.6 <W2 + 0.6 WB2>	D + CU + <W2 + WB2>
25	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 W1> + 0.45 WB2>	D + CG + L + W1> + WB2>
26	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 <W2 + 0.45 WB2>	D + CG + L + <W2 + WB2>
27	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W1> + 0.45 WB2>	D + CG + S + W1> + WB2>
28	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W2 + 0.45 WB2>	D + CG + S + <W2 + WB2>
29	System Derived	1.000	1.0 D + 1.0 CG + 0.6 W1> + 0.6 <WB2	D + CG + W1> + <WB2
30	System Derived	1.000	1.0 D + 1.0 CG + 0.6 <W2 + 0.6 <WB2	D + CG + <W2 + <WB2
31	System Derived	1.000	0.6 D + 0.6 CU + 0.6 W1> + 0.6 <WB2	D + CU + W1> + <WB2
32	System Derived	1.000	0.6 D + 0.6 CU + 0.6 <W2 + 0.6 <WB2	D + CU + <W2 + <WB2
33	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 W1> + 0.45 <WB2	D + CG + L + W1> + <WB2
34	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 <W2 + 0.45 <WB2	D + CG + L + <W2 + <WB2
35	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W1> + 0.45 <WB2	D + CG + S + W1> + <WB2
36	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W2 + 0.45 <WB2	D + CG + S + <W2 + <WB2
37	System Derived	1.000	1.0 D + 1.0 CG + 0.6 W1> + 0.6 WB3>	D + CG + W1> + WB3>
38	System Derived	1.000	1.0 D + 1.0 CG + 0.6 <W2 + 0.6 WB3>	D + CG + <W2 + WB3>
39	System Derived	1.000	0.6 D + 0.6 CU + 0.6 W1> + 0.6 WB3>	D + CU + W1> + WB3>
40	System Derived	1.000	0.6 D + 0.6 CU + 0.6 <W2 + 0.6 WB3>	D + CU + <W2 + WB3>
41	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 W1> + 0.45 WB3>	D + CG + L + W1> + WB3>
42	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 <W2 + 0.45 WB3>	D + CG + L + <W2 + WB3>
43	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W1> + 0.45 WB3>	D + CG + S + W1> + WB3>
44	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W2 + 0.45 WB3>	D + CG + S + <W2 + WB3>
45	System Derived	1.000	1.0 D + 1.0 CG + 0.6 W1> + 0.6 <WB3	D + CG + W1> + <WB3
46	System Derived	1.000	1.0 D + 1.0 CG + 0.6 <W2 + 0.6 <WB3	D + CG + <W2 + <WB3
47	System Derived	1.000	0.6 D + 0.6 CU + 0.6 W1> + 0.6 <WB3	D + CU + W1> + <WB3
48	System Derived	1.000	0.6 D + 0.6 CU + 0.6 <W2 + 0.6 <WB3	D + CU + <W2 + <WB3
49	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 W1> + 0.45 <WB3	D + CG + L + W1> + <WB3
50	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 <W2 + 0.45 <WB3	D + CG + L + <W2 + <WB3
51	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W1> + 0.45 <WB3	D + CG + S + W1> + <WB3
52	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W2 + 0.45 <WB3	D + CG + S + <W2 + <WB3

53	System Derived	1.000	1.0 D + 1.0 CG + 0.6 W1> + 0.6 WB4>	D + CG + W1> + WB4>
54	System Derived	1.000	1.0 D + 1.0 CG + 0.6 <W2 + 0.6 WB4>	D + CG + <W2 + WB4>
55	System Derived	1.000	0.6 D + 0.6 CU + 0.6 W1> + 0.6 WB4>	D + CU + W1> + WB4>
56	System Derived	1.000	0.6 D + 0.6 CU + 0.6 <W2 + 0.6 WB4>	D + CU + <W2 + WB4>
57	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 W1> + 0.45 WB4>	D + CG + L + W1> + WB4>
58	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 <W2 + 0.45 WB4>	D + CG + L + <W2 + WB4>
59	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W1> + 0.45 WB4>	D + CG + S + W1> + WB4>
60	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W2 + 0.45 WB4>	D + CG + S + <W2 + WB4>
61	System Derived	1.000	1.0 D + 1.0 CG + 0.6 W1> + 0.6 <WB4	D + CG + W1> + <WB4
62	System Derived	1.000	1.0 D + 1.0 CG + 0.6 <W2 + 0.6 <WB4	D + CG + <W2 + <WB4
63	System Derived	1.000	0.6 D + 0.6 CU + 0.6 W1> + 0.6 <WB4	D + CU + W1> + <WB4
64	System Derived	1.000	0.6 D + 0.6 CU + 0.6 <W2 + 0.6 <WB4	D + CU + <W2 + <WB4
65	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 W1> + 0.45 <WB4	D + CG + L + W1> + <WB4
66	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 <W2 + 0.45 <WB4	D + CG + L + <W2 + <WB4
67	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W1> + 0.45 <WB4	D + CG + S + W1> + <WB4
68	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W2 + 0.45 <WB4	D + CG + S + <W2 + <WB4
69	System Derived	1.000	1.0 D + 1.0 CG + 0.7 EB> + 0.7 EG+	D + CG + EB> + EG+
70	System Derived	1.000	0.6 D + 0.6 CU + 0.7 EB> + 0.7 EG-	D + CU + EB> + EG-
71	System Derived	1.000	1.0 D + 1.0 CG + 0.7 <EB + 0.7 EG+	D + CG + <EB + EG+
72	System Derived	1.000	0.6 D + 0.6 CU + 0.7 <EB + 0.7 EG-	D + CU + <EB + EG-

Design Load Combinations - Girt

No.	Origin	Factor	Application	Description
1	System	1.000	0.6 W1>	W1>
2	System	1.000	0.6 <W2	<W2

Design Load Combinations - Roof - Panel

No.	Origin	Factor	Application	Description
1	System	1.000	1.0 D + 1.0 L	D + L
2	System	1.000	1.0 D + 1.0 SMS	D + SMS
3	System	1.000	1.0 D + 1.0 S	D + S
4	System	1.000	1.0 D + 0.6 <W2	D + <W2
5	System	1.000	0.6 D + 0.6 W1>	D + W1>

Design Load Combinations - Wall - Panel

No.	Origin	Factor	Application	Description
1	System	1.000	0.6 W1>	W1>
2	System	1.000	0.6 <W2	<W2

Deflection Load Combinations - Framing

No.	Origin	Factor	Def H	Def V	Application	Description
1	User	1.000	0	0	1.0 D + 1.0 CG + 1.0 S	Jack beam deflection check
2	System	1.000	0	180	1.0 L	L
3	System	1.000	0	180	1.0 SMS	SMS
4	System	1.000	60	180	0.42 W1>	W1>
5	System	1.000	60	180	0.42 <W1	<W1
6	System	1.000	60	180	0.42 W2>	W2>
7	System	1.000	60	180	0.42 <W2	<W2
8	System	1.000	60	180	0.42 WPL	WPL
9	System	1.000	60	180	0.42 WPR	WPR
10	System	1.000	10	0	1.0 E> + 1.0 EG-	E> + EG-
11	System	1.000	10	0	1.0 <E + 1.0 EG-	<E + EG-

Deflection Load Combinations - Purlin

No.	Origin	Factor	Deflection	Application	Description
1	System	1.000	150	1.0 L	L
2	System	1.000	180	1.0 SMS	SMS
3	System	1.000	180	0.42 W1>	W1>
4	System	1.000	180	0.42 <W2	<W2

Deflection Load Combinations - Girt

No.	Origin	Factor	Deflection	Application	Description
1	System	1.000	90	0.42 W1>	W1>
2	System	1.000	90	0.42 <W2	<W2

Deflection Load Combinations - Roof - Panel

No.	Origin	Factor	Def H	Def V	Application	Description
1	System	1.000	60	60	1.0 S	S
2	System	1.000	60	60	1.0 SMS	SMS
3	System	1.000	60	60	0.42 <W2	<W2

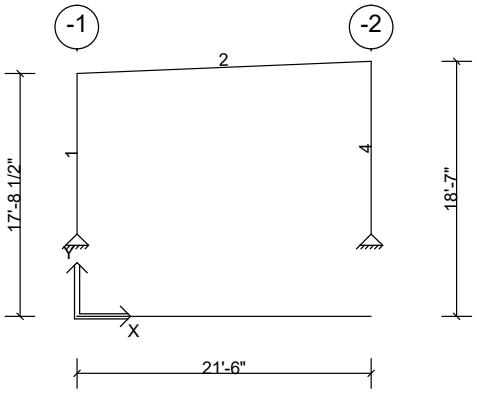
Load Type Descriptions

D	Material Dead Weight	C	Collateral Load
CG	Collateral Load for Gravity Cases	CU	Collateral Load for Wind Cases
L	Roof Live Load	ASL^	Alternate Span Live Load, Shifted Right
^ASL	Alternate Span Live Load, Shifted Left	PL2	Partial Live, Full, 2 Spans
L>	Live - Notional Right	<L	Live - Notional Left
S	Snow Load	US1*	Unbalanced Snow Load 1, Shifted Right
*US1	Unbalanced Snow Load 1, Shifted Left	US2*	Unbalanced Snow Load 2, Shifted Right
*US2	Unbalanced Snow Load 2, Shifted Left	SD	Snow Drift Load
SS	Sliding Snow Load	RS	Rain Surcharge Load
PF1	Partial Load, Full, 1 Span	PH1	Partial Load, Half, 1 Span
PF2	Partial Load, Full, 2 Spans	PH2	Partial Load, Half, 2 Spans
S>	Snow - Notional Right	<S	Snow - Notional Left
SMS	Specified Min. Roof Snow	SMS>	Specified Min. Roof Snow - Notional Right
<SMS	Specified Min. Roof Snow - Notional Left	PS1	Partial Load, Half Span 1
PS2	Partial Load, Half Span 2	W	Wind Load
W1>	Wind Load, Case 1, Right	<W1	Wind Load, Case 1, Left
W2>	Wind Load, Case 2, Right	<W2	Wind Load, Case 2, Left
W3>	Wind Load, Case 3, Right	<W3	Wind Load, Case 3, Left
W4>	Wind Load, Case 4, Right	<W4	Wind Load, Case 4, Left
W5>	Wind Load, Case 5, Right	<W5	Wind Load, Case 5, Left
W6>	Wind Load, Case 6, Right	<W6	Wind Load, Case 6, Left
WP	Wind Load, Parallel to Ridge	WPR	Wind Load, || Ridge, Right
WPL	Wind Load, || Ridge, Left	WPA1	Wind Parallel - Ref A, Case 1
WPA2	Wind Parallel - Ref A, Case 2	WPB1	Wind Parallel - Ref B, Case 1
WPB2	Wind Parallel - Ref B, Case 2	WPC1	Wind Parallel - Ref C, Case 1
WPC2	Wind Parallel - Ref C, Case 2	WPD1	Wind Parallel - Ref D, Case 1
WPD2	Wind Parallel - Ref D, Case 2	WB1>	Wind Brace Reaction, Case 1, Right
<WB1	Wind Brace Reaction, Case 1, Left	WB2>	Wind Brace Reaction, Case 2, Right
<WB2	Wind Brace Reaction, Case 2, Left	WB3>	Wind Brace Reaction, Case 3, Right
<WB3	Wind Brace Reaction, Case 3, Left	WB4>	Wind Brace Reaction, Case 4, Right
<WB4	Wind Brace Reaction, Case 4, Left	WB5>	Wind Brace Reaction, Case 5, Right
<WB5	Wind Brace Reaction, Case 5, Left	WB6>	Wind Brace Reaction, Case 6, Right
<WB6	Wind Brace Reaction, Case 6, Left	MW	Minimum Wind Load
MWB	Minimum Wind Bracing Reaction	E	Seismic Load
E>	Seismic Load, Right	<E	Seismic Load, Left
EG	Vertical Seismic Effect	EG+	Vertical Seismic Effect, Additive
EG-	Vertical Seismic Effect, Subtractive	EB>	Seismic Brace Reaction, Right
<EB	Seismic Brace Reaction, Left	EHP	Seismic High Performance Load
EHP>	Seismic High Performance Load, Right	<EHP	Seismic High Performance Load, Left
EGHP	Vertical Seismic High Performance Effect	EGHP+	Vertical Seismic High Performance Effect, Additive
EGHP-	Vertical Seismic High Performance Effect, Subtractive	EHPB	Seismic High Performance Brace Reaction
EHPB>	Seismic High Performance Brace Reaction, Right	<EHPB	Seismic High Performance Brace Reaction, Left
FL	Floor Live Load	FL*	Alternate Span Floor Live Load, Shifted Right
*FL	Alternate Span Floor Live Load, Shifted Left	FD	Floor Dead Load
AL	Auxiliary Live Load	AL*>	Auxiliary Live Load, Right, Right
*AL>	Auxiliary Live Load, Right, Left	<AL*	Auxiliary Live Load, Left, Right
<*AL	Auxiliary Live Load, Left, Left	AL*	Aux Live, Right
*AL	Aux Live, Left	AL*>(1)	Auxiliary Live Load, Right, Right, Aisle 1
*AL>(1)	Auxiliary Live Load, Right, Left, Aisle 1	<AL*(1)	Auxiliary Live Load, Left, Right, Aisle 1
<*AL(1)	Auxiliary Live Load, Left, Left, Aisle 1	AL*(1)	Aux Live, Right, Aisle 1
*AL(1)	Aux Live, Left, Aisle 1	AL*>(2)	Auxiliary Live Load, Right, Right, Aisle 2
*AL>(2)	Auxiliary Live Load, Right, Left, Aisle 2	<AL*(2)	Auxiliary Live Load, Left, Right, Aisle 2
<*AL(2)	Auxiliary Live Load, Left, Left, Aisle 2	AL*(2)	Aux Live, Right, Aisle 2
*AL(2)	Aux Live, Left, Aisle 2	AL*>(3)	Auxiliary Live Load, Right, Right, Aisle 3
*AL>(3)	Auxiliary Live Load, Right, Left, Aisle 3	<AL*(3)	Auxiliary Live Load, Left, Right, Aisle 3
<*AL(3)	Auxiliary Live Load, Left, Left, Aisle 3	AL*(3)	Aux Live, Right, Aisle 3
*AL(3)	Aux Live, Left, Aisle 3	AL*>(4)	Auxiliary Live Load, Right, Right, Aisle 4
*AL>(4)	Auxiliary Live Load, Right, Left, Aisle 4	<AL*(4)	Auxiliary Live Load, Left, Right, Aisle 4
<*AL(4)	Auxiliary Live Load, Left, Left, Aisle 4	AL*(4)	Aux Live, Right, Aisle 4
*AL(4)	Aux Live, Left, Aisle 4	AL*>(5)	Auxiliary Live Load, Right, Right, Aisle 5
*AL>(5)	Auxiliary Live Load, Right, Left, Aisle 5	<AL*(5)	Auxiliary Live Load, Left, Right, Aisle 5

<*AL(5)	Auxiliary Live Load, Left, Left, Aisle 5
*AL(5)	Aux Live, Left, Aisle 5
ALB>	Aux Live Bracing Reaction, Right
WALB>	Wind, Aux Live Bracing Reaction, Right
ALB>(1)	Aux Live Bracing Reaction, Right, Aisle 1
WALB>(1)	Wind, Aux Live Bracing Reaction, Right, Aisle 1
ALB>(2)	Aux Live Bracing Reaction, Right, Aisle 2
WALB>(2)	Wind, Aux Live Bracing Reaction, Right, Aisle 2
ALB>(3)	Aux Live Bracing Reaction, Right, Aisle 3
WALB>(3)	Wind, Aux Live Bracing Reaction, Right, Aisle 3
ALB>(4)	Aux Live Bracing Reaction, Right, Aisle 4
WALB>(4)	Wind, Aux Live Bracing Reaction, Right, Aisle 4
ALB>(5)	Aux Live Bracing Reaction, Right, Aisle 5
WALB>(5)	Wind, Aux Live Bracing Reaction, Right, Aisle 5
WALB	Wind, Aux Live Bracing Reaction
U0	User Defined Load
U2	User Defined Load - 2
U4	User Defined Load - 4
U6	User Defined Load - 6
U8	User Defined Load - 8
UB	User Brace Reaction
UB2	User Brace Reaction - 2
UB4	User Brace Reaction - 4
UB6	User Brace Reaction - 6
UB8	User Brace Reaction - 8
R	Rain Load
V	Shear
WT1>	Tornado Load, Case 1, Right
WT2>	Tornado Load, Case 2, Right
WT3>	Tornado Load, Case 3, Right
WT4>	Tornado Load, Case 4, Right
WT5>	Tornado Load, Case 5, Right
WT6>	Tornado Load, Case 6, Right
WTP	Tornado Load, Parallel to Ridge
WTPL	Tornado Load, Parallel to Ridge, Left
<WTB1	Tornado Brace Reaction, Case 1, Left
<WTB2	Tornado Brace Reaction, Case 2, Left
<WTB3	Tornado Brace Reaction, Case 3, Left
<WTB4	Tornado Brace Reaction, Case 4, Left
<WTB5	Tornado Brace Reaction, Case 5, Left
<WTB6	Tornado Brace Reaction, Case 6, Left
AL*(5)	Aux Live, Right, Aisle 5
ALB	Aux Live Bracing Reaction
<ALB	Aux Live Bracing Reaction, Left
<WALB	Wind, Aux Live Bracing Reaction, Left
<ALB(1)	Aux Live Bracing Reaction, Left, Aisle 1
<WALB(1)	Wind, Aux Live Bracing Reaction, Left, Aisle 1
<ALB(2)	Aux Live Bracing Reaction, Left, Aisle 2
<WALB(2)	Wind, Aux Live Bracing Reaction, Left, Aisle 2
<ALB(3)	Aux Live Bracing Reaction, Left, Aisle 3
<WALB(3)	Wind, Aux Live Bracing Reaction, Left, Aisle 3
<ALB(4)	Aux Live Bracing Reaction, Left, Aisle 4
<WALB(4)	Wind, Aux Live Bracing Reaction, Left, Aisle 4
<ALB(5)	Aux Live Bracing Reaction, Left, Aisle 5
<WALB(5)	Wind, Aux Live Bracing Reaction, Left, Aisle 5
AD	Auxiliary Dead Load
U1	User Defined Load - 1
U3	User Defined Load - 3
U5	User Defined Load - 5
U7	User Defined Load - 7
U9	User Defined Load - 9
UB1	User Brace Reaction - 1
UB3	User Brace Reaction - 3
UB5	User Brace Reaction - 5
UB7	User Brace Reaction - 7
UB9	User Brace Reaction - 9
T	Temperature Load
WT	Tornado Load
<WT1	Tornado Load, Case 1, Left
<WT2	Tornado Load, Case 2, Left
<WT3	Tornado Load, Case 3, Left
<WT4	Tornado Load, Case 4, Left
<WT5	Tornado Load, Case 5, Left
<WT6	Tornado Load, Case 6, Left
WTPR	Tornado Load, Parallel to Ridge, Right
WTB1>	Tornado Brace Reaction, Case 1, Right
WTB2>	Tornado Brace Reaction, Case 2, Right
WTB3>	Tornado Brace Reaction, Case 3, Right
WTB4>	Tornado Brace Reaction, Case 4, Right
WTB5>	Tornado Brace Reaction, Case 5, Right
WTB6>	Tornado Brace Reaction, Case 6, Right

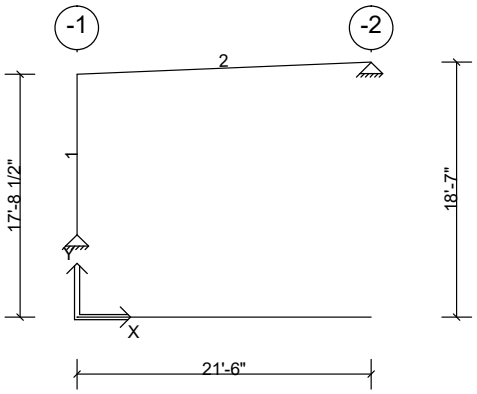
User Defined Frame Point Loads for Cross Section:

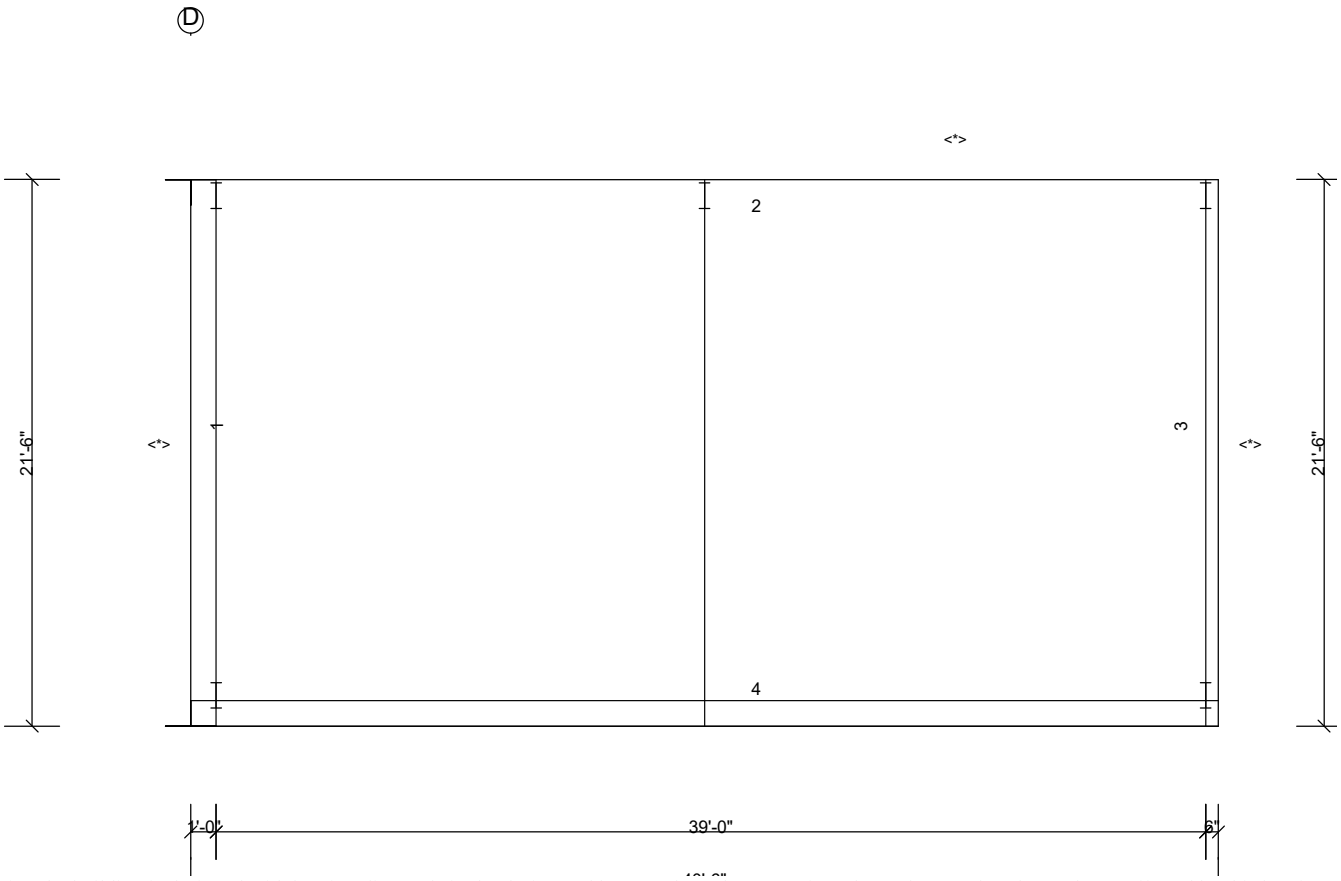
Side	Units	Type	Description	Mag1	Loc1	Offset	H or V	Supp.	Dir.	Coef.	Loc.
4	k	W1>	Torsional Bracing	1.22	18/6/14	NA	NA	N	RIGHT	1.000	OF
4	k	<W1	Torsional Bracing	1.22	18/6/14	NA	NA	N	RIGHT	1.000	OF
4	k	W2>	Torsional Bracing	1.22	18/6/14	NA	NA	N	RIGHT	1.000	OF
4	k	<W2	Torsional Bracing	1.22	18/6/14	NA	NA	N	RIGHT	1.000	OF
4	k	WPR	Torsional Bracing	1.22	18/6/14	NA	NA	N	RIGHT	1.000	OF
4	k	WPL	Torsional Bracing	1.22	18/6/14	NA	NA	N	RIGHT	1.000	OF
4	k	W1>	Weak Axis	-3.44	12/3/8	NA	NA	N	OUT	1.000	WA
4	k	W2>	Weak Axis	-3.44	12/3/8	NA	NA	N	OUT	1.000	WA
4	k	<W1	Weak Axis	3.44	12/3/8	NA	NA	N	IN	1.000	WA
4	k	<W2	Weak Axis	3.44	12/3/8	NA	NA	N	IN	1.000	WA



User Defined Frame Point Loads for Cross Section:

Side	Units	Type	Description	Mag1	Loc1	Offset	H or V	Supp.	Dir.	Coef.	Loc.
1	k	W1>	Torsional Bracing	-1.22	17/8/6	NA	NA	N	LEFT	1.000	OF
1	k	<W1	Torsional Bracing	-1.22	17/8/6	NA	NA	N	LEFT	1.000	OF
1	k	W2>	Torsional Bracing	-1.22	17/8/6	NA	NA	N	LEFT	1.000	OF
1	k	<W2	Torsional Bracing	-1.22	17/8/6	NA	NA	N	LEFT	1.000	OF
1	k	WPR	Torsional Bracing	-1.22	17/8/6	NA	NA	N	LEFT	1.000	OF
1	k	WPL	Torsional Bracing	-1.22	17/8/6	NA	NA	N	LEFT	1.000	OF





<*> The building is designed with bracing diagonals in the designated bays. Column base reactions, base plates and anchor rods are affected by this bracing and diagonals may not be relocated without consulting the building supplier's engineer.

Bracing - Summary Report

Shape: Alternate 3

Shape Alternate 3 is set as an existing shape.

Shape: Alternate 3 ADDITION

Loads and Codes - Shape: Alternate 3 ADDITION

City: Lees Summit **County:** Jackson **State:** Missouri **Country:** United States
Building Code: 2018 International Building Code
Structural: 16AISC - ASD Rainfall: I: 7.00 inches per hour
Building Risk/Occupancy Category: II (Standard Occupancy Structure)
Cold Form: 16AISI - ASD f'c: 3000.00 psi Concrete

Dead and Collateral Loads
Collateral Gravity: 10.00 psf
Collateral Uplift: 0.00 psf
Roof Covering + Second. Dead Load: 2.46 psf
Frame Weight (assumed for seismic):2.50 psf

Roof Live Load
Roof Live Load: 20.00 psf Not Reducible

Wind Load
Wind Speed: Vult: 115.00 (Vasd: 89.08) mph

The 'Envelope Procedure' is Used
Primaries Wind Exposure: C - Kz: 0.879
Parts Wind Exposure Factor: 0.879
Wind Enclosure: Partially Enclosed
Solidity Ratio: 20.0%
Frame Width Factor: Kb: 1.5850
Shielding Factor: Ks: 0.6690
Topographic Factor: Kzt: 1.0000
Ground Elevation Factor: Ke: 0.9636

NOT Windborne Debris Region
Base Elevation: 0/0/0
Site Elevation: 1024.0 ft
Primary Zone Strip Width: 2a: 6/0/0
Parts / Portions Zone Strip Width:
Walls, a: 3/0/0
Roof(s), 0.6h: 10/7/8
Velocity Pressure: qz: 24.38, (C&C) 24.38 psf

Snow Load
Ground Snow Load: pg: 20.00 psf

Flat Roof Snow: pf: 16.80 psf
Design Snow (Sloped): ps: 16.80 psf
Rain Surcharge: 0.00 psf
Specified Minimum Roof Snow: 20.00 psf (Code)
Exposure Factor: 2 Partially Exposed - Ce: 1.00
Snow Importance: Is: 1.000
Thermal Factor: Unheated - Ct: 1.20
Ground / Roof Conversion: 0.70
Obstructed or Not Slippery

Seismic Load
Lateral Force Resisting Systems using Equivalent Force Procedure
Mapped MCE Acceleration: Ss: 12.00 %g
Mapped MCE Acceleration: S1: 7.00 %g
Site Class: Stiff soil (D) - Default
Seismic Importance: Ie: 1.000
Design Acceleration Parameter: Sds: 0.1280
Design Acceleration Parameter: Sd1: 0.1120
Seismic Design Category:: A
Seismic Snow Load: 0.00 psf
% Snow Used in Seismic: 0.00
Diaphragm Condition: Flexible
Fundamental Period Height Used: 18/1/12

Transverse Direction Parameters
System NOT detailed for Seismic
Redundancy Factor: Rho: 1.00
Fundamental Period: Ta: 0.2846
R-Factor: 3.00
Overstrength Factor: Omega: 2.50
Deflection Amplification Factor: Cd: 3.00
Base Shear: V: 0.0100 x W

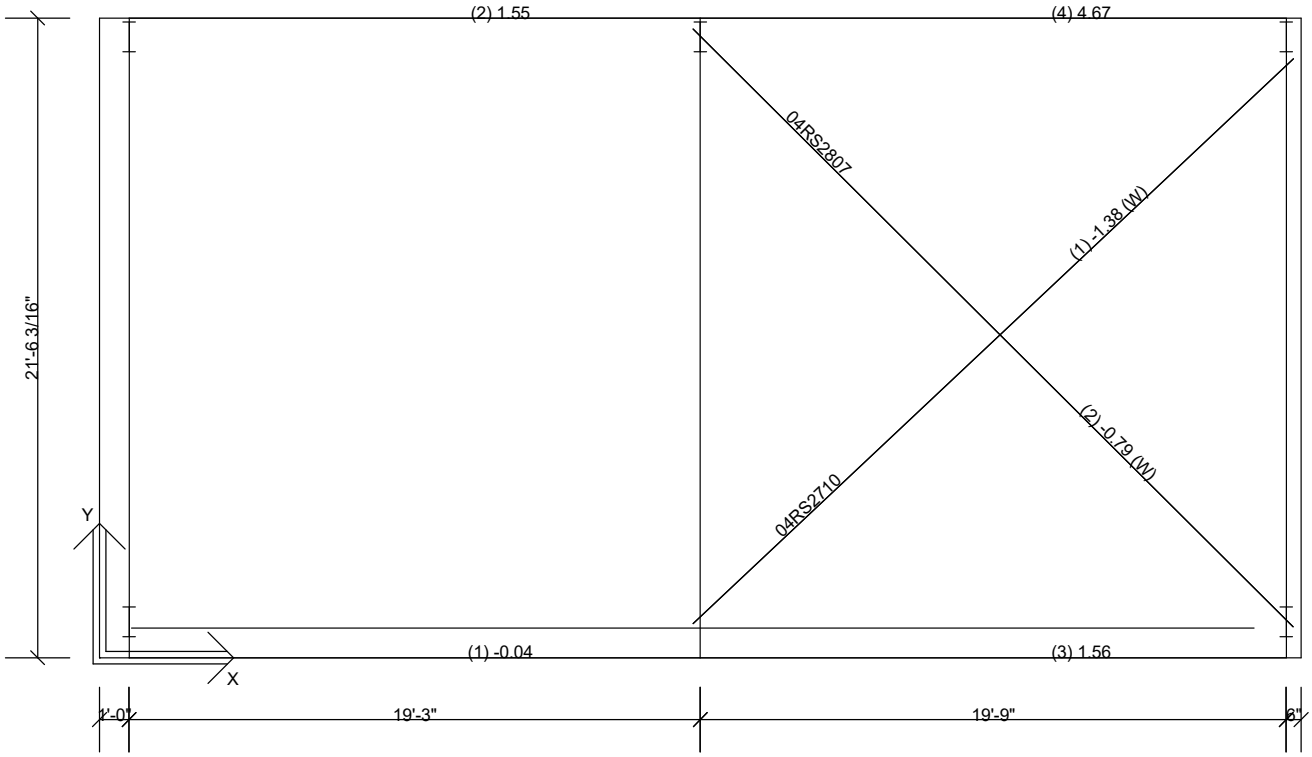
Longitudinal Direction Parameters
System NOT detailed for Seismic
Redundancy Factor: Rho: 1.00
Fundamental Period: Ta: 0.1758
R-Factor: 3.00
Overstrength Factor: Omega: 2.50
Deflection Amplification Factor: Cd: 3.00
Base Shear: V: 0.0100 x W

Deflection Conditions
Frames are vertically supporting: Metal Roof Purlins and Panels
Frames are laterally supporting: Metal Wall Girts and Panels
Purlins are supporting: Metal Roof Panels
Girts are supporting: Metal Wall Panels

Design Load Combinations - Bracing

No.	Origin	Factor	Application	Description
1	System	1.000	1.0 D + 0.6 W1>	D + W1>
2	System	1.000	1.0 D + 0.6 <W1	D + <W1
3	System	1.000	1.0 D + 0.6 W2>	D + W2>
4	System	1.000	1.0 D + 0.6 <W2	D + <W2
5	System	1.000	1.0 D + 0.6 W3>	D + W3>
6	System	1.000	1.0 D + 0.6 <W3	D + <W3
7	System	1.000	1.0 D + 0.6 W4>	D + W4>
8	System	1.000	1.0 D + 0.6 <W4	D + <W4

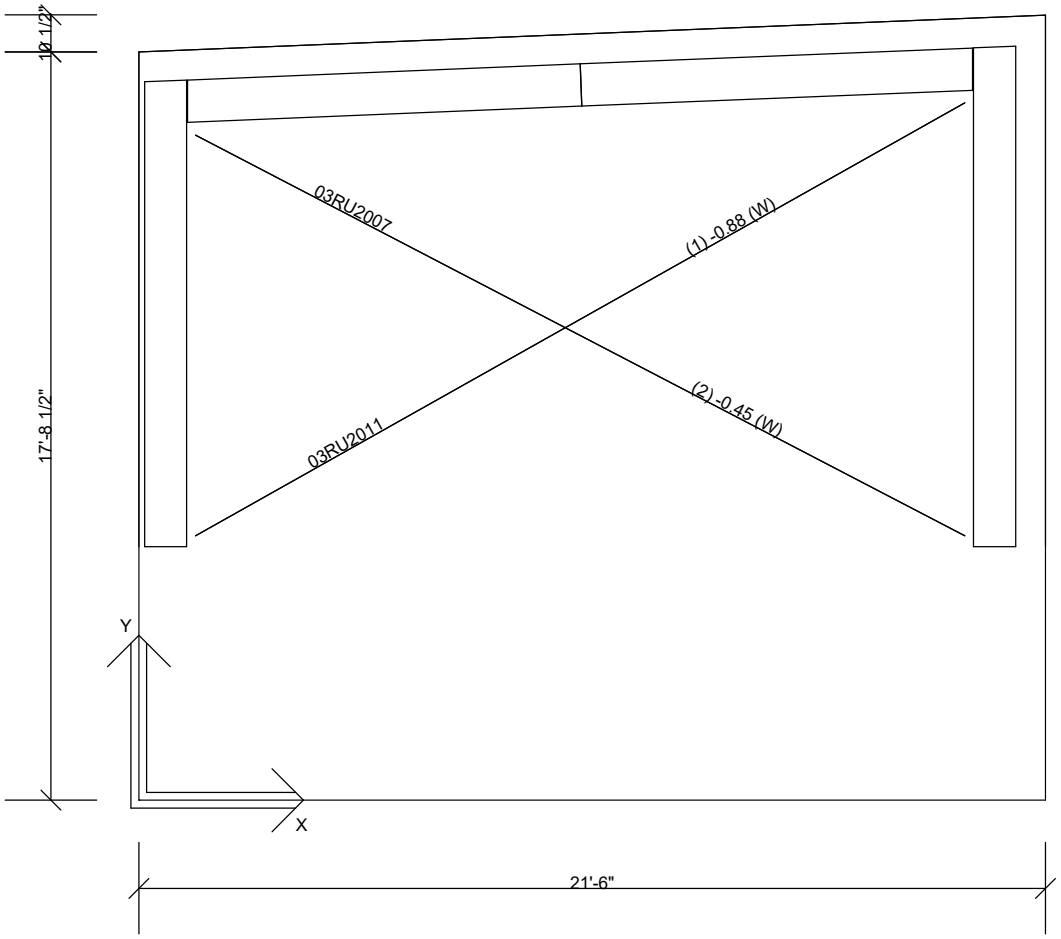
9	System	1.000	0.6 MW	MW - Wall: 1
10	System	1.000	0.6 MW	MW - Wall: 2
11	System	1.000	0.6 MW	MW - Wall: 3
12	System	1.000	0.6 MW	MW - Wall: 4
13	System	1.000	1.0 D + 0.7 E>	D + E>
14	System	1.000	1.0 D + 0.7 <E	D + <E
15	System Derived	1.000	1.0 D + 1.0 CG + 0.6 W1>	D + CG + W1>
16	System Derived	1.000	1.0 D + 1.0 CG + 0.6 <W1	D + CG + <W1
17	System Derived	1.000	1.0 D + 1.0 CG + 0.6 W2>	D + CG + W2>
18	System Derived	1.000	1.0 D + 1.0 CG + 0.6 <W2	D + CG + <W2
19	System Derived	1.000	1.0 D + 1.0 CG + 0.6 W3>	D + CG + W3>
20	System Derived	1.000	1.0 D + 1.0 CG + 0.6 <W3	D + CG + <W3
21	System Derived	1.000	1.0 D + 1.0 CG + 0.6 W4>	D + CG + W4>
22	System Derived	1.000	1.0 D + 1.0 CG + 0.6 <W4	D + CG + <W4
23	System Derived	1.000	0.6 D + 0.6 CU + 0.6 W1>	D + CU + W1>
24	System Derived	1.000	0.6 D + 0.6 CU + 0.6 <W1	D + CU + <W1
25	System Derived	1.000	0.6 D + 0.6 CU + 0.6 W2>	D + CU + W2>
26	System Derived	1.000	0.6 D + 0.6 CU + 0.6 <W2	D + CU + <W2
27	System Derived	1.000	0.6 D + 0.6 CU + 0.6 W3>	D + CU + W3>
28	System Derived	1.000	0.6 D + 0.6 CU + 0.6 <W3	D + CU + <W3
29	System Derived	1.000	0.6 D + 0.6 CU + 0.6 W4>	D + CU + W4>
30	System Derived	1.000	0.6 D + 0.6 CU + 0.6 <W4	D + CU + <W4
31	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W1>	D + CG + S + W1>
32	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W1	D + CG + S + <W1
33	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W2>	D + CG + S + W2>
34	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W2	D + CG + S + <W2
35	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W3>	D + CG + S + W3>
36	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W3	D + CG + S + <W3
37	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W4>	D + CG + S + W4>
38	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W4	D + CG + S + <W4
39	System Derived	1.000	1.0 D + 1.0 CG + 0.7 E> + 0.7 EG+	D + CG + E> + EG+
40	System Derived	1.000	1.0 D + 1.0 CG + 0.7 <E + 0.7 EG+	D + CG + <E + EG+
41	System Derived	1.000	0.6 D + 0.6 CG + 0.7 E> + 0.7 EG-	D + CG + E> + EG-
42	System Derived	1.000	0.6 D + 0.6 CG + 0.7 <E + 0.7 EG-	D + CG + <E + EG-



Diagonal Bracing Member Design Summary: Roof A

Mem. No.	Bracing Shape	Length (ft)	Angle	Design Axial (k)	Seismic Factor	Stress Factor	Stress Ratio	Governing Load Case	Design Status	Comment
1	R 0.5	27.76	46.1	-1.38	1.0000	1.0000	0.302	0.6MW Wall 3	passed	
2	R 0.5	28.52	46.1	-0.79	1.0000	1.0000	0.172	1.0D+1.0CG+0.6W2>	passed	

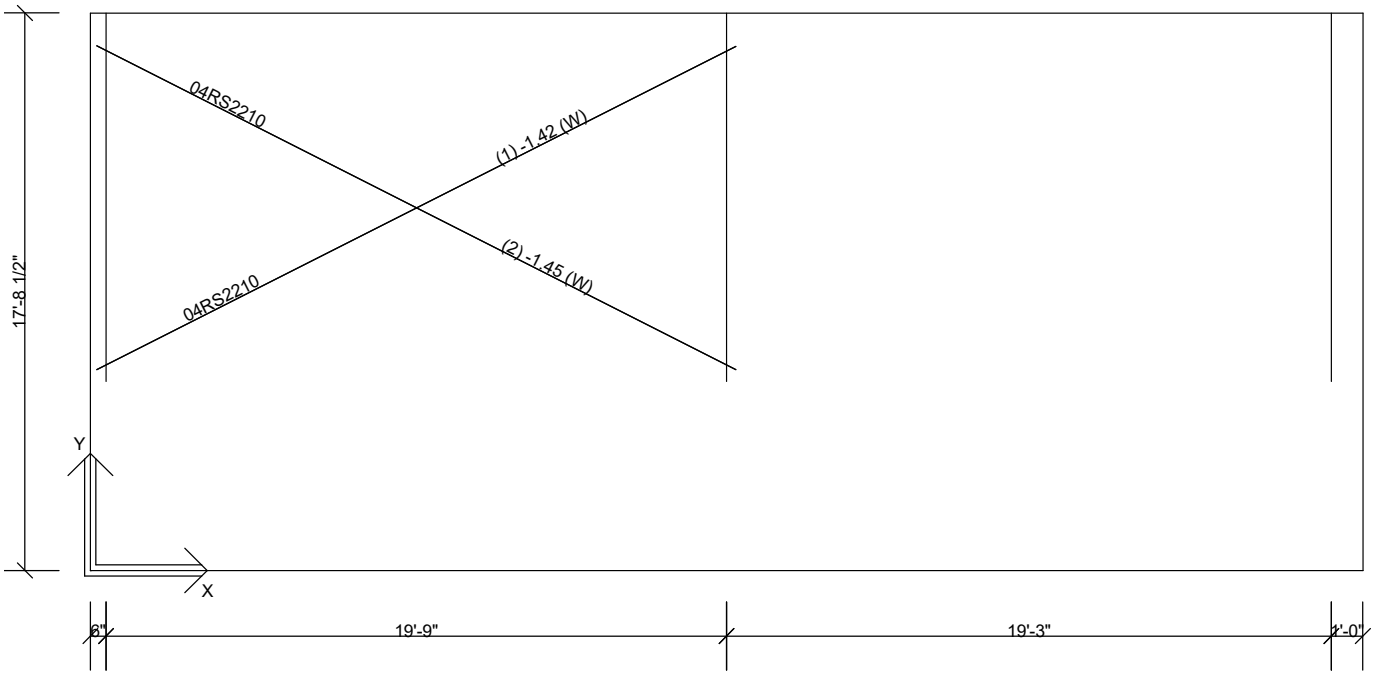
Mem.	End	Diagonal Connection Design Information
1	Left	Slot: Web Thk = 0.134, Load Case 0.6MW Wall 3, Factored F = 1.38, E factor = 1.000, stress increase = 1.000, slot offset, = 3.000, web-flange weld OK, web direct shear OK, web punching shear OK, tensile fracture of web OK, >> PASSED.
	Right	Slot: Web Thk = 0.134, Load Case 0.6MW Wall 3, Factored F = 1.38, E factor = 1.000, stress increase = 1.000, slot offset, = 3.000, web-flange weld OK, web direct shear OK, web punching shear OK, tensile fracture of web OK, >> PASSED.
2	Left	Slot: Web Thk = 0.134, Load Case 1.0D+1.0CG+0.6W2>, Factored F = 0.79, E factor = 1.000, stress increase = 1.000, slot offset, = 3.000, web-flange weld OK, web direct shear OK, web punching shear OK, tensile fracture of web OK, >> PASSED.
	Right	Slot: Web Thk = 0.134, Load Case 1.0D+1.0CG+0.6W2>, Factored F = 0.79, E factor = 1.000, stress increase = 1.000, slot offset, = 3.000, web-flange weld OK, web direct shear OK, web punching shear OK, tensile fracture of web OK, >> PASSED.



Diagonal Bracing Member Design Summary: Endwall 1

Mem. No.	Bracing Shape	Length (ft)	Angle	Design Axial (k)	Seismic Factor	Stress Factor	Stress Ratio	Governing Load Case	Design Status	Comment
1	R 0.375	20.92	30.3	-0.88	1.0000	1.0000	0.343	0.6MW Wall 2	passed	
2	R 0.375	20.56	28.6	-0.45	1.0000	1.0000	0.177	1.0D+1.0CG+0.6W2>	passed	

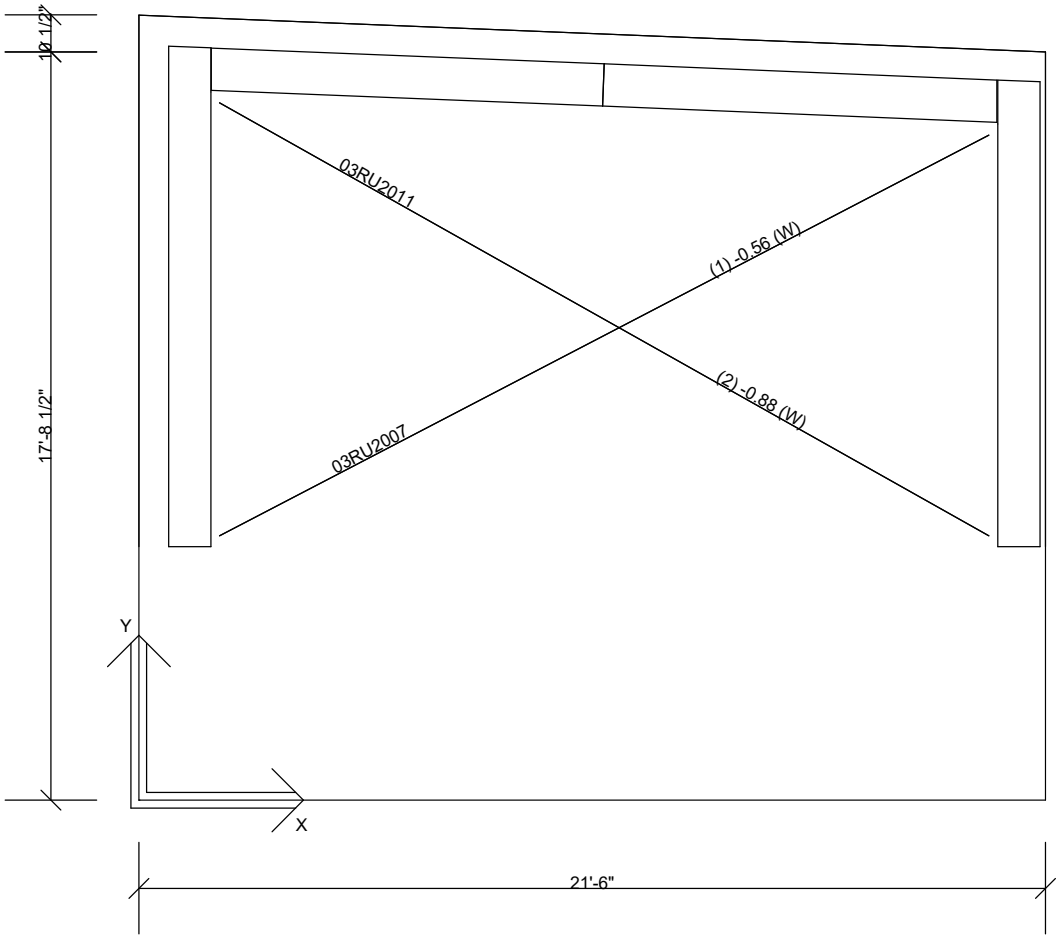
Mem.	End	Diagonal Connection Design Information
1	Left	Clevis Connection Per DP 3.15.2, SQW5x5x0.375, Weld To Flange 0.188 One Side, Web Weld PASSED.
	Right	Clevis Connection Per DP 3.15.2, SQW5x5x0.375, Weld To Flange 0.188 One Side, Web Weld PASSED.
2	Left	Clevis Connection Per DP 3.15.2, SQW5x5x0.375, Weld To Flange 0.188 One Side, Web Weld PASSED.
	Right	Clevis Connection Per DP 3.15.2, SQW5x5x0.375, Weld To Flange 0.188 One Side, Web Weld PASSED.



Diagonal Bracing Member Design Summary: Sidewall 2

Mem. No.	Bracing Shape	Length (ft)	Angle	Design Axial (k)	Seismic Factor	Stress Factor	Stress Ratio	Governing Load Case	Design Status	Comment
1	R 0.5	22.79	30.7	-1.42	1.0000	1.0000	0.310	1.0D+1.0CG+0.6<W2	passed	
2	R 0.5	22.80	30.7	-1.45	1.0000	1.0000	0.316	1.0D+1.0CG+0.6W2>	passed	

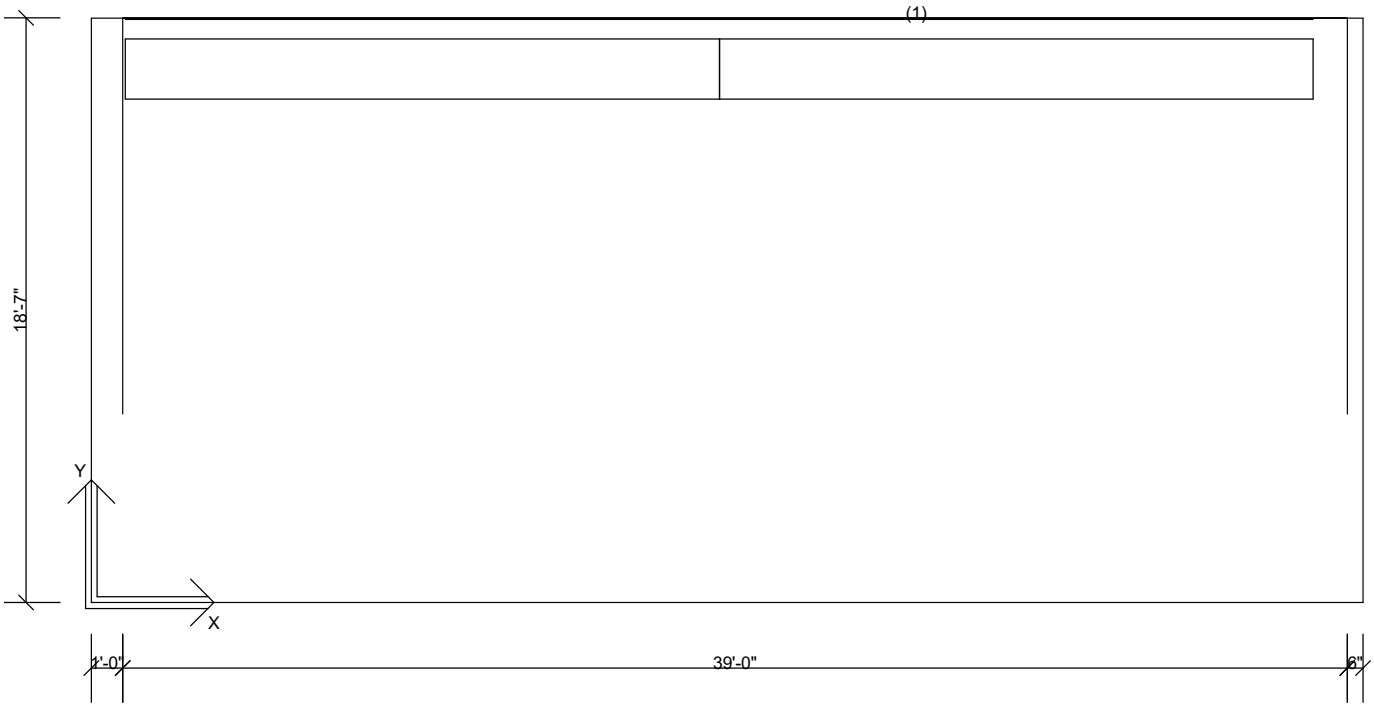
Mem.	End	Diagonal Connection Design Information
1	Left	Slot: Web Thk = 0.134, Load Case 1.0D+1.0CG+0.6<W2, Factored F = 1.42, E factor = 1.000, stress increase = 1.000, slot offset, = 3.000, web-flange weld OK, web direct shear OK, web punching shear OK, tensile fracture of web OK, >> PASSED.
	Right	Slot: Web Thk = 0.134, Load Case 1.0D+1.0CG+0.6<W2, Factored F = 1.42, E factor = 1.000, stress increase = 1.000, slot offset, = 3.000, web-flange weld OK, web direct shear OK, web punching shear OK, tensile fracture of web OK, >> PASSED.
2	Left	Slot: Web Thk = 0.134, Load Case 1.0D+1.0CG+0.6W2>, Factored F = 1.45, E factor = 1.000, stress increase = 1.000, slot offset, = 3.000, web-flange weld OK, web direct shear OK, web punching shear OK, tensile fracture of web OK, >> PASSED.
	Right	Slot: Web Thk = 0.134, Load Case 1.0D+1.0CG+0.6W2>, Factored F = 1.45, E factor = 1.000, stress increase = 1.000, slot offset, = 3.000, web-flange weld OK, web direct shear OK, web punching shear OK, tensile fracture of web OK, >> PASSED.



Diagonal Bracing Member Design Summary: Endwall 3

Mem. No.	Bracing Shape	Length (ft)	Angle	Design Axial (k)	Seismic Factor	Stress Factor	Stress Ratio	Governing Load Case	Design Status	Comment
1	R 0.375	20.56	28.6	-0.56	1.0000	1.0000	0.217	1.0D+1.0CG+0.6W4>	passed	
2	R 0.375	20.92	30.3	-0.88	1.0000	1.0000	0.343	0.6MW Wall 2	passed	

Mem.	End	Diagonal Connection Design Information
1	Left	Clevis Connection Per DP 3.15.2, SQW5x5x0.375, Weld To Flange 0.188 One Side, Web Weld PASSED.
	Right	Clevis Connection Per DP 3.15.2, SQW5x5x0.375, Weld To Flange 0.188 One Side, Web Weld PASSED.
2	Left	Clevis Connection Per DP 3.15.2, SQW5x5x0.375, Weld To Flange 0.188 One Side, Web Weld PASSED.
	Right	Clevis Connection Per DP 3.15.2, SQW5x5x0.375, Weld To Flange 0.188 One Side, Web Weld PASSED.


(1)
18'-7"
Y
X
1'-0"
39'-0"
6"

Secondary - Summary Report

Shape Alternate 3 is set as an existing shape.

Loads and Codes - Shape: Alternate 3 ADDITION

City: Lees Summit **County:** Jackson **State:** Missouri **Country:** United States
Building Code: 2018 International Building Code
Building Risk/Occupancy Category: II (Standard Occupancy Structure)
Structural: 16AISC - ASD
Cold Form: 16AISI - ASD
Rainfall: I: 7.00 inches per hour
f'c: 3000.00 psi Concrete

Dead and Collateral Loads
Collateral Gravity: 10.00 psf
Collateral Uplift: 0.00 psf
Roof Covering + Second. Dead Load: 2.46 psf
Frame Weight (assumed for seismic):2.50 psf

Roof Live Load
Roof Live Load: 20.00 psf Not Reducible

Wind Load
Wind Speed: Vult: 115.00 (Vasd: 89.08) mph

The 'Envelope Procedure' is Used
Primaries Wind Exposure: C - Kz: 0.879
Parts Wind Exposure Factor: 0.879
Wind Enclosure: Partially Enclosed
Solidity Ratio: 20.0%
Frame Width Factor: Kb: 1.5850
Shielding Factor: Ks: 0.6690
Topographic Factor: Kzt: 1.0000
Ground Elevation Factor: Ke: 0.9636

NOT Windborne Debris Region
Base Elevation: 0/0/0
Site Elevation: 1024.0 ft
Primary Zone Strip Width: 2a: 6/0/0
Parts / Portions Zone Strip Width:
Walls, a: 3/0/0
Roof(s), 0.6h: 10/7/8
Velocity Pressure: qz: 24.38, (C&C) 24.38 psf

Snow Load
Ground Snow Load: pg: 20.00 psf

Flat Roof Snow: pf: 16.80 psf
Design Snow (Sloped): ps: 16.80 psf
Rain Surcharge: 0.00 psf
Specified Minimum Roof Snow: 20.00 psf (Code)
Exposure Factor: 2 Partially Exposed - Ce: 1.00
Snow Importance: Is: 1.000
Thermal Factor: Unheated - Ct: 1.20
Ground / Roof Conversion: 0.70
Obstructed or Not Slippery

Seismic Load
Lateral Force Resisting Systems using Equivalent Force Procedure
Mapped MCE Acceleration: Ss: 12.00 %g
Mapped MCE Acceleration: S1: 7.00 %g
Site Class: Stiff soil (D) - Default
Seismic Importance: Ie: 1.000
Design Acceleration Parameter: Sds: 0.1280
Design Acceleration Parameter: Sd1: 0.1120
Seismic Design Category:: A
Seismic Snow Load: 0.00 psf
% Snow Used in Seismic: 0.00
Diaphragm Condition: Flexible
Fundamental Period Height Used: 18/1/12

Transverse Direction Parameters
System NOT detailed for Seismic
Redundancy Factor: Rho: 1.00
Fundamental Period: Ta: 0.2846
R-Factor: 3.00
Overstrength Factor: Omega: 2.50
Deflection Amplification Factor: Cd: 3.00
Base Shear: V: 0.0100 x W

Longitudinal Direction Parameters
System NOT detailed for Seismic
Redundancy Factor: Rho: 1.00
Fundamental Period: Ta: 0.1758
R-Factor: 3.00
Overstrength Factor: Omega: 2.50
Deflection Amplification Factor: Cd: 3.00
Base Shear: V: 0.0100 x W

Design Load Combinations - Purlin

No.	Origin	Factor	Application	Description
1	System	1.000	1.0 D + 1.0 CG + 1.0 L	D + CG + L
2	System	1.000	1.0 D + 1.0 CG + 1.0 SMS	D + CG + SMS
3	System	1.000	1.0 D + 1.0 CG + 1.0 PF1	D + CG + PF1(Span 1)
4	System	1.000	1.0 D + 1.0 CG + 1.0 PF1	D + CG + PF1(Span 2)
5	System Derived	1.000	1.0 D + 1.0 CG + 0.6 W1> + 0.6 WB1>	D + CG + W1> + WB1>
6	System Derived	1.000	1.0 D + 1.0 CG + 0.6 <W2 + 0.6 WB1>	D + CG + <W2 + WB1>
7	System Derived	1.000	0.6 D + 0.6 CU + 0.6 W1> + 0.6 WB1>	D + CU + W1> + WB1>
8	System Derived	1.000	0.6 D + 0.6 CU + 0.6 <W2 + 0.6 WB1>	D + CU + <W2 + WB1>
9	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 W1> + 0.45 WB1>	D + CG + L + W1> + WB1>
10	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 <W2 + 0.45 WB1>	D + CG + L + <W2 + WB1>
11	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W1> + 0.45 WB1>	D + CG + S + W1> + WB1>
12	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W2 + 0.45 WB1>	D + CG + S + <W2 + WB1>
13	System Derived	1.000	1.0 D + 1.0 CG + 0.6 W1> + 0.6 <WB1	D + CG + W1> + <WB1
14	System Derived	1.000	1.0 D + 1.0 CG + 0.6 <W2 + 0.6 <WB1	D + CG + <W2 + <WB1
15	System Derived	1.000	0.6 D + 0.6 CU + 0.6 W1> + 0.6 <WB1	D + CU + W1> + <WB1
16	System Derived	1.000	0.6 D + 0.6 CU + 0.6 <W2 + 0.6 <WB1	D + CU + <W2 + <WB1
17	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 W1> + 0.45 <WB1	D + CG + L + W1> + <WB1
18	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 <W2 + 0.45 <WB1	D + CG + L + <W2 + <WB1
19	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W1> + 0.45 <WB1	D + CG + S + W1> + <WB1
20	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W2 + 0.45 <WB1	D + CG + S + <W2 + <WB1
21	System Derived	1.000	1.0 D + 1.0 CG + 0.6 W1> + 0.6 WB2>	D + CG + W1> + WB2>
22	System Derived	1.000	1.0 D + 1.0 CG + 0.6 <W2 + 0.6 WB2>	D + CG + <W2 + WB2>
23	System Derived	1.000	0.6 D + 0.6 CU + 0.6 W1> + 0.6 WB2>	D + CU + W1> + WB2>

24	System Derived	1.000	0.6 D + 0.6 CU + 0.6 <W2 + 0.6 WB2>	D + CU + <W2 + WB2>
25	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 W1> + 0.45 WB2>	D + CG + L + W1> + WB2>
26	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 <W2 + 0.45 WB2>	D + CG + L + <W2 + WB2>
27	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W1> + 0.45 WB2>	D + CG + S + W1> + WB2>
28	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W2 + 0.45 WB2>	D + CG + S + <W2 + WB2>
29	System Derived	1.000	1.0 D + 1.0 CG + 0.6 W1> + 0.6 <WB2	D + CG + W1> + <WB2
30	System Derived	1.000	1.0 D + 1.0 CG + 0.6 <W2 + 0.6 <WB2	D + CG + <W2 + <WB2
31	System Derived	1.000	0.6 D + 0.6 CU + 0.6 W1> + 0.6 <WB2	D + CU + W1> + <WB2
32	System Derived	1.000	0.6 D + 0.6 CU + 0.6 <W2 + 0.6 <WB2	D + CU + <W2 + <WB2
33	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 W1> + 0.45 <WB2	D + CG + L + W1> + <WB2
34	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 <W2 + 0.45 <WB2	D + CG + L + <W2 + <WB2
35	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W1> + 0.45 <WB2	D + CG + S + W1> + <WB2
36	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W2 + 0.45 <WB2	D + CG + S + <W2 + <WB2
37	System Derived	1.000	1.0 D + 1.0 CG + 0.6 W1> + 0.6 WB3>	D + CG + W1> + WB3>
38	System Derived	1.000	1.0 D + 1.0 CG + 0.6 <W2 + 0.6 WB3>	D + CG + <W2 + WB3>
39	System Derived	1.000	0.6 D + 0.6 CU + 0.6 W1> + 0.6 WB3>	D + CU + W1> + WB3>
40	System Derived	1.000	0.6 D + 0.6 CU + 0.6 <W2 + 0.6 WB3>	D + CU + <W2 + WB3>
41	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 W1> + 0.45 WB3>	D + CG + L + W1> + WB3>
42	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 <W2 + 0.45 WB3>	D + CG + L + <W2 + WB3>
43	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W1> + 0.45 WB3>	D + CG + S + W1> + WB3>
44	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W2 + 0.45 WB3>	D + CG + S + <W2 + WB3>
45	System Derived	1.000	1.0 D + 1.0 CG + 0.6 W1> + 0.6 <WB3	D + CG + W1> + <WB3
46	System Derived	1.000	1.0 D + 1.0 CG + 0.6 <W2 + 0.6 <WB3	D + CG + <W2 + <WB3
47	System Derived	1.000	0.6 D + 0.6 CU + 0.6 W1> + 0.6 <WB3	D + CU + W1> + <WB3
48	System Derived	1.000	0.6 D + 0.6 CU + 0.6 <W2 + 0.6 <WB3	D + CU + <W2 + <WB3
49	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 W1> + 0.45 <WB3	D + CG + L + W1> + <WB3
50	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 <W2 + 0.45 <WB3	D + CG + L + <W2 + <WB3
51	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W1> + 0.45 <WB3	D + CG + S + W1> + <WB3
52	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W2 + 0.45 <WB3	D + CG + S + <W2 + <WB3
53	System Derived	1.000	1.0 D + 1.0 CG + 0.6 W1> + 0.6 WB4>	D + CG + W1> + WB4>
54	System Derived	1.000	1.0 D + 1.0 CG + 0.6 <W2 + 0.6 WB4>	D + CG + <W2 + WB4>
55	System Derived	1.000	0.6 D + 0.6 CU + 0.6 W1> + 0.6 WB4>	D + CU + W1> + WB4>
56	System Derived	1.000	0.6 D + 0.6 CU + 0.6 <W2 + 0.6 WB4>	D + CU + <W2 + WB4>
57	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 W1> + 0.45 WB4>	D + CG + L + W1> + WB4>
58	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 <W2 + 0.45 WB4>	D + CG + L + <W2 + WB4>
59	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W1> + 0.45 WB4>	D + CG + S + W1> + WB4>
60	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W2 + 0.45 WB4>	D + CG + S + <W2 + WB4>
61	System Derived	1.000	1.0 D + 1.0 CG + 0.6 W1> + 0.6 <WB4	D + CG + W1> + <WB4
62	System Derived	1.000	1.0 D + 1.0 CG + 0.6 <W2 + 0.6 <WB4	D + CG + <W2 + <WB4
63	System Derived	1.000	0.6 D + 0.6 CU + 0.6 W1> + 0.6 <WB4	D + CU + W1> + <WB4
64	System Derived	1.000	0.6 D + 0.6 CU + 0.6 <W2 + 0.6 <WB4	D + CU + <W2 + <WB4
65	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 W1> + 0.45 <WB4	D + CG + L + W1> + <WB4
66	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 <W2 + 0.45 <WB4	D + CG + L + <W2 + <WB4
67	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W1> + 0.45 <WB4	D + CG + S + W1> + <WB4
68	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W2 + 0.45 <WB4	D + CG + S + <W2 + <WB4
69	System Derived	1.000	1.0 D + 1.0 CG + 0.7 EB> + 0.7 EG+	D + CG + EB> + EG+
70	System Derived	1.000	0.6 D + 0.6 CU + 0.7 EB> + 0.7 EG-	D + CU + EB> + EG-
71	System Derived	1.000	1.0 D + 1.0 CG + 0.7 <EB + 0.7 EG+	D + CG + <EB + EG+
72	System Derived	1.000	0.6 D + 0.6 CU + 0.7 <EB + 0.7 EG-	D + CU + <EB + EG-

Design Load Combinations - Girt

No.	Origin	Factor	Application	Description
1	System	1.000	0.6 W1>	W1>
2	System	1.000	0.6 <W2	<W2

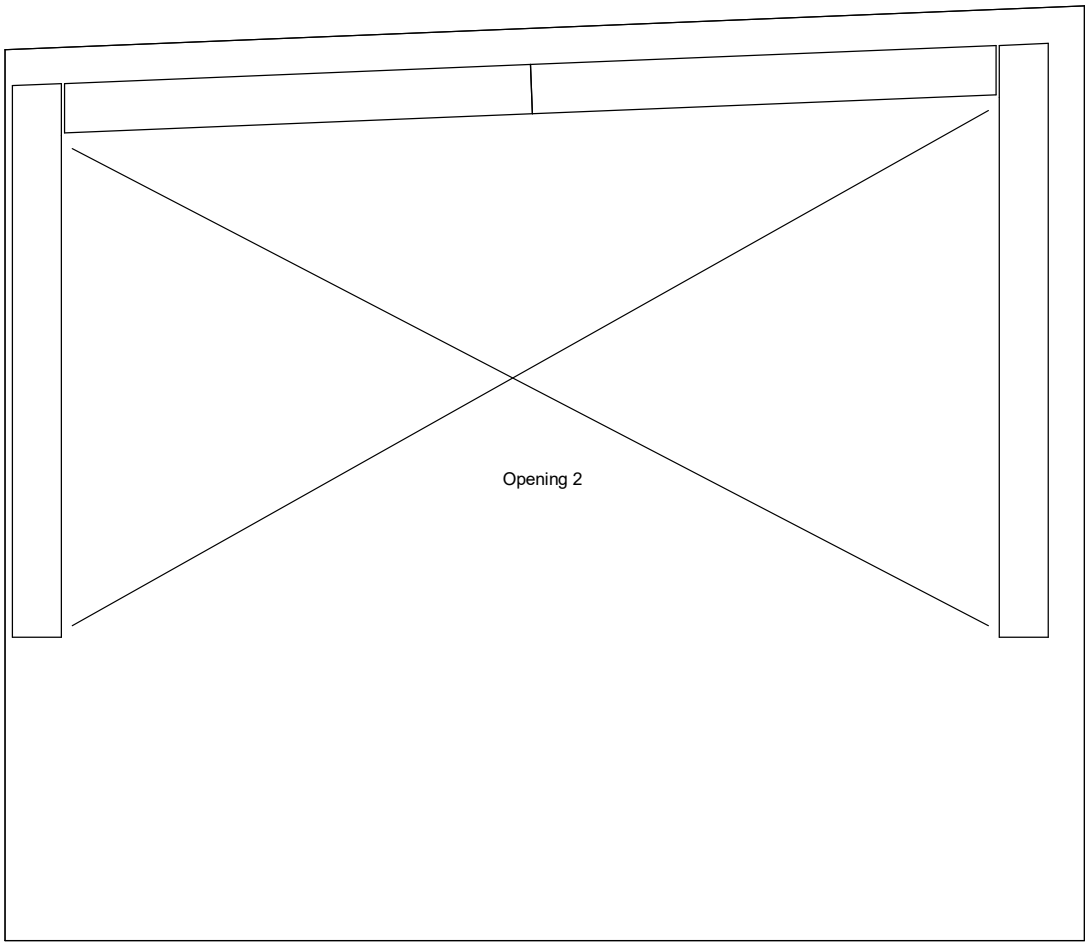
Deflection Load Combinations - Purlin

No.	Origin	Factor	Deflection	Application	Description
1	System	1.000	150	1.0 L	L
2	System	1.000	180	1.0 SMS	SMS
3	System	1.000	180	0.42 W1>	W1>
4	System	1.000	180	0.42 <W2	<W2

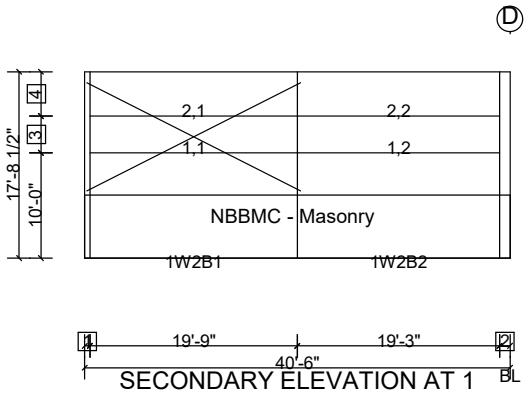
Deflection Load Combinations - Girt

No.	Origin	Factor	Deflection	Application	Description
1	System	1.000	90	0.42 W1>	W1>
2	System	1.000	90	0.42 <W2	<W2

Wall: 1



Wall: 2



Dimension Key
1 6"
2 1'-0"
3 3'-6"
4 4'-2 1/2"

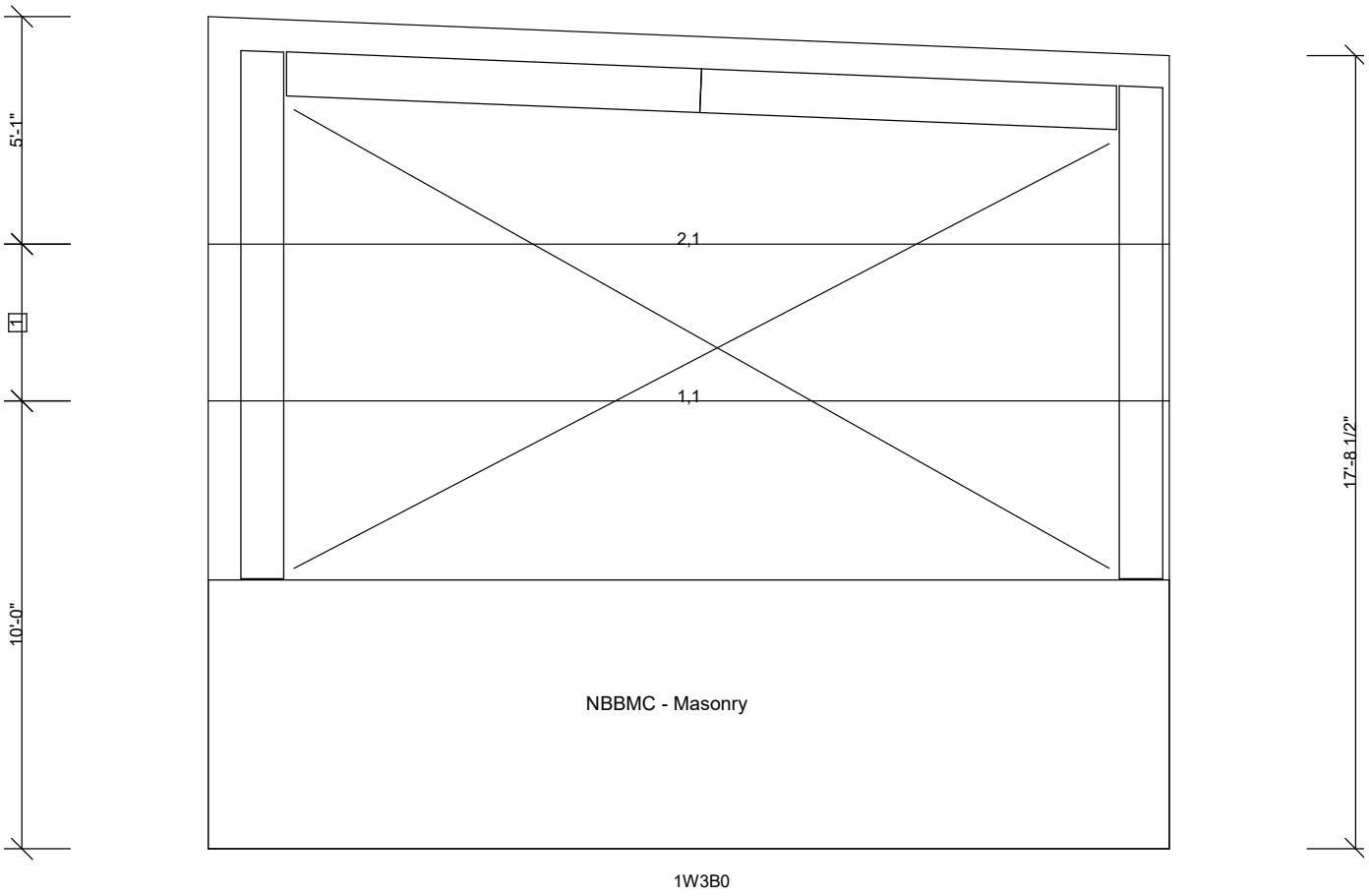
Maximum Secondary Designs for Shape Alternate 3 ADDITION on Side 2

Des Id	Len (ft)	Description - Fy(ksi)	Design Status	Detail Lap (in.)	Location	Stress Condition						
						% Axial	% Bnd	% Shr	% Cmb	% Wcp	Ld Cs	Lap (in.)
1,1	19.75	8.50x0.113 Z Sim-60.0	Yes	0.0	Interior	0.00	0.63	0.00	0.00	0.00	1	
1,2	19.25	8.50x0.073 Z Sim-60.0	Yes	0.0	Interior	0.00	1.01	0.00	0.00	0.00	1	
2,1	19.75	8.50x0.073 Z Sim-60.0	Yes	0.0	Interior	0.00	0.83	0.00	0.00	0.00	1	
2,2	19.25	8.50x0.073 Z Sim-60.0	Yes	0.0	Interior	0.00	0.78	0.00	0.00	0.00	1	

Maximum Secondary Deflections for Shape Alternate 3 ADDITION on Side 2

Design Id	Segment	Deflection(in.)	Ratio	Location(ft)	Load Case	Description
1	1	0.46	(L/513)	10.00	1	0.42W1>
1	2	0.64	(L/362)	29.25	1	0.42W1>
2	1	0.55	(L/429)	10.00	1	0.42W1>
2	2	0.50	(L/463)	29.25	1	0.42W1>

Wall: 3



Dimension Key
1 3'-6"

Maximum Secondary Designs for Shape Alternate 3 ADDITION on Side 3

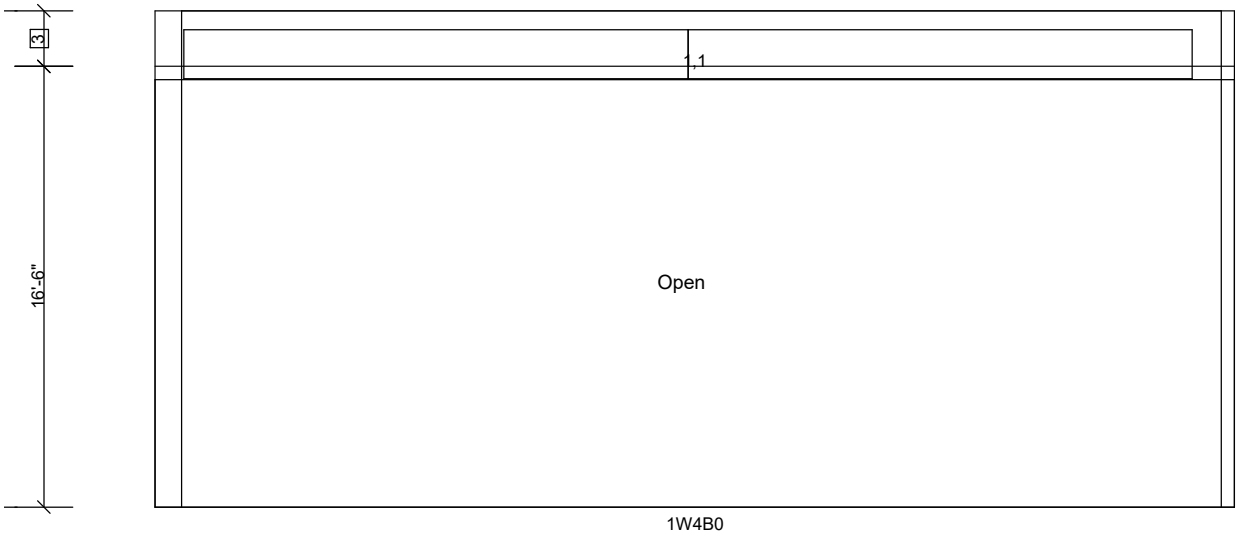
Des Id	Len (ft)	Description - Fy(ksi)	Design Status	Detail Lap (in.)	Location	Stress Condition						
						% Axial	% Bnd	% Shr	% Cmb	% Wcp	Ld Cs	Lap (in.)
1,1	21.50	8.50x0.113 Z Sim-60.0	Yes	0.0	Interior	0.00	0.75	0.00	0.00	0.00	1	
2,1	21.50	8.50x0.113 Z Sim-60.0	Yes	0.0	Interior	0.00	0.63	0.00	0.00	0.00	1	

Maximum Secondary Deflections for Shape Alternate 3 ADDITION on Side 3

Design Id	Segment	Deflection(in.)	Ratio	Location(ft)	Load Case	Description
1	1	0.65	(L/400)	10.50	1	0.42W1>
2	1	0.55	(L/471)	10.50	1	0.42W1>

Wall: 4

Ⓓ



Dimension Key
1 1'-0"
2 6"
3 2'-1"

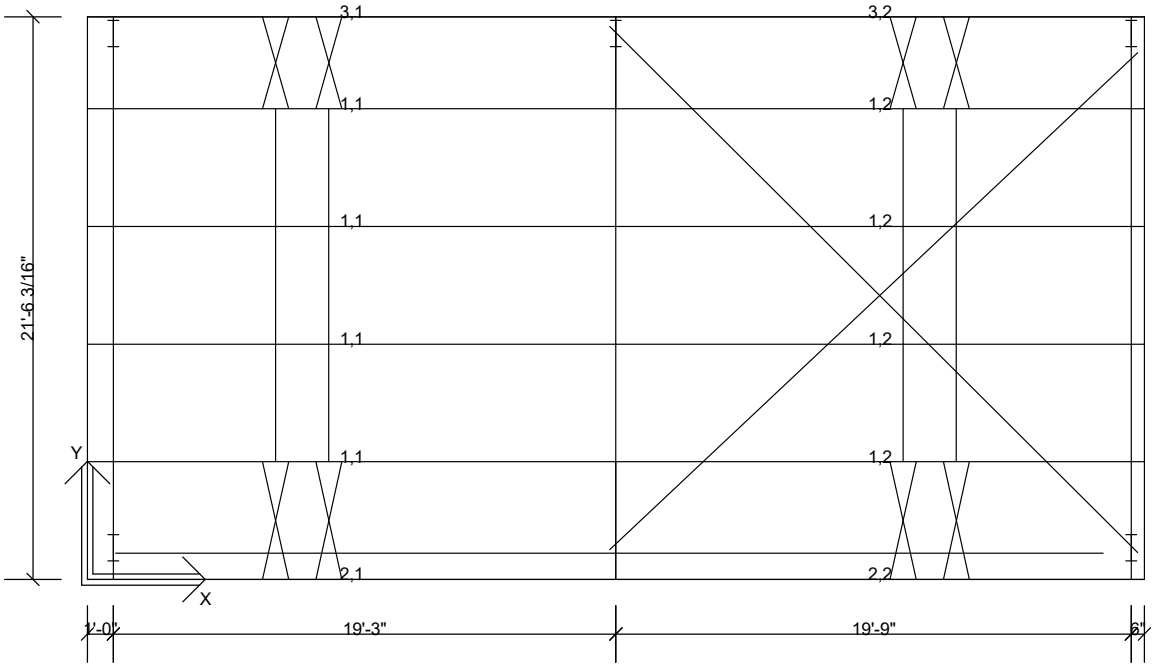
Maximum Secondary Designs for Shape Alternate 3 ADDITION on Side 4

Des Id	Len (ft)	Description - Fy(ksi)	Design Status	Detail Lap (in.)	Location	Stress Condition						
						% Axial	% Bnd	% Shr	% Cmb	% Wcp	Ld Cs	Lap (in.)
1,1	40.50	8.50x0.113 Z Sim-60.0	Yes	0.0	Interior	0.00	0.84	0.01	0.38	0.00	1	

Maximum Secondary Deflections for Shape Alternate 3 ADDITION on Side 4

Design Id	Segment	Deflection(in.)	Ratio	Location(ft)	Load Case	Description
1	1	2.02	(L/231)	20.50	1	0.42W1>

Roof: A



Maximum Secondary Designs for Shape Alternate 3 ADDITION on Side A

Des Id	Len (ft)	Description - Fy(ksi)	Design Status	Detail Lap (in.)	Location	Stress Condition % Axial	% Bnd	% Shr	% Cmb	% Wcp	Ld Cs	Lap (in.)
1,1	20.25	8.50x0.068 Z Con-60.0	Yes	34.5	Interior	0.00	0.77	0.41	0.87	0.00	63	
					Right	0.00	0.72	0.28	0.98	1.00	66	34.5
1,2	20.25	8.50x0.068 Z Con-60.0	Yes	34.5	Left	0.00	0.72	0.32	0.98	1.00	66	34.5
					Interior	0.00	1.01	0.00	0.79	0.00	63	
2,1	20.25	8.50x0.060 EZ Sim-60.0	Yes	0.0	Interior	0.02	0.59	0.00	0.00	0.00	66	
2,2	20.25	8.50x0.060 EZ Sim-60.0	Yes	0.0	Interior	0.05	0.78	0.00	0.84	0.00	31	
3,1	20.25	8.50x0.060 EZ Sim-60.0	Yes	0.0	Interior	0.02	0.47	0.00	0.48	0.00	26	
3,2	20.25	8.50x0.060 EZ Sim-60.0	Yes	0.0	Interior	0.10	0.60	0.00	0.72	0.00	31	

Maximum Secondary Deflections for Shape Alternate 3 ADDITION on Side A

Design Id	Segment	Deflection(in.)	Ratio	Location(ft)	Load Case	Description
1	1	-0.28	(L/821)	8.50	2	1.0SMS
1	2	0.68	(L/350)	31.13	3	0.42W1>
2	1	0.48	(L/479)	10.50	3	0.42W1>
2	2	0.75	(L/316)	29.75	3	0.42W1>
3	1	0.38	(L/613)	10.50	3	0.42W1>
3	2	0.58	(L/407)	29.75	3	0.42W1>

Purlin Anchorage Forces for Shape Alternate 3 ADDITION, Roof A, Panel Type is MR24, Pitch = 0.488:12 AR Clip if req'd - ARC1 Flipped Orientation=1

Bay	Thickness	Load(psf)	Ld Case	# Purlins	Length	Simple?	Diaphragm Width	Allowable Defl	Actual Defl
1	0.068	-31.18	1	4	20.25	N	21.52	1.350	0.256

2	0.068	-31.18	1	4	20.25	N	21.52	1.350	0.256

Reference Frm-Line	Located @	Force per Anch. Line(k)	Force per Anchor	Anch. Allow	Req'd AR Anchors	Actual AR, STD	Required Stiffness	Available Stiffness	Diaphragm Allow	Diaphragm Shr	Diaphragm Stress Ratio
1(0.00)	Frame	0.06U	0.01U (k)	0.14	0	0, 0	0.284	1.469	0.069	0.002	0.031
	BR.1		0.27T (in-k)	4.35	1	1, 0			0.069	0.000	0.000
	BR.2		0.20T (in-k)	4.35	1	1, 0			0.069	0.000	0.000
2(20.25)	Frame	0.12U	0.02U (k)	0.28	0	0, 0	0.568	4.081	0.069	0.002	0.028
	BR.1		0.20T (in-k)	4.35	1	1, 0			0.069	0.000	0.000
	BR.2		0.27T (in-k)	4.35	1	1, 0			0.069	0.000	0.000
3(40.50)	Frame	0.06U	0.01U (k)	0.14	0	0, 0	0.284	1.469	0.069	0.002	0.031

Framing - Summary Report

Shape Alternate 3 is set as an existing shape.

Loads and Codes - Shape: Alternate 3 ADDITION

City: Lees Summit **County:** Jackson **State:** Missouri **Country:** United States
Building Code: 2018 International Building Code
Structural: 16AISC - ASD
Rainfall: I: 7.00 inches per hour
Building Risk/Occupancy Category: II (Standard Occupancy Structure)
Cold Form: 16AISI - ASD
f'c: 3000.00 psi Concrete

Dead and Collateral Loads
Collateral Gravity: 10.00 psf
Collateral Uplift: 0.00 psf
Roof Covering + Second. Dead Load: 2.46 psf
Frame Weight (assumed for seismic):2.50 psf

Roof Live Load
Roof Live Load: 20.00 psf Not Reducible

Wind Load
Wind Speed: Vult: 115.00 (Vasd: 89.08) mph

The 'Envelope Procedure' is Used
Primaries Wind Exposure: C - Kz: 0.879
Parts Wind Exposure Factor: 0.879
Wind Enclosure: Partially Enclosed
Solidity Ratio: 20.0%
Frame Width Factor: Kb: 1.5850
Shielding Factor: Ks: 0.6690
Topographic Factor: Kzt: 1.0000
Ground Elevation Factor: Ke: 0.9636

NOT Windborne Debris Region
Base Elevation: 0/0/0
Site Elevation: 1024.0 ft
Primary Zone Strip Width: 2a: 6/0/0
Parts / Portions Zone Strip Width:
Walls, a: 3/0/0
Roof(s), 0.6h: 10/7/8
Velocity Pressure: qz: 24.38, (C&C) 24.38 psf

Snow Load
Ground Snow Load: pg: 20.00 psf

Flat Roof Snow: pf: 16.80 psf
Design Snow (Sloped): ps: 16.80 psf
Rain Surcharge: 0.00 psf
Specified Minimum Roof Snow: 20.00 psf (Code)
Exposure Factor: 2 Partially Exposed - Ce: 1.00
Snow Importance: Is: 1.000
Thermal Factor: Unheated - Ct: 1.20
Ground / Roof Conversion: 0.70
Obstructed or Not Slippery

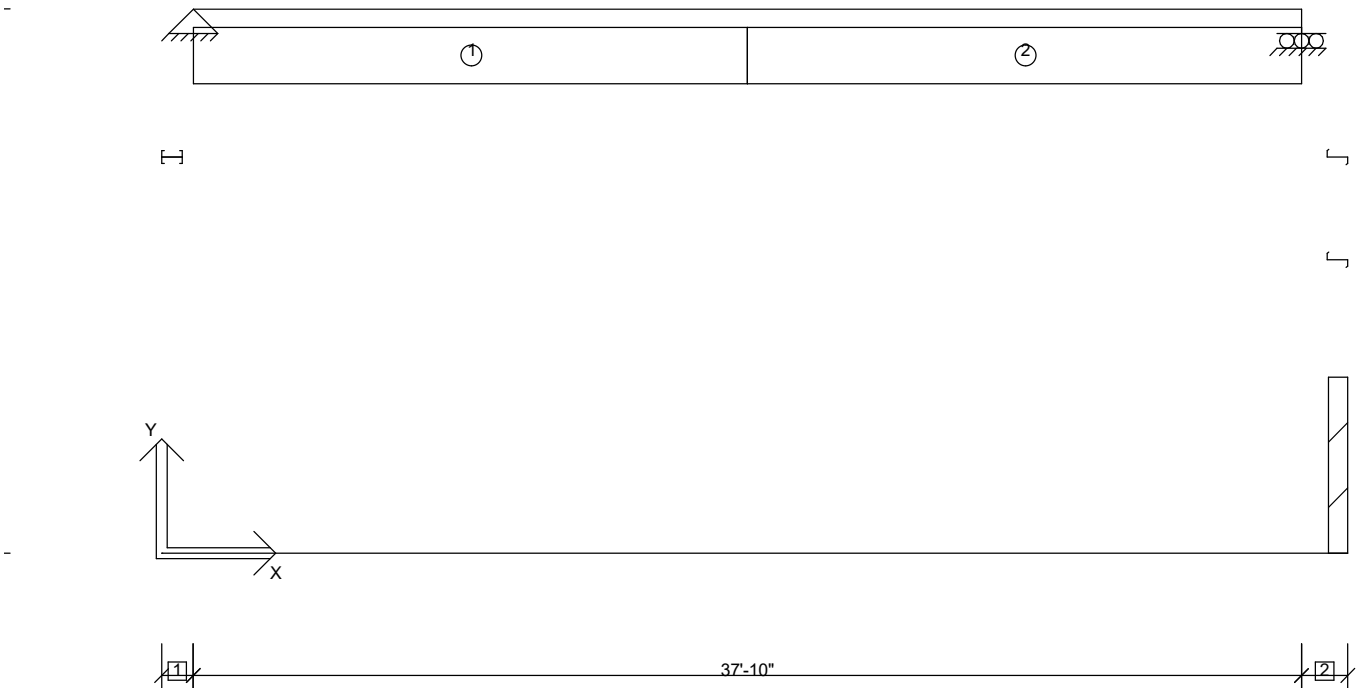
Seismic Load
Lateral Force Resisting Systems using Equivalent Force Procedure
Mapped MCE Acceleration: Ss: 12.00 %g
Mapped MCE Acceleration: S1: 7.00 %g
Site Class: Stiff soil (D) - Default
Seismic Importance: Ie: 1.000
Design Acceleration Parameter: Sds: 0.1280
Design Acceleration Parameter: Sd1: 0.1120
Seismic Design Category:: A
Seismic Snow Load: 0.00 psf
% Snow Used in Seismic: 0.00
Diaphragm Condition: Flexible
Fundamental Period Height Used: 18/1/12

Transverse Direction Parameters
System NOT detailed for Seismic
Redundancy Factor: Rho: 1.00
Fundamental Period: Ta: 0.2846
R-Factor: 3.00
Overstrength Factor: Omega: 2.50
Deflection Amplification Factor: Cd: 3.00
Base Shear: V: 0.0100 x W

Longitudinal Direction Parameters
System NOT detailed for Seismic
Redundancy Factor: Rho: 1.00
Fundamental Period: Ta: 0.1758
R-Factor: 3.00
Overstrength Factor: Omega: 2.50
Deflection Amplification Factor: Cd: 3.00
Base Shear: V: 0.0100 x W

Deflection Conditions
Frames are vertically supporting: Metal Roof Purlins and Panels
Frames are laterally supporting: Metal Wall Girts and Panels
Purlins are supporting: Metal Roof Panels
Girts are supporting: Metal Wall Panels

Wall: 1, Frame at: 20/6/0
Frame Cross Section: 2



Dimension Key
1 1'-1"
2 1'-7"
3 3'-6"

Frame Clearances
Finished Floor Elevation = 100'-0" (Unless Noted Otherwise)

Frame Location Design Parameters:

Location	Avg. Bay Space	Description	Angle	Group	Trib. Override	Design Status
20/6/0	21/6/0	New CBJ	90.0000		-	Stress Check

Design Load Combinations - Framing

No.	Origin	Factor	Application	Description
1	System	1.000	1.0 D + 1.0 CG + 1.0 L>	D + CG + L>
2	System	1.000	1.0 D + 1.0 CG + 1.0 <L	D + CG + <L
3	System	1.000	1.0 D + 1.0 CG + 1.0 SMS>	D + CG + SMS>
4	System	1.000	1.0 D + 1.0 CG + 1.0 <SMS	D + CG + <SMS
5	System	1.000	1.0 D + 1.0 CG + 0.6 W1>	D + CG + W1>
6	System	1.000	1.0 D + 1.0 CG + 0.6 <W1	D + CG + <W1
7	System	1.000	1.0 D + 1.0 CG + 0.6 W2>	D + CG + W2>
8	System	1.000	1.0 D + 1.0 CG + 0.6 <W2	D + CG + <W2
9	System	1.000	1.0 D + 1.0 CG + 0.6 WPL	D + CG + WPL
10	System	1.000	1.0 D + 1.0 CG + 0.6 WPR	D + CG + WPR
11	System	1.000	0.6 MW	MW - Wall: 1
12	System	1.000	0.6 MW	MW - Wall: 2
13	System	1.000	0.6 MW	MW - Wall: 3
14	System	1.000	0.6 MW	MW - Wall: 4
15	System	1.000	0.6 D + 0.6 CU + 0.6 W1>	D + CU + W1>
16	System	1.000	0.6 D + 0.6 CU + 0.6 <W1	D + CU + <W1
17	System	1.000	0.6 D + 0.6 CU + 0.6 W2>	D + CU + W2>
18	System	1.000	0.6 D + 0.6 CU + 0.6 <W2	D + CU + <W2
19	System	1.000	0.6 D + 0.6 CU + 0.6 WPL	D + CU + WPL
20	System	1.000	0.6 D + 0.6 CU + 0.6 WPR	D + CU + WPR
21	System	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 W1>	D + CG + L + W1>
22	System	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 <W1	D + CG + L + <W1
23	System	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 W2>	D + CG + L + W2>
24	System	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 <W2	D + CG + L + <W2
25	System	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPL	D + CG + L + WPL
26	System	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPR	D + CG + L + WPR
27	System	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W1>	D + CG + S + W1>
28	System	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W1	D + CG + S + <W1
29	System	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W2>	D + CG + S + W2>
30	System	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W2	D + CG + S + <W2
31	System	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPL	D + CG + S + WPL
32	System	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPR	D + CG + S + WPR
33	System	1.000	1.0 D + 1.0 CG + 0.7 E> + 0.7 EG+	D + CG + E> + EG+
34	System	1.000	1.0 D + 1.0 CG + 0.7 <E + 0.7 EG+	D + CG + <E + EG+
35	System	1.000	0.6 D + 0.6 CU + 0.7 E> + 0.7 EG-	D + CU + E> + EG-
36	System	1.000	0.6 D + 0.6 CU + 0.7 <E + 0.7 EG-	D + CU + <E + EG-

Frame Member Sizes

Mem. No.	Flg Width (in.)	Flg Thk (in.)	Web Thk (in.)	Depth1 (in.)	Depth2 (in.)	Length (ft)	Weight (p)	Flg Fy (ksi)	Web Fy (ksi)	Splice Jt.1	Codes Jt.2	Shape
1	12.00	0.5000	0.1875	23.00	23.00	18.92	1037.9	55.00	55.00	SS	SS	3P
2	12.00	0.5000	0.1875	23.00	23.00	18.92	1037.9	55.00	55.00	SS	SS	3P

Total Frame Weight = 2075.9 (p) (Includes all plates)

Boundary Condition Summary

Member	X-Loc	Y-Loc	Supp. X	Supp. Y	Moment	Displacement X(in.)	Displacement Y(in.)	Displacement ZZ(rad.)
1	1/1/0	18/6/8	Yes	Yes	No	0/0/0	0/0/0	0.0000
2	38/11/0	18/6/8	No	Yes	No	0/0/0	0/0/0	0.0000

Values shown are resisting forces of the foundation.
Base Connection Design is Based on 3000.00 (psi) Concrete

Reactions - Unfactored Load Type at Frame Cross Section: 2

Type X-Loc Grid1 - Grid2 Base Plate W x L (in.) Base Plate Thickness (in.) Anchor Rod Qty/Diam. (in.) Column Base Elev.		Rafter 1/1/0 y=18/6/8				
Load Type	Desc.	Hx				

D	Frm	-	-	-	-	-
CG	Frm	-	-	-	-	-
L>	Frm	-	-	-	-	-
<L	Frm	-	-	-	-	-
SMS>	Frm	-	-	-	-	-
<SMS	Frm	-	-	-	-	-
W1>	Frm	-	-	-	-	-
<W1	Frm	-	-	-	-	-
W2>	Frm	-	-	-	-	-
<W2	Frm	-	-	-	-	-
WPL	Frm	-	-	-	-	-
WPR	Frm	-	-	-	-	-
MW - Wall: 1	Frm	-	-	-	-	-
MW - Wall: 2	Frm	-	-	-	-	-
MW - Wall: 3	Frm	-	-	-	-	-
MW - Wall: 4	Frm	-	-	-	-	-
CU	Frm	-	-	-	-	-
L	Frm	-	-	-	-	-
S	Frm	-	-	-	-	-
E>	Frm	-0.06	-	-	-	-
EG+	Frm	-	-	-	-	-
<E	Frm	0.06	-	-	-	-
EG-	Frm	-	-	-	-	-
SMS	Frm	-	-	-	-	-
<WB1	Brc	-	-	-	-	-
<WB2	Brc	-	-	-	-	-
<WB3	Brc	-	-	-	-	-
<WB4	Brc	-	-	-	-	-
MWB - Wall: 1	Brc	-	-	-	-	-

Sum of Forces with Reactions Check - Framing

	Horizontal		Vertical	
Load Type	Load (k)	Reaction (k)	Load (k)	Reaction (k)
D	0.0	0.0	3.9	3.9
CG	0.0	0.0	6.8	6.8
L>	0.0	0.0	12.6	12.6
<L	0.0	0.0	12.6	12.6
SMS>	0.0	0.0	13.6	13.6
<SMS	0.0	0.0	13.6	13.6
W1>	0.0	0.0	15.9	15.9
<W1	0.0	0.0	17.8	17.8
W2>	0.0	0.0	0.9	0.9
<W2	0.0	0.0	1.0	1.0
WPL	0.0	0.0	19.4	19.4
WPR	0.0	0.0	14.2	14.2
MW - Wall: 1	0.0	0.0	0.0	0.0
MW - Wall: 2	0.0	0.0	0.1	0.1
MW - Wall: 3	0.0	0.0	0.0	0.0
MW - Wall: 4	0.0	0.0	0.0	0.0
CU	0.0	0.0	0.0	0.0
L	0.0	0.0	12.6	12.6
S	0.0	0.0	11.4	11.4
E>	0.1	0.1	0.0	0.0
EG+	0.0	0.0	0.2	0.2
<E	0.1	0.1	0.0	0.0
EG-	0.0	0.0	0.2	0.2
SMS	0.0	0.0	13.6	13.6
<WB1	0.0	0.0	0.0	0.0
<WB2	0.0	0.0	0.0	0.0
<WB3	0.0	0.0	0.0	0.0
<WB4	0.0	0.0	0.0	0.0
MWB - Wall: 1	0.0	0.0	0.0	0.0

Maximum Combined Reactions Summary with Factored Loads - Framing
Note: All reactions are based on 1st order structural analysis.

X-Loc	Grid	Hrz left (-Hx) (k)	Load Case	Hrz Right (Hx) (k)	Load Case	Hrz In (-Hz) (k)	Load Case	Hrz Out (Hz) (k)	Load Case	Uplift (-Vy) (k)	Load Case	Vrt Down (Vy) (k)	Load Case	Mom cw (-Mzz) (in-k)	Load Case	Mom ccw (Mzz) (in-k)	Load Case
1/1/0	18/6/8	0.04	33	0.04	34	-	-	-	-	4.51	19	12.11	3	-	-	-	-
38/11/0	18/6/8	-	-	-	-	-	-	-	-	4.80	19	12.22	3	-	-	-	-

Base Plate Connection Strength Ratios

X-Loc	Rod Shear	Load Case	Rod Tension	Load Case	Rod V + T	Load Case	Rod Bending	Load Case	Conc. Bearing	Load Case	Plate Tension	Load Case	Plate Comp	Load Case	Flange Weld	Load Case	Web Weld	Load Case

Frame Design Member Summary - Controlling Load Case and Maximum Combined Stresses per Member (Locations are from Joint 1)

			Controlling Cases		Required Strength				Available Strength				Strength Ratios	
Mem. No.	Loc. ft	Depth in.	Axial + Flexure	Shear	Axial Pr k	Shear Vr k	Mom-x Mrx in-k	Mom-y Mry in-k	Axial Pc k	Shear Vc k	Mom-x Mcx in-k	Mom-y Mcy in-k	Axial + Flexure	Shear
1	18.92	23.00	3		0.0		1842.5	0.0	97.8		1989.6	900.0	0.93	
1	0.00	23.00		3		12.1				42.5				0.29
2	0.25	23.00	3		0.0		1854.7	0.0	97.8		1989.6	900.0	0.93	
2	18.92	23.00		3		-12.2				42.5				0.29

Parameters Used for Axial and Flexural Design

Mem. No.	Loc. ft	Lx in.	Ly/Lt in.	Lb in.	Ag in.2	Afn in.2	Ixx in.4	Iyy in.4	Sx in.3	Sy in.3	Zx in.3	Zy in.3	J in.4	Cw in.6	Cb	Rpg	Rpc	Aeff/ Ag	
1	18.92	454.00	454.0	454.0	16.13	6.00	1685.38	144.01	146.55	24.00	157.69	36.19	1.05	18226.53	1.22	1.00	1.02	1.00	
2	0.25	454.00	454.0	454.0	16.13	6.00	1685.38	144.01	146.55	24.00	157.69	36.19	1.05	18226.53	1.22	1.00	1.02	1.00	

Deflection Load Combinations - Framing

No.	Origin	Factor	Def H	Def V	Application	Description
1	User	1.000	0	0	1.0 D + 1.0 CG + 1.0 S	Jack beam deflection check
2	System	1.000	0	180	1.0 L	L
3	System	1.000	0	180	1.0 SMS	SMS
4	System	1.000	60	180	0.42 W1>	W1>
5	System	1.000	60	180	0.42 <W1	<W1
6	System	1.000	60	180	0.42 W2>	W2>
7	System	1.000	60	180	0.42 <W2	<W2
8	System	1.000	60	180	0.42 WPL	WPL
9	System	1.000	60	180	0.42 WPR	WPR
10	System	1.000	10	0	1.0 E> + 1.0 EG-	E> + EG-
11	System	1.000	10	0	1.0 <E + 1.0 EG-	<E + EG-

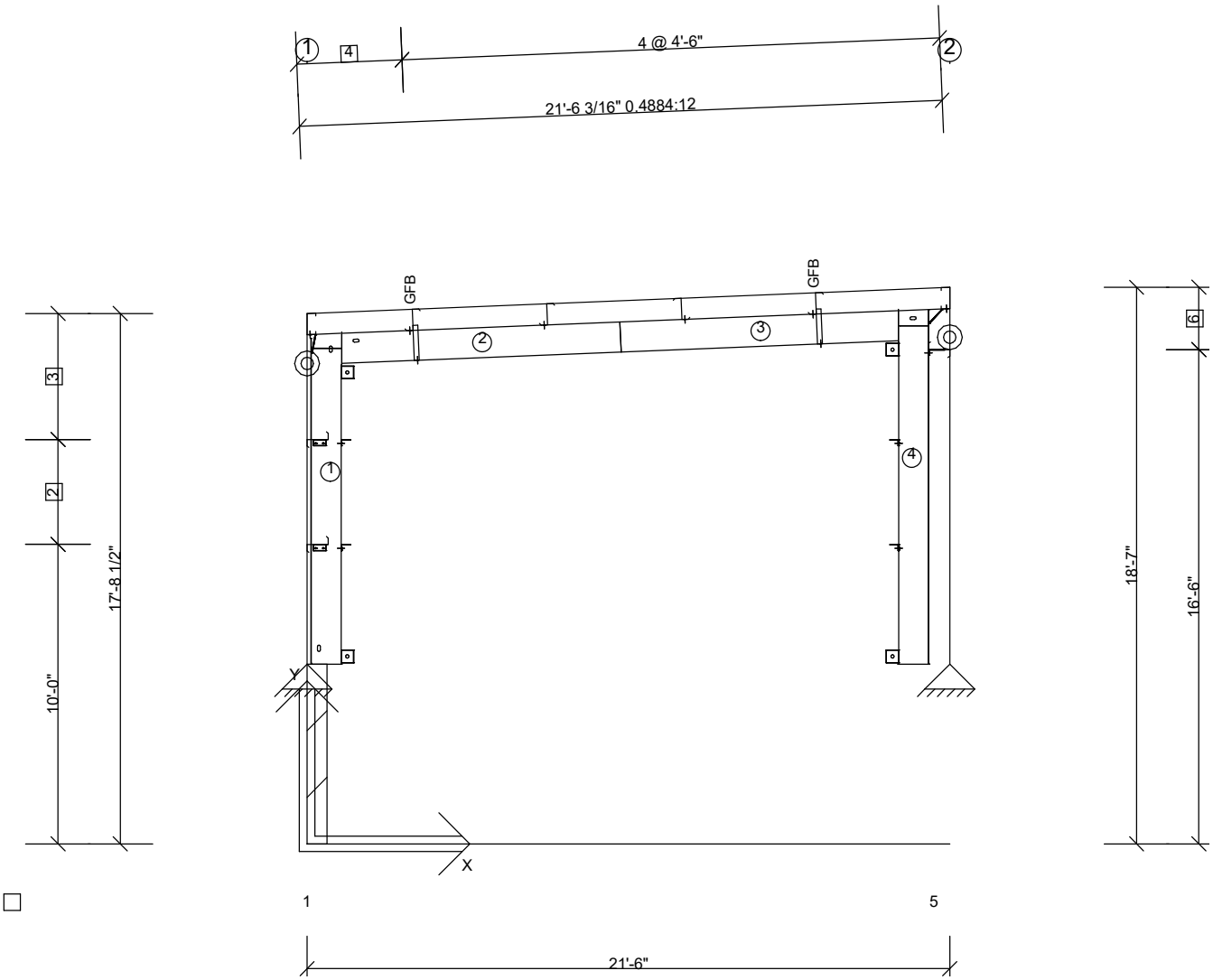
Controlling Frame Deflection Ratios for Cross Section: 2

Description	Ratio	Deflection (in.)	Member	Joint	Load Case	Load Case Description
Max. Vertical Deflection for Span 1	(L/1093)	-0.415	2	1	3	SMS

* Negative horizontal deflection is left
* Negative vertical deflection is down

Lateral deflections of primary frames are calculated on a bare frame basis and do not include resistance from systems such as roof and endwall diaphragms or partial base fixity. Therefore, these deflections may be considerably overstated.

Wall: 2, Frame at: 0/6/0
Frame Cross Section:



Dimension Key
1 1 5/8"
2 3'-6"
3 4'-2 1/2"
4 3'-6 3/16"
5 8 1/2"
6 2'-1"

Frame Clearances
Horiz. Clearance between members 1(CX004) and 4(CX005): 18'-7 7/8"
Vert. Clearance at member 1(CX004): 16'-0 1/16"
Vert. Clearance at member 4(CX005): 16'-9 1/8"
Finished Floor Elevation = 100'-0" (Unless Noted Otherwise)

Frame Location Design Parameters:

Location	Avg. Bay Space	Description	Angle	Group	Trib. Override	Design Status
0/6/0	10/4/8	Copy of Alternate 3 Pinned Endwall #2 EW 3	90.0000		-	Stress Check

Design Load Combinations - Framing

No.	Origin	Factor	Application	Description
1	System	1.000	1.0 D + 1.0 CG + 1.0 L>	D + CG + L>
2	System	1.000	1.0 D + 1.0 CG + 1.0 <L	D + CG + <L
3	System	1.000	1.0 D + 1.0 CG + 1.0 SMS>	D + CG + SMS>
4	System	1.000	1.0 D + 1.0 CG + 1.0 <SMS	D + CG + <SMS
5	System	1.000	1.0 D + 1.0 CG + 0.6 W1>	D + CG + W1>
6	System	1.000	1.0 D + 1.0 CG + 0.6 <W1	D + CG + <W1
7	System	1.000	1.0 D + 1.0 CG + 0.6 W2>	D + CG + W2>
8	System	1.000	1.0 D + 1.0 CG + 0.6 <W2	D + CG + <W2
9	System	1.000	1.0 D + 1.0 CG + 0.6 WPL	D + CG + WPL
10	System	1.000	1.0 D + 1.0 CG + 0.6 WPR	D + CG + WPR
11	System	1.000	0.6 MW	MW - Wall: 1
12	System	1.000	0.6 MW	MW - Wall: 2
13	System	1.000	0.6 MW	MW - Wall: 3
14	System	1.000	0.6 MW	MW - Wall: 4
15	System	1.000	0.6 D + 0.6 CU + 0.6 W1>	D + CU + W1>
16	System	1.000	0.6 D + 0.6 CU + 0.6 <W1	D + CU + <W1
17	System	1.000	0.6 D + 0.6 CU + 0.6 W2>	D + CU + W2>
18	System	1.000	0.6 D + 0.6 CU + 0.6 <W2	D + CU + <W2
19	System	1.000	0.6 D + 0.6 CU + 0.6 WPL	D + CU + WPL
20	System	1.000	0.6 D + 0.6 CU + 0.6 WPR	D + CU + WPR
21	System	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 W1>	D + CG + L + W1>
22	System	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 <W1	D + CG + L + <W1
23	System	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 W2>	D + CG + L + W2>
24	System	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 <W2	D + CG + L + <W2
25	System	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPL	D + CG + L + WPL
26	System	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPR	D + CG + L + WPR
27	System	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W1>	D + CG + S + W1>
28	System	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W1	D + CG + S + <W1
29	System	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W2>	D + CG + S + W2>
30	System	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W2	D + CG + S + <W2
31	System	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPL	D + CG + S + WPL
32	System	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPR	D + CG + S + WPR
33	System	1.000	1.0 D + 1.0 CG + 0.7 E> + 0.7 EG+	D + CG + E> + EG+
34	System	1.000	1.0 D + 1.0 CG + 0.7 <E + 0.7 EG+	D + CG + <E + EG+
35	System	1.000	0.6 D + 0.6 CU + 0.7 E> + 0.7 EG-	D + CU + E> + EG-
36	System	1.000	0.6 D + 0.6 CU + 0.7 <E + 0.7 EG-	D + CU + <E + EG-
37	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPR + 0.6 WB1>	D + CG + WPR + WB1>
38	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPR + 0.6 WB1>	D + CU + WPR + WB1>
39	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPR + 0.45 WB1>	D + CG + L + WPR + WB1>
40	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPR + 0.45 WB1>	D + CG + S + WPR + WB1>
41	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPR + 0.6 <WB1	D + CG + WPR + <WB1
42	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPR + 0.6 <WB1	D + CU + WPR + <WB1
43	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPR + 0.45 <WB1	D + CG + L + WPR + <WB1
44	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPR + 0.45 <WB1	D + CG + S + WPR + <WB1
45	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPR + 0.6 WB2>	D + CG + WPR + WB2>
46	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPR + 0.6 WB2>	D + CU + WPR + WB2>
47	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPR + 0.45 WB2>	D + CG + L + WPR + WB2>
48	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPR + 0.45 WB2>	D + CG + S + WPR + WB2>
49	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPR + 0.6 <WB2	D + CG + WPR + <WB2
50	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPR + 0.6 <WB2	D + CU + WPR + <WB2
51	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPR + 0.45 <WB2	D + CG + L + WPR + <WB2
52	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPR + 0.45 <WB2	D + CG + S + WPR + <WB2
53	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPL + 0.6 WB3>	D + CG + WPL + WB3>
54	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPL + 0.6 WB3>	D + CU + WPL + WB3>
55	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPL + 0.45 WB3>	D + CG + L + WPL + WB3>
56	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPL + 0.45 WB3>	D + CG + S + WPL + WB3>
57	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPL + 0.6 <WB3	D + CG + WPL + <WB3
58	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPL + 0.6 <WB3	D + CU + WPL + <WB3
59	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPL + 0.45 <WB3	D + CG + L + WPL + <WB3
60	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPL + 0.45 <WB3	D + CG + S + WPL + <WB3

61	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPL + 0.6 WB4>	D + CG + WPL + WB4>
62	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPL + 0.6 WB4>	D + CU + WPL + WB4>
63	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPL + 0.45 WB4>	D + CG + L + WPL + WB4>
64	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPL + 0.45 WB4>	D + CG + S + WPL + WB4>
65	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPL + 0.6 <WB4	D + CG + WPL + <WB4
66	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPL + 0.6 <WB4	D + CU + WPL + <WB4
67	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPL + 0.45 <WB4	D + CG + L + WPL + <WB4
68	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPL + 0.45 <WB4	D + CG + S + WPL + <WB4
69	System Derived	1.000	0.6 MWB	MWB - Wall: 1
70	System Derived	1.000	0.6 MWB	MWB - Wall: 2
71	System Derived	1.000	0.6 MWB	MWB - Wall: 3
72	System Derived	1.000	0.6 MWB	MWB - Wall: 4
73	System Derived	1.000	1.0 D + 1.0 CG + 0.7 EB> + 0.7 EG+	D + CG + EB> + EG+
74	System Derived	1.000	0.6 D + 0.6 CU + 0.7 EB> + 0.7 EG-	D + CU + EB> + EG-
75	System Derived	1.000	1.0 D + 1.0 CG + 0.7 <EB + 0.7 EG+	D + CG + <EB + EG+
76	System Derived	1.000	0.6 D + 0.6 CU + 0.7 <EB + 0.7 EG-	D + CU + <EB + EG-

Frame Member Sizes

Mem. No.	Flg Width (in.)	Flg Thk (in.)	Web Thk (in.)	Depth1 (in.)	Depth2 (in.)	Length (ft)	Weight (p)	Flg Fy (ksi)	Web Fy (ksi)	Splice Jt.1	Codes Jt.2	Shape
1	5.00	0.1345	0.1345	12.00	12.00	11.00	128.5	55.00	55.00	BP	KN	3P
2	5.00	0.1345	0.1345	12.00	12.00	10.32	100.9	55.00	55.00	KN	SS	3P
3	5.00	0.1345	0.1345	12.00	12.00	10.33	100.5	55.00	55.00	SS	KN	3P
4	5.00	0.2500	0.1345	12.00	12.00	11.85	184.2	55.00	55.00	BP	KN	3P

Total Frame Weight = 514.1 (p) (Includes all plates)

Frame Member Releases

Member	Joint 1	Joint 2
1	No	Yes
4	No	Yes

Boundary Condition Summary

Member	X-Loc	Y-Loc	Supp. X	Supp. Y	Moment	Displacement X(in.)	Displacement Y(in.)	Displacement ZZ(rad.)
1	0/0/0	6/0/0	Yes	Yes	No	0/0/0	0/0/0	0.0000
4	21/6/0	6/0/0	Yes	Yes	No	0/0/0	0/0/0	0.0000

Values shown are resisting forces of the foundation.
Base Connection Design is Based on 3000.00 (psi) Concrete

Reactions - Unfactored Load Type at Frame Cross Section:

Type		Exterior Column			Exterior Column					
X-Loc		0/0/0			21/6/0					
Grid1 - Grid2		-1			-2					
Base Plate W x L (in.)		8 X 13			8 X 13					
Base Plate Thickness (in.)		0.375			0.375					
Anchor Rod Qty/Diam. (in.)		4 - 0.750			4 - 0.750					
Column Base Elev.		106'-0"			106'-0"					
Load Type	Desc.	Hx	Hz	Vy	Hx	Hz	Vy			
D	Frm	-	-	0.47	-	-	2.50	-	-	-
CG	Frm	-	-	1.08	-	-	4.57	-	-	-
L>	Frm	-	-	2.17	-	-	8.62	-	-	-
<L	Frm	-	-	2.17	-	-	8.62	-	-	-
SMS>	Frm	-	-	2.17	-	-	9.13	-	-	-
<SMS	Frm	-	-	2.17	-	-	9.13	-	-	-
W1>	Frm	1.21	-	-2.69	0.02	-1.72	-11.90	-	-	-
<W1	Frm	0.06	-	-3.79	-0.06	1.72	-12.09	-	-	-
W2>	Frm	-0.25	-	0.29	0.06	-1.72	-0.47	-	-	-
<W2	Frm	-1.41	-	-0.81	-0.02	1.72	-0.66	-	-	-
WPL	Frm	1.35	-	-3.85	-0.04	-	-13.90	-	-	-
WPR	Frm	1.35	-	-2.71	-0.04	-	-9.95	-	-	-
MW - Wall: 1	Frm	-	-	-	-	-	-	-	-	-
MW - Wall: 2	Frm	-0.87	-	0.04	-	-	-0.08	-	-	-
MW - Wall: 3	Frm	-	-	-	-	-	-	-	-	-
MW - Wall: 4	Frm	-	-	0.01	1.81	-	-0.01	-	-	-
CU	Frm	-	-	-	-	-	-	-	-	-
L	Frm	-	-	2.17	-	-	8.62	-	-	-
S	Frm	-	-	1.82	-	-	7.67	-	-	-
E>	Frm	-	-	-	-	-	-	-	-	-
EG+	Frm	-	-	0.04	-	-	0.17	-	-	-

<E	Frm	-	-	-	-	-	-	-	-	-
EG-	Frm	-	-	-0.04	-	-	-0.17	-	-	-
WB1>	Brc	-	-	1.66	-0.80	-	-0.46	-	-	-
<WB1	Brc	1.14	-1.99	-1.83	-	-	0.64	-	-	-
WB2>	Brc	-	-	1.66	-0.80	-	-0.46	-	-	-
<WB2	Brc	1.14	-1.99	-1.83	-	-	0.64	-	-	-
WB3>	Brc	-	-	1.66	-0.80	-	-0.46	-	-	-
<WB3	Brc	1.14	-1.98	-1.83	-	-	0.64	-	-	-
WB4>	Brc	-	-	1.66	-0.80	-	-0.46	-	-	-
<WB4	Brc	1.14	-1.98	-1.83	-	-	0.64	-	-	-
MWB - Wall: 1	Brc	-	-	0.94	-	-	-0.02	-	-	-
MWB - Wall: 2	Brc	1.30	-	-0.76	-	-	0.76	-	-	-
MWB - Wall: 3	Brc	0.02	-1.58	-0.93	-	-	-	-	-	-
MWB - Wall: 4	Brc	-	-	-	-	-	-	-	-	-
EB>	Brc	-	-	0.08	-0.03	-	-0.02	-	-	-
<EB	Brc	0.04	-0.10	-0.08	-	-	0.02	-	-	-
SMS	Frm	-	-	2.17	-	-	9.13	-	-	-

Sum of Forces with Reactions Check - Framing

	Horizontal		Vertical	
Load Type	Load (k)	Reaction (k)	Load (k)	Reaction (k)
D	0.0	0.0	3.0	3.0
CG	0.0	0.0	5.7	5.7
L>	0.0	0.0	10.8	10.8
<L	0.0	0.0	10.8	10.8
SMS>	0.0	0.0	11.3	11.3
<SMS	0.0	0.0	11.3	11.3
W1>	1.6	1.6	14.6	14.6
<W1	1.9	1.9	15.9	15.9
W2>	0.5	0.5	0.2	0.2
<W2	4.0	4.0	1.5	1.5
WPL	0.8	0.8	17.7	17.7
WPR	0.7	0.7	12.7	12.7
MW - Wall: 1	0.0	0.0	0.0	0.0
MW - Wall: 2	1.9	1.9	0.0	0.0
MW - Wall: 3	0.0	0.0	0.0	0.0
MW - Wall: 4	4.0	4.0	0.0	0.0
CU	0.0	0.0	0.0	0.0
L	0.0	0.0	10.8	10.8
S	0.0	0.0	9.5	9.5
E>	0.0	0.0	0.0	0.0
EG+	0.0	0.0	0.2	0.2
<E	0.0	0.0	0.0	0.0
EG-	0.0	0.0	0.2	0.2
WB1>	0.8	0.8	1.2	1.2
<WB1	1.1	1.1	1.2	1.2
WB2>	0.8	0.8	1.2	1.2
<WB2	1.1	1.1	1.2	1.2
WB3>	0.8	0.8	1.2	1.2
<WB3	1.1	1.1	1.2	1.2
WB4>	0.8	0.8	1.2	1.2
<WB4	1.1	1.1	1.2	1.2
MWB - Wall: 1	0.0	0.0	0.9	0.9
MWB - Wall: 2	1.3	1.3	0.0	0.0
MWB - Wall: 3	0.0	0.0	0.9	0.9
MWB - Wall: 4	0.0	0.0	0.0	0.0
EB>	0.0	0.0	0.1	0.1
<EB	0.0	0.0	0.1	0.1
SMS	0.0	0.0	11.3	11.3

Maximum Combined Reactions Summary with Factored Loads - Framing

Note: All reactions are based on 1st order structural analysis.

X-Loc	Grid	Hrz left (-Hx) (k)	Load Case	Hrz Right (Hx) (k)	Load Case	Hrz In (-Hz) (k)	Load Case	Hrz Out (Hz) (k)	Load Case	Uplift (-Vy) (k)	Load Case	Vrt Down (Vy) (k)	Load Case	Mom cw (-Mzz) (in-k)	Load Case	Mom ccw (Mzz) (in-k)	Load Case

0/0/0	-1	0.84	8	1.50	41	1.19	41	-	-	3.12	58	3.72	1	-	-	-	-
21/6/0	-2	1.54	8	1.33	14	-	-	-	-	-	-	-	-	-	-	-	-
21/6/0	-2	0.50	37	1.09	14	1.03	5	1.03	6	7.12	54	16.20	3	-	-	-	-

Base Plate Summary
Base Connection Design is Based on 3000.00 (psi) Concrete
Plate Fy = 55.00 ksi
Grade A36 Anchor Rods used to determine quantity and diameter
Gage and pitch standards are based on ACI-318 Appendix D criteria for "cast-in-place" anchor rods (Min space = 4*drod)

X-Loc	Grid	Mem. No.	Thickness (in.)	Width (in.)	Length (in.)	Stiff.	Num. Of Rods	Rod Diam. (in.)	Pitch (in.)	Gage (in.)	Hole Type	Welds to Flange	Welds to Web
0/0/0	-1	1	0.375	8	13	No	4	0.750	5.0	5.0	Std	OS-0.1875	OS-0.1875
21/6/0	-2	4	0.375	8	13	No	4	0.750	5.0	5.0	Std	OS-0.1875	OS-0.1875

Pinned Base Plate Connection Loading

	Maximum Shear Case			Maximum Tension Case			Maximum Comp Case			Maximum Bracing/WA Case			
X-Loc	Shear (k)	Axial (k)	Load Case	Shear (k)	Tension (k)	Load Case	Shear (k)	Comp (k)	Load Case	Shear (k)	Axial (k)	Frame Shear (k)	Load Case
0/0/0	1.50	-2.44	42	1.50	-3.12	58	-	3.72	1	1.19	-3.12	1.50	58
21/6/0	1.09	-0.01	14	0.50	-7.12	54	-	16.21	4	1.03	-5.75	0.04	16

Base Plate Connection Strength Ratios

X-Loc	Rod Shear	Load Case	Rod Tension	Load Case	Rod V + T	Load Case	Rod Bending	Load Case	Conc. Bearing	Load Case	Plate Tension	Load Case	Plate Comp	Load Case	Flange Weld	Load Case	Web Weld	Load Case
0/0/0	0.089	58	0.081	58	-	0	-	0	0.032	1	0.118	58	0.060	1	0.062	58	0.072	58
21/6/0	0.059	14	0.185	54	-	0	-	0	0.141	4	0.269	54	0.261	4	0.233	4	0.144	54

Web Stiffener Summary

Mem. No.	Stiff. No.	Desc.	Loc. (ft)	Web Depth (in.)	h/t	a/h	a (in.)	Thick. (in.)	Width (in.)	Side	Welding Description
1	1	S2	10.51	11.731	87.22	N/A	N/A	0.1875	2.000	Both	SP-OS-0.1250,W-OS-0.1250,F-OS-0.1250
4	1	S2	11.27	11.500	85.50	N/A	N/A	0.1875	2.000	Both	SP-OS-0.1250,W-OS-0.1250,F-OS-0.1250

Bolted End-Plate Connections (Plate Fy = 55.00 ksi)

			End-Plate Dimensions			Bolt			Outside Flange			Inside Flange		
Mem. No.	Jt. No.	Type	Thick. (in.)	Width (in.)	Length (in.)	Diam. (in.)	Spec/Joint	Gages In/Out (in.)	Configuration ID	Configuration Desc.	Pitches 1st/2nd (in.)	Configuration ID	Configuration Desc.	Pitches 1st/2nd (in.)
1	2	KN(Face)	0.375	6.00	13.00	0.500	A325/-	3.00	11	Flush	3.00	11	Flush	3.00
2	1	KN(Face)	0.375	6.00	13.03	0.500	A325/-	3.00	11	Flush	3.00/3.00	11	Flush	3.00/3.00
3	2	KN(Face)	0.375	6.00	12.99	0.500	A325/-	3.00	11	Flush	3.00/3.00	11	Flush	3.00/3.00
4	2	KN(Face)	0.375	6.00	13.02	0.500	A325/-	3.00	11	Flush	3.00	11	Flush	3.00

Pinned Connections:

		Maximum Shear Case			Maximum Tension Case			Strength Ratios							
Mem. No.	Jt. No.	Ld Cs	Axial (k)	Shear (k)	Ld Cs	Axial (k)	Shear (k)	Bolt Tension	Bolt Shear	Bolt V + T	Plate Bending	Flange Yielding	Flange Bearing	Flange Weld	Web Weld
1	2	2	0.0	3.2	54	1.0	1.8	0.032	0.152	0.000	0.033	0.023	0.114	0.053	0.099
2	2	1	-0.1	3.2	19	1.1	1.8	0.034	0.152	0.000	0.035	0.024	0.114	0.053	0.099
3	2	3	0.1	3.2	9	1.1	0.7	0.036	0.153	0.000	0.037	0.026	0.062	0.053	0.099
4	2	3	0.0	3.2	54	1.2	1.9	0.037	0.152	0.000	0.038	0.014	0.061	0.054	0.101

Bolted End-Plate Connections Weld Data:

Mem.	Jt.		Outside Flange				Inside Flange				Web				WS_P_01 Web Weld			
No.	No.	Type	Type	Size (in.)	Side	Notes	Type	Size (in.)	Side	Notes	Type	Size (in.)	Side	Notes	Type	Size (in.)	Side	Notes
1	2	KN(Face)	Fillet	0.1875	Both	-	CJP	99.0000	CJP	-	Fillet	0.1875	One	-	-	-	-	-
2	1	KN(Face)	Fillet	0.1875	One	-	Fillet	0.1875	One	-	Fillet	0.1875	One	-	-	-	-	-
3	2	KN(Face)	Fillet	0.1875	One	-	Fillet	0.1875	One	-	Fillet	0.1875	One	-	-	-	-	-
4	2	KN(Face)	Fillet	0.1875	Both	-	CJP	99.0000	CJP	-	Fillet	0.1875	One	-	-	-	-	-

Flange Brace Summary

Member	From Member Joint 1	From Side Point 1	Part	Axial Load per FB (k)	Load Case	Design Note
3	6/6/14	4/6/0	GFB2050	0.097	0	
2	2/4/11	18/0/0	GFB2050	0.095	1	

Frame Design Member Summary - Controlling Load Case and Maximum Combined Stresses per Member (Locations are from Joint 1)

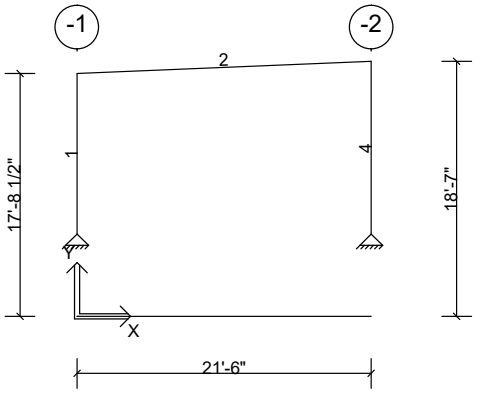
			Controlling Cases		Required Strength				Available Strength				Strength Ratios	
Mem. No.	Loc. ft	Depth in.	Axial + Flexure	Shear	Axial Pr k	Shear Vr k	Mom-x Mrx in-k	Mom-y Mry in-k	Axial Pc k	Shear Vc k	Mom-x Mcx in-k	Mom-y Mcy in-k	Axial + Flexure	Shear
1	5.75	12.00	8		-1.1		26.5	0.0	35.1		211.7	20.2	0.14	
1	0.00	12.00		42		-0.8				21.4				0.04
2	9.86	12.00	1		0.0		199.2	0.0	15.9		211.7	20.2	0.94	
2	0.48	12.00		1		3.2				21.4				0.15
3	0.00	12.00	1		0.0		199.2	0.0	15.9		211.7	20.2	0.94	
3	9.30	12.00		3		-3.2				21.4				0.15
4	6.29	12.00	7		-6.8		2.9	-77.9	42.1		346.0	96.3	0.90	
4	0.00	12.00		14		-1.1				21.8				0.05

Parameters Used for Axial and Flexural Design

Mem. No.	Loc. ft	Lx in.	Ly/Lt in.	Lb in.	Ag in.2	Afn in.2	Ixx in.4	Iyy in.4	Sx in.3	Sy in.3	Zx in.3	Zy in.3	J in.4	Cw in.6	Cb	Rpg	Rpc	Aeff/ Ag	
1	5.75	120.54	90.0	42.0	2.92	0.67	65.44	2.80	10.91	1.12	12.61	1.73	0.02	98.71	1.00	1.00	1.15	0.72	
2	9.86	224.06	162.0	54.0	2.92	0.67	65.44	2.80	10.91	1.12	12.61	1.73	0.02	98.71	1.06	1.00	1.15	0.98	
3	0.00	224.06	162.0	54.0	2.92	0.67	65.44	2.80	10.91	1.12	12.61	1.73	0.02	98.71	1.06	1.00	1.15	0.98	
4	6.29	129.65	129.6	129.6	4.05	1.25	103.35	5.21	17.22	2.08	19.13	3.18	0.06	179.85	1.00	1.00	1.11	0.90	

User Defined Frame Point Loads for Cross Section:

Side	Units	Type	Description	Mag1	Loc1	Offset	H or V	Supp.	Dir.	Coef.	Loc.
4	k	W1>	Torsional Bracing	1.22	18/6/14	NA	NA	N	RIGHT	1.000	OF
4	k	<W1	Torsional Bracing	1.22	18/6/14	NA	NA	N	RIGHT	1.000	OF
4	k	W2>	Torsional Bracing	1.22	18/6/14	NA	NA	N	RIGHT	1.000	OF
4	k	<W2	Torsional Bracing	1.22	18/6/14	NA	NA	N	RIGHT	1.000	OF
4	k	WPR	Torsional Bracing	1.22	18/6/14	NA	NA	N	RIGHT	1.000	OF
4	k	WPL	Torsional Bracing	1.22	18/6/14	NA	NA	N	RIGHT	1.000	OF
4	k	W1>	Weak Axis	-3.44	12/3/8	NA	NA	N	OUT	1.000	WA
4	k	W2>	Weak Axis	-3.44	12/3/8	NA	NA	N	OUT	1.000	WA
4	k	<W1	Weak Axis	3.44	12/3/8	NA	NA	N	IN	1.000	WA
4	k	<W2	Weak Axis	3.44	12/3/8	NA	NA	N	IN	1.000	WA



Deflection Load Combinations - Framing

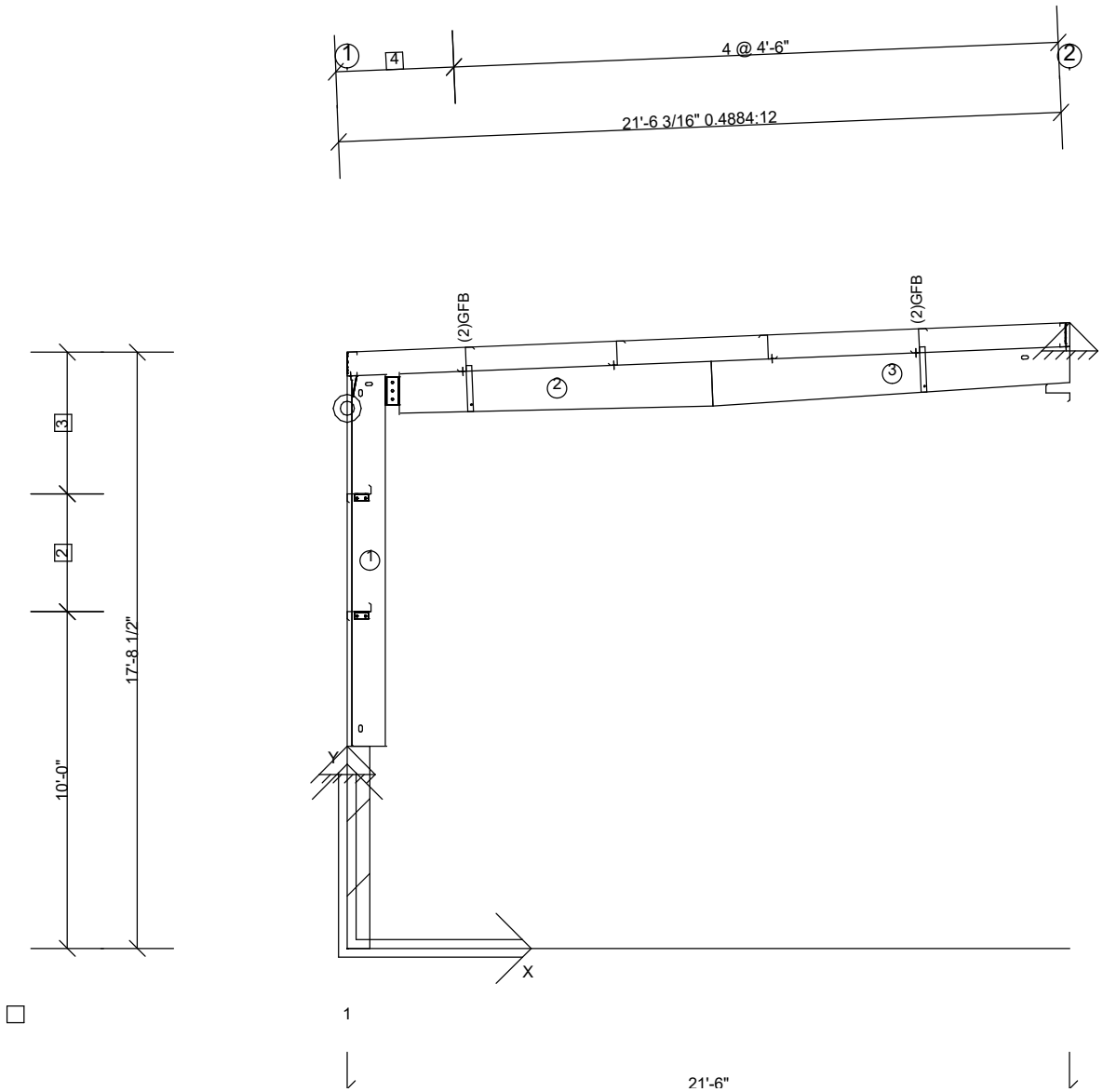
No.	Origin	Factor	Def H	Def V	Application	Description
1	User	1.000	0	0	1.0 D + 1.0 CG + 1.0 S	Jack beam deflection check
2	System	1.000	0	180	1.0 L	L
3	System	1.000	0	180	1.0 SMS	SMS
4	System	1.000	60	180	0.42 W1>	W1>
5	System	1.000	60	180	0.42 <W1	<W1
6	System	1.000	60	180	0.42 W2>	W2>
7	System	1.000	60	180	0.42 <W2	<W2
8	System	1.000	60	180	0.42 WPL	WPL
9	System	1.000	60	180	0.42 WPR	WPR
10	System	1.000	10	0	1.0 E> + 1.0 EG-	E> + EG-
11	System	1.000	10	0	1.0 <E + 1.0 EG-	<E + EG-

Controlling Frame Deflection Ratios for Cross Section:

Description	Ratio	Deflection (in.)	Member	Joint	Load Case	Load Case Description
Max. Horizontal Deflection	(H/64143)	0.002	1	2	7	<W2
Max. Vertical Deflection for Span 1	(L/636)	-0.370	3	1	3	SMS

* Negative horizontal deflection is left
* Negative vertical deflection is down
Lateral deflections of primary frames are calculated on a bare frame basis and do not include resistance from systems such as roof and endwall diaphragms or partial base fixity. Therefore, these deflections may be considerably overstated.

Wall: 2, Frame at: 20/3/0
Frame Cross Section:



Dimension Key
1 1 5/8"
2 3'-6"
3 4'-2 1/2"
4 3'-6 3/16"
5 2'-1"

Frame Clearances
Finished Floor Elevation = 100'-0" (Unless Noted Otherwise)

Frame Location Design Parameters:

Location	Avg. Bay Space	Description	Angle	Group	Trib. Override	Design Status
20/3/0	19/6/0	Leanto	90.0000		-	Stress Check

Design Load Combinations - Framing

No.	Origin	Factor	Application	Description
1	System	1.000	1.0 D + 1.0 CG + 1.0 L>	D + CG + L>
2	System	1.000	1.0 D + 1.0 CG + 1.0 <L	D + CG + <L
3	System	1.000	1.0 D + 1.0 CG + 1.0 SMS>	D + CG + SMS>
4	System	1.000	1.0 D + 1.0 CG + 1.0 <SMS	D + CG + <SMS
5	System	1.000	1.0 D + 1.0 CG + 0.6 W1>	D + CG + W1>
6	System	1.000	1.0 D + 1.0 CG + 0.6 <W1	D + CG + <W1
7	System	1.000	1.0 D + 1.0 CG + 0.6 W2>	D + CG + W2>
8	System	1.000	1.0 D + 1.0 CG + 0.6 <W2	D + CG + <W2
9	System	1.000	1.0 D + 1.0 CG + 0.6 WPL	D + CG + WPL
10	System	1.000	1.0 D + 1.0 CG + 0.6 WPR	D + CG + WPR
11	System	1.000	0.6 MW	MW - Wall: 1
12	System	1.000	0.6 MW	MW - Wall: 2
13	System	1.000	0.6 MW	MW - Wall: 3
14	System	1.000	0.6 MW	MW - Wall: 4
15	System	1.000	0.6 D + 0.6 CU + 0.6 W1>	D + CU + W1>
16	System	1.000	0.6 D + 0.6 CU + 0.6 <W1	D + CU + <W1
17	System	1.000	0.6 D + 0.6 CU + 0.6 W2>	D + CU + W2>
18	System	1.000	0.6 D + 0.6 CU + 0.6 <W2	D + CU + <W2
19	System	1.000	0.6 D + 0.6 CU + 0.6 WPL	D + CU + WPL
20	System	1.000	0.6 D + 0.6 CU + 0.6 WPR	D + CU + WPR
21	System	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 W1>	D + CG + L + W1>
22	System	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 <W1	D + CG + L + <W1
23	System	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 W2>	D + CG + L + W2>
24	System	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 <W2	D + CG + L + <W2
25	System	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPL	D + CG + L + WPL
26	System	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPR	D + CG + L + WPR
27	System	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W1>	D + CG + S + W1>
28	System	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W1	D + CG + S + <W1
29	System	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W2>	D + CG + S + W2>
30	System	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W2	D + CG + S + <W2
31	System	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPL	D + CG + S + WPL
32	System	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPR	D + CG + S + WPR
33	System	1.000	1.0 D + 1.0 CG + 0.7 E> + 0.7 EG+	D + CG + E> + EG+
34	System	1.000	1.0 D + 1.0 CG + 0.7 <E + 0.7 EG+	D + CG + <E + EG+
35	System	1.000	0.6 D + 0.6 CU + 0.7 E> + 0.7 EG-	D + CU + E> + EG-
36	System	1.000	0.6 D + 0.6 CU + 0.7 <E + 0.7 EG-	D + CU + <E + EG-
37	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPR + 0.6 WB1>	D + CG + WPR + WB1>
38	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPR + 0.6 WB1>	D + CU + WPR + WB1>
39	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPR + 0.45 WB1>	D + CG + L + WPR + WB1>
40	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPR + 0.45 WB1>	D + CG + S + WPR + WB1>
41	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPR + 0.6 <WB1	D + CG + WPR + <WB1
42	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPR + 0.6 <WB1	D + CU + WPR + <WB1
43	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPR + 0.45 <WB1	D + CG + L + WPR + <WB1
44	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPR + 0.45 <WB1	D + CG + S + WPR + <WB1
45	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPR + 0.6 WB2>	D + CG + WPR + WB2>
46	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPR + 0.6 WB2>	D + CU + WPR + WB2>
47	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPR + 0.45 WB2>	D + CG + L + WPR + WB2>
48	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPR + 0.45 WB2>	D + CG + S + WPR + WB2>
49	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPR + 0.6 <WB2	D + CG + WPR + <WB2
50	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPR + 0.6 <WB2	D + CU + WPR + <WB2
51	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPR + 0.45 <WB2	D + CG + L + WPR + <WB2
52	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPR + 0.45 <WB2	D + CG + S + WPR + <WB2
53	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPL + 0.6 WB3>	D + CG + WPL + WB3>
54	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPL + 0.6 WB3>	D + CU + WPL + WB3>
55	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPL + 0.45 WB3>	D + CG + L + WPL + WB3>
56	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPL + 0.45 WB3>	D + CG + S + WPL + WB3>
57	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPL + 0.6 <WB3	D + CG + WPL + <WB3
58	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPL + 0.6 <WB3	D + CU + WPL + <WB3
59	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPL + 0.45 <WB3	D + CG + L + WPL + <WB3
60	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPL + 0.45 <WB3	D + CG + S + WPL + <WB3

61	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPL + 0.6 WB4>	D + CG + WPL + WB4>
62	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPL + 0.6 WB4>	D + CU + WPL + WB4>
63	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPL + 0.45 WB4>	D + CG + L + WPL + WB4>
64	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPL + 0.45 WB4>	D + CG + S + WPL + WB4>
65	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPL + 0.6 <WB4	D + CG + WPL + <WB4
66	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPL + 0.6 <WB4	D + CU + WPL + <WB4
67	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPL + 0.45 <WB4	D + CG + L + WPL + <WB4
68	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPL + 0.45 <WB4	D + CG + S + WPL + <WB4
69	System Derived	1.000	0.6 MWB	MWB - Wall: 1
70	System Derived	1.000	0.6 MWB	MWB - Wall: 2
71	System Derived	1.000	0.6 MWB	MWB - Wall: 3
72	System Derived	1.000	0.6 MWB	MWB - Wall: 4
73	System Derived	1.000	1.0 D + 1.0 CG + 0.7 EB> + 0.7 EG+	D + CG + EB> + EG+
74	System Derived	1.000	0.6 D + 0.6 CU + 0.7 EB> + 0.7 EG-	D + CU + EB> + EG-
75	System Derived	1.000	1.0 D + 1.0 CG + 0.7 <EB + 0.7 EG+	D + CG + <EB + EG+
76	System Derived	1.000	0.6 D + 0.6 CU + 0.7 <EB + 0.7 EG-	D + CU + <EB + EG-

Frame Member Sizes

Mem. No.	Flg Width (in.)	Flg Thk (in.)	Web Thk (in.)	Depth1 (in.)	Depth2 (in.)	Length (ft)	Weight (p)	Flg Fy (ksi)	Web Fy (ksi)	Splice Jt.1	Codes Jt.2	Shape
1	5.00	0.1345	0.1345	12.00	12.00	11.00	122.7	55.00	55.00	BP	SS	3P
2	5.00	0.1875	0.1345	14.01	16.00	10.29	131.0	55.00	55.00	SS	SS	3P
3	5.00	0.1875	0.1345	16.00	12.74	10.71	136.2	55.00	55.00	SS	SS	3P

Total Frame Weight = 389.9 (p) (Includes all plates)

Frame Member Releases

Member	Joint 1	Joint 2
1	No	Yes

Boundary Condition Summary

Member	X-Loc	Y-Loc	Supp. X	Supp. Y	Moment	Displacement X(in.)	Displacement Y(in.)	Displacement ZZ(rad.)
1	0/0/0	6/0/0	Yes	Yes	No	0/0/0	0/0/0	0.0000
3	21/6/0	18/7/0	Yes	Yes	No	0/0/0	0/0/0	0.0000

Values shown are resisting forces of the foundation.
Base Connection Design is Based on 3000.00 (psi) Concrete

Reactions - Unfactored Load Type at Frame Cross Section:

Type		Exterior Column			Rafter			
X-Loc		0/0/0			21/6/0			
Grid1 - Grid2		-1			-2			
Base Plate W x L (in.)		8 X 13						
Base Plate Thickness (in.)		0.375						
Anchor Rod Qty/Diam. (in.)		4 - 0.750						
Column Base Elev.		106'-0"						
Load Type	Desc.	Hx	Hz	Vy	Hx			
D	Frm	0.04	-	0.91	-	-	-	-
CG	Frm	0.13	-	2.71	-	-	-	-
L>	Frm	0.21	-	4.33	-	-	-	-
<L	Frm	0.21	-	4.33	-	-	-	-
SMS>	Frm	0.26	-	5.41	-	-	-	-
<SMS	Frm	0.26	-	5.41	-	-	-	-
W1>	Frm	1.86	-	-5.02	4.21	-	-	-
<W1	Frm	0.03	-	-6.67	2.18	-	-	-
W2>	Frm	-0.59	-	0.89	0.36	-	-	-
<W2	Frm	-2.42	-	-0.76	-1.67	-	-	-
WPL	Frm	2.16	-	-6.77	4.83	-	-	-
WPR	Frm	2.25	-	-5.04	4.69	-	-	-
MW - Wall: 1	Frm	-	-	-	-	-	-	-
MW - Wall: 2	Frm	-1.63	-	0.08	-2.16	-	-	-
MW - Wall: 3	Frm	-	-	-	-	-	-	-
MW - Wall: 4	Frm	-	-	-	-	-	-	-
CU	Frm	-	-	-	-	-	-	-
L	Frm	0.21	-	4.33	-	-	-	-
S	Frm	0.22	-	4.55	-	-	-	-
E>	Frm	-	-	-	0.06	-	-	-
EG+	Frm	-	-	0.08	-	-	-	-
<E	Frm	-	-	-	-0.06	-	-	-
EG-	Frm	-	-	-0.08	-	-	-	-

WB1>	Brc	0.09	2.03	-1.20	-0.09	-	-	-
<WB1	Brc	0.06	-	1.21	-	-	-	-
WB2>	Brc	0.09	2.03	-1.20	-0.09	-	-	-
<WB2	Brc	0.06	-	1.21	-	-	-	-
WB3>	Brc	0.09	2.02	-1.19	-0.09	-	-	-
<WB3	Brc	0.06	-	1.20	-	-	-	-
WB4>	Brc	0.09	2.02	-1.19	-0.09	-	-	-
<WB4	Brc	0.06	-	1.20	-	-	-	-
MWB - Wall: 1	Brc	0.07	1.55	-0.91	-0.07	-	-	-
MWB - Wall: 2	Brc	-	-	-	-	-	-	-
MWB - Wall: 3	Brc	0.05	-	0.96	-	-	-	-
MWB - Wall: 4	Brc	-	-	-	-	-	-	-
EB>	Brc	-	0.10	-0.06	-	-	-	-
<EB	Brc	-	-	0.06	-	-	-	-
SMS	Frm	0.26	-	5.41	-	-	-	-

Sum of Forces with Reactions Check - Framing

	Horizontal		Vertical	
Load Type	Load (k)	Reaction (k)	Load (k)	Reaction (k)
D	0.0	0.0	1.7	1.7
CG	0.0	0.1	5.2	5.2
L>	0.0	0.2	8.4	8.4
<L	0.0	0.2	8.4	8.4
SMS>	0.0	0.3	10.5	10.5
<SMS	0.0	0.3	10.5	10.5
W1>	6.3	6.1	9.5	9.5
<W1	2.5	2.2	12.8	12.8
W2>	0.3	0.2	1.8	1.8
<W2	4.0	4.1	1.6	1.6
WPL	7.3	7.0	12.8	12.8
WPR	7.2	6.9	9.5	9.5
MW - Wall: 1	0.0	0.0	0.0	0.0
MW - Wall: 2	3.8	3.8	0.0	0.0
MW - Wall: 3	0.0	0.0	0.0	0.0
MW - Wall: 4	0.0	0.0	0.0	0.0
CU	0.0	0.0	0.0	0.0
L	0.0	0.2	8.4	8.4
S	0.0	0.2	8.8	8.8
E>	0.1	0.1	0.0	0.0
EG+	0.0	0.0	0.2	0.2
<E	0.1	0.1	0.0	0.0
EG-	0.0	0.0	0.2	0.2
WB1>	0.0	0.0	1.2	1.2
<WB1	0.0	0.1	1.2	1.2
WB2>	0.0	0.0	1.2	1.2
<WB2	0.0	0.1	1.2	1.2
WB3>	0.0	0.0	1.2	1.2
<WB3	0.0	0.1	1.2	1.2
WB4>	0.0	0.0	1.2	1.2
<WB4	0.0	0.1	1.2	1.2
MWB - Wall: 1	0.0	0.0	0.9	0.9
MWB - Wall: 2	0.0	0.0	0.0	0.0
MWB - Wall: 3	0.0	0.0	0.9	0.9
MWB - Wall: 4	0.0	0.0	0.0	0.0
EB>	0.0	0.0	0.1	0.1
<EB	0.0	0.0	0.1	0.1
SMS	0.0	0.3	10.5	10.5

Maximum Combined Reactions Summary with Factored Loads - Framing

Note: All reactions are based on 1st order structural analysis.

X-Loc	Grid	Hrz left (-Hx) (k)	Load Case	Hrz Right (Hx) (k)	Load Case	Hrz In (-Hz) (k)	Load Case	Hrz Out (Hz) (k)	Load Case	Uplift (-Vy) (k)	Load Case	Vrt Down (Vy) (k)	Load Case	Mom cw (-Mzz) (in-k)	Load Case	Mom ccw (Mzz) (in-k)	Load Case
0/0/0	-1	1.42	18	1.57	37	-	-	1.22	37	4.23	54	9.03	3	-	-	-	-
21/6/0	-2	1.30	12	2.90	9	-	-	-	-	3.24	16	8.36	3	-	-	-	-

Base Plate Summary
Base Connection Design is Based on 3000.00 (psi) Concrete
Plate Fy = 55.00 ksi
Grade A36 Anchor Rods used to determine quantity and diameter
Gage and pitch standards are based on ACI-318 Appendix D criteria for "cast-in-place" anchor rods (Min space = 4*drod)

X-Loc	Grid	Mem. No.	Thickness (in.)	Width (in.)	Length (in.)	Stiff.	Num. Of Rods	Rod Diam. (in.)	Pitch (in.)	Gage (in.)	Hole Type	Welds to Flange	Welds to Web
0/0/0	-1	1	0.375	8	13	No	4	0.750	5.0	5.0	Std	OS-0.1875	OS-0.1875

Pinned Base Plate Connection Loading

	Maximum Shear Case			Maximum Tension Case			Maximum Comp Case			Maximum Bracing/WA Case			
X-Loc	Shear (k)	Axial (k)	Load Case	Shear (k)	Tension (k)	Load Case	Shear (k)	Comp (k)	Load Case	Shear (k)	Axial (k)	Frame Shear (k)	Load Case
0/0/0	1.57	-0.13	37	1.38	-4.23	54	0.44	9.03	3	1.21	-4.23	1.38	54

Base Plate Connection Strength Ratios

X-Loc	Rod Shear	Load Case	Rod Tension	Load Case	Rod V + T	Load Case	Rod Bending	Load Case	Conc. Bearing	Load Case	Plate Tension	Load Case	Plate Comp	Load Case	Flange Weld	Load Case	Web Weld	Load Case
0/0/0	0.085	37	0.110	54	-	0	-	0	0.079	3	0.160	54	0.145	3	0.097	3	0.097	3

Flange Brace Summary

Member	From Member Joint 1	From Side Point 1	Part	Axial Load per FB (k)	Load Case	Design Note
3	6/2/7	4/6/0	(2)GFB2063	0.099	3	
2	1/11/15	18/0/0	(2)GFB2063	0.072	3	

Double Shear Tab Connection - Geometry

Mem. No.	Jt. No.	Shear Tab						End Plate			Column
		Part Mark	Part Mark	Bolt			Weld	Size	Weld to	Weld to	Reinforcement
		Rafter/Beam Side	Column Side	Grade	Qty	Dia.			Flange	Web	Weld
2	1	3MZE0440610000003B	3MZE0440610000003B	A325	3	0.75	0.1875 BS	15x6x0.375	0.1875 OS	0.1250 BS	0.3750

Total reinforcement weld size may be one or two sided once detailing is complete

Double Shear Tab Connection Strength Ratios - Mem. No. = 2; Jt. No. = 1

#	Limit State	LC	Shear (k)	Axial (k)	Allowable (k)	Ratio	Group Coefficient
1	Bolt Shear (Bolt Group)	3	8.418	-0.092	23.574	0.357	1.976
2	Bearing at Bolt Holes (Plate)	3	8.418	-0.092	58.364	0.144	1.976
3	Tearout (Plate)	3	8.418	-0.092	114.434	0.074	-
4	Yielding (Plate)	3	8.418	-0.092	74.105	0.114	-
5	Rupture (Plate)	3	8.418	-0.092	58.080	0.145	-
6	Block Shear (Plate)	3	8.418	-0.092	66.281	0.127	-
7	Axial Compression (Plate)	16	-3.388	-2.601	123.750	0.021	-
8	Local Buckling (Plate)	3	8.418	-0.092	205.838	0.102	-
9	Flexural Interaction V+M (Plate)	3	8.418	-0.092	99.153	0.085	-
10	Weld Metal (Fillet Weld)	3	8.418	-0.092	55.716	0.151	-
11	Ductility Check (Plate)	N/A				OK	-
12	Reinforcing Fillet Weld (Column)	11	0.048	1.296	133.643	0.625	-
13	End Plate Weld To Web	3	8.418	-0.092	50.730	0.166	-
14	End Plate Weld To Flange	16	-3.388	-2.601	41.763	0.062	-
15	Column Flange Rupture	3	8.418	-0.092	33.895	0.248	-

Frame Design Member Summary - Controlling Load Case and Maximum Combined Stresses per Member (Locations are from Joint 1)

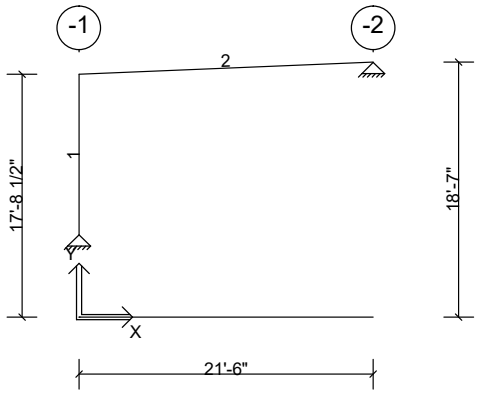
			Controlling Cases		Required Strength				Available Strength				Strength Ratios	
Mem. No.	Loc. ft	Depth in.	Axial + Flexure	Shear	Axial Pr k	Shear Vr k	Mom-x Mrx in-k	Mom-y Mry in-k	Axial Pc k	Shear Vc k	Mom-x Mcx in-k	Mom-y Mcy in-k	Axial + Flexure	Shear
1	7.50	12.00	3		-9.0		-39.5	0.0	35.1		211.7	20.2	0.42	
1	0.00	12.00		37		-1.6				21.4				0.07
2	10.23	16.00	3		0.0		526.4	0.0	19.8		544.2	51.6	0.97	
2	0.48	14.01		3		8.0				21.5				0.37
3	1.71	15.48	3		0.1		516.0	0.0	120.3		526.7	52.1	0.98	
3	10.71	12.74		3		-8.4				21.5				0.39

Parameters Used for Axial and Flexural Design

Mem. No.	Loc. ft	Lx in.	Ly/Lt in.	Lb in.	Ag in.2	Afn in.2	Ixx in.4	Iyy in.4	Sx in.3	Sy in.3	Zx in.3	Zy in.3	J in.4	Cw in.6	Cb	Rpg	Rpc	Aeff/ Ag	
1	7.50	118.61	90.0	90.0	2.92	0.67	65.44	2.80	10.91	1.12	12.61	1.73	0.02	98.71	1.00	1.00	1.15	0.56	
2	10.23	245.50	162.0	54.0	3.98	0.94	159.97	3.91	20.00	1.56	23.03	2.41	0.03	244.37	1.06	1.00	1.05	0.88	
3	1.71	245.50	162.0	54.0	3.91	0.70	148.21	3.91	19.15	1.56	22.00	2.41	0.03	228.49	1.10	1.00	1.06	1.00	

User Defined Frame Point Loads for Cross Section:

Side	Units	Type	Description	Mag1	Loc1	Offset	H or V	Supp.	Dir.	Coef.	Loc.
1	k	W1>	Torsional Bracing	-1.22	17/8/6	NA	NA	N	LEFT	1.000	OF
1	k	<W1	Torsional Bracing	-1.22	17/8/6	NA	NA	N	LEFT	1.000	OF
1	k	W2>	Torsional Bracing	-1.22	17/8/6	NA	NA	N	LEFT	1.000	OF
1	k	<W2	Torsional Bracing	-1.22	17/8/6	NA	NA	N	LEFT	1.000	OF
1	k	WPR	Torsional Bracing	-1.22	17/8/6	NA	NA	N	LEFT	1.000	OF
1	k	WPL	Torsional Bracing	-1.22	17/8/6	NA	NA	N	LEFT	1.000	OF



Deflection Load Combinations - Framing

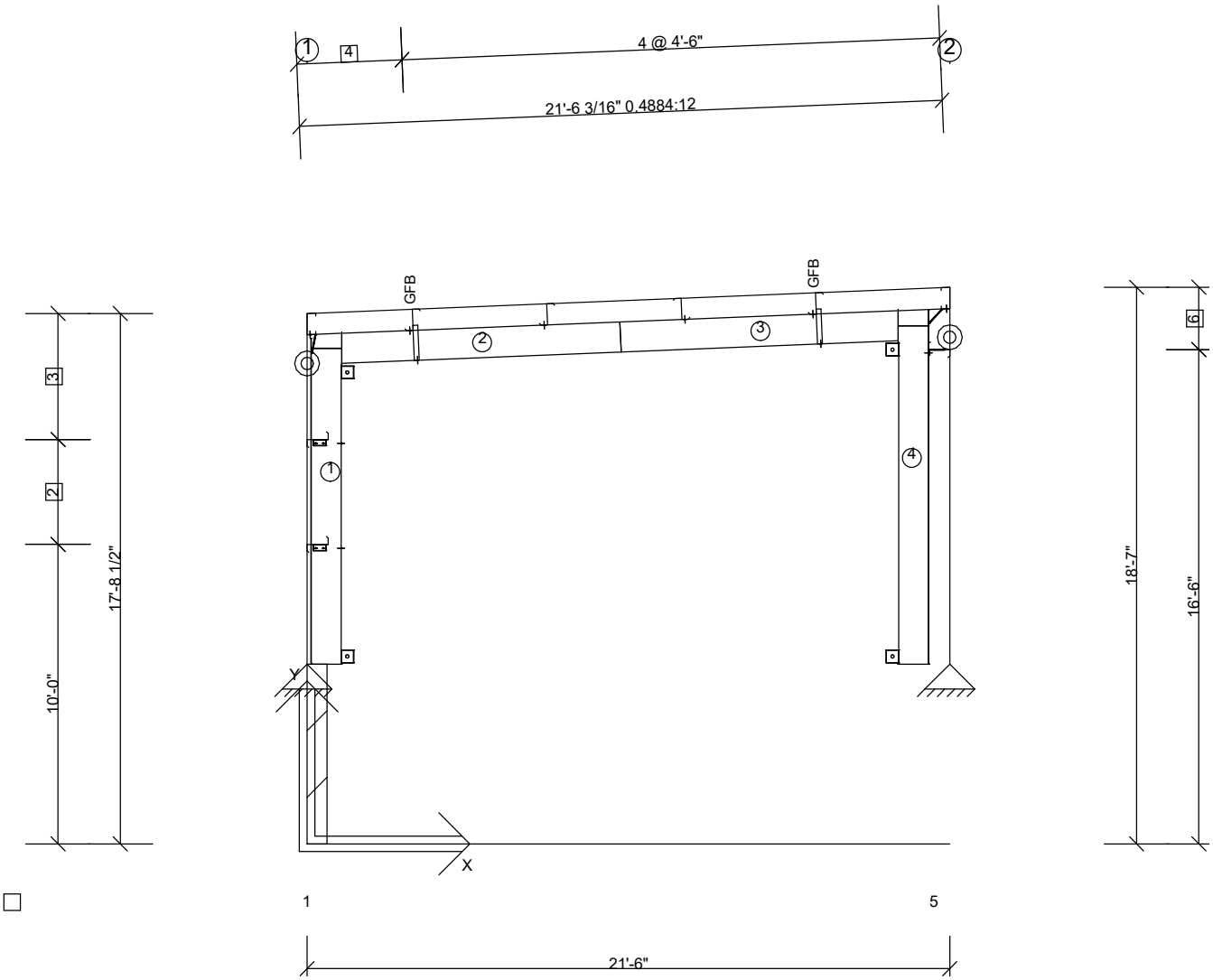
No.	Origin	Factor	Def H	Def V	Application	Description
1	User	1.000	0	0	1.0 D + 1.0 CG + 1.0 S	Jack beam deflection check
2	System	1.000	0	180	1.0 L	L
3	System	1.000	0	180	1.0 SMS	SMS
4	System	1.000	60	180	0.42 W1>	W1>
5	System	1.000	60	180	0.42 <W1	<W1
6	System	1.000	60	180	0.42 W2>	W2>
7	System	1.000	60	180	0.42 <W2	<W2
8	System	1.000	60	180	0.42 WPL	WPL
9	System	1.000	60	180	0.42 WPR	WPR
10	System	1.000	10	0	1.0 E> + 1.0 EG-	E> + EG-
11	System	1.000	10	0	1.0 <E + 1.0 EG-	<E + EG-

Controlling Frame Deflection Ratios for Cross Section:

Description	Ratio	Deflection (in.)	Member	Joint	Load Case	Load Case Description
Max. Horizontal Deflection	(H/12131)	-0.010	1	2	8	WPL
Max. Vertical Deflection for Span 1	(L/489)	-0.513	3	1	3	SMS

* Negative horizontal deflection is left
* Negative vertical deflection is down
Lateral deflections of primary frames are calculated on a bare frame basis and do not include resistance from systems such as roof and endwall diaphragms or partial base fixity. Therefore, these deflections may be considerably overstated.

Wall: 2, Frame at: 39/6/0
Frame Cross Section:



Dimension Key
1 1 5/8"
2 3'-6"
3 4'-2 1/2"
4 3'-6 3/16"
5 8 1/2"
6 2'-1"

Frame Clearances
Horiz. Clearance between members 1(CX007) and 4(CX008): 18'-7 7/8"
Vert. Clearance at member 1(CX007): 16'-0 1/16"
Vert. Clearance at member 4(CX008): 16'-9 1/8"
Finished Floor Elevation = 100'-0" (Unless Noted Otherwise)

Frame Location Design Parameters:

Location	Avg. Bay Space	Description	Angle	Group	Trib. Override	Design Status
39/6/0	10/7/8	Copy of Alternate 3 Pinned Endwall #2 EW 3	90.0000		-	Stress Check

Design Load Combinations - Framing

No.	Origin	Factor	Application	Description
1	System	1.000	1.0 D + 1.0 CG + 1.0 L>	D + CG + L>
2	System	1.000	1.0 D + 1.0 CG + 1.0 <L	D + CG + <L
3	System	1.000	1.0 D + 1.0 CG + 1.0 SMS>	D + CG + SMS>
4	System	1.000	1.0 D + 1.0 CG + 1.0 <SMS	D + CG + <SMS
5	System	1.000	1.0 D + 1.0 CG + 0.6 W1>	D + CG + W1>
6	System	1.000	1.0 D + 1.0 CG + 0.6 <W1	D + CG + <W1
7	System	1.000	1.0 D + 1.0 CG + 0.6 W2>	D + CG + W2>
8	System	1.000	1.0 D + 1.0 CG + 0.6 <W2	D + CG + <W2
9	System	1.000	1.0 D + 1.0 CG + 0.6 WPL	D + CG + WPL
10	System	1.000	1.0 D + 1.0 CG + 0.6 WPR	D + CG + WPR
11	System	1.000	0.6 MW	MW - Wall: 1
12	System	1.000	0.6 MW	MW - Wall: 2
13	System	1.000	0.6 MW	MW - Wall: 3
14	System	1.000	0.6 MW	MW - Wall: 4
15	System	1.000	0.6 D + 0.6 CU + 0.6 W1>	D + CU + W1>
16	System	1.000	0.6 D + 0.6 CU + 0.6 <W1	D + CU + <W1
17	System	1.000	0.6 D + 0.6 CU + 0.6 W2>	D + CU + W2>
18	System	1.000	0.6 D + 0.6 CU + 0.6 <W2	D + CU + <W2
19	System	1.000	0.6 D + 0.6 CU + 0.6 WPL	D + CU + WPL
20	System	1.000	0.6 D + 0.6 CU + 0.6 WPR	D + CU + WPR
21	System	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 W1>	D + CG + L + W1>
22	System	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 <W1	D + CG + L + <W1
23	System	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 W2>	D + CG + L + W2>
24	System	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 <W2	D + CG + L + <W2
25	System	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPL	D + CG + L + WPL
26	System	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPR	D + CG + L + WPR
27	System	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W1>	D + CG + S + W1>
28	System	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W1	D + CG + S + <W1
29	System	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 W2>	D + CG + S + W2>
30	System	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 <W2	D + CG + S + <W2
31	System	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPL	D + CG + S + WPL
32	System	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPR	D + CG + S + WPR
33	System	1.000	1.0 D + 1.0 CG + 0.7 E> + 0.7 EG+	D + CG + E> + EG+
34	System	1.000	1.0 D + 1.0 CG + 0.7 <E + 0.7 EG+	D + CG + <E + EG+
35	System	1.000	0.6 D + 0.6 CU + 0.7 E> + 0.7 EG-	D + CU + E> + EG-
36	System	1.000	0.6 D + 0.6 CU + 0.7 <E + 0.7 EG-	D + CU + <E + EG-
37	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPR + 0.6 WB1>	D + CG + WPR + WB1>
38	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPR + 0.6 WB1>	D + CU + WPR + WB1>
39	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPR + 0.45 WB1>	D + CG + L + WPR + WB1>
40	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPR + 0.45 WB1>	D + CG + S + WPR + WB1>
41	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPR + 0.6 <WB1	D + CG + WPR + <WB1
42	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPR + 0.6 <WB1	D + CU + WPR + <WB1
43	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPR + 0.45 <WB1	D + CG + L + WPR + <WB1
44	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPR + 0.45 <WB1	D + CG + S + WPR + <WB1
45	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPR + 0.6 WB2>	D + CG + WPR + WB2>
46	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPR + 0.6 WB2>	D + CU + WPR + WB2>
47	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPR + 0.45 WB2>	D + CG + L + WPR + WB2>
48	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPR + 0.45 WB2>	D + CG + S + WPR + WB2>
49	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPR + 0.6 <WB2	D + CG + WPR + <WB2
50	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPR + 0.6 <WB2	D + CU + WPR + <WB2
51	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPR + 0.45 <WB2	D + CG + L + WPR + <WB2
52	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPR + 0.45 <WB2	D + CG + S + WPR + <WB2
53	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPL + 0.6 WB3>	D + CG + WPL + WB3>
54	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPL + 0.6 WB3>	D + CU + WPL + WB3>
55	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPL + 0.45 WB3>	D + CG + L + WPL + WB3>
56	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPL + 0.45 WB3>	D + CG + S + WPL + WB3>
57	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPL + 0.6 <WB3	D + CG + WPL + <WB3
58	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPL + 0.6 <WB3	D + CU + WPL + <WB3
59	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPL + 0.45 <WB3	D + CG + L + WPL + <WB3
60	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPL + 0.45 <WB3	D + CG + S + WPL + <WB3

61	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPL + 0.6 WB4>	D + CG + WPL + WB4>
62	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPL + 0.6 WB4>	D + CU + WPL + WB4>
63	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPL + 0.45 WB4>	D + CG + L + WPL + WB4>
64	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPL + 0.45 WB4>	D + CG + S + WPL + WB4>
65	System Derived	1.000	1.0 D + 1.0 CG + 0.6 WPL + 0.6 <WB4	D + CG + WPL + <WB4
66	System Derived	1.000	0.6 D + 0.6 CU + 0.6 WPL + 0.6 <WB4	D + CU + WPL + <WB4
67	System Derived	1.000	1.0 D + 1.0 CG + 0.75 L + 0.45 WPL + 0.45 <WB4	D + CG + L + WPL + <WB4
68	System Derived	1.000	1.0 D + 1.0 CG + 0.75 S + 0.45 WPL + 0.45 <WB4	D + CG + S + WPL + <WB4
69	System Derived	1.000	0.6 MWB	MWB - Wall: 1
70	System Derived	1.000	0.6 MWB	MWB - Wall: 2
71	System Derived	1.000	0.6 MWB	MWB - Wall: 3
72	System Derived	1.000	0.6 MWB	MWB - Wall: 4
73	System Derived	1.000	1.0 D + 1.0 CG + 0.7 EB> + 0.7 EG+	D + CG + EB> + EG+
74	System Derived	1.000	0.6 D + 0.6 CU + 0.7 EB> + 0.7 EG-	D + CU + EB> + EG-
75	System Derived	1.000	1.0 D + 1.0 CG + 0.7 <EB + 0.7 EG+	D + CG + <EB + EG+
76	System Derived	1.000	0.6 D + 0.6 CU + 0.7 <EB + 0.7 EG-	D + CU + <EB + EG-

Frame Member Sizes

Mem. No.	Flg Width (in.)	Flg Thk (in.)	Web Thk (in.)	Depth1 (in.)	Depth2 (in.)	Length (ft)	Weight (p)	Flg Fy (ksi)	Web Fy (ksi)	Splice Jt.1	Codes Jt.2	Shape
1	5.00	0.1345	0.1345	12.00	12.00	11.00	128.5	55.00	55.00	BP	KN	3P
2	5.00	0.1345	0.1644	12.00	12.00	10.32	112.0	55.00	55.00	KN	SS	3P
3	5.00	0.1345	0.1644	12.00	12.00	10.32	111.5	55.00	55.00	SS	KN	3P
4	5.00	0.1345	0.1345	12.00	12.00	11.85	138.0	55.00	55.00	BP	KN	3P

Total Frame Weight = 490.0 (p) (Includes all plates)

Frame Member Releases

Member	Joint 1	Joint 2
1	No	Yes
4	No	Yes

Boundary Condition Summary

Member	X-Loc	Y-Loc	Supp. X	Supp. Y	Moment	Displacement X(in.)	Displacement Y(in.)	Displacement ZZ(rad.)
1	0/0/0	6/0/0	Yes	Yes	No	0/0/0	0/0/0	0.0000
4	21/6/0	6/0/0	Yes	Yes	No	0/0/0	0/0/0	0.0000

Values shown are resisting forces of the foundation.
Base Connection Design is Based on 3000.00 (psi) Concrete

Reactions - Unfactored Load Type at Frame Cross Section:

Type		Exterior Column		Exterior Column				
X-Loc		0/0/0		21/6/0				
Grid1 - Grid2		-1		-2				
Base Plate W x L (in.)		8 X 13		8 X 13				
Base Plate Thickness (in.)		0.375		0.375				
Anchor Rod Qty/Diam. (in.)		4 - 0.750		4 - 0.750				
Column Base Elev.		106'-0"		106'-0"				
Load Type	Desc.	Hx	Vy	Hx	Vy			
D	Frm	-	0.51	-	2.49	-	-	-
CG	Frm	-	1.19	-	4.65	-	-	-
L>	Frm	-	2.38	-	8.79	-	-	-
<L	Frm	-	2.38	-	8.79	-	-	-
SMS>	Frm	-	2.38	-	9.29	-	-	-
<SMS	Frm	-	2.38	-	9.29	-	-	-
W1>	Frm	1.23	-2.72	-	-11.45	-	-	-
<W1	Frm	0.22	-3.61	-0.03	-11.63	-	-	-
W2>	Frm	-0.38	0.56	0.04	0.20	-	-	-
<W2	Frm	-1.39	-0.34	0.01	0.02	-	-	-
WPL	Frm	1.46	-3.67	-0.04	-13.21	-	-	-
WPR	Frm	1.46	-2.74	-0.04	-9.74	-	-	-
MW - Wall: 1	Frm	-	-	-	-	-	-	-
MW - Wall: 2	Frm	-0.96	0.04	-	-0.08	-	-	-
MW - Wall: 3	Frm	-	-	-	-	-	-	-
MW - Wall: 4	Frm	-	0.01	1.93	-0.01	-	-	-
CU	Frm	-	-	-	-	-	-	-
L	Frm	-	2.38	-	8.79	-	-	-
S	Frm	-	2.00	-	7.81	-	-	-
E>	Frm	-	-	-	-	-	-	-
EG+	Frm	-	0.05	-	0.17	-	-	-

<E	Frm	-	-	-	-	-	-	-
EG-	Frm	-	-0.05	-	-0.17	-	-	-
WB1>	Brc	-	0.35	-0.64	-0.35	-	-	-
<WB1	Brc	0.89	-0.52	-	0.50	-	-	-
WB2>	Brc	-	0.35	-0.64	-0.35	-	-	-
<WB2	Brc	0.89	-0.52	-	0.50	-	-	-
WB3>	Brc	-	0.35	-0.64	-0.35	-	-	-
<WB3	Brc	0.89	-0.52	-	0.50	-	-	-
WB4>	Brc	-	0.35	-0.64	-0.35	-	-	-
<WB4	Brc	0.89	-0.52	-	0.50	-	-	-
MWB - Wall: 1	Brc	-	-	-	-	-	-	-
MWB - Wall: 2	Brc	1.30	-0.76	-	0.76	-	-	-
MWB - Wall: 3	Brc	-	-	-	-	-	-	-
MWB - Wall: 4	Brc	-	-	-	-	-	-	-
EB>	Brc	-	0.02	-0.03	-0.02	-	-	-
<EB	Brc	0.03	-0.02	-	0.02	-	-	-
SMS	Frm	-	2.38	-	9.29	-	-	-

Sum of Forces with Reactions Check - Framing

	Horizontal		Vertical	
Load Type	Load (k)	Reaction (k)	Load (k)	Reaction (k)
D	0.0	0.0	3.0	3.0
CG	0.0	0.0	5.8	5.8
L>	0.0	0.0	11.2	11.2
<L	0.0	0.0	11.2	11.2
SMS>	0.0	0.0	11.7	11.7
<SMS	0.0	0.0	11.7	11.7
W1>	2.8	2.8	14.2	14.2
<W1	0.3	0.3	15.2	15.2
W2>	0.4	0.4	0.8	0.8
<W2	2.7	2.7	0.3	0.3
WPL	2.2	2.2	16.9	16.9
WPR	2.1	2.1	12.5	12.5
MW - Wall: 1	0.0	0.0	0.0	0.0
MW - Wall: 2	2.2	2.2	0.0	0.0
MW - Wall: 3	0.0	0.0	0.0	0.0
MW - Wall: 4	4.3	4.3	0.0	0.0
CU	0.0	0.0	0.0	0.0
L	0.0	0.0	11.2	11.2
S	0.0	0.0	9.8	9.8
E>	0.0	0.0	0.0	0.0
EG+	0.0	0.0	0.2	0.2
<E	0.0	0.0	0.0	0.0
EG-	0.0	0.0	0.2	0.2
WB1>	0.6	0.6	0.0	0.0
<WB1	0.9	0.9	0.0	0.0
WB2>	0.6	0.6	0.0	0.0
<WB2	0.9	0.9	0.0	0.0
WB3>	0.6	0.6	0.0	0.0
<WB3	0.9	0.9	0.0	0.0
WB4>	0.6	0.6	0.0	0.0
<WB4	0.9	0.9	0.0	0.0
MWB - Wall: 1	0.0	0.0	0.0	0.0
MWB - Wall: 2	1.3	1.3	0.0	0.0
MWB - Wall: 3	0.0	0.0	0.0	0.0
MWB - Wall: 4	0.0	0.0	0.0	0.0
EB>	0.0	0.0	0.0	0.0
<EB	0.0	0.0	0.0	0.0
SMS	0.0	0.0	11.7	11.7

Maximum Combined Reactions Summary with Factored Loads - Framing

Note: All reactions are based on 1st order structural analysis.

X-Loc	Grid	Hrz left (-Hx) (k)	Load Case	Hrz Right (Hx) (k)	Load Case	Hrz In (-Hz) (k)	Load Case	Hrz Out (Hz) (k)	Load Case	Uplift (-Vy) (k)	Load Case	Vrt Down (Vy) (k)	Load Case	Mom cw (-Mzz) (in-k)	Load Case	Mom ccw (Mzz) (in-k)	Load Case

0/0/0	-1	0.83	8	1.41	41	-	-	-	-	2.21	58	4.08	1	-	-	-	-
21/6/0	-2	0.80	8	1.41	14	-	-	-	-	-	-	-	-	-	-	-	-
21/6/0	-2	0.41	37	1.16	14	-	-	-	-	6.64	54	16.43	3	-	-	-	-

Base Plate Summary
Base Connection Design is Based on 3000.00 (psi) Concrete
Plate Fy = 55.00 ksi
Grade A36 Anchor Rods used to determine quantity and diameter
Gage and pitch standards are based on ACI-318 Appendix D criteria for "cast-in-place" anchor rods (Min space = 4*drod)

X-Loc	Grid	Mem. No.	Thickness (in.)	Width (in.)	Length (in.)	Stiff.	Num. Of Rods	Rod Diam. (in.)	Pitch (in.)	Gage (in.)	Hole Type	Welds to Flange	Welds to Web
0/0/0	-1	1	0.375	8	13	No	4	0.750	5.0	5.0	Std	OS-0.1875	OS-0.1875
21/6/0	-2	4	0.375	8	13	No	4	0.750	5.0	5.0	Std	OS-0.1875	OS-0.1875

Pinned Base Plate Connection Loading

	Maximum Shear Case			Maximum Tension Case			Maximum Comp Case			Maximum Bracing/WA Case			
X-Loc	Shear (k)	Axial (k)	Load Case	Shear (k)	Tension (k)	Load Case	Shear (k)	Comp (k)	Load Case	Shear (k)	Axial (k)	Frame Shear (k)	Load Case
0/0/0	1.41	-2.21	58	1.41	-2.21	58	-	4.08	1	-	-	-	58
21/6/0	1.16	-0.01	14	0.41	-6.64	54	-	16.43	4	-	-	-	16

Base Plate Connection Strength Ratios

X-Loc	Rod Shear	Load Case	Rod Tension	Load Case	Rod V + T	Load Case	Rod Bending	Load Case	Conc. Bearing	Load Case	Plate Tension	Load Case	Plate Comp	Load Case	Flange Weld	Load Case	Web Weld	Load Case
0/0/0	0.076	58	0.057	58	-	0	-	0	0.036	1	0.083	58	0.066	1	0.044	1	0.056	58
21/6/0	0.063	14	0.173	54	-	0	-	0	0.143	4	0.251	54	0.264	4	0.176	4	0.176	4

Web Stiffener Summary

Mem. No.	Stiff. No.	Desc.	Loc. (ft)	Web Depth (in.)	h/t	a/h	a (in.)	Thick. (in.)	Width (in.)	Side	Welding Description
1	1	S2	10.51	11.731	87.22	N/A	N/A	0.1875	2.000	Both	SP-OS-0.1250,W-OS-0.1250,F-OS-0.1250
4	1	S2	11.27	11.731	87.22	N/A	N/A	0.1875	2.000	Both	SP-OS-0.1250,W-OS-0.1250,F-OS-0.1250

Bolted End-Plate Connections (Plate Fy = 55.00 ksi)

			End-Plate Dimensions			Bolt			Outside Flange			Inside Flange		
Mem. No.	Jt. No.	Type	Thick. (in.)	Width (in.)	Length (in.)	Diam. (in.)	Spec/Joint	Gages In/Out (in.)	Configuration ID	Configuration Desc.	Pitches 1st/2nd (in.)	Configuration ID	Configuration Desc.	Pitches 1st/2nd (in.)
1	2	KN(Face)	0.375	6.00	13.00	0.500	A325/-	3.00	11	Flush	3.00	11	Flush	3.00
2	1	KN(Face)	0.375	6.00	13.03	0.500	A325/-	3.00	11	Flush	3.00/3.00	11	Flush	3.00/3.00
3	2	KN(Face)	0.375	6.00	12.99	0.500	A325/-	3.00	11	Flush	3.00/3.00	11	Flush	3.00/3.00
4	2	KN(Face)	0.375	6.00	13.02	0.500	A325/-	3.00	11	Flush	3.00	11	Flush	3.00

Pinned Connections:

		Maximum Shear Case			Maximum Tension Case			Strength Ratios							
Mem. No.	Jt. No.	Ld Cs	Axial (k)	Shear (k)	Ld Cs	Axial (k)	Shear (k)	Bolt Tension	Bolt Shear	Bolt V + T	Plate Bending	Flange Yielding	Flange Bearing	Flange Weld	Web Weld
1	2	4	0.0	3.5	54	1.1	1.7	0.034	0.167	0.000	0.035	0.025	0.125	0.059	0.108
2	2	1	-0.1	3.6	19	1.2	1.7	0.036	0.167	0.000	0.038	0.026	0.126	0.059	0.109
3	2	3	0.2	3.6	9	1.2	0.5	0.038	0.168	0.000	0.040	0.028	0.126	0.059	0.109
4	2	3	0.0	3.5	54	1.2	1.8	0.039	0.167	0.000	0.040	0.028	0.126	0.059	0.108

Bolted End-Plate Connections Weld Data:

Mem.	Jt.		Outside Flange				Inside Flange				Web				WS_P_01 Web Weld			
No.	No.	Type	Type	Size (in.)	Side	Notes	Type	Size (in.)	Side	Notes	Type	Size (in.)	Side	Notes	Type	Size (in.)	Side	Notes
1	2	KN(Face)	Fillet	0.1875	Both	-	CJP	99.0000	CJP	-	Fillet	0.1875	One	-	-	-	-	-
2	1	KN(Face)	Fillet	0.1875	One	-	Fillet	0.1875	One	-	Fillet	0.1875	One	-	-	-	-	-
3	2	KN(Face)	Fillet	0.1875	One	-	Fillet	0.1875	One	-	Fillet	0.1875	One	-	-	-	-	-
4	2	KN(Face)	Fillet	0.1875	Both	-	CJP	99.0000	CJP	-	Fillet	0.1875	One	-	-	-	-	-

Flange Brace Summary

Member	From Member Joint 1	From Side Point 1	Part	Axial Load per FB (k)	Load Case	Design Note
3	6/6/14	4/6/0	GFB2050	0.086	0	
2	2/4/11	18/0/0	GFB2050	0.079	1	

Frame Design Member Summary - Controlling Load Case and Maximum Combined Stresses per Member (Locations are from Joint 1)

			Controlling Cases		Required Strength				Available Strength				Strength Ratios	
Mem. No.	Loc. ft	Depth in.	Axial + Flexure	Shear	Axial Pr k	Shear Vr k	Mom-x Mrx in-k	Mom-y Mry in-k	Axial Pc k	Shear Vc k	Mom-x Mcx in-k	Mom-y Mcy in-k	Axial + Flexure	Shear
1	5.75	12.00	8		-1.5		26.2	0.0	35.1		211.7	20.2	0.15	
1	0.00	12.00		58		-0.9				21.4				0.04
2	9.86	12.00	1		0.0		218.8	0.0	16.1		248.5	23.7	0.88	
2	0.48	12.00		1		3.6				32.0				0.11
3	0.00	12.00	1		0.0		218.8	0.0	16.1		248.5	23.7	0.88	
3	9.30	12.00		3		-3.6				32.0				0.11
4	9.00	12.00	3		-16.4		0.0	0.0	22.7		179.6	20.2	0.72	
4	0.00	12.00		14		-1.2				21.4				0.05

Parameters Used for Axial and Flexural Design

Mem. No.	Loc. ft	Lx in.	Ly/Lt in.	Lb in.	Ag in.2	Afn in.2	Ixx in.4	Iyy in.4	Sx in.3	Sy in.3	Zx in.3	Zy in.3	J in.4	Cw in.6	Cb	Rpg	Rpc	Aeff/ Ag
1	5.75	120.54	90.0	42.0	2.92	0.67	65.44	2.80	10.91	1.12	12.61	1.73	0.02	98.71	1.00	1.00	1.15	0.72
2	9.86	224.06	162.0	54.0	3.27	0.67	69.46	2.81	11.58	1.12	13.64	1.76	0.03	98.78	1.06	1.00	1.18	1.00
3	0.00	224.06	162.0	54.0	3.27	0.67	69.46	2.81	11.58	1.12	13.64	1.76	0.03	98.78	1.06	1.00	1.18	1.00
4	9.00	129.65	129.6	129.6	2.92	0.67	65.44	2.80	10.91	1.12	12.61	1.73	0.02	98.71	1.00	1.00	1.15	0.90

Deflection Load Combinations - Framing

No.	Origin	Factor	Def H	Def V	Application	Description
1	User	1.000	0	0	1.0 D + 1.0 CG + 1.0 S	Jack beam deflection check
2	System	1.000	0	180	1.0 L	L
3	System	1.000	0	180	1.0 SMS	SMS
4	System	1.000	60	180	0.42 W1>	W1>
5	System	1.000	60	180	0.42 <W1	<W1
6	System	1.000	60	180	0.42 W2>	W2>
7	System	1.000	60	180	0.42 <W2	<W2
8	System	1.000	60	180	0.42 WPL	WPL
9	System	1.000	60	180	0.42 WPR	WPR
10	System	1.000	10	0	1.0 E> + 1.0 EG-	E> + EG-
11	System	1.000	10	0	1.0 <E + 1.0 EG-	<E + EG-

Controlling Frame Deflection Ratios for Cross Section:

Description	Ratio	Deflection (in.)	Member	Joint	Load Case	Load Case Description
Max. Horizontal Deflection	(H/70507)	-0.002	1	2	9	WPR
Max. Vertical Deflection for Span 1	(L/612)	-0.385	3	1	3	SMS

* Negative horizontal deflection is left
* Negative vertical deflection is down

Lateral deflections of primary frames are calculated on a bare frame basis and do not include resistance from systems such as roof and endwall diaphragms or partial base fixity. Therefore, these deflections may be considerably overstated.

Covering - Summary Report

Shape: Alternate 3

Shape Alternate 3 is set as an existing shape.

Shape: Alternate 3 ADDITION

Loads and Codes - Shape: Alternate 3 ADDITION

City: Lees Summit **County:** Jackson **State:** Missouri **Country:** United States
Building Code: 2018 International Building Code
Building Risk/Occupancy Category: II (Standard Occupancy Structure)
Structural: 16AISC - ASD
Cold Form: 16AISI - ASD
Rainfall: I: 7.00 inches per hour
f'c: 3000.00 psi Concrete

Dead and Collateral Loads
Collateral Gravity: 10.00 psf
Collateral Uplift: 0.00 psf
Roof Covering + Second. Dead Load: 2.46 psf
Frame Weight (assumed for seismic):2.50 psf

Roof Live Load
Roof Live Load: 20.00 psf Not Reducible

Wind Load
Wind Speed: Vult: 115.00 (Vasd: 89.08) mph

The 'Envelope Procedure' is Used
Primaries Wind Exposure: C - Kz: 0.879
Parts Wind Exposure Factor: 0.879
Wind Enclosure: Partially Enclosed
Solidity Ratio: 20.0%
Frame Width Factor: Kb: 1.5850
Shielding Factor: Ks: 0.6690
Topographic Factor: Kzt: 1.0000
Ground Elevation Factor: Ke: 0.9636

NOT Windborne Debris Region
Base Elevation: 0/0/0
Site Elevation: 1024.0 ft
Primary Zone Strip Width: 2a: 6/0/0
Parts / Portions Zone Strip Width:
Walls, a: 3/0/0
Roof(s), 0.6h: 10/7/8
Velocity Pressure: qz: 24.38, (C&C) 24.38 psf

Snow Load
Ground Snow Load: pg: 20.00 psf

Flat Roof Snow: pf: 16.80 psf
Design Snow (Sloped): ps: 16.80 psf
Rain Surcharge: 0.00 psf
Specified Minimum Roof Snow: 20.00 psf (Code)
Exposure Factor: 2 Partially Exposed - Ce: 1.00
Snow Importance: Is: 1.000
Thermal Factor: Unheated - Ct: 1.20
Ground / Roof Conversion: 0.70
Obstructed or Not Slippery

Seismic Load
Lateral Force Resisting Systems using Equivalent Force Procedure
Mapped MCE Acceleration: Ss: 12.00 %g
Mapped MCE Acceleration: S1: 7.00 %g
Site Class: Stiff soil (D) - Default
Seismic Importance: Ie: 1.000
Design Acceleration Parameter: Sds: 0.1280
Design Acceleration Parameter: Sd1: 0.1120
Seismic Design Category:: A
Seismic Snow Load: 0.00 psf
% Snow Used in Seismic: 0.00
Diaphragm Condition: Flexible
Fundamental Period Height Used: 18/1/12

Transverse Direction Parameters
System NOT detailed for Seismic
Redundancy Factor: Rho: 1.00
Fundamental Period: Ta: 0.2846
R-Factor: 3.00
Overstrength Factor: Omega: 2.50
Deflection Amplification Factor: Cd: 3.00
Base Shear: V: 0.0100 x W

Longitudinal Direction Parameters
System NOT detailed for Seismic
Redundancy Factor: Rho: 1.00
Fundamental Period: Ta: 0.1758
R-Factor: 3.00
Overstrength Factor: Omega: 2.50
Deflection Amplification Factor: Cd: 3.00
Base Shear: V: 0.0100 x W

Covering Design Loads - Wall: 2

Zone	Units	Type	Description	Actual	Loc1	Allow.	Ratio	Dir.	Coef.
End Zone	psf	W1>	Need Lower Girt	26.47	0/0/0	38.000	0.70	OUT	-1.810
End Zone	psf	<W2	Need Lower Girt	21.21	0/0/0	28.000	0.76	IN	1.450
Interior Area	psf	W1>	Need Lower Girt	22.52	3/0/0	38.000	0.59	OUT	-1.540
Interior Area	psf	<W2	Need Lower Girt	21.21	3/0/0	28.000	0.76	IN	1.450

Covering Design Loads - Wall: 3

Zone	Units	Type	Description	Actual	Loc1	Allow.	Ratio	Dir.	Coef.
End Zone	psf	W1>	Need Lower Girt	26.47	0/0/0	27.000	0.98	OUT	-1.810
End Zone	psf	<W2	Need Lower Girt	21.21	0/0/0	22.000	0.96	IN	1.450
End Zone	psf	W1>	Need Lower Girt	26.47	18/6/0	27.000	0.98	OUT	-1.810
End Zone	psf	<W2	Need Lower Girt	21.21	18/6/0	22.000	0.96	IN	1.450
Interior Area	psf	W1>	Need Lower Girt	22.52	3/0/0	27.000	0.83	OUT	-1.540
Interior Area	psf	<W2	Need Lower Girt	21.21	3/0/0	22.000	0.96	IN	1.450

Covering Design Loads - Wall: 4

Zone	Units	Type	Description	Actual	Loc1	Allow.	Ratio	Dir.	Coef.

End Zone	psf	W1>	Need Lower Girt	26.47	37/6/0	27.000	0.98	OUT	-1.810
End Zone	psf	<W2	Need Lower Girt	21.21	37/6/0	22.000	0.96	IN	1.450
Interior Area	psf	W1>	Need Lower Girt	22.52	0/0/0	27.000	0.83	OUT	-1.540
Interior Area	psf	<W2	Need Lower Girt	21.21	0/0/0	22.000	0.96	IN	1.450

Covering Design Loads - Roof: A

Zone	Units	Type	Description	Actual	Loc1	Allow.	Ratio	Dir.	Coef.
Entire Surface	psf	L	Standard Spacing is Adequate	21.18	0/0/0	121.000	0.18	IN	0.999
Entire Surface	psf	S	Standard Spacing is Adequate	17.99	0/0/0	121.000	0.15	IN	0.999
Entire Surface	psf	SMS	Standard Spacing is Adequate	21.18	0/0/0	121.000	0.18	IN	0.999
Side Zone	psf	<W2	Standard Spacing is Adequate	13.63	0/0/0	121.000	0.11	IN	0.850
Side Zone	psf	W1>	Non-std Spacing: 4/9/0 Required	32.19	0/0/0	34.000	0.95	OUT	-2.250
Corner Zone	psf	<W2	Standard Spacing is Adequate	13.63	29/10/8	121.000	0.11	IN	0.850
Corner Zone	psf	W1>	Non-std Spacing: 4/6/0 Required	36.03	29/10/8	36.000	1.00	OUT	-2.513
Corner Zone	psf	<W2	Standard Spacing is Adequate	13.63	36/11/8	121.000	0.11	IN	0.850
Corner Zone	psf	W1>	Non-std Spacing: 4/6/0 Required	36.03	36/11/8	36.000	1.00	OUT	-2.513
Side Zone	psf	<W2	Standard Spacing is Adequate	13.63	29/10/8	121.000	0.11	IN	0.850
Side Zone	psf	W1>	Non-std Spacing: 4/9/0 Required	32.19	29/10/8	34.000	0.95	OUT	-2.250
Side Zone	psf	<W2	Standard Spacing is Adequate	13.63	29/10/8	121.000	0.11	IN	0.850
Side Zone	psf	W1>	Non-std Spacing: 4/9/0 Required	32.19	29/10/8	34.000	0.95	OUT	-2.250
Corner Zone	psf	<W2	Standard Spacing is Adequate	13.63	36/11/8	121.000	0.11	IN	0.850
Corner Zone	psf	W1>	Non-std Spacing: 4/6/0 Required	36.03	36/11/8	36.000	1.00	OUT	-2.513
Corner Zone	psf	<W2	Standard Spacing is Adequate	13.63	29/10/8	121.000	0.11	IN	0.850
Corner Zone	psf	W1>	Non-std Spacing: 4/6/0 Required	36.03	29/10/8	36.000	1.00	OUT	-2.513
Side Zone	psf	<W2	Standard Spacing is Adequate	13.63	0/0/0	121.000	0.11	IN	0.850
Side Zone	psf	W1>	Non-std Spacing: 4/9/0 Required	32.19	0/0/0	34.000	0.95	OUT	-2.250
Side Zone	psf	<W2	Standard Spacing is Adequate	13.63	29/10/8	121.000	0.11	IN	0.850
Side Zone	psf	W1>	Non-std Spacing: 4/9/0 Required	32.19	29/10/8	34.000	0.95	OUT	-2.250
Misc. Edge Zone	psf	<W2	Standard Spacing is Adequate	13.63	19/3/0	121.000	0.11	IN	0.850
Misc. Edge Zone	psf	W1>	Non-std Spacing: 4/9/0 Required	32.19	19/3/0	34.000	0.95	OUT	-2.250
Interior Area	psf	<W2	Standard Spacing is Adequate	13.63	0/0/0	121.000	0.11	IN	0.850
Interior Area	psf	W1>	Standard Spacing is Adequate	20.49	0/0/0	31.000	0.66	OUT	-1.450

Panel Data

Wall/Roof	Type	Thickness	Finish	Color	Direction	Gable Dir	Max. Length
Wall: 1	Shadowall Unpunched	26	Special Request	LSMO PEWTER	Left to Right	Left to Right	40/0/0
Wall: 2	Shadowall Unpunched	26	Special Request	LSMO PEWTER	Left to Right	Left to Right	40/0/0
Location: 2	NBBMC - Masonry	8"	psf = 0.10	Supported by others=yes			
Wall: 3	Shadowall Unpunched	26	Special Request	LSMO PEWTER	Left to Right	Left to Right	40/0/0
Location: 2	NBBMC - Masonry	8"	psf = 0.10	Supported by others=yes			
Wall: 4	Shadowall Unpunched	26	Special Request	LSMO PEWTER	Left to Right	Left to Right	40/0/0
Location: 2	Open						
Roof: A	MR-24	24	Special Request	LSMO PEWTER	Right to Left	Not Applicable	50/0/0

Fastener Data

Wall/Roof	Type	Length	Spacing	Washers	Insul. Block	Mod. Ctrl.	Ice Damming
Wall: 1	Torx CMC MPS, CMC SDS Stitch	MPS, SDS Stitch	Standard Option	Yes	None	No	Yes
Wall: 2	Torx CMC MPS, CMC SDS Stitch	MPS, SDS Stitch	Standard Option	Yes	None	No	Yes
Location: 2	Not Applicable						
Wall: 3	Torx CMC MPS, CMC SDS Stitch	MPS, SDS Stitch	Standard Option	Yes	None	No	Yes
Location: 2	Not Applicable						
Wall: 4	Torx CMC MPS, CMC SDS Stitch	MPS, SDS Stitch	Standard Option	Yes	None	No	Yes
Location: 2	None.						
Roof: A	Stainless	Standard Option	Standard Option	Yes	None	No	Yes

Stud Wall

Wall	Use Bay Spaces	Max. Stud Panel Width	Stud Spacing	Deflection	Weight	Thickness	Wall Panel Offset	Description	
No	0/0/0	0	0	0.10	0/8/0	0/0/0			No
0/0/0	0	0	0.10	0/8/0	0/0/0				