



## ***Structural Calculations***

*PREPARED FOR:*

KMB Architects  
906 Columbia Street SW, Suite 400  
Olympia, WA 98501

*PROJECT:*

Green Hill School Baker North Addition  
2220197.20

*PREPARED BY:*

Andrea Sauter, PE, SE  
Project Manager

*REVIEWED BY:*

Ken Leland, PE, SE  
Principal

*DATE:*

October 2022

# Structural Calculations

For



## Green Hill School Baker North Addition Chehalis, WA

Project # 2220197.20

**Project Principal**  
**Project Manager**  
**Project Engineer**

Ken Leland, PE, SE  
Andrea Sauter, PE, SE  
Caroline Burkhardt

### Design Criteria

#### Design Codes and Standards

Codes and Standards: Structural design and construction shall be in accordance with the applicable sections of the following codes and standards as adopted and amended by the local building authority: International Building Code, 2018 Edition.

#### Structural Design Criteria:

##### Live Load Criteria:

Roof (Min Blanket Snow)	25 psf
Mechanical Mezzanine	125 psf
Catwalks	40 psf
Slab on Grade	125 psf

##### Wind Load Criteria:

Ultimate Wind Speed	96
Risk Category	II
Wind Exposure	C
Topographic Factor	1.0

##### Seismic Criteria:

Risk Category	II
Seismic Importance Factor	1.0
$S_s = 1.17$	$S_1 = 0.483$
$S_{ds} = 0.805$	$S_{d1} = 0.580$
Site Class	= D
Seismic Design Category	= D
Response Modification Coeff. (R):	3.5 OMF; 5.0 Metal Stud SW
Seismic Response Coeff. ( $C_s$ ):	0.230 OMF; 0.161 (SW)



Soil Criteria:

Based on Preliminary Geotechnical Data by: Shannon & Wilson, report forthcoming.

Allowable Soil Bearing Capacity: 2000psf allow 33% increase for loads from wind or seismic origin.

**Project Description**

The project consists of the design of a single-story multi-purpose room addition to the Baker North building at Green Hill School in Chehalis, WA.

Project BAKER NORTH  
Subject \_\_\_\_\_  
With/To \_\_\_\_\_  
Address \_\_\_\_\_  
Date 8/10/22

Project No. 2220197.20  
Phone \_\_\_\_\_  
Fax # \_\_\_\_\_  
# Faxed Pages \_\_\_\_\_  
By AMS

- Page \_\_\_\_ of \_\_\_\_
- Calculations
- Fax
- Memorandum
- Meeting Minutes
- Telephone Memo



Civil Engineers  
Structural Engineers  
Landscape Architects  
Community Planners  
Land Surveyors

SCOPE: NEW SINGLE STORY ADDITION OF APPROX. 500 SF TO (E) BAKER NORTH BUILDING AT GREEN HILL SCHOOL.

NEW ADDITION IS STEEL FRAMED.

### DESIGN CRITERIA.

ROOF DEAD LOAD — 20 PSF  
SNOW LOAD — 25 PSF

MEZZANINE DEAD LOAD — 50 PSF  
LIVE LOAD — 125 PSF

CAT WALK DEAD LOAD — 10 PSF  
LIVE LOAD — 40 PSF

### SEISMIC

RISK CAT. II  
SITE CLASS D  
 $S_s = 1.17$   
 $S_1 = 0.483$   
 $S_{DS} = 0.805$

### WIND.

RISK CATEGORY II  
EXPOSURE C  
36 MPH.

### SOIL BEARING

2000 PSF

## Search Information

<b>Coordinates:</b>	46.64936, -122.96216
<b>Elevation:</b>	192 ft
<b>Timestamp:</b>	2022-06-17T02:13:12.929Z
<b>Hazard Type:</b>	Seismic
<b>Reference Document:</b>	ASCE7-16
<b>Risk Category:</b>	II
<b>Site Class:</b>	D



## Basic Parameters

Name	Value	Description
$S_S$	1.17	$MCE_R$ ground motion (period=0.2s)
$S_1$	0.483	$MCE_R$ ground motion (period=1.0s)
$S_{MS}$	1.207	Site-modified spectral acceleration value
$S_{M1}$	* null	Site-modified spectral acceleration value
$S_{DS}$	0.805	Numeric seismic design value at 0.2s SA
$S_{D1}$	* null	Numeric seismic design value at 1.0s SA

\* See Section 11.4.8

## ▼Additional Information

Name	Value	Description
SDC	* null	Seismic design category
$F_a$	1.032	Site amplification factor at 0.2s
$F_v$	* null	Site amplification factor at 1.0s
$CR_S$	0.9	Coefficient of risk (0.2s)
$CR_1$	0.879	Coefficient of risk (1.0s)
PGA	0.517	$MCE_G$ peak ground acceleration
$F_{PGA}$	1.1	Site amplification factor at PGA
$PGA_M$	0.568	Site modified peak ground acceleration
$T_L$	16	Long-period transition period (s)

SsRT	1.17	Probabilistic risk-targeted ground motion (0.2s)
SsUH	1.299	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	1.5	Factored deterministic acceleration value (0.2s)
S1RT	0.483	Probabilistic risk-targeted ground motion (1.0s)
S1UH	0.55	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S1D	0.774	Factored deterministic acceleration value (1.0s)
PGAd	0.663	Factored deterministic acceleration value (PGA)

\* See Section 11.4.8

*The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.*

## Disclaimer

Hazard loads are provided by the U.S. Geological Survey [Seismic Design Web Services](#).

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**ATC** Hazards by Location

**Search Information**

**Coordinates:** 46.64936, -122.96216  
**Elevation:** 192 ft  
**Timestamp:** 2022-06-17T02:12:36.086Z  
**Hazard Type:** Wind



**ASCE 7-16**

MRI 10-Year ..... 66 mph  
 MRI 25-Year ..... 72 mph  
 MRI 50-Year ..... 77 mph  
 MRI 100-Year ..... 82 mph  
 Risk Category I ..... 91 mph  
 Risk Category II ..... 96 mph  
 Risk Category III ..... 103 mph  
 Risk Category IV ..... 107 mph

**ASCE 7-10**

MRI 10-Year ..... 72 mph  
 MRI 25-Year ..... 79 mph  
 MRI 50-Year ..... 85 mph  
 MRI 100-Year ..... 91 mph  
 Risk Category I ..... 100 mph  
 Risk Category II ..... 110 mph  
 Risk Category III-IV ..... 115 mph

**ASCE 7-05**

ASCE 7-05 Wind Speed ..... 85 mph

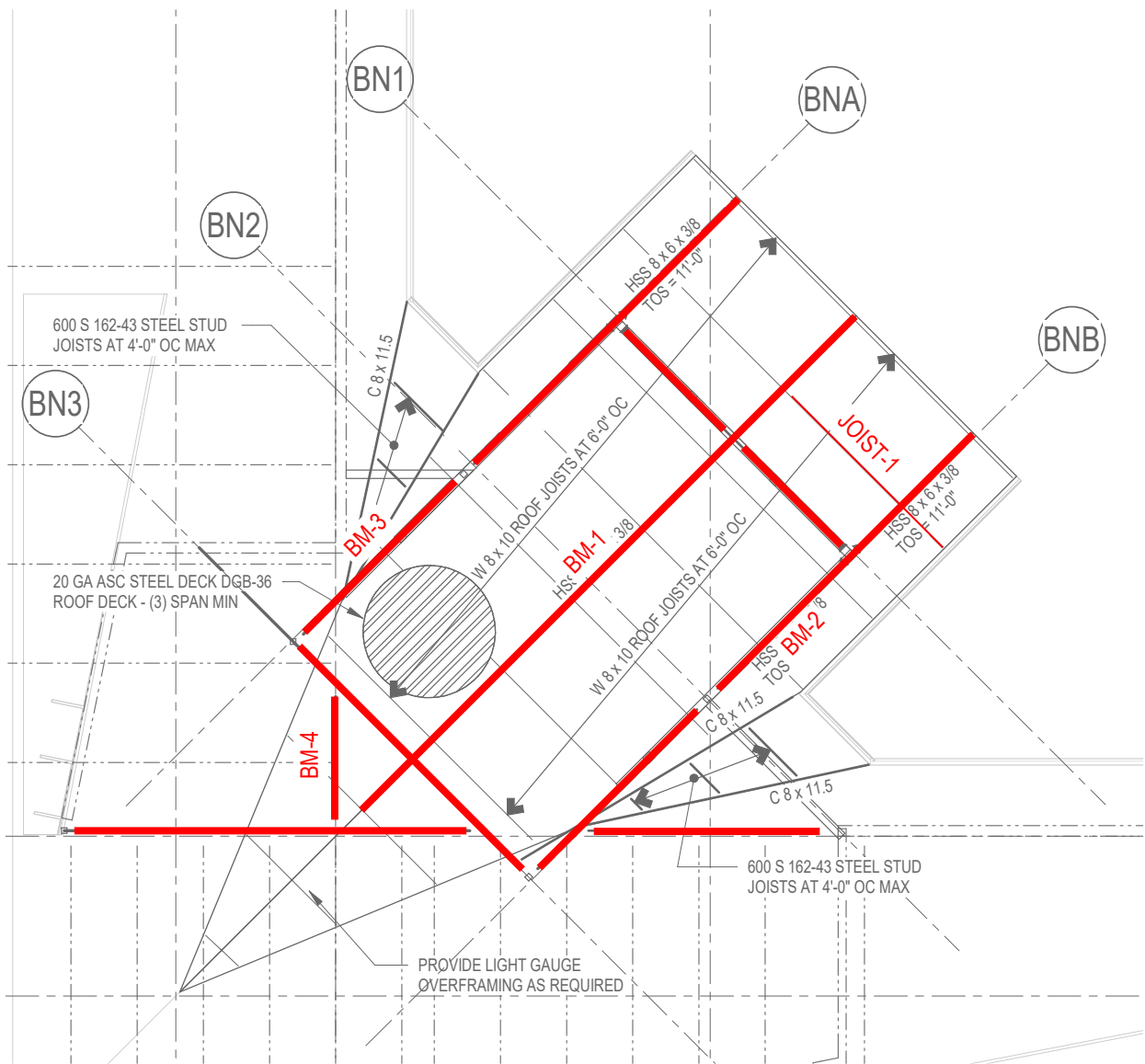
*The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.*

**Disclaimer**

Hazard loads are interpolated from data provided in ASCE 7 and rounded up to the nearest whole integer. Per ASCE 7, islands and coastal areas outside the last contour should use the last wind speed contour of the coastal area – in some cases, this website will extrapolate past the last wind speed contour and therefore, provide a wind speed that is slightly higher. NOTE: For queries near wind-borne debris region boundaries, the resulting determination is sensitive to rounding which may affect whether or not it is considered to be within a wind-borne debris region.

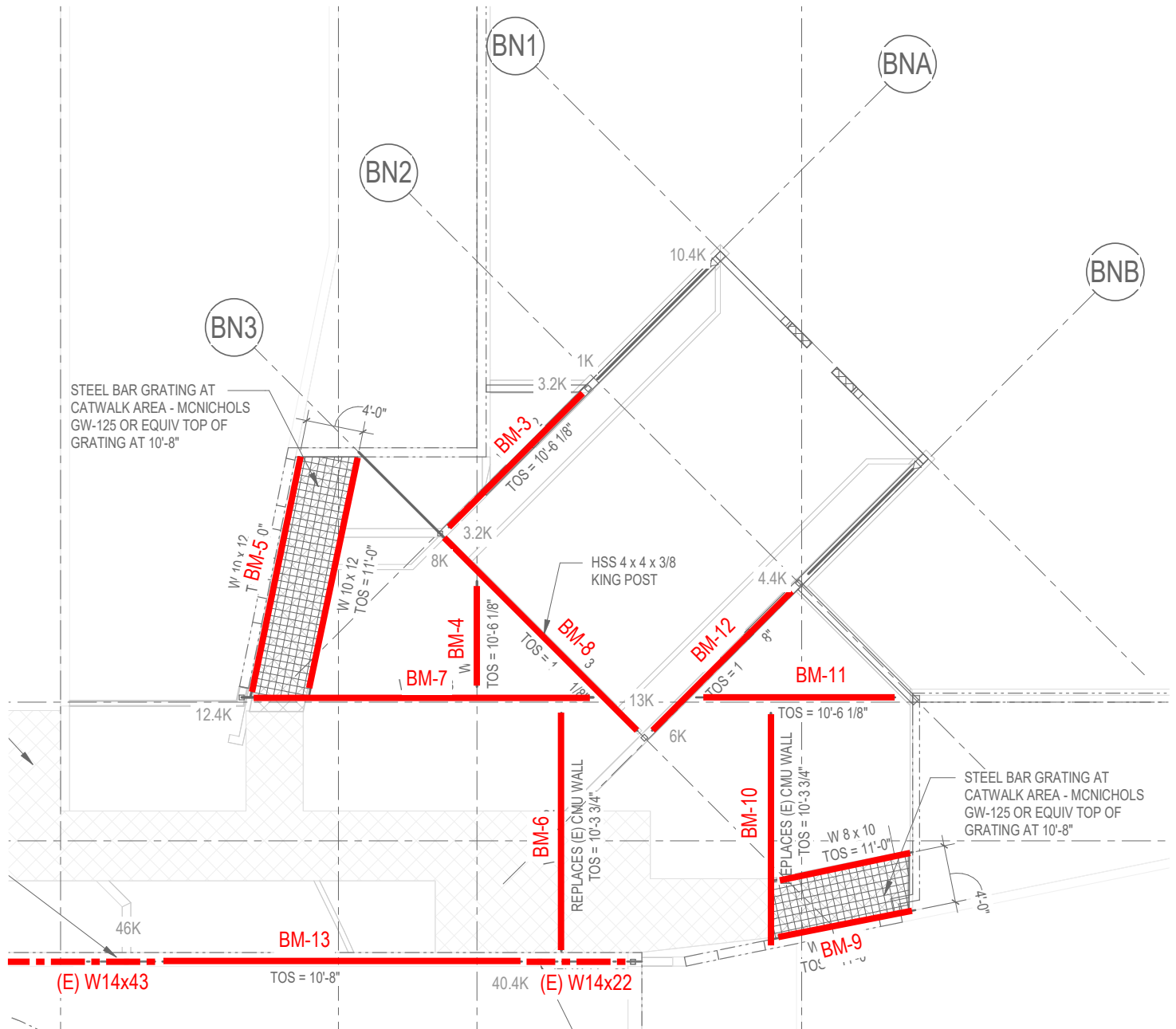
Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.

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**ROOF FRAMING - MEMBER KEY PLAN**





MEZZANINE FRAMING - MEMBER KEY PLAN



Project BAKER NORTH  
 Subject \_\_\_\_\_  
 With/To \_\_\_\_\_  
 Address \_\_\_\_\_  
 Date 8/10/22

Project No. 2220197.20  
 Phone \_\_\_\_\_  
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Civil Engineers

Structural Engineers

Landscape Architects

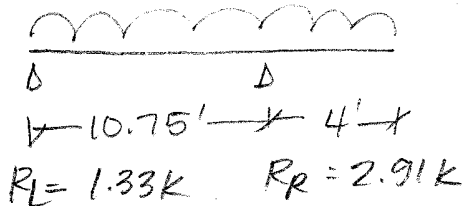
Community Planners

Land Surveyors

ROOF FRAMING / MEZZANINE FRAMING

JOIST-1 (TYP RAFTER)

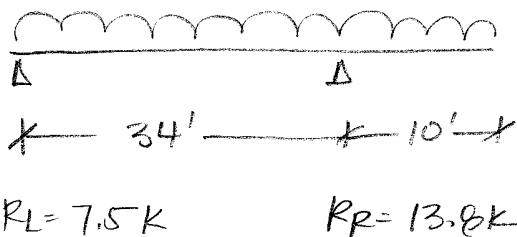
$$W = 6(25 \text{ SN} + 20 \text{ D})$$



W8x10 AT  
6'-0" OC MAX

BM-1

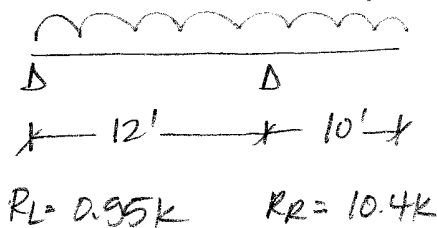
$$W = 10.75(25 \text{ SN} + 20 \text{ D})$$



HSS 16x80x 3/8

BM-2

$$W = 9.5(25 \text{ SN} + 20 \text{ D})$$



HSS 8x6 x 3/8

## Steel Beam

Lic. #: KW-06014847

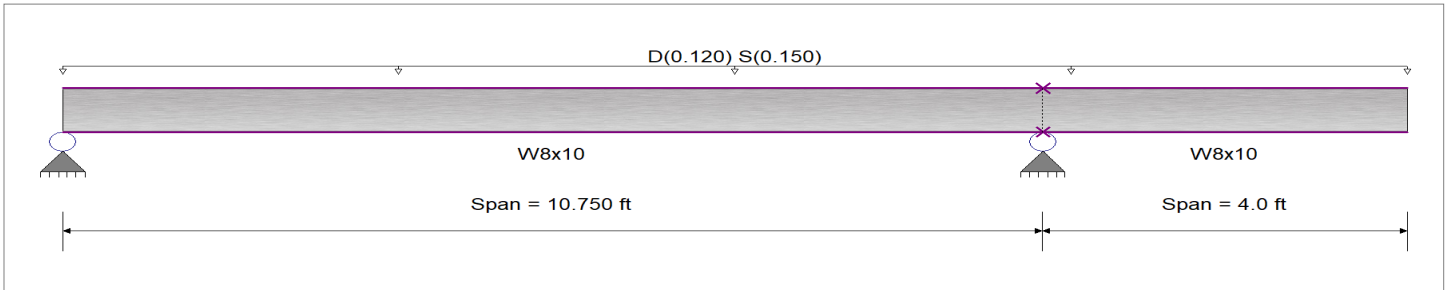
DESCRIPTION: JOIST-1 WF

### CODE REFERENCES

Calculations per AISC 360-16, IBC 2018, CBC 2019, ASCE 7-16  
Load Combination Set : ASCE 7-16

### Material Properties

Analysis Method : Allowable Strength Design  
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling  
Bending Axis : Major Axis Bending  
Fy : Steel Yield : 50.0 ksi  
E: Modulus : 29,000.0 ksi



### Applied Loads

Service loads entered. Load Factors will be applied for calculations

Beam self weight calculated and added to loading  
Loads on all spans...  
Uniform Load on ALL spans : D = 0.020, S = 0.0250 ksf, Tributary Width = 6.0 ft

### DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio =	<b>0.137</b> : 1	Maximum Shear Stress Ratio =	<b>0.064</b> : 1
Section used for this span	<b>W8x10</b>	Section used for this span	<b>W8x10</b>
Ma : Applied	3.003 k-ft	Va : Applied	1.714 k
Mn / Omega : Allowable	21.870 k-ft	Vn/Omega : Allowable	26.826 k
Load Combination	+D+S+H	Load Combination	+D+S+H
Location of maximum on span	4.644 ft	Location of maximum on span	10.750 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.034 in	Ratio =	3,782 >=360
Max Upward Transient Deflection	-0.018 in	Ratio =	5,470 >=360
Max Downward Total Deflection	0.064 in	Ratio =	2026 >=180
Max Upward Total Deflection	-0.033 in	Ratio =	2930 >=180

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values				
			M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega	
+D+H															
Dsgn. L = 10.75 ft		1	0.064	0.030	1.39	-1.04	1.39	36.52	21.87	1.00	1.00	0.80	40.24	26.83	
Dsgn. L = 4.00 ft		2	0.048	0.019		-1.04	1.04	36.52	21.87	1.00	1.00	0.52	40.24	26.83	
+D+L+H, LL Comb Run (*L)															
Dsgn. L = 10.75 ft		1	0.064	0.030	1.39	-1.04	1.39	36.52	21.87	1.00	1.00	0.80	40.24	26.83	
Dsgn. L = 4.00 ft		2	0.048	0.019		-1.04	1.04	36.52	21.87	1.00	1.00	0.52	40.24	26.83	
+D+L+H, LL Comb Run (L*)															
Dsgn. L = 10.75 ft		1	0.064	0.030	1.39	-1.04	1.39	36.52	21.87	1.00	1.00	0.80	40.24	26.83	
Dsgn. L = 4.00 ft		2	0.048	0.019		-1.04	1.04	36.52	21.87	1.00	1.00	0.52	40.24	26.83	
+D+L+H, LL Comb Run (LL)															
Dsgn. L = 10.75 ft		1	0.064	0.030	1.39	-1.04	1.39	36.52	21.87	1.00	1.00	0.80	40.24	26.83	
Dsgn. L = 4.00 ft		2	0.048	0.019		-1.04	1.04	36.52	21.87	1.00	1.00	0.52	40.24	26.83	
+D+Lr+H, LL Comb Run (*L)															
Dsgn. L = 10.75 ft		1	0.064	0.030	1.39	-1.04	1.39	36.52	21.87	1.00	1.00	0.80	40.24	26.83	
Dsgn. L = 4.00 ft		2	0.048	0.019		-1.04	1.04	36.52	21.87	1.00	1.00	0.52	40.24	26.83	
+D+Lr+H, LL Comb Run (L*)															
Dsgn. L = 10.75 ft		1	0.064	0.030	1.39	-1.04	1.39	36.52	21.87	1.00	1.00	0.80	40.24	26.83	
Dsgn. L = 4.00 ft		2	0.048	0.019		-1.04	1.04	36.52	21.87	1.00	1.00	0.52	40.24	26.83	
+D+Lr+H, LL Comb Run (LL)															
Dsgn. L = 10.75 ft		1	0.064	0.030	1.39	-1.04	1.39	36.52	21.87	1.00	1.00	0.80	40.24	26.83	
Dsgn. L = 4.00 ft		2	0.048	0.019		-1.04	1.04	36.52	21.87	1.00	1.00	0.52	40.24	26.83	
+D+S+H															
Dsgn. L = 10.75 ft		1	0.137	0.064	3.00	-2.24	3.00	36.52	21.87	1.00	1.00	1.71	40.24	26.83	

**Steel Beam**

Lic. #: KW-06014847

AHBL, INC

DESCRIPTION: **JOIST-1 WF**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega
Dsgn. L = 4.00 ft	2		0.102	0.042								1.12	40.24	26.83
+D+0.750Lr+0.750L+H, LL Comb Run (*														
Dsgn. L = 10.75 ft	1		0.064	0.030	1.39	-1.04	1.39	36.52	21.87	1.00	1.00	0.80	40.24	26.83
Dsgn. L = 4.00 ft	2		0.048	0.019		-1.04	1.04	36.52	21.87	1.00	1.00	0.52	40.24	26.83
+D+0.750Lr+0.750L+H, LL Comb Run (L														
Dsgn. L = 10.75 ft	1		0.064	0.030	1.39	-1.04	1.39	36.52	21.87	1.00	1.00	0.80	40.24	26.83
Dsgn. L = 4.00 ft	2		0.048	0.019		-1.04	1.04	36.52	21.87	1.00	1.00	0.52	40.24	26.83
+D+0.750Lr+0.750L+H, LL Comb Run (L														
Dsgn. L = 10.75 ft	1		0.064	0.030	1.39	-1.04	1.39	36.52	21.87	1.00	1.00	0.80	40.24	26.83
Dsgn. L = 4.00 ft	2		0.048	0.019		-1.04	1.04	36.52	21.87	1.00	1.00	0.52	40.24	26.83
+D+0.750L+0.750S+H, LL Comb Run (*L														
Dsgn. L = 10.75 ft	1		0.119	0.055	2.60	-1.94	2.60	36.52	21.87	1.00	1.00	1.48	40.24	26.83
Dsgn. L = 4.00 ft	2		0.089	0.036		-1.94	1.94	36.52	21.87	1.00	1.00	0.97	40.24	26.83
+D+0.750L+0.750S+H, LL Comb Run (L*														
Dsgn. L = 10.75 ft	1		0.119	0.055	2.60	-1.94	2.60	36.52	21.87	1.00	1.00	1.48	40.24	26.83
Dsgn. L = 4.00 ft	2		0.089	0.036		-1.94	1.94	36.52	21.87	1.00	1.00	0.97	40.24	26.83
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Dsgn. L = 4.00 ft	2		0.089	0.036		-1.94	1.94	36.52	21.87	1.00	1.00	0.97	40.24	26.83
+D+0.60W+H														
Dsgn. L = 10.75 ft	1		0.064	0.030	1.39	-1.04	1.39	36.52	21.87	1.00	1.00	0.80	40.24	26.83
Dsgn. L = 4.00 ft	2		0.048	0.019		-1.04	1.04	36.52	21.87	1.00	1.00	0.52	40.24	26.83
+D+0.750Lr+0.750L+0.450W+H, LL Com														
Dsgn. L = 10.75 ft	1		0.064	0.030	1.39	-1.04	1.39	36.52	21.87	1.00	1.00	0.80	40.24	26.83
Dsgn. L = 4.00 ft	2		0.048	0.019		-1.04	1.04	36.52	21.87	1.00	1.00	0.52	40.24	26.83
+D+0.750Lr+0.750L+0.450W+H, LL Com														
Dsgn. L = 10.75 ft	1		0.064	0.030	1.39	-1.04	1.39	36.52	21.87	1.00	1.00	0.80	40.24	26.83
Dsgn. L = 4.00 ft	2		0.048	0.019		-1.04	1.04	36.52	21.87	1.00	1.00	0.52	40.24	26.83
+D+0.750Lr+0.750L+0.450W+H, LL Com														
Dsgn. L = 10.75 ft	1		0.064	0.030	1.39	-1.04	1.39	36.52	21.87	1.00	1.00	0.80	40.24	26.83
Dsgn. L = 4.00 ft	2		0.048	0.019		-1.04	1.04	36.52	21.87	1.00	1.00	0.52	40.24	26.83
+D+0.750L+0.750S+0.450W+H, LL Coml														
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Dsgn. L = 4.00 ft	2		0.089	0.036		-1.94	1.94	36.52	21.87	1.00	1.00	0.97	40.24	26.83
+0.60D+0.60W+0.60H														
Dsgn. L = 10.75 ft	1		0.038	0.018	0.84	-0.62	0.84	36.52	21.87	1.00	1.00	0.48	40.24	26.83
Dsgn. L = 4.00 ft	2		0.029	0.012		-0.62	0.62	36.52	21.87	1.00	1.00	0.31	40.24	26.83
+D+0.70E+0.60H														
Dsgn. L = 10.75 ft	1		0.064	0.030	1.39	-1.04	1.39	36.52	21.87	1.00	1.00	0.80	40.24	26.83
Dsgn. L = 4.00 ft	2		0.048	0.019		-1.04	1.04	36.52	21.87	1.00	1.00	0.52	40.24	26.83
+D+0.750L+0.750S+0.5250E+H, LL Com														
Dsgn. L = 10.75 ft	1		0.119	0.055	2.60	-1.94	2.60	36.52	21.87	1.00	1.00	1.48	40.24	26.83
Dsgn. L = 4.00 ft	2		0.089	0.036		-1.94	1.94	36.52	21.87	1.00	1.00	0.97	40.24	26.83
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Dsgn. L = 10.75 ft	1		0.119	0.055	2.60	-1.94	2.60	36.52	21.87	1.00	1.00	1.48	40.24	26.83
Dsgn. L = 4.00 ft	2		0.089	0.036		-1.94	1.94	36.52	21.87	1.00	1.00	0.97	40.24	26.83
+0.60D+0.70E+H														
Dsgn. L = 10.75 ft	1		0.038	0.018	0.84	-0.62	0.84	36.52	21.87	1.00	1.00	0.48	40.24	26.83
Dsgn. L = 4.00 ft	2		0.029	0.012		-0.62	0.62	36.52	21.87	1.00	1.00	0.31	40.24	26.83

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S+H	1	0.0637	5.074		0.0000	0.000
	2	0.0000	5.074	+D+S+H	-0.0328	4.000

**Vertical Reactions**

Load Combination	Support 1	Support 2	Support 3
Overall MAXimum	1.297	2.834	
Overall MINimum	0.361	0.790	

Support notation : Far left is #1

Values in KIPS

AHBL, Inc.  
 1200 6th Avenue  
 Suite 1620  
 Seattle, WA 98101  
 206-267-2425  
 www.ahbl.com

Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

Printed: 10 JUN 2022, 2:40PM

**Steel Beam**

File: GHSBN.ec6  
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 AHBL, INC

Lic. # : KW-06014847

DESCRIPTION: JOIST-1 WF

**Vertical Reactions**

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
+D+H	0.602	1.316	
+D+L+H, LL Comb Run (*L)	0.602	1.316	
+D+L+H, LL Comb Run (L*)	0.602	1.316	
+D+L+H, LL Comb Run (LL)	0.602	1.316	
+D+Lr+H, LL Comb Run (*L)	0.602	1.316	
+D+Lr+H, LL Comb Run (L*)	0.602	1.316	
+D+Lr+H, LL Comb Run (LL)	0.602	1.316	
+D+S+H	1.297	2.834	
+D+0.750Lr+0.750L+H, LL Comb Run (*	0.602	1.316	
+D+0.750Lr+0.750L+H, LL Comb Run (L	0.602	1.316	
+D+0.750Lr+0.750L+H, LL Comb Run (L	0.602	1.316	
+D+0.750L+0.750S+H, LL Comb Run (*L	1.123	2.455	
+D+0.750L+0.750S+H, LL Comb Run (L*	1.123	2.455	
+D+0.750L+0.750S+H, LL Comb Run (LL	1.123	2.455	
+D+0.60W+H	0.602	1.316	
+D+0.750Lr+0.750L+0.450W+H, LL Com	0.602	1.316	
+D+0.750Lr+0.750L+0.450W+H, LL Com	0.602	1.316	
+D+0.750Lr+0.750L+0.450W+H, LL Com	0.602	1.316	
+D+0.750L+0.750S+0.450W+H, LL Comt	1.123	2.455	
+D+0.750L+0.750S+0.450W+H, LL Comt	1.123	2.455	
+D+0.750L+0.750S+0.450W+H, LL Comt	1.123	2.455	
+0.60D+0.60W+0.60H	0.361	0.790	
+D+0.70E+0.60H	0.602	1.316	
+D+0.750L+0.750S+0.5250E+H, LL Com	1.123	2.455	
+D+0.750L+0.750S+0.5250E+H, LL Com	1.123	2.455	
+D+0.750L+0.750S+0.5250E+H, LL Com	1.123	2.455	
+0.60D+0.70E+H	0.361	0.790	
D Only	0.602	1.316	
S Only	0.695	1.518	
H Only			

Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

## Steel Beam

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

(c) ENERCALC INC 1983-2022

DESCRIPTION: **BM-1**

### CODE REFERENCES

Calculations per AISC 360-16, IBC 2018, CBC 2019, ASCE 7-16

Load Combination Set : ASCE 7-16

### Material Properties

Analysis Method : Allowable Strength Design

Fy : Steel Yield : 46.0 ksi

Beam Bracing : Beam bracing is defined as a set spacing over all spans

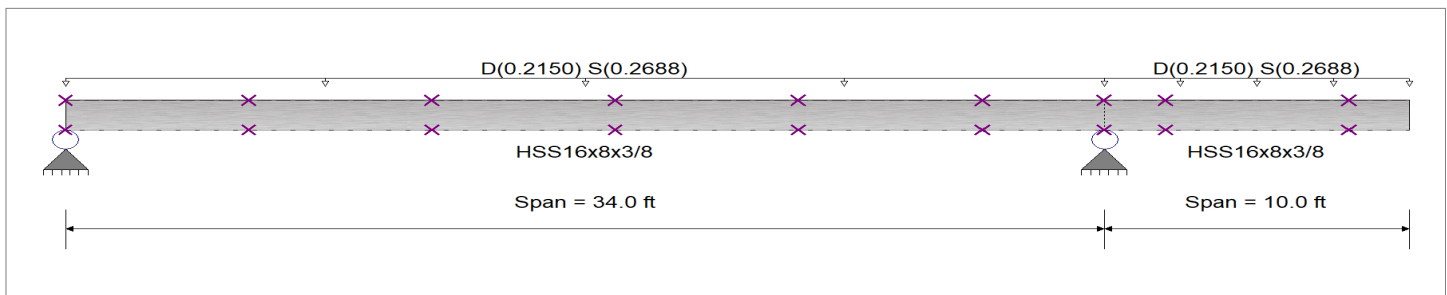
E: Modulus : 29,000.0 ksi

Bending Axis : Major Axis Bending

### Unbraced Lengths

First Brace starts at 6.0 ft from Left-Most support

Regular spacing of lateral supports on length of beam = 6.0 ft



### Applied Loads

Service loads entered. Load Factors will be applied for calculation

Beam self weight NOT internally calculated and added

Load for Span Number 1

Uniform Load : D = 0.020, S = 0.0250 ksf, Tributary Width = 10.750 ft

Load for Span Number 2

Uniform Load : D = 0.020, S = 0.0250 ksf, Tributary Width = 10.750 ft

### DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio =	<b>0.310</b> : 1	Maximum Shear Stress Ratio =	<b>0.052</b> : 1
Section used for this span	<b>HSS16x8x3/8</b>	Section used for this span	<b>HSS16x8x3/8</b>
Ma : Applied	58.331 k-ft	Va : Applied	8.935 k
Mn / Omega : Allowable	188.453 k-ft	Vn/Omega : Allowable	172.495 k
Load Combination	+D+S	Load Combination	+D+S
Span # where maximum occurs	Span # 1	Location of maximum on span	34.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.419 in Ratio =	973	>=360 Span: 2 : S Only
Max Upward Transient Deflection	-0.285 in Ratio =	840	>=360 Span: 2 : S Only
Max Downward Total Deflection	0.755 in Ratio =	541	>=180 Span: 2 : +D+S
Max Upward Total Deflection	-0.514 in Ratio =	467	>=180 Span: 2 : +D+S

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega
<b>D Only</b>														
Dsgn. L =	5.98 ft	1	0.086	0.019	16.13		16.13	314.72	188.45	1.56	1.00	3.34	288.07	172.49
Dsgn. L =	5.98 ft	1	0.130	0.012	24.56	16.13	24.56	314.72	188.45	1.12	1.00	2.05	288.07	172.49
Dsgn. L =	5.98 ft	1	0.138	0.004	25.92	24.56	25.92	314.72	188.45	1.01	1.00	0.77	288.07	172.49
Dsgn. L =	5.98 ft	1	0.134	0.010	25.29	18.33	25.29	314.72	188.45	1.09	1.00	1.81	288.07	172.49
Dsgn. L =	5.98 ft	1	0.097	0.018	18.33	3.66	18.33	314.72	188.45	1.40	1.00	3.09	288.07	172.49
Dsgn. L =	4.08 ft	1	0.057	0.023	3.66	-10.75	10.75	314.72	188.45	2.16	1.00	3.97	288.07	172.49
Dsgn. L =	2.00 ft	2	0.057	0.012	-0.00	-10.75	10.75	314.72	188.45	1.00	1.00	2.15	288.07	172.49
Dsgn. L =	6.00 ft	2	0.037	0.010	-0.00	-6.88	6.88	314.72	188.45	1.00	1.00	1.72	288.07	172.49
Dsgn. L =	2.00 ft	2	0.002	0.002		-0.43	0.43	314.72	188.45	1.00	1.00	0.43	288.07	172.49
<b>+D+S</b>														
Dsgn. L =	5.98 ft	1	0.193	0.044	36.29		36.29	314.72	188.45	1.56	1.00	7.51	288.07	172.49
Dsgn. L =	5.98 ft	1	0.293	0.027	55.26	36.29	55.26	314.72	188.45	1.12	1.00	4.62	288.07	172.49
Dsgn. L =	5.98 ft	1	0.310	0.010	58.33	55.26	58.33	314.72	188.45	1.01	1.00	1.72	288.07	172.49

Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

**Steel Beam**

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

(c) ENERCALC INC 1983-2022

**DESCRIPTION: BM-1**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega Cb	Rm	Va Max	Vnx	Vnx/Omega	
Dsgn. L =	5.98 ft	1	0.302	0.024	56.91	41.24	56.91	314.72	188.45	1.09	1.00	4.07	288.07	172.49
Dsgn. L =	5.98 ft	1	0.219	0.040	41.24	8.24	41.24	314.72	188.45	1.40	1.00	6.96	288.07	172.49
Dsgn. L =	4.08 ft	1	0.128	0.052	8.24	-24.19	24.19	314.72	188.45	2.16	1.00	8.94	288.07	172.49
Dsgn. L =	2.00 ft	2	0.128	0.028	-0.00	-24.19	24.19	314.72	188.45	1.00	1.00	4.84	288.07	172.49
Dsgn. L =	6.00 ft	2	0.082	0.022	-0.00	-15.48	15.48	314.72	188.45	1.00	1.00	3.87	288.07	172.49
Dsgn. L =	2.00 ft	2	0.005	0.006		-0.97	0.97	314.72	188.45	1.00	1.00	0.97	288.07	172.49
<b>+D+0.750S</b>														
Dsgn. L =	5.98 ft	1	0.166	0.038	31.25		31.25	314.72	188.45	1.56	1.00	6.47	288.07	172.49
Dsgn. L =	5.98 ft	1	0.253	0.023	47.59	31.25	47.59	314.72	188.45	1.12	1.00	3.98	288.07	172.49
Dsgn. L =	5.98 ft	1	0.267	0.009	50.23	47.59	50.23	314.72	188.45	1.01	1.00	1.48	288.07	172.49
Dsgn. L =	5.98 ft	1	0.260	0.020	49.01	35.51	49.01	314.72	188.45	1.09	1.00	3.50	288.07	172.49
Dsgn. L =	5.98 ft	1	0.188	0.035	35.51	7.10	35.51	314.72	188.45	1.40	1.00	5.99	288.07	172.49
Dsgn. L =	4.08 ft	1	0.111	0.045	7.10	-20.83	20.83	314.72	188.45	2.16	1.00	7.69	288.07	172.49
Dsgn. L =	2.00 ft	2	0.111	0.024	-0.00	-20.83	20.83	314.72	188.45	1.00	1.00	4.17	288.07	172.49
Dsgn. L =	6.00 ft	2	0.071	0.019	-0.00	-13.33	13.33	314.72	188.45	1.00	1.00	3.33	288.07	172.49
Dsgn. L =	2.00 ft	2	0.004	0.005		-0.83	0.83	314.72	188.45	1.00	1.00	0.83	288.07	172.49
<b>+0.60D</b>														
Dsgn. L =	5.98 ft	1	0.051	0.012	9.68		9.68	314.72	188.45	1.56	1.00	2.00	288.07	172.49
Dsgn. L =	5.98 ft	1	0.078	0.007	14.74	9.68	14.74	314.72	188.45	1.12	1.00	1.23	288.07	172.49
Dsgn. L =	5.98 ft	1	0.083	0.003	15.55	14.74	15.55	314.72	188.45	1.01	1.00	0.46	288.07	172.49
Dsgn. L =	5.98 ft	1	0.081	0.006	15.18	11.00	15.18	314.72	188.45	1.09	1.00	1.08	288.07	172.49
Dsgn. L =	5.98 ft	1	0.058	0.011	11.00	2.20	11.00	314.72	188.45	1.40	1.00	1.86	288.07	172.49
Dsgn. L =	4.08 ft	1	0.034	0.014	2.20	-6.45	6.45	314.72	188.45	2.16	1.00	2.38	288.07	172.49
Dsgn. L =	2.00 ft	2	0.034	0.007	-0.00	-6.45	6.45	314.72	188.45	1.00	1.00	1.29	288.07	172.49
Dsgn. L =	6.00 ft	2	0.022	0.006	-0.00	-4.13	4.13	314.72	188.45	1.00	1.00	1.03	288.07	172.49
Dsgn. L =	2.00 ft	2	0.001	0.001		-0.26	0.26	314.72	188.45	1.00	1.00	0.26	288.07	172.49

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	0.7546	16.456	+D+S	0.0000	0.000
	2	0.0000	16.456		-0.5137	10.000

**Vertical Reactions**

Load Combination	Support notation : Far left is #			Values in KIPS
	Support 1	Support 2	Support 3	
Overall MAXimum	7.512	13.773		
Overall MINimum	2.003	3.673		
D Only	3.339	6.121		
+D+S	7.512	13.773		
+D+0.750S	6.469	11.860		
+0.60D	2.003	3.673		
S Only	4.174	7.651		

## Steel Beam

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

(c) ENERCALC INC 1983-2022

DESCRIPTION: **BM-2**

### CODE REFERENCES

Calculations per AISC 360-16, IBC 2018, CBC 2019, ASCE 7-16

Load Combination Set : ASCE 7-16

### Material Properties

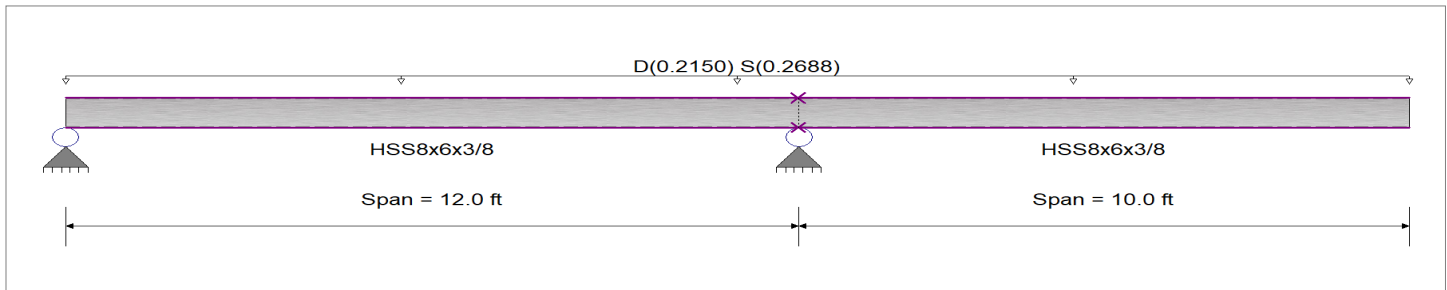
Analysis Method : Allowable Strength Design

Fy : Steel Yield : 46.0 ksi

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling

E: Modulus : 29,000.0 ksi

Bending Axis : Major Axis Bending



### Applied Loads

Service loads entered. Load Factors will be applied for calculation

Beam self weight calculated and added to loading

Loads on all spans...

Uniform Load on ALL spans : D = 0.020, S = 0.0250 ksf, Tributary Width = 10.750 ft

### DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio =	<b>0.467</b> : 1	Maximum Shear Stress Ratio =	<b>0.065</b> : 1
Section used for this span	<b>HSS8x6x3/8</b>	Section used for this span	<b>HSS8x6x3/8</b>
Ma : Applied	25.813 k-ft	Va : Applied	5.249 k
Mn / Omega : Allowable	55.319 k-ft	Vn/Omega : Allowable	80.208 k
Load Combination	+D+S+H	Load Combination	+D+S+H
Span # where maximum occurs	Span # 1	Location of maximum on span	12.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.512 in	Ratio =	<b>469</b> >=360
Max Upward Transient Deflection	-0.043 in	Ratio =	<b>3,379</b> >=360
Max Downward Total Deflection	0.983 in	Ratio =	<b>244</b> >=180
Max Upward Total Deflection	-0.082 in	Ratio =	<b>1759</b> >=180
		Span: 2 : S Only	
		Span: 2 : +D+S+H	
		Span: 2 : +D+S+H	

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx/Vnx/Omega	
<b>+D+H</b>														
Dsgn. L = 12.00 ft		1	0.224	0.031	0.42	-12.38	12.38	92.38	55.32	1.00	1.00	2.52	133.95	80.21
Dsgn. L = 10.00 ft		2	0.224	0.031		-12.38	12.38	92.38	55.32	1.00	1.00	2.48	133.95	80.21
<b>+D+L+H, LL Comb Run (*L)</b>														
Dsgn. L = 12.00 ft		1	0.224	0.031	0.42	-12.38	12.38	92.38	55.32	1.00	1.00	2.52	133.95	80.21
Dsgn. L = 10.00 ft		2	0.224	0.031		-12.38	12.38	92.38	55.32	1.00	1.00	2.48	133.95	80.21
<b>+D+L+H, LL Comb Run (L*)</b>														
Dsgn. L = 12.00 ft		1	0.224	0.031	0.42	-12.38	12.38	92.38	55.32	1.00	1.00	2.52	133.95	80.21
Dsgn. L = 10.00 ft		2	0.224	0.031		-12.38	12.38	92.38	55.32	1.00	1.00	2.48	133.95	80.21
<b>+D+L+H, LL Comb Run (LL)</b>														
Dsgn. L = 12.00 ft		1	0.224	0.031	0.42	-12.38	12.38	92.38	55.32	1.00	1.00	2.52	133.95	80.21
Dsgn. L = 10.00 ft		2	0.224	0.031		-12.38	12.38	92.38	55.32	1.00	1.00	2.48	133.95	80.21
<b>+D+Lr+H, LL Comb Run (*L)</b>														
Dsgn. L = 12.00 ft		1	0.224	0.031	0.42	-12.38	12.38	92.38	55.32	1.00	1.00	2.52	133.95	80.21
Dsgn. L = 10.00 ft		2	0.224	0.031		-12.38	12.38	92.38	55.32	1.00	1.00	2.48	133.95	80.21
<b>+D+Lr+H, LL Comb Run (L*)</b>														
Dsgn. L = 12.00 ft		1	0.224	0.031	0.42	-12.38	12.38	92.38	55.32	1.00	1.00	2.52	133.95	80.21
Dsgn. L = 10.00 ft		2	0.224	0.031		-12.38	12.38	92.38	55.32	1.00	1.00	2.48	133.95	80.21
<b>+D+Lr+H, LL Comb Run (LL)</b>														
Dsgn. L = 12.00 ft		1	0.224	0.031	0.42	-12.38	12.38	92.38	55.32	1.00	1.00	2.52	133.95	80.21
Dsgn. L = 10.00 ft		2	0.224	0.031		-12.38	12.38	92.38	55.32	1.00	1.00	2.48	133.95	80.21



Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

**Steel Beam**

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

(c) ENERCALC INC 1983-2022

**DESCRIPTION: BM-2**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega Cb	Rm	Va Max	Vnx	Vnx/Omega	
<b>+D+S+H</b>														
Dsgn. L = 12.00 ft	1		0.467	0.065	0.87	-25.81	25.81	92.38	55.32	1.00	1.00	5.25	133.95	80.21
Dsgn. L = 10.00 ft	2		0.467	0.064		-25.81	25.81	92.38	55.32	1.00	1.00	5.16	133.95	80.21
<b>+D+0.750Lr+0.750L+H, LL Comb</b>														
Dsgn. L = 12.00 ft	1		0.224	0.031	0.42	-12.38	12.38	92.38	55.32	1.00	1.00	2.52	133.95	80.21
Dsgn. L = 10.00 ft	2		0.224	0.031		-12.38	12.38	92.38	55.32	1.00	1.00	2.48	133.95	80.21
<b>+D+0.750Lr+0.750L+H, LL Comb</b>														
Dsgn. L = 12.00 ft	1		0.224	0.031	0.42	-12.38	12.38	92.38	55.32	1.00	1.00	2.52	133.95	80.21
Dsgn. L = 10.00 ft	2		0.224	0.031		-12.38	12.38	92.38	55.32	1.00	1.00	2.48	133.95	80.21
<b>+D+0.750Lr+0.750L+H, LL Comb</b>														
Dsgn. L = 12.00 ft	1		0.224	0.031	0.42	-12.38	12.38	92.38	55.32	1.00	1.00	2.52	133.95	80.21
Dsgn. L = 10.00 ft	2		0.224	0.031		-12.38	12.38	92.38	55.32	1.00	1.00	2.48	133.95	80.21
<b>+D+0.750L+0.750S+H, LL Comb  </b>														
Dsgn. L = 12.00 ft	1		0.406	0.057	0.75	-22.45	22.45	92.38	55.32	1.00	1.00	4.57	133.95	80.21
Dsgn. L = 10.00 ft	2		0.406	0.056		-22.45	22.45	92.38	55.32	1.00	1.00	4.49	133.95	80.21
<b>+D+0.750L+0.750S+H, LL Comb  </b>														
Dsgn. L = 12.00 ft	1		0.406	0.057	0.75	-22.45	22.45	92.38	55.32	1.00	1.00	4.57	133.95	80.21
Dsgn. L = 10.00 ft	2		0.406	0.056		-22.45	22.45	92.38	55.32	1.00	1.00	4.49	133.95	80.21
<b>+D+0.750L+0.750S+H, LL Comb  </b>														
Dsgn. L = 12.00 ft	1		0.406	0.057	0.75	-22.45	22.45	92.38	55.32	1.00	1.00	4.57	133.95	80.21
Dsgn. L = 10.00 ft	2		0.406	0.056		-22.45	22.45	92.38	55.32	1.00	1.00	4.49	133.95	80.21
<b>+D+0.60W+H</b>														
Dsgn. L = 12.00 ft	1		0.224	0.031	0.42	-12.38	12.38	92.38	55.32	1.00	1.00	2.52	133.95	80.21
Dsgn. L = 10.00 ft	2		0.224	0.031		-12.38	12.38	92.38	55.32	1.00	1.00	2.48	133.95	80.21
<b>+D+0.750Lr+0.750L+0.450W+H,  </b>														
Dsgn. L = 12.00 ft	1		0.224	0.031	0.42	-12.38	12.38	92.38	55.32	1.00	1.00	2.52	133.95	80.21
Dsgn. L = 10.00 ft	2		0.224	0.031		-12.38	12.38	92.38	55.32	1.00	1.00	2.48	133.95	80.21
<b>+D+0.750Lr+0.750L+0.450W+H,  </b>														
Dsgn. L = 12.00 ft	1		0.224	0.031	0.42	-12.38	12.38	92.38	55.32	1.00	1.00	2.52	133.95	80.21
Dsgn. L = 10.00 ft	2		0.224	0.031		-12.38	12.38	92.38	55.32	1.00	1.00	2.48	133.95	80.21
<b>+D+0.750Lr+0.750L+0.450W+H,  </b>														
Dsgn. L = 12.00 ft	1		0.224	0.031	0.42	-12.38	12.38	92.38	55.32	1.00	1.00	2.52	133.95	80.21
Dsgn. L = 10.00 ft	2		0.224	0.031		-12.38	12.38	92.38	55.32	1.00	1.00	2.48	133.95	80.21
<b>+D+0.750L+0.750S+0.450W+H, L</b>														
Dsgn. L = 12.00 ft	1		0.406	0.057	0.75	-22.45	22.45	92.38	55.32	1.00	1.00	4.57	133.95	80.21
Dsgn. L = 10.00 ft	2		0.406	0.056		-22.45	22.45	92.38	55.32	1.00	1.00	4.49	133.95	80.21
<b>+D+0.750L+0.750S+0.450W+H, L</b>														
Dsgn. L = 12.00 ft	1		0.406	0.057	0.75	-22.45	22.45	92.38	55.32	1.00	1.00	4.57	133.95	80.21
Dsgn. L = 10.00 ft	2		0.406	0.056		-22.45	22.45	92.38	55.32	1.00	1.00	4.49	133.95	80.21
<b>+D+0.750L+0.750S+0.450W+H, L</b>														
Dsgn. L = 12.00 ft	1		0.406	0.057	0.75	-22.45	22.45	92.38	55.32	1.00	1.00	4.57	133.95	80.21
Dsgn. L = 10.00 ft	2		0.406	0.056		-22.45	22.45	92.38	55.32	1.00	1.00	4.49	133.95	80.21
<b>+0.60D+0.60W+0.60H</b>														
Dsgn. L = 12.00 ft	1		0.134	0.019	0.25	-7.43	7.43	92.38	55.32	1.00	1.00	1.51	133.95	80.21
Dsgn. L = 10.00 ft	2		0.134	0.019		-7.43	7.43	92.38	55.32	1.00	1.00	1.49	133.95	80.21
<b>+D+0.70E+0.60H</b>														
Dsgn. L = 12.00 ft	1		0.224	0.031	0.42	-12.38	12.38	92.38	55.32	1.00	1.00	2.52	133.95	80.21
Dsgn. L = 10.00 ft	2		0.224	0.031		-12.38	12.38	92.38	55.32	1.00	1.00	2.48	133.95	80.21
<b>+D+0.750L+0.750S+0.5250E+H,  </b>														
Dsgn. L = 12.00 ft	1		0.406	0.057	0.75	-22.45	22.45	92.38	55.32	1.00	1.00	4.57	133.95	80.21
Dsgn. L = 10.00 ft	2		0.406	0.056		-22.45	22.45	92.38	55.32	1.00	1.00	4.49	133.95	80.21
<b>+D+0.750L+0.750S+0.5250E+H,  </b>														
Dsgn. L = 12.00 ft	1		0.406	0.057	0.75	-22.45	22.45	92.38	55.32	1.00	1.00	4.57	133.95	80.21
Dsgn. L = 10.00 ft	2		0.406	0.056		-22.45	22.45	92.38	55.32	1.00	1.00	4.49	133.95	80.21
<b>+D+0.750L+0.750S+0.5250E+H,  </b>														
Dsgn. L = 12.00 ft	1		0.406	0.057	0.75	-22.45	22.45	92.38	55.32	1.00	1.00	4.57	133.95	80.21
Dsgn. L = 10.00 ft	2		0.406	0.056		-22.45	22.45	92.38	55.32	1.00	1.00	4.49	133.95	80.21
<b>+0.60D+0.70E+H</b>														
Dsgn. L = 12.00 ft	1		0.134	0.019	0.25	-7.43	7.43	92.38	55.32	1.00	1.00	1.51	133.95	80.21
Dsgn. L = 10.00 ft	2		0.134	0.019		-7.43	7.43	92.38	55.32	1.00	1.00	1.49	133.95	80.21

Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

**Steel Beam**

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

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**DESCRIPTION: BM-2**

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
	1	0.0000	0.000	+D+S+H	-0.0819	8.112
+D+S+H	2	0.9826	10.000		0.0000	8.112

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Overall MAXimum	0.946	10.411	
Overall MINimum	0.272	2.995	
+D+H	0.454	4.991	
+D+L+H, LL Comb Run (*L)	0.454	4.991	
+D+L+H, LL Comb Run (L*)	0.454	4.991	
+D+L+H, LL Comb Run (LL)	0.454	4.991	
+D+Lr+H, LL Comb Run (*L)	0.454	4.991	
+D+Lr+H, LL Comb Run (L*)	0.454	4.991	
+D+Lr+H, LL Comb Run (LL)	0.454	4.991	
+D+S+H	0.946	10.411	
+D+0.750Lr+0.750L+H, LL Comb	0.454	4.991	
+D+0.750Lr+0.750L+H, LL Comb	0.454	4.991	
+D+0.750Lr+0.750L+H, LL Comb	0.454	4.991	
+D+0.750L+0.750S+H, LL Comb	0.823	9.056	
+D+0.750L+0.750S+H, LL Comb	0.823	9.056	
+D+0.750L+0.750S+H, LL Comb	0.823	9.056	
+D+0.60W+H	0.454	4.991	
+D+0.750Lr+0.750L+0.450W+H,	0.454	4.991	
+D+0.750Lr+0.750L+0.450W+H,	0.454	4.991	
+D+0.750Lr+0.750L+0.450W+H,	0.454	4.991	
+D+0.750L+0.750S+0.450W+H, L	0.823	9.056	
+D+0.750L+0.750S+0.450W+H, L	0.823	9.056	
+D+0.750L+0.750S+0.450W+H, L	0.823	9.056	
+0.60D+0.60W+0.60H	0.272	2.995	
+D+0.70E+0.60H	0.454	4.991	
+D+0.750L+0.750S+0.5250E+H,	0.823	9.056	
+D+0.750L+0.750S+0.5250E+H,	0.823	9.056	
+D+0.750L+0.750S+0.5250E+H,	0.823	9.056	
+0.60D+0.70E+H	0.272	2.995	
D Only	0.454	4.991	
S Only	0.493	5.420	
H Only			

Project BAKER NORTH  
 Subject \_\_\_\_\_  
 With/To \_\_\_\_\_  
 Address \_\_\_\_\_  
 Date 6/10/22

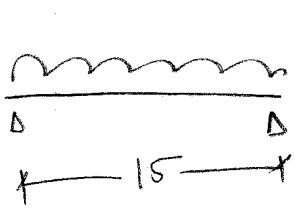
Project No. 2220197.20  
 Phone \_\_\_\_\_  
 Fax # \_\_\_\_\_  
 # Faxed Pages \_\_\_\_\_  
 By AMS

- Page \_\_\_\_ of \_\_\_\_
- Calculations
- Fax
- Memorandum
- Meeting Minutes
- Telephone Memo



Civil Engineers  
 Structural Engineers  
 Landscape Architects  
 Community Planners  
 Land Surveyors

BM-3



$W = 9.5 (200 + 25 SN)$

W10x12

$R_L = R_R = 3.2K$

BM-4

$L = 8.5'$

$W = 9.5 (200 + 25 SN)$

W10x12

$R_L = R_R = 1.8K$

BM-5

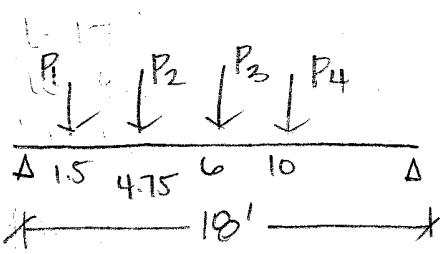
$L = 17.5'$

$W = (2) (40L + 100)$

W12x14

$R_L = R_R = 0.9K$

BM-6



$P_1 = 1320L + 330D$   
 $P_2 = 760L + 190D$   
 $P_3 = 1600L + 400D$   
 $P_4 = 1400L + 350D$

$R_L = 4.3K$        $R_R = 2.0K$

W10x22

## Steel Beam

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

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DESCRIPTION: BM-3

### CODE REFERENCES

Calculations per AISC 360-16, IBC 2018, CBC 2019, ASCE 7-16

Load Combination Set : ASCE 7-16

### Material Properties

Analysis Method : Allowable Strength Design

Fy : Steel Yield : 50.0 ksi

Beam Bracing : Beam bracing is defined as a set spacing over all spans

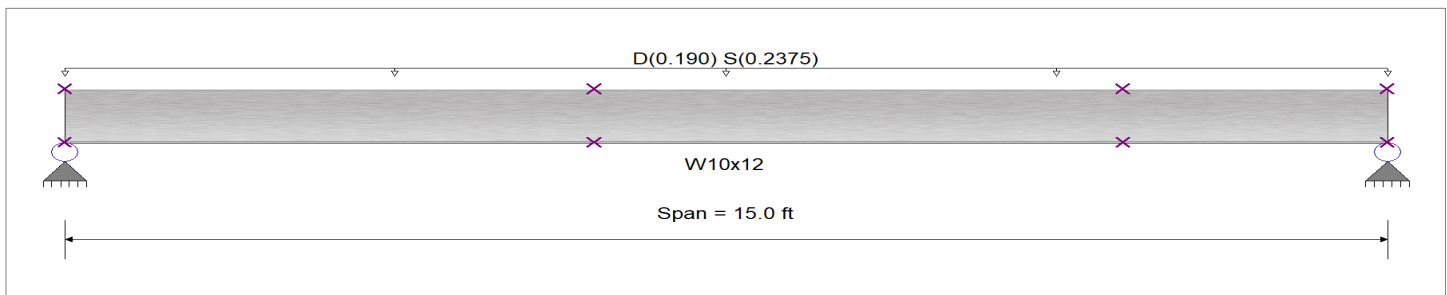
E: Modulus : 29,000.0 ksi

Bending Axis : Major Axis Bending

### Unbraced Lengths

First Brace starts at 6.0 ft from Left-Most support

Regular spacing of lateral supports on length of beam = 6.0 ft



### Applied Loads

Service loads entered. Load Factors will be applied for calculation

Beam self weight NOT internally calculated and added

Uniform Load : D = 0.020, S = 0.0250 ksf, Tributary Width = 9.50 ft

### DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio =	<b>0.478</b> : 1	Maximum Shear Stress Ratio =	<b>0.085</b> : 1
Section used for this span	<b>W10x12</b>	Section used for this span	<b>W10x12</b>
Ma : Applied	12.023 k-ft	Va : Applied	3.206 k
Mn / Omega : Allowable	25.144 k-ft	Vn/Omega : Allowable	37.506 k
Load Combination	+D+S	Load Combination	+D+S
Span # where maximum occurs	Span # 1	Location of maximum on span	0.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.174 in Ratio = <b>1,033</b> >=360		
Max Upward Transient Deflection	0.000 in Ratio = <b>0</b> <360	Span: 1 : S Only	
Max Downward Total Deflection	0.314 in Ratio = <b>574</b> >=180	Span: 1 : +D+S	
Max Upward Total Deflection	0.000 in Ratio = <b>0</b> <180		

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega
<b>D Only</b>														
Dsgn. L =	6.00 ft	1	0.164	0.038	5.13		5.13	52.12	31.21	1.40	1.00	1.43	56.26	37.51
Dsgn. L =	6.00 ft	1	0.213	0.023	5.34	3.42	5.34	41.99	25.14	1.05	1.00	0.86	56.26	37.51
Dsgn. L =	3.00 ft	1	0.110	0.038	3.42		3.42	52.12	31.21	1.55	1.00	1.42	56.26	37.51
<b>+D+S</b>														
Dsgn. L =	6.00 ft	1	0.370	0.085	11.54		11.54	52.12	31.21	1.40	1.00	3.21	56.26	37.51
Dsgn. L =	6.00 ft	1	0.478	0.051	12.02	7.69	12.02	41.99	25.14	1.05	1.00	1.92	56.26	37.51
Dsgn. L =	3.00 ft	1	0.247	0.085	7.69		7.69	52.12	31.21	1.55	1.00	3.21	56.26	37.51
<b>+D+0.750S</b>														
Dsgn. L =	6.00 ft	1	0.318	0.074	9.94		9.94	52.12	31.21	1.40	1.00	2.76	56.26	37.51
Dsgn. L =	6.00 ft	1	0.412	0.044	10.35	6.63	10.35	41.99	25.14	1.05	1.00	1.66	56.26	37.51
Dsgn. L =	3.00 ft	1	0.212	0.074	6.63		6.63	52.12	31.21	1.55	1.00	2.76	56.26	37.51
<b>+0.60D</b>														
Dsgn. L =	6.00 ft	1	0.099	0.023	3.08		3.08	52.12	31.21	1.40	1.00	0.86	56.26	37.51
Dsgn. L =	6.00 ft	1	0.128	0.014	3.21	2.05	3.21	41.99	25.14	1.05	1.00	0.51	56.26	37.51
Dsgn. L =	3.00 ft	1	0.066	0.023	2.05		2.05	52.12	31.21	1.55	1.00	0.85	56.26	37.51

Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

**Steel Beam**

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

(c) ENERCALC INC 1983-2022

**DESCRIPTION: BM-3**

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	0.3135	7.543		0.0000	0.000

**Vertical Reactions**

Load Combination	Support notation : Far left is #		Values in KIPS
	Support 1	Support 2	
Overall MAXimum	3.206	3.206	
Overall MINimum	0.855	0.855	
D Only	1.425	1.425	
+D+S	3.206	3.206	
+D+0.750S	2.761	2.761	
+0.60D	0.855	0.855	
S Only	1.781	1.781	

## Steel Beam

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

(c) ENERCALC INC 1983-2022

DESCRIPTION: BM-4

### CODE REFERENCES

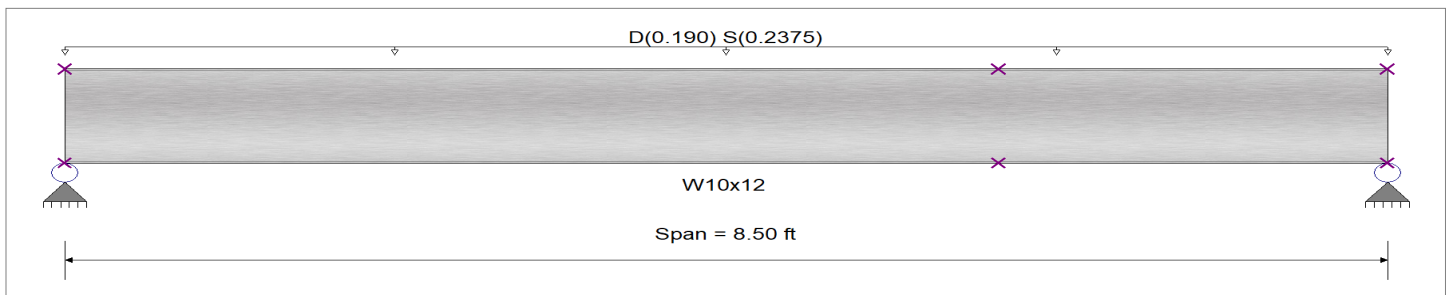
Calculations per AISC 360-16, IBC 2018, CBC 2019, ASCE 7-16  
 Load Combination Set : ASCE 7-16

### Material Properties

Analysis Method : Allowable Strength Design	Fy : Steel Yield :	50.0 ksi
Beam Bracing : Beam bracing is defined as a set spacing over all spans	E: Modulus :	29,000.0 ksi
Bending Axis : Major Axis Bending		

### Unbraced Lengths

First Brace starts at 6.0 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 6.0 ft



### Applied Loads

Service loads entered. Load Factors will be applied for calculation

Beam self weight NOT internally calculated and added  
 Uniform Load : D = 0.020, S = 0.0250 ksf, Tributary Width = 9.50 ft

### DESIGN SUMMARY

Design OK

<p><b>Maximum Bending Stress Ratio = 0.141 : 1</b></p> <p>Section used for this span <b>W10x12</b></p> <p>Ma : Applied 3.861 k-ft</p> <p>Mn / Omega : Allowable 27.462 k-ft</p> <p>Load Combination +D+S</p> <p>Span # where maximum occurs Span # 1</p> <p><b>Maximum Deflection</b></p> <p>Max Downward Transient Deflection 0.018 in Ratio = 5,679 &gt;=360</p> <p>Max Upward Transient Deflection 0.000 in Ratio = 0 &lt;360</p> <p>Max Downward Total Deflection 0.032 in Ratio = 3155 &gt;=180</p> <p>Max Upward Total Deflection 0.000 in Ratio = 0 &lt;180</p>	<p><b>Maximum Shear Stress Ratio = 0.048 : 1</b></p> <p>Section used for this span <b>W10x12</b></p> <p>Va : Applied 1.817 k</p> <p>Vn/Omega : Allowable 37.506 k</p> <p>Load Combination +D+S</p> <p>Location of maximum on span 0.000 ft</p> <p>Span # where maximum occurs Span # 1</p>
--	--

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega
D Only														
Dsgn. L =	6.00 ft	1	0.062	0.022	1.72		1.72	45.86	27.46	1.15	1.00	0.81	56.26	37.51
Dsgn. L =	2.50 ft	1	0.046	0.022	1.43		1.43	52.12	31.21	1.48	1.00	0.81	56.26	37.51
+D+S														
Dsgn. L =	6.00 ft	1	0.141	0.048	3.86		3.86	45.86	27.46	1.15	1.00	1.82	56.26	37.51
Dsgn. L =	2.50 ft	1	0.103	0.048	3.21		3.21	52.12	31.21	1.48	1.00	1.82	56.26	37.51
+D+0.750S														
Dsgn. L =	6.00 ft	1	0.121	0.042	3.32		3.32	45.86	27.46	1.15	1.00	1.56	56.26	37.51
Dsgn. L =	2.50 ft	1	0.089	0.042	2.76		2.76	52.12	31.21	1.48	1.00	1.56	56.26	37.51
+0.60D														
Dsgn. L =	6.00 ft	1	0.037	0.013	1.03		1.03	45.86	27.46	1.15	1.00	0.48	56.26	37.51
Dsgn. L =	2.50 ft	1	0.027	0.013	0.86		0.86	52.12	31.21	1.48	1.00	0.48	56.26	37.51

### Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	0.0323	4.274		0.0000	0.000

Project Title:  
Engineer:  
Project ID:  
Project Descr:

## Steel Beam

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

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**DESCRIPTION:** BM-4

### Vertical Reactions

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	1.817	1.817
Overall MINimum	0.485	0.485
D Only	0.808	0.808
+D+S	1.817	1.817
+D+0.750S	1.565	1.565
+0.60D	0.485	0.485
S Only	1.009	1.009

Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

## Steel Beam

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

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**DESCRIPTION:** BM-5

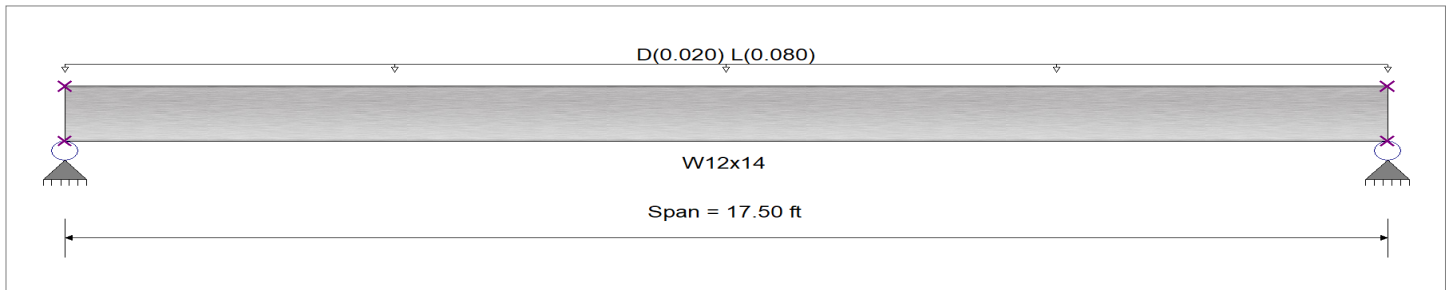
### CODE REFERENCES

Calculations per AISC 360-16, IBC 2018, CBC 2019, ASCE 7-16  
 Load Combination Set : ASCE 7-16

### Material Properties

Analysis Method : Allowable Strength Design  
 Beam Bracing : Completely Unbraced  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi



### Applied Loads

Service loads entered. Load Factors will be applied for calculation

Beam self weight NOT internally calculated and added  
 Uniform Load : D = 0.010, L = 0.040 ksf, Tributary Width = 2.0 ft

### DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio =	<b>0.477 : 1</b>	Maximum Shear Stress Ratio =	<b>0.020 : 1</b>
Section used for this span	<b>W12x14</b>	Section used for this span	<b>W12x14</b>
Ma : Applied	3.828 k-ft	Va : Applied	0.8750 k
Mn / Omega : Allowable	8.022 k-ft	Vn/Omega : Allowable	42.754 k
Load Combination	+D+L	Load Combination	+D+L
Span # where maximum occurs	Span # 1	Location of maximum on span	0.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.066 in	Ratio =	<b>3,181</b> >=360
Max Upward Transient Deflection	0.000 in	Ratio =	<b>0</b> <360
Max Downward Total Deflection	0.083 in	Ratio =	<b>2545</b> >=180
Max Upward Total Deflection	0.000 in	Ratio =	<b>0</b> <180

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega
D Only	Dsgn. L = 17.50 ft	1	0.095	0.004	0.77		0.77	13.40	8.02	1.14	1.00	0.18	71.40	42.75
+D+L	Dsgn. L = 17.50 ft	1	0.477	0.020	3.83		3.83	13.40	8.02	1.14	1.00	0.88	71.40	42.75
+D+0.750L	Dsgn. L = 17.50 ft	1	0.382	0.016	3.06		3.06	13.40	8.02	1.14	1.00	0.70	71.40	42.75
+0.60D	Dsgn. L = 17.50 ft	1	0.057	0.002	0.46		0.46	13.40	8.02	1.14	1.00	0.11	71.40	42.75

### Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L	1	0.0825	8.800		0.0000	0.000

### Vertical Reactions

Support notation : Far left is #'

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.875	0.875
Overall MINimum	0.105	0.105
D Only	0.175	0.175
+D+L	0.875	0.875
+D+0.750L	0.700	0.700
+0.60D	0.105	0.105
L Only	0.700	0.700



Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

## Steel Beam

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

(c) ENERCALC INC 1983-2022

DESCRIPTION: **BM-6**

### CODE REFERENCES

Calculations per AISC 360-16, IBC 2018, CBC 2019, ASCE 7-16

Load Combination Set : ASCE 7-16

### Material Properties

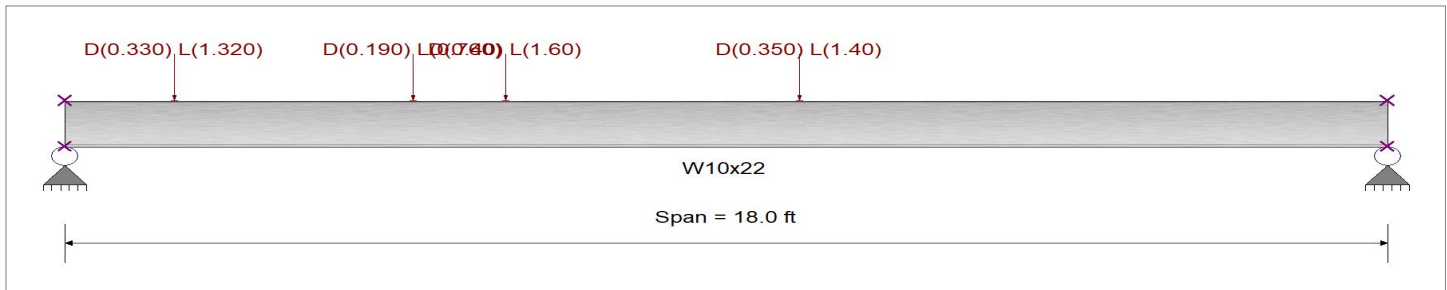
Analysis Method : Allowable Strength Design

Beam Bracing : Completely Unbraced

Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi

E: Modulus : 29,000.0 ksi



### Applied Loads

Service loads entered. Load Factors will be applied for calculation

Beam self weight NOT internally calculated and added

Load(s) for Span Number 1

Point Load : D = 0.330, L = 1.320 k @ 1.50 ft

Point Load : D = 0.190, L = 0.760 k @ 4.750 ft

Point Load : D = 0.40, L = 1.60 k @ 6.0 ft

Point Load : D = 0.350, L = 1.40 k @ 10.0 ft

### DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio =	<b>0.524</b> : 1	Maximum Shear Stress Ratio =	<b>0.088</b> : 1
Section used for this span	<b>W10x22</b>	Section used for this span	<b>W10x22</b>
Ma : Applied	17.320 k-ft	Va : Applied	4.323 k
Mn / Omega : Allowable	33.084 k-ft	Vn/Omega : Allowable	48.960 k
Load Combination	+D+L	Load Combination	+D+L
Span # where maximum occurs	Span # 1	Location of maximum on span	0.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.223 in	Ratio =	<b>967</b> >=360
Max Upward Transient Deflection	0.000 in	Ratio =	<b>0</b> <360
Max Downward Total Deflection	0.279 in	Ratio =	<b>774</b> >=180
Max Upward Total Deflection	0.000 in	Ratio =	<b>0</b> <180

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega
D Only	Dsgn. L = 18.00 ft	1	0.105	0.018	3.46		3.46	55.25	33.08	1.20	1.00	0.86	73.44	48.96
+D+L	Dsgn. L = 18.00 ft	1	0.524	0.088	17.32		17.32	55.25	33.08	1.20	1.00	4.32	73.44	48.96
+D+0.750L	Dsgn. L = 18.00 ft	1	0.419	0.071	13.86		13.86	55.25	33.08	1.20	1.00	3.46	73.44	48.96
+0.60D	Dsgn. L = 18.00 ft	1	0.063	0.011	2.08		2.08	55.25	33.08	1.20	1.00	0.52	73.44	48.96

### Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L	1	0.2790	8.589		0.0000	0.000

Project Title:  
Engineer:  
Project ID:  
Project Descr:

## Steel Beam

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

(c) ENERCALC INC 1983-2022

**DESCRIPTION:** BM-6

### Vertical Reactions

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	4.323	2.027
Overall MINimum	0.519	0.243
D Only	0.865	0.405
+D+L	4.323	2.027
+D+0.750L	3.458	1.622
+0.60D	0.519	0.243
L Only	3.458	1.622

Project BAKER NORTH  
 Subject \_\_\_\_\_  
 With/To \_\_\_\_\_  
 Address \_\_\_\_\_  
 Date 8/10/22

Project No. 2220197.20  
 Phone \_\_\_\_\_  
 Fax # \_\_\_\_\_  
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- Page \_\_\_\_ of \_\_\_\_
- Calculations
- Fax
- Memorandum
- Meeting Minutes
- Telephone Memo



Civil Engineers

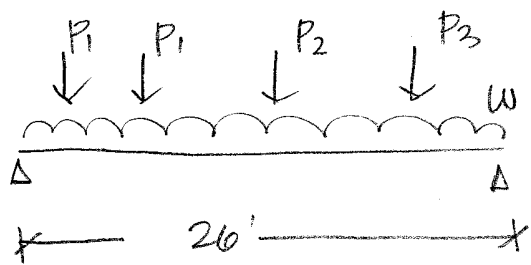
Structural Engineers

Landscape Architects

Community Planners

Land Surveyors

BM-7



$$W = 10 (20D + 25SN)$$

$$P_1 = 2940L + 735D$$

$$P_2 = 808D + 1010SN$$

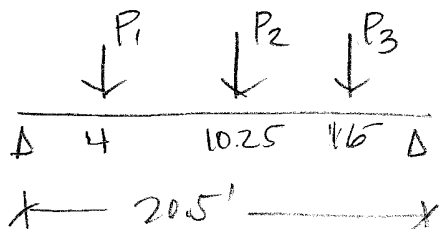
$$P_3 = 410D + 1620L$$

$R_L = 12.4K$

$R_R = 10.8K$

W12x45

BM-8



$$P_1 = 808D + 1010SN$$

$$P_2 = 3655D + 4570SN$$

$$P_3 = 3666D + 2170L + 7170SN$$

$R_L = 8K$

$R_R = 13K$

W14x43

BM-9

$L = 10'$   
 $W = 2(10D + 40L)$   
 $R_L = R_R = 0.5K$

W8x10



Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

**Steel Beam**

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

(c) ENERCALC INC 1983-2022

**DESCRIPTION:** BM-7..

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios				Summary of Moment Values					Summary of Shear Values		
Segment Length	Span #	M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega Cb	Rm	Va Max	Vnx	Vnx/Omega	
Dsgn. L = 26.00 ft	1	0.150	0.031	14.05		14.05	156.57	93.76	1.13	1.00	2.54	121.61	81.07

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	0.8947	13.446		0.0000	0.000

**Vertical Reactions**

Load Combination	Support 1	Support 2
Overall MAXimum	12.353	10.833
Overall MINimum	2.536	2.174
D Only	4.227	3.661
+D+L	9.553	5.835
+D+S	9.735	10.833
+D+0.750L	8.222	5.291
+D+0.750L+0.750S	12.353	10.670
+0.60D	2.536	2.197
L Only	5.326	2.174
S Only	5.508	7.172

Support notation : Far left is #

Values in KIPS

## Steel Beam

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

(c) ENERCALC INC 1983-2022

DESCRIPTION: BM-8

### CODE REFERENCES

Calculations per AISC 360-16, IBC 2018, CBC 2019, ASCE 7-16

Load Combination Set : ASCE 7-16

### Material Properties

Analysis Method : Allowable Strength Design

Fy : Steel Yield : 50.0 ksi

Beam Bracing : Beam bracing is defined as a set spacing over all spans

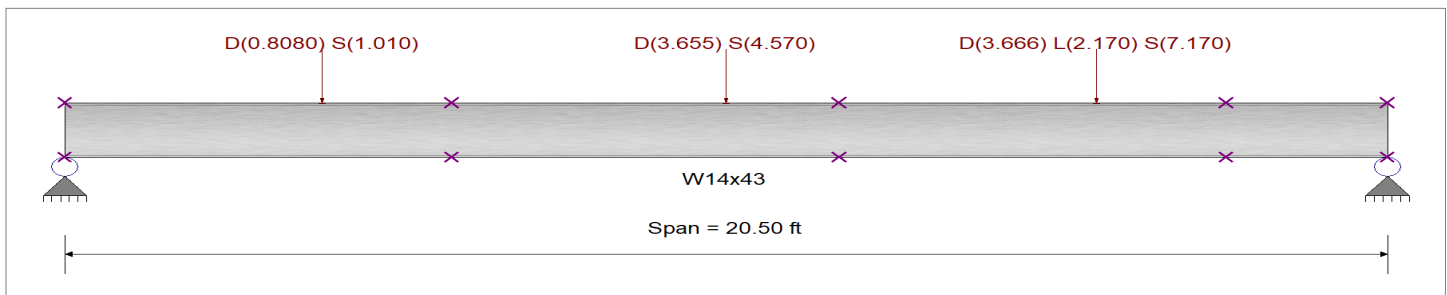
E: Modulus : 29,000.0 ksi

Bending Axis : Major Axis Bending

### Unbraced Lengths

First Brace starts at 6.0 ft from Left-Most support

Regular spacing of lateral supports on length of beam = 6.0 ft



### Applied Loads

Service loads entered. Load Factors will be applied for calculation

Beam self weight NOT internally calculated and added

Load(s) for Span Number 1

Point Load : D = 3.655, S = 4.570 k @ 10.250 ft

Point Load : D = 0.8080, S = 1.010 k @ 4.0 ft

Point Load : D = 3.666, L = 2.170, S = 7.170 k @ 16.0 ft

### DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio =	<b>0.404</b> : 1	Maximum Shear Stress Ratio =	<b>0.155</b> : 1
Section used for this span	<b>W14x43</b>	Section used for this span	<b>W14x43</b>
Ma : Applied	70.170 k-ft	Va : Applied	12.925 k
Mn / Omega : Allowable	173.653 k-ft	Vn/Omega : Allowable	83.570 k
Load Combination	+D+S	Load Combination	+D+S
Span # where maximum occurs	Span # 1	Location of maximum on span	16.049 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.240 in Ratio = <b>1,023</b> >=360		
Max Upward Transient Deflection	0.000 in Ratio = <b>0</b> <360	Span: 1 : S Only	
Max Downward Total Deflection	0.400 in Ratio = <b>615</b> >=180	Span: 1 : +D+S	
Max Upward Total Deflection	0.000 in Ratio = <b>0</b> <180		

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega
<b>D Only</b>														
Dsgn. L =	5.97 ft	1	0.104	0.039	18.02		18.02	290.00	173.65	1.59	1.00	3.28	125.36	83.57
Dsgn. L =	5.97 ft	1	0.165	0.030	28.60	18.02	28.60	290.00	173.65	1.11	1.00	2.47	125.36	83.57
Dsgn. L =	6.03 ft	1	0.153	0.058	26.59	12.21	26.59	290.00	173.65	1.14	1.00	4.85	125.36	83.57
Dsgn. L =	2.52 ft	1	0.070	0.058	12.21		12.21	290.00	173.65	1.64	1.00	4.85	125.36	83.57
<b>+D+L</b>														
Dsgn. L =	5.97 ft	1	0.120	0.045	20.86		20.86	290.00	173.65	1.60	1.00	3.76	125.36	83.57
Dsgn. L =	5.97 ft	1	0.193	0.035	33.48	20.86	33.48	290.00	173.65	1.11	1.00	2.95	125.36	83.57
Dsgn. L =	6.03 ft	1	0.186	0.078	32.28	16.47	32.28	290.00	173.65	1.08	1.00	6.54	125.36	83.57
Dsgn. L =	2.52 ft	1	0.095	0.078	16.47		16.47	290.00	173.65	1.64	1.00	6.54	125.36	83.57
<b>+D+S</b>														
Dsgn. L =	5.97 ft	1	0.253	0.095	43.93		43.93	290.00	173.65	1.60	1.00	7.95	125.36	83.57
Dsgn. L =	5.97 ft	1	0.404	0.073	70.17	43.93	70.17	290.00	173.65	1.11	1.00	6.14	125.36	83.57

Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

**Steel Beam**

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

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**DESCRIPTION: BM-8**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega Cb	Rm	Va Max	Vnx	Vnx/Omega	
Dsgn. L =	6.03 ft	1	0.384	0.155	66.62	32.55	66.62	290.00	173.65	1.10	1.00	12.92	125.36	83.57
Dsgn. L =	2.52 ft	1	0.187	0.155	32.55		32.55	290.00	173.65	1.64	1.00	12.92	125.36	83.57
<b>+D+0.750L</b>														
Dsgn. L =	5.97 ft	1	0.116	0.044	20.15		20.15	290.00	173.65	1.60	1.00	3.64	125.36	83.57
Dsgn. L =	5.97 ft	1	0.186	0.034	32.26	20.15	32.26	290.00	173.65	1.11	1.00	2.83	125.36	83.57
Dsgn. L =	6.03 ft	1	0.178	0.073	30.86	15.41	30.86	290.00	173.65	1.09	1.00	6.12	125.36	83.57
Dsgn. L =	2.52 ft	1	0.089	0.073	15.41		15.41	290.00	173.65	1.64	1.00	6.12	125.36	83.57
<b>+D+0.750L+0.750S</b>														
Dsgn. L =	5.97 ft	1	0.228	0.085	39.59		39.59	290.00	173.65	1.60	1.00	7.14	125.36	83.57
Dsgn. L =	5.97 ft	1	0.365	0.067	63.44	39.59	63.44	290.00	173.65	1.11	1.00	5.58	125.36	83.57
Dsgn. L =	6.03 ft	1	0.351	0.146	60.88	30.66	60.88	290.00	173.65	1.09	1.00	12.18	125.36	83.57
Dsgn. L =	2.52 ft	1	0.177	0.146	30.66		30.66	290.00	173.65	1.64	1.00	12.18	125.36	83.57
<b>+0.60D</b>														
Dsgn. L =	5.97 ft	1	0.062	0.024	10.81		10.81	290.00	173.65	1.59	1.00	1.97	125.36	83.57
Dsgn. L =	5.97 ft	1	0.099	0.018	17.16	10.81	17.16	290.00	173.65	1.11	1.00	1.48	125.36	83.57
Dsgn. L =	6.03 ft	1	0.092	0.035	15.95	7.32	15.95	290.00	173.65	1.14	1.00	2.91	125.36	83.57
Dsgn. L =	2.52 ft	1	0.042	0.035	7.32		7.32	290.00	173.65	1.64	1.00	2.91	125.36	83.57

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	0.4001	10.660		0.0000	0.000

**Vertical Reactions**

Load Combination	Support notation : Far left is #'		Values in KIPS
	Support 1	Support 2	
Overall MAXimum	7.954	12.925	
Overall MINimum	0.476	1.694	
D Only	3.283	4.846	
+D+L	3.759	6.540	
+D+S	7.954	12.925	
+D+0.750L	3.640	6.117	
+D+0.750L+0.750S	7.144	12.175	
+0.60D	1.970	2.908	
L Only	0.476	1.694	
S Only	4.672	8.078	

Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

## Steel Beam

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

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DESCRIPTION: **BM-9**

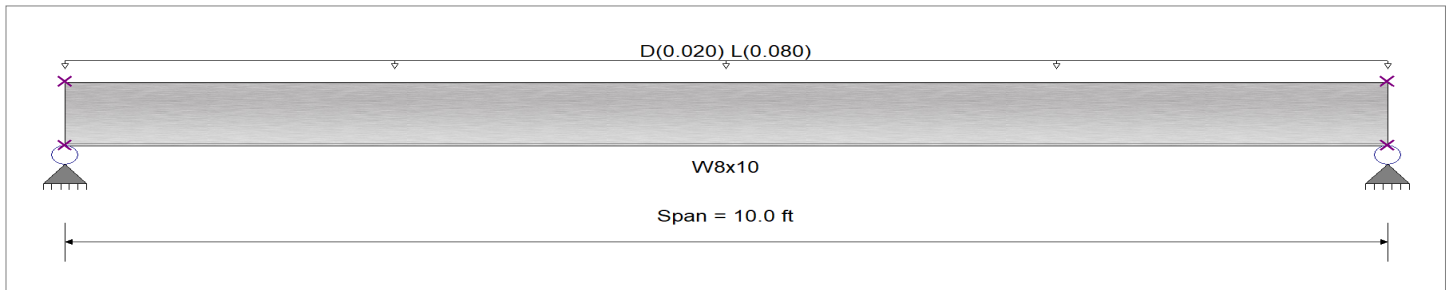
### CODE REFERENCES

Calculations per AISC 360-16, IBC 2018, CBC 2019, ASCE 7-16  
 Load Combination Set : ASCE 7-16

### Material Properties

Analysis Method : Allowable Strength Design  
 Beam Bracing : Completely Unbraced  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi



### Applied Loads

Service loads entered. Load Factors will be applied for calculation

Beam self weight NOT internally calculated and added  
 Uniform Load : D = 0.010, L = 0.040 ksf, Tributary Width = 2.0 ft

### DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio =	<b>0.104 : 1</b>	Maximum Shear Stress Ratio =	<b>0.019 : 1</b>
Section used for this span	<b>W8x10</b>	Section used for this span	<b>W8x10</b>
Ma : Applied	1.250 k-ft	Va : Applied	0.50 k
Mn / Omega : Allowable	12.063 k-ft	Vn/Omega : Allowable	26.826 k
Load Combination	+D+L	Load Combination	+D+L
Span # where maximum occurs	Span # 1	Location of maximum on span	0.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.020 in	Ratio =	5,927 >=360
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.025 in	Ratio =	4742 >=180
Max Upward Total Deflection	0.000 in	Ratio =	0 <180
		Span: 1 : L Only	
		Span: 1 : +D+L	

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega
D Only	Dsgn. L = 10.00 ft	1	0.021	0.004	0.25		0.25	20.14	12.06	1.14	1.00	0.10	40.24	26.83
+D+L	Dsgn. L = 10.00 ft	1	0.104	0.019	1.25		1.25	20.14	12.06	1.14	1.00	0.50	40.24	26.83
+D+0.750L	Dsgn. L = 10.00 ft	1	0.083	0.015	1.00		1.00	20.14	12.06	1.14	1.00	0.40	40.24	26.83
+0.60D	Dsgn. L = 10.00 ft	1	0.012	0.002	0.15		0.15	20.14	12.06	1.14	1.00	0.06	40.24	26.83

### Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L	1	0.0253	5.029		0.0000	0.000

### Vertical Reactions

Support notation : Far left is #'

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.500	0.500
Overall MINimum	0.060	0.060
D Only	0.100	0.100
+D+L	0.500	0.500
+D+0.750L	0.400	0.400
+0.60D	0.060	0.060
L Only	0.400	0.400



Project BAKER NORTH  
 Subject \_\_\_\_\_  
 With/To \_\_\_\_\_  
 Address \_\_\_\_\_  
 Date 6/10/22

Project No. 2220197.20  
 Phone \_\_\_\_\_  
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Civil Engineers

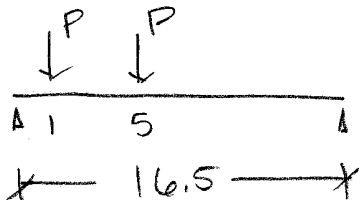
Structural Engineers

Landscape Architects

Community Planners

Land Surveyors

BM-10

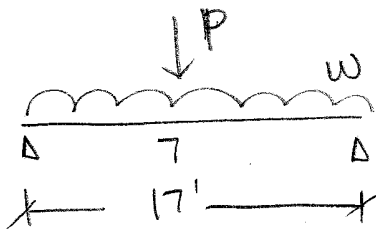


$$P = 1600L + 400D$$

W8x15

$$R_L = 3.3K \quad R_R = 0.7K$$

BM-11



$$P = 150D + 580L$$

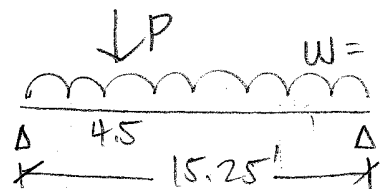
$$W = 10(25SN + 20D)$$

W10x12

BM-13

$$R_L = 3.9K \quad R_R = 3.9K$$

BM-12



$$W = 9.5(20D + 25SN) \quad P = 1790D + 340L + 2130SN$$

$$R_L = 6K \quad R_R = 4.4K \quad W10x22$$

## Steel Beam

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

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**DESCRIPTION:** BM-10

### CODE REFERENCES

Calculations per AISC 360-16, IBC 2018, CBC 2019, ASCE 7-16

Load Combination Set : ASCE 7-16

### Material Properties

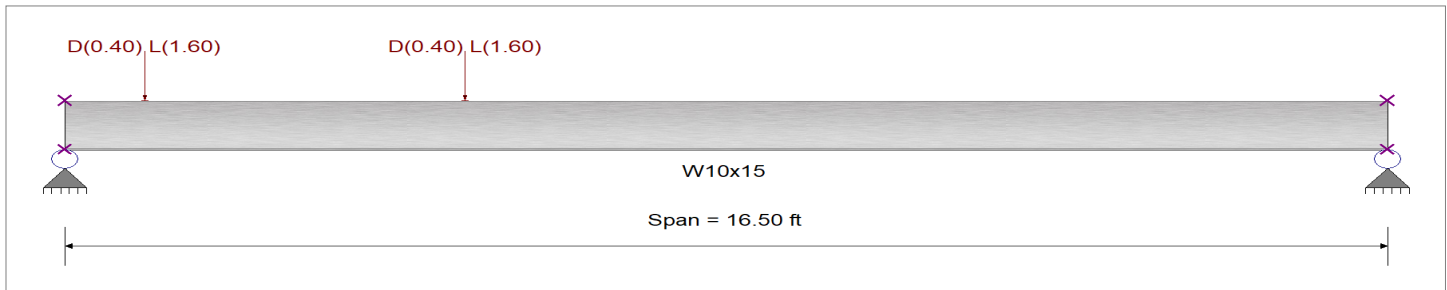
Analysis Method : Allowable Strength Design

Beam Bracing : Completely Unbraced

Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi

E: Modulus : 29,000.0 ksi



### Applied Loads

Service loads entered. Load Factors will be applied for calculation

Beam self weight NOT internally calculated and added

Load(s) for Span Number 1

Point Load : D = 0.40, L = 1.60 k @ 1.0 ft

Point Load : D = 0.40, L = 1.60 k @ 5.0 ft

### DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio =	<b>0.648</b> : 1	Maximum Shear Stress Ratio =	<b>0.071</b> : 1
Section used for this span	<b>W10x15</b>	Section used for this span	<b>W10x15</b>
Ma : Applied	8.360 k-ft	Va : Applied	3.273 k
Mn / Omega : Allowable	12.901 k-ft	Vn/Omega : Allowable	46.0 k
Load Combination	+D+L	Load Combination	+D+L
Span # where maximum occurs	Span # 1	Location of maximum on span	0.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.129 in	Ratio =	<b>1,531</b> >=360
Max Upward Transient Deflection	0.000 in	Ratio =	<b>0</b> <360
Max Downward Total Deflection	0.162 in	Ratio =	<b>1226</b> >=180
Max Upward Total Deflection	0.000 in	Ratio =	<b>0</b> <180

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega
D Only														
Dsgn. L =	16.50 ft	1	0.130	0.014	1.67		1.67	21.54	12.90	1.38	1.00	0.65	69.00	46.00
+D+L														
Dsgn. L =	16.50 ft	1	0.648	0.071	8.36		8.36	21.54	12.90	1.38	1.00	3.27	69.00	46.00
+D+0.750L														
Dsgn. L =	16.50 ft	1	0.518	0.057	6.69		6.69	21.54	12.90	1.38	1.00	2.62	69.00	46.00
+0.60D														
Dsgn. L =	16.50 ft	1	0.078	0.009	1.00		1.00	21.54	12.90	1.38	1.00	0.39	69.00	46.00

### Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L	1	0.1616	7.354		0.0000	0.000

### Vertical Reactions

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	3.273	0.727
Overall MINimum	0.393	0.087
D Only	0.655	0.145
+D+L	3.273	0.727

Project Title:  
Engineer:  
Project ID:  
Project Descr:

## Steel Beam

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

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**DESCRIPTION:** BM-10

### Vertical Reactions

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2
+D+0.750L	2.618	0.582
+0.60D	0.393	0.087
L Only	2.618	0.582

## Steel Beam

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

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DESCRIPTION: BM-11..

### CODE REFERENCES

Calculations per AISC 360-16, IBC 2018, CBC 2019, ASCE 7-16

Load Combination Set : ASCE 7-16

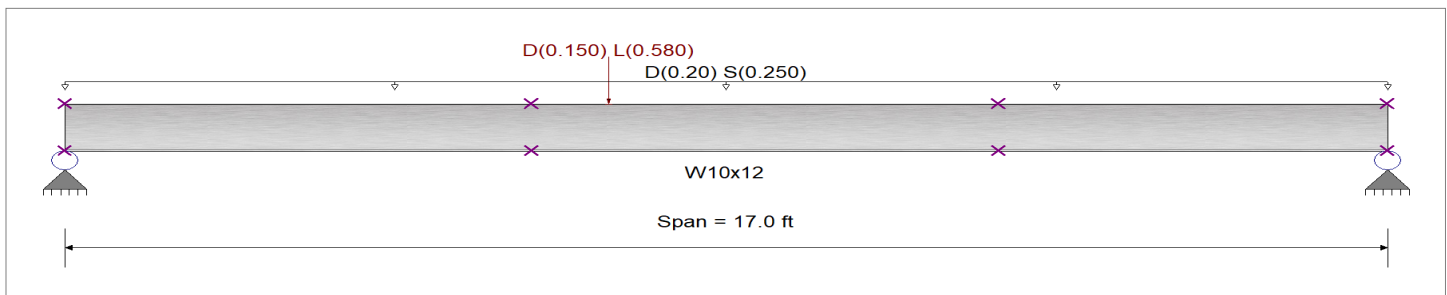
### Material Properties

Analysis Method : Allowable Strength Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

### Unbraced Lengths

First Brace starts at 6.0 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 6.0 ft



### Applied Loads

Service loads entered. Load Factors will be applied for calculation

Beam self weight NOT internally calculated and added  
 Uniform Load : D = 0.020, S = 0.0250 ksf, Tributary Width = 10.0 ft

Point Load : D = 0.150, L = 0.580 k @ 7.0 ft

### DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio =	<b>0.692</b> : 1	Maximum Shear Stress Ratio =	<b>0.104</b> : 1
Section used for this span	<b>W10x12</b>	Section used for this span	<b>W10x12</b>
Ma : Applied	16.785 k-ft	Va : Applied	3.913 k
Mn / Omega : Allowable	24.255 k-ft	Vn/Omega : Allowable	37.506 k
Load Combination	+D+S	Load Combination	+D+S
Span # where maximum occurs	Span # 1	Location of maximum on span	0.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.302 in Ratio =	<b>674</b> >=360	
Max Upward Transient Deflection	0.000 in Ratio =	<b>0</b> <360	Span: 1 : S Only
Max Downward Total Deflection	0.561 in Ratio =	<b>364</b> >=180	Span: 1 : +D+S
Max Upward Total Deflection	0.000 in Ratio =	<b>0</b> <180	

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx/Vnx/Omega	
<b>D Only</b>														
Dsgn. L =	5.97 ft	1	0.228	0.048	7.11		7.11	52.12	31.21	1.47	1.00	1.79	56.26	37.51
Dsgn. L =	6.02 ft	1	0.319	0.020	7.76	6.31	7.76	40.58	24.30	1.02	1.00	0.76	56.26	37.51
Dsgn. L =	5.00 ft	1	0.202	0.047	6.31		6.31	52.12	31.21	1.49	1.00	1.76	56.26	37.51
<b>+D+L</b>														
Dsgn. L =	5.97 ft	1	0.293	0.057	9.15		9.15	52.12	31.21	1.51	1.00	2.13	56.26	37.51
Dsgn. L =	6.02 ft	1	0.403	0.027	10.01	7.51	10.01	41.50	24.85	1.04	1.00	1.00	56.26	37.51
Dsgn. L =	5.00 ft	1	0.241	0.053	7.51		7.51	52.12	31.21	1.51	1.00	2.00	56.26	37.51
<b>+D+S</b>														
Dsgn. L =	5.97 ft	1	0.492	0.104	15.35		15.35	52.12	31.21	1.46	1.00	3.91	56.26	37.51
Dsgn. L =	6.02 ft	1	0.692	0.044	16.79	13.81	16.79	40.51	24.25	1.02	1.00	1.64	56.26	37.51
Dsgn. L =	5.00 ft	1	0.443	0.104	13.81		13.81	52.12	31.21	1.49	1.00	3.89	56.26	37.51
<b>+D+0.750L</b>														
Dsgn. L =	5.97 ft	1	0.277	0.055	8.64		8.64	52.12	31.21	1.50	1.00	2.04	56.26	37.51
Dsgn. L =	6.02 ft	1	0.382	0.025	9.42	7.21	9.42	41.22	24.68	1.04	1.00	0.94	56.26	37.51
Dsgn. L =	5.00 ft	1	0.231	0.052	7.21		7.21	52.12	31.21	1.51	1.00	1.94	56.26	37.51

Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

**Steel Beam**

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

(c) ENERCALC INC 1983-2022

**DESCRIPTION: BM-11..**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega Cb	Rm	Va Max	Vnx	Vnx/Omega	
<b>+D+0.750L+0.750S</b>														
Dsgn. L =	5.97 ft	1	0.475	0.097	14.82		14.82	52.12	31.21	1.48	1.00	3.64	56.26	37.51
Dsgn. L =	6.02 ft	1	0.660	0.043	16.12	12.83	16.12	40.78	24.42	1.03	1.00	1.60	56.26	37.51
Dsgn. L =	5.00 ft	1	0.411	0.094	12.83		12.83	52.12	31.21	1.50	1.00	3.53	56.26	37.51
<b>+0.60D</b>														
Dsgn. L =	5.97 ft	1	0.137	0.029	4.27		4.27	52.12	31.21	1.47	1.00	1.07	56.26	37.51
Dsgn. L =	6.02 ft	1	0.192	0.012	4.66	3.79	4.66	40.58	24.30	1.02	1.00	0.46	56.26	37.51
Dsgn. L =	5.00 ft	1	0.121	0.028	3.79		3.79	52.12	31.21	1.49	1.00	1.06	56.26	37.51

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	0.5608	8.500		0.0000	0.000

**Vertical Reactions**

Load Combination	Support 1	Support 2
Overall MAXimum	3.913	3.887
Overall MINimum	0.341	0.239
D Only	1.788	1.762
+D+L	2.129	2.001
+D+S	3.913	3.887
+D+0.750L	2.044	1.941
+D+0.750L+0.750S	3.638	3.535
+0.60D	1.073	1.057
L Only	0.341	0.239
S Only	2.125	2.125

Support notation : Far left is #

Values in KIPS

## Steel Beam

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

(c) ENERCALC INC 1983-2022

**DESCRIPTION:** BM-12

### CODE REFERENCES

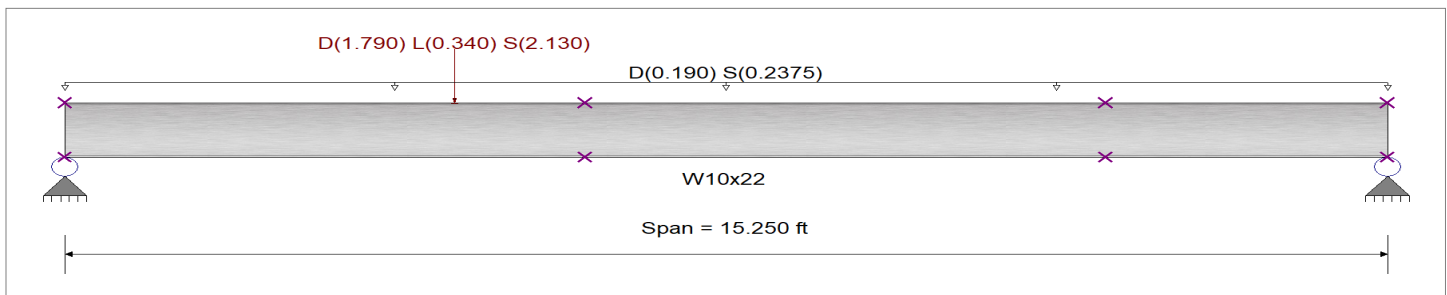
Calculations per AISC 360-16, IBC 2018, CBC 2019, ASCE 7-16  
 Load Combination Set : ASCE 7-16

### Material Properties

Analysis Method : Allowable Strength Design	Fy : Steel Yield :	50.0 ksi
Beam Bracing : Beam bracing is defined as a set spacing over all spans	E : Modulus :	29,000.0 ksi
Bending Axis : Major Axis Bending		

### Unbraced Lengths

First Brace starts at 6.0 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 6.0 ft



### Applied Loads

Service loads entered. Load Factors will be applied for calculation

Beam self weight NOT internally calculated and added  
 Uniform Load : D = 0.020, S = 0.0250 ksf, Tributary Width = 9.50 ft

Point Load : D = 1.790, L = 0.340, S = 2.130 k @ 4.50 ft

### DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio =	<b>0.352</b> : 1	Maximum Shear Stress Ratio =	<b>0.123</b> : 1
Section used for this span	<b>W10x22</b>	Section used for this span	<b>W10x22</b>
Ma : Applied	22.812 k-ft	Va : Applied	6.023 k
Mn / Omega : Allowable	64.870 k-ft	Vn/Omega : Allowable	48.960 k
Load Combination	+D+S	Load Combination	+D+S
Span # where maximum occurs	Span # 1	Location of maximum on span	0.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.148 in Ratio = <b>1,239</b> >=360		
Max Upward Transient Deflection	0.000 in Ratio = <b>0</b> <360	Span: 1 : S Only	
Max Downward Total Deflection	0.268 in Ratio = <b>682</b> >=180	Span: 1 : +D+S	
Max Upward Total Deflection	0.000 in Ratio = <b>0</b> <180		

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx/Vnx/Omega	
<b>D Only</b>														
Dsgn. L =	5.97 ft	1	0.159	0.055	10.29		10.29	108.33	64.87	1.33	1.00	2.71	73.44	48.96
Dsgn. L =	6.01 ft	1	0.157	0.028	10.16	5.45	10.16	108.33	64.87	1.15	1.00	1.36	73.44	48.96
Dsgn. L =	3.22 ft	1	0.084	0.040	5.45	0.09	5.45	108.33	64.87	1.56	1.00	1.97	73.44	48.96
Dsgn. L =	0.04 ft	1	0.001	0.040	0.09		0.09	108.33	64.87	1.00	1.00	1.98	73.44	48.96
<b>+D+L</b>														
Dsgn. L =	5.97 ft	1	0.175	0.060	11.35		11.35	108.33	64.87	1.34	1.00	2.95	73.44	48.96
Dsgn. L =	6.01 ft	1	0.171	0.030	11.10	5.77	11.10	108.33	64.87	1.16	1.00	1.46	73.44	48.96
Dsgn. L =	3.22 ft	1	0.089	0.042	5.77	0.09	5.77	108.33	64.87	1.57	1.00	2.07	73.44	48.96
Dsgn. L =	0.04 ft	1	0.001	0.042	0.09		0.09	108.33	64.87	1.00	1.00	2.08	73.44	48.96
<b>+D+S</b>														
Dsgn. L =	5.97 ft	1	0.352	0.123	22.81		22.81	108.33	64.87	1.33	1.00	6.02	73.44	48.96
Dsgn. L =	6.01 ft	1	0.348	0.062	22.58	12.15	22.58	108.33	64.87	1.14	1.00	3.02	73.44	48.96
Dsgn. L =	3.22 ft	1	0.187	0.090	12.15	0.19	12.15	108.33	64.87	1.56	1.00	4.40	73.44	48.96
Dsgn. L =	0.04 ft	1	0.003	0.090	0.19		0.19	108.33	64.87	1.00	1.00	4.42	73.44	48.96
<b>+D+0.750L</b>														

Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

**Steel Beam**

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

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**DESCRIPTION: BM-12**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega Cb	Rm	Va Max	Vnx	Vnx/Omega	
Dsgn. L =	5.97 ft	1	0.171	0.059	11.08		11.08	108.33	64.87	1.34	1.00	2.89	73.44	48.96
Dsgn. L =	6.01 ft	1	0.167	0.029	10.86	5.69	10.86	108.33	64.87	1.16	1.00	1.43	73.44	48.96
Dsgn. L =	3.22 ft	1	0.088	0.042	5.69	0.09	5.69	108.33	64.87	1.57	1.00	2.04	73.44	48.96
Dsgn. L =	0.04 ft	1	0.001	0.042	0.09		0.09	108.33	64.87	1.00	1.00	2.05	73.44	48.96
<b>+D+0.750L+0.750S</b>														
Dsgn. L =	5.97 ft	1	0.315	0.110	20.47		20.47	108.33	64.87	1.33	1.00	5.37	73.44	48.96
Dsgn. L =	6.01 ft	1	0.311	0.055	20.17	10.72	20.17	108.33	64.87	1.15	1.00	2.68	73.44	48.96
Dsgn. L =	3.22 ft	1	0.165	0.079	10.72	0.17	10.72	108.33	64.87	1.56	1.00	3.87	73.44	48.96
Dsgn. L =	0.04 ft	1	0.003	0.079	0.17		0.17	108.33	64.87	1.00	1.00	3.88	73.44	48.96
<b>+0.60D</b>														
Dsgn. L =	5.97 ft	1	0.095	0.033	6.17		6.17	108.33	64.87	1.33	1.00	1.63	73.44	48.96
Dsgn. L =	6.01 ft	1	0.094	0.017	6.10	3.27	6.10	108.33	64.87	1.15	1.00	0.81	73.44	48.96
Dsgn. L =	3.22 ft	1	0.050	0.024	3.27	0.05	3.27	108.33	64.87	1.56	1.00	1.18	73.44	48.96
Dsgn. L =	0.04 ft	1	0.001	0.024	0.05		0.05	108.33	64.87	1.00	1.00	1.19	73.44	48.96

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	0.2684	7.320		0.0000	0.000

**Vertical Reactions**

Load Combination	Support notation : Far left is #		Values in KIPS
	Support 1	Support 2	
Overall MAXimum	6.023	4.416	
Overall MINimum	0.240	0.100	
D Only	2.711	1.977	
+D+L	2.950	2.077	
+D+S	6.023	4.416	
+D+0.750L	2.890	2.052	
+D+0.750L+0.750S	5.375	3.882	
+0.60D	1.626	1.186	
L Only	0.240	0.100	
S Only	3.312	2.439	



Project GHS BAKER N.  
 Subject \_\_\_\_\_  
 With/To \_\_\_\_\_  
 Address \_\_\_\_\_  
 Date 7/18/22

Project No. 2220197.20  
 Phone \_\_\_\_\_  
 Fax # \_\_\_\_\_  
 # Faxed Pages \_\_\_\_\_  
 By AMS

- Page \_\_\_\_ of \_\_\_\_
- Calculations
- Fax
- Memorandum
- Meeting Minutes
- Telephone Memo

Civil Engineers

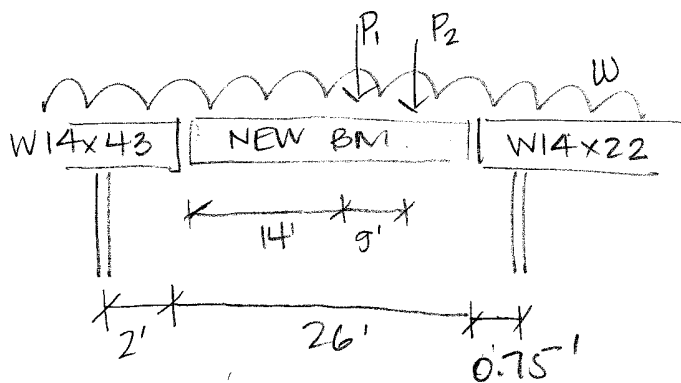
Structural Engineers

Landscape Architects

Community Planners

Land Surveyors

BM-13 : HANGING FROM (E) BM'S



$$W = (500 + 125L) 10 \text{ FT}$$

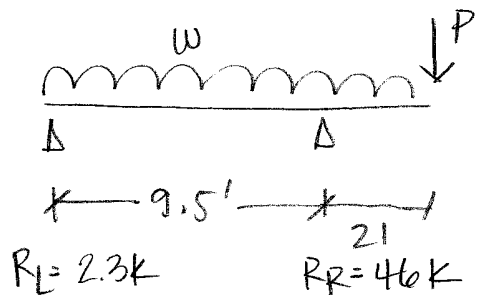
$$P_1 = 5.94 \text{ D} + 7.425 \text{ SN}$$

$$P_2 = 3.78 \text{ D} + 4.725 \text{ SN}$$

W14x68

$R_L = 11.4 \text{ K D}$	$R_R = 13.27 \text{ K D}$
$16.25 \text{ K L}$	$16.25 \text{ K L}$
$4.91 \text{ K SN}$	$7.24 \text{ K SN}$

(E) W14x43.

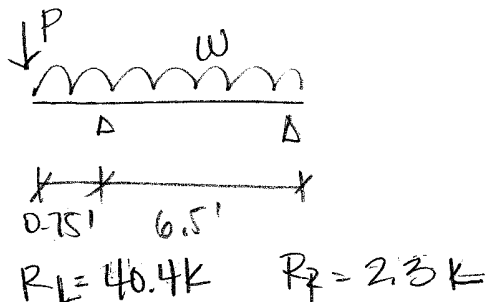


$$W = 10(500 + 125L)$$

$$P = R_L \text{ FROM ABOVE.}$$

(E) BM OK ✓

(E) W14x22



$$W = 10(500 + 125L)$$

$$P = R_R \text{ FROM ABOVE}$$

(E) BM OK ✓



## Steel Beam

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

(c) ENERCALC INC 1983-2022

**DESCRIPTION: BM-13 - HANGING BEAM**

### CODE REFERENCES

Calculations per AISC 360-16, IBC 2018, CBC 2019, ASCE 7-16

Load Combination Set : ASCE 7-16

### Material Properties

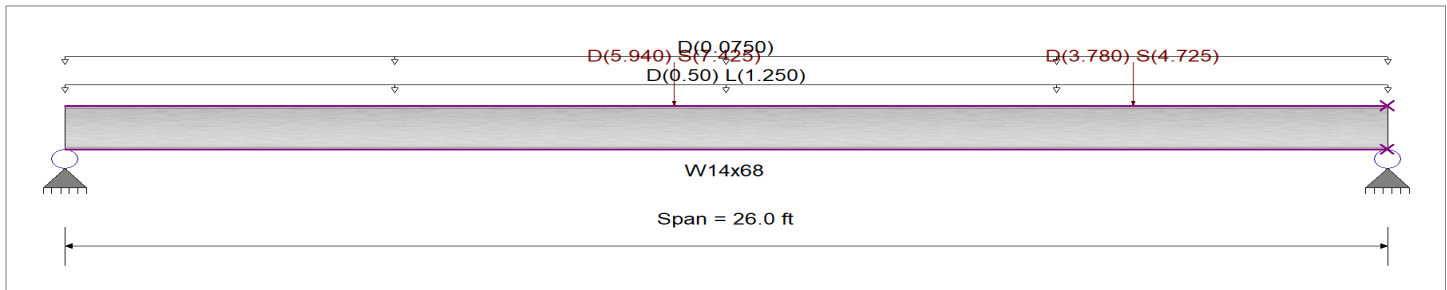
Analysis Method : Allowable Strength Design

Fy : Steel Yield : 50.0 ksi

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling

E: Modulus : 29,000.0 ksi

Bending Axis : Major Axis Bending



### Applied Loads

Service loads entered. Load Factors will be applied for calculation

Beam self weight NOT internally calculated and added

Uniform Load : D = 0.050, L = 0.1250 ksf, Tributary Width = 10.0 ft

Point Load : D = 5.940, S = 7.425 k @ 12.0 ft

Uniform Load : D = 0.0750 k/ft, Tributary Width = 1.0 ft

Point Load : D = 3.780, S = 4.725 k @ 21.0 ft

### DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio =	<b>0.761</b> : 1	Maximum Shear Stress Ratio =	<b>0.266</b> : 1
Section used for this span	<b>W14x68</b>	Section used for this span	<b>W14x68</b>
Ma : Applied	218.232 k-ft	Va : Applied	30.890 k
Mn / Omega : Allowable	286.926 k-ft	Vn/Omega : Allowable	116.20 k
Load Combination	+D+0.750L+0.750S	Load Combination	+D+0.750L+0.750S
Span # where maximum occurs	Span # 1	Location of maximum on span	26.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.617 in Ratio = <b>505</b> >=360		
Max Upward Transient Deflection	0.000 in Ratio = <b>0</b> <360	Span: 1 : L Only	
Max Downward Total Deflection	1.214 in Ratio = <b>257</b> >=240	Span: 1 : +D+0.750L+0.750S	
Max Upward Total Deflection	0.000 in Ratio = <b>0</b> <240.0		

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega
D Only														
Dsgn. L = 26.00 ft		1	0.332	0.114	95.35		95.35	479.17	286.93	1.00	1.00	13.27	174.30	116.20
+D+L														
Dsgn. L = 26.00 ft		1	0.698	0.254	200.40		200.40	479.17	286.93	1.00	1.00	29.52	174.30	116.20
+D+S														
Dsgn. L = 26.00 ft		1	0.537	0.177	154.15		154.15	479.17	286.93	1.00	1.00	20.51	174.30	116.20
+D+0.750L														
Dsgn. L = 26.00 ft		1	0.607	0.219	174.14		174.14	479.17	286.93	1.00	1.00	25.46	174.30	116.20
+D+0.750L+0.750S														
Dsgn. L = 26.00 ft		1	0.761	0.266	218.23		218.23	479.17	286.93	1.00	1.00	30.89	174.30	116.20
+0.60D														
Dsgn. L = 26.00 ft		1	0.199	0.069	57.21		57.21	479.17	286.93	1.00	1.00	7.96	174.30	116.20

Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

**Steel Beam**

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

(c) ENERCALC INC 1983-2022

**DESCRIPTION: BM-13 - HANGING BEAM**

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.750L+0.750S	1	1.2143	13.074		0.0000	0.000

**Vertical Reactions**

Load Combination	Support notation : Far left is #		Values in KIPS
	Support 1	Support 2	
Overall MAXimum	27.650	30.890	
Overall MINimum	4.907	7.243	
D Only	11.400	13.270	
+D+L	27.650	29.520	
+D+S	16.307	20.513	
+D+0.750L	23.588	25.457	
+D+0.750L+0.750S	27.268	30.890	
+0.60D	6.840	7.962	
L Only	16.250	16.250	
S Only	4.907	7.243	



AHBL, Inc.  
 1200 6th Avenue  
 Suite 1620  
 Seattle, WA 98101  
 206-267-2425  
 www.ahbl.com

Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

Printed: 18 JUL 2022, 12:40PM

**Steel Beam**

File: GHSBN.ec6  
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 AHBL, INC

Lic. # : KW-06014847

DESCRIPTION: (E) W 14x22

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega
Dsgn. L = 6.50 ft	6.50 ft	1	0.285	0.507	0.43	-23.58	23.58	138.33	82.83	1.00	1.00	31.98	94.53	63.02
	0.75 ft	2	0.285	0.507		-23.58	23.58	138.33	82.83	1.00	1.00	31.98	94.53	63.02
+D+0.60W+H	6.50 ft	1	0.122	0.217	0.02	-10.10	10.10	138.33	82.83	1.00	1.00	13.66	94.53	63.02
	0.75 ft	2	0.122	0.217		-10.10	10.10	138.33	82.83	1.00	1.00	13.66	94.53	63.02
+D+0.750Lr+0.750L+0.450W+H	6.50 ft	1	0.235	0.421	1.04	-19.50	19.50	138.33	82.83	1.00	1.00	26.55	94.53	63.02
	0.75 ft	2	0.235	0.421		-19.50	19.50	138.33	82.83	1.00	1.00	26.55	94.53	63.02
+D+0.750L+0.750S+0.450W+H	6.50 ft	1	0.285	0.507	0.43	-23.58	23.58	138.33	82.83	1.00	1.00	31.98	94.53	63.02
	0.75 ft	2	0.285	0.507		-23.58	23.58	138.33	82.83	1.00	1.00	31.98	94.53	63.02
+0.60D+0.60W+0.60H	6.50 ft	1	0.073	0.130	0.01	-6.06	6.06	138.33	82.83	1.00	1.00	8.20	94.53	63.02
	0.75 ft	2	0.073	0.130		-6.06	6.06	138.33	82.83	1.00	1.00	8.20	94.53	63.02
+D+0.70E+0.60H	6.50 ft	1	0.122	0.217	0.02	-10.10	10.10	138.33	82.83	1.00	1.00	13.66	94.53	63.02
	0.75 ft	2	0.122	0.217		-10.10	10.10	138.33	82.83	1.00	1.00	13.66	94.53	63.02
+D+0.750L+0.750S+0.5250E+H	6.50 ft	1	0.285	0.507	0.43	-23.58	23.58	138.33	82.83	1.00	1.00	31.98	94.53	63.02
	0.75 ft	2	0.285	0.507		-23.58	23.58	138.33	82.83	1.00	1.00	31.98	94.53	63.02
+0.60D+0.70E+H	6.50 ft	1	0.073	0.130	0.01	-6.06	6.06	138.33	82.83	1.00	1.00	8.20	94.53	63.02
	0.75 ft	2	0.073	0.130		-6.06	6.06	138.33	82.83	1.00	1.00	8.20	94.53	63.02

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.750L+0.750S+0.5250E+H	1	0.0000	0.000	+D+0.750L+0.750S+0.5250E+H	-0.0096	4.290
	2	0.0090	0.750		0.0000	4.290

**Vertical Reactions**

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Overall MAXimum	2.276	40.353	
Overall MINimum	0.086	8.075	
+D+H	0.143	16.912	
+D+L+H	2.276	40.091	
+D+Lr+H	0.143	16.912	
+D+S+H	-0.692	24.987	
+D+0.750Lr+0.750L+H	1.743	34.296	
+D+0.750L+0.750S+H	1.117	40.353	
+D+0.60W+H	0.143	16.912	
+D+0.750Lr+0.750L+0.450W+H	1.743	34.296	
+D+0.750L+0.750S+0.450W+H	1.117	40.353	
+0.60D+0.60W+0.60H	0.086	10.147	
+D+0.70E+0.60H	0.143	16.912	
+D+0.750L+0.750S+0.5250E+H	1.117	40.353	
+0.60D+0.70E+H	0.086	10.147	
D Only	0.143	16.912	
L Only	2.133	23.179	
S Only	-0.835	8.075	
H Only			



**Steel Beam**

Lic. #: KW-06014847

DESCRIPTION: (E) W 14x43

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega
Dsgn. L = 9.50 ft	9.50 ft	1	0.331	0.362	0.32	-57.50	57.50	290.00	173.65	1.00	1.00	30.23	125.36	83.57
	2.00 ft	2	0.331	0.362		-57.50	57.50	290.00	173.65	1.00	1.00	30.23	125.36	83.57
<b>+D+0.60W+H</b>														
Dsgn. L = 9.50 ft	9.50 ft	1	0.138	0.149	0.00	-23.89	23.89	290.00	173.65	1.00	1.00	12.49	125.36	83.57
	2.00 ft	2	0.138	0.149		-23.89	23.89	290.00	173.65	1.00	1.00	12.49	125.36	83.57
<b>+D+0.750Lr+0.750L+0.450W+H</b>														
Dsgn. L = 9.50 ft	9.50 ft	1	0.289	0.318	1.04	-50.14	50.14	290.00	173.65	1.00	1.00	26.55	125.36	83.57
	2.00 ft	2	0.289	0.318		-50.14	50.14	290.00	173.65	1.00	1.00	26.55	125.36	83.57
<b>+D+0.750L+0.750S+0.450W+H</b>														
Dsgn. L = 9.50 ft	9.50 ft	1	0.331	0.362	0.32	-57.50	57.50	290.00	173.65	1.00	1.00	30.23	125.36	83.57
	2.00 ft	2	0.331	0.362		-57.50	57.50	290.00	173.65	1.00	1.00	30.23	125.36	83.57
<b>+0.60D+0.60W+0.60H</b>														
Dsgn. L = 9.50 ft	9.50 ft	1	0.083	0.090	0.00	-14.33	14.33	290.00	173.65	1.00	1.00	7.49	125.36	83.57
	2.00 ft	2	0.083	0.090		-14.33	14.33	290.00	173.65	1.00	1.00	7.49	125.36	83.57
<b>+D+0.70E+0.60H</b>														
Dsgn. L = 9.50 ft	9.50 ft	1	0.138	0.149	0.00	-23.89	23.89	290.00	173.65	1.00	1.00	12.49	125.36	83.57
	2.00 ft	2	0.138	0.149		-23.89	23.89	290.00	173.65	1.00	1.00	12.49	125.36	83.57
<b>+D+0.750L+0.750S+0.5250E+H</b>														
Dsgn. L = 9.50 ft	9.50 ft	1	0.331	0.362	0.32	-57.50	57.50	290.00	173.65	1.00	1.00	30.23	125.36	83.57
	2.00 ft	2	0.331	0.362		-57.50	57.50	290.00	173.65	1.00	1.00	30.23	125.36	83.57
<b>+0.60D+0.70E+H</b>														
Dsgn. L = 9.50 ft	9.50 ft	1	0.083	0.090	0.00	-14.33	14.33	290.00	173.65	1.00	1.00	7.49	125.36	83.57
	2.00 ft	2	0.083	0.090		-14.33	14.33	290.00	173.65	1.00	1.00	7.49	125.36	83.57

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.750L+0.750S+0.5250E+H	1	0.0000	0.000	+D+0.750L+0.750S+0.5250E+H	-0.0258	6.118
	2	0.0465	2.000		0.0000	6.118

**Vertical Reactions**

Load Combination	Support 1	Support 2	Support 3
Overall MAXimum	2.318	45.951	
Overall MINimum	0.039	5.944	
+D+H	0.064	17.579	
+D+L+H	2.318	45.951	
+D+Lr+H	0.064	17.579	
+D+S+H	-0.969	23.522	
+D+0.750Lr+0.750L+H	1.754	38.858	
+D+0.750L+0.750S+H	0.979	43.315	
+D+0.60W+H	0.064	17.579	
+D+0.750Lr+0.750L+0.450W+H	1.754	38.858	
+D+0.750L+0.750S+0.450W+H	0.979	43.315	
+0.60D+0.60W+0.60H	0.039	10.547	
+D+0.70E+0.60H	0.064	17.579	
+D+0.750L+0.750S+0.5250E+H	0.979	43.315	
+0.60D+0.70E+H	0.039	10.547	
D Only	0.064	17.579	
L Only	2.253	28.372	
S Only	-1.034	5.944	
H Only			



Project BAKER NORTH  
Subject \_\_\_\_\_  
With/To \_\_\_\_\_  
Address \_\_\_\_\_  
Date 8/10/22

Project No. 2220197.20  
Phone \_\_\_\_\_  
Fax # \_\_\_\_\_  
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- Calculations
- Fax
- Memorandum
- Meeting Minutes
- Telephone Memo

Civil Engineers

Structural Engineers

Landscape Architects

Community Planners

Land Surveyors

### COLUMN CAPACITY

HSS 4x4x 3/8 — 26.75 K @ 10FT TALL.

HSS 5x5x 1/2 — 50.75K @ 10FT TALL

### FOOTING CAPACITY

2FT STRIP FOOTING — 8K

2FT  $\Phi$  — 8K

2.5 FT  $\Phi$  — 12.5 K

3.0 FT  $\Phi$  — 18 K

3.5 FT  $\Phi$  — 24.5 K

4.0 FT  $\Phi$  — 32.0 K

4.5 FT  $\Phi$  — 40.5 K

5.0 FT  $\Phi$  — 50 K.

Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

## Steel Column

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

(c) ENERCALC INC 1983-2022

### DESCRIPTION: HSS 4x4x3/8 CAPACITY

### Code References

Calculations per AISC 360-16, IBC 2018, CBC 2019, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

### General Information

Steel Section Name : <b>HSS4x4x3/8</b>	Overall Column Height	10.0 ft
Analysis Method : Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition for deflection (buckling) along columns :	
Fy : Steel Yield	X-X (width) axis :	
E : Elastic Bending Modulus	Unbraced Length for buckling ABOUT Y-Y Axis = 10.0 ft, K = 1.0	
	Y-Y (depth) axis :	
	Unbraced Length for buckling ABOUT X-X Axis = 10.0 ft, K = 1.0	

### Applied Loads

Service loads entered. Load Factors will be applied for calculation

Column self weight included : 171.975 lbs \* Dead Load Factor  
 AXIAL LOADS . . .  
 Axial Load at 10.0 ft, Xecc = 5.0 in, D = 26.750 k

### DESIGN SUMMARY

#### Bending & Shear Check Results

<b>PASS</b> Max. Axial+Bending Stress Ratio =	<b>0.9910</b> : 1	<b>Maximum Load Reactions . .</b>	
Load Combination	D Only	Top along X-X	1.115 k
Location of max.above base	9.933 ft	Bottom along X-X	1.115 k
At maximum location values are . . .		Top along Y-Y	0.0 k
Pa : Axial	26.922 k	Bottom along Y-Y	0.0 k
Pn / Omega : Allowable	84.099 k	<b>Maximum Load Deflections . . .</b>	
Ma-x : Applied	0.0 k-ft	Along Y-Y	0.0 in at 0.0ft above base
Mn-x / Omega : Allowable	14.668 k-ft	for load combination :	
Ma-y : Applied	-11.071 k-ft	Along X-X	-0.4172 in at 5.839ft above base
Mn-y / Omega : Allowable	14.668 k-ft	for load combination D Only	
<b>PASS</b> Maximum Shear Stress Ratio	<b>0.03272</b> : 1		
Load Combination	D Only		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	1.115 k		
Vn / Omega : Allowable	34.065 k		

### Load Combination Results

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Ry	KyLy/Rx	Stress Ratio	Status	Location
D Only	0.991	PASS	9.93 ft	1.00	1.66	81.63	81.63	0.033	PASS	0.00 ft
+0.60D	0.549	PASS	9.93 ft	1.00	1.66	81.63	81.63	0.020	PASS	0.00 ft

### Maximum Reactions

Note: Only non-zero reactions are listed

Load Combination	Axial Reaction	X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	26.922	1.115	1.115							
+0.60D	16.153	0.669	0.669							

### Extreme Reactions

Item	Extreme Value	Axial Reaction	X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	26.922	1.115	1.115							
"	Minimum	16.153	0.669	0.669							
Reaction, X-X Axis Base	Maximum	26.922	1.115	1.115							
"	Minimum	16.153	0.669	0.669							
Reaction, Y-Y Axis Base	Maximum	26.922	1.115	1.115							
"	Minimum	26.922	1.115	1.115							
Reaction, X-X Axis Top	Maximum	26.922	1.115	1.115							



Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

## Steel Column

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

(c) ENERCALC INC 1983-2022

### DESCRIPTION: HSS 4x4x3/8 CAPACITY

#### Extreme Reactions

Item	Extreme Value	Axial Reaction		X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
"	Minimum	16.153	0.669	0.669							
Reaction, Y-Y Axis Top	Maximum	16.153	0.669	0.669							
"	Minimum	26.922	1.115	1.115							
Moment, X-X Axis Base	Maximum	26.922			1.115						
"	Minimum	26.922			1.115						
Moment, Y-Y Axis Base	Maximum	26.922	1.115	1.115							
"	Minimum	26.922	1.115	1.115							
Moment, X-X Axis Top	Maximum	26.922	1.115	1.115							
"	Minimum	26.922	1.115	1.115							
Moment, Y-Y Axis Top	Maximum	26.922	1.115	1.115							
"	Minimum	26.922	1.115	1.115							

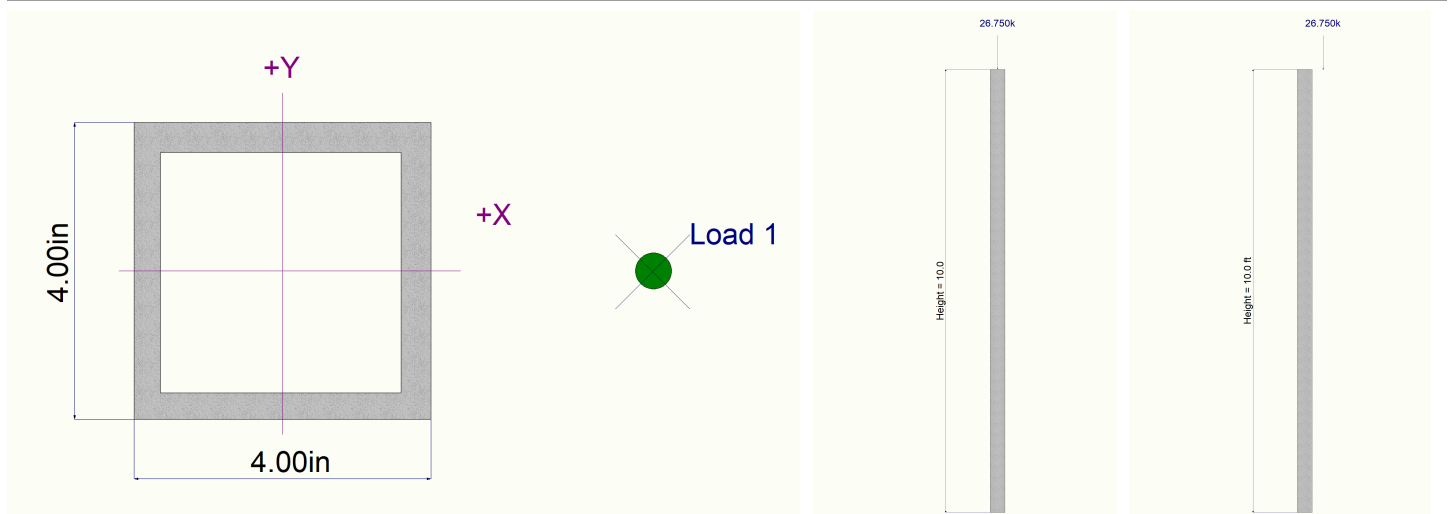
#### Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
D Only	-0.4172 in	5.839 ft	0.000 in	0.000 ft
+0.60D	-0.2503 in	5.839 ft	0.000 in	0.000 ft

#### Steel Section Properties : HSS4x4x3/8

Depth	=	4.000 in	I xx	=	10.30 in <sup>4</sup>	J	=	17.500 in <sup>4</sup>
Design Thick	=	0.349 in	S xx	=	5.13 in <sup>3</sup>			
Width	=	4.000 in	R xx	=	1.470 in			
Wall Thick	=	0.375 in	Zx	=	6.390 in <sup>3</sup>			
Area	=	4.780 in <sup>2</sup>	I yy	=	10.300 in <sup>4</sup>	C	=	9.140 in <sup>3</sup>
Weight	=	17.197 plf	S yy	=	5.130 in <sup>3</sup>			
			R yy	=	1.470 in			
Ycg	=	0.000 in						

#### Sketches



Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

## Steel Column

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

(c) ENERCALC INC 1983-2022

### DESCRIPTION: HSS 5X5x1/2 CAPACITY

### Code References

Calculations per AISC 360-16, IBC 2018, CBC 2019, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

### General Information

Steel Section Name : <b>HSS5x5x1/2</b>	Overall Column Height	10.0 ft
Analysis Method : Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition for deflection (buckling) along columns :	
Fy : Steel Yield	X-X (width) axis :	
E : Elastic Bending Modulus	Unbraced Length for buckling ABOUT Y-Y Axis = 10.0 ft, K = 1.0	
	Y-Y (depth) axis :	
	Unbraced Length for buckling ABOUT X-X Axis = 10.0 ft, K = 1.0	

### Applied Loads

Service loads entered. Load Factors will be applied for calculation

Column self weight included : 284.30 lbs \* Dead Load Factor  
 AXIAL LOADS . . .  
 Axial Load at 10.0 ft, Xecc = 5.50 in, D = 50.750 k

### DESIGN SUMMARY

#### Bending & Shear Check Results

<b>PASS</b> Max. Axial+Bending Stress Ratio =	<b>0.9980</b> : 1	<b>Maximum Load Reactions . .</b>	
Load Combination	D Only	Top along X-X	2.326 k
Location of max.above base	9.933 ft	Bottom along X-X	2.326 k
At maximum location values are . . .		Top along Y-Y	0.0 k
Pa : Axial	51.034 k	Bottom along Y-Y	0.0 k
Pn / Omega : Allowable	162.019 k	<b>Maximum Load Deflections . . .</b>	
Ma-x : Applied	0.0 k-ft	Along Y-Y	0.0 in at 0.0ft above base
Mn-x / Omega : Allowable	30.070 k-ft	for load combination :	
Ma-y : Applied	-23.104 k-ft	Along X-X	-0.3449 in at 5.839ft above base
Mn-y / Omega : Allowable	30.070 k-ft	for load combination D Only	
<b>PASS</b> Maximum Shear Stress Ratio	<b>0.04198</b> : 1		
Load Combination	D Only		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	2.326 k		
Vn / Omega : Allowable	55.409 k		

### Load Combination Results

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Ry	KyLy/Rx	Stress Ratio	Status	Location
D Only	0.998	PASS	9.93 ft	1.00	1.66	65.93	65.93	0.042	PASS	0.00 ft
+0.60D	0.556	PASS	9.93 ft	1.00	1.66	65.93	65.93	0.025	PASS	0.00 ft

### Maximum Reactions

Note: Only non-zero reactions are listed

Load Combination	Axial Reaction	X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	51.034	2.326	2.326							
+0.60D	30.621	1.396	1.396							

### Extreme Reactions

Item	Extreme Value	Axial Reaction	X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	51.034	2.326	2.326							
"	Minimum	30.621	1.396	1.396							
Reaction, X-X Axis Base	Maximum	51.034	2.326	2.326							
"	Minimum	30.621	1.396	1.396							
Reaction, Y-Y Axis Base	Maximum	51.034	2.326	2.326							
"	Minimum	51.034	2.326	2.326							
Reaction, X-X Axis Top	Maximum	51.034	2.326	2.326							

Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

## Steel Column

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

(c) ENERCALC INC 1983-2022

### DESCRIPTION: HSS 5X5x1/2 CAPACITY

#### Extreme Reactions

Item	Extreme Value	Axial Reaction		X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Base	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
"	Minimum	30.621	1.396	1.396								
Reaction, Y-Y Axis Top	Maximum	30.621	1.396	1.396								
"	Minimum	51.034	2.326	2.326								
Moment, X-X Axis Base	Maximum	51.034		2.326								
"	Minimum	51.034		2.326								
Moment, Y-Y Axis Base	Maximum	51.034	2.326	2.326								
"	Minimum	51.034	2.326	2.326								
Moment, X-X Axis Top	Maximum	51.034	2.326	2.326								
"	Minimum	51.034	2.326	2.326								
Moment, Y-Y Axis Top	Maximum	51.034	2.326	2.326								
"	Minimum	51.034	2.326	2.326								

#### Maximum Deflections for Load Combinations

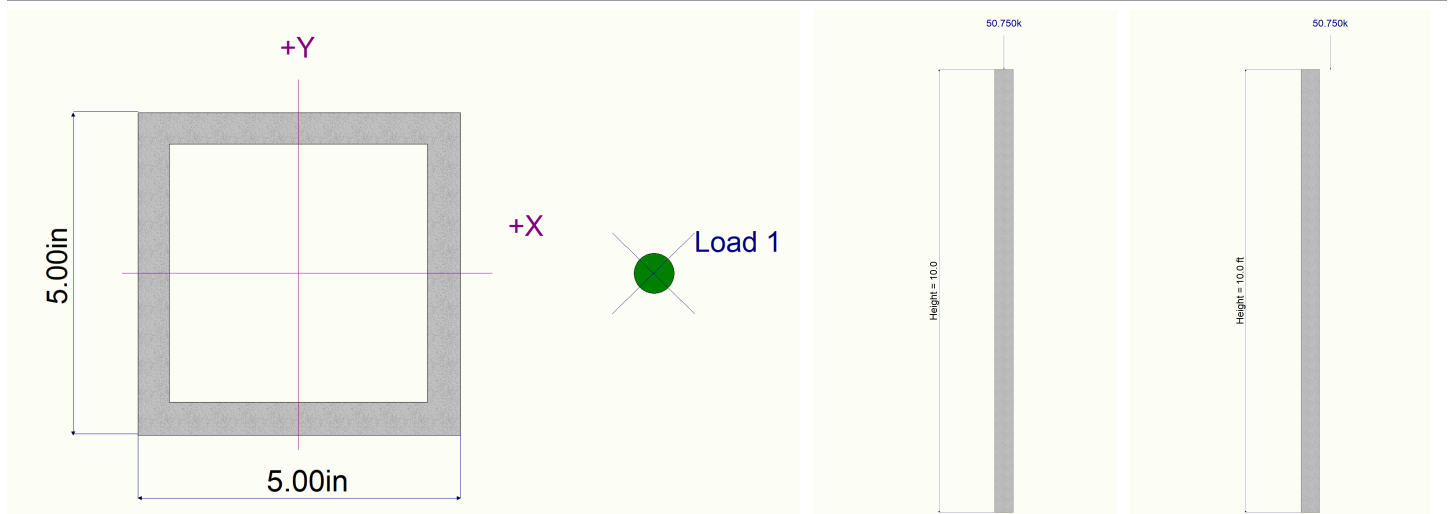
Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
D Only	-0.3449 in	5.839 ft	0.000 in	0.000 ft
+0.60D	-0.2070 in	5.839 ft	0.000 in	0.000 ft

#### Steel Section Properties : HSS5x5x1/2

Depth	=	5.000 in	I xx	=	26.00 in <sup>4</sup>	J	=	44.600 in <sup>4</sup>
Design Thick	=	0.465 in	S xx	=	10.40 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.820 in			
Wall Thick	=	0.500 in	Zx	=	13.100 in <sup>3</sup>			
Area	=	7.880 in <sup>2</sup>	I yy	=	26.000 in <sup>4</sup>	C	=	18.700 in <sup>3</sup>
Weight	=	28.430 plf	S yy	=	10.400 in <sup>3</sup>			
			R yy	=	1.820 in			

Ycg = 0.000 in

#### Sketches





Project GHS BAKER N.  
 Subject \_\_\_\_\_  
 With/To \_\_\_\_\_  
 Address \_\_\_\_\_  
 Date 7/18/22

Project No. 2220197-20  
 Phone \_\_\_\_\_  
 Fax # \_\_\_\_\_  
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- Page \_\_\_\_ of \_\_\_\_
- Calculations
- Fax
- Memorandum
- Meeting Minutes
- Telephone Memo

Civil Engineers

Structural Engineers

Landscape Architects

Community Planners

Land Surveyors

LATERAL DESIGN.

(E) BUILDING UTILIZES REINFORCED MASONRY SHEARWALLS DESIGNED IN ACCORDANCE W/ 1994 UBC.

RENOVATION WILL DEMOLISH SOME INTERIOR MASONRY WALLS, CONCRETE CEILINGS, AND EXTERIOR MASONRY WALLS.

ADDITION DOES NOT ADD ANY WIND LOAD TO STRUCTURE. - NEGLECT WIND DESIGN, BY OBSERVATION SEISMIC WILL CONTROL

DETERMINE ORIGINAL BUILDING MASS.

AREA ROOF = 20,400 SF @ 20 PSF  
 AREA MEZZANINE = 1,600 SF @ 50 PSF  
 AREA CATWALKS = 850 SF @ 10 PSF  
 AREA CONCRETE CEILING = 6,525 SF @ 62 PSF  
 LINEAL FT OF 8" CMU = 2,620 FT ((AVG HT = 10.5')) @ 84 PSF  
 LINEAL FT OF 6" CMU = 240 FT (AVG HT = 10') @ 62 PSF

$$W = 408,000 + 80,000 + 8500 + 404,550 + 2,310,840 + 148,800 = 3,360,690 \#$$



Project GHS BAKER N  
Subject \_\_\_\_\_  
With/To \_\_\_\_\_  
Address \_\_\_\_\_  
Date 7/20/22

Project No. 2220197.20  
Phone \_\_\_\_\_  
Fax # \_\_\_\_\_  
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Page \_\_\_\_\_ of \_\_\_\_\_  
 Calculations  
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 Memorandum  
 Meeting Minutes  
 Telephone Memo

Civil Engineers

Structural Engineers

Landscape Architects

Community Planners

Land Surveyors

SINCE ADDITION DOES NOT CREATE AN INCREASE IN DEMAND, REVIEW REMOVAL OF MASONRY WALLS TO DETERMINE IF DECREASE IN CAPACITY IS  $\leq$  10%.  
LIEBC

TOTAL LENGTH OF WALL AT BUILDING ORIGINAL CONSTRUCTION

$\approx$  2300 FT.

LENGTH OF WALL DEMOLISHED w/ BAKER NORTH ADDITION

$\approx$  95 FT.

$\Rightarrow$  4% OF WALLS DEMOLISHED.

BY OBSERVATION DEMAND/CAPACITY RATIO WILL NOT INCREASE BY MORE THAN 10%.

DESIGN ADDITION TO SUPPORT OWN LATERAL LOADS USING STEEL STUD SHEARWALLS AND STEEL MOMENT FRAMES.

$\sim$  USE  $R=3.5$  FOR MOMENT FRAMES

$\sim$  USE  $R=5.0$  FOR SHEARWALLS (MATCH MASONRY)



Project GHS BAKER N.  
 Subject \_\_\_\_\_  
 With/To \_\_\_\_\_  
 Address \_\_\_\_\_  
 Date 7/21/22

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Civil Engineers

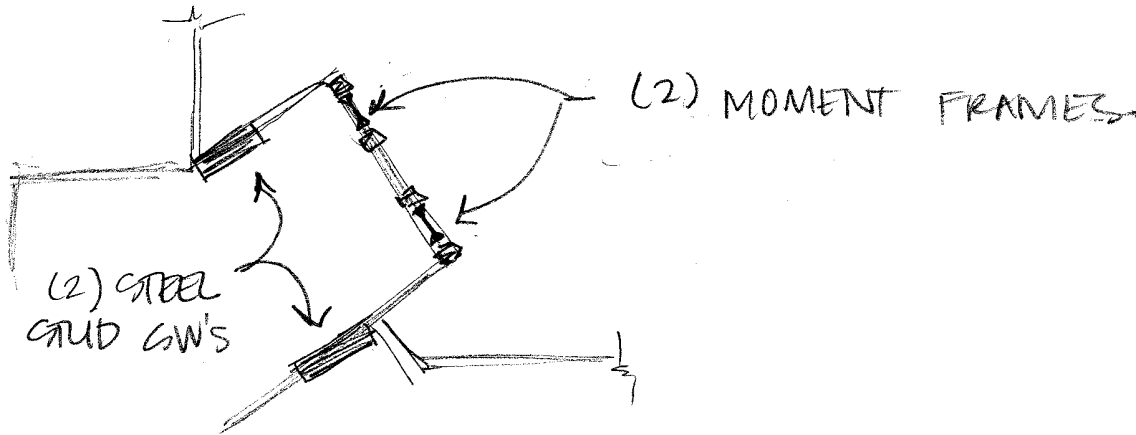
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LATERAL FORCE RESISTING SYSTEM AT ADDITION.



$$W = W_{RF} + 1/2 W_E \text{ WAUS} = 18,400 + 0.5(22,500) = 29,650 \#$$

$$V = p C_s = \frac{\rho I \cdot S_{DS}}{R} = \frac{1.3 \cdot 1.0 \cdot 0.805}{R} \cdot W$$

FOR MOMENT FRAMES = 0.299 W.

FOR SHEARWAUS = 0.209 W

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- Page \_\_\_\_ of \_\_\_\_
- Calculations
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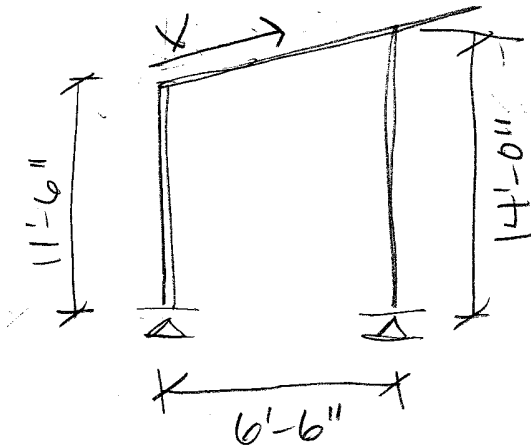
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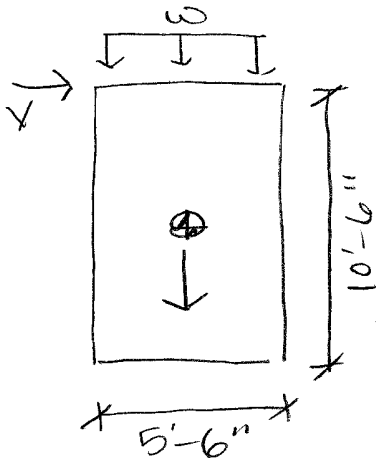
MOMENT FRAME DESIGN.



SEE RISA.

$$V = 4.43 \text{ K (ULT)}$$

SHEARWALL DESIGN.



$$V = 3.12 \text{ K (ULT, SEISMIC)}$$

$$W = 6(25 \text{ SN} + 20 \text{ D})$$

$$W = (H \cdot W) \text{ PSF} = 866 \#$$

$$V = \frac{0.7(V)}{5.5'} = 0.397 \text{ klf}$$

$$M_{OT} = 0.7 \cdot (V) \cdot H = 22.9 \text{ K-ft}$$

$$M_R = 0.6(1.53 \text{ K})(1/2 W) + 0.6(0.48)(W) = 4.1 \text{ K-ft}$$

$$\therefore \text{NET OT} = M_{OT} - M_R = 18.8 \text{ K-ft}$$

$$\text{TENSION} = \frac{M}{D} = 3.4 \text{ K}$$

If this does not meet with your understanding, please contact us in writing within seven days. THANK YOU.



Project BAKER NORTH  
 Subject \_\_\_\_\_  
 With/To \_\_\_\_\_  
 Address \_\_\_\_\_  
 Date 9/10/22

Project No. 2220197.20  
 Phone \_\_\_\_\_  
 Fax # \_\_\_\_\_  
 # Faxed Pages \_\_\_\_\_  
 By AMS

- Page \_\_\_\_\_ of \_\_\_\_\_
- Calculations
- Fax
- Memorandum
- Meeting Minutes
- Telephone Memo

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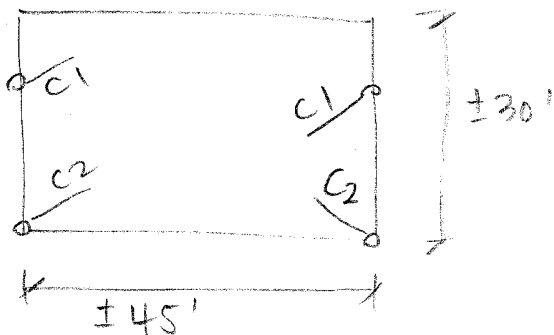
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CANOPY.



COLUMNS INSET  
 10'-0" FROM  
 BACK EDGE  
 TO AVOID SHORING  
 WALL SURCHARGE.

DEAD LOAD = 15 PSF + SELF WT  
 SNOW LOAD = 25 PSF

MUFRS = CANT. COLUMNS.

$$R = 1.25$$

$$S_{DS} = 0.805$$

$$\therefore C_s = \frac{S_{DS}}{R} = 0.644$$

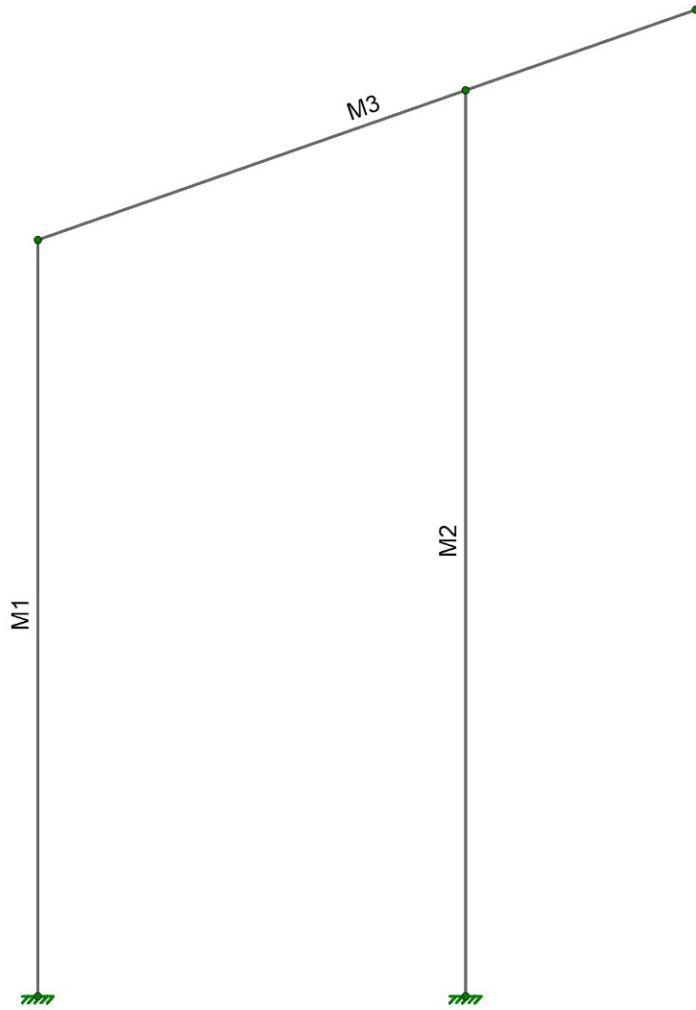
BASE SHEAR = 0.644 W.

→ BASED ON TRIB AREA, SEISMIC LOAD IS EQUAL TO

$$C_1 = 0.644(10.458) = 6.73 \text{ K}$$

$$C_2 = 0.644(3.903) = 2.51 \text{ K.}$$





SK-1

Oct 08, 2022

GHS BN MOMENT FRAMES.r3d

**Project Grid Lines**

No Data to Print...
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**Project Grid Arcs**

No Data to Print...
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**Node Coordinates**

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
1	N1	0	0	0	
2	N2	6.5	0	0	
3	N3	0	11.5	0	
4	N5	10	15	0	
5	N6	6.5	13.775	0	

**Node Boundary Conditions**

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
1	N3			Reaction			
2	N6			Reaction			
3	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N2	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
5	N5			Reaction			

**Hot Rolled Steel Properties**

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e <sup>5</sup> F <sup>-1</sup> ]	Density [k/ft <sup>3</sup> ]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
7	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3

**Cold Formed Steel Properties**

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e <sup>5</sup> F <sup>-1</sup> ]	Density [k/ft <sup>3</sup> ]	Yield [ksi]	Fu [ksi]
1	A653 SS Gr33	29500	11346	0.3	0.65	0.49	33	45
2	A653 SS Gr50/1	29500	11346	0.3	0.65	0.49	50	65

**Wood Properties**

	Label	Type	Database	Species	Grade	Cm	Ci	Emod	Nu	Therm. Coeff. [1e <sup>5</sup> F <sup>-1</sup> ]	Density [k/ft <sup>3</sup> ]
1	DF	Solid Sawn	Visually Graded	Douglas Fir-Larch	No.1			1	0.3	0.3	0.035
2	SP	Solid Sawn	Visually Graded	Southern Pine	No.1			1	0.3	0.3	0.035
3	HF	Solid Sawn	Visually Graded	Hem-Fir	No.1			1	0.3	0.3	0.035
4	SPF	Solid Sawn	Visually Graded	Spruce-Pine-fir	No.1			1	0.3	0.3	0.035
5	24F-1.8E DF Balanced	Glulam	NDS Table 5A	24F-1.8E_DF_BAL	na			1	0.3	0.3	0.035
6	24F-1.8E DF Unbalanced	Glulam	NDS Table 5A	24F-1.8E_DF_UNBAL	na			1	0.3	0.3	0.035
7	24F-1.8E SP Balanced	Glulam	NDS Table 5A	24F-1.8E_SP_BAL	na			1	0.3	0.3	0.035
8	24F-1.8E SP Unbalanced	Glulam	NDS Table 5A	24F-1.8E_SP_UNBAL	na			1	0.3	0.3	0.035

### Concrete Properties

Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e <sup>5</sup> F <sup>-1</sup> ]	Density [k/ft <sup>3</sup> ]	f <sub>c</sub> [ksi]	Lambda	Flex Steel [ksi]	Shear Steel [ksi]
1 Conc3000NW	3156	1372	0.15	0.6	0.145	3	1	60	60
2 Conc3500NW	3409	1482	0.15	0.6	0.145	3.5	1	60	60
3 Conc4000NW	3644	1584	0.15	0.6	0.145	4	1	60	60
4 Conc3000LW	2085	907	0.15	0.6	0.11	3	0.75	60	60
5 Conc3500LW	2252	979	0.15	0.6	0.11	3.5	0.75	60	60
6 Conc4000LW	2408	1047	0.15	0.6	0.11	4	0.75	60	60

### Masonry Properties

Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e <sup>5</sup> F <sup>-1</sup> ]	Self Weight [k/ft <sup>3</sup> ]	f <sub>m</sub> [ksi]	Flex Steel [ksi]	Shear Steel [ksi]
1 Concrete Matl	1350	540	0.25	0.6	Custom	1.5	60	60
2 Clay Matl	1050	420	0.25	0.6	Custom	1.5	60	60
3 Gen Masonry	1050	420	0.25	0.6	0.08	1.5	60	60

### Aluminum Properties

Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e <sup>5</sup> F <sup>-1</sup> ]	Density [k/ft <sup>3</sup> ]	Table B.4	kt	F <sub>tu</sub> [ksi]	F <sub>ty</sub> [ksi]	F <sub>cy</sub> [ksi]	F <sub>su</sub> [ksi]	C <sub>t</sub>
1 3003-H14	10100	3787.5	0.33	1.3	0.173	Table B.4-1	1	19	16	13	12	141
2 6061-T6	10100	3787.5	0.33	1.3	0.173	Table B.4-2	1	38	35	35	24	141
3 6063-T5	10100	3787.5	0.33	1.3	0.173	Table B.4-2	1	22	16	16	13	141
4 6063-T6	10100	3787.5	0.33	1.3	0.173	Table B.4-2	1	30	25	25	19	141
5 5052-H34	10200	3787.5	0.33	1.3	0.173	Table B.4-1	1	34	26	24	20	141
6 6061-T6 W	10100	3787.5	0.33	1.3	0.173	Table B.4-1	1	24	15	15	15	141

### Stainless Steel Properties

Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e <sup>5</sup> F <sup>-1</sup> ]	Density [k/ft <sup>3</sup> ]	n	Yield [ksi]	F <sub>u</sub> [ksi]
1 A276 S316	28000	10780	0.3	0.93	0.5	5.6	30	75
2 A276 S321	29000	11165	0.3	0.73	0.48	5.6	65	94
3 A276 S304	28000	10780	0.3	0.93	0.49	5.6	30	75

### General Materials Properties

Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e <sup>5</sup> F <sup>-1</sup> ]	Density [k/ft <sup>3</sup> ]	Plate Methodology
1 gen Conc3NW	3155	1372	0.15	0.6	0.145	Isotropic
2 gen Conc4NW	3644	1584	0.15	0.6	0.145	Isotropic
3 gen Conc3LW	2085	906	0.15	0.6	0.11	Isotropic
4 gen Conc4LW	2408	1047	0.15	0.6	0.11	Isotropic
5 gen Alum	10100	4077	0.3	1.29	0.173	Isotropic
6 gen Steel	29000	11154	0.3	0.65	0.49	Isotropic
7 gen Plywood	1800	38	0	0.3	0.035	Isotropic
8 RIGID	1e+6		0.3	0	0	Isotropic

### Custom Wood Properties

Label	F <sub>b</sub>	F <sub>t</sub>	F <sub>v</sub>	F <sub>c</sub>	E	E <sub>05</sub>	Type
1 LVL PRL 1.5E 2250F	2.25	1.5	0.22	1.95	1500	0.5	SCL
2 LVL PRL 2.0E 2900F	2.9	1.9	0.285	2.75	2000	0.5	SCL
3 LVL Microllam 1.9E 2600F	2.6	1.555	0.285	2.51	1900	0.5	SCL
4 PSL Parallam 2.0E 2900F	2.9	2.025	0.29	2.9	2000	0.5	SCL
5 PSL Parallam 1.8E	2.4	1.755	0.18	2.5	1800	0.5	SCL
6 LSL TimberStrand 1.55E 2325F	2.325	1.07	0.31	2.05	1550	0.5	SCL
7 LSL TimberStrand 1.3E 1700F	1.7	1.075	0.4	1.4	1300	0.5	SCL

**Hot Rolled Steel Section Sets**

	Label	Shape	Type	Design List	Material	Design Rule	Area [in <sup>2</sup> ]	Iyy [in <sup>4</sup> ]	Izz [in <sup>4</sup> ]	J [in <sup>4</sup> ]
1	COL	HSS6X6X6	Column	None	A500 Gr.B Rect	Typical	7.58	39.5	39.5	64.6
2	BEAM	W8X35	Beam	Wide Flange	A992	Typical	10.3	42.6	127	0.769

**Cold Formed Steel Section Sets**

	Label	Shape	Type	Design List	Material	Design Rule	Area [in <sup>2</sup> ]	Iyy [in <sup>4</sup> ]	Izz [in <sup>4</sup> ]	J [in <sup>4</sup> ]
1	CF1A	8CU1.25X057	Beam	None	A653 SS Gr33	Typical	0.581	0.057	4.41	0.00063

**Wood Section Sets**

	Label	Shape	Type	Design List	Material	Design Rule	Area [in <sup>2</sup> ]	Iyy [in <sup>4</sup> ]	Izz [in <sup>4</sup> ]	J [in <sup>4</sup> ]
1	WOOD1A	2X6	Beam	None	DF	Typical	8.25	1.547	20.797	5.125

**Concrete Section Sets**

	Label	Shape	Type	Design List	Material	Design Rule	Area [in <sup>2</sup> ]	Iyy [in <sup>4</sup> ]	Izz [in <sup>4</sup> ]	J [in <sup>4</sup> ]
1	CONC1A	CRECT12X8	Beam	None	Conc3000NW	Typical	96	512	1152	1187.84

**Aluminum Section Sets**

	Label	Shape	Type	Design List	Material	Design Rule	Area [in <sup>2</sup> ]	Iyy [in <sup>4</sup> ]	Izz [in <sup>4</sup> ]	J [in <sup>4</sup> ]
1	AL1A	AA13X1.64	Beam	None	3003-H14	Typical	1.39	0.522	2.24	0.019

**Stainless Steel Section Sets**

	Label	Shape	Type	Design List	Material	Design Rule	Area [in <sup>2</sup> ]	Iyy [in <sup>4</sup> ]	Izz [in <sup>4</sup> ]	J [in <sup>4</sup> ]
1	SS1A	W10X33 SS	Beam	None	A276 S316	Typical	9.71	36.6	171	0.583

**General Section Sets**

	Label	Shape	Type	Material	Area [in <sup>2</sup> ]	Iyy [in <sup>4</sup> ]	Izz [in <sup>4</sup> ]	J [in <sup>4</sup> ]
1	GEN1A	RE4X4	Beam	gen_Conc3NW	16	21.333	21.333	31.573
2	RIGID		None	RIGID	1e+6	1e+6	1e+6	1e+6

**Member Primary Data**

	Label	I Node	J Node	Section/Shape	Type	Design List	Material	Design Rule
1	M1	N1	N3	COL	Column	None	A500 Gr.B Rect	Typical
2	M2	N2	N6	COL	Column	None	A500 Gr.B Rect	Typical
3	M3	N3	N5	BEAM	Beam	Wide Flange	A992	Typical

**Member Advanced Data**

	Label	Physical	Deflection Ratio Options	Seismic DR
1	M1	Yes	** NA **	None
2	M2	Yes	** NA **	None
3	M3	Yes	N/A	None

**Hot Rolled Steel Design Parameters**

	Label	Shape	Length [ft]	Lcomp top [ft]	Channel Conn.	a [ft]	Function
1	M1	COL	11.5		N/A	N/A	Lateral
2	M2	COL	13.775		N/A	N/A	Lateral
3	M3	BEAM	10.595	Lbyy	N/A	N/A	Lateral

**Cold Formed Steel Design Parameters**

No Data to Print...

**Wood Design Parameters**

No Data to Print...

**Concrete Beam Design Parameters**

No Data to Print...

**Concrete Column Design Parameters**

No Data to Print...

**Aluminum Design Parameters**

No Data to Print...

**Stainless Steel Design Parameters**

No Data to Print...

**Member RISACONNECTION Properties**

	Label	Shape	Start Conn	End Conn	Start Release	End Release
1	M1	HSS6X6X6	None	None	Fixed	Fixed
2	M2	HSS6X6X6	None	None	Fixed	Fixed
3	M3	W8X35	None	None	Fixed	Fixed

**Plate Primary Data**

No Data to Print...

**Plate Advanced Data**

No Data to Print...

**Solid Primary Data**

No Data to Print...

**Wall Panel Data**

No Data to Print...

**Wall Panel Advanced Data**

No Data to Print...

**Diaphragms**

No Data to Print...

**Design Size and Code Check Parameters**

Label	Max Axial/Bending Chk	Max Shear Chk
1 Typical	1	1

**Concrete Rebar Parameters**

Label	Optimize Rebar ?	Min Flex Bar	Max Flex Bar	Shear Bar	Legs per Stirrup	Top (Column) Cover [in]	Bottom Cover [in]	Side Cover [in]	Top/Bottom Bars	Add'l Side Bars	Shear Bar Spacing [in]
1 Typical	Optimize	#6	#10	#4	2	1.5	1.5	1.5	2	1	12

**Deflection Design**

Label	LC	Ratio	LC	Ratio	LC	Ratio
1 Typical	1	240	2	360	3	240

**Wall Panel U.C. Parameters**

Label	Max Bending Chk	Max Shear Chk
1 Typical	1	1

**Masonry Wall Panel Parameters**

Label	Block Nom Width	Block Grouting	Reinforced	Wall Area Method
1 Typical	10"	Partially Grouted	Yes	NCMA

**Masonry Wall Panel In-Plane Parameters**

Label	Vert Bar Size	Bars Per Cell	Min Bound Zone Width [in]	Max Bound Zone Width [in]	Horz Bar Size	Transfer Load
1 Typical	#5	1	8	40	#5	

**Masonry Wall Panel Out-of-Plane Parameters**

Label	Bar Size	Bar Space	Min Bar Space	Max Bar Placement	Cover [in]	Mortar Type	Cement Type	Transfer Load
1 Typical	#5	8"	72"	Center	Min	Type M or S	Portland, Lime/Mortar	

**Masonry Wall Panel Lintel Parameters**

Label	Depth [in]	Bear Length [in]	Bar Size	Min # Bars Per Layer	Max # Bars Per Layer	Num of Layers	c/c Sp of Layers [in]	Dist To Bot [in]	Stirrup Size	Analysis Method
1 Typical	16	8	#5	1	3	1	N/A	3.5	#4	Simply Supported

**Wood Wall Panel Parameters**

Label	Top Plate	Sill Plate	Studs	Min Stud Space [in]	Max Stud Space [in]	Green Lumber?	Header Size	Header Matl
1 Typical	2-2X6	2X6	2X6	16	16		6x8	Same as Wall

**Additional Wood Wall Panel Parameters**

Label	Schedule	Min Panel Thick [in]	Max Panel Thick [in]	Double Sided Panel?	Max. Nail Spacing	Min. Nail Spacing	HD Chords	HD Chord Matl	Hold Down	Chord Strap	Eccentricity
1 Typical	AWC 2015 OSB	0.375	0.75	Optimum	6-in.	2-in.	2-2X6	Same as Wall	SIMPSON HoldDowns	SIMPSON Chord Straps	Yes

**Concrete Wall Panel Rebar Parameters**

Label	Vert Bar Size	Max Vert Bar Space [in]	Min Vert Bar Space [in]	Vert Bar Inc [in]	Horz Bar Size	Max Horz Bar Space [in]	Min Horz Bar Space [in]	Horz Bar Inc [in]	Group Wall
1 Typical	#6	18	4	2	#4	18	4	2	

**Concrete Wall Panel Cover Parameters**

Label	Outer Bars	Location	Int Cover -z [in]	Ext Cover +z [in]	Edge Cover [in]	Transfer In	Transfer Out
1 Typical	Vertical	Each Face	1	1	2		

**Frame / HR Seismic Design Rule**

Label	Frame Type	Column Ductility	Column Overstrength	Beam Ductility	Connection	Beam Overstrength	Z Factor	Hinge Location [in]	Brace Ductility	Brace Overstrength	KL/r
1 OCBF	OCBF	Minimal	Yes	Minimal	Other/None		N/A	N/A	Minimal		
2 SCBF	SCBF	High	Yes	High	Other/None	Yes	N/A	N/A	High		Yes
3 OMF	OMF	Minimal	Yes	Minimal	BUJEEP			12	N/A		
4 IMF	IMF	Moderate	Yes	Moderate	BFP			12	N/A		
5 SMF-RBS	SMF	High	Yes	High	RBS		0.685	14.625	N/A		
6 SMF-Kaiser	SMF	High	Yes	High	KBB-B			12	N/A		

**Concrete Wall Seismic Design Rule**

No Data to Print...											
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**Masonry Wall Seismic Design Rule**

Label	Wall Types	Special Boundary Elements	1.5x Shear ASD
1 Ordinary	Ordinary		
2 Intermediate	Intermediate		
3 Special	Special	Yes	Yes

**Connection Design Rules**

Label	Conn Type	Type	Beam Conn	Col/Girder Conn	Eccentricity
1 Col/Bm Clip Angle	Shear	Column/Beam Clip Double Angle Shear	Welded	Bolted	1.5
2 Col/Bm Shear Tab	Shear	Column/Beam Shear Tab Shear	Bolted	N/A	3
3 Girder/Bm Clip Angle	Shear	Girder/Beam Clip Single Angle Shear	Welded	Bolted	N/A
4 Girder/Bm Shear Tab	Shear	Girder/Beam Shear Tab Shear	Bolted	N/A	N/A
5 Flange Plate Moment	Moment	Column/Beam Flange Plate Moment	Bolted	N/A	N/A
6 End-Plate Moment	Moment	Column/Beam Extended End-Plate Moment	N/A	N/A	N/A
7 Col Shear Splice	Shear	Column Shear Tab Splice	N/A	N/A	N/A
8 Col Moment Splice	Moment	Column Moment Plate Splice	N/A	N/A	N/A
9 Diagonal Brace	Brace	Diagonal Vertical Brace	N/A	N/A	N/A
10 Chevron Brace	Brace	Chevron Vertical Brace	N/A	N/A	N/A
11 Knee Brace	Brace	Knee Brace	N/A	N/A	N/A
12 Base Plate	Baseplate	Single Column Baseplate	N/A	N/A	N/A

**Drift Definitions**

No Data to Print...											
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**Nodal Loads and Enforced Displacements**

No Data to Print...											
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**Member Point Loads (BLC 1 : DEAD)**

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M3	Y	-3.07	0
2	M3	Y	-3.07	%100

**Member Point Loads (BLC 2 : SNOW)**

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	M3	Y	-3.83	%100
2	M3	Y	-3.83	0

**Wall Panel Point Loads**

No Data to Print...				
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**Diaphragm Point Loads**

No Data to Print...				
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**Member Distributed Loads (BLC 1 : DEAD)**

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M3	Y	-0.12	-0.12	0	%100

**Member Distributed Loads (BLC 2 : SNOW)**

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M3	Y	-0.15	-0.15	0	%100

**Member Distributed Loads (BLC 3 : EQ)**

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M3	X	0.443	0.443	0	%100

**Wall Panel Distributed Loads**

No Data to Print...				
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**Diaphragm Distributed Loads**

No Data to Print...				
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**Member Area Loads**

No Data to Print...				
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**Plate Surface Loads**

No Data to Print...				
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**Wall Panel Surface Loads**

No Data to Print...				
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**Diaphragm Surface Loads**

No Data to Print...

**Basic Load Cases**

	BLC Description	Category	Y Gravity	Point	Distributed
1	DEAD	DL	-1	2	1
2	SNOW	SL		2	1
3	EQ	EL			1

**Moving Loads**

No Data to Print...

**Moving Load Patterns**

No Data to Print...

**Time History Loads**

No Data to Print...

**Load Combinations**

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	Deflection 1	Yes	Y	DL	1										
2	Deflection 2	Yes	Y	LL	1										
3	Deflection 3	Yes	Y	DL	1	LL	1								
4	IBC 16-8	Yes	Y	DL	1										
5	IBC 16-9	Yes	Y	DL	1	LL	1	LLS	1						
6	IBC 16-10 (b)	Yes	Y	DL	1	SL	1	SLN	1						
7	IBC 16-11 (b)	Yes	Y	DL	1	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75		
8	IBC 16-12 (b) (a)	Yes	Y	DL	1	EL	0.7								
9	IBC 16-12 (b) (b)	Yes	Y	DL	1	EL	-0.7								
10	IBC 16-14 (a)	Yes	Y	DL	1	EL	0.525	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
11	IBC 16-14 (b)	Yes	Y	DL	1	EL	-0.525	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
12	IBC 16-16 (a)	Yes	Y	DL	0.6	EL	0.7								
13	IBC 16-16 (b)	Yes	Y	DL	0.6	EL	0.7								
14															
15															
16	D			DL	1										
17	S			SL	1										
18	EQ			EL	1										
19	EQ-			EL	-1										

**Load Combination Design**

	Description	CD	Service	Hot Rolled	Cold Formed	Wood	Concrete	Masonry	Aluminum	Stainless	Connection
1	Deflection 1		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	Deflection 2		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	Deflection 3		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	IBC 16-8	0.9	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	IBC 16-9		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	IBC 16-10 (b)	1.15	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	IBC 16-11 (b)	1.15	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	IBC 16-12 (b) (a)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	IBC 16-12 (b) (b)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	IBC 16-14 (a)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

**Load Combination Design (Continued)**

	Description	CD	Service	Hot Rolled	Cold Formed	Wood	Concrete	Masonry	Aluminum	Stainless	Connection
11	IBC 16-14 (b)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12	IBC 16-16 (a)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
13	IBC 16-16 (b)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
14		1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
15		1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
16	D	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
17	S	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
18	EQ	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
19	EQ-	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

**Envelope Node Reactions**

Node Label	X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N3	max	0	13	0	13	0	13	0	13	0	13
2		min	0	1	0	1	0	1	0	1	0	1
3	N6	max	0	13	0	13	0	13	0	13	0	13
4		min	0	1	0	1	0	1	0	1	0	1
5	N1	max	1.866	9	6.413	11	0	13	0	13	13.201	8
6		min	-2.23	8	-2.196	12	0	1	0	1	-11.624	9
7	N2	max	1.421	9	14.319	10	0	13	0	13	8.604	13
8		min	-1.128	12	0	2	0	1	0	1	-9.62	9
9	N5	max	0	13	0	13	0	13	0	13	0	13
10		min	0	1	0	1	0	1	0	1	0	1
11	Totals:	max	3.287	9	17.733	6	0	13				
12		min	-3.287	12	0	2	0	1				

**Envelope Node Reactions - Overstrength or Capacity Limit**

No Data to Print...

**Envelope Node Displacements**

Node Label	X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
1	N1	max	0	8	0	13	0	13	0	13	0	9
2		min	0	9	0	11	0	1	0	1	0	8
3	N2	max	0	13	0	2	0	13	0	13	0	9
4		min	0	9	0	10	0	1	0	1	0	12
5	N3	max	0.593	8	0.002	13	0	13	0	13	1.252e-3	9
6		min	-0.547	9	-0.005	11	0	1	0	1	-8.755e-4	12
7	N5	max	0.634	8	0	2	0	13	0	13	0	2
8		min	-0.529	9	-0.194	6	0	1	0	1	-4.791e-3	6
9	N6	max	0.597	8	0	2	0	13	0	13	0	2
10		min	-0.548	9	-0.013	10	0	1	0	1	-2.542e-3	10

**Envelope Member Section Forces**

Member	Sec	Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[k-ft]	LC	z-z Moment[k-ft]	LC
1	M1	1	max	6.413	11	2.22	8	0	13	0	13	13.201	8
2			min	-2.196	12	-1.901	9	0	1	0	1	-11.624	9
3		2	max	6.333	11	2.22	8	0	13	0	13	6.819	8
4			min	-2.243	12	-1.901	9	0	1	0	1	-6.158	9
5		3	max	6.253	11	2.22	8	0	13	0	13	0.484	13
6			min	-2.291	12	-1.901	9	0	1	0	1	-0.693	9
7		4	max	6.173	11	2.22	8	0	13	0	13	4.773	9
8			min	-2.339	12	-1.901	9	0	1	0	1	-5.946	8

**Envelope Member Section Forces (Continued)**

Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[k-ft]	LC	z-z Moment[k-ft]	LC
9	5	max	6.094	11	2.22	8	0	13	0	13	0	13	10.238	9
10		min	-2.387	12	-1.901	9	0	1	0	1	0	1	-12.328	8
11	M2	1	max	14.319	10	1.169	13	0	13	0	13	0	8.604	13
12		min	0	2	-1.435	9	0	1	0	1	0	1	-9.62	9
13	2	max	14.223	10	1.169	13	0	13	0	13	0	13	4.59	8
14		min	0	2	-1.435	9	0	1	0	1	0	1	-4.679	9
15	3	max	14.127	10	1.169	13	0	13	0	13	0	13	1.174	10
16		min	0	2	-1.435	9	0	1	0	1	0	1	0	2
17	4	max	14.032	10	1.169	13	0	13	0	13	0	13	5.203	9
18		min	0	2	-1.435	9	0	1	0	1	0	1	-3.472	12
19	5	max	13.936	10	1.169	13	0	13	0	13	0	13	10.144	9
20		min	0	2	-1.435	9	0	1	0	1	0	1	-7.498	12
21	M3	1	max	2.504	9	1.505	9	0	13	0	13	0	10.238	9
22		min	-3.674	8	-4.251	10	0	1	0	1	0	1	-12.328	8
23	2	max	1.593	9	1.388	9	0	13	0	13	0	13	7.811	11
24		min	-3.125	10	-5.124	10	0	1	0	1	0	1	-2.486	12
25	3	max	0.681	9	1.272	9	0	13	0	13	0	13	16.514	10
26		min	-2.778	10	-5.996	10	0	1	0	1	0	1	0	2
27	4	max	2.779	11	7.292	6	0	13	0	13	0	13	18.305	6
28		min	-0.086	12	0	2	0	1	0	1	0	1	0	2
29	5	max	2.279	6	6.53	6	0	13	0	13	0	13	0	13
30		min	0	2	0	2	0	1	0	1	0	1	0	1

**Envelope Maximum Member Section Forces**

Member	Axial[k]	Loc[ft]	Lcy	Shear[k]	Loc[ft]	LCz	Shear[k]	Loc[ft]	LC	Torque[k-ft]	Loc[ft]	LC	y-y Moment[k-ft]	Loc[ft]	LC	z-z Moment[k-ft]	Loc[ft]	LC		
1	M1	max	6.413	0	11	2.22	11.5	8	0	11.5	13	0	11.5	13	0	11.5	13	13.201	0	8
2		min	-2.387	11.5	12	-1.901	0	9	0	0	1	0	0	1	0	0	1	-12.328	11.5	8
3	M2	max	14.319	0	10	1.169	13.775	13	0	13.775	13	0	13.775	13	0	13.775	13	10.144	13.775	9
4		min	0	0	2	-1.435	0	9	0	0	1	0	0	1	0	0	1	-9.62	0	9
5	M3	max	3.085	6.953	11	7.578	6.953	6	0	10.595	13	0	10.595	13	0	10.595	13	26.172	6.842	10
6		min	-3.674	0	8	-6.505	6.842	10	0	0	1	0	0	1	0	0	1	-12.328	0	8

**Envelope Member End Reactions**

Member	Member End		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[k-ft]	LC	z-z Moment[k-ft]	LC	
1	M1	I	max	6.413	11	2.22	8	0	13	0	13	0	13	13.201	8
2		min	-2.196	12	-1.901	9	0	1	0	1	0	1	0	-11.624	9
3		J	max	6.094	11	2.22	8	0	13	0	13	0	13	10.238	9
4		min	-2.387	12	-1.901	9	0	1	0	1	0	1	0	-12.328	8
5	M2	I	max	14.319	10	1.169	13	0	13	0	13	0	13	8.604	13
6		min	0	2	-1.435	9	0	1	0	1	0	1	0	-9.62	9
7		J	max	13.936	10	1.169	13	0	13	0	13	0	13	10.144	9
8		min	0	2	-1.435	9	0	1	0	1	0	1	0	-7.498	12
9	M3	I	max	2.504	9	1.505	9	0	13	0	13	0	13	10.238	9
10		min	-3.674	8	-4.251	10	0	1	0	1	0	1	0	-12.328	8
11		J	max	2.279	6	6.53	6	0	13	0	13	0	13	0	13
12		min	0	2	0	2	0	1	0	1	0	1	0	1	

**Envelope Member 2nd/1st Moment Ratios**

Member		y-y Moment [k-ft]	2nd/1st Ratio	z-z Moment [k-ft]	2nd/1st Ratio	Loc [ft]	LC	
1	M1	max	NC	NC	-7.869	1.029	0	11
2		min	NC	NC	12.807	1.007	0	12
3	M2	max	NC	NC	5.702	1.034	0	10

**Envelope Member 2nd/1st Moment Ratios (Continued)**

Member		y-y Moment [k-ft]	2nd/1st Ratio	z-z Moment [k-ft]	2nd/1st Ratio	Loc [ft]	LC
4		min	NC	3.612	0.996	13.775	6
5	M3	max	NC	26.172	1.008	6.842	10
6		min	NC	11.536	1.001	6.953	1

**Envelope Member Torsion Stresses**

Member	Sec	LC	Torque[k-ft]	Torsion Shear[ksi]	LC	y-y Warp Shear[ksi]	LC	z-z Warp Shear[ksi]	LC	Top Warp Bend[ksi]	LC	Bot Warp Bend[ksi]	LC
1	M1	1	max	0	13	0	13	NC	NC	NC	NC	NC	NC
2			min	0	1	0	1	NC	NC	NC	NC	NC	NC
3		2	max	0	13	0	13	NC	NC	NC	NC	NC	NC
4			min	0	1	0	1	NC	NC	NC	NC	NC	NC
5		3	max	0	13	0	13	NC	NC	NC	NC	NC	NC
6			min	0	1	0	1	NC	NC	NC	NC	NC	NC
7		4	max	0	13	0	13	NC	NC	NC	NC	NC	NC
8			min	0	1	0	1	NC	NC	NC	NC	NC	NC
9		5	max	0	13	0	13	NC	NC	NC	NC	NC	NC
10			min	0	1	0	1	NC	NC	NC	NC	NC	NC
11	M2	1	max	0	13	0	13	NC	NC	NC	NC	NC	NC
12			min	0	1	0	1	NC	NC	NC	NC	NC	NC
13		2	max	0	13	0	13	NC	NC	NC	NC	NC	NC
14			min	0	1	0	1	NC	NC	NC	NC	NC	NC
15		3	max	0	13	0	13	NC	NC	NC	NC	NC	NC
16			min	0	1	0	1	NC	NC	NC	NC	NC	NC
17		4	max	0	13	0	13	NC	NC	NC	NC	NC	NC
18			min	0	1	0	1	NC	NC	NC	NC	NC	NC
19		5	max	0	13	0	13	NC	NC	NC	NC	NC	NC
20			min	0	1	0	1	NC	NC	NC	NC	NC	NC
21	M3	1	max	0	13	0	13	0	13	0	13	0	13
22			min	0	1	0	1	0	1	0	1	0	1
23		2	max	0	13	0	13	0	13	0	13	0	13
24			min	0	1	0	1	0	1	0	1	0	1
25		3	max	0	13	0	13	0	13	0	13	0	13
26			min	0	1	0	1	0	1	0	1	0	1
27		4	max	0	13	0	13	0	13	0	13	0	13
28			min	0	1	0	1	0	1	0	1	0	1
29		5	max	0	13	0	13	0	13	0	13	0	13
30			min	0	1	0	1	0	1	0	1	0	1

**Envelope Member Section Stresses**

Member	Sec	LC	Axial[ksi]	LC	y Shear[ksi]	LC	z Shear[ksi]	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC	
1	M1	1	max	0.846	11	0.642	8	0	13	10.594	9	12.031	8	0	13	0	13
2			min	-0.29	12	-0.55	9	0	1	-12.031	8	-10.594	9	0	1	0	1
3		2	max	0.835	11	0.642	8	0	13	5.613	9	6.215	8	0	13	0	13
4			min	-0.296	12	-0.55	9	0	1	-6.215	8	-5.613	9	0	1	0	1
5		3	max	0.825	11	0.642	8	0	13	0.631	9	0.442	13	0	13	0	13
6			min	-0.302	12	-0.55	9	0	1	-0.442	12	-0.631	9	0	1	0	1
7		4	max	0.814	11	0.642	8	0	13	5.419	8	4.35	9	0	13	0	13
8			min	-0.309	12	-0.55	9	0	1	-4.35	9	-5.419	8	0	1	0	1
9		5	max	0.804	11	0.642	8	0	13	11.235	8	9.331	9	0	13	0	13
10			min	-0.315	12	-0.55	9	0	1	-9.331	9	-11.235	8	0	1	0	1
11	M2	1	max	1.889	10	0.338	13	0	13	8.768	9	7.842	13	0	13	0	13
12			min	0	2	-0.415	9	0	1	-7.842	12	-8.768	9	0	1	0	1
13		2	max	1.876	10	0.338	13	0	13	4.265	9	4.183	8	0	13	0	13
14			min	0	2	-0.415	9	0	1	-4.183	8	-4.265	9	0	1	0	1

**Envelope Member Section Stresses (Continued)**

Member	Sec	LC	LC	LC	LC	LC	LC	LC	LC	LC	LC	LC	LC	LC	LC		
LC	LC	LC	LC	LC	LC	LC	LC	LC	LC	LC	LC	LC	LC	LC	LC		
15	3	max	1.864	10	0.338	13	0	13	0	2	1.07	10	0	13	0	13	
16		min	0	2	-0.415	9	0	1	-1.07	10	0	2	0	1	0	1	
17	4	max	1.851	10	0.338	13	0	13	3.165	13	4.742	9	0	13	0	13	
18		min	0	2	-0.415	9	0	1	-4.742	9	-3.165	12	0	1	0	1	
19	5	max	1.839	10	0.338	13	0	13	6.834	13	9.245	9	0	13	0	13	
20		min	0	2	-0.415	9	0	1	-9.245	9	-6.834	12	0	1	0	1	
21	M3	1	max	0.243	9	0.598	9	0	13	4.729	8	3.928	9	0	13	0	13
22		min	-0.357	8	-1.689	10	0	1	-3.928	9	-4.729	8	0	1	0	1	
23	2	max	0.155	9	0.552	9	0	13	0.954	13	2.997	11	0	13	0	13	
24		min	-0.303	10	-2.036	10	0	1	-2.997	11	-0.954	12	0	1	0	1	
25	3	max	0.066	9	0.505	9	0	13	0	2	6.335	10	0	13	0	13	
26		min	-0.27	10	-2.382	10	0	1	-6.335	10	0	2	0	1	0	1	
27	4	max	0.27	11	2.897	6	0	13	0	2	7.022	6	0	13	0	13	
28		min	-0.008	12	0	2	0	1	-7.022	6	0	2	0	1	0	1	
29	5	max	0.221	6	2.594	6	0	13	0	13	0	13	0	13	0	13	
30		min	0	2	0	2	0	1	0	1	0	1	0	1	0	1	

**Envelope Member Section Deflections - Service**

Member	Sec	LC	LC	LC	LC	LC	LC	LC	LC	LC	LC	LC	LC	LC	LC	
LC	LC	LC	LC	LC	LC	LC	LC	LC	LC	LC	LC	LC	LC	LC	LC	
1	M1	1	max	0	13	0	13	0	13	0	13	NC	13	NC	13	
2		min	0	1	0	1	0	1	0	1	0	1	NC	1	NC	1
3	2	max	0	13	0.078	9	0	13	0	13	NC	7	NC	13		
4		min	-0.001	11	-0.088	8	0	1	0	1	1564.377	8	NC	1		
5	3	max	0.001	13	0.252	9	0	13	0	13	NC	7	NC	13		
6		min	-0.002	11	-0.283	8	0	1	0	1	488.142	8	NC	1		
7	4	max	0.001	13	0.437	9	0	13	0	13	NC	7	NC	13		
8		min	-0.004	11	-0.484	8	0	1	0	1	285.124	8	NC	1		
9	5	max	0.002	13	0.547	9	0	13	0	13	NC	7	NC	13		
10		min	-0.005	11	-0.593	8	0	1	0	1	232.861	8	NC	1		
11	M2	1	max	0	13	0	13	0	13	0	13	NC	13	NC	13	
12		min	0	1	0	1	0	1	0	1	0	1	NC	1	NC	1
13	2	max	0	2	0.091	9	0	13	0	13	NC	7	NC	13		
14		min	-0.003	10	-0.082	12	0	1	0	1	2005.77	12	NC	1		
15	3	max	0	2	0.286	9	0	13	0	13	NC	9	NC	13		
16		min	-0.007	10	-0.267	12	0	1	0	1	618.603	12	NC	1		
17	4	max	0	2	0.475	9	0	13	0	13	NC	7	NC	13		
18		min	-0.01	10	-0.465	8	0	1	0	1	355.235	8	NC	1		
19	5	max	0	2	0.548	9	0	13	0	13	NC	11	NC	13		
20		min	-0.013	10	-0.597	8	0	1	0	1	276.763	8	NC	1		
21	M3	1	max	0.56	8	0.177	9	0	13	0	13	NC	13	NC	13	
22		min	-0.518	9	-0.195	8	0	1	0	1	NC	1	NC	1		
23	2	max	0.56	8	0.196	9	0	13	0	13	NC	2	NC	13		
24		min	-0.518	9	-0.195	8	0	1	0	1	1761.991	6	NC	1		
25	3	max	0.561	8	0.19	9	0	13	0	13	NC	2	NC	13		
26		min	-0.518	9	-0.19	8	0	1	0	1	1053.907	6	NC	1		
27	4	max	0.561	8	0.167	9	0	13	0	13	NC	2	NC	13		
28		min	-0.519	9	-0.232	8	0	1	0	1	1109.037	11	NC	1		
29	5	max	0.561	8	0.119	9	0	13	0	13	NC	11	NC	13		
30		min	-0.519	9	-0.357	10	0	1	0	1	628.363	6	NC	1		

**Envelope Member Section Deflections - Strength**

No Data to Print...

**Envelope Beam Deflections**

	Member Label	Span		Location [ft]	y' [in]	(n) L'/y' Ratio	LC
1	M3	1	max	6.842	0.001	NC	7
2		1	min	4.194	0.032	2600	6
3		2	max	6.953	-0.001	NC	8
4		2	min	10.595	-0.187	475	6

**Envelope Beam Deflection Checks**

Beam	Design Rule	Span	Defl [in]	Ratio	LC	Defl [in]	Ratio	LC	Defl [in]	Ratio	LC	
1	M3	Typical	1	0.014	5880	1(DL)	0	NC	2(LL)	0.014	5880	3(DL+LL)
2			2	-0.084	1065	1(DL)	0	NC	2(LL)	-0.084	1065	3(DL+LL)

**Envelope AISC 14TH (360-10): ASD Member Steel Code Checks**

Member	Shape	Code Check	Loc[ft]	LC	Shear	Check	Loc[ft]	Dir	LC	Pnc/om [k]	Pnt/om [k]	Mnyy/om [k-ft]	Mnzz/om [k-ft]	Cb	Eqn
1	M1	HSS6X6X6	0.367	0	8	0.039	11.5	y	8	163.285	208.79	36.267	36.267	2.259	H1-1b
2	M2	HSS6X6X6	0.294	13.775	11	0.025	13.775	y	9	146.733	208.79	36.267	36.267	2.239	H1-1b
3	M3	W8X35	0.306	6.842	10	0.151	6.953	y	6	231.733	308.383	40.17	86.577	1.769	H1-1b

**Envelope AISI S100-12: ASD Member Cold Formed Steel Code Checks**

No Data to Print...

**Envelope AWC NDS-15: ASD Member Wood Code Checks**

No Data to Print...

**Envelope Concrete Beam Design Results**

No Data to Print...

**Envelope Concrete Column Design Results**

No Data to Print...

**Envelope AA ADM1-15: ASD - BUILDING Member Aluminum Code Checks**

No Data to Print...

**Envelope AISC 14TH (360-10): ASD Member Stainless Steel Code Checks**

No Data to Print...

**Concrete Beam Bending Reinforcement**

No Data to Print...

**Concrete Beam Shear Reinforcement**

No Data to Print...



Company :  
 Designer :  
 Job Number :  
 Model Name :

10/8/2022  
 2:26:20 PM  
 Checked By : \_\_\_\_\_

**Concrete Column Bending Reinforcement**

No Data to Print...

**Concrete Column Shear Reinforcement**

No Data to Print...

**Member Suggested Designs**

Section Set/Member	Current Shape	Suggested Shape	Controlling Member	Controlling Criteria	Use Suggested?
1  BEAM	W8X35	W10X15	M3	Strength	Yes

**Envelope Plate Principal Stresses**

No Data to Print...

**Envelope Plate Forces (per ft)**

No Data to Print...

**Envelope Plate/Shell Corner Forces**

No Data to Print...

**Envelope Solid Stresses**

No Data to Print...

**Envelope Solid Principal Stresses**

No Data to Print...

**Envelope Solid Corner Forces**

No Data to Print...

**Envelope Wall Panel Forces**

No Data to Print...

**Concrete Wall Reinforcement**

No Data to Print...

**Masonry Wall Reinforcement**

No Data to Print...

**Masonry Lintel Reinforcement**

No Data to Print...

**ACI 318-14 Wall Panel Concrete Code Checks (In-Plane)**

No Data to Print...

**ACI 318-14 Wall Panel Concrete Code Checks (Out-of-Plane)**

No Data to Print...



Company :  
Designer :  
Job Number :  
Model Name :

10/8/2022  
2:26:20 PM  
Checked By : \_\_\_\_\_

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***ACI 530-13: ASD Wall Panel Masonry Code Checks (In-Plane)***

No Data to Print...

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***ACI 530-13: ASD Wall Panel Masonry Code Checks (Out-of-Plane)***

No Data to Print...

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***Wall Panel ACI 530-13: ASD Masonry Code Checks for Lintels***

No Data to Print...

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***AWC NDS-15: ASD Wall Panel Wood Code Checks (Axial)***

No Data to Print...

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***AWC NDS-15: ASD Wall Panel Wood Code Checks (In-Plane)***

No Data to Print...

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***AWC NDS-15: ASD Wall Panel Wood Code Checks (Header)***

No Data to Print...

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***AISI S100-12: ASD Wall Panel CFS Code Checks (Axial)***

No Data to Print...

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***AISI S100-12: ASD Wall Panel CFS Code Checks (In-Plane)***

No Data to Print...

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***ACI 318-14 Wall Panel Concrete Code Checks (Seismic)***

No Data to Print...

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***ACI 530-13: ASD Wall Panel Masonry Code Checks (Seismic)***

No Data to Print...

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***Masonry Wall Suggested Design***

No Data to Print...

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***Wood Wall Suggested Design***

No Data to Print...

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***Envelope X-Direction Story Drift - Service***

No Data to Print...

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***Envelope Z-Direction Story Drift - Service***

No Data to Print...

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***Envelope X-Direction Story Drift - Strength***

No Data to Print...

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***Envelope Z-Direction Story Drift - Strength***

No Data to Print...




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Company:  
 Address:  
 Phone | Fax: |  
 Design: Concrete - Oct 8, 2022  
 Fastening point:

Page: 1  
 Specifier:  
 E-Mail:  
 Date: 10/8/2022

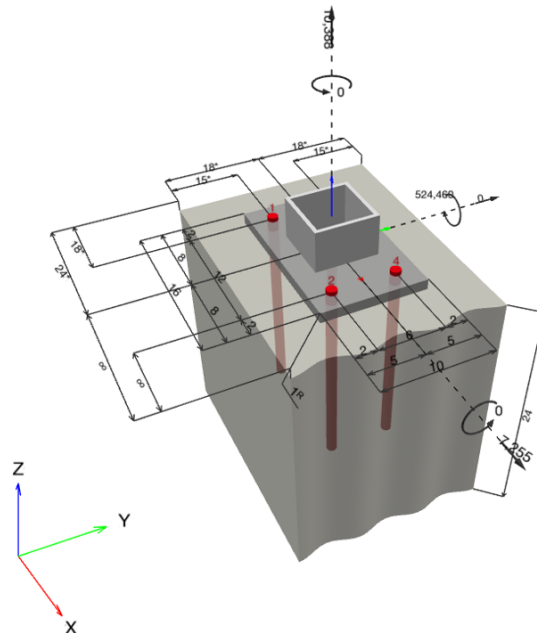
**Specifier's comments:**

**1 Input data**

<b>Anchor type and diameter:</b>	<b>Heavy Hex Head ASTM F 1554 GR. 36 1</b>	
Item number:	not available	
Additional plate or washer (17.4.2.8):	$d_{plate} = 0.100 \text{ in.}$ , $t_{plate} = 0.100 \text{ in.}$	
Effective embedment depth:	$h_{ef} = 18.000 \text{ in.}$ , $h_{ef,17.4.2.8} = 0.000 \text{ in.}$	
Material:	ASTM F 1554	
Evaluation Service Report:	Hilti Technical Data	
Issued   Valid:	-   -	
Proof:	Design Method ACI 318-14 / CIP	
Stand-off installation:	$e_b = 0.000 \text{ in.}$ (no stand-off); $t = 1.000 \text{ in.}$	
Anchor plate <sup>R</sup> :	$l_x \times l_y \times t = 16.000 \text{ in.} \times 10.000 \text{ in.} \times 1.000 \text{ in.}$ ; (Recommended plate thickness: not calculated)	
Profile:	Square HSS (AISC), HSS6X6X.375; (L x W x T) = 6.000 in. x 6.000 in. x 0.375 in.	
Base material:	cracked concrete, 4000, $f'_c = 4,000 \text{ psi}$ ; $h = 24.000 \text{ in.}$	
Reinforcement:	tension: condition A, shear: condition B; anchor reinforcement: tension edge reinforcement: none or < No. 4 bar	

<sup>R</sup> - The anchor calculation is based on a rigid anchor plate assumption.

**Geometry [in.] & Loading [lb, in.lb]**





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Company:		Page:	2
Address:		Specifier:	
Phone   Fax:		E-Mail:	
Design:	Concrete - Oct 8, 2022	Date:	10/8/2022
Fastening point:			

1.1 Design results

Case	Description	Forces [lb] / Moments [in.lb]	Seismic	Max. Util. Anchor [%]
1	Combination 1	N = 10,388; V <sub>x</sub> = 7,255; V <sub>y</sub> = 0; M <sub>x</sub> = 0; M <sub>y</sub> = 524,460; M <sub>z</sub> = 0;	no	89



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Company:		Page:	3
Address:		Specifier:	
Phone   Fax:		E-Mail:	
Design:	Concrete - Oct 8, 2022	Date:	10/8/2022
Fastening point:			

## 2 Proof I Utilization (Governing Cases)

Loading	Proof	Design values [lb]		Utilization	Status
		Load	Capacity	$\beta_N / \beta_V$ [%]	
Tension	Steel Strength	23,251	26,361	89 / -	OK
Shear	Concrete edge failure in direction y-	7,255	54,011	- / 14	OK

Loading	$\beta_N$	$\beta_V$	$\zeta$	Utilization $\beta_{N,V}$ [%]	Status
Combined tension and shear loads	0.882	0.134	5/3	85	OK

## 3 Warnings

- Please consider all details and hints/warnings given in the detailed report!

**Fastening meets the design criteria!**



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Company:		Page:	4
Address:		Specifier:	
Phone   Fax:		E-Mail:	
Design:	Concrete - Oct 8, 2022	Date:	10/8/2022
Fastening point:			

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#### 4 Remarks; Your Cooperation Duties

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- You must take all necessary and reasonable steps to prevent or limit damage caused by the Software. In particular, you must arrange for the regular backup of programs and data and, if applicable, carry out the updates of the Software offered by Hilti on a regular basis. If you do not use the AutoUpdate function of the Software, you must ensure that you are using the current and thus up-to-date version of the Software in each case by carrying out manual updates via the Hilti Website. Hilti will not be liable for consequences, such as the recovery of lost or damaged data or programs, arising from a culpable breach of duty by you.

## Steel Base Plate

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

(c) ENERCALC INC 1983-2022

### DESCRIPTION: MOMENT FRAME BASEPLATE

#### Code Reference

Calculations per AISC Design Guide # 1, IBC 2018, CBC 2019, ASCE 7-16, AISC 360-16  
 Load Combination Set : IBC 2018

#### General Information

##### Material Properties

AISC Design Method	Load Resistance Factor Design	$\phi_c$ : LRFD Resistance Factor	0.65
Steel Plate $F_y$	=	36 ksi	
Concrete Support $f'_c$	=	4.0 ksi	
Assumed Bearing Area	Full Bearing	Nominal Bearing $F_p$ per J8	3.40 ksi

#### Column & Plate

##### Column Properties

Steel Section	HSS6x6x3/8		
Depth	6 in	Area	7.58 in <sup>2</sup>
Width	6 in	$I_{xx}$	39.5 in <sup>4</sup>
Flange Thickness	0.349 in	$I_{yy}$	39.5 in <sup>4</sup>
Web Thickness	0 in		

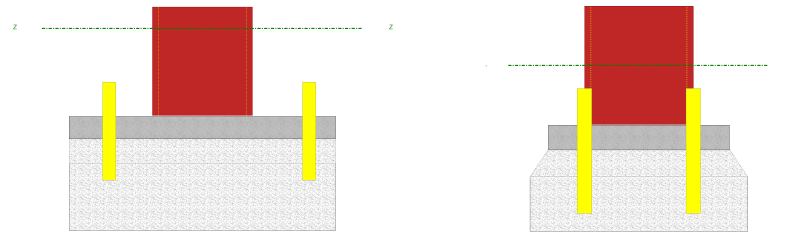
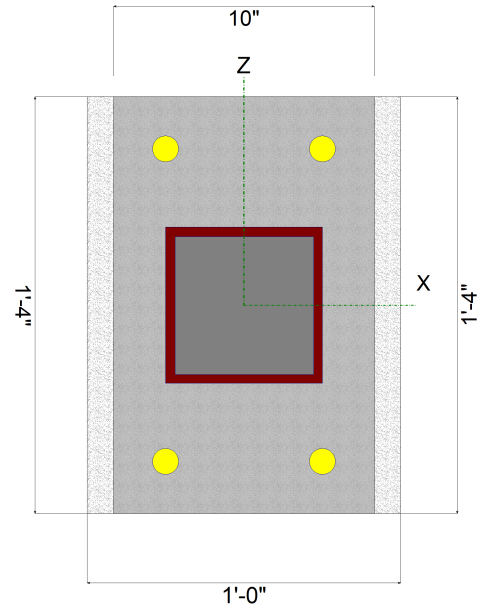
##### Plate Dimensions

N : Length	16.0 in
B : Width	10.0 in
Thickness	1.375 in

##### Support Dimensions

Width along "X"	16.0 in
Length along "Z"	12 in

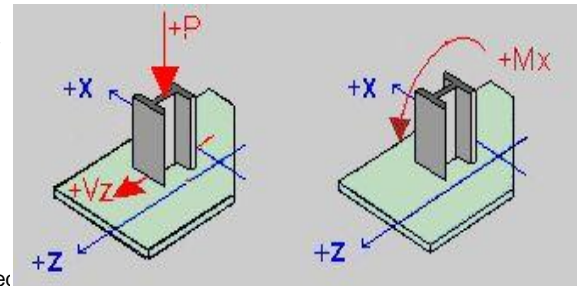
Column assumed welded to base plate



#### Applied Loads

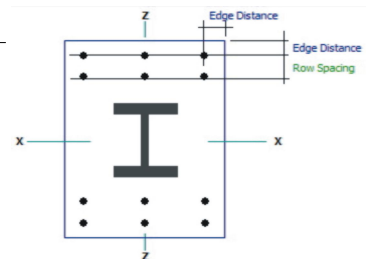
	P-Y	V-Z	M-X
D : Dead Load	2.146 k	k	k-ft
L : Live	k	k	k-ft
Lr : Roof Live	k	k	k-ft
S : Snow	2.171 k	k	k-ft
W : Wind	k	k	k-ft
E : Earthquake	5.0 k	2.90 k	17.482 k-ft
H : Lateral Earth	k	k	k-ft

" P " = Gravity load, "+" sign is downward  
 "+" Moments create higher soil pressure at +Z edge  
 "+" Shears push plate towards +Z edge



#### Anchor Bolts

Anchor Bolt or Rod Description	1 1/2"	
Max of Tension or Pullout Capacity.....	k	
Shear Capacity.....	k	
Edge distance : bolt to plate.....	2.0 in	
Number of Bolts in each Row.....	2	
Number of Bolt Rows.....	1	



Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

**Steel Base Plate**

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

(c) ENERCALC INC 1983-2022

**DESCRIPTION: MOMENT FRAME BASEPLATE**

**GOVERNING DESIGN LOAD CASE SUMMARY**

Plate Design Summary

Design Method **Load Resistance Factor Design**  
 Governing Load Combinat **+1.20D+0.70S+E**  
 Governing Load Case Typ **Axial + Moment, L/2 < Eccentricity, Tension**  
 Governing STRESS RATIO **1.0**  
 Design Plate Size **1'-4" x 10" x 1 -3/8"**  
 Pu : Axial ..... 0.000 k  
 Mu : Moment ..... 0.000 k-ft

Mu : Max. Moment ..... 8.983 k-in  
 fb : Max. Bending Stress ..... 28.508 ksi  
 Fb : Allowable : 32.400 ksi  
 Fy \* Phi  
 Bending Stress Ratio **0.880**  
**Bending Stress OK**  
 fu : Max. Plate Bearing Stress .... 2.210 ksi  
 Fp : Allowable : 2.210 ksi  
 Bearing Stress Ratio **1.000**  
**Bearing Stress OK**

Load Comb. : +1.40D

**Axial Load Only, No Moment**

Loading

Pu : Axial ..... 3.004 k  
 Design Plate Height ..... 16.000 in  
 Design Plate Width ..... 10.000 in  
*Will be different from entry if partial bearing used.*  
 A1 : Plate Area ..... 160.000 in^2  
 A2: Support Area ..... 160.000 in^2  
 sqrt( A2/A1 ) 1.000

Bearing Stresses

Fp : Allowable ..... 2.210 ksi  
 fu : Max. Bearing Pressure 0.019 ksi  
**Stress Ratio ..... 0.008**

Plate Bending Stresses

Mmax = Fu \* L^2 / 2 ..... 0.249 k-in on 1" strip  
 fb : Actual ..... 0.527 ksi  
 Fb : Allowable ..... 32.400 ksi  
**Stress Ratio ..... 0.016**

Distance for Moment Calculation

" m " ..... 5.150 in  
 " n " ..... 2.150 in  
 X ..... 0.000 in^2  
 Lambda ..... 0.000  
 n' ..... 0.000 in  
 n' \* Lambda ..... 0.000 in  
 L = max(m, n, n') ..... 5.150 in

Load Comb. : +1.20D

**Axial Load Only, No Moment**

Loading

Pu : Axial ..... 2.575 k  
 Design Plate Height ..... 16.000 in  
 Design Plate Width ..... 10.000 in  
*Will be different from entry if partial bearing used.*  
 A1 : Plate Area ..... 160.000 in^2  
 A2: Support Area ..... 160.000 in^2  
 sqrt( A2/A1 ) 1.000

Bearing Stresses

Fp : Allowable ..... 2.210 ksi  
 fu : Max. Bearing Pressure 0.016 ksi  
**Stress Ratio ..... 0.007**

Plate Bending Stresses

Mmax = Fu \* L^2 / 2 ..... 0.213 k-in on 1" strip  
 fb : Actual ..... 0.452 ksi  
 Fb : Allowable ..... 32.400 ksi  
**Stress Ratio ..... 0.014**

Distance for Moment Calculation

" m " ..... 5.150 in  
 " n " ..... 2.150 in  
 X ..... 0.000 in^2  
 Lambda ..... 0.000  
 n' ..... 0.000 in  
 n' \* Lambda ..... 0.000 in  
 L = max(m, n, n') ..... 5.150 in

Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

**Steel Base Plate**

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

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**DESCRIPTION: MOMENT FRAME BASEPLATE**

Load Comb. : +1.20D+0.50S

**Axial Load Only, No Moment**

Loading

Pu : Axial ..... 3.661 k  
 Design Plate Height ..... 16.000 in  
 Design Plate Width ..... 10.000 in  
*Will be different from entry if partial bearing used.*  
 A1 : Plate Area ..... 160.000 in<sup>2</sup>  
 A2: Support Area ..... 160.000 in<sup>2</sup>  
 sqrt( A2/A1 ) ..... 1.000

Bearing Stresses

Fp : Allowable ..... 2.210 ksi  
 fu : Max. Bearing Pressure ..... 0.023 ksi  
**Stress Ratio** ..... **0.010**

Plate Bending Stresses

Mmax = Fu \* L<sup>2</sup> / 2 ..... 0.303 k-in on 1" strip  
 fb : Actual ..... 0.642 ksi  
 Fb : Allowable ..... 32.400 ksi  
**Stress Ratio** ..... **0.020**

Distance for Moment Calculation

" m " ..... 5.150 in  
 " n " ..... 2.150 in  
 X ..... 0.000 in<sup>2</sup>  
 Lambda ..... 0.000  
 n' ..... 0.000 in  
 n' \* Lambda ..... 0.000 in  
 L = max(m, n, n") ..... 5.150 in

Load Comb. : +1.20D+1.60S

**Axial Load Only, No Moment**

Loading

Pu : Axial ..... 6.049 k  
 Design Plate Height ..... 16.000 in  
 Design Plate Width ..... 10.000 in  
*Will be different from entry if partial bearing used.*  
 A1 : Plate Area ..... 160.000 in<sup>2</sup>  
 A2: Support Area ..... 160.000 in<sup>2</sup>  
 sqrt( A2/A1 ) ..... 1.000

Bearing Stresses

Fp : Allowable ..... 2.210 ksi  
 fu : Max. Bearing Pressure ..... 0.038 ksi  
**Stress Ratio** ..... **0.017**

Plate Bending Stresses

Mmax = Fu \* L<sup>2</sup> / 2 ..... 0.501 k-in on 1" strip  
 fb : Actual ..... 1.061 ksi  
 Fb : Allowable ..... 32.400 ksi  
**Stress Ratio** ..... **0.033**

Distance for Moment Calculation

" m " ..... 5.150 in  
 " n " ..... 2.150 in  
 X ..... 0.000 in<sup>2</sup>  
 Lambda ..... 0.000  
 n' ..... 0.000 in  
 n' \* Lambda ..... 0.000 in  
 L = max(m, n, n") ..... 5.150 in

Load Comb. : +1.20D+0.70S+E

**Axial Load + Moment, Ecc. > L/2**

Loading

Pu : Axial ..... 9.095 k  
 Mu : Moment ..... 17.482 k-ft  
 Eccentricity ..... 23.066 in  
 A1 : Plate Area ..... 160.000 in<sup>2</sup>  
 A2 : Support Area ..... 160.000 in<sup>2</sup>  
 sqrt( A2/A1 ) ..... 1.000

Calculate plate moment from bolt tension ...

Tension per Bolt ..... 5.313 k  
 Tension : Allowable ..... 0.000 k  
**Stress Ratio** ..... **0.000**  
 Dist. from Bolt to Col. Edge ..... 3.150 in  
 Effective Bolt Width for Bending ..... 10.000 in  
 Plate Moment from Bolt Tension ..... 3.347 k-in

Calculate plate moment from bearing ...

max(m, n) ..... 5.150 in  
 "A" : Bearing Length ..... 1.785 in  
 Mpl : Plate Moment ..... 0.749 k-in

Bearing Stresses

Fp : Allowable ..... 2.210 ksi  
 fu : Max. Bearing Pressure ( set equal to Fp ) .....  
**Stress Ratio** ..... **1.000**

Plate Bending Stresses

Mmax ..... 8.983 k-in on 1" strip  
 fb : Actual ..... 28.508 ksi  
 Fb : Allowable ..... 32.400 ksi  
**Stress Ratio** ..... **0.880**

Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

**Steel Base Plate**

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

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**DESCRIPTION: MOMENT FRAME BASEPLATE**

Load Comb. : +0.90D

***Axial Load Only, No Moment***

Loading

Pu : Axial ..... 1.931 k  
 Design Plate Height ..... 16.000 in  
 Design Plate Width ..... 10.000 in  
*Will be different from entry if partial bearing used.*  
 A1 : Plate Area ..... 160.000 in^2  
 A2: Support Area ..... 160.000 in^2  
 sqrt( A2/A1 ) ..... 1.000

Distance for Moment Calculation

" m " ..... 5.150 in  
 " n " ..... 2.150 in  
 X ..... 0.000 in^2  
 Lambda ..... 0.000  
 n' ..... 0.000 in  
 n' \* Lambda ..... 0.000 in  
 L = max(m, n, n') ..... 5.150 in

Bearing Stresses

Fp : Allowable ..... 2.210 ksi  
 fu : Max. Bearing Pressure ..... 0.012 ksi  
**Stress Ratio ..... 0.005**

Plate Bending Stresses

Mmax = Fu \* L^2 / 2 ..... 0.160 k-in on 1" strip  
 fb : Actual ..... 0.339 ksi  
 Fb : Allowable ..... 32.400 ksi  
**Stress Ratio ..... 0.010**

Load Comb. : +0.90D+E

***Axial Load + Moment, Ecc. > L/2***

Loading

Pu : Axial ..... 6.931 k  
 Mu : Moment ..... 17.482 k-ft  
 Eccentricity ..... 30.266 in  
 A1 : Plate Area ..... 160.000 in^2  
 A2 : Support Area ..... 160.000 in^2  
 sqrt( A2/A1 ) ..... 1.000

Calculate plate moment from bearing ...

max(m, n) ..... 5.150 in  
 "A" : Bearing Length ..... 1.693 in  
 Mpl : Plate Moment ..... 0.715 k-in

Calculate plate moment from bolt tension ...

Tension per Bolt ..... 5.889 k  
 Tension : Allowable ..... 0.000 k  
**Stress Ratio ..... 0.000**  
 Dist. from Bolt to Col. Edge ..... 3.150 in  
 Effective Bolt Width for Bending ..... 10.000 in  
 Plate Moment from Bolt Tension ..... 3.710 k-in

Bearing Stresses

Fp : Allowable ..... 2.210 ksi  
 fu : Max. Bearing Pressure ( set equal to Fp ) .....  
**Stress Ratio ..... 1.000**

Plate Bending Stresses

Mmax ..... 8.579 k-in on 1" strip  
 fb : Actual ..... 27.227 ksi  
 Fb : Allowable ..... 32.400 ksi  
**Stress Ratio ..... 0.840**



## Combined Footing

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

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### DESCRIPTION: MOMENT FRAME FOOTING

#### Code References

Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

#### General Information

##### Material Properties

f'c : Concrete 28 day strength	3.0 ksi
fy : Rebar Yield	60.0 ksi
Ec : Concrete Elastic Modulus	3,122.0 ksi
Concrete Density	150.0 pcf
φ : Phi Values	
Flexure :	0.90
Shear :	0.750

##### Analysis/Design Settings

Calculate footing weight as dead load ?	Yes
Calculate Pedestal weight as dead load ?	No
Min Steel % Bending Reinf (based on 'd')	
Min Allow % Temp Reinf (based on thick)	0.00180
Min. Overturning Safety Factor	1.0: 1
Min. Sliding Safety Factor	1.0: 1

#### Soil Information

Allowable Soil Bearing	2.0 ksf
Increase Bearing By Footing Weight	No
Soil Passive Sliding Resistance	250.0 pcf
<i>(Uses entry for "Footing base depth below soil surface" for force)</i>	
Coefficient of Soil/Concrete Friction	0.30

##### Soil Bearing Increase

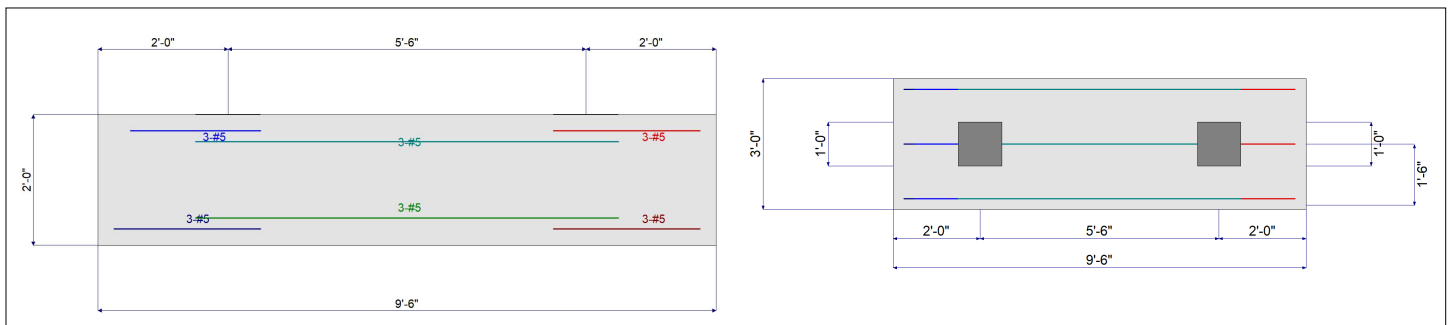
Footing base depth below soil surface	3.0 ft
Increases based on footing Depth . . . .	
Allowable pressure increase per foot when base of footing is below	ksf ft
Increases based on footing Width . . .	
Allowable pressure increase per foot when maximum length or width is greater than	ksf ft
Maximum Allowed Bearing Pressure	10.0 ksf
<i>(A value of zero implies no limit)</i>	
Adjusted Allowable Soil Bearing	2.0 ksf
<i>(Allowable Soil Bearing adjusted for footing weight and depth &amp; width increases as specified by user.)</i>	

#### Dimensions & Reinforcing

Distance Left of Column #1 = 2.0 ft	Pedestal dimensions...	Col #1	Col #2	Bars left of Col #1	Count	Size #	As Provided	As Req'd
Between Columns = 5.50 ft								
Distance Right of Column #2 = 2.0 ft				Top Bars	3.0	5	0.930	0.7776 in <sup>2</sup>
Total Footing Length = 9.50 ft	Height =			Bars Btwn Cols				
Footing Width = 3.0 ft				Bottom Bars	3.0	5	0.930	0.7776 in <sup>2</sup>
Footing Thickness = 24.0 in				Top Bars	3.0	5	0.930	0.7776 in <sup>2</sup>
Rebar Center to Concrete Edge @ Top = 3.0 in				Bars Right of Col #2				
Rebar Center to Concrete Edge @ Bottom = 3.0 in				Bottom Bars	3.0	5	0.930	0.7776 in <sup>2</sup>
				Top Bars	3.0	5	0.930	0.7776 in <sup>2</sup>

#### Applied Loads

Applied @ Left Column	D	Lr	L	S	W	E	H
Axial Load Downward =	2.150			2.171		4.928	k
Moment (+CW) =	0.7940			0.9850		-17.482	k-ft
Shear (+X) =						2.920	k
Applied @ Right Column							
Axial Load Downward =	6.340			7.079		-4.696	k
Moment (+CW) =	-0.5950			-0.750		-12.704	k-ft
Shear (+X) =						1.794	k
Overburden =							



Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

## Combined Footing

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

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### DESCRIPTION: MOMENT FRAME FOOTING

### DESIGN SUMMARY

Design OK

Factor of Safety	Item	Applied	Capacity	Governing Load Combination
PASS 2.007	Overturing	34.606 k-ft	69.453 k-ft	+0.60D+0.70E
PASS 1.853	Sliding	3.30 k	6.116 k	+0.60D+0.70E
PASS 4.160	Uplift	3.287 k	13.674 k	+0.60D+0.70E

Utilization Ratio	Item	Applied	Capacity	Governing Load Combination
PASS 0.7426	Soil Bearing	1.485 ksf	2.0 ksf	+D+S
PASS 0.04298	1-way Shear - Col #1	3.531 psi	82.158 psi	+0.90D+E
PASS 0.05771	1-way Shear - Col #2	4.741 psi	82.158 psi	+1.20D+0.20S+E
PASS 0.006434	2-way Punching - Col #1	1.057 psi	164.317 psi	+1.20D+1.60S
PASS 0.01888	2-way Punching - Col #2	3.102 psi	164.317 psi	+0.90D+E
PASS No Bending	Flexure - Left of Col #1 - Top	0.0 k-ft	0.0 k-ft	N/A
PASS 0.04167	Flexure - Left of Col #1 - Bottom	3.609 k-ft	86.613 k-ft	+0.90D+E
PASS 0.06282	Flexure - Between Cols - Top	-5.441 k-ft	86.613 k-ft	+1.20D+0.20S+E
PASS 0.07737	Flexure - Between Cols - Bottom	6.701 k-ft	86.613 k-ft	+1.20D+1.60S
PASS 0.01047	Flexure - Right of Col #2 - Top	-0.9067 k-ft	86.613 k-ft	+0.90D+E
PASS 0.06171	Flexure - Right of Col #2 - Bottom	5.345 k-ft	86.613 k-ft	+1.20D+1.60S

### Soil Bearing

Load Combination...	Total Bearing	Eccentricity from Ftg CL	Actual Soil Bearing Stress		Allowable	Actual / Allow Ratio
			@ Left Edge	@ Right Edge		
D Only	17.04 k	0.688 ft	0.34 ksf	0.86 ksf	2.00 ksf	0.429
+D+S	26.29 k	0.968 ft	0.36 ksf	1.49 ksf	2.00 ksf	0.743
+D+0.750S	23.98 k	0.918 ft	0.35 ksf	1.33 ksf	2.00 ksf	0.664
+0.60D	10.22 k	0.688 ft	0.20 ksf	0.51 ksf	2.00 ksf	0.257
+D+0.70E	17.20 k	-1.240 ft	1.08 ksf	0.13 ksf	2.00 ksf	0.538
+D+0.750S+0.5250E	24.10 k	-0.115 ft	0.91 ksf	0.78 ksf	2.00 ksf	0.453
+0.60D+0.70E	10.39 k	-2.506 ft	1.03 ksf	0.00 ksf	2.00 ksf	0.513

### Overturing Stability

Load Combination...	Moments about Left Edge k-ft			Moments about Right Edge k-ft		
	Overturing	Resisting	Ratio	Overturing	Resisting	Ratio
D Only	0.60	93.26	156.734	0.79	70.01	88.177
+D+S	1.35	151.68	112.770	1.78	101.20	56.888
+D+0.750S	1.16	137.07	118.420	1.53	93.41	60.940
+0.60D	0.36	55.95	156.734	0.48	42.01	88.177
+D+0.70E	34.78	106.76	3.069	10.48	117.01	11.170
+D+0.750S+0.5250E	26.62	147.20	5.529	8.56	128.66	15.030
+0.60D+0.70E	34.61	69.45	2.007	10.24	89.01	8.694

### Sliding Stability

Load Combination...	Sliding Force	Resisting Force	Sliding Safety Ratio
D Only	0.00 k	8.11 k	999
+D+S	0.00 k	10.89 k	999
+D+0.750S	0.00 k	10.19 k	999
+0.60D	0.00 k	6.07 k	999
+D+0.70E	3.30 k	8.16 k	2.473
+D+0.750S+0.5250E	2.47 k	10.23 k	4.134
+0.60D+0.70E	3.30 k	6.12 k	1.853

### Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+0.60D+0.70E	0.000	0.000	0	0.000	0	0.000	0.000	0.000
+0.60D+0.70E	0.000	0.024	0	0.000	0	0.000	0.000	0.000
+0.60D+0.70E	0.000	0.048	0	0.000	0	0.000	0.000	0.000
+0.60D+0.70E	0.000	0.071	0	0.000	0	0.000	0.000	0.000
+0.90D+E	0.016	0.095	Bottom	0.778	Min Temp %	0.930	86.613	0.000
+0.90D+E	0.025	0.119	Bottom	0.778	Min Temp %	0.930	86.613	0.000

Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

**Combined Footing**

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

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**DESCRIPTION: MOMENT FRAME FOOTING**

**Z-Axis Footing Flexure - Maximum Values for Load Combination**

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+0.90D+E	0.035	0.143	Bottom	0.778	Min Temp %	0.930	86.613	0.000
+0.90D+E	0.048	0.166	Bottom	0.778	Min Temp %	0.930	86.613	0.001
+0.90D+E	0.063	0.190	Bottom	0.778	Min Temp %	0.930	86.613	0.001
+0.90D+E	0.080	0.214	Bottom	0.778	Min Temp %	0.930	86.613	0.001
+0.90D+E	0.098	0.238	Bottom	0.778	Min Temp %	0.930	86.613	0.001
+0.90D+E	0.118	0.261	Bottom	0.778	Min Temp %	0.930	86.613	0.001
+0.90D+E	0.141	0.285	Bottom	0.778	Min Temp %	0.930	86.613	0.002
+0.90D+E	0.165	0.309	Bottom	0.778	Min Temp %	0.930	86.613	0.002
+0.90D+E	0.191	0.333	Bottom	0.778	Min Temp %	0.930	86.613	0.002
+0.90D+E	0.219	0.356	Bottom	0.778	Min Temp %	0.930	86.613	0.003
+0.90D+E	0.249	0.380	Bottom	0.778	Min Temp %	0.930	86.613	0.003
+0.90D+E	0.281	0.404	Bottom	0.778	Min Temp %	0.930	86.613	0.003
+0.90D+E	0.314	0.428	Bottom	0.778	Min Temp %	0.930	86.613	0.004
+0.90D+E	0.350	0.451	Bottom	0.778	Min Temp %	0.930	86.613	0.004
+0.90D+E	0.387	0.475	Bottom	0.778	Min Temp %	0.930	86.613	0.004
+0.90D+E	0.426	0.499	Bottom	0.778	Min Temp %	0.930	86.613	0.005
+0.90D+E	0.467	0.523	Bottom	0.778	Min Temp %	0.930	86.613	0.005
+0.90D+E	0.509	0.546	Bottom	0.778	Min Temp %	0.930	86.613	0.006
+0.90D+E	0.554	0.570	Bottom	0.778	Min Temp %	0.930	86.613	0.006
+0.90D+E	0.600	0.594	Bottom	0.778	Min Temp %	0.930	86.613	0.007
+0.90D+E	0.648	0.618	Bottom	0.778	Min Temp %	0.930	86.613	0.007
+0.90D+E	0.698	0.641	Bottom	0.778	Min Temp %	0.930	86.613	0.008
+0.90D+E	0.750	0.665	Bottom	0.778	Min Temp %	0.930	86.613	0.009
+0.90D+E	0.803	0.689	Bottom	0.778	Min Temp %	0.930	86.613	0.009
+0.90D+E	0.858	0.713	Bottom	0.778	Min Temp %	0.930	86.613	0.010
+0.90D+E	0.915	0.736	Bottom	0.778	Min Temp %	0.930	86.613	0.011
+0.90D+E	0.974	0.760	Bottom	0.778	Min Temp %	0.930	86.613	0.011
+0.90D+E	1.034	0.784	Bottom	0.778	Min Temp %	0.930	86.613	0.012
+0.90D+E	1.096	0.808	Bottom	0.778	Min Temp %	0.930	86.613	0.013
+0.90D+E	1.160	0.831	Bottom	0.778	Min Temp %	0.930	86.613	0.013
+0.90D+E	1.226	0.855	Bottom	0.778	Min Temp %	0.930	86.613	0.014
+0.90D+E	1.293	0.879	Bottom	0.778	Min Temp %	0.930	86.613	0.015
+0.90D+E	1.362	0.903	Bottom	0.778	Min Temp %	0.930	86.613	0.016
+0.90D+E	1.432	0.926	Bottom	0.778	Min Temp %	0.930	86.613	0.017
+0.90D+E	1.504	0.950	Bottom	0.778	Min Temp %	0.930	86.613	0.017
+0.90D+E	1.578	0.974	Bottom	0.778	Min Temp %	0.930	86.613	0.018
+0.90D+E	1.654	0.998	Bottom	0.778	Min Temp %	0.930	86.613	0.019
+0.90D+E	1.731	1.021	Bottom	0.778	Min Temp %	0.930	86.613	0.020
+0.90D+E	1.810	1.045	Bottom	0.778	Min Temp %	0.930	86.613	0.021
+0.90D+E	1.890	1.069	Bottom	0.778	Min Temp %	0.930	86.613	0.022
+0.90D+E	1.972	1.093	Bottom	0.778	Min Temp %	0.930	86.613	0.023
+0.90D+E	2.056	1.116	Bottom	0.778	Min Temp %	0.930	86.613	0.024
+0.90D+E	2.141	1.140	Bottom	0.778	Min Temp %	0.930	86.613	0.025
+0.90D+E	2.228	1.164	Bottom	0.778	Min Temp %	0.930	86.613	0.026
+0.90D+E	2.317	1.188	Bottom	0.778	Min Temp %	0.930	86.613	0.027
+0.90D+E	2.407	1.211	Bottom	0.778	Min Temp %	0.930	86.613	0.028
+0.90D+E	2.499	1.235	Bottom	0.778	Min Temp %	0.930	86.613	0.029
+0.90D+E	2.592	1.259	Bottom	0.778	Min Temp %	0.930	86.613	0.030
+0.90D+E	2.687	1.283	Bottom	0.778	Min Temp %	0.930	86.613	0.031
+0.90D+E	2.783	1.306	Bottom	0.778	Min Temp %	0.930	86.613	0.032
+0.90D+E	2.881	1.330	Bottom	0.778	Min Temp %	0.930	86.613	0.033
+0.90D+E	2.980	1.354	Bottom	0.778	Min Temp %	0.930	86.613	0.034
+0.90D+E	3.081	1.378	Bottom	0.778	Min Temp %	0.930	86.613	0.036
+0.90D+E	3.184	1.401	Bottom	0.778	Min Temp %	0.930	86.613	0.037
+0.90D+E	3.288	1.425	Bottom	0.778	Min Temp %	0.930	86.613	0.038
+0.90D+E	3.393	1.449	Bottom	0.778	Min Temp %	0.930	86.613	0.039
+0.90D+E	3.500	1.473	Bottom	0.778	Min Temp %	0.930	86.613	0.040
+0.90D+E	3.609	1.496	Bottom	0.778	Min Temp %	0.930	86.613	0.042
+0.90D+E	3.717	1.520	Bottom	0.778	Min Temp %	0.930	86.613	0.043
+0.90D+E	3.824	1.544	Bottom	0.778	Min Temp %	0.930	86.613	0.044
+0.90D+E	3.927	1.568	Bottom	0.778	Min Temp %	0.930	86.613	0.045
+0.90D+E	4.029	1.591	Bottom	0.778	Min Temp %	0.930	86.613	0.047
+0.90D+E	4.128	1.615	Bottom	0.778	Min Temp %	0.930	86.613	0.048

Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

**Combined Footing**

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

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**DESCRIPTION: MOMENT FRAME FOOTING**

**Z-Axis Footing Flexure - Maximum Values for Load Combination**

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+0.90D+E	4.224	1.639	Bottom	0.778	Min Temp %	0.930	86.613	0.049
+0.90D+E	4.318	1.663	Bottom	0.778	Min Temp %	0.930	86.613	0.050
+0.90D+E	4.410	1.686	Bottom	0.778	Min Temp %	0.930	86.613	0.051
+0.90D+E	4.499	1.710	Bottom	0.778	Min Temp %	0.930	86.613	0.052
+0.90D+E	4.586	1.734	Bottom	0.778	Min Temp %	0.930	86.613	0.053
+0.90D+E	4.670	1.758	Bottom	0.778	Min Temp %	0.930	86.613	0.054
+0.90D+E	4.752	1.781	Bottom	0.778	Min Temp %	0.930	86.613	0.055
+0.90D+E	4.831	1.805	Bottom	0.778	Min Temp %	0.930	86.613	0.056
+0.90D+E	4.908	1.829	Bottom	0.778	Min Temp %	0.930	86.613	0.057
+0.90D+E	4.982	1.853	Bottom	0.778	Min Temp %	0.930	86.613	0.058
+0.90D+E	5.054	1.876	Bottom	0.778	Min Temp %	0.930	86.613	0.058
+0.90D+E	5.123	1.900	Bottom	0.778	Min Temp %	0.930	86.613	0.059
+0.90D+E	5.190	1.924	Bottom	0.778	Min Temp %	0.930	86.613	0.060
+0.90D+E	5.254	1.948	Bottom	0.778	Min Temp %	0.930	86.613	0.061
+0.90D+E	5.316	1.971	Bottom	0.778	Min Temp %	0.930	86.613	0.061
+0.90D+E	5.375	1.995	Bottom	0.778	Min Temp %	0.930	86.613	0.062
+0.90D+E	-5.496	2.019	Top	0.778	Min Temp %	0.930	86.613	0.063
+0.90D+E	-5.442	2.043	Top	0.778	Min Temp %	0.930	86.613	0.063
+0.90D+E	-5.390	2.066	Top	0.778	Min Temp %	0.930	86.613	0.062
+0.90D+E	-5.342	2.090	Top	0.778	Min Temp %	0.930	86.613	0.062
+0.90D+E	-5.296	2.114	Top	0.778	Min Temp %	0.930	86.613	0.061
+0.90D+E	-5.252	2.138	Top	0.778	Min Temp %	0.930	86.613	0.061
+0.90D+E	-5.211	2.161	Top	0.778	Min Temp %	0.930	86.613	0.060
+1.20D+0.20S+E	-5.186	2.185	Top	0.778	Min Temp %	0.930	86.613	0.060
+1.20D+0.20S+E	-5.169	2.209	Top	0.778	Min Temp %	0.930	86.613	0.060
+1.20D+0.20S+E	-5.155	2.233	Top	0.778	Min Temp %	0.930	86.613	0.060
+1.20D+0.20S+E	-5.144	2.256	Top	0.778	Min Temp %	0.930	86.613	0.059
+1.20D+0.20S+E	-5.137	2.280	Top	0.778	Min Temp %	0.930	86.613	0.059
+1.20D+0.20S+E	-5.132	2.304	Top	0.778	Min Temp %	0.930	86.613	0.059
+1.20D+0.20S+E	-5.131	2.328	Top	0.778	Min Temp %	0.930	86.613	0.059
+1.20D+0.20S+E	-5.133	2.351	Top	0.778	Min Temp %	0.930	86.613	0.059
+1.20D+0.20S+E	-5.138	2.375	Top	0.778	Min Temp %	0.930	86.613	0.059
+1.20D+0.20S+E	-5.146	2.399	Top	0.778	Min Temp %	0.930	86.613	0.059
+1.20D+0.20S+E	-5.158	2.423	Top	0.778	Min Temp %	0.930	86.613	0.060
+1.20D+0.20S+E	-5.172	2.446	Top	0.778	Min Temp %	0.930	86.613	0.060
+1.20D+0.20S+E	-5.190	2.470	Top	0.778	Min Temp %	0.930	86.613	0.060
+1.20D+0.20S+E	-5.211	2.494	Top	0.778	Min Temp %	0.930	86.613	0.060
+1.20D+0.20S+E	-5.234	2.518	Top	0.778	Min Temp %	0.930	86.613	0.060
+1.20D+0.20S+E	-5.256	2.541	Top	0.778	Min Temp %	0.930	86.613	0.061
+1.20D+0.20S+E	-5.277	2.565	Top	0.778	Min Temp %	0.930	86.613	0.061
+1.20D+0.20S+E	-5.296	2.589	Top	0.778	Min Temp %	0.930	86.613	0.061
+1.20D+0.20S+E	-5.314	2.613	Top	0.778	Min Temp %	0.930	86.613	0.061
+1.20D+0.20S+E	-5.331	2.636	Top	0.778	Min Temp %	0.930	86.613	0.062
+1.20D+0.20S+E	-5.347	2.660	Top	0.778	Min Temp %	0.930	86.613	0.062
+1.20D+0.20S+E	-5.362	2.684	Top	0.778	Min Temp %	0.930	86.613	0.062
+1.20D+0.20S+E	-5.375	2.708	Top	0.778	Min Temp %	0.930	86.613	0.062
+1.20D+0.20S+E	-5.387	2.731	Top	0.778	Min Temp %	0.930	86.613	0.062
+1.20D+0.20S+E	-5.398	2.755	Top	0.778	Min Temp %	0.930	86.613	0.062
+1.20D+0.20S+E	-5.407	2.779	Top	0.778	Min Temp %	0.930	86.613	0.062
+1.20D+0.20S+E	-5.416	2.803	Top	0.778	Min Temp %	0.930	86.613	0.063
+1.20D+0.20S+E	-5.423	2.826	Top	0.778	Min Temp %	0.930	86.613	0.063
+1.20D+0.20S+E	-5.429	2.850	Top	0.778	Min Temp %	0.930	86.613	0.063
+1.20D+0.20S+E	-5.434	2.874	Top	0.778	Min Temp %	0.930	86.613	0.063
+1.20D+0.20S+E	-5.437	2.898	Top	0.778	Min Temp %	0.930	86.613	0.063
+1.20D+0.20S+E	-5.440	2.921	Top	0.778	Min Temp %	0.930	86.613	0.063
+1.20D+0.20S+E	-5.441	2.945	Top	0.778	Min Temp %	0.930	86.613	0.063
+1.20D+0.20S+E	-5.441	2.969	Top	0.778	Min Temp %	0.930	86.613	0.063
+1.20D+0.20S+E	-5.440	2.993	Top	0.778	Min Temp %	0.930	86.613	0.063
+1.20D+0.20S+E	-5.438	3.016	Top	0.778	Min Temp %	0.930	86.613	0.063
+1.20D+0.20S+E	-5.435	3.040	Top	0.778	Min Temp %	0.930	86.613	0.063
+1.20D+0.20S+E	-5.430	3.064	Top	0.778	Min Temp %	0.930	86.613	0.063
+1.20D+0.20S+E	-5.424	3.088	Top	0.778	Min Temp %	0.930	86.613	0.063
+1.20D+0.20S+E	-5.418	3.111	Top	0.778	Min Temp %	0.930	86.613	0.063

Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

**Combined Footing**

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

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**DESCRIPTION: MOMENT FRAME FOOTING**

**Z-Axis Footing Flexure - Maximum Values for Load Combination**

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+1.20D+0.20S+E	-5.410	3.135	Top	0.778	Min Temp %	0.930	86.613	0.062
+1.20D+0.20S+E	-5.401	3.159	Top	0.778	Min Temp %	0.930	86.613	0.062
+1.20D+0.20S+E	-5.391	3.183	Top	0.778	Min Temp %	0.930	86.613	0.062
+1.20D+0.20S+E	-5.380	3.206	Top	0.778	Min Temp %	0.930	86.613	0.062
+1.20D+0.20S+E	-5.367	3.230	Top	0.778	Min Temp %	0.930	86.613	0.062
+1.20D+0.20S+E	-5.354	3.254	Top	0.778	Min Temp %	0.930	86.613	0.062
+1.20D+0.20S+E	-5.340	3.277	Top	0.778	Min Temp %	0.930	86.613	0.062
+1.20D+0.20S+E	-5.324	3.301	Top	0.778	Min Temp %	0.930	86.613	0.061
+1.20D+0.20S+E	-5.307	3.325	Top	0.778	Min Temp %	0.930	86.613	0.061
+1.20D+0.20S+E	-5.290	3.349	Top	0.778	Min Temp %	0.930	86.613	0.061
+1.20D+0.20S+E	-5.271	3.372	Top	0.778	Min Temp %	0.930	86.613	0.061
+1.20D+0.20S+E	-5.251	3.396	Top	0.778	Min Temp %	0.930	86.613	0.061
+1.20D+0.20S+E	-5.230	3.420	Top	0.778	Min Temp %	0.930	86.613	0.060
+1.20D+0.20S+E	-5.208	3.444	Top	0.778	Min Temp %	0.930	86.613	0.060
+1.20D+0.20S+E	-5.186	3.467	Top	0.778	Min Temp %	0.930	86.613	0.060
+1.20D+0.20S+E	-5.162	3.491	Top	0.778	Min Temp %	0.930	86.613	0.060
+1.20D+0.20S+E	-5.137	3.515	Top	0.778	Min Temp %	0.930	86.613	0.059
+1.20D+0.20S+E	-5.110	3.539	Top	0.778	Min Temp %	0.930	86.613	0.059
+1.20D+0.20S+E	-5.083	3.562	Top	0.778	Min Temp %	0.930	86.613	0.059
+1.20D+0.20S+E	-5.055	3.586	Top	0.778	Min Temp %	0.930	86.613	0.058
+1.20D+0.20S+E	-5.026	3.610	Top	0.778	Min Temp %	0.930	86.613	0.058
+1.20D+0.20S+E	-4.996	3.634	Top	0.778	Min Temp %	0.930	86.613	0.058
+1.20D+0.20S+E	-4.965	3.657	Top	0.778	Min Temp %	0.930	86.613	0.057
+1.20D+0.20S+E	-4.933	3.681	Top	0.778	Min Temp %	0.930	86.613	0.057
+1.20D+0.20S+E	-4.900	3.705	Top	0.778	Min Temp %	0.930	86.613	0.057
+1.20D+0.20S+E	-4.866	3.729	Top	0.778	Min Temp %	0.930	86.613	0.056
+1.20D+0.20S+E	-4.831	3.752	Top	0.778	Min Temp %	0.930	86.613	0.056
+1.20D+0.20S+E	-4.795	3.776	Top	0.778	Min Temp %	0.930	86.613	0.055
+1.20D+0.20S+E	-4.758	3.800	Top	0.778	Min Temp %	0.930	86.613	0.055
+1.20D+0.20S+E	-4.720	3.824	Top	0.778	Min Temp %	0.930	86.613	0.054
+1.20D+0.20S+E	-4.681	3.847	Top	0.778	Min Temp %	0.930	86.613	0.054
+1.20D+0.20S+E	-4.641	3.871	Top	0.778	Min Temp %	0.930	86.613	0.054
+1.20D+0.20S+E	-4.601	3.895	Top	0.778	Min Temp %	0.930	86.613	0.053
+1.20D+0.20S+E	-4.559	3.919	Top	0.778	Min Temp %	0.930	86.613	0.053
+1.20D+0.20S+E	-4.516	3.942	Top	0.778	Min Temp %	0.930	86.613	0.052
+1.20D+0.20S+E	-4.473	3.966	Top	0.778	Min Temp %	0.930	86.613	0.052
+1.20D+0.20S+E	-4.429	3.990	Top	0.778	Min Temp %	0.930	86.613	0.051
+1.20D+0.20S+E	-4.383	4.014	Top	0.778	Min Temp %	0.930	86.613	0.051
+1.20D+0.20S+E	-4.337	4.037	Top	0.778	Min Temp %	0.930	86.613	0.050
+1.20D+0.20S+E	-4.290	4.061	Top	0.778	Min Temp %	0.930	86.613	0.050
+1.20D+0.20S+E	-4.242	4.085	Top	0.778	Min Temp %	0.930	86.613	0.049
+1.20D+0.20S+E	-4.193	4.109	Top	0.778	Min Temp %	0.930	86.613	0.048
+1.20D+0.20S+E	-4.143	4.132	Top	0.778	Min Temp %	0.930	86.613	0.048
+1.20D+0.20S+E	-4.092	4.156	Top	0.778	Min Temp %	0.930	86.613	0.047
+1.20D+0.20S+E	-4.041	4.180	Top	0.778	Min Temp %	0.930	86.613	0.047
+1.20D+0.20S+E	-3.988	4.204	Top	0.778	Min Temp %	0.930	86.613	0.046
+1.20D+0.20S+E	-3.935	4.227	Top	0.778	Min Temp %	0.930	86.613	0.045
+1.20D+0.20S+E	-3.881	4.251	Top	0.778	Min Temp %	0.930	86.613	0.045
+1.20D+0.20S+E	-3.826	4.275	Top	0.778	Min Temp %	0.930	86.613	0.044
+1.20D+0.20S+E	-3.770	4.299	Top	0.778	Min Temp %	0.930	86.613	0.044
+1.20D+0.20S+E	-3.713	4.322	Top	0.778	Min Temp %	0.930	86.613	0.043
+1.20D+0.20S+E	-3.656	4.346	Top	0.778	Min Temp %	0.930	86.613	0.042
+1.20D+0.20S+E	-3.598	4.370	Top	0.778	Min Temp %	0.930	86.613	0.042
+1.20D+0.20S+E	-3.538	4.394	Top	0.778	Min Temp %	0.930	86.613	0.041
+1.20D+0.20S+E	-3.478	4.417	Top	0.778	Min Temp %	0.930	86.613	0.040
+1.20D+0.20S+E	-3.418	4.441	Top	0.778	Min Temp %	0.930	86.613	0.039
+1.20D+0.20S+E	-3.356	4.465	Top	0.778	Min Temp %	0.930	86.613	0.039
+1.20D+0.20S+E	-3.294	4.489	Top	0.778	Min Temp %	0.930	86.613	0.038
+1.20D+0.20S+E	-3.231	4.512	Top	0.778	Min Temp %	0.930	86.613	0.037
+1.20D+0.20S+E	-3.167	4.536	Top	0.778	Min Temp %	0.930	86.613	0.037
+1.20D+0.20S+E	-3.102	4.560	Top	0.778	Min Temp %	0.930	86.613	0.036
+1.20D+0.20S+E	-3.036	4.584	Top	0.778	Min Temp %	0.930	86.613	0.035
+1.20D+0.20S+E	-2.970	4.607	Top	0.778	Min Temp %	0.930	86.613	0.034

Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

**Combined Footing**

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

(c) ENERCALC INC 1983-2022

**DESCRIPTION: MOMENT FRAME FOOTING**

**Z-Axis Footing Flexure - Maximum Values for Load Combination**

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+1.20D+0.20S+E	-2.903	4.631	Top	0.778	Min Temp %	0.930	86.613	0.034
+1.20D+0.20S+E	-2.835	4.655	Top	0.778	Min Temp %	0.930	86.613	0.033
+1.20D+0.20S+E	-2.767	4.679	Top	0.778	Min Temp %	0.930	86.613	0.032
+1.20D+0.20S+E	-2.698	4.702	Top	0.778	Min Temp %	0.930	86.613	0.031
+1.20D+0.20S+E	-2.627	4.726	Top	0.778	Min Temp %	0.930	86.613	0.030
+1.20D+0.20S+E	-2.557	4.750	Top	0.778	Min Temp %	0.930	86.613	0.030
+1.20D+0.20S+E	-2.485	4.774	Top	0.778	Min Temp %	0.930	86.613	0.029
+1.20D+1.60S	-2.425	4.797	Top	0.778	Min Temp %	0.930	86.613	0.028
+1.20D+1.60S	-2.404	4.821	Top	0.778	Min Temp %	0.930	86.613	0.028
+1.20D+1.60S	-2.381	4.845	Top	0.778	Min Temp %	0.930	86.613	0.027
+1.20D+1.60S	-2.356	4.869	Top	0.778	Min Temp %	0.930	86.613	0.027
+1.20D+1.60S	-2.330	4.892	Top	0.778	Min Temp %	0.930	86.613	0.027
+1.20D+1.60S	-2.302	4.916	Top	0.778	Min Temp %	0.930	86.613	0.027
+1.20D+1.60S	-2.273	4.940	Top	0.778	Min Temp %	0.930	86.613	0.026
+1.20D+1.60S	-2.243	4.964	Top	0.778	Min Temp %	0.930	86.613	0.026
+1.20D+1.60S	-2.210	4.987	Top	0.778	Min Temp %	0.930	86.613	0.026
+1.20D+1.60S	-2.177	5.011	Top	0.778	Min Temp %	0.930	86.613	0.025
+1.20D+1.60S	-2.141	5.035	Top	0.778	Min Temp %	0.930	86.613	0.025
+1.20D+1.60S	-2.104	5.059	Top	0.778	Min Temp %	0.930	86.613	0.024
+1.20D+1.60S	-2.066	5.082	Top	0.778	Min Temp %	0.930	86.613	0.024
+1.20D+1.60S	-2.026	5.106	Top	0.778	Min Temp %	0.930	86.613	0.023
+1.20D+1.60S	-1.984	5.130	Top	0.778	Min Temp %	0.930	86.613	0.023
+1.20D+1.60S	-1.941	5.154	Top	0.778	Min Temp %	0.930	86.613	0.022
+1.20D+1.60S	-1.896	5.177	Top	0.778	Min Temp %	0.930	86.613	0.022
+1.20D+1.60S	-1.850	5.201	Top	0.778	Min Temp %	0.930	86.613	0.021
+1.20D+1.60S	-1.802	5.225	Top	0.778	Min Temp %	0.930	86.613	0.021
+1.20D+1.60S	-1.752	5.249	Top	0.778	Min Temp %	0.930	86.613	0.020
+1.20D+1.60S	-1.701	5.272	Top	0.778	Min Temp %	0.930	86.613	0.020
+1.20D+1.60S	-1.648	5.296	Top	0.778	Min Temp %	0.930	86.613	0.019
+1.20D+1.60S	-1.593	5.320	Top	0.778	Min Temp %	0.930	86.613	0.018
+1.20D+1.60S	-1.537	5.344	Top	0.778	Min Temp %	0.930	86.613	0.018
+1.20D+1.60S	-1.479	5.367	Top	0.778	Min Temp %	0.930	86.613	0.017
+1.20D+1.60S	-1.420	5.391	Top	0.778	Min Temp %	0.930	86.613	0.016
+1.20D+1.60S	-1.359	5.415	Top	0.778	Min Temp %	0.930	86.613	0.016
+0.90D+E	1.423	5.439	Bottom	0.778	Min Temp %	0.930	86.613	0.016
+0.90D+E	1.504	5.462	Bottom	0.778	Min Temp %	0.930	86.613	0.017
+0.90D+E	1.584	5.486	Bottom	0.778	Min Temp %	0.930	86.613	0.018
+0.90D+E	1.665	5.510	Bottom	0.778	Min Temp %	0.930	86.613	0.019
+0.90D+E	1.745	5.534	Bottom	0.778	Min Temp %	0.930	86.613	0.020
+0.90D+E	1.826	5.557	Bottom	0.778	Min Temp %	0.930	86.613	0.021
+0.90D+E	1.907	5.581	Bottom	0.778	Min Temp %	0.930	86.613	0.022
+0.90D+E	1.988	5.605	Bottom	0.778	Min Temp %	0.930	86.613	0.023
+0.90D+E	2.069	5.629	Bottom	0.778	Min Temp %	0.930	86.613	0.024
+0.90D+E	2.151	5.652	Bottom	0.778	Min Temp %	0.930	86.613	0.025
+0.90D+E	2.232	5.676	Bottom	0.778	Min Temp %	0.930	86.613	0.026
+0.90D+E	2.313	5.700	Bottom	0.778	Min Temp %	0.930	86.613	0.027
+0.90D+E	2.395	5.724	Bottom	0.778	Min Temp %	0.930	86.613	0.028
+0.90D+E	2.476	5.747	Bottom	0.778	Min Temp %	0.930	86.613	0.029
+0.90D+E	2.557	5.771	Bottom	0.778	Min Temp %	0.930	86.613	0.030
+0.90D+E	2.639	5.795	Bottom	0.778	Min Temp %	0.930	86.613	0.030
+0.90D+E	2.720	5.819	Bottom	0.778	Min Temp %	0.930	86.613	0.031
+0.90D+E	2.802	5.842	Bottom	0.778	Min Temp %	0.930	86.613	0.032
+0.90D+E	2.883	5.866	Bottom	0.778	Min Temp %	0.930	86.613	0.033
+0.90D+E	2.965	5.890	Bottom	0.778	Min Temp %	0.930	86.613	0.034
+0.90D+E	3.046	5.914	Bottom	0.778	Min Temp %	0.930	86.613	0.035
+0.90D+E	3.128	5.937	Bottom	0.778	Min Temp %	0.930	86.613	0.036
+0.90D+E	3.209	5.961	Bottom	0.778	Min Temp %	0.930	86.613	0.037
+0.90D+E	3.290	5.985	Bottom	0.778	Min Temp %	0.930	86.613	0.038
+0.90D+E	3.372	6.009	Bottom	0.778	Min Temp %	0.930	86.613	0.039
+0.90D+E	3.453	6.032	Bottom	0.778	Min Temp %	0.930	86.613	0.040
+0.90D+E	3.534	6.056	Bottom	0.778	Min Temp %	0.930	86.613	0.041
+0.90D+E	3.615	6.080	Bottom	0.778	Min Temp %	0.930	86.613	0.042
+0.90D+E	3.696	6.104	Bottom	0.778	Min Temp %	0.930	86.613	0.043

Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

**Combined Footing**

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

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**DESCRIPTION: MOMENT FRAME FOOTING**

**Z-Axis Footing Flexure - Maximum Values for Load Combination**

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+0.90D+E	3.777	6.127	Bottom	0.778	Min Temp %	0.930	86.613	0.044
+0.90D+E	3.858	6.151	Bottom	0.778	Min Temp %	0.930	86.613	0.045
+0.90D+E	3.939	6.175	Bottom	0.778	Min Temp %	0.930	86.613	0.045
+0.90D+E	4.019	6.199	Bottom	0.778	Min Temp %	0.930	86.613	0.046
+0.90D+E	4.100	6.222	Bottom	0.778	Min Temp %	0.930	86.613	0.047
+0.90D+E	4.180	6.246	Bottom	0.778	Min Temp %	0.930	86.613	0.048
+0.90D+E	4.260	6.270	Bottom	0.778	Min Temp %	0.930	86.613	0.049
+0.90D+E	4.340	6.294	Bottom	0.778	Min Temp %	0.930	86.613	0.050
+0.90D+E	4.420	6.317	Bottom	0.778	Min Temp %	0.930	86.613	0.051
+0.90D+E	4.500	6.341	Bottom	0.778	Min Temp %	0.930	86.613	0.052
+0.90D+E	4.580	6.365	Bottom	0.778	Min Temp %	0.930	86.613	0.053
+0.90D+E	4.659	6.389	Bottom	0.778	Min Temp %	0.930	86.613	0.054
+0.90D+E	4.738	6.412	Bottom	0.778	Min Temp %	0.930	86.613	0.055
+0.90D+E	4.817	6.436	Bottom	0.778	Min Temp %	0.930	86.613	0.056
+0.90D+E	4.896	6.460	Bottom	0.778	Min Temp %	0.930	86.613	0.057
+0.90D+E	4.975	6.484	Bottom	0.778	Min Temp %	0.930	86.613	0.057
+0.90D+E	5.053	6.507	Bottom	0.778	Min Temp %	0.930	86.613	0.058
+0.90D+E	5.131	6.531	Bottom	0.778	Min Temp %	0.930	86.613	0.059
+0.90D+E	5.209	6.555	Bottom	0.778	Min Temp %	0.930	86.613	0.060
+0.90D+E	5.287	6.579	Bottom	0.778	Min Temp %	0.930	86.613	0.061
+0.90D+E	5.364	6.602	Bottom	0.778	Min Temp %	0.930	86.613	0.062
+0.90D+E	5.442	6.626	Bottom	0.778	Min Temp %	0.930	86.613	0.063
+0.90D+E	5.519	6.650	Bottom	0.778	Min Temp %	0.930	86.613	0.064
+0.90D+E	5.595	6.674	Bottom	0.778	Min Temp %	0.930	86.613	0.065
+0.90D+E	5.672	6.697	Bottom	0.778	Min Temp %	0.930	86.613	0.065
+0.90D+E	5.748	6.721	Bottom	0.778	Min Temp %	0.930	86.613	0.066
+0.90D+E	5.823	6.745	Bottom	0.778	Min Temp %	0.930	86.613	0.067
+0.90D+E	5.899	6.769	Bottom	0.778	Min Temp %	0.930	86.613	0.068
+0.90D+E	5.974	6.792	Bottom	0.778	Min Temp %	0.930	86.613	0.069
+0.90D+E	6.049	6.816	Bottom	0.778	Min Temp %	0.930	86.613	0.070
+0.90D+E	6.123	6.840	Bottom	0.778	Min Temp %	0.930	86.613	0.071
+0.90D+E	6.197	6.864	Bottom	0.778	Min Temp %	0.930	86.613	0.072
+0.90D+E	6.271	6.887	Bottom	0.778	Min Temp %	0.930	86.613	0.072
+0.90D+E	6.345	6.911	Bottom	0.778	Min Temp %	0.930	86.613	0.073
+0.90D+E	6.418	6.935	Bottom	0.778	Min Temp %	0.930	86.613	0.074
+1.20D+1.60S	6.515	6.959	Bottom	0.778	Min Temp %	0.930	86.613	0.075
+1.20D+1.60S	6.701	6.982	Bottom	0.778	Min Temp %	0.930	86.613	0.077
+1.20D+1.60S	6.889	7.006	Bottom	0.778	Min Temp %	0.930	86.613	0.080
+1.20D+1.60S	7.071	7.030	Bottom	0.778	Min Temp %	0.930	86.613	0.082
+1.20D+1.60S	7.245	7.054	Bottom	0.778	Min Temp %	0.930	86.613	0.084
+1.20D+1.60S	7.410	7.077	Bottom	0.778	Min Temp %	0.930	86.613	0.086
+1.20D+1.60S	7.567	7.101	Bottom	0.778	Min Temp %	0.930	86.613	0.087
+1.20D+1.60S	7.715	7.125	Bottom	0.778	Min Temp %	0.930	86.613	0.089
+1.20D+1.60S	7.854	7.149	Bottom	0.778	Min Temp %	0.930	86.613	0.091
+1.20D+1.60S	7.985	7.172	Bottom	0.778	Min Temp %	0.930	86.613	0.092
+1.20D+1.60S	8.108	7.196	Bottom	0.778	Min Temp %	0.930	86.613	0.094
+1.20D+1.60S	8.222	7.220	Bottom	0.778	Min Temp %	0.930	86.613	0.095
+1.20D+1.60S	8.327	7.244	Bottom	0.778	Min Temp %	0.930	86.613	0.096
+1.20D+1.60S	8.424	7.267	Bottom	0.778	Min Temp %	0.930	86.613	0.097
+1.20D+1.60S	8.513	7.291	Bottom	0.778	Min Temp %	0.930	86.613	0.098
+1.20D+1.60S	8.593	7.315	Bottom	0.778	Min Temp %	0.930	86.613	0.099
+1.20D+1.60S	8.664	7.339	Bottom	0.778	Min Temp %	0.930	86.613	0.100
+1.20D+1.60S	8.727	7.362	Bottom	0.778	Min Temp %	0.930	86.613	0.101
+1.20D+1.60S	8.782	7.386	Bottom	0.778	Min Temp %	0.930	86.613	0.101
+1.20D+1.60S	8.828	7.410	Bottom	0.778	Min Temp %	0.930	86.613	0.102
+1.20D+1.60S	8.866	7.434	Bottom	0.778	Min Temp %	0.930	86.613	0.102
+1.20D+1.60S	8.895	7.457	Bottom	0.778	Min Temp %	0.930	86.613	0.103
+1.20D+1.60S	8.916	7.481	Bottom	0.778	Min Temp %	0.930	86.613	0.103
+1.20D+1.60S	7.015	7.505	Bottom	0.778	Min Temp %	0.930	86.613	0.081
+1.20D+1.60S	7.019	7.529	Bottom	0.778	Min Temp %	0.930	86.613	0.081
+1.20D+1.60S	7.015	7.552	Bottom	0.778	Min Temp %	0.930	86.613	0.081
+1.20D+1.60S	7.002	7.576	Bottom	0.778	Min Temp %	0.930	86.613	0.081
+1.20D+1.60S	6.981	7.600	Bottom	0.778	Min Temp %	0.930	86.613	0.081

Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

**Combined Footing**

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

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**DESCRIPTION: MOMENT FRAME FOOTING**

**Z-Axis Footing Flexure - Maximum Values for Load Combination**

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+1.20D+1.60S	6.951	7.624	Bottom	0.778	Min Temp %	0.930	86.613	0.080
+1.20D+1.60S	6.913	7.647	Bottom	0.778	Min Temp %	0.930	86.613	0.080
+1.20D+1.60S	6.867	7.671	Bottom	0.778	Min Temp %	0.930	86.613	0.079
+1.20D+1.60S	6.813	7.695	Bottom	0.778	Min Temp %	0.930	86.613	0.079
+1.20D+1.60S	6.750	7.719	Bottom	0.778	Min Temp %	0.930	86.613	0.078
+1.20D+1.60S	6.678	7.742	Bottom	0.778	Min Temp %	0.930	86.613	0.077
+1.20D+1.60S	6.599	7.766	Bottom	0.778	Min Temp %	0.930	86.613	0.076
+1.20D+1.60S	6.511	7.790	Bottom	0.778	Min Temp %	0.930	86.613	0.075
+1.20D+1.60S	6.414	7.814	Bottom	0.778	Min Temp %	0.930	86.613	0.074
+1.20D+1.60S	6.310	7.837	Bottom	0.778	Min Temp %	0.930	86.613	0.073
+1.20D+1.60S	6.197	7.861	Bottom	0.778	Min Temp %	0.930	86.613	0.072
+1.20D+1.60S	6.075	7.885	Bottom	0.778	Min Temp %	0.930	86.613	0.070
+1.20D+1.60S	5.946	7.909	Bottom	0.778	Min Temp %	0.930	86.613	0.069
+1.20D+1.60S	5.808	7.932	Bottom	0.778	Min Temp %	0.930	86.613	0.067
+1.20D+1.60S	5.662	7.956	Bottom	0.778	Min Temp %	0.930	86.613	0.065
+1.20D+1.60S	5.507	7.980	Bottom	0.778	Min Temp %	0.930	86.613	0.064
+1.20D+1.60S	5.345	8.004	Bottom	0.778	Min Temp %	0.930	86.613	0.062
+1.20D+1.60S	5.181	8.027	Bottom	0.778	Min Temp %	0.930	86.613	0.060
+1.20D+1.60S	5.019	8.051	Bottom	0.778	Min Temp %	0.930	86.613	0.058
+1.20D+1.60S	4.860	8.075	Bottom	0.778	Min Temp %	0.930	86.613	0.056
+1.20D+1.60S	4.703	8.099	Bottom	0.778	Min Temp %	0.930	86.613	0.054
+1.20D+1.60S	4.549	8.122	Bottom	0.778	Min Temp %	0.930	86.613	0.053
+1.20D+1.60S	4.397	8.146	Bottom	0.778	Min Temp %	0.930	86.613	0.051
+1.20D+1.60S	4.248	8.170	Bottom	0.778	Min Temp %	0.930	86.613	0.049
+1.20D+1.60S	4.101	8.194	Bottom	0.778	Min Temp %	0.930	86.613	0.047
+1.20D+1.60S	3.956	8.217	Bottom	0.778	Min Temp %	0.930	86.613	0.046
+1.20D+1.60S	3.814	8.241	Bottom	0.778	Min Temp %	0.930	86.613	0.044
+1.20D+1.60S	3.675	8.265	Bottom	0.778	Min Temp %	0.930	86.613	0.042
+1.20D+1.60S	3.538	8.289	Bottom	0.778	Min Temp %	0.930	86.613	0.041
+1.20D+1.60S	3.403	8.312	Bottom	0.778	Min Temp %	0.930	86.613	0.039
+1.20D+1.60S	3.271	8.336	Bottom	0.778	Min Temp %	0.930	86.613	0.038
+1.20D+1.60S	3.141	8.360	Bottom	0.778	Min Temp %	0.930	86.613	0.036
+1.20D+1.60S	3.014	8.384	Bottom	0.778	Min Temp %	0.930	86.613	0.035
+1.20D+1.60S	2.890	8.407	Bottom	0.778	Min Temp %	0.930	86.613	0.033
+1.20D+1.60S	2.768	8.431	Bottom	0.778	Min Temp %	0.930	86.613	0.032
+1.20D+1.60S	2.648	8.455	Bottom	0.778	Min Temp %	0.930	86.613	0.031
+1.20D+1.60S	2.531	8.479	Bottom	0.778	Min Temp %	0.930	86.613	0.029
+1.20D+1.60S	2.417	8.502	Bottom	0.778	Min Temp %	0.930	86.613	0.028
+1.20D+1.60S	2.305	8.526	Bottom	0.778	Min Temp %	0.930	86.613	0.027
+1.20D+1.60S	2.196	8.550	Bottom	0.778	Min Temp %	0.930	86.613	0.025
+1.20D+1.60S	2.089	8.574	Bottom	0.778	Min Temp %	0.930	86.613	0.024
+1.20D+1.60S	1.985	8.597	Bottom	0.778	Min Temp %	0.930	86.613	0.023
+1.20D+1.60S	1.884	8.621	Bottom	0.778	Min Temp %	0.930	86.613	0.022
+1.20D+1.60S	1.785	8.645	Bottom	0.778	Min Temp %	0.930	86.613	0.021
+1.20D+1.60S	1.688	8.669	Bottom	0.778	Min Temp %	0.930	86.613	0.019
+1.20D+1.60S	1.594	8.692	Bottom	0.778	Min Temp %	0.930	86.613	0.018
+1.20D+1.60S	1.503	8.716	Bottom	0.778	Min Temp %	0.930	86.613	0.017
+1.20D+1.60S	1.415	8.740	Bottom	0.778	Min Temp %	0.930	86.613	0.016
+1.20D+1.60S	1.329	8.764	Bottom	0.778	Min Temp %	0.930	86.613	0.015
+1.20D+1.60S	1.245	8.787	Bottom	0.778	Min Temp %	0.930	86.613	0.014
+1.20D+1.60S	1.165	8.811	Bottom	0.778	Min Temp %	0.930	86.613	0.013
+1.20D+1.60S	1.087	8.835	Bottom	0.778	Min Temp %	0.930	86.613	0.013
+1.20D+1.60S	1.011	8.859	Bottom	0.778	Min Temp %	0.930	86.613	0.012
+1.20D+1.60S	0.938	8.882	Bottom	0.778	Min Temp %	0.930	86.613	0.011
+1.20D+1.60S	0.868	8.906	Bottom	0.778	Min Temp %	0.930	86.613	0.010
+1.20D+1.60S	0.801	8.930	Bottom	0.778	Min Temp %	0.930	86.613	0.009
+1.20D+1.60S	0.736	8.954	Bottom	0.778	Min Temp %	0.930	86.613	0.008
+1.20D+1.60S	0.674	8.977	Bottom	0.778	Min Temp %	0.930	86.613	0.008
+1.20D+1.60S	0.615	9.001	Bottom	0.778	Min Temp %	0.930	86.613	0.007
+1.20D+1.60S	0.558	9.025	Bottom	0.778	Min Temp %	0.930	86.613	0.006
+1.20D+1.60S	0.504	9.049	Bottom	0.778	Min Temp %	0.930	86.613	0.006
+1.20D+1.60S	0.453	9.072	Bottom	0.778	Min Temp %	0.930	86.613	0.005
+1.20D+1.60S	0.404	9.096	Bottom	0.778	Min Temp %	0.930	86.613	0.005



Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

**Combined Footing**

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

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**DESCRIPTION: MOMENT FRAME FOOTING**

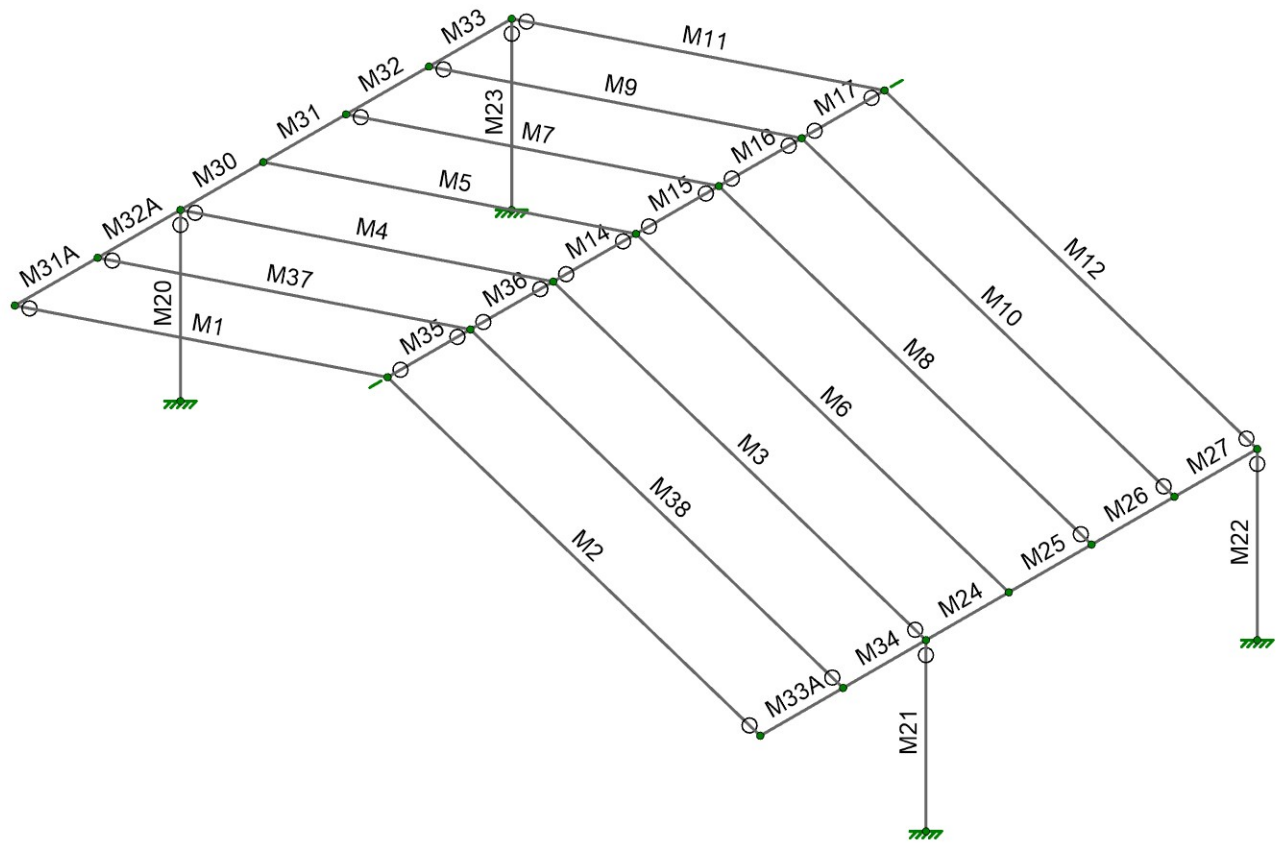
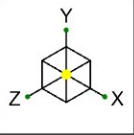
**Z-Axis Footing Flexure - Maximum Values for Load Combination**

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+1.20D+1.60S	0.358	9.120	Bottom	0.778	Min Temp %	0.930	86.613	0.004
+1.20D+1.60S	0.315	9.144	Bottom	0.778	Min Temp %	0.930	86.613	0.004
+1.20D+1.60S	0.275	9.167	Bottom	0.778	Min Temp %	0.930	86.613	0.003
+1.20D+1.60S	0.237	9.191	Bottom	0.778	Min Temp %	0.930	86.613	0.003
+1.20D+1.60S	0.202	9.215	Bottom	0.778	Min Temp %	0.930	86.613	0.002
+1.20D+1.60S	0.170	9.239	Bottom	0.778	Min Temp %	0.930	86.613	0.002
+1.20D+1.60S	0.141	9.262	Bottom	0.778	Min Temp %	0.930	86.613	0.002
+1.20D+1.60S	0.114	9.286	Bottom	0.778	Min Temp %	0.930	86.613	0.001
+1.20D+1.60S	0.090	9.310	Bottom	0.778	Min Temp %	0.930	86.613	0.001
+1.20D+1.60S	0.069	9.334	Bottom	0.778	Min Temp %	0.930	86.613	0.001
+1.20D+1.60S	0.051	9.357	Bottom	0.778	Min Temp %	0.930	86.613	0.001
+1.20D+1.60S	0.035	9.381	Bottom	0.778	Min Temp %	0.930	86.613	0.000
+1.20D+1.60S	0.023	9.405	Bottom	0.778	Min Temp %	0.930	86.613	0.000
+1.20D+1.60S	0.013	9.429	Bottom	0.778	Min Temp %	0.930	86.613	0.000
+1.20D+1.60S	0.000	9.452	0	0.000	0	0.000	0.000	0.000
+1.20D+1.60S	0.000	9.476	0	0.000	0	0.000	0.000	0.000
+1.20D+1.60S	0.000	9.500	0	0.000	0	0.000	0.000	0.000

**One Way Shear**

**Punching Shear**

Load Combination...	Phi Vn	vu @ Col #1	vu @ Col #2	Phi Vn	vu @ Col #1	vu @ Col #2
+1.40D	82.16 psi	0.33 psi	1.31 psi	164.32 psi	0.52psi	0.63 psi
+1.20D	82.16 psi	0.29 psi	1.13 psi	164.32 psi	0.45psi	0.54 psi
+1.20D+0.50S	82.16 psi	0.40 psi	1.65 psi	164.32 psi	0.64psi	0.83 psi
+1.20D+1.60S	82.16 psi	0.66 psi	2.81 psi	164.32 psi	1.06psi	1.47 psi
+0.90D	82.16 psi	0.21 psi	0.84 psi	164.32 psi	0.34psi	0.40 psi
+1.20D+0.20S+E	82.16 psi	3.04 psi	4.74 psi	164.32 psi	0.63psi	2.76 psi
+0.90D+E	82.16 psi	3.53 psi	4.40 psi	164.32 psi	0.37psi	3.10 psi



AHBL

AMS

2220197.20

GHS BN COVERED YARD

SK-2

Oct 08, 2022

GHSBN COVERED YARD - HSS.r3d

**Project Grid Lines**

No Data to Print...

**Project Grid Arcs**

No Data to Print...

**Node Coordinates**

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
1	N1	0	0	0	
2	N2	45	0	0	
3	N3	0	0	20	
4	N4	45	0	20	
5	N5	0	10	0	
6	N6	45	10	0	
7	N7	0	10	30	
8	N8	45	10	30	
9	N9	22.5	17.5	0	
10	N10	22.5	17.5	30	
11	N11	0	10	20	
12	N12	45	10	20	
13	N13	22.5	17.5	20	
14	N14	0	10	15	
15	N15	45	10	15	
16	N16	22.5	17.5	15	
17	N17	0	10	10	
18	N18	45	10	10	
19	N19	22.5	17.5	10	
20	N20	0	10	5	
21	N21	45	10	5	
22	N22	22.5	17.5	5	
23	N25	0	10	25	
24	N26	45	10	25	
25	N27	22.5	17.5	25	

**Node Boundary Conditions**

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
1	N3	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N4	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N2	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
5	N10			Reaction			
6	N9			Reaction			

**Hot Rolled Steel Properties**

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e <sup>-6</sup> F <sup>-1</sup> ]	Density [k/ft <sup>3</sup> ]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
7	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3

**Cold Formed Steel Properties**

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e <sup>5</sup> F <sup>-1</sup> ]	Density [k/ft <sup>3</sup> ]	Yield [ksi]	Fu [ksi]
1	A653 SS Gr33	29500	11346	0.3	0.65	0.49	33	45
2	A653 SS Gr50/1	29500	11346	0.3	0.65	0.49	50	65

**Wood Properties**

	Label	Type	Database	Species	Grade	Cm	Ci	Emod	Nu	Therm. Coeff. [1e <sup>5</sup> F <sup>-1</sup> ]	Density [k/ft <sup>3</sup> ]
1	DF	Solid Sawn	Visually Graded	Douglas Fir-Larch	No.1			1	0.3	0.3	0.035
2	SP	Solid Sawn	Visually Graded	Southern Pine	No.1			1	0.3	0.3	0.035
3	HF	Solid Sawn	Visually Graded	Hem-Fir	No.1			1	0.3	0.3	0.035
4	SPF	Solid Sawn	Visually Graded	Spruce-Pine-fir	No.1			1	0.3	0.3	0.035
5	24F-1.8E DF Balanced	Glulam	NDS Table 5A	24F-1.8E DF BAL	na			1	0.3	0.3	0.035
6	24F-1.8E DF Unbalanced	Glulam	NDS Table 5A	24F-1.8E DF UNBAL	na			1	0.3	0.3	0.035
7	24F-1.8E SP Balanced	Glulam	NDS Table 5A	24F-1.8E SP BAL	na			1	0.3	0.3	0.035
8	24F-1.8E SP Unbalanced	Glulam	NDS Table 5A	24F-1.8E SP UNBAL	na			1	0.3	0.3	0.035

**Concrete Properties**

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e <sup>5</sup> F <sup>-1</sup> ]	Density [k/ft <sup>3</sup> ]	f <sub>c</sub> [ksi]	Lambda	Flex Steel [ksi]	Shear Steel [ksi]
1	Conc3000NW	3156	1372	0.15	0.6	0.145	3	1	60	60
2	Conc3500NW	3409	1482	0.15	0.6	0.145	3.5	1	60	60
3	Conc4000NW	3644	1584	0.15	0.6	0.145	4	1	60	60
4	Conc3000LW	2085	907	0.15	0.6	0.11	3	0.75	60	60
5	Conc3500LW	2252	979	0.15	0.6	0.11	3.5	0.75	60	60
6	Conc4000LW	2408	1047	0.15	0.6	0.11	4	0.75	60	60

**Masonry Properties**

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e <sup>5</sup> F <sup>-1</sup> ]	Self Weight [k/ft <sup>3</sup> ]	f <sub>m</sub> [ksi]	Flex Steel [ksi]	Shear Steel [ksi]
1	Concrete Matl	1350	540	0.25	0.6	Custom	1.5	60	60
2	Clay Matl	1050	420	0.25	0.6	Custom	1.5	60	60
3	Gen Masonry	1050	420	0.25	0.6	0.08	1.5	60	60

**Aluminum Properties**

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e <sup>5</sup> F <sup>-1</sup> ]	Density [k/ft <sup>3</sup> ]	Table B.4	kt	F <sub>tu</sub> [ksi]	F <sub>ty</sub> [ksi]	F <sub>cy</sub> [ksi]	F <sub>su</sub> [ksi]	Ct
1	3003-H14	10100	3787.5	0.33	1.3	0.173	Table B.4-1	1	19	16	13	12	141
2	6061-T6	10100	3787.5	0.33	1.3	0.173	Table B.4-2	1	38	35	35	24	141
3	6063-T5	10100	3787.5	0.33	1.3	0.173	Table B.4-2	1	22	16	16	13	141
4	6063-T6	10100	3787.5	0.33	1.3	0.173	Table B.4-2	1	30	25	25	19	141
5	5052-H34	10200	3787.5	0.33	1.3	0.173	Table B.4-1	1	34	26	24	20	141
6	6061-T6 W	10100	3787.5	0.33	1.3	0.173	Table B.4-1	1	24	15	15	15	141

**Stainless Steel Properties**

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e <sup>5</sup> F <sup>-1</sup> ]	Density [k/ft <sup>3</sup> ]	n	Yield [ksi]	Fu [ksi]
1	A276 S316	28000	10780	0.3	0.93	0.5	5.6	30	75
2	A276 S321	29000	11165	0.3	0.73	0.48	5.6	65	94
3	A276 S304	28000	10780	0.3	0.93	0.49	5.6	30	75

**General Materials Properties**

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [ $1e^{-5}F^{-1}$ ]	Density [k/ft <sup>3</sup> ]	Plate Methodology
1	gen Conc3NW	3155	1372	0.15	0.6	0.145	Isotropic
2	gen Conc4NW	3644	1584	0.15	0.6	0.145	Isotropic
3	gen Conc3LW	2085	906	0.15	0.6	0.11	Isotropic
4	gen Conc4LW	2408	1047	0.15	0.6	0.11	Isotropic
5	gen Alum	10100	4077	0.3	1.29	0.173	Isotropic
6	gen Steel	29000	11154	0.3	0.65	0.49	Isotropic
7	gen Plywood	1800	38	0	0.3	0.035	Isotropic
8	RIGID	1e+6		0.3	0	0	Isotropic

**Custom Wood Properties**

	Label	Fb	Ft	Fv	Fc	E	E05	Type
1	LVL_PRL_1.5E_2250F	2.25	1.5	0.22	1.95	1500	0.5	SCL
2	LVL_PRL_2.0E_2900F	2.9	1.9	0.285	2.75	2000	0.5	SCL
3	LVL_Microllam_1.9E_2600F	2.6	1.555	0.285	2.51	1900	0.5	SCL
4	PSL_Parallam_2.0E_2900F	2.9	2.025	0.29	2.9	2000	0.5	SCL
5	PSL_Parallam_1.8E	2.4	1.755	0.18	2.5	1800	0.5	SCL
6	LSL_TimberStrand_1.55E_2325F	2.325	1.07	0.31	2.05	1550	0.5	SCL
7	LSL_TimberStrand_1.3E_1700F	1.7	1.075	0.4	1.4	1300	0.5	SCL

**Hot Rolled Steel Section Sets**

	Label	Shape	Type	Design List	Material	Design Rule	Area [in <sup>2</sup> ]	Iyy [in <sup>4</sup> ]	Izz [in <sup>4</sup> ]	J [in <sup>4</sup> ]
1	BENT	HSS16X4X6	Beam	None	A500 Gr.B Rect	Typical	13.2	38.3	360	120
2	BEAM	HSS12X8X6	Beam	None	A500 Gr.B Rect	Typical	13.2	140	262	293
3	COL	HSS8X8X10	Column	None	A500 Gr.B Rect	Typical	16.4	146	146	244
4	RIDGE	HSS3X3X4	Beam	None	A500 Gr.B Rect	Typical	2.44	3.02	3.02	5.08

**Cold Formed Steel Section Sets**

	Label	Shape	Type	Design List	Material	Design Rule	Area [in <sup>2</sup> ]	Iyy [in <sup>4</sup> ]	Izz [in <sup>4</sup> ]	J [in <sup>4</sup> ]
1	CF1A	8CU1.25X057	Beam	None	A653 SS Gr33	Typical	0.581	0.057	4.41	0.00063

**Wood Section Sets**

	Label	Shape	Type	Design List	Material	Design Rule	Area [in <sup>2</sup> ]	Iyy [in <sup>4</sup> ]	Izz [in <sup>4</sup> ]	J [in <sup>4</sup> ]
1	WOOD1A	2X6	Beam	None	DF	Typical	8.25	1.547	20.797	5.125

**Concrete Section Sets**

	Label	Shape	Type	Design List	Material	Design Rule	Area [in <sup>2</sup> ]	Iyy [in <sup>4</sup> ]	Izz [in <sup>4</sup> ]	J [in <sup>4</sup> ]
1	CONC1A	CRECT12X8	Beam	None	Conc3000NW	Typical	96	512	1152	1187.84

**Aluminum Section Sets**

	Label	Shape	Type	Design List	Material	Design Rule	Area [in <sup>2</sup> ]	Iyy [in <sup>4</sup> ]	Izz [in <sup>4</sup> ]	J [in <sup>4</sup> ]
1	AL1A	AAI3X1.64	Beam	None	3003-H14	Typical	1.39	0.522	2.24	0.019

**Stainless Steel Section Sets**

	Label	Shape	Type	Design List	Material	Design Rule	Area [in <sup>2</sup> ]	Iyy [in <sup>4</sup> ]	Izz [in <sup>4</sup> ]	J [in <sup>4</sup> ]
1	SS1A	W10X33 SS	Beam	None	A276 S316	Typical	9.71	36.6	171	0.583

**General Section Sets**

	Label	Shape	Type	Material	Area [in <sup>2</sup> ]	Iyy [in <sup>4</sup> ]	Izz [in <sup>4</sup> ]	J [in <sup>4</sup> ]
1	GEN1A	RE4X4	Beam	gen Conc3NW	16	21.333	21.333	31.573
2	RIGID		None	RIGID	1e+6	1e+6	1e+6	1e+6

**Member Primary Data**

	Label	I Node	J Node	Section/Shape	Type	Design List	Material	Design Rule
1	M1	N7	N10	BENT	Beam	None	A500 Gr.B Rect	Typical
2	M2	N10	N8	BENT	Beam	None	A500 Gr.B Rect	Typical
3	M3	N12	N13	BENT	Beam	None	A500 Gr.B Rect	Typical
4	M4	N13	N11	BENT	Beam	None	A500 Gr.B Rect	Typical
5	M5	N14	N16	BENT	Beam	None	A500 Gr.B Rect	Typical
6	M6	N16	N15	BENT	Beam	None	A500 Gr.B Rect	Typical
7	M7	N17	N19	BENT	Beam	None	A500 Gr.B Rect	Typical
8	M8	N19	N18	BENT	Beam	None	A500 Gr.B Rect	Typical
9	M9	N20	N22	BENT	Beam	None	A500 Gr.B Rect	Typical
10	M10	N22	N21	BENT	Beam	None	A500 Gr.B Rect	Typical
11	M11	N5	N9	BENT	Beam	None	A500 Gr.B Rect	Typical
12	M12	N9	N6	BENT	Beam	None	A500 Gr.B Rect	Typical
13	M14	N13	N16	RIDGE	Beam	None	A500 Gr.B Rect	Typical
14	M15	N16	N19	RIDGE	Beam	None	A500 Gr.B Rect	Typical
15	M16	N19	N22	RIDGE	Beam	None	A500 Gr.B Rect	Typical
16	M17	N22	N9	RIDGE	Beam	None	A500 Gr.B Rect	Typical
17	M20	N3	N11	COL	Column	None	A500 Gr.B Rect	Typical
18	M21	N4	N12	COL	Column	None	A500 Gr.B Rect	Typical
19	M22	N2	N6	COL	Column	None	A500 Gr.B Rect	Typical
20	M23	N1	N5	COL	Column	None	A500 Gr.B Rect	Typical
21	M24	N12	N15	BEAM	Beam	None	A500 Gr.B Rect	Typical
22	M25	N15	N18	BEAM	Beam	None	A500 Gr.B Rect	Typical
23	M26	N18	N21	BEAM	Beam	None	A500 Gr.B Rect	Typical
24	M27	N21	N6	BEAM	Beam	None	A500 Gr.B Rect	Typical
25	M30	N11	N14	BEAM	Beam	None	A500 Gr.B Rect	Typical
26	M31	N14	N17	BEAM	Beam	None	A500 Gr.B Rect	Typical
27	M32	N17	N20	BEAM	Beam	None	A500 Gr.B Rect	Typical
28	M33	N20	N5	BEAM	Beam	None	A500 Gr.B Rect	Typical
29	M31A	N7	N25	BEAM	Beam	None	A500 Gr.B Rect	Typical
30	M32A	N25	N11	BEAM	Beam	None	A500 Gr.B Rect	Typical
31	M33A	N8	N26	BEAM	Beam	None	A500 Gr.B Rect	Typical
32	M34	N26	N12	BEAM	Beam	None	A500 Gr.B Rect	Typical
33	M35	N10	N27	RIDGE	Beam	None	A500 Gr.B Rect	Typical
34	M36	N27	N13	RIDGE	Beam	None	A500 Gr.B Rect	Typical
35	M37	N25	N27	BENT	Beam	None	A500 Gr.B Rect	Typical
36	M38	N27	N26	BENT	Beam	None	A500 Gr.B Rect	Typical

**Member Advanced Data**

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
1	M1	BenPIN		Yes	Default	None
2	M2		BenPIN	Yes	Default	None
3	M3	BenPIN		Yes	Default	None

**Member Advanced Data (Continued)**

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
4	M4		BenPIN	Yes	Default	None
5	M5			Yes	Default	None
6	M6			Yes	Default	None
7	M7	BenPIN		Yes	Default	None
8	M8		BenPIN	Yes	Default	None
9	M9	BenPIN		Yes	Default	None
10	M10		BenPIN	Yes	Default	None
11	M11	BenPIN		Yes	Default	None
12	M12		BenPIN	Yes	Default	None
13	M14	BenPIN	BenPIN	Yes	N/A	None
14	M15	BenPIN	BenPIN	Yes	N/A	None
15	M16	BenPIN	BenPIN	Yes	N/A	None
16	M17	BenPIN	BenPIN	Yes	N/A	None
17	M20		BenPIN	Yes	** NA **	None
18	M21		BenPIN	Yes	** NA **	None
19	M22		BenPIN	Yes	** NA **	None
20	M23		BenPIN	Yes	** NA **	None
21	M24			Yes	N/A	None
22	M25			Yes	N/A	None
23	M26			Yes	N/A	None
24	M27			Yes	N/A	None
25	M30			Yes	N/A	None
26	M31			Yes	N/A	None
27	M32			Yes	N/A	None
28	M33			Yes	N/A	None
29	M31A			Yes	N/A	None
30	M32A			Yes	N/A	None
31	M33A			Yes	N/A	None
32	M34			Yes	N/A	None
33	M35	BenPIN	BenPIN	Yes	N/A	None
34	M36	BenPIN	BenPIN	Yes	N/A	None
35	M37	BenPIN		Yes	Default	None
36	M38		BenPIN	Yes	Default	None

**Hot Rolled Steel Design Parameters**

	Label	Shape	Length [ft]	Lb y-y [ft]	Lb z-z [ft]	Lcomp top [ft]	Channel Conn.	a [ft]	Function
1	M1	BENT	23.717	1	1	Lbyy	N/A	N/A	Lateral
2	M2	BENT	23.717	1	1	Lbyy	N/A	N/A	Lateral
3	M3	BENT	23.717	1	1	Lbyy	N/A	N/A	Lateral
4	M4	BENT	23.717	1	1	Lbyy	N/A	N/A	Lateral
5	M5	BENT	23.717	1	1	Lbyy	N/A	N/A	Lateral
6	M6	BENT	23.717	1	1	Lbyy	N/A	N/A	Lateral
7	M7	BENT	23.717	1	1	Lbyy	N/A	N/A	Lateral
8	M8	BENT	23.717	1	1	Lbyy	N/A	N/A	Lateral
9	M9	BENT	23.717	1	1	Lbyy	N/A	N/A	Lateral
10	M10	BENT	23.717	1	1	Lbyy	N/A	N/A	Lateral
11	M11	BENT	23.717	1	1	Lbyy	N/A	N/A	Lateral
12	M12	BENT	23.717	1	1	Lbyy	N/A	N/A	Lateral
13	M14	RIDGE	5	1	1	Lbyy	N/A	N/A	Lateral
14	M15	RIDGE	5	1	1	Lbyy	N/A	N/A	Lateral
15	M16	RIDGE	5	1	1	Lbyy	N/A	N/A	Lateral
16	M17	RIDGE	5	1	1	Lbyy	N/A	N/A	Lateral
17	M20	COL	10			Lbyy	N/A	N/A	Lateral
18	M21	COL	10			Lbyy	N/A	N/A	Lateral
19	M22	COL	10			Lbyy	N/A	N/A	Lateral

**Hot Rolled Steel Design Parameters (Continued)**

	Label	Shape	Length [ft]	Lb y-y [ft]	Lb z-z [ft]	Lcomp top [ft]	Channel Conn.	a [ft]	Function
20	M23	COL	10			Lbyy	N/A	N/A	Lateral
21	M24	BEAM	5			Lbyy	N/A	N/A	Lateral
22	M25	BEAM	5			Lbyy	N/A	N/A	Lateral
23	M26	BEAM	5			Lbyy	N/A	N/A	Lateral
24	M27	BEAM	5			Lbyy	N/A	N/A	Lateral
25	M30	BEAM	5			Lbyy	N/A	N/A	Lateral
26	M31	BEAM	5			Lbyy	N/A	N/A	Lateral
27	M32	BEAM	5			Lbyy	N/A	N/A	Lateral
28	M33	BEAM	5			Lbyy	N/A	N/A	Lateral
29	M31A	BEAM	5			Lbyy	N/A	N/A	Lateral
30	M32A	BEAM	5			Lbyy	N/A	N/A	Lateral
31	M33A	BEAM	5			Lbyy	N/A	N/A	Lateral
32	M34	BEAM	5			Lbyy	N/A	N/A	Lateral
33	M35	RIDGE	5			Lbyy	N/A	N/A	Lateral
34	M36	RIDGE	5			Lbyy	N/A	N/A	Lateral
35	M37	BENT	23.717	1	1	Lbyy	N/A	N/A	Lateral
36	M38	BENT	23.717	1	1	Lbyy	N/A	N/A	Lateral

**Cold Formed Steel Design Parameters**

No Data to Print...

**Wood Design Parameters**

No Data to Print...

**Concrete Beam Design Parameters**

No Data to Print...

**Concrete Column Design Parameters**

No Data to Print...

**Aluminum Design Parameters**

No Data to Print...

**Stainless Steel Design Parameters**

No Data to Print...

**Member RISACONNECTION PROPERTIES**

	Label	Shape	Start Conn	End Conn	Start Release	End Release
1	M1	HSS16X4X6	None	None	Pinned	Fixed
2	M2	HSS16X4X6	None	None	Fixed	Pinned
3	M3	HSS16X4X6	None	None	Pinned	Fixed
4	M4	HSS16X4X6	None	None	Fixed	Pinned
5	M5	HSS16X4X6	None	None	Fixed	Fixed
6	M6	HSS16X4X6	None	None	Fixed	Fixed
7	M7	HSS16X4X6	None	None	Pinned	Fixed
8	M8	HSS16X4X6	None	None	Fixed	Pinned
9	M9	HSS16X4X6	None	None	Pinned	Fixed
10	M10	HSS16X4X6	None	None	Fixed	Pinned
11	M11	HSS16X4X6	None	None	Pinned	Fixed
12	M12	HSS16X4X6	None	None	Fixed	Pinned
13	M14	HSS3X3X4	None	None	Pinned	Pinned
14	M15	HSS3X3X4	None	None	Pinned	Pinned



**Member RISACONNECTION PROPERTIES (Continued)**

	Label	Shape	Start Conn	End Conn	Start Release	End Release
15	M16	HSS3X3X4	None	None	Pinned	Pinned
16	M17	HSS3X3X4	None	None	Pinned	Pinned
17	M20	HSS8X8X10	None	None	Fixed	Pinned
18	M21	HSS8X8X10	None	None	Fixed	Pinned
19	M22	HSS8X8X10	None	None	Fixed	Pinned
20	M23	HSS8X8X10	None	None	Fixed	Pinned
21	M24	HSS12X8X6	None	None	Fixed	Fixed
22	M25	HSS12X8X6	None	None	Fixed	Fixed
23	M26	HSS12X8X6	None	None	Fixed	Fixed
24	M27	HSS12X8X6	None	None	Fixed	Fixed
25	M30	HSS12X8X6	None	None	Fixed	Fixed
26	M31	HSS12X8X6	None	None	Fixed	Fixed
27	M32	HSS12X8X6	None	None	Fixed	Fixed
28	M33	HSS12X8X6	None	None	Fixed	Fixed
29	M31A	HSS12X8X6	None	None	Fixed	Fixed
30	M32A	HSS12X8X6	None	None	Fixed	Fixed
31	M33A	HSS12X8X6	None	None	Fixed	Fixed
32	M34	HSS12X8X6	None	None	Fixed	Fixed
33	M35	HSS3X3X4	None	None	Pinned	Pinned
34	M36	HSS3X3X4	None	None	Pinned	Pinned
35	M37	HSS16X4X6	None	None	Pinned	Fixed
36	M38	HSS16X4X6	None	None	Fixed	Pinned

**Plate Primary Data**

No Data to Print...
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**Plate Advanced Data**

No Data to Print...
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**Solid Primary Data**

No Data to Print...
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**Wall Panel Data**

No Data to Print...
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**Wall Panel Advanced Data**

No Data to Print...
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**Diaphragms**

No Data to Print...
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**Design Size and Code Check Parameters**

	Label	Max Axial/Bending Chk	Max Shear Chk
1	Typical	1	1

**Concrete Rebar Parameters**

Label	Optimize Rebar ?	Min Flex Bar	Max Flex Bar	Shear Bar	Legs per Stirrup	Top (Column) Cover [in]	Bottom Cover [in]	Side Cover [in]	Top/Bottom Bars	Add'l Side Bars	Shear Bar Spacing [in]	
1	Typical	Optimize	#6	#10	#4	2	1.5	1.5	1.5	2	1	12



Company : AHBL  
 Designer : AMS  
 Job Number : 2220197.20  
 Model Name : GHS BN COVERED YARD

10/8/2022  
 3:31:00 PM  
 Checked By : KPL

**Deflection Design**

	Label	LC	Ratio	LC	Ratio	LC	Ratio
1	Typical	1	240	2	360	3	240

**Wall Panel U.C. Parameters**

	Label	Max Bending Chk	Max Shear Chk
1	Typical	1	1

**Masonry Wall Panel Parameters**

	Label	Block Nom Width	Block Grouting	Reinforced	Wall Area Method
1	Typical	10"	Partially Grouted	Yes	NCMA

**Masonry Wall Panel In-Plane Parameters**

	Label	Vert Bar Size	Bars Per Cell	Min Bound Zone Width [in]	Max Bound Zone Width [in]	Horz Bar Size	Transfer Load
1	Typical	#5	1	8	40	#5	

**Masonry Wall Panel Out-of-Plane Parameters**

	Label	Bar Size	Bar Space	Min Bar Space	Max Bar Placement	Cover [in]	Mortar Type	Cement Type	Transfer Load
1	Typical	#5	8"	72"	Center	Min	Type M or S	Portland, Lime/Mortar	

**Masonry Wall Panel Lintel Parameters**

	Label	Depth [in]	Bear Length [in]	Bar Size	Min # Bars	Per Layer	Max # Bars	Per Layer	Num of Layers	c/c Sp of Layers [in]	Dist To Bot [in]	Stirrup Size	Analysis Method
1	Typical	16	8	#5	1		3		1	N/A	3.5	#4	Simply Supported

**Wood Wall Panel Parameters**

	Label	Top Plate	Sill Plate	Studs	Min Stud Space [in]	Max Stud Space [in]	Green Lumber?	Header Size	Header Matl
1	Typical	2-2X6	2X6	2X6	16	16		6x8	Same as Wall

**Additional Wood Wall Panel Parameters**

	Label	Schedule	Min Panel Thick [in]	Max Panel Thick [in]	Double Sided Panel?	Max. Nail Spacing	Min. Nail Spacing	HD Chords	HD Chord Matl	Hold Down	Chord Strap	Eccentricity
1	Typical	AWC 2015 OSB	0.375	0.75	Optimum	6-in.	2-in.	2-2X6	Same as Wall	SIMPSON HoldDowns	SIMPSON Chord Straps	Yes

**Concrete Wall Panel Rebar Parameters**

	Label	Vert Bar Size	Max Vert Bar Space [in]	Min Vert Bar Space [in]	Vert Bar Inc [in]	Horz Bar Size	Max Horz Bar Space [in]	Min Horz Bar Space [in]	Horz Bar Inc [in]	Group Wall
1	Typical	#6	18	4	2	#4	18	4	2	

**Concrete Wall Panel Cover Parameters**

	Label	Outer Bars	Location	Int Cover -z [in]	Ext Cover +z [in]	Edge Cover [in]	Transfer In	Transfer Out
1	Typical	Vertical	Each Face	1	1	2		

**Frame / HR Seismic Design Rule**

Label	Frame Type	Column Ductility	Column Overstrength	Beam Ductility	Connection	Beam Overstrength	Z Factor	Hinge Location [in]	Brace Ductility	Brace Overstrength	KL/r
1	OCBF	OCBF	Minimal	Yes	Minimal	Other/None	N/A	N/A	Minimal		
2	SCBF	SCBF	High	Yes	High	Other/None	Yes	N/A	High		Yes
3	OMF	OMF	Minimal	Yes	Minimal	BUJEEP		12	N/A		
4	IMF	IMF	Moderate	Yes	Moderate	BFP		12	N/A		
5	SMF-RBS	SMF	High	Yes	High	RBS	0.685	14.625	N/A		
6	SMF-Kaiser	SMF	High	Yes	High	KBB-B		12	N/A		

**Concrete Wall Seismic Design Rule**

No Data to Print...											
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**Masonry Wall Seismic Design Rule**

Label	Wall Types	Special Boundary Elements	1.5x Shear ASD
1	Ordinary	Ordinary	
2	Intermediate	Intermediate	
3	Special	Special	Yes

**Connection Design Rules**

Label	Conn Type	Type	Beam Conn	Col/Girder Conn	Eccentricity	
1	Col/Bm Clip Angle	Shear	Column/Beam Clip Double Angle Shear	Welded	Bolted	1.5
2	Col/Bm Shear Tab	Shear	Column/Beam Shear Tab Shear	Bolted	N/A	3
3	Girder/Bm Clip Angle	Shear	Girder/Beam Clip Single Angle Shear	Welded	Bolted	N/A
4	Girder/Bm Shear Tab	Shear	Girder/Beam Shear Tab Shear	Bolted	N/A	N/A
5	Flange Plate Moment	Moment	Column/Beam Flange Plate Moment	Bolted	N/A	N/A
6	End-Plate Moment	Moment	Column/Beam Extended End-Plate Moment	N/A	N/A	N/A
7	Col Shear Splice	Shear	Column Shear Tab Splice	N/A	N/A	N/A
8	Col Moment Splice	Moment	Column Moment Plate Splice	N/A	N/A	N/A
9	Diagonal Brace	Brace	Diagonal Vertical Brace	N/A	N/A	N/A
10	Chevron Brace	Brace	Chevron Vertical Brace	N/A	N/A	N/A
11	Knee Brace	Brace	Knee Brace	N/A	N/A	N/A
12	Base Plate	Baseplate	Single Column Baseplate	N/A	N/A	N/A

**Drift Definitions**

No Data to Print...											
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**Nodal Loads and Enforced Displacements**

No Data to Print...											
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**Member Point Loads (BLC 3 : SEISMIC X)**

Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]	
1	M22	X	2.51	10
2	M23	X	2.51	10
3	M20	X	6.73	10
4	M21	X	6.73	10

**Member Point Loads (BLC 4 : SEISMIC Z)**

Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]	
1	M20	Z	5	10
2	M23	Z	5	10

**Member Point Loads (BLC 4 : SEISMIC Z) (Continued)**

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
3	M21	Z	5	10
4	M22	Z	5	10

**Wall Panel Point Loads**

No Data to Print...				
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**Diaphragm Point Loads**

No Data to Print...				
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**Member Distributed Loads (BLC 5 : BLC 1 Transient Area Loads)**

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	Y	-0.013	-0.013	6.828e-15	23.717
2	M4	Y	-0.025	-0.025	3.053e-15	23.717
3	M5	Y	-0.025	-0.025	2.609e-15	23.717
4	M7	Y	-0.025	-0.025	3.275e-15	23.717
5	M9	Y	-0.025	-0.025	3.275e-15	23.717
6	M11	Y	-0.013	-0.013	2.942e-15	23.717
7	M37	Y	-0.025	-0.025	3.497e-15	23.717
8	M2	Y	-0.013	-0.013	9.048e-15	23.717
9	M3	Y	-0.025	-0.025	0	23.717
10	M6	Y	-0.025	-0.025	7.383e-15	23.717
11	M8	Y	-0.025	-0.025	6.495e-15	23.717
12	M10	Y	-0.025	-0.025	5.718e-15	23.717
13	M12	Y	-0.013	-0.013	6.495e-15	23.717
14	M38	Y	-0.025	-0.025	1.782e-14	23.717

**Member Distributed Loads (BLC 6 : BLC 2 Transient Area Loads)**

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	Y	-0.063	-0.063	6.828e-15	23.717
2	M4	Y	-0.125	-0.125	3.053e-15	23.717
3	M5	Y	-0.125	-0.125	2.609e-15	23.717
4	M7	Y	-0.125	-0.125	3.275e-15	23.717
5	M9	Y	-0.125	-0.125	3.275e-15	23.717
6	M11	Y	-0.063	-0.063	2.942e-15	23.717
7	M37	Y	-0.125	-0.125	3.497e-15	23.717
8	M2	Y	-0.063	-0.063	9.048e-15	23.717
9	M3	Y	-0.125	-0.125	0	23.717
10	M6	Y	-0.125	-0.125	7.383e-15	23.717
11	M8	Y	-0.125	-0.125	6.495e-15	23.717
12	M10	Y	-0.125	-0.125	5.718e-15	23.717
13	M12	Y	-0.063	-0.063	6.495e-15	23.717
14	M38	Y	-0.125	-0.125	1.782e-14	23.717

**Wall Panel Distributed Loads**

No Data to Print...				
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**Diaphragm Distributed Loads**

No Data to Print...				
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**Member Area Loads (BLC 1 : DEAD)**

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [ksf]
1	N9	N10	N7	N5	Y	A-B	-0.005
2	N10	N9	N6	N8	Y	A-B	-0.005

**Member Area Loads (BLC 2 : SNOW)**

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [ksf]
1	N9	N10	N7	N5	Y	A-B	-0.025
2	N10	N9	N6	N8	Y	A-B	-0.025

**Plate Surface Loads**

No Data to Print...							
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**Wall Panel Surface Loads**

No Data to Print...							
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**Diaphragm Surface Loads**

No Data to Print...							
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**Basic Load Cases**

	BLC Description	Category	Y Gravity	Point	Distributed	Area(Member)
1	DEAD	DL	-1			2
2	SNOW	SL				2
3	SEISMIC X	ELX		4		
4	SEISMIC Z	ELZ		4		
5	BLC 1 Transient Area Loads	None			14	
6	BLC 2 Transient Area Loads	None			14	

**Moving Loads**

No Data to Print...							
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**Moving Load Patterns**

No Data to Print...							
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**Time History Loads**

No Data to Print...							
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**Load Combinations**

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	Deflection 1	Yes	Y	DL	1										
2	Deflection 2	Yes	Y	LL	1										
3	Deflection 3	Yes	Y	DL	1	LL	1								
4	IBC 16-8	Yes	Y	DL	1										
5	IBC 16-9	Yes	Y	DL	1	LL	1	LLS	1						
6	IBC 16-10 (b)	Yes	Y	DL	1	SL	1	SLN	1						
7	IBC 16-11 (b)	Yes	Y	DL	1	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75		
8	IBC 16-12 (b) (a)	Yes	Y	DL	1	ELX	0.7								
9	IBC 16-12 (b) (b)	Yes	Y	DL	1	ELZ	0.7								
10	IBC 16-12 (b) (c)	Yes	Y	DL	1	ELX	-0.7								
11	IBC 16-12 (b) (d)	Yes	Y	DL	1	ELZ	-0.7								

**Load Combinations (Continued)**

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
12	IBC 16-14 (a)	Yes	Y	DL	1	ELX	0.525	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
13	IBC 16-14 (b)	Yes	Y	DL	1	ELZ	0.525	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
14	IBC 16-14 (c)	Yes	Y	DL	1	ELX	-0.525	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
15	IBC 16-14 (d)	Yes	Y	DL	1	ELZ	-0.525	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
16	IBC 16-16 (a)	Yes	Y	DL	0.6	ELX	0.7								
17	IBC 16-16 (b)	Yes	Y	DL	0.6	ELZ	0.7								
18	IBC 16-16 (c)	Yes	Y	DL	0.6	ELX	-0.7								
19	IBC 16-16 (d)	Yes	Y	DL	0.6	ELZ	-0.7								
20															
21															
22	DL		Y	DL	1										
23	SL		Y	SL	1										
24															
25	IBC 16-5 (os-a)		Y	DL	1.2	Om*ELX	1	LL	0.5	LLS	1	SL	0.2	SLN	0.7
26	IBC 16-5 (os-b)		Y	DL	1.2	Om*ELZ	1	LL	0.5	LLS	1	SL	0.2	SLN	0.7
27	IBC 16-5 (os-c)		Y	DL	1.2	Om*ELX	-1	LL	0.5	LLS	1	SL	0.2	SLN	0.7
28	IBC 16-5 (os-d)		Y	DL	1.2	Om*ELZ	-1	LL	0.5	LLS	1	SL	0.2	SLN	0.7
29	IBC 16-7 (os-a)		Y	DL	0.9	Om*ELX	1								
30	IBC 16-7 (os-b)		Y	DL	0.9	Om*ELZ	1								
31	IBC 16-7 (os-c)		Y	DL	0.9	Om*ELX	-1								
32	IBC 16-7 (os-d)		Y	DL	0.9	Om*ELZ	-1								

**Load Combination Design**

	Description	CD	Service	Hot Rolled	Cold Formed	Wood	Concrete	Masonry	Aluminum	Stainless	Connection
1	Deflection 1		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	Deflection 2		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	Deflection 3		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	IBC 16-8	0.9	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	IBC 16-9		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	IBC 16-10 (b)	1.15	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	IBC 16-11 (b)	1.15	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	IBC 16-12 (b) (a)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	IBC 16-12 (b) (b)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	IBC 16-12 (b) (c)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	IBC 16-12 (b) (d)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12	IBC 16-14 (a)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
13	IBC 16-14 (b)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
14	IBC 16-14 (c)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
15	IBC 16-14 (d)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
16	IBC 16-16 (a)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
17	IBC 16-16 (b)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
18	IBC 16-16 (c)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
19	IBC 16-16 (d)	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
20		1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
21		1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
22	DL	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
23	SL	1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
24		1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
25	IBC 16-5 (os-a)			Yes	Yes		Yes	Yes	Yes	Yes	Yes
26	IBC 16-5 (os-b)			Yes	Yes		Yes	Yes	Yes	Yes	Yes
27	IBC 16-5 (os-c)			Yes	Yes		Yes	Yes	Yes	Yes	Yes
28	IBC 16-5 (os-d)			Yes	Yes		Yes	Yes	Yes	Yes	Yes
29	IBC 16-7 (os-a)			Yes	Yes		Yes	Yes	Yes	Yes	Yes
30	IBC 16-7 (os-b)			Yes	Yes		Yes	Yes	Yes	Yes	Yes
31	IBC 16-7 (os-c)			Yes	Yes		Yes	Yes	Yes	Yes	Yes

**Load Combination Design (Continued)**

Description	CD	Service	Hot Rolled	Cold Formed	Wood	Concrete	Masonry	Aluminum	Stainless	Connection
32 IBC 16-7 (os-d)			Yes	Yes		Yes	Yes	Yes	Yes	Yes

**Envelope Node Reactions**

Node Label	X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1 N3 max	6.573	14	23.798	6	3.241	19	33.175	11	2.204	18	35.32	16
2 min	-3.483	16	0	2	-3.224	17	-32.834	9	-2.864	12	-68.913	14
3 N1 max	3.892	14	8.351	6	3.292	11	33.177	11	6.09	14	13.761	16
4 min	-1.369	16	0	2	-3.255	9	-32.837	9	-1.805	16	-39.544	14
5 N4 max	3.483	18	23.798	6	3.241	19	33.175	11	2.864	14	68.913	12
6 min	-6.573	12	0	2	-3.224	17	-32.834	9	-2.204	16	-35.32	18
7 N2 max	1.369	18	8.351	6	3.292	11	33.177	11	1.805	18	39.544	12
8 min	-3.892	12	0	2	-3.255	9	-32.837	9	-6.09	12	-13.761	18
9 N10 max	0	19	0	19	0.454	19	0	19	0	19	0	19
10 min	0	1	0	1	-0.574	9	0	1	0	1	0	1
11 N9 max	0	19	0	19	0.516	11	0	19	0	19	0	19
12 min	0	1	0	1	-0.505	17	0	1	0	1	0	1
13 Totals: max	12.936	18	64.298	6	14	11						
14 min	-12.936	8	0	2	-14	9						

**Envelope Node Reactions - Overstrength or Capacity Limit**

No Data to Print...												
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**Envelope Node Displacements**

Node Label	X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
1 N1 max	0	16	0	2	0	9	0	9	0	16	0	14
2 min	0	14	0	6	0	11	0	11	0	14	0	16
3 N2 max	0	12	0	2	0	9	0	9	0	12	0	18
4 min	0	18	0	6	0	11	0	11	0	18	0	12
5 N3 max	0	16	0	2	0	17	0	9	0	12	0	14
6 min	0	14	0	6	0	19	0	11	0	18	0	16
7 N4 max	0	12	0	2	0	17	0	9	0	16	0	18
8 min	0	18	0	6	0	19	0	11	0	14	0	12
9 N5 max	0.236	16	0	2	0.563	9	3.055e-3	6	9.551e-4	16	0	2
10 min	-0.678	14	-0.003	6	-0.569	11	0	2	-3.222e-3	14	-1.334e-2	6
11 N6 max	0.678	12	0	2	0.563	9	3.055e-3	6	3.222e-3	12	1.334e-2	6
12 min	-0.236	18	-0.003	6	-0.569	11	0	2	-9.551e-4	18	0	2
13 N7 max	0.752	16	0	2	0.563	9	6.259e-3	6	1.986e-3	12	0	2
14 min	-1.206	14	-0.601	6	-0.569	11	0	2	-1.205e-3	10	-1.334e-2	6
15 N8 max	1.206	12	0	2	0.563	9	6.259e-3	6	1.205e-3	8	1.334e-2	6
16 min	-0.752	18	-0.601	6	-0.569	11	0	2	-1.986e-3	14	0	2
17 N9 max	0.36	8	0	2	0	17	2.317e-3	15	9.404e-5	8	4.149e-8	8
18 min	-0.36	10	-1.418	6	0	11	-6.882e-4	17	-9.404e-5	10	-4.149e-8	10
19 N10 max	0.919	8	0	2	0	9	5.924e-3	15	7.592e-5	8	2.047e-5	10
20 min	-0.919	10	-2.348	6	0	19	0	2	-7.592e-5	10	-2.047e-5	8
21 N11 max	0.605	16	0	2	0.563	9	1.413e-3	15	1.516e-3	12	0	2
22 min	-1.181	14	-0.007	6	-0.569	11	0	2	-1.166e-3	18	-1.334e-2	6
23 N12 max	1.181	12	0	2	0.563	9	1.413e-3	15	1.166e-3	16	1.334e-2	6
24 min	-0.605	18	-0.007	6	-0.569	11	0	2	-1.516e-3	14	0	2
25 N13 max	0.769	8	0	2	0.001	17	2.188e-3	11	8.371e-5	8	8.436e-8	10
26 min	-0.769	10	-2.122	6	-0.001	11	-7.515e-4	17	-8.371e-5	10	-8.436e-8	8
27 N14 max	0.511	16	0.004	19	0.563	9	0	2	1.784e-3	8	0	2
28 min	-1.149	14	-0.067	6	-0.569	11	-2.088e-3	6	-1.493e-3	18	-1.334e-2	6
29 N15 max	1.149	12	0.004	19	0.563	9	0	2	1.493e-3	16	1.334e-2	6

**Envelope Node Displacements (Continued)**

Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC	
30		min	-0.511	18	-0.067	6	-0.569	11	-2.088e-3	6	-1.784e-3	10	0	2
31	N16	max	0.681	8	0	2	0.001	17	1.886e-3	19	6.704e-4	10	9.337e-7	8
32		min	-0.681	10	-2.312	6	-0.001	11	-2.521e-3	13	-6.704e-4	8	-9.337e-7	10
33	N17	max	0.404	16	0	2	0.563	9	0	2	1.764e-3	16	0	2
34		min	-1.06	14	-0.18	6	-0.569	11	-1.021e-3	6	-2.158e-3	14	-1.334e-2	6
35	N18	max	1.06	12	0	2	0.563	9	0	2	2.158e-3	12	1.334e-2	6
36		min	-0.404	18	-0.18	6	-0.569	11	-1.021e-3	6	-1.764e-3	18	0	2
37	N19	max	0.574	8	0	2	0.001	17	8.487e-4	19	1.218e-4	8	7.102e-7	10
38		min	-0.574	10	-2.399	6	-0.001	11	-1.758e-3	13	-1.218e-4	10	-7.102e-7	8
39	N20	max	0.306	16	0	2	0.563	9	1.669e-3	6	1.411e-3	16	0	2
40		min	-0.891	14	-0.161	6	-0.569	11	0	2	-3.396e-3	14	-1.334e-2	6
41	N21	max	0.891	12	0	2	0.563	9	1.669e-3	6	3.396e-3	12	1.334e-2	6
42		min	-0.306	18	-0.161	6	-0.569	11	0	2	-1.411e-3	18	0	2
43	N22	max	0.46	8	0	2	0	17	1.404e-3	15	1.172e-4	8	9.825e-7	10
44		min	-0.46	10	-2.082	6	0	11	-9.362e-4	17	-1.172e-4	10	-9.825e-7	8
45	N25	max	0.679	16	0	2	0.563	9	5.416e-3	6	1.673e-3	12	0	2
46		min	-1.206	14	-0.239	6	-0.569	11	0	2	-1.253e-3	10	-1.334e-2	6
47	N26	max	1.206	12	0	2	0.563	9	5.416e-3	6	1.253e-3	8	1.334e-2	6
48		min	-0.679	18	-0.239	6	-0.569	11	0	2	-1.673e-3	14	0	2
49	N27	max	0.844	8	0	2	0	9	5.198e-3	15	7.848e-5	8	8.057e-6	10
50		min	-0.844	10	-2.224	6	0	19	0	2	-7.848e-5	10	-8.057e-6	8

**Envelope Member Section Forces**

Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[k-ft]	LC	z-z Moment[k-ft]	LC	
1	M1	1	max	0.37	11	3.037	6	0.088	13	0.698	13	0	19	0	19
2			min	0	2	0	2	-0.033	19	-0.26	19	0	1	0	1
3		2	max	0.256	11	2.343	6	0.088	13	0.698	13	0.523	13	0	2
4			min	-0.067	6	0	2	-0.033	19	-0.26	19	-0.195	19	-15.949	6
5		3	max	0.142	11	1.649	6	0.088	13	0.698	13	1.047	13	0	2
6			min	-0.298	6	0	2	-0.033	19	-0.26	19	-0.389	19	-27.785	6
7		4	max	0.028	11	0.956	6	0.088	13	0.698	13	1.57	13	0	2
8			min	-0.529	6	0	2	-0.033	19	-0.26	19	-0.584	19	-35.508	6
9		5	max	0	2	0.262	6	0.088	13	0.698	13	2.094	13	0	2
10			min	-0.761	6	0	2	-0.033	19	-0.26	19	-0.779	19	-39.119	6
11	M2	1	max	0	2	0	2	0.033	19	0.26	19	2.094	13	0	2
12			min	-0.761	6	-0.262	6	-0.088	13	-0.698	13	-0.779	19	-39.119	6
13		2	max	0.028	11	0	2	0.033	19	0.26	19	1.57	13	0	2
14			min	-0.529	6	-0.956	6	-0.088	13	-0.698	13	-0.584	19	-35.508	6
15		3	max	0.142	11	0	2	0.033	19	0.26	19	1.047	13	0	2
16			min	-0.298	6	-1.649	6	-0.088	13	-0.698	13	-0.389	19	-27.785	6
17		4	max	0.256	11	0	2	0.033	19	0.26	19	0.523	13	0	2
18			min	-0.067	6	-2.343	6	-0.088	13	-0.698	13	-0.195	19	-15.949	6
19		5	max	0.37	11	0	2	0.033	19	0.26	19	0	19	0	19
20			min	0	2	-3.037	6	-0.088	13	-0.698	13	0	1	0	1
21	M3	1	max	2.755	6	4.088	6	0.046	19	0.364	19	0	19	0	19
22			min	0	2	0	2	-0.061	9	-0.48	9	0	1	0	1
23		2	max	2.384	6	2.973	6	0.046	19	0.364	19	0.273	19	0	2
24			min	0	2	0	2	-0.061	9	-0.48	9	-0.36	9	-20.934	6
25		3	max	2.012	6	1.857	6	0.046	19	0.364	19	0.546	19	0	2
26			min	0	2	0	2	-0.061	9	-0.48	9	-0.72	9	-35.255	6
27		4	max	1.64	6	0.742	6	0.046	19	0.364	19	0.819	19	0	2
28			min	0	2	0	2	-0.061	9	-0.48	9	-1.079	9	-42.961	6
29		5	max	1.268	6	0	2	0.046	19	0.364	19	1.092	19	0	2
30			min	0	2	-0.374	6	-0.061	9	-0.48	9	-1.439	9	-44.054	6
31	M4	1	max	1.268	6	0.374	6	0.061	9	0.48	9	1.092	19	0	2



**Envelope Member Section Forces (Continued)**

Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[k-ft]	LC	z-z Moment[k-ft]	LC	
32		min	0	2	0	2	-0.046	19	-0.364	19	-1.439	9	-44.054	6	
33	2	max	1.64	6	0	2	0.061	9	0.48	9	0.819	19	0	2	
34		min	0	2	-0.742	6	-0.046	19	-0.364	19	-1.079	9	-42.961	6	
35	3	max	2.012	6	0	2	0.061	9	0.48	9	0.546	19	0	2	
36		min	0	2	-1.857	6	-0.046	19	-0.364	19	-0.72	9	-35.255	6	
37	4	max	2.384	6	0	2	0.061	9	0.48	9	0.273	19	0	2	
38		min	0	2	-2.973	6	-0.046	19	-0.364	19	-0.36	9	-20.934	6	
39	5	max	2.755	6	0	2	0.061	9	0.48	9	0	19	0	19	
40		min	0	2	-4.088	6	-0.046	19	-0.364	19	0	1	0	1	
41	M5	1	max	2.286	6	4.239	6	0.181	17	0.69	17	2.998	15	0	19
42		min	0	2	0	2	-0.234	11	-0.864	11	-2.218	17	0	1	
43	2	max	1.914	6	3.124	6	0.181	17	0.69	17	1.621	15	0	2	
44		min	0	2	0	2	-0.234	11	-0.864	11	-1.146	17	-21.829	6	
45	3	max	1.543	6	2.008	6	0.181	17	0.69	17	0.633	8	0	2	
46		min	0	2	0	2	-0.234	11	-0.864	11	-0.515	18	-37.044	6	
47	4	max	1.171	6	0.893	6	0.181	17	0.69	17	0.999	17	0	2	
48		min	0	2	0	2	-0.234	11	-0.864	11	-1.203	11	-45.645	6	
49	5	max	0.799	6	0	2	0.181	17	0.69	17	2.071	17	0	2	
50		min	0	2	-0.223	6	-0.234	11	-0.864	11	-2.591	11	-47.631	6	
51	M6	1	max	0.799	6	0.223	6	0.234	11	0.864	11	2.071	17	0	2
52		min	0	2	0	2	-0.181	17	-0.69	17	-2.591	11	-47.631	6	
53	2	max	1.171	6	0	2	0.234	11	0.864	11	0.999	17	0	2	
54		min	0	2	-0.893	6	-0.181	17	-0.69	17	-1.203	11	-45.645	6	
55	3	max	1.543	6	0	2	0.234	11	0.864	11	0.633	10	0	2	
56		min	0	2	-2.008	6	-0.181	17	-0.69	17	-0.515	16	-37.044	6	
57	4	max	1.914	6	0	2	0.234	11	0.864	11	1.621	15	0	2	
58		min	0	2	-3.124	6	-0.181	17	-0.69	17	-1.146	17	-21.829	6	
59	5	max	2.286	6	0	2	0.234	11	0.864	11	2.998	15	0	19	
60		min	0	2	-4.239	6	-0.181	17	-0.69	17	-2.218	17	0	1	
61	M7	1	max	2.385	6	4.208	6	0.05	17	0.398	17	0	19	0	19
62		min	0	2	0	2	-0.058	11	-0.462	11	0	1	0	1	
63	2	max	2.013	6	3.093	6	0.05	17	0.398	17	0.299	17	0	2	
64		min	0	2	0	2	-0.058	11	-0.462	11	-0.346	11	-21.645	6	
65	3	max	1.642	6	1.977	6	0.05	17	0.398	17	0.597	17	0	2	
66		min	0	2	0	2	-0.058	11	-0.462	11	-0.693	11	-36.675	6	
67	4	max	1.27	6	0.862	6	0.05	17	0.398	17	0.896	17	0	2	
68		min	0	2	0	2	-0.058	11	-0.462	11	-1.039	11	-45.092	6	
69	5	max	0.898	6	0	2	0.05	17	0.398	17	1.195	17	0	2	
70		min	0	2	-0.254	6	-0.058	11	-0.462	11	-1.386	11	-46.894	6	
71	M8	1	max	0.898	6	0.254	6	0.058	11	0.462	11	1.195	17	0	2
72		min	0	2	0	2	-0.05	17	-0.398	17	-1.386	11	-46.894	6	
73	2	max	1.27	6	0	2	0.058	11	0.462	11	0.896	17	0	2	
74		min	0	2	-0.862	6	-0.05	17	-0.398	17	-1.039	11	-45.092	6	
75	3	max	1.642	6	0	2	0.058	11	0.462	11	0.597	17	0	2	
76		min	0	2	-1.977	6	-0.05	17	-0.398	17	-0.693	11	-36.675	6	
77	4	max	2.013	6	0	2	0.058	11	0.462	11	0.299	17	0	2	
78		min	0	2	-3.093	6	-0.05	17	-0.398	17	-0.346	11	-21.645	6	
79	5	max	2.385	6	0	2	0.058	11	0.462	11	0	19	0	19	
80		min	0	2	-4.208	6	-0.05	17	-0.398	17	0	1	0	1	
81	M9	1	max	3.436	6	3.867	6	0.056	9	0.443	9	0	19	0	19
82		min	0	2	0	2	-0.053	19	-0.416	19	0	1	0	1	
83	2	max	3.065	6	2.751	6	0.056	9	0.443	9	0.332	9	0	2	
84		min	0	2	0	2	-0.053	19	-0.416	19	-0.312	19	-19.62	6	
85	3	max	2.693	6	1.636	6	0.056	9	0.443	9	0.664	9	0	2	
86		min	0	2	0	2	-0.053	19	-0.416	19	-0.624	19	-32.625	6	

**Envelope Member Section Forces (Continued)**

Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[k-ft]	LC	z-z Moment[k-ft]	LC	
87		4	max	2.321	6	0.52	6	0.056	9	0.443	9	0.996	9	0	2
88			min	0	2	0	2	-0.053	19	-0.416	19	-0.936	19	-39.017	6
89		5	max	1.949	6	0	2	0.056	9	0.443	9	1.328	9	0	2
90			min	0	2	-0.595	6	-0.053	19	-0.416	19	-1.248	19	-38.795	6
91	M10	1	max	1.949	6	0.595	6	0.053	19	0.416	19	1.328	9	0	2
92			min	0	2	0	2	-0.056	9	-0.443	9	-1.248	19	-38.795	6
93		2	max	2.321	6	0	2	0.053	19	0.416	19	0.996	9	0	2
94			min	0	2	-0.52	6	-0.056	9	-0.443	9	-0.936	19	-39.017	6
95		3	max	2.693	6	0	2	0.053	19	0.416	19	0.664	9	0	2
96			min	0	2	-1.636	6	-0.056	9	-0.443	9	-0.624	19	-32.625	6
97		4	max	3.065	6	0	2	0.053	19	0.416	19	0.332	9	0	2
98			min	0	2	-2.751	6	-0.056	9	-0.443	9	-0.312	19	-19.62	6
99		5	max	3.436	6	0	2	0.053	19	0.416	19	0	19	0	19
100			min	0	2	-3.867	6	-0.056	9	-0.443	9	0	1	0	1
101	M11	1	max	1.331	6	2.657	6	0.06	9	0.477	9	0	19	0	19
102			min	0	2	0	2	-0.05	19	-0.397	19	0	1	0	1
103		2	max	1.1	6	1.964	6	0.06	9	0.477	9	0.358	9	0	2
104			min	0	2	0	2	-0.05	19	-0.397	19	-0.298	19	-13.7	6
105		3	max	0.869	6	1.27	6	0.06	9	0.477	9	0.715	9	0	2
106			min	0	2	0	2	-0.05	19	-0.397	19	-0.595	19	-23.287	6
107		4	max	0.638	6	0.576	6	0.06	9	0.477	9	1.073	9	0	2
108			min	0	2	0	2	-0.05	19	-0.397	19	-0.893	19	-28.761	6
109		5	max	0.495	11	0	2	0.06	9	0.477	9	1.43	9	0	2
110			min	0	2	-0.152	11	-0.05	19	-0.397	19	-1.19	19	-30.123	6
111	M12	1	max	0.495	11	0.152	11	0.05	19	0.397	19	1.43	9	0	2
112			min	0	2	0	2	-0.06	9	-0.477	9	-1.19	19	-30.123	6
113		2	max	0.638	6	0	2	0.05	19	0.397	19	1.073	9	0	2
114			min	0	2	-0.576	6	-0.06	9	-0.477	9	-0.893	19	-28.761	6
115		3	max	0.869	6	0	2	0.05	19	0.397	19	0.715	9	0	2
116			min	0	2	-1.27	6	-0.06	9	-0.477	9	-0.595	19	-23.287	6
117		4	max	1.1	6	0	2	0.05	19	0.397	19	0.358	9	0	2
118			min	0	2	-1.964	6	-0.06	9	-0.477	9	-0.298	19	-13.7	6
119		5	max	1.331	6	0	2	0.05	19	0.397	19	0	19	0	19
120			min	0	2	-2.657	6	-0.06	9	-0.477	9	0	1	0	1
121	M14	1	max	0.172	17	0.022	11	0	19	0	8	0	19	0	19
122			min	-0.258	15	0	2	0	1	0	10	0	1	0	1
123		2	max	0.172	17	0.011	11	0	19	0	8	0	19	0	2
124			min	-0.258	15	0	2	0	1	0	10	0	1	-0.021	1
125		3	max	0.172	17	0	19	0	19	0	8	0	19	0	2
126			min	-0.258	15	0	1	0	1	0	10	0	1	-0.028	1
127		4	max	0.172	17	0	2	0	19	0	8	0	19	0	2
128			min	-0.258	15	-0.011	6	0	1	0	10	0	1	-0.021	1
129		5	max	0.172	17	0	2	0	19	0	8	0	19	0	19
130			min	-0.258	15	-0.022	6	0	1	0	10	0	1	0	1
131	M15	1	max	0.213	11	0.022	11	0	19	0	10	0	19	0	19
132			min	-0.187	17	0	2	0	1	0	8	0	1	0	1
133		2	max	0.213	11	0.011	11	0	19	0	10	0	19	0	2
134			min	-0.187	17	0	2	0	1	0	8	0	1	-0.021	1
135		3	max	0.213	11	0	19	0	19	0	10	0	19	0	2
136			min	-0.187	17	0	1	0	1	0	8	0	1	-0.028	11
137		4	max	0.213	11	0	2	0	19	0	10	0	19	0	2
138			min	-0.187	17	-0.011	6	0	1	0	8	0	1	-0.021	11
139		5	max	0.213	11	0	2	0	19	0	10	0	19	0	19
140			min	-0.187	17	-0.022	6	0	1	0	8	0	1	0	1
141	M16	1	max	0.326	11	0.022	6	0	19	0	10	0	19	0	19

**Envelope Member Section Forces (Continued)**

Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[k-ft]	LC	z-z Moment[k-ft]	LC	
142		min	-0.286	17	0	2	0	1	0	8	0	1	0	1	
143	2	max	0.326	11	0.011	6	0	19	0	10	0	19	0	2	
144		min	-0.286	17	0	2	0	1	0	8	0	1	-0.021	6	
145	3	max	0.326	11	0	19	0	19	0	10	0	19	0	2	
146		min	-0.286	17	0	1	0	1	0	8	0	1	-0.028	6	
147	4	max	0.326	11	0	2	0	19	0	10	0	19	0	2	
148		min	-0.286	17	-0.011	1	0	1	0	8	0	1	-0.021	6	
149	5	max	0.326	11	0	2	0	19	0	10	0	19	0	19	
150		min	-0.286	17	-0.022	1	0	1	0	8	0	1	0	1	
151	M17	1	max	0.425	11	0.022	6	0	19	0	8	0	19	0	19
152		min	-0.393	17	0	2	0	1	0	10	0	1	0	1	
153	2	max	0.425	11	0.011	6	0	19	0	8	0	19	0	2	
154		min	-0.393	17	0	2	0	1	0	10	0	1	-0.021	6	
155	3	max	0.425	11	0	19	0	19	0	8	0	19	0	2	
156		min	-0.393	17	0	1	0	1	0	10	0	1	-0.028	6	
157	4	max	0.425	11	0	2	0	19	0	8	0	19	0	2	
158		min	-0.393	17	-0.011	11	0	1	0	10	0	1	-0.021	6	
159	5	max	0.425	11	0	2	0	19	0	8	0	19	0	19	
160		min	-0.393	17	-0.022	11	0	1	0	10	0	1	0	1	
161	M20	1	max	23.798	6	3.532	16	3.318	11	2.204	18	32.834	9	35.32	16
162		min	0	2	-6.891	14	-3.283	9	-2.864	12	-33.175	11	-68.913	14	
163	2	max	23.648	6	3.532	16	3.318	11	2.204	18	24.625	9	26.49	16	
164		min	0	2	-6.891	14	-3.283	9	-2.864	12	-24.881	11	-51.685	14	
165	3	max	23.498	6	3.532	16	3.318	11	2.204	18	16.417	9	17.66	16	
166		min	0	2	-6.891	14	-3.283	9	-2.864	12	-16.588	11	-34.456	14	
167	4	max	23.348	6	3.532	16	3.318	11	2.204	18	8.208	9	8.83	16	
168		min	0	2	-6.891	14	-3.283	9	-2.864	12	-8.294	11	-17.228	14	
169	5	max	23.198	6	3.532	16	3.318	11	2.204	18	0	19	0	19	
170		min	0	2	-6.891	14	-3.283	9	-2.864	12	0	1	0	1	
171	M21	1	max	23.798	6	6.891	12	3.318	11	2.864	14	32.834	9	68.913	12
172		min	0	2	-3.532	18	-3.283	9	-2.204	16	-33.175	11	-35.32	18	
173	2	max	23.648	6	6.891	12	3.318	11	2.864	14	24.625	9	51.685	12	
174		min	0	2	-3.532	18	-3.283	9	-2.204	16	-24.881	11	-26.49	18	
175	3	max	23.498	6	6.891	12	3.318	11	2.864	14	16.417	9	34.456	12	
176		min	0	2	-3.532	18	-3.283	9	-2.204	16	-16.588	11	-17.66	18	
177	4	max	23.348	6	6.891	12	3.318	11	2.864	14	8.208	9	17.228	12	
178		min	0	2	-3.532	18	-3.283	9	-2.204	16	-8.294	11	-8.83	18	
179	5	max	23.198	6	6.891	12	3.318	11	2.864	14	0	19	0	19	
180		min	0	2	-3.532	18	-3.283	9	-2.204	16	0	1	0	1	
181	M22	1	max	8.351	6	3.954	12	3.318	11	1.805	18	32.837	9	39.544	12
182		min	0	2	-1.376	18	-3.284	9	-6.09	12	-33.177	11	-13.761	18	
183	2	max	8.201	6	3.954	12	3.318	11	1.805	18	24.628	9	29.658	12	
184		min	0	2	-1.376	18	-3.284	9	-6.09	12	-24.883	11	-10.321	18	
185	3	max	8.051	6	3.954	12	3.318	11	1.805	18	16.419	9	19.772	12	
186		min	0	2	-1.376	18	-3.284	9	-6.09	12	-16.588	11	-6.881	18	
187	4	max	7.901	6	3.954	12	3.318	11	1.805	18	8.209	9	9.886	12	
188		min	0	2	-1.376	18	-3.284	9	-6.09	12	-8.294	11	-3.44	18	
189	5	max	7.751	6	3.954	12	3.318	11	1.805	18	0	19	0	19	
190		min	0	2	-1.376	18	-3.284	9	-6.09	12	0	1	0	1	
191	M23	1	max	8.351	6	1.376	16	3.318	11	6.09	14	32.837	9	13.761	16
192		min	0	2	-3.954	14	-3.284	9	-1.805	16	-33.177	11	-39.544	14	
193	2	max	8.201	6	1.376	16	3.318	11	6.09	14	24.628	9	10.321	16	
194		min	0	2	-3.954	14	-3.284	9	-1.805	16	-24.883	11	-29.658	14	
195	3	max	8.051	6	1.376	16	3.318	11	6.09	14	16.419	9	6.881	16	
196		min	0	2	-3.954	14	-3.284	9	-1.805	16	-16.588	11	-19.772	14	

**Envelope Member Section Forces (Continued)**

Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[k-ft]	LC	z-z Moment[k-ft]	LC	
197		4	max	7.901	6	1.376	16	3.318	11	6.09	14	8.209	9	3.44	16
198			min	0	2	-3.954	14	-3.284	9	-1.805	16	-8.294	11	-9.886	14
199		5	max	7.751	6	1.376	16	3.318	11	6.09	14	0	19	0	19
200			min	0	2	-3.954	14	-3.284	9	-1.805	16	0	1	0	1
201	M24	1	max	0.202	15	10.327	6	0	2	0	19	4.341	14	54.518	6
202			min	-0.09	17	0	2	-1.576	14	0	1	-1.35	16	0	2
203		2	max	0.202	15	10.267	6	0	2	0	19	3.099	10	41.646	6
204			min	-0.09	17	0	2	-1.576	14	0	1	-1.413	16	0	2
205		3	max	0.202	15	10.207	6	0	2	0	19	1.911	10	28.85	6
206			min	-0.09	17	0	2	-1.576	14	0	1	-2.156	12	0	2
207		4	max	0.202	15	10.146	6	0	2	0	19	0.921	18	16.129	6
208			min	-0.09	17	0	2	-1.576	14	0	1	-3.491	12	0	2
209		5	max	0.202	15	10.086	6	0	2	0	19	0.284	17	4.06	11
210			min	-0.09	17	0	2	-1.576	14	0	1	-5.145	6	0	2
211	M25	1	max	0.09	17	5.36	6	0.159	16	0	19	1.521	18	5.816	11
212			min	-0.072	19	0	2	-0.859	14	0	1	-4.843	12	0	2
213		2	max	0.09	17	5.3	6	0.159	16	0	19	0.908	18	2.615	11
214			min	-0.072	19	0	2	-0.859	14	0	1	-5.282	12	-2.661	13
215		3	max	0.09	17	5.24	6	0.159	16	0	19	0.295	18	0.169	19
216			min	-0.072	19	0	2	-0.859	14	0	1	-5.802	6	-9.064	6
217		4	max	0.09	17	5.179	6	0.159	16	0	19	0	2	0	2
218			min	-0.072	19	0	2	-0.859	14	0	1	-6.695	6	-15.576	6
219		5	max	0.09	17	5.119	6	0.159	16	0	19	0	2	0	2
220			min	-0.072	19	0	2	-0.859	14	0	1	-7.587	6	-22.013	6
221	M26	1	max	0.139	17	0.588	11	0.438	12	0	19	0	2	0	2
222			min	-0.126	19	0	2	-0.289	18	0	1	-7.616	6	-21.927	6
223		2	max	0.139	17	0.528	11	0.438	12	0	19	0	2	0	2
224			min	-0.126	19	0	2	-0.289	18	0	1	-7.335	6	-22.38	6
225		3	max	0.139	17	0.467	11	0.438	12	0	19	0	2	0	2
226			min	-0.126	19	-0.028	17	-0.289	18	0	1	-7.054	6	-22.758	6
227		4	max	0.139	17	0.407	11	0.438	12	0	19	0	2	0	2
228			min	-0.126	19	-0.064	17	-0.289	18	0	1	-6.773	6	-23.06	6
229		5	max	0.139	17	0.346	11	0.438	12	0	19	0	2	0	2
230			min	-0.126	19	-0.1	17	-0.289	18	0	1	-6.492	6	-23.287	6
231	M27	1	max	0.193	17	0	2	2.272	6	0	19	0	2	0	2
232			min	-0.177	19	-4.575	6	0	2	0	1	-6.474	6	-23.34	6
233		2	max	0.193	17	0	2	2.272	6	0	19	0.768	16	0	2
234			min	-0.177	19	-4.635	6	0	2	0	1	-4.153	14	-17.584	6
235		3	max	0.193	17	0	2	2.272	6	0	19	1.676	16	0	2
236			min	-0.177	19	-4.695	6	0	2	0	1	-2.203	10	-11.752	6
237		4	max	0.193	17	0	2	2.272	6	0	19	3.437	12	0	2
238			min	-0.177	19	-4.756	6	0	2	0	1	-1.96	18	-5.845	6
239		5	max	0.193	17	0	2	2.272	6	0	19	6.091	12	0.452	9
240			min	-0.177	19	-4.816	6	0	2	0	1	-1.864	18	-0.376	19
241	M30	1	max	0.202	15	10.327	6	1.576	12	0	19	1.35	18	54.518	6
242			min	-0.09	17	0	2	0	2	0	1	-4.341	12	0	2
243		2	max	0.202	15	10.267	6	1.576	12	0	19	1.413	18	41.646	6
244			min	-0.09	17	0	2	0	2	0	1	-3.099	8	0	2
245		3	max	0.202	15	10.207	6	1.576	12	0	19	2.156	14	28.85	6
246			min	-0.09	17	0	2	0	2	0	1	-1.911	8	0	2
247		4	max	0.202	15	10.146	6	1.576	12	0	19	3.491	14	16.129	6
248			min	-0.09	17	0	2	0	2	0	1	-0.921	16	0	2
249		5	max	0.202	15	10.086	6	1.576	12	0	19	5.145	6	4.06	11
250			min	-0.09	17	0	2	0	2	0	1	-0.284	17	0	2
251	M31	1	max	0.09	17	5.36	6	0.859	12	0	19	4.843	14	5.816	11

**Envelope Member Section Forces (Continued)**

Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[k-ft]	LC	z-z Moment[k-ft]	LC	
252		min	-0.072	19	0	2	-0.159	18	0	1	-1.521	16	0	2	
253	2	max	0.09	17	5.3	6	0.859	12	0	19	5.282	14	2.615	11	
254		min	-0.072	19	0	2	-0.159	18	0	1	-0.908	16	-2.661	13	
255	3	max	0.09	17	5.24	6	0.859	12	0	19	5.802	6	0.169	19	
256		min	-0.072	19	0	2	-0.159	18	0	1	-0.295	16	-9.064	6	
257	4	max	0.09	17	5.179	6	0.859	12	0	19	6.695	6	0	2	
258		min	-0.072	19	0	2	-0.159	18	0	1	0	2	-15.576	6	
259	5	max	0.09	17	5.119	6	0.859	12	0	19	7.587	6	0	2	
260		min	-0.072	19	0	2	-0.159	18	0	1	0	2	-22.013	6	
261	M32	1	max	0.139	17	0.588	11	0.289	16	0	19	7.616	6	0	2
262		min	-0.126	19	0	2	-0.438	14	0	1	0	2	-21.927	6	
263	2	max	0.139	17	0.528	11	0.289	16	0	19	7.335	6	0	2	
264		min	-0.126	19	0	2	-0.438	14	0	1	0	2	-22.38	6	
265	3	max	0.139	17	0.467	11	0.289	16	0	19	7.054	6	0	2	
266		min	-0.126	19	-0.028	17	-0.438	14	0	1	0	2	-22.758	6	
267	4	max	0.139	17	0.407	11	0.289	16	0	19	6.773	6	0	2	
268		min	-0.126	19	-0.064	17	-0.438	14	0	1	0	2	-23.06	6	
269	5	max	0.139	17	0.346	11	0.289	16	0	19	6.492	6	0	2	
270		min	-0.126	19	-0.1	17	-0.438	14	0	1	0	2	-23.287	6	
271	M33	1	max	0.193	17	0	0	2	0	19	6.474	6	0	2	
272		min	-0.177	19	-4.575	6	-2.272	6	0	1	0	2	-23.34	6	
273	2	max	0.193	17	0	2	0	2	0	19	4.153	12	0	2	
274		min	-0.177	19	-4.635	6	-2.272	6	0	1	-0.768	18	-17.584	6	
275	3	max	0.193	17	0	2	0	2	0	19	2.203	8	0	2	
276		min	-0.177	19	-4.695	6	-2.272	6	0	1	-1.676	18	-11.752	6	
277	4	max	0.193	17	0	2	0	2	0	19	1.96	16	0	2	
278		min	-0.177	19	-4.756	6	-2.272	6	0	1	-3.437	14	-5.845	6	
279	5	max	0.193	17	0	2	0	2	0	19	1.864	16	0.452	9	
280		min	-0.177	19	-4.816	6	-2.272	6	0	1	-6.091	14	-0.376	19	
281	M31A	1	max	0.089	13	0	0.806	6	0	19	0.082	19	0.246	19	
282		min	-0.033	19	-2.936	6	0	2	0	1	-0.221	13	-0.662	13	
283	2	max	0.089	13	0	2	0.806	6	0	19	0.865	6	3.282	6	
284		min	-0.033	19	-2.997	6	0	2	0	1	-0.088	17	0	2	
285	3	max	0.089	13	0	2	0.806	6	0	19	1.872	6	7.065	6	
286		min	-0.033	19	-3.057	6	0	2	0	1	-0.008	17	0	2	
287	4	max	0.089	13	0	2	0.806	6	0	19	2.879	6	10.924	6	
288		min	-0.033	19	-3.117	6	0	2	0	1	0	2	0	2	
289	5	max	0.089	13	0	2	0.806	6	0	19	3.885	6	14.858	6	
290		min	-0.033	19	-3.178	6	0	2	0	1	0	2	0	2	
291	M32A	1	max	0.165	13	0	0	2	0	19	3.764	6	14.495	6	
292		min	-0.067	19	-7.903	6	-1.002	6	0	1	-0.011	17	0	2	
293	2	max	0.165	13	0	2	0	2	0	19	2.512	6	24.411	6	
294		min	-0.067	19	-7.964	6	-1.002	6	0	1	-0.386	9	0	2	
295	3	max	0.165	13	0	2	0	2	0	19	1.26	6	34.404	6	
296		min	-0.067	19	-8.024	6	-1.002	6	0	1	-0.908	9	0	2	
297	4	max	0.165	13	0	2	0	2	0	19	0.007	6	44.472	6	
298		min	-0.067	19	-8.085	6	-1.002	6	0	1	-1.43	9	0	2	
299	5	max	0.165	13	0	2	0	2	0	19	0	2	54.615	6	
300		min	-0.067	19	-8.145	6	-1.002	6	0	1	-1.951	9	0	2	
301	M33A	1	max	0.089	13	0	0	2	0	19	0.221	13	0.246	19	
302		min	-0.033	19	-2.936	6	-0.806	6	0	1	-0.082	19	-0.662	13	
303	2	max	0.089	13	0	2	0	2	0	19	0.088	17	3.282	6	
304		min	-0.033	19	-2.997	6	-0.806	6	0	1	-0.865	6	0	2	
305	3	max	0.089	13	0	2	0	2	0	19	0.008	17	7.065	6	
306		min	-0.033	19	-3.057	6	-0.806	6	0	1	-1.872	6	0	2	

**Envelope Member Section Forces (Continued)**

Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[k-ft]	LC	z-z Moment[k-ft]	LC	
307		4	max	0.089	13	0	2	0	2	0	19	0	2	10.924	6
308			min	-0.033	19	-3.117	6	-0.806	6	0	1	-2.879	6	0	2
309		5	max	0.089	13	0	2	0	2	0	19	0	2	14.858	6
310			min	-0.033	19	-3.178	6	-0.806	6	0	1	-3.885	6	0	2
311	M34	1	max	0.165	13	0	2	1.002	6	0	19	0.011	17	14.495	6
312			min	-0.067	19	-7.903	6	0	2	0	1	-3.764	6	0	2
313		2	max	0.165	13	0	2	1.002	6	0	19	0.386	9	24.411	6
314			min	-0.067	19	-7.964	6	0	2	0	1	-2.512	6	0	2
315		3	max	0.165	13	0	2	1.002	6	0	19	0.908	9	34.404	6
316			min	-0.067	19	-8.024	6	0	2	0	1	-1.26	6	0	2
317		4	max	0.165	13	0	2	1.002	6	0	19	1.43	9	44.472	6
318			min	-0.067	19	-8.085	6	0	2	0	1	-0.007	6	0	2
319		5	max	0.165	13	0	2	1.002	6	0	19	1.951	9	54.615	6
320			min	-0.067	19	-8.145	6	0	2	0	1	0	2	0	2
321	M35	1	max	0.416	9	0.022	11	0	19	0.001	8	0	19	0	19
322			min	-0.389	19	0	2	0	1	-0.001	10	0	1	0	1
323		2	max	0.416	9	0.011	11	0	19	0.001	8	0	19	0	2
324			min	-0.389	19	0	2	0	1	-0.001	10	0	1	-0.021	1
325		3	max	0.416	9	0	19	0	19	0.001	8	0	19	0	2
326			min	-0.389	19	0	1	0	1	-0.001	10	0	1	-0.028	1
327		4	max	0.416	9	0	2	0	19	0.001	8	0	19	0	2
328			min	-0.389	19	-0.011	6	0	1	-0.001	10	0	1	-0.021	1
329		5	max	0.416	9	0	2	0	19	0.001	8	0	19	0	19
330			min	-0.389	19	-0.022	6	0	1	-0.001	10	0	1	0	1
331	M36	1	max	0.283	17	0.022	11	0	19	0.001	8	0	19	0	19
332			min	-0.333	11	0	2	0	1	-0.001	10	0	1	0	1
333		2	max	0.283	17	0.011	11	0	19	0.001	8	0	19	0	2
334			min	-0.333	11	0	2	0	1	-0.001	10	0	1	-0.021	11
335		3	max	0.283	17	0	19	0	19	0.001	8	0	19	0	2
336			min	-0.333	11	0	1	0	1	-0.001	10	0	1	-0.028	11
337		4	max	0.283	17	0	2	0	19	0.001	8	0	19	0	2
338			min	-0.333	11	-0.011	6	0	1	-0.001	10	0	1	-0.021	11
339		5	max	0.283	17	0	2	0	19	0.001	8	0	19	0	19
340			min	-0.333	11	-0.022	6	0	1	-0.001	10	0	1	0	1
341	M37	1	max	3.209	6	3.94	6	0.081	13	0.643	13	0	19	0	19
342			min	0	2	0	2	-0.036	19	-0.281	19	0	1	0	1
343		2	max	2.837	6	2.825	6	0.081	13	0.643	13	0.483	13	0	2
344			min	0	2	0	2	-0.036	19	-0.281	19	-0.21	19	-20.057	6
345		3	max	2.465	6	1.709	6	0.081	13	0.643	13	0.965	13	0	2
346			min	0	2	0	2	-0.036	19	-0.281	19	-0.421	19	-33.5	6
347		4	max	2.093	6	0.594	6	0.081	13	0.643	13	1.448	13	0	2
348			min	0	2	0	2	-0.036	19	-0.281	19	-0.631	19	-40.329	6
349		5	max	1.722	6	0	2	0.081	13	0.643	13	1.93	13	0	2
350			min	0	2	-0.521	6	-0.036	19	-0.281	19	-0.842	19	-40.544	6
351	M38	1	max	1.722	6	0.521	6	0.036	19	0.281	19	1.93	13	0	2
352			min	0	2	0	2	-0.081	13	-0.643	13	-0.842	19	-40.544	6
353		2	max	2.093	6	0	2	0.036	19	0.281	19	1.448	13	0	2
354			min	0	2	-0.594	6	-0.081	13	-0.643	13	-0.631	19	-40.329	6
355		3	max	2.465	6	0	2	0.036	19	0.281	19	0.965	13	0	2
356			min	0	2	-1.709	6	-0.081	13	-0.643	13	-0.421	19	-33.5	6
357		4	max	2.837	6	0	2	0.036	19	0.281	19	0.483	13	0	2
358			min	0	2	-2.825	6	-0.081	13	-0.643	13	-0.21	19	-20.057	6
359		5	max	3.209	6	0	2	0.036	19	0.281	19	0	19	0	19
360			min	0	2	-3.94	6	-0.081	13	-0.643	13	0	1	0	1



**Envelope Maximum Member Section Forces**

Member		Axial[k]	Loc[ft]	LCy	Shear[k]	Loc[ft]	LCz	Shear[k]	Loc[ft]	LC Torque[k-ft]	Loc[ft]	LCy-y Moment[k-ft]	Loc[ft]	LCz-z Moment[k-ft]	Loc[ft]	LC				
1	M1	max	0.37	0	11	3.037	0	6	0.088	23.717	13	0.698	23.717	13	2.094	23.717	13	0	23.717	2
2		min	-0.761	23.717	6	0	0	2	-0.033	0	19	-0.26	0	19	-0.779	23.717	19	-39.119	23.717	6
3	M2	max	0.37	23.717	11	0	23.717	2	0.033	23.717	19	0.26	23.717	19	2.094	0	13	0	23.717	19
4		min	-0.761	0	6	-3.037	23.717	6	-0.088	0	13	-0.698	0	13	-0.779	0	19	-39.119	0	6
5	M3	max	2.755	0	6	4.088	0	6	0.046	23.717	19	0.364	23.717	19	1.092	23.717	19	0	23.717	2
6		min	0	0	2	-0.374	23.717	6	-0.061	0	9	-0.48	0	9	-1.439	23.717	9	-44.424	21.741	6
7	M4	max	2.755	23.717	6	0.374	0	6	0.061	23.717	9	0.48	23.717	9	1.092	0	19	0	23.717	19
8		min	0	0	2	-4.088	23.717	6	-0.046	0	19	-0.364	0	19	-1.439	0	9	-44.424	1.976	6
9	M5	max	2.286	0	6	4.239	0	6	0.181	23.717	17	0.69	23.717	17	2.998	0	15	0	23.717	2
10		min	0	0	2	-0.223	23.717	6	-0.234	0	11	-0.864	0	11	-2.591	23.717	11	-47.763	22.482	6
11	M6	max	2.286	23.717	6	0.223	0	6	0.234	23.717	11	0.864	23.717	11	2.998	23.717	15	0	23.717	19
12		min	0	0	2	-4.239	23.717	6	-0.181	0	17	-0.69	0	17	-2.591	0	11	-47.763	1.235	6
13	M7	max	2.385	0	6	4.208	0	6	0.05	23.717	17	0.398	23.717	17	1.195	23.717	17	0	23.717	2
14		min	0	0	2	-0.254	23.717	6	-0.058	0	11	-0.462	0	11	-1.386	23.717	11	-47.064	22.482	6
15	M8	max	2.385	23.717	6	0.254	0	6	0.058	23.717	11	0.462	23.717	11	1.195	0	17	0	23.717	19
16		min	0	0	2	-4.208	23.717	6	-0.05	0	17	-0.398	0	17	-1.386	0	11	-47.064	1.235	6
17	M9	max	3.436	0	6	3.867	0	6	0.056	23.717	9	0.443	23.717	9	1.328	23.717	9	0	23.717	2
18		min	0	0	2	-0.595	23.717	6	-0.053	0	19	-0.416	0	19	-1.248	23.717	19	-39.736	20.505	6
19	M10	max	3.436	23.717	6	0.595	0	6	0.053	23.717	19	0.416	23.717	19	1.328	0	9	0	23.717	19
20		min	0	0	2	-3.867	23.717	6	-0.056	0	9	-0.443	0	9	-1.248	0	19	-39.736	3.212	6
21	M11	max	1.331	0	6	2.657	0	6	0.06	23.717	9	0.477	23.717	9	1.43	23.717	9	0	23.717	2
22		min	0	0	2	-0.152	23.717	11	-0.05	0	19	-0.397	0	19	-1.19	23.717	19	-30.182	22.729	6
23	M12	max	1.331	23.717	6	0.152	0	11	0.05	23.717	19	0.397	23.717	19	1.43	0	9	0	23.717	19
24		min	0	0	2	-2.657	23.717	6	-0.06	0	9	-0.477	0	9	-1.19	0	19	-30.182	0.988	6
25	M14	max	0.172	5	17	0.022	0	11	0	5	19	0	5	8	0	5	19	0	5	19
26		min	-0.258	0	15	-0.022	5	6	0	0	1	0	0	10	0	0	1	-0.028	2.5	1
27	M15	max	0.213	5	11	0.022	0	11	0	5	19	0	5	10	0	5	19	0	5	19
28		min	-0.187	0	17	-0.022	5	6	0	0	1	0	0	8	0	0	1	-0.028	2.5	11
29	M16	max	0.326	5	11	0.022	0	6	0	5	19	0	5	10	0	5	19	0	5	19
30		min	-0.286	0	17	-0.022	5	1	0	0	1	0	0	8	0	0	1	-0.028	2.5	6
31	M17	max	0.425	5	11	0.022	0	6	0	5	19	0	5	8	0	5	19	0	5	19
32		min	-0.393	0	17	-0.022	5	11	0	0	1	0	0	10	0	0	1	-0.028	2.5	6
33	M20	max	23.798	0	6	3.532	10	16	3.318	10	11	2.204	10	18	32.834	0	9	35.32	0	16
34		min	0	0	2	-6.891	0	14	-3.283	0	9	-2.864	0	12	-33.175	0	11	-68.913	0	14
35	M21	max	23.798	0	6	6.891	10	12	3.318	10	11	2.864	10	14	32.834	0	9	68.913	0	12
36		min	0	0	2	-3.532	0	18	-3.283	0	9	-2.204	0	16	-33.175	0	11	-35.32	0	18
37	M22	max	8.351	0	6	3.954	10	12	3.318	10	11	1.805	10	18	32.837	0	9	39.544	0	12
38		min	0	0	2	-1.376	0	18	-3.284	0	9	-6.09	0	12	-33.177	0	11	-13.761	0	18
39	M23	max	8.351	0	6	1.376	10	16	3.318	10	11	6.09	10	14	32.837	0	9	13.761	0	16
40		min	0	0	2	-3.954	0	14	-3.284	0	9	-1.805	0	16	-33.177	0	11	-39.544	0	14
41	M24	max	0.202	5	15	10.327	0	6	0	5	2	0	5	19	4.341	0	14	54.518	0	6
42		min	-0.09	0	17	0	0	2	-1.576	0	14	0	0	1	-5.145	5	6	0	0	2
43	M25	max	0.09	5	17	5.36	0	6	0.159	5	16	0	5	19	1.521	0	18	5.816	0	11
44		min	-0.072	0	19	0	0	2	-0.859	0	14	0	0	1	-7.587	5	6	-22.013	5	6
45	M26	max	0.139	5	17	0.588	0	11	0.438	5	12	0	5	19	0	5	2	0	5	2
46		min	-0.126	0	19	-0.1	5	17	-0.289	0	18	0	0	1	-7.616	0	6	-23.287	5	6
47	M27	max	0.193	5	17	0	5	2	2.272	5	6	0	5	19	6.091	5	12	0.452	5	9
48		min	-0.177	0	19	-4.816	5	6	0	0	2	0	0	1	-6.474	0	6	-23.34	0	6
49	M30	max	0.202	5	15	10.327	0	6	1.576	5	12	0	5	19	5.145	5	6	54.518	0	6
50		min	-0.09	0	17	0	0	2	0	0	2	0	0	1	-4.341	0	12	0	0	2
51	M31	max	0.09	5	17	5.36	0	6	0.859	5	12	0	5	19	7.587	5	6	5.816	0	11
52		min	-0.072	0	19	0	0	2	-0.159	0	18	0	0	1	-1.521	0	16	-22.013	5	6
53	M32	max	0.139	5	17	0.588	0	11	0.289	5	16	0	5	19	7.616	0	6	0	5	2
54		min	-0.126	0	19	-0.1	5	17	-0.438	0	14	0	0	1	0	0	2	-23.287	5	6
55	M33	max	0.193	5	17	0	5	2	0	5	2	0	5	19	6.474	0	6	0.452	5	9

**Envelope Maximum Member Section Forces (Continued)**

Member	Axial[k]	Loc[ft]	LCy	Shear[k]	Loc[ft]	LCz	Shear[k]	Loc[ft]	LC	Torque[k-ft]	Loc[ft]	LCy-y	Moment[k-ft]	Loc[ft]	LCz-z	Moment[k-ft]	Loc[ft]	LC		
56	min	-0.177	0	19	-4.816	5	6	-2.272	0	6	0	0	1	-6.091	5	14	-23.34	0	6	
57	M31A	max	0.089	5	13	0	5	2	0.806	5	6	0	5	19	3.885	5	6	14.858	5	6
58		min	-0.033	0	19	-3.178	5	6	0	0	2	0	0	1	-0.221	0	13	-0.662	0	13
59	M32A	max	0.165	5	13	0	5	2	0	5	2	0	5	19	3.764	0	6	54.615	5	6
60		min	-0.067	0	19	-8.145	5	6	-1.002	0	6	0	0	1	-1.951	5	9	0	0	2
61	M33A	max	0.089	5	13	0	5	2	0	5	2	0	5	19	0.221	0	13	14.858	5	6
62		min	-0.033	0	19	-3.178	5	6	-0.806	0	6	0	0	1	-3.885	5	6	-0.662	0	13
63	M34	max	0.165	5	13	0	5	2	1.002	5	6	0	5	19	1.951	5	9	54.615	5	6
64		min	-0.067	0	19	-8.145	5	6	0	0	2	0	0	1	-3.764	0	6	0	0	2
65	M35	max	0.416	5	9	0.022	0	11	0	5	19	0.001	5	8	0	5	19	0	5	19
66		min	-0.389	0	19	-0.022	5	6	0	0	1	-0.001	0	10	0	0	1	-0.028	2.5	1
67	M36	max	0.283	5	17	0.022	0	11	0	5	19	0.001	5	8	0	5	19	0	5	19
68		min	-0.333	0	11	-0.022	5	6	0	0	1	-0.001	0	10	0	0	1	-0.028	2.5	11
69	M37	max	3.209	0	6	3.94	0	6	0.081	23.717	13	0.643	23.717	13	1.93	23.717	13	0	23.717	2
70		min	0	0	2	-0.521	23.717	6	-0.036	0	19	-0.281	0	19	-0.842	23.717	19	-41.266	21	6
71	M38	max	3.209	23.717	6	0.521	0	6	0.036	23.717	19	0.281	23.717	19	1.93	0	13	0	23.717	19
72		min	0	0	2	-3.94	23.717	6	-0.081	0	13	-0.643	0	13	-0.842	0	19	-41.266	2.718	6

**Envelope Member End Reactions**

Member	Member End	Axial[k]	LC	y	Shear[k]	LC	z	Shear[k]	LC	Torque[k-ft]	LC	y-y	Moment[k-ft]	LC	z-z	Moment[k-ft]	LC
1	M1	I	max	0.37	11	3.037	6	0.088	13	0.698	13	0	19	0	19	0	19
2			min	0	2	0	2	-0.033	19	-0.26	19	0	1	0	1	0	1
3		J	max	0	2	0.262	6	0.088	13	0.698	13	2.094	13	0	2	0	2
4			min	-0.761	6	0	2	-0.033	19	-0.26	19	-0.779	19	-39.119	6	-39.119	6
5	M2	I	max	0	2	0	2	0.033	19	0.26	19	2.094	13	0	2	0	2
6			min	-0.761	6	-0.262	6	-0.088	13	-0.698	13	-0.779	19	-39.119	6	-39.119	6
7		J	max	0.37	11	0	2	0.033	19	0.26	19	0	19	0	19	0	19
8			min	0	2	-3.037	6	-0.088	13	-0.698	13	0	1	0	1	0	1
9	M3	I	max	2.755	6	4.088	6	0.046	19	0.364	19	0	19	0	19	0	19
10			min	0	2	0	2	-0.061	9	-0.48	9	0	1	0	1	0	1
11		J	max	1.268	6	0	2	0.046	19	0.364	19	1.092	19	0	2	0	2
12			min	0	2	-0.374	6	-0.061	9	-0.48	9	-1.439	9	-44.054	6	-44.054	6
13	M4	I	max	1.268	6	0.374	6	0.061	9	0.48	9	1.092	19	0	2	0	2
14			min	0	2	0	2	-0.046	19	-0.364	19	-1.439	9	-44.054	6	-44.054	6
15		J	max	2.755	6	0	2	0.061	9	0.48	9	0	19	0	19	0	19
16			min	0	2	-4.088	6	-0.046	19	-0.364	19	0	1	0	1	0	1
17	M5	I	max	2.286	6	4.239	6	0.181	17	0.69	17	2.998	15	0	19	0	19
18			min	0	2	0	2	-0.234	11	-0.864	11	-2.218	17	0	1	0	1
19		J	max	0.799	6	0	2	0.181	17	0.69	17	2.071	17	0	2	0	2
20			min	0	2	-0.223	6	-0.234	11	-0.864	11	-2.591	11	-47.631	6	-47.631	6
21	M6	I	max	0.799	6	0.223	6	0.234	11	0.864	11	2.071	17	0	2	0	2
22			min	0	2	0	2	-0.181	17	-0.69	17	-2.591	11	-47.631	6	-47.631	6
23		J	max	2.286	6	0	2	0.234	11	0.864	11	2.998	15	0	19	0	19
24			min	0	2	-4.239	6	-0.181	17	-0.69	17	-2.218	17	0	1	0	1
25	M7	I	max	2.385	6	4.208	6	0.05	17	0.398	17	0	19	0	19	0	19
26			min	0	2	0	2	-0.058	11	-0.462	11	0	1	0	1	0	1
27		J	max	0.898	6	0	2	0.05	17	0.398	17	1.195	17	0	2	0	2
28			min	0	2	-0.254	6	-0.058	11	-0.462	11	-1.386	11	-46.894	6	-46.894	6
29	M8	I	max	0.898	6	0.254	6	0.058	11	0.462	11	1.195	17	0	2	0	2
30			min	0	2	0	2	-0.05	17	-0.398	17	-1.386	11	-46.894	6	-46.894	6
31		J	max	2.385	6	0	2	0.058	11	0.462	11	0	19	0	19	0	19
32			min	0	2	-4.208	6	-0.05	17	-0.398	17	0	1	0	1	0	1
33	M9	I	max	3.436	6	3.867	6	0.056	9	0.443	9	0	19	0	19	0	19
34			min	0	2	0	2	-0.053	19	-0.416	19	0	1	0	1	0	1
35		J	max	1.949	6	0	2	0.056	9	0.443	9	1.328	9	0	2	0	2



**Envelope Member End Reactions (Continued)**

Member	Member End		Axial[k]	LC y	Shear[k]	LC z	Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[k-ft]	LC	z-z Moment[k-ft]	LC	
36		min	0	2	-0.595	6	-0.053	19	-0.416	19	-1.248	19	-38.795	6	
37	M10	I	max	1.949	6	0.595	6	0.053	19	0.416	19	1.328	9	0	2
38		min	0	2	0	2	-0.056	9	-0.443	9	-1.248	19	-38.795	6	
39		J	max	3.436	6	0	2	0.053	19	0.416	19	0	19	0	19
40		min	0	2	-3.867	6	-0.056	9	-0.443	9	0	1	0	1	
41	M11	I	max	1.331	6	2.657	6	0.06	9	0.477	9	0	19	0	19
42		min	0	2	0	2	-0.05	19	-0.397	19	0	1	0	1	
43		J	max	0.495	11	0	2	0.06	9	0.477	9	1.43	9	0	2
44		min	0	2	-0.152	11	-0.05	19	-0.397	19	-1.19	19	-30.123	6	
45	M12	I	max	0.495	11	0.152	11	0.05	19	0.397	19	1.43	9	0	2
46		min	0	2	0	2	-0.06	9	-0.477	9	-1.19	19	-30.123	6	
47		J	max	1.331	6	0	2	0.05	19	0.397	19	0	19	0	19
48		min	0	2	-2.657	6	-0.06	9	-0.477	9	0	1	0	1	
49	M14	I	max	0.172	17	0.022	11	0	19	0	8	0	19	0	19
50		min	-0.258	15	0	2	0	1	0	10	0	1	0	1	
51		J	max	0.172	17	0	2	0	19	0	8	0	19	0	19
52		min	-0.258	15	-0.022	6	0	1	0	10	0	1	0	1	
53	M15	I	max	0.213	11	0.022	11	0	19	0	10	0	19	0	19
54		min	-0.187	17	0	2	0	1	0	8	0	1	0	1	
55		J	max	0.213	11	0	2	0	19	0	10	0	19	0	19
56		min	-0.187	17	-0.022	6	0	1	0	8	0	1	0	1	
57	M16	I	max	0.326	11	0.022	6	0	19	0	10	0	19	0	19
58		min	-0.286	17	0	2	0	1	0	8	0	1	0	1	
59		J	max	0.326	11	0	2	0	19	0	10	0	19	0	19
60		min	-0.286	17	-0.022	1	0	1	0	8	0	1	0	1	
61	M17	I	max	0.425	11	0.022	6	0	19	0	8	0	19	0	19
62		min	-0.393	17	0	2	0	1	0	10	0	1	0	1	
63		J	max	0.425	11	0	2	0	19	0	8	0	19	0	19
64		min	-0.393	17	-0.022	11	0	1	0	10	0	1	0	1	
65	M20	I	max	23.798	6	3.532	16	3.318	11	2.204	18	32.834	9	35.32	16
66		min	0	2	-6.891	14	-3.283	9	-2.864	12	-33.175	11	-68.913	14	
67		J	max	23.198	6	3.532	16	3.318	11	2.204	18	0	19	0	19
68		min	0	2	-6.891	14	-3.283	9	-2.864	12	0	1	0	1	
69	M21	I	max	23.798	6	6.891	12	3.318	11	2.864	14	32.834	9	68.913	12
70		min	0	2	-3.532	18	-3.283	9	-2.204	16	-33.175	11	-35.32	18	
71		J	max	23.198	6	6.891	12	3.318	11	2.864	14	0	19	0	19
72		min	0	2	-3.532	18	-3.283	9	-2.204	16	0	1	0	1	
73	M22	I	max	8.351	6	3.954	12	3.318	11	1.805	18	32.837	9	39.544	12
74		min	0	2	-1.376	18	-3.284	9	-6.09	12	-33.177	11	-13.761	18	
75		J	max	7.751	6	3.954	12	3.318	11	1.805	18	0	19	0	19
76		min	0	2	-1.376	18	-3.284	9	-6.09	12	0	1	0	1	
77	M23	I	max	8.351	6	1.376	16	3.318	11	6.09	14	32.837	9	13.761	16
78		min	0	2	-3.954	14	-3.284	9	-1.805	16	-33.177	11	-39.544	14	
79		J	max	7.751	6	1.376	16	3.318	11	6.09	14	0	19	0	19
80		min	0	2	-3.954	14	-3.284	9	-1.805	16	0	1	0	1	
81	M24	I	max	0.202	15	10.327	6	0	2	0	19	4.341	14	54.518	6
82		min	-0.09	17	0	2	-1.576	14	0	1	-1.35	16	0	2	
83		J	max	0.202	15	10.086	6	0	2	0	19	0.284	17	4.06	11
84		min	-0.09	17	0	2	-1.576	14	0	1	-5.145	6	0	2	
85	M25	I	max	0.09	17	5.36	6	0.159	16	0	19	1.521	18	5.816	11
86		min	-0.072	19	0	2	-0.859	14	0	1	-4.843	12	0	2	
87		J	max	0.09	17	5.119	6	0.159	16	0	19	0	2	0	2
88		min	-0.072	19	0	2	-0.859	14	0	1	-7.587	6	-22.013	6	
89	M26	I	max	0.139	17	0.588	11	0.438	12	0	19	0	2	0	2
90		min	-0.126	19	0	2	-0.289	18	0	1	-7.616	6	-21.927	6	

**Envelope Member End Reactions (Continued)**

Member	Member End		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[k-ft]	LC	z-z Moment[k-ft]	LC	
91		J	max	0.139	17	0.346	11	0.438	12	0	19	0	2	0	2
92			min	-0.126	19	-0.1	17	-0.289	18	0	1	-6.492	6	-23.287	6
93	M27	I	max	0.193	17	0	2	2.272	6	0	19	0	2	0	2
94			min	-0.177	19	-4.575	6	0	2	0	1	-6.474	6	-23.34	6
95		J	max	0.193	17	0	2	2.272	6	0	19	6.091	12	0.452	9
96			min	-0.177	19	-4.816	6	0	2	0	1	-1.864	18	-0.376	19
97	M30	I	max	0.202	15	10.327	6	1.576	12	0	19	1.35	18	54.518	6
98			min	-0.09	17	0	2	0	2	0	1	-4.341	12	0	2
99		J	max	0.202	15	10.086	6	1.576	12	0	19	5.145	6	4.06	11
100			min	-0.09	17	0	2	0	2	0	1	-0.284	17	0	2
101	M31	I	max	0.09	17	5.36	6	0.859	12	0	19	4.843	14	5.816	11
102			min	-0.072	19	0	2	-0.159	18	0	1	-1.521	16	0	2
103		J	max	0.09	17	5.119	6	0.859	12	0	19	7.587	6	0	2
104			min	-0.072	19	0	2	-0.159	18	0	1	0	2	-22.013	6
105	M32	I	max	0.139	17	0.588	11	0.289	16	0	19	7.616	6	0	2
106			min	-0.126	19	0	2	-0.438	14	0	1	0	2	-21.927	6
107		J	max	0.139	17	0.346	11	0.289	16	0	19	6.492	6	0	2
108			min	-0.126	19	-0.1	17	-0.438	14	0	1	0	2	-23.287	6
109	M33	I	max	0.193	17	0	2	0	2	0	19	6.474	6	0	2
110			min	-0.177	19	-4.575	6	-2.272	6	0	1	0	2	-23.34	6
111		J	max	0.193	17	0	2	0	2	0	19	1.864	16	0.452	9
112			min	-0.177	19	-4.816	6	-2.272	6	0	1	-6.091	14	-0.376	19
113	M31A	I	max	0.089	13	0	2	0.806	6	0	19	0.082	19	0.246	19
114			min	-0.033	19	-2.936	6	0	2	0	1	-0.221	13	-0.662	13
115		J	max	0.089	13	0	2	0.806	6	0	19	3.885	6	14.858	6
116			min	-0.033	19	-3.178	6	0	2	0	1	0	2	0	2
117	M32A	I	max	0.165	13	0	2	0	2	0	19	3.764	6	14.495	6
118			min	-0.067	19	-7.903	6	-1.002	6	0	1	-0.011	17	0	2
119		J	max	0.165	13	0	2	0	2	0	19	0	2	54.615	6
120			min	-0.067	19	-8.145	6	-1.002	6	0	1	-1.951	9	0	2
121	M33A	I	max	0.089	13	0	2	0	2	0	19	0.221	13	0.246	19
122			min	-0.033	19	-2.936	6	-0.806	6	0	1	-0.082	19	-0.662	13
123		J	max	0.089	13	0	2	0	2	0	19	0	2	14.858	6
124			min	-0.033	19	-3.178	6	-0.806	6	0	1	-3.885	6	0	2
125	M34	I	max	0.165	13	0	2	1.002	6	0	19	0.011	17	14.495	6
126			min	-0.067	19	-7.903	6	0	2	0	1	-3.764	6	0	2
127		J	max	0.165	13	0	2	1.002	6	0	19	1.951	9	54.615	6
128			min	-0.067	19	-8.145	6	0	2	0	1	0	2	0	2
129	M35	I	max	0.416	9	0.022	11	0	19	0.001	8	0	19	0	19
130			min	-0.389	19	0	2	0	1	-0.001	10	0	1	0	1
131		J	max	0.416	9	0	2	0	19	0.001	8	0	19	0	19
132			min	-0.389	19	-0.022	6	0	1	-0.001	10	0	1	0	1
133	M36	I	max	0.283	17	0.022	11	0	19	0.001	8	0	19	0	19
134			min	-0.333	11	0	2	0	1	-0.001	10	0	1	0	1
135		J	max	0.283	17	0	2	0	19	0.001	8	0	19	0	19
136			min	-0.333	11	-0.022	6	0	1	-0.001	10	0	1	0	1
137	M37	I	max	3.209	6	3.94	6	0.081	13	0.643	13	0	19	0	19
138			min	0	2	0	2	-0.036	19	-0.281	19	0	1	0	1
139		J	max	1.722	6	0	2	0.081	13	0.643	13	1.93	13	0	2
140			min	0	2	-0.521	6	-0.036	19	-0.281	19	-0.842	19	-40.544	6
141	M38	I	max	1.722	6	0.521	6	0.036	19	0.281	19	1.93	13	0	2
142			min	0	2	0	2	-0.081	13	-0.643	13	-0.842	19	-40.544	6
143		J	max	3.209	6	0	2	0.036	19	0.281	19	0	19	0	19
144			min	0	2	-3.94	6	-0.081	13	-0.643	13	0	1	0	1

**Envelope Member 2nd/1st Moment Ratios**

Member		y-y Moment [k-ft]	2nd/1st Ratio	Loc [ft]	LC	z-z Moment [k-ft]	2nd/1st Ratio	Loc [ft]	LC	
1	M1	max	-0.514	1.04	23.717	11	-39.119	1.006	23.717	6
2		min	0.269	0.912	23.717	15	-10.275	1.001	23.717	19
3	M2	max	-0.514	1.04	0	11	-39.119	1.006	0	6
4		min	0.269	0.912	0	15	-10.275	1.001	0	19
5	M3	max	0.652	1.05	23.717	15	-44.424	1.02	21.741	6
6		min	-0.082	0.991	23.717	18	-9.583	1.004	21.494	17
7	M4	max	0.652	1.05	0	15	-44.424	1.02	1.976	6
8		min	-0.082	0.991	0	16	-9.583	1.004	2.223	17
9	M5	max	0.961	1.07	23.717	13	-47.763	1.018	22.482	6
10		min	1.292	0.981	0	6	-10.545	1.004	22.482	17
11	M6	max	0.961	1.07	0	13	-47.763	1.018	1.235	6
12		min	1.292	0.981	23.717	6	-10.545	1.004	1.235	17
13	M7	max	0.004	1.365	23.717	18	-47.064	1.015	22.482	6
14		min	-0.041	0.961	23.717	10	-11.008	1.003	22.976	17
15	M8	max	0.004	1.365	0	16	-47.064	1.015	1.235	6
16		min	-0.041	0.961	0	8	-11.008	1.003	0.741	17
17	M9	max	-0.025	1.1	23.717	8	-39.736	1.012	20.505	6
18		min	0.082	0.944	23.717	12	-9.175	1.003	21	19
19	M10	max	-0.025	1.1	0	10	-39.736	1.012	3.212	6
20		min	0.082	0.944	0	14	-9.175	1.003	2.718	19
21	M11	max	-0.619	1.057	23.717	15	-30.182	1.013	22.729	6
22		min	0.034	0.972	23.717	16	-7.672	1.003	21	19
23	M12	max	-0.619	1.057	0	15	-30.182	1.013	0.988	6
24		min	0.034	0.972	0	18	-7.672	1.003	2.718	19
25	M14	max	NC	NC			-0.017	1	2.5	17
26		min	NC	NC			-0.028	1	2.5	11
27	M15	max	NC	NC			-0.028	1	2.5	15
28		min	NC	NC			-0.028	1	2.5	1
29	M16	max	NC	NC			-0.017	1	2.5	18
30		min	NC	NC			-0.028	1	2.5	13
31	M17	max	NC	NC			-0.028	1	2.5	9
32		min	NC	NC			-0.017	1	2.5	17
33	M20	max	0.084	1.181	0	12	29.556	1.03	0	8
34		min	32.682	1.01	0	17	-0.149	0.134	0	12
35	M21	max	0.084	1.181	0	14	-29.556	1.03	0	10
36		min	32.682	1.01	0	17	0.149	0.134	0	14
37	M22	max	0.084	1.179	0	14	-9.071	1.023	0	10
38		min	32.686	1.01	0	17	7.611	0.978	0	14
39	M23	max	0.084	1.179	0	12	9.071	1.023	0	8
40		min	32.686	1.01	0	17	-7.611	0.978	0	12
41	M24	max	-2.132	1.012	5	8	48.077	1	0	15
42		min	4.341	0.965	0	14	46.342	1	0	13
43	M25	max	1.521	1.022	0	18	4.155	1.003	0	19
44		min	-1.832	0.987	5	10	-4.194	0.999	5	18
45	M26	max	-6.238	1.009	5	14	-5.475	1.001	1.563	17
46		min	-1.882	0.993	0	11	-5.002	1	5	18
47	M27	max	6.091	1.026	5	12	-9.154	1.001	0	9
48		min	-2.023	0.994	0	9	-4.603	0.999	0	19
49	M30	max	2.132	1.012	5	10	48.077	1	0	15
50		min	-4.341	0.965	0	12	46.342	1	0	13
51	M31	max	-1.521	1.022	0	16	4.155	1.003	0	19
52		min	1.832	0.987	5	8	-4.194	0.999	5	16
53	M32	max	6.238	1.009	5	12	-5.475	1.001	1.563	17
54		min	1.882	0.993	0	11	-5.002	1	5	16
55	M33	max	-6.091	1.026	5	14	-9.154	1.001	0	9

**Envelope Member 2nd/1st Moment Ratios (Continued)**

Member		y-y Moment [k-ft]	2nd/1st Ratio	Loc [ft]	LC	z-z Moment [k-ft]	2nd/1st Ratio	Loc [ft]	LC	
56		min	2.023	0.994	0	9	-4.603	0.999	0	19
57	M31A	max	0.526	1.057	5	11	7.769	1.001	5	10
58		min	-0.168	1.008	0	17	4.482	1	5	16
59	M32A	max	3.764	1.055	0	6	25.583	1	5	10
60		min	-1.198	0.944	5	11	14.983	1	5	16
61	M33A	max	-0.526	1.057	5	11	7.769	1.001	5	8
62		min	0.168	1.008	0	17	4.482	1	5	18
63	M34	max	-3.764	1.055	0	6	25.583	1	5	8
64		min	1.198	0.944	5	11	14.983	1	5	18
65	M35	max	NC	NC			-0.017	1	2.5	19
66		min	NC	NC			-0.028	1	2.5	6
67	M36	max	NC	NC			-0.017	1	2.5	18
68		min	NC	NC			-0.028	1	2.5	6
69	M37	max	-0.613	1.034	23.717	11	-41.266	1.015	21	6
70		min	0.091	0.769	23.717	15	-9.697	1.003	21.494	17
71	M38	max	-0.613	1.034	0	11	-41.266	1.015	2.718	6
72		min	0.091	0.769	0	15	-9.697	1.003	2.223	17

**Envelope Member Torsion Stresses**

Member	Sec		Torque[k-ft]	LC Torsion	Shear[ksi]	LC y-y Warp Shear[ksi]	z-z Warp Shear[ksi]	z-Top Warp Bend[ksi]	z-Bot Warp Bend[ksi]
1	M1	1	max	0.698	13	0.21	13	NC	NC
2			min	-0.26	19	-0.078	19	NC	NC
3		2	max	0.698	13	0.21	13	NC	NC
4			min	-0.26	19	-0.078	19	NC	NC
5		3	max	0.698	13	0.21	13	NC	NC
6			min	-0.26	19	-0.078	19	NC	NC
7		4	max	0.698	13	0.21	13	NC	NC
8			min	-0.26	19	-0.078	19	NC	NC
9		5	max	0.698	13	0.21	13	NC	NC
10			min	-0.26	19	-0.078	19	NC	NC
11	M2	1	max	0.26	19	0.078	19	NC	NC
12			min	-0.698	13	-0.21	13	NC	NC
13		2	max	0.26	19	0.078	19	NC	NC
14			min	-0.698	13	-0.21	13	NC	NC
15		3	max	0.26	19	0.078	19	NC	NC
16			min	-0.698	13	-0.21	13	NC	NC
17		4	max	0.26	19	0.078	19	NC	NC
18			min	-0.698	13	-0.21	13	NC	NC
19		5	max	0.26	19	0.078	19	NC	NC
20			min	-0.698	13	-0.21	13	NC	NC
21	M3	1	max	0.364	19	0.11	19	NC	NC
22			min	-0.48	9	-0.144	9	NC	NC
23		2	max	0.364	19	0.11	19	NC	NC
24			min	-0.48	9	-0.144	9	NC	NC
25		3	max	0.364	19	0.11	19	NC	NC
26			min	-0.48	9	-0.144	9	NC	NC
27		4	max	0.364	19	0.11	19	NC	NC
28			min	-0.48	9	-0.144	9	NC	NC
29		5	max	0.364	19	0.11	19	NC	NC
30			min	-0.48	9	-0.144	9	NC	NC
31	M4	1	max	0.48	9	0.144	9	NC	NC
32			min	-0.364	19	-0.11	19	NC	NC
33		2	max	0.48	9	0.144	9	NC	NC
34			min	-0.364	19	-0.11	19	NC	NC
35		3	max	0.48	9	0.144	9	NC	NC

**Envelope Member Torsion Stresses (Continued)**

Member	Sec		Torque[k-ft]	LC Torsion Shear[ksi]	LC y-y Warp Shear[ksi]	z-z Warp Shear[ksi]	z-Top Warp Bend[ksi]	z-Bot Warp Bend[ksi]
36		min	-0.364	19	-0.11	19	NC	NC
37	4	max	0.48	9	0.144	9	NC	NC
38		min	-0.364	19	-0.11	19	NC	NC
39	5	max	0.48	9	0.144	9	NC	NC
40		min	-0.364	19	-0.11	19	NC	NC
41	M5	1	max	0.69	17	0.208	17	NC
42		min	-0.864	11	-0.26	11	NC	NC
43	2	max	0.69	17	0.208	17	NC	NC
44		min	-0.864	11	-0.26	11	NC	NC
45	3	max	0.69	17	0.208	17	NC	NC
46		min	-0.864	11	-0.26	11	NC	NC
47	4	max	0.69	17	0.208	17	NC	NC
48		min	-0.864	11	-0.26	11	NC	NC
49	5	max	0.69	17	0.208	17	NC	NC
50		min	-0.864	11	-0.26	11	NC	NC
51	M6	1	max	0.864	11	0.26	11	NC
52		min	-0.69	17	-0.208	17	NC	NC
53	2	max	0.864	11	0.26	11	NC	NC
54		min	-0.69	17	-0.208	17	NC	NC
55	3	max	0.864	11	0.26	11	NC	NC
56		min	-0.69	17	-0.208	17	NC	NC
57	4	max	0.864	11	0.26	11	NC	NC
58		min	-0.69	17	-0.208	17	NC	NC
59	5	max	0.864	11	0.26	11	NC	NC
60		min	-0.69	17	-0.208	17	NC	NC
61	M7	1	max	0.398	17	0.12	17	NC
62		min	-0.462	11	-0.139	11	NC	NC
63	2	max	0.398	17	0.12	17	NC	NC
64		min	-0.462	11	-0.139	11	NC	NC
65	3	max	0.398	17	0.12	17	NC	NC
66		min	-0.462	11	-0.139	11	NC	NC
67	4	max	0.398	17	0.12	17	NC	NC
68		min	-0.462	11	-0.139	11	NC	NC
69	5	max	0.398	17	0.12	17	NC	NC
70		min	-0.462	11	-0.139	11	NC	NC
71	M8	1	max	0.462	11	0.139	11	NC
72		min	-0.398	17	-0.12	17	NC	NC
73	2	max	0.462	11	0.139	11	NC	NC
74		min	-0.398	17	-0.12	17	NC	NC
75	3	max	0.462	11	0.139	11	NC	NC
76		min	-0.398	17	-0.12	17	NC	NC
77	4	max	0.462	11	0.139	11	NC	NC
78		min	-0.398	17	-0.12	17	NC	NC
79	5	max	0.462	11	0.139	11	NC	NC
80		min	-0.398	17	-0.12	17	NC	NC
81	M9	1	max	0.443	9	0.133	9	NC
82		min	-0.416	19	-0.125	19	NC	NC
83	2	max	0.443	9	0.133	9	NC	NC
84		min	-0.416	19	-0.125	19	NC	NC
85	3	max	0.443	9	0.133	9	NC	NC
86		min	-0.416	19	-0.125	19	NC	NC
87	4	max	0.443	9	0.133	9	NC	NC
88		min	-0.416	19	-0.125	19	NC	NC
89	5	max	0.443	9	0.133	9	NC	NC
90		min	-0.416	19	-0.125	19	NC	NC

**Envelope Member Torsion Stresses (Continued)**

Member	Sec	LC	Torque[k-ft]	Torsion Shear[ksi]	LC	y-y Warp Shear[ksi]	z-z Warp Shear[ksi]	z-Top Warp Bend[ksi]	z-Bot Warp Bend[ksi]		
91	M10	1	max	0.416	19	0.125	19	NC	NC	NC	NC
92			min	-0.443	9	-0.133	9	NC	NC	NC	NC
93		2	max	0.416	19	0.125	19	NC	NC	NC	NC
94			min	-0.443	9	-0.133	9	NC	NC	NC	NC
95		3	max	0.416	19	0.125	19	NC	NC	NC	NC
96			min	-0.443	9	-0.133	9	NC	NC	NC	NC
97		4	max	0.416	19	0.125	19	NC	NC	NC	NC
98			min	-0.443	9	-0.133	9	NC	NC	NC	NC
99		5	max	0.416	19	0.125	19	NC	NC	NC	NC
100			min	-0.443	9	-0.133	9	NC	NC	NC	NC
101	M11	1	max	0.477	9	0.143	9	NC	NC	NC	NC
102			min	-0.397	19	-0.119	19	NC	NC	NC	NC
103		2	max	0.477	9	0.143	9	NC	NC	NC	NC
104			min	-0.397	19	-0.119	19	NC	NC	NC	NC
105		3	max	0.477	9	0.143	9	NC	NC	NC	NC
106			min	-0.397	19	-0.119	19	NC	NC	NC	NC
107		4	max	0.477	9	0.143	9	NC	NC	NC	NC
108			min	-0.397	19	-0.119	19	NC	NC	NC	NC
109		5	max	0.477	9	0.143	9	NC	NC	NC	NC
110			min	-0.397	19	-0.119	19	NC	NC	NC	NC
111	M12	1	max	0.397	19	0.119	19	NC	NC	NC	NC
112			min	-0.477	9	-0.143	9	NC	NC	NC	NC
113		2	max	0.397	19	0.119	19	NC	NC	NC	NC
114			min	-0.477	9	-0.143	9	NC	NC	NC	NC
115		3	max	0.397	19	0.119	19	NC	NC	NC	NC
116			min	-0.477	9	-0.143	9	NC	NC	NC	NC
117		4	max	0.397	19	0.119	19	NC	NC	NC	NC
118			min	-0.477	9	-0.143	9	NC	NC	NC	NC
119		5	max	0.397	19	0.119	19	NC	NC	NC	NC
120			min	-0.477	9	-0.143	9	NC	NC	NC	NC
121	M14	1	max	0	8	0	8	NC	NC	NC	NC
122			min	0	10	0	10	NC	NC	NC	NC
123		2	max	0	8	0	8	NC	NC	NC	NC
124			min	0	10	0	10	NC	NC	NC	NC
125		3	max	0	8	0	8	NC	NC	NC	NC
126			min	0	10	0	10	NC	NC	NC	NC
127		4	max	0	8	0	8	NC	NC	NC	NC
128			min	0	10	0	10	NC	NC	NC	NC
129		5	max	0	8	0	8	NC	NC	NC	NC
130			min	0	10	0	10	NC	NC	NC	NC
131	M15	1	max	0	10	0	10	NC	NC	NC	NC
132			min	0	8	0	8	NC	NC	NC	NC
133		2	max	0	10	0	10	NC	NC	NC	NC
134			min	0	8	0	8	NC	NC	NC	NC
135		3	max	0	10	0	10	NC	NC	NC	NC
136			min	0	8	0	8	NC	NC	NC	NC
137		4	max	0	10	0	10	NC	NC	NC	NC
138			min	0	8	0	8	NC	NC	NC	NC
139		5	max	0	10	0	10	NC	NC	NC	NC
140			min	0	8	0	8	NC	NC	NC	NC
141	M16	1	max	0	10	0	10	NC	NC	NC	NC
142			min	0	8	0	8	NC	NC	NC	NC
143		2	max	0	10	0	10	NC	NC	NC	NC
144			min	0	8	0	8	NC	NC	NC	NC
145		3	max	0	10	0	10	NC	NC	NC	NC

**Envelope Member Torsion Stresses (Continued)**

Member	Sec	Torque[k-ft]	LC Torsion	Shear[ksi]	LC y-y Warp	Shear[ksi]	z-z Warp	Shear[ksi]	z-Top Warp	Bend[ksi]	z-Bot Warp	Bend[ksi]
146		min	0	8	0	8	NC	NC	NC	NC	NC	NC
147	4	max	0	10	0	10	NC	NC	NC	NC	NC	NC
148		min	0	8	0	8	NC	NC	NC	NC	NC	NC
149	5	max	0	10	0	10	NC	NC	NC	NC	NC	NC
150		min	0	8	0	8	NC	NC	NC	NC	NC	NC
151	M17	1	max	0	8	0	8	NC	NC	NC	NC	NC
152		min	0	10	0	10	NC	NC	NC	NC	NC	NC
153	2	max	0	8	0	8	NC	NC	NC	NC	NC	NC
154		min	0	10	0	10	NC	NC	NC	NC	NC	NC
155	3	max	0	8	0	8	NC	NC	NC	NC	NC	NC
156		min	0	10	0	10	NC	NC	NC	NC	NC	NC
157	4	max	0	8	0	8	NC	NC	NC	NC	NC	NC
158		min	0	10	0	10	NC	NC	NC	NC	NC	NC
159	5	max	0	8	0	8	NC	NC	NC	NC	NC	NC
160		min	0	10	0	10	NC	NC	NC	NC	NC	NC
161	M20	1	max	2.204	18	0.413	18	NC	NC	NC	NC	NC
162		min	-2.864	12	-0.537	12	NC	NC	NC	NC	NC	NC
163	2	max	2.204	18	0.413	18	NC	NC	NC	NC	NC	NC
164		min	-2.864	12	-0.537	12	NC	NC	NC	NC	NC	NC
165	3	max	2.204	18	0.413	18	NC	NC	NC	NC	NC	NC
166		min	-2.864	12	-0.537	12	NC	NC	NC	NC	NC	NC
167	4	max	2.204	18	0.413	18	NC	NC	NC	NC	NC	NC
168		min	-2.864	12	-0.537	12	NC	NC	NC	NC	NC	NC
169	5	max	2.204	18	0.413	18	NC	NC	NC	NC	NC	NC
170		min	-2.864	12	-0.537	12	NC	NC	NC	NC	NC	NC
171	M21	1	max	2.864	14	0.537	14	NC	NC	NC	NC	NC
172		min	-2.204	16	-0.413	16	NC	NC	NC	NC	NC	NC
173	2	max	2.864	14	0.537	14	NC	NC	NC	NC	NC	NC
174		min	-2.204	16	-0.413	16	NC	NC	NC	NC	NC	NC
175	3	max	2.864	14	0.537	14	NC	NC	NC	NC	NC	NC
176		min	-2.204	16	-0.413	16	NC	NC	NC	NC	NC	NC
177	4	max	2.864	14	0.537	14	NC	NC	NC	NC	NC	NC
178		min	-2.204	16	-0.413	16	NC	NC	NC	NC	NC	NC
179	5	max	2.864	14	0.537	14	NC	NC	NC	NC	NC	NC
180		min	-2.204	16	-0.413	16	NC	NC	NC	NC	NC	NC
181	M22	1	max	1.805	18	0.339	18	NC	NC	NC	NC	NC
182		min	-6.09	12	-1.143	12	NC	NC	NC	NC	NC	NC
183	2	max	1.805	18	0.339	18	NC	NC	NC	NC	NC	NC
184		min	-6.09	12	-1.143	12	NC	NC	NC	NC	NC	NC
185	3	max	1.805	18	0.339	18	NC	NC	NC	NC	NC	NC
186		min	-6.09	12	-1.143	12	NC	NC	NC	NC	NC	NC
187	4	max	1.805	18	0.339	18	NC	NC	NC	NC	NC	NC
188		min	-6.09	12	-1.143	12	NC	NC	NC	NC	NC	NC
189	5	max	1.805	18	0.339	18	NC	NC	NC	NC	NC	NC
190		min	-6.09	12	-1.143	12	NC	NC	NC	NC	NC	NC
191	M23	1	max	6.09	14	1.143	14	NC	NC	NC	NC	NC
192		min	-1.805	16	-0.339	16	NC	NC	NC	NC	NC	NC
193	2	max	6.09	14	1.143	14	NC	NC	NC	NC	NC	NC
194		min	-1.805	16	-0.339	16	NC	NC	NC	NC	NC	NC
195	3	max	6.09	14	1.143	14	NC	NC	NC	NC	NC	NC
196		min	-1.805	16	-0.339	16	NC	NC	NC	NC	NC	NC
197	4	max	6.09	14	1.143	14	NC	NC	NC	NC	NC	NC
198		min	-1.805	16	-0.339	16	NC	NC	NC	NC	NC	NC
199	5	max	6.09	14	1.143	14	NC	NC	NC	NC	NC	NC
200		min	-1.805	16	-0.339	16	NC	NC	NC	NC	NC	NC

**Envelope Member Torsion Stresses (Continued)**

Member	Sec		Torque[k-ft]	LC Torsion	Shear[ksj]	LC y-y Warp	Shear[ksj]	z-z Warp	Shear[ksj]	z-Top Warp	Bend[ksj]	z-Bot Warp	Bend[ksj]
201	M24	1	max	0	19	0	19	NC	NC	NC	NC	NC	NC
202			min	0	1	0	1	NC	NC	NC	NC	NC	NC
203		2	max	0	19	0	19	NC	NC	NC	NC	NC	NC
204			min	0	1	0	1	NC	NC	NC	NC	NC	NC
205		3	max	0	19	0	19	NC	NC	NC	NC	NC	NC
206			min	0	1	0	1	NC	NC	NC	NC	NC	NC
207		4	max	0	19	0	19	NC	NC	NC	NC	NC	NC
208			min	0	1	0	1	NC	NC	NC	NC	NC	NC
209		5	max	0	19	0	19	NC	NC	NC	NC	NC	NC
210			min	0	1	0	1	NC	NC	NC	NC	NC	NC
211	M25	1	max	0	19	0	19	NC	NC	NC	NC	NC	NC
212			min	0	1	0	1	NC	NC	NC	NC	NC	NC
213		2	max	0	19	0	19	NC	NC	NC	NC	NC	NC
214			min	0	1	0	1	NC	NC	NC	NC	NC	NC
215		3	max	0	19	0	19	NC	NC	NC	NC	NC	NC
216			min	0	1	0	1	NC	NC	NC	NC	NC	NC
217		4	max	0	19	0	19	NC	NC	NC	NC	NC	NC
218			min	0	1	0	1	NC	NC	NC	NC	NC	NC
219		5	max	0	19	0	19	NC	NC	NC	NC	NC	NC
220			min	0	1	0	1	NC	NC	NC	NC	NC	NC
221	M26	1	max	0	19	0	19	NC	NC	NC	NC	NC	NC
222			min	0	1	0	1	NC	NC	NC	NC	NC	NC
223		2	max	0	19	0	19	NC	NC	NC	NC	NC	NC
224			min	0	1	0	1	NC	NC	NC	NC	NC	NC
225		3	max	0	19	0	19	NC	NC	NC	NC	NC	NC
226			min	0	1	0	1	NC	NC	NC	NC	NC	NC
227		4	max	0	19	0	19	NC	NC	NC	NC	NC	NC
228			min	0	1	0	1	NC	NC	NC	NC	NC	NC
229		5	max	0	19	0	19	NC	NC	NC	NC	NC	NC
230			min	0	1	0	1	NC	NC	NC	NC	NC	NC
231	M27	1	max	0	19	0	19	NC	NC	NC	NC	NC	NC
232			min	0	1	0	1	NC	NC	NC	NC	NC	NC
233		2	max	0	19	0	19	NC	NC	NC	NC	NC	NC
234			min	0	1	0	1	NC	NC	NC	NC	NC	NC
235		3	max	0	19	0	19	NC	NC	NC	NC	NC	NC
236			min	0	1	0	1	NC	NC	NC	NC	NC	NC
237		4	max	0	19	0	19	NC	NC	NC	NC	NC	NC
238			min	0	1	0	1	NC	NC	NC	NC	NC	NC
239		5	max	0	19	0	19	NC	NC	NC	NC	NC	NC
240			min	0	1	0	1	NC	NC	NC	NC	NC	NC
241	M30	1	max	0	19	0	19	NC	NC	NC	NC	NC	NC
242			min	0	1	0	1	NC	NC	NC	NC	NC	NC
243		2	max	0	19	0	19	NC	NC	NC	NC	NC	NC
244			min	0	1	0	1	NC	NC	NC	NC	NC	NC
245		3	max	0	19	0	19	NC	NC	NC	NC	NC	NC
246			min	0	1	0	1	NC	NC	NC	NC	NC	NC
247		4	max	0	19	0	19	NC	NC	NC	NC	NC	NC
248			min	0	1	0	1	NC	NC	NC	NC	NC	NC
249		5	max	0	19	0	19	NC	NC	NC	NC	NC	NC
250			min	0	1	0	1	NC	NC	NC	NC	NC	NC
251	M31	1	max	0	19	0	19	NC	NC	NC	NC	NC	NC
252			min	0	1	0	1	NC	NC	NC	NC	NC	NC
253		2	max	0	19	0	19	NC	NC	NC	NC	NC	NC
254			min	0	1	0	1	NC	NC	NC	NC	NC	NC
255		3	max	0	19	0	19	NC	NC	NC	NC	NC	NC



**Envelope Member Torsion Stresses (Continued)**

MemberSec	Torque[k-ft]	LC Torsion Shear[ksi]	LC y-y Warp Shear[ksi]	z-z Warp Shear[ksi]	z-Top Warp Bend[ksi]	z-Bot Warp Bend[ksi]			
256	min	0	1	0	1	NC	NC	NC	NC
257	4 max	0	19	0	19	NC	NC	NC	NC
258	min	0	1	0	1	NC	NC	NC	NC
259	5 max	0	19	0	19	NC	NC	NC	NC
260	min	0	1	0	1	NC	NC	NC	NC
261	M32 1 max	0	19	0	19	NC	NC	NC	NC
262	min	0	1	0	1	NC	NC	NC	NC
263	2 max	0	19	0	19	NC	NC	NC	NC
264	min	0	1	0	1	NC	NC	NC	NC
265	3 max	0	19	0	19	NC	NC	NC	NC
266	min	0	1	0	1	NC	NC	NC	NC
267	4 max	0	19	0	19	NC	NC	NC	NC
268	min	0	1	0	1	NC	NC	NC	NC
269	5 max	0	19	0	19	NC	NC	NC	NC
270	min	0	1	0	1	NC	NC	NC	NC
271	M33 1 max	0	19	0	19	NC	NC	NC	NC
272	min	0	1	0	1	NC	NC	NC	NC
273	2 max	0	19	0	19	NC	NC	NC	NC
274	min	0	1	0	1	NC	NC	NC	NC
275	3 max	0	19	0	19	NC	NC	NC	NC
276	min	0	1	0	1	NC	NC	NC	NC
277	4 max	0	19	0	19	NC	NC	NC	NC
278	min	0	1	0	1	NC	NC	NC	NC
279	5 max	0	19	0	19	NC	NC	NC	NC
280	min	0	1	0	1	NC	NC	NC	NC
281	M31A 1 max	0	19	0	19	NC	NC	NC	NC
282	min	0	1	0	1	NC	NC	NC	NC
283	2 max	0	19	0	19	NC	NC	NC	NC
284	min	0	1	0	1	NC	NC	NC	NC
285	3 max	0	19	0	19	NC	NC	NC	NC
286	min	0	1	0	1	NC	NC	NC	NC
287	4 max	0	19	0	19	NC	NC	NC	NC
288	min	0	1	0	1	NC	NC	NC	NC
289	5 max	0	19	0	19	NC	NC	NC	NC
290	min	0	1	0	1	NC	NC	NC	NC
291	M32A 1 max	0	19	0	19	NC	NC	NC	NC
292	min	0	1	0	1	NC	NC	NC	NC
293	2 max	0	19	0	19	NC	NC	NC	NC
294	min	0	1	0	1	NC	NC	NC	NC
295	3 max	0	19	0	19	NC	NC	NC	NC
296	min	0	1	0	1	NC	NC	NC	NC
297	4 max	0	19	0	19	NC	NC	NC	NC
298	min	0	1	0	1	NC	NC	NC	NC
299	5 max	0	19	0	19	NC	NC	NC	NC
300	min	0	1	0	1	NC	NC	NC	NC
301	M33A 1 max	0	19	0	19	NC	NC	NC	NC
302	min	0	1	0	1	NC	NC	NC	NC
303	2 max	0	19	0	19	NC	NC	NC	NC
304	min	0	1	0	1	NC	NC	NC	NC
305	3 max	0	19	0	19	NC	NC	NC	NC
306	min	0	1	0	1	NC	NC	NC	NC
307	4 max	0	19	0	19	NC	NC	NC	NC
308	min	0	1	0	1	NC	NC	NC	NC
309	5 max	0	19	0	19	NC	NC	NC	NC
310	min	0	1	0	1	NC	NC	NC	NC

**Envelope Member Torsion Stresses (Continued)**

Member	Sec		Torque[k-ft]	LC Torsion	Shear[ksi]	LC y-y	Warp Shear[ksi]	z-z	Warp Shear[ksi]	z-Top	Warp Bend[ksi]	z-Bot	Warp Bend[ksi]
311	M34	1	max	0	19	0	19	NC	NC	NC	NC	NC	NC
312			min	0	1	0	1	NC	NC	NC	NC	NC	NC
313		2	max	0	19	0	19	NC	NC	NC	NC	NC	NC
314			min	0	1	0	1	NC	NC	NC	NC	NC	NC
315		3	max	0	19	0	19	NC	NC	NC	NC	NC	NC
316			min	0	1	0	1	NC	NC	NC	NC	NC	NC
317		4	max	0	19	0	19	NC	NC	NC	NC	NC	NC
318			min	0	1	0	1	NC	NC	NC	NC	NC	NC
319		5	max	0	19	0	19	NC	NC	NC	NC	NC	NC
320			min	0	1	0	1	NC	NC	NC	NC	NC	NC
321	M35	1	max	0.001	8	0.003	8	NC	NC	NC	NC	NC	NC
322			min	-0.001	10	-0.003	10	NC	NC	NC	NC	NC	NC
323		2	max	0.001	8	0.003	8	NC	NC	NC	NC	NC	NC
324			min	-0.001	10	-0.003	10	NC	NC	NC	NC	NC	NC
325		3	max	0.001	8	0.003	8	NC	NC	NC	NC	NC	NC
326			min	-0.001	10	-0.003	10	NC	NC	NC	NC	NC	NC
327		4	max	0.001	8	0.003	8	NC	NC	NC	NC	NC	NC
328			min	-0.001	10	-0.003	10	NC	NC	NC	NC	NC	NC
329		5	max	0.001	8	0.003	8	NC	NC	NC	NC	NC	NC
330			min	-0.001	10	-0.003	10	NC	NC	NC	NC	NC	NC
331	M36	1	max	0.001	8	0.002	8	NC	NC	NC	NC	NC	NC
332			min	-0.001	10	-0.002	10	NC	NC	NC	NC	NC	NC
333		2	max	0.001	8	0.002	8	NC	NC	NC	NC	NC	NC
334			min	-0.001	10	-0.002	10	NC	NC	NC	NC	NC	NC
335		3	max	0.001	8	0.002	8	NC	NC	NC	NC	NC	NC
336			min	-0.001	10	-0.002	10	NC	NC	NC	NC	NC	NC
337		4	max	0.001	8	0.002	8	NC	NC	NC	NC	NC	NC
338			min	-0.001	10	-0.002	10	NC	NC	NC	NC	NC	NC
339		5	max	0.001	8	0.002	8	NC	NC	NC	NC	NC	NC
340			min	-0.001	10	-0.002	10	NC	NC	NC	NC	NC	NC
341	M37	1	max	0.643	13	0.194	13	NC	NC	NC	NC	NC	NC
342			min	-0.281	19	-0.084	19	NC	NC	NC	NC	NC	NC
343		2	max	0.643	13	0.194	13	NC	NC	NC	NC	NC	NC
344			min	-0.281	19	-0.084	19	NC	NC	NC	NC	NC	NC
345		3	max	0.643	13	0.194	13	NC	NC	NC	NC	NC	NC
346			min	-0.281	19	-0.084	19	NC	NC	NC	NC	NC	NC
347		4	max	0.643	13	0.194	13	NC	NC	NC	NC	NC	NC
348			min	-0.281	19	-0.084	19	NC	NC	NC	NC	NC	NC
349		5	max	0.643	13	0.194	13	NC	NC	NC	NC	NC	NC
350			min	-0.281	19	-0.084	19	NC	NC	NC	NC	NC	NC
351	M38	1	max	0.281	19	0.084	19	NC	NC	NC	NC	NC	NC
352			min	-0.643	13	-0.194	13	NC	NC	NC	NC	NC	NC
353		2	max	0.281	19	0.084	19	NC	NC	NC	NC	NC	NC
354			min	-0.643	13	-0.194	13	NC	NC	NC	NC	NC	NC
355		3	max	0.281	19	0.084	19	NC	NC	NC	NC	NC	NC
356			min	-0.643	13	-0.194	13	NC	NC	NC	NC	NC	NC
357		4	max	0.281	19	0.084	19	NC	NC	NC	NC	NC	NC
358			min	-0.643	13	-0.194	13	NC	NC	NC	NC	NC	NC
359		5	max	0.281	19	0.084	19	NC	NC	NC	NC	NC	NC
360			min	-0.643	13	-0.194	13	NC	NC	NC	NC	NC	NC

**Envelope Member Section Stresses**

Member	Sec		Axial[ksi]	LC y	Shear[ksi]	LC z	Shear[ksi]	LC y-Top[ksi]	LC y-Bot[ksi]	LC z-Top[ksi]	LC z-Bot[ksi]	LC	
1	M1	1	max	0.028	11	0.291	6	0.043	13	0	19	0	19
2			min	0	2	0	2	-0.016	19	0	1	0	1

**Envelope Member Section Stresses (Continued)**

Member	Sec		Axial[ksi]	LC y	Shear[ksi]	LC z	Shear[ksi]	LC y-Top[ksi]	LC y-Bot[ksi]	LC z-Top[ksi]	LC z-Bot[ksi]	LC					
3	2	max	0.019	11	0.224	6	0.043	13	4.253	6	0	2	0.328	13	0.122	19	
4		min	-0.005	6	0	2	-0.016	19	0	2	-4.253	6	-0.122	19	-0.328	13	
5	3	max	0.011	11	0.158	6	0.043	13	7.409	6	0	2	0.656	13	0.244	19	
6		min	-0.023	6	0	2	-0.016	19	0	2	-7.409	6	-0.244	19	-0.656	13	
7	4	max	0.002	11	0.092	6	0.043	13	9.469	6	0	2	0.984	13	0.366	19	
8		min	-0.04	6	0	2	-0.016	19	0	2	-9.469	6	-0.366	19	-0.984	13	
9	5	max	0	2	0.025	6	0.043	13	10.432	6	0	2	1.312	13	0.488	19	
10		min	-0.058	6	0	2	-0.016	19	0	2	-10.432	6	-0.488	19	-1.312	13	
11	M2	1	max	0	2	0	0.016	19	10.432	6	0	2	1.312	13	0.488	19	
12		min	-0.058	6	-0.025	6	-0.043	13	0	2	-10.432	6	-0.488	19	-1.312	13	
13	2	max	0.002	11	0	2	0.016	19	9.469	6	0	2	0.984	13	0.366	19	
14		min	-0.04	6	-0.092	6	-0.043	13	0	2	-9.469	6	-0.366	19	-0.984	13	
15	3	max	0.011	11	0	2	0.016	19	7.409	6	0	2	0.656	13	0.244	19	
16		min	-0.023	6	-0.158	6	-0.043	13	0	2	-7.409	6	-0.244	19	-0.656	13	
17	4	max	0.019	11	0	2	0.016	19	4.253	6	0	2	0.328	13	0.122	19	
18		min	-0.005	6	-0.224	6	-0.043	13	0	2	-4.253	6	-0.122	19	-0.328	13	
19	5	max	0.028	11	0	2	0.016	19	0	19	0	19	0	19	0	19	
20		min	0	2	-0.291	6	-0.043	13	0	1	0	1	0	1	0	1	
21	M3	1	max	0.209	6	0.392	6	0.022	19	0	19	0	19	0	19	0	19
22		min	0	2	0	2	-0.029	9	0	1	0	1	0	1	0	1	
23	2	max	0.181	6	0.285	6	0.022	19	5.583	6	0	2	0.171	19	0.225	9	
24		min	0	2	0	2	-0.029	9	0	2	-5.583	6	-0.225	9	-0.171	19	
25	3	max	0.152	6	0.178	6	0.022	19	9.401	6	0	2	0.342	19	0.451	9	
26		min	0	2	0	2	-0.029	9	0	2	-9.401	6	-0.451	9	-0.342	19	
27	4	max	0.124	6	0.071	6	0.022	19	11.456	6	0	2	0.513	19	0.676	9	
28		min	0	2	0	2	-0.029	9	0	2	-11.456	6	-0.676	9	-0.513	19	
29	5	max	0.096	6	0	2	0.022	19	11.748	6	0	2	0.684	19	0.902	9	
30		min	0	2	-0.036	6	-0.029	9	0	2	-11.748	6	-0.902	9	-0.684	19	
31	M4	1	max	0.096	6	0.036	6	0.029	9	11.748	6	0	2	0.684	19	0.902	9
32		min	0	2	0	2	-0.022	19	0	2	-11.748	6	-0.902	9	-0.684	19	
33	2	max	0.124	6	0	2	0.029	9	11.456	6	0	2	0.513	19	0.676	9	
34		min	0	2	-0.071	6	-0.022	19	0	2	-11.456	6	-0.676	9	-0.513	19	
35	3	max	0.152	6	0	2	0.029	9	9.401	6	0	2	0.342	19	0.451	9	
36		min	0	2	-0.178	6	-0.022	19	0	2	-9.401	6	-0.451	9	-0.342	19	
37	4	max	0.181	6	0	2	0.029	9	5.583	6	0	2	0.171	19	0.225	9	
38		min	0	2	-0.285	6	-0.022	19	0	2	-5.583	6	-0.225	9	-0.171	19	
39	5	max	0.209	6	0	2	0.029	9	0	19	0	19	0	19	0	19	
40		min	0	2	-0.392	6	-0.022	19	0	1	0	1	0	1	0	1	
41	M5	1	max	0.173	6	0.406	6	0.088	17	0	19	0	19	1.879	15	1.39	17
42		min	0	2	0	2	-0.114	11	0	1	0	1	-1.39	17	-1.879	15	
43	2	max	0.145	6	0.299	6	0.088	17	5.821	6	0	2	1.016	15	0.718	17	
44		min	0	2	0	2	-0.114	11	0	2	-5.821	6	-0.718	17	-1.016	15	
45	3	max	0.117	6	0.192	6	0.088	17	9.878	6	0	2	0.397	8	0.323	18	
46		min	0	2	0	2	-0.114	11	0	2	-9.878	6	-0.323	18	-0.397	8	
47	4	max	0.089	6	0.086	6	0.088	17	12.172	6	0	2	0.626	17	0.754	11	
48		min	0	2	0	2	-0.114	11	0	2	-12.172	6	-0.754	11	-0.626	17	
49	5	max	0.061	6	0	2	0.088	17	12.702	6	0	2	1.298	17	1.624	11	
50		min	0	2	-0.021	6	-0.114	11	0	2	-12.702	6	-1.624	11	-1.298	17	
51	M6	1	max	0.061	6	0.021	6	0.114	11	12.702	6	0	2	1.298	17	1.624	11
52		min	0	2	0	2	-0.088	17	0	2	-12.702	6	-1.624	11	-1.298	17	
53	2	max	0.089	6	0	2	0.114	11	12.172	6	0	2	0.626	17	0.754	11	
54		min	0	2	-0.086	6	-0.088	17	0	2	-12.172	6	-0.754	11	-0.626	17	
55	3	max	0.117	6	0	2	0.114	11	9.878	6	0	2	0.397	10	0.323	16	
56		min	0	2	-0.192	6	-0.088	17	0	2	-9.878	6	-0.323	16	-0.397	10	
57	4	max	0.145	6	0	2	0.114	11	5.821	6	0	2	1.016	15	0.718	17	

**Envelope Member Section Stresses (Continued)**

Member	Sec		Axial[ksi]	LC y	Shear[ksi]	LC z	Shear[ksi]	LC y-Top[ksi]	LC y-Bot[ksi]	LC z-Top[ksi]	LC z-Bot[ksi]	LC					
58		min	0	2	-0.299	6	-0.088	17	0	2	-5.821	6	-0.718	17	-1.016	15	
59	5	max	0.173	6	0	2	0.114	11	0	19	0	19	1.879	15	1.39	17	
60		min	0	2	-0.406	6	-0.088	17	0	1	0	1	-1.39	17	-1.879	15	
61	M7	1	max	0.181	6	0.403	6	0.024	17	0	19	0	19	0	19	0	19
62		min	0	2	0	2	-0.028	11	0	1	0	1	0	1	0	1	
63	2	max	0.153	6	0.296	6	0.024	17	5.772	6	0	2	0.187	17	0.217	11	
64		min	0	2	0	2	-0.028	11	0	2	-5.772	6	-0.217	11	-0.187	17	
65	3	max	0.124	6	0.189	6	0.024	17	9.78	6	0	2	0.374	17	0.434	11	
66		min	0	2	0	2	-0.028	11	0	2	-9.78	6	-0.434	11	-0.374	17	
67	4	max	0.096	6	0.083	6	0.024	17	12.024	6	0	2	0.561	17	0.651	11	
68		min	0	2	0	2	-0.028	11	0	2	-12.024	6	-0.651	11	-0.561	17	
69	5	max	0.068	6	0	2	0.024	17	12.505	6	0	2	0.749	17	0.869	11	
70		min	0	2	-0.024	6	-0.028	11	0	2	-12.505	6	-0.869	11	-0.749	17	
71	M8	1	max	0.068	6	0.024	6	0.028	11	12.505	6	0	2	0.749	17	0.869	11
72		min	0	2	0	2	-0.024	17	0	2	-12.505	6	-0.869	11	-0.749	17	
73	2	max	0.096	6	0	2	0.028	11	12.024	6	0	2	0.561	17	0.651	11	
74		min	0	2	-0.083	6	-0.024	17	0	2	-12.024	6	-0.651	11	-0.561	17	
75	3	max	0.124	6	0	2	0.028	11	9.78	6	0	2	0.374	17	0.434	11	
76		min	0	2	-0.189	6	-0.024	17	0	2	-9.78	6	-0.434	11	-0.374	17	
77	4	max	0.153	6	0	2	0.028	11	5.772	6	0	2	0.187	17	0.217	11	
78		min	0	2	-0.296	6	-0.024	17	0	2	-5.772	6	-0.217	11	-0.187	17	
79	5	max	0.181	6	0	2	0.028	11	0	19	0	19	0	19	0	19	
80		min	0	2	-0.403	6	-0.024	17	0	1	0	1	0	1	0	1	
81	M9	1	max	0.26	6	0.37	6	0.027	9	0	19	0	19	0	19	0	19
82		min	0	2	0	2	-0.026	19	0	1	0	1	0	1	0	1	
83	2	max	0.232	6	0.264	6	0.027	9	5.232	6	0	2	0.208	9	0.195	19	
84		min	0	2	0	2	-0.026	19	0	2	-5.232	6	-0.195	19	-0.208	9	
85	3	max	0.204	6	0.157	6	0.027	9	8.7	6	0	2	0.416	9	0.391	19	
86		min	0	2	0	2	-0.026	19	0	2	-8.7	6	-0.391	19	-0.416	9	
87	4	max	0.176	6	0.05	6	0.027	9	10.405	6	0	2	0.624	9	0.586	19	
88		min	0	2	0	2	-0.026	19	0	2	-10.405	6	-0.586	19	-0.624	9	
89	5	max	0.148	6	0	2	0.027	9	10.345	6	0	2	0.832	9	0.782	19	
90		min	0	2	-0.057	6	-0.026	19	0	2	-10.345	6	-0.782	19	-0.832	9	
91	M10	1	max	0.148	6	0.057	6	0.026	19	10.345	6	0	2	0.832	9	0.782	19
92		min	0	2	0	2	-0.027	9	0	2	-10.345	6	-0.782	19	-0.832	9	
93	2	max	0.176	6	0	2	0.026	19	10.405	6	0	2	0.624	9	0.586	19	
94		min	0	2	-0.05	6	-0.027	9	0	2	-10.405	6	-0.586	19	-0.624	9	
95	3	max	0.204	6	0	2	0.026	19	8.7	6	0	2	0.416	9	0.391	19	
96		min	0	2	-0.157	6	-0.027	9	0	2	-8.7	6	-0.391	19	-0.416	9	
97	4	max	0.232	6	0	2	0.026	19	5.232	6	0	2	0.208	9	0.195	19	
98		min	0	2	-0.264	6	-0.027	9	0	2	-5.232	6	-0.195	19	-0.208	9	
99	5	max	0.26	6	0	2	0.026	19	0	19	0	19	0	19	0	19	
100		min	0	2	-0.37	6	-0.027	9	0	1	0	1	0	1	0	1	
101	M11	1	max	0.101	6	0.255	6	0.029	9	0	19	0	19	0	19	0	19
102		min	0	2	0	2	-0.024	19	0	1	0	1	0	1	0	1	
103	2	max	0.083	6	0.188	6	0.029	9	3.653	6	0	2	0.224	9	0.186	19	
104		min	0	2	0	2	-0.024	19	0	2	-3.653	6	-0.186	19	-0.224	9	
105	3	max	0.066	6	0.122	6	0.029	9	6.21	6	0	2	0.448	9	0.373	19	
106		min	0	2	0	2	-0.024	19	0	2	-6.21	6	-0.373	19	-0.448	9	
107	4	max	0.048	6	0.055	6	0.029	9	7.67	6	0	2	0.672	9	0.559	19	
108		min	0	2	0	2	-0.024	19	0	2	-7.67	6	-0.559	19	-0.672	9	
109	5	max	0.037	11	0	2	0.029	9	8.033	6	0	2	0.896	9	0.746	19	
110		min	0	2	-0.015	11	-0.024	19	0	2	-8.033	6	-0.746	19	-0.896	9	
111	M12	1	max	0.037	11	0.015	11	0.024	19	8.033	6	0	2	0.896	9	0.746	19
112		min	0	2	0	2	-0.029	9	0	2	-8.033	6	-0.746	19	-0.896	9	

**Envelope Member Section Stresses (Continued)**

Member	Sec		Axial[ksi]	LC y	Shear[ksi]	LC z	Shear[ksi]	LC y-Top[ksi]	LC y-Bot[ksi]	LC z-Top[ksi]	LC z-Bot[ksi]	LC					
113	2	max	0.048	6	0	2	0.024	19	7.67	6	0	2	0.672	9	0.559	19	
114		min	0	2	-0.055	6	-0.029	9	0	2	-7.67	6	-0.559	19	-0.672	9	
115	3	max	0.066	6	0	2	0.024	19	6.21	6	0	2	0.448	9	0.373	19	
116		min	0	2	-0.122	6	-0.029	9	0	2	-6.21	6	-0.373	19	-0.448	9	
117	4	max	0.083	6	0	2	0.024	19	3.653	6	0	2	0.224	9	0.186	19	
118		min	0	2	-0.188	6	-0.029	9	0	2	-3.653	6	-0.186	19	-0.224	9	
119	5	max	0.101	6	0	2	0.024	19	0	19	0	19	0	19	0	19	
120		min	0	2	-0.255	6	-0.029	9	0	1	0	1	0	1	0	1	
121	M14	1	max	0.071	17	0.021	11	0	19	0	19	0	19	0	19	0	19
122		min	-0.106	15	0	2	0	1	0	1	0	1	0	1	0	1	
123	2	max	0.071	17	0.01	11	0	19	0.125	11	0	2	0	19	0	19	
124		min	-0.106	15	0	2	0	1	0	2	-0.125	1	0	1	0	1	
125	3	max	0.071	17	0	19	0	19	0.166	11	0	2	0	19	0	19	
126		min	-0.106	15	0	1	0	1	0	2	-0.166	1	0	1	0	1	
127	4	max	0.071	17	0	2	0	19	0.125	11	0	2	0	19	0	19	
128		min	-0.106	15	-0.01	6	0	1	0	2	-0.125	1	0	1	0	1	
129	5	max	0.071	17	0	2	0	19	0	19	0	19	0	19	0	19	
130		min	-0.106	15	-0.021	6	0	1	0	1	0	1	0	1	0	1	
131	M15	1	max	0.087	11	0.021	11	0	19	0	19	0	19	0	19	0	19
132		min	-0.077	17	0	2	0	1	0	1	0	1	0	1	0	1	
133	2	max	0.087	11	0.01	11	0	19	0.125	15	0	2	0	19	0	19	
134		min	-0.077	17	0	2	0	1	0	2	-0.125	1	0	1	0	1	
135	3	max	0.087	11	0	19	0	19	0.166	11	0	2	0	19	0	19	
136		min	-0.077	17	0	1	0	1	0	2	-0.166	11	0	1	0	1	
137	4	max	0.087	11	0	2	0	19	0.125	11	0	2	0	19	0	19	
138		min	-0.077	17	-0.01	6	0	1	0	2	-0.125	11	0	1	0	1	
139	5	max	0.087	11	0	2	0	19	0	19	0	19	0	19	0	19	
140		min	-0.077	17	-0.021	6	0	1	0	1	0	1	0	1	0	1	
141	M16	1	max	0.134	11	0.021	6	0	19	0	19	0	19	0	19	0	19
142		min	-0.117	17	0	2	0	1	0	1	0	1	0	1	0	1	
143	2	max	0.134	11	0.01	6	0	19	0.125	6	0	2	0	19	0	19	
144		min	-0.117	17	0	2	0	1	0	2	-0.125	6	0	1	0	1	
145	3	max	0.134	11	0	19	0	19	0.166	6	0	2	0	19	0	19	
146		min	-0.117	17	0	1	0	1	0	2	-0.166	6	0	1	0	1	
147	4	max	0.134	11	0	2	0	19	0.125	6	0	2	0	19	0	19	
148		min	-0.117	17	-0.01	1	0	1	0	2	-0.125	6	0	1	0	1	
149	5	max	0.134	11	0	2	0	19	0	19	0	19	0	19	0	19	
150		min	-0.117	17	-0.021	1	0	1	0	1	0	1	0	1	0	1	
151	M17	1	max	0.174	11	0.021	6	0	19	0	19	0	19	0	19	0	19
152		min	-0.161	17	0	2	0	1	0	1	0	1	0	1	0	1	
153	2	max	0.174	11	0.01	6	0	19	0.125	6	0	2	0	19	0	19	
154		min	-0.161	17	0	2	0	1	0	2	-0.125	6	0	1	0	1	
155	3	max	0.174	11	0	19	0	19	0.166	6	0	2	0	19	0	19	
156		min	-0.161	17	0	1	0	1	0	2	-0.166	6	0	1	0	1	
157	4	max	0.174	11	0	2	0	19	0.125	6	0	2	0	19	0	19	
158		min	-0.161	17	-0.01	11	0	1	0	2	-0.125	6	0	1	0	1	
159	5	max	0.174	11	0	2	0	19	0	19	0	19	0	19	0	19	
160		min	-0.161	17	-0.021	11	0	1	0	1	0	1	0	1	0	1	
161	M20	1	max	1.451	6	0.486	16	0.456	11	22.656	14	11.612	16	10.795	9	10.907	11
162		min	0	2	-0.948	14	-0.452	9	-11.612	16	-22.656	14	-10.907	11	-10.795	9	
163	2	max	1.442	6	0.486	16	0.456	11	16.992	14	8.709	16	8.096	9	8.18	11	
164		min	0	2	-0.948	14	-0.452	9	-8.709	16	-16.992	14	-8.18	11	-8.096	9	
165	3	max	1.433	6	0.486	16	0.456	11	11.328	14	5.806	16	5.397	9	5.453	11	
166		min	0	2	-0.948	14	-0.452	9	-5.806	16	-11.328	14	-5.453	11	-5.397	9	
167	4	max	1.424	6	0.486	16	0.456	11	5.664	14	2.903	16	2.699	9	2.727	11	

**Envelope Member Section Stresses (Continued)**

Member Sec	Axial[ksi]	LC	y Shear[ksi]	LC	z Shear[ksi]	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC			
168		min	0	2	-0.948	14	-0.452	9	-2.903	16	-5.664	14	-2.727	11	-2.699	9	
169	5	max	1.414	6	0.486	16	0.456	11	0	19	0	19	0	19	0	19	
170		min	0	2	-0.948	14	-0.452	9	0	1	0	1	0	1	0	1	
171	M21	1	max	1.451	6	0.948	12	0.456	11	11.612	18	22.656	12	10.795	9	10.907	11
172		min	0	2	-0.486	18	-0.452	9	-22.656	12	-11.612	18	-10.907	11	-10.795	9	
173	2	max	1.442	6	0.948	12	0.456	11	8.709	18	16.992	12	8.096	9	8.18	11	
174		min	0	2	-0.486	18	-0.452	9	-16.992	12	-8.709	18	-8.18	11	-8.096	9	
175	3	max	1.433	6	0.948	12	0.456	11	5.806	18	11.328	12	5.397	9	5.453	11	
176		min	0	2	-0.486	18	-0.452	9	-11.328	12	-5.806	18	-5.453	11	-5.397	9	
177	4	max	1.424	6	0.948	12	0.456	11	2.903	18	5.664	12	2.699	9	2.727	11	
178		min	0	2	-0.486	18	-0.452	9	-5.664	12	-2.903	18	-2.727	11	-2.699	9	
179	5	max	1.414	6	0.948	12	0.456	11	0	19	0	19	0	19	0	19	
180		min	0	2	-0.486	18	-0.452	9	0	1	0	1	0	1	0	1	
181	M22	1	max	0.509	6	0.544	12	0.456	11	4.524	18	13.001	12	10.796	9	10.907	11
182		min	0	2	-0.189	18	-0.452	9	-13.001	12	-4.524	18	-10.907	11	-10.796	9	
183	2	max	0.5	6	0.544	12	0.456	11	3.393	18	9.75	12	8.097	9	8.181	11	
184		min	0	2	-0.189	18	-0.452	9	-9.75	12	-3.393	18	-8.181	11	-8.097	9	
185	3	max	0.491	6	0.544	12	0.456	11	2.262	18	6.5	12	5.398	9	5.454	11	
186		min	0	2	-0.189	18	-0.452	9	-6.5	12	-2.262	18	-5.454	11	-5.398	9	
187	4	max	0.482	6	0.544	12	0.456	11	1.131	18	3.25	12	2.699	9	2.727	11	
188		min	0	2	-0.189	18	-0.452	9	-3.25	12	-1.131	18	-2.727	11	-2.699	9	
189	5	max	0.473	6	0.544	12	0.456	11	0	19	0	19	0	19	0	19	
190		min	0	2	-0.189	18	-0.452	9	0	1	0	1	0	1	0	1	
191	M23	1	max	0.509	6	0.189	16	0.456	11	13.001	14	4.524	16	10.796	9	10.907	11
192		min	0	2	-0.544	14	-0.452	9	-4.524	16	-13.001	14	-10.907	11	-10.796	9	
193	2	max	0.5	6	0.189	16	0.456	11	9.75	14	3.393	16	8.097	9	8.181	11	
194		min	0	2	-0.544	14	-0.452	9	-3.393	16	-9.75	14	-8.181	11	-8.097	9	
195	3	max	0.491	6	0.189	16	0.456	11	6.5	14	2.262	16	5.398	9	5.454	11	
196		min	0	2	-0.544	14	-0.452	9	-2.262	16	-6.5	14	-5.454	11	-5.398	9	
197	4	max	0.482	6	0.189	16	0.456	11	3.25	14	1.131	16	2.699	9	2.727	11	
198		min	0	2	-0.544	14	-0.452	9	-1.131	16	-3.25	14	-2.727	11	-2.699	9	
199	5	max	0.473	6	0.189	16	0.456	11	0	19	0	19	0	19	0	19	
200		min	0	2	-0.544	14	-0.452	9	0	1	0	1	0	1	0	1	
201	M24	1	max	0.015	15	1.351	6	0	2	0	2	14.982	6	1.488	14	0.463	16
202		min	-0.007	17	0	2	-0.325	14	-14.982	6	0	2	-0.463	16	-1.488	14	
203	2	max	0.015	15	1.343	6	0	2	0	2	11.445	6	1.062	10	0.485	16	
204		min	-0.007	17	0	2	-0.325	14	-11.445	6	0	2	-0.485	16	-1.062	10	
205	3	max	0.015	15	1.335	6	0	2	0	2	7.928	6	0.655	10	0.739	12	
206		min	-0.007	17	0	2	-0.325	14	-7.928	6	0	2	-0.739	12	-0.655	10	
207	4	max	0.015	15	1.327	6	0	2	0	2	4.433	6	0.316	18	1.197	12	
208		min	-0.007	17	0	2	-0.325	14	-4.433	6	0	2	-1.197	12	-0.316	18	
209	5	max	0.015	15	1.319	6	0	2	0	2	1.116	11	0.097	17	1.764	6	
210		min	-0.007	17	0	2	-0.325	14	-1.116	11	0	2	-1.764	6	-0.097	17	
211	M25	1	max	0.007	17	0.701	6	0.033	16	0	2	1.598	11	0.521	18	1.661	12
212		min	-0.005	19	0	2	-0.177	14	-1.598	11	0	2	-1.661	12	-0.521	18	
213	2	max	0.007	17	0.693	6	0.033	16	0.731	13	0.719	11	0.311	18	1.811	12	
214		min	-0.005	19	0	2	-0.177	14	-0.719	11	-0.731	13	-1.811	12	-0.311	18	
215	3	max	0.007	17	0.685	6	0.033	16	2.491	6	0.046	19	0.101	18	1.989	6	
216		min	-0.005	19	0	2	-0.177	14	-2.491	6	-0.046	19	-1.989	6	-0.101	18	
217	4	max	0.007	17	0.677	6	0.033	16	4.28	6	0	2	0	2	2.295	6	
218		min	-0.005	19	0	2	-0.177	14	0	2	-4.28	6	-2.295	6	0	2	
219	5	max	0.007	17	0.67	6	0.033	16	6.049	6	0	2	0	2	2.601	6	
220		min	-0.005	19	0	2	-0.177	14	0	2	-6.049	6	-2.601	6	0	2	
221	M26	1	max	0.011	17	0.077	11	0.09	12	6.026	6	0	2	0	2	2.611	6
222		min	-0.01	19	0	2	-0.06	18	0	2	-6.026	6	-2.611	6	0	2	

**Envelope Member Section Stresses (Continued)**

Member	Sec		Axial[ksi]	LC y	Shear[ksi]	LC z	Shear[ksi]	LC y-Top[ksi]	LC y-Bot[ksi]	LC z-Top[ksi]	LC z-Bot[ksi]	LC						
223	2	max	0.011	17	0.069	11	0.09	12	6.15	6	0	2	2.515	6				
224		min	-0.01	19	0	2	-0.06	18	0	2	-6.15	6	-2.515	6	0	2		
225	3	max	0.011	17	0.061	11	0.09	12	6.254	6	0	2	2.418	6	0	2		
226		min	-0.01	19	-0.004	17	-0.06	18	0	2	-6.254	6	0	2	-2.418	6	0	2
227	4	max	0.011	17	0.053	11	0.09	12	6.337	6	0	2	2.322	6	0	2		
228		min	-0.01	19	-0.008	17	-0.06	18	0	2	-6.337	6	-2.322	6	0	2		
229	5	max	0.011	17	0.045	11	0.09	12	6.4	6	0	2	2.226	6	0	2		
230		min	-0.01	19	-0.013	17	-0.06	18	0	2	-6.4	6	-2.226	6	0	2		
231	M27	1	max	0.015	17	0	2	0.468	6	6.414	6	0	2	2.22	6	0	2	
232		min	-0.013	19	-0.598	6	0	2	0	2	-6.414	6	-2.22	6	0	2		
233	2	max	0.015	17	0	2	0.468	6	4.832	6	0	2	0.263	16	1.424	14		
234		min	-0.013	19	-0.606	6	0	2	0	2	-4.832	6	-1.424	14	-0.263	16		
235	3	max	0.015	17	0	2	0.468	6	3.23	6	0	2	0.755	16	0.755	10		
236		min	-0.013	19	-0.614	6	0	2	0	2	-3.23	6	-0.755	10	-0.755	16		
237	4	max	0.015	17	0	2	0.468	6	1.606	6	0	2	1.178	12	0.672	18		
238		min	-0.013	19	-0.622	6	0	2	0	2	-1.606	6	-0.672	18	-1.178	12		
239	5	max	0.015	17	0	2	0.468	6	0.103	19	0.124	9	2.088	12	0.639	18		
240		min	-0.013	19	-0.63	6	0	2	-0.124	9	-0.103	19	-0.639	18	-2.088	12		
241	M30	1	max	0.015	15	1.351	6	0.325	12	0	2	14.982	6	0.463	18	1.488	12	
242		min	-0.007	17	0	2	0	2	-14.982	6	0	2	-1.488	12	-0.463	18		
243	2	max	0.015	15	1.343	6	0.325	12	0	2	11.445	6	0.485	18	1.062	8		
244		min	-0.007	17	0	2	0	2	-11.445	6	0	2	-1.062	8	-0.485	18		
245	3	max	0.015	15	1.335	6	0.325	12	0	2	7.928	6	0.739	14	0.655	8		
246		min	-0.007	17	0	2	0	2	-7.928	6	0	2	-0.655	8	-0.739	14		
247	4	max	0.015	15	1.327	6	0.325	12	0	2	4.433	6	1.197	14	0.316	16		
248		min	-0.007	17	0	2	0	2	-4.433	6	0	2	-0.316	16	-1.197	14		
249	5	max	0.015	15	1.319	6	0.325	12	0	2	1.116	11	1.764	6	0.097	17		
250		min	-0.007	17	0	2	0	2	-1.116	11	0	2	-0.097	17	-1.764	6		
251	M31	1	max	0.007	17	0.701	6	0.177	12	0	2	1.598	11	1.661	14	0.521	16	
252		min	-0.005	19	0	2	-0.033	18	-1.598	11	0	2	-0.521	16	-1.661	14		
253	2	max	0.007	17	0.693	6	0.177	12	0.731	13	0.719	11	1.811	14	0.311	16		
254		min	-0.005	19	0	2	-0.033	18	-0.719	11	-0.731	13	-0.311	16	-1.811	14		
255	3	max	0.007	17	0.685	6	0.177	12	2.491	6	0.046	19	1.989	6	0.101	16		
256		min	-0.005	19	0	2	-0.033	18	-0.046	19	-2.491	6	-0.101	16	-1.989	6		
257	4	max	0.007	17	0.677	6	0.177	12	4.28	6	0	2	2.295	6	0	2		
258		min	-0.005	19	0	2	-0.033	18	0	2	-4.28	6	0	2	-2.295	6		
259	5	max	0.007	17	0.67	6	0.177	12	6.049	6	0	2	2.601	6	0	2		
260		min	-0.005	19	0	2	-0.033	18	0	2	-6.049	6	0	2	-2.601	6		
261	M32	1	max	0.011	17	0.077	11	0.06	16	6.026	6	0	2	2.611	6	0	2	
262		min	-0.01	19	0	2	-0.09	14	0	2	-6.026	6	0	2	-2.611	6		
263	2	max	0.011	17	0.069	11	0.06	16	6.15	6	0	2	2.515	6	0	2		
264		min	-0.01	19	0	2	-0.09	14	0	2	-6.15	6	0	2	-2.515	6		
265	3	max	0.011	17	0.061	11	0.06	16	6.254	6	0	2	2.418	6	0	2		
266		min	-0.01	19	-0.004	17	-0.09	14	0	2	-6.254	6	0	2	-2.418	6		
267	4	max	0.011	17	0.053	11	0.06	16	6.337	6	0	2	2.322	6	0	2		
268		min	-0.01	19	-0.008	17	-0.09	14	0	2	-6.337	6	0	2	-2.322	6		
269	5	max	0.011	17	0.045	11	0.06	16	6.4	6	0	2	2.226	6	0	2		
270		min	-0.01	19	-0.013	17	-0.09	14	0	2	-6.4	6	0	2	-2.226	6		
271	M33	1	max	0.015	17	0	2	0	6.414	6	0	2	2.22	6	0	2		
272		min	-0.013	19	-0.598	6	-0.468	6	0	2	-6.414	6	0	2	-2.22	6		
273	2	max	0.015	17	0	2	0	2	4.832	6	0	2	1.424	12	0.263	18		
274		min	-0.013	19	-0.606	6	-0.468	6	0	2	-4.832	6	-0.263	18	-1.424	12		
275	3	max	0.015	17	0	2	0	2	3.23	6	0	2	0.755	8	0.755	18		
276		min	-0.013	19	-0.614	6	-0.468	6	0	2	-3.23	6	-0.755	18	-0.755	8		
277	4	max	0.015	17	0	2	0	2	1.606	6	0	2	1.178	16	0.672	14		

**Envelope Member Section Stresses (Continued)**

Member	Sec		Axial[ksi]	LC y	Shear[ksi]	LC z	Shear[ksi]	LC y-Top[ksi]	LC y-Bot[ksi]	LC z-Top[ksi]	LC z-Bot[ksi]	LC					
278		min	-0.013	19	-0.622	6	-0.468	6	0	2	-1.606	6	-1.178	14	-0.672	16	
279	5	max	0.015	17	0	2	0	2	0.103	19	0.124	9	0.639	16	2.088	14	
280		min	-0.013	19	-0.63	6	-0.468	6	-0.124	9	-0.103	19	-2.088	14	-0.639	16	
281	M31A	1	max	0.007	13	0	2	0.166	6	0.182	13	0.068	19	0.028	19	0.076	13
282		min	-0.002	19	-0.384	6	0	2	-0.068	19	-0.182	13	-0.076	13	-0.028	19	
283	2	max	0.007	13	0	2	0.166	6	0	2	0.902	6	0.296	6	0.03	17	
284		min	-0.002	19	-0.392	6	0	2	-0.902	6	0	2	-0.03	17	-0.296	6	
285	3	max	0.007	13	0	2	0.166	6	0	2	1.942	6	0.642	6	0.003	17	
286		min	-0.002	19	-0.4	6	0	2	-1.942	6	0	2	-0.003	17	-0.642	6	
287	4	max	0.007	13	0	2	0.166	6	0	2	3.002	6	0.987	6	0	2	
288		min	-0.002	19	-0.408	6	0	2	-3.002	6	0	2	0	2	-0.987	6	
289	5	max	0.007	13	0	2	0.166	6	0	2	4.083	6	1.332	6	0	2	
290		min	-0.002	19	-0.416	6	0	2	-4.083	6	0	2	0	2	-1.332	6	
291	M32A	1	max	0.013	13	0	2	0	2	3.983	6	1.291	6	0.004	17	0.004	17
292		min	-0.005	19	-1.034	6	-0.206	6	-3.983	6	0	2	-0.004	17	-1.291	6	
293	2	max	0.013	13	0	2	0	2	0	2	6.708	6	0.861	6	0.133	9	
294		min	-0.005	19	-1.042	6	-0.206	6	-6.708	6	0	2	-0.133	9	-0.861	6	
295	3	max	0.013	13	0	2	0	2	0	2	9.455	6	0.432	6	0.311	9	
296		min	-0.005	19	-1.05	6	-0.206	6	-9.455	6	0	2	-0.311	9	-0.432	6	
297	4	max	0.013	13	0	2	0	2	0	2	12.221	6	0.002	6	0.49	9	
298		min	-0.005	19	-1.057	6	-0.206	6	-12.221	6	0	2	-0.49	9	-0.002	6	
299	5	max	0.013	13	0	2	0	2	0	2	15.009	6	0	2	0.669	9	
300		min	-0.005	19	-1.065	6	-0.206	6	-15.009	6	0	2	-0.669	9	0	2	
301	M33A	1	max	0.007	13	0	2	0	2	0.182	13	0.068	19	0.076	13	0.028	19
302		min	-0.002	19	-0.384	6	-0.166	6	-0.068	19	-0.182	13	-0.028	19	-0.076	13	
303	2	max	0.007	13	0	2	0	2	0	2	0.902	6	0.03	17	0.296	6	
304		min	-0.002	19	-0.392	6	-0.166	6	-0.902	6	0	2	-0.296	6	-0.03	17	
305	3	max	0.007	13	0	2	0	2	0	2	1.942	6	0.003	17	0.642	6	
306		min	-0.002	19	-0.4	6	-0.166	6	-1.942	6	0	2	-0.642	6	-0.003	17	
307	4	max	0.007	13	0	2	0	2	0	2	3.002	6	0	2	0.987	6	
308		min	-0.002	19	-0.408	6	-0.166	6	-3.002	6	0	2	-0.987	6	0	2	
309	5	max	0.007	13	0	2	0	2	0	2	4.083	6	0	2	1.332	6	
310		min	-0.002	19	-0.416	6	-0.166	6	-4.083	6	0	2	-1.332	6	0	2	
311	M34	1	max	0.013	13	0	2	0.206	6	0	2	3.983	6	0.004	17	1.291	6
312		min	-0.005	19	-1.034	6	0	2	-3.983	6	0	2	-1.291	6	-0.004	17	
313	2	max	0.013	13	0	2	0.206	6	0	2	6.708	6	0.133	9	0.861	6	
314		min	-0.005	19	-1.042	6	0	2	-6.708	6	0	2	-0.861	6	-0.133	9	
315	3	max	0.013	13	0	2	0.206	6	0	2	9.455	6	0.311	9	0.432	6	
316		min	-0.005	19	-1.05	6	0	2	-9.455	6	0	2	-0.432	6	-0.311	9	
317	4	max	0.013	13	0	2	0.206	6	0	2	12.221	6	0.49	9	0.002	6	
318		min	-0.005	19	-1.057	6	0	2	-12.221	6	0	2	-0.002	6	-0.49	9	
319	5	max	0.013	13	0	2	0.206	6	0	2	15.009	6	0.669	9	0	2	
320		min	-0.005	19	-1.065	6	0	2	-15.009	6	0	2	0	2	-0.669	9	
321	M35	1	max	0.171	9	0.021	11	0	19	0	19	0	19	0	19	0	19
322		min	-0.159	19	0	2	0	1	0	1	0	1	0	1	0	1	1
323	2	max	0.171	9	0.01	11	0	19	0.125	15	0	2	0	19	0	19	
324		min	-0.159	19	0	2	0	1	0	2	-0.125	1	0	1	0	1	1
325	3	max	0.171	9	0	19	0	19	0.166	11	0	2	0	19	0	19	
326		min	-0.159	19	0	1	0	1	0	2	-0.166	1	0	1	0	1	1
327	4	max	0.171	9	0	2	0	19	0.125	15	0	2	0	19	0	19	
328		min	-0.159	19	-0.01	6	0	1	0	2	-0.125	1	0	1	0	1	1
329	5	max	0.171	9	0	2	0	19	0	19	0	19	0	19	0	19	19
330		min	-0.159	19	-0.021	6	0	1	0	1	0	1	0	1	0	1	1
331	M36	1	max	0.116	17	0.021	11	0	19	0	19	0	19	0	19	0	19
332		min	-0.136	11	0	2	0	1	0	1	0	1	0	1	0	1	1



**Envelope Member Section Stresses (Continued)**

Member	Sec		Axial[ksi]	LC	y	Shear[ksi]	LC	z	Shear[ksi]	LC	y-Top[ksi]	LC	y-Bot[ksi]	LC	z-Top[ksi]	LC	z-Bot[ksi]	LC
333	2	max	0.116	17		0.01	11	0	19		0.125	11	0	2	0	19	0	19
334		min	-0.136	11		0	2	0	1		0	2	-0.125	11	0	1	0	1
335	3	max	0.116	17		0	19	0	19		0.166	11	0	2	0	19	0	19
336		min	-0.136	11		0	1	0	1		0	2	-0.166	11	0	1	0	1
337	4	max	0.116	17		0	2	0	19		0.125	11	0	2	0	19	0	19
338		min	-0.136	11		-0.01	6	0	1		0	2	-0.125	11	0	1	0	1
339	5	max	0.116	17		0	2	0	19		0	19	0	19	0	19	0	19
340		min	-0.136	11		-0.021	6	0	1		0	1	0	1	0	1	0	1
341	M37	1	max	0.243	6	0.378	6	0.039	13		0	19	0	19	0	19	0	19
342		min	0	2		0	2	-0.017	19		0	1	0	1	0	1	0	1
343	2	max	0.215	6		0.271	6	0.039	13		5.349	6	0	2	0.302	13	0.132	19
344		min	0	2		0	2	-0.017	19		0	2	-5.349	6	-0.132	19	-0.302	13
345	3	max	0.187	6		0.164	6	0.039	13		8.933	6	0	2	0.605	13	0.264	19
346		min	0	2		0	2	-0.017	19		0	2	-8.933	6	-0.264	19	-0.605	13
347	4	max	0.159	6		0.057	6	0.039	13		10.754	6	0	2	0.907	13	0.396	19
348		min	0	2		0	2	-0.017	19		0	2	-10.754	6	-0.396	19	-0.907	13
349	5	max	0.13	6		0	2	0.039	13		10.812	6	0	2	1.21	13	0.528	19
350		min	0	2		-0.05	6	-0.017	19		0	2	-10.812	6	-0.528	19	-1.21	13
351	M38	1	max	0.13	6	0.05	6	0.017	19		10.812	6	0	2	1.21	13	0.528	19
352		min	0	2		0	2	-0.039	13		0	2	-10.812	6	-0.528	19	-1.21	13
353	2	max	0.159	6		0	2	0.017	19		10.754	6	0	2	0.907	13	0.396	19
354		min	0	2		-0.057	6	-0.039	13		0	2	-10.754	6	-0.396	19	-0.907	13
355	3	max	0.187	6		0	2	0.017	19		8.933	6	0	2	0.605	13	0.264	19
356		min	0	2		-0.164	6	-0.039	13		0	2	-8.933	6	-0.264	19	-0.605	13
357	4	max	0.215	6		0	2	0.017	19		5.349	6	0	2	0.302	13	0.132	19
358		min	0	2		-0.271	6	-0.039	13		0	2	-5.349	6	-0.132	19	-0.302	13
359	5	max	0.243	6		0	2	0.017	19		0	19	0	19	0	19	0	19
360		min	0	2		-0.378	6	-0.039	13		0	1	0	1	0	1	0	1

**Envelope Member Section Deflections - Service**

Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [rad]	LC	(n) L/y' Ratio	LC	(n) L/z' Ratio	LC	
1	M1	1	max	0.652	16	0.142	18	0.563	9	0.006	6	NC	19	NC	19
2		min	-1.314	14	-0.566	12	-0.569	11	0	2	NC	1	NC	1	
3	2	max	0.651	16	0	2	0.352	17	0.006	6	NC	2	NC	18	
4		min	-1.314	14	-1.179	12	-0.405	11	0	2	1143.521	6	3181.277	13	
5	3	max	0.651	16	0	2	0.171	17	0.006	6	NC	2	NC	16	
6		min	-1.314	14	-1.694	12	-0.249	11	0	2	740.665	6	1988.298	13	
7	4	max	0.651	16	0	2	0.045	17	0.006	15	NC	2	NC	18	
8		min	-1.314	14	-2.087	6	-0.125	15	0	2	889.334	6	2272.34	13	
9	5	max	0.651	16	0	2	0	19	0.006	15	NC	19	NC	19	
10		min	-1.314	14	-2.227	6	0	1	0	2	NC	1	NC	1	
11	M2	1	max	1.314	12	0	2	0	19	0.006	15	NC	19	NC	19
12		min	-0.651	18	-2.227	6	0	1	0	2	NC	1	NC	1	
13	2	max	1.314	12	0	2	0.045	17	0.006	15	NC	2	NC	18	
14		min	-0.651	18	-2.087	6	-0.125	15	0	2	889.334	6	2272.34	13	
15	3	max	1.314	12	0	2	0.171	17	0.006	6	NC	2	NC	18	
16		min	-0.651	18	-1.694	14	-0.249	11	0	2	740.665	6	1988.298	13	
17	4	max	1.314	12	0	2	0.352	17	0.006	6	NC	2	NC	18	
18		min	-0.651	18	-1.179	14	-0.405	11	0	2	1143.521	6	3181.277	13	
19	5	max	1.314	12	0.142	16	0.563	9	0.006	6	NC	19	NC	19	
20		min	-0.652	18	-0.566	14	-0.569	11	0	2	NC	1	NC	1	
21	M3	1	max	0.574	18	0.368	12	0.569	11	0	2	NC	19	NC	19
22		min	-1.123	12	-0.193	18	-0.563	9	-0.002	14	NC	1	NC	1	
23	2	max	0.574	18	0.094	16	0.383	11	0	2	NC	2	NC	18	
24		min	-1.123	12	-0.739	14	-0.363	17	-0.002	15	904.862	6	4627.449	9	

**Envelope Member Section Deflections - Service (Continued)**

Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [rad]	LC	(n) L/y' Ratio	LC	(n) L/z' Ratio	LC	
25		3	max	0.574	18	0	2	0.215	11	0	17	NC	2	NC	18
26			min	-1.123	12	-1.38	6	-0.188	17	-0.002	15	591.946	6	2892.156	9
27		4	max	0.573	18	0	2	0.082	11	0	17	NC	2	NC	18
28			min	-1.124	12	-1.851	6	-0.06	17	-0.002	15	721.182	6	3305.321	9
29		5	max	0.573	18	0	2	0.001	11	0.001	17	NC	19	NC	19
30			min	-1.124	12	-2.013	6	-0.001	17	-0.002	11	NC	1	NC	1
31	M4	1	max	1.124	14	0	2	0.001	11	0.001	17	NC	19	NC	19
32			min	-0.573	16	-2.013	6	-0.001	17	-0.002	11	NC	1	NC	1
33		2	max	1.124	14	0	2	0.082	11	0	17	NC	2	NC	18
34			min	-0.573	16	-1.851	6	-0.06	17	-0.002	15	721.182	6	3305.321	9
35		3	max	1.123	14	0	2	0.215	11	0	17	NC	2	NC	18
36			min	-0.574	16	-1.38	6	-0.188	17	-0.002	15	591.946	6	2892.156	9
37		4	max	1.123	14	0.094	18	0.383	11	0	2	NC	2	NC	18
38			min	-0.574	16	-0.739	12	-0.363	17	-0.002	15	904.862	6	4627.449	9
39		5	max	1.123	14	0.368	14	0.569	11	0	2	NC	19	NC	19
40			min	-0.574	16	-0.193	16	-0.563	9	-0.002	12	NC	1	NC	1
41	M5	1	max	0.483	16	0.314	14	0.563	9	0	16	NC	19	NC	19
42			min	-1.107	14	-0.166	16	-0.569	11	-0.002	14	NC	1	NC	1
43		2	max	0.483	16	0.058	18	0.465	17	0	19	NC	2	NC	14
44			min	-1.107	14	-0.792	12	-0.493	11	-0.002	13	860.373	6	3344.089	12
45		3	max	0.483	16	0	2	0.291	17	0.001	19	NC	2	NC	19
46			min	-1.108	14	-1.518	6	-0.31	11	-0.002	13	561.553	6	3288.224	8
47		4	max	0.483	16	0	2	0.112	9	0.001	19	NC	2	NC	19
48			min	-1.108	14	-2.02	6	-0.115	11	-0.002	13	681.841	6	6046.256	8
49		5	max	0.483	16	0	2	0.001	17	0.002	19	NC	19	NC	19
50			min	-1.108	14	-2.194	6	-0.001	11	-0.002	13	NC	1	NC	1
51	M6	1	max	1.108	12	0	2	0.001	17	0.002	19	NC	19	NC	19
52			min	-0.483	18	-2.194	6	-0.001	11	-0.002	13	NC	1	NC	1
53		2	max	1.108	12	0	2	0.112	9	0.001	19	NC	2	NC	19
54			min	-0.483	18	-2.02	6	-0.115	11	-0.002	13	681.841	6	6046.256	10
55		3	max	1.108	12	0	2	0.291	17	0.001	19	NC	2	NC	19
56			min	-0.483	18	-1.518	6	-0.31	11	-0.002	13	561.553	6	3288.224	10
57		4	max	1.107	12	0.058	16	0.465	17	0	19	NC	2	NC	13
58			min	-0.483	18	-0.792	14	-0.493	11	-0.002	13	860.373	6	3344.089	14
59		5	max	1.107	12	0.314	12	0.563	9	0	18	NC	19	NC	19
60			min	-0.483	18	-0.166	18	-0.569	11	-0.002	12	NC	1	NC	1
61	M7	1	max	0.373	16	0.221	10	0.563	9	0	16	NC	19	NC	19
62			min	-1.053	14	-0.156	16	-0.569	11	-0.002	14	NC	1	NC	1
63		2	max	0.373	16	0	2	0.373	9	0	16	NC	2	NC	18
64			min	-1.053	14	-0.85	12	-0.367	11	-0.001	14	869.175	6	4805.542	11
65		3	max	0.373	16	0	2	0.203	9	0	19	NC	2	NC	18
66			min	-1.053	14	-1.608	6	-0.191	19	-0.001	13	567.555	6	3003.464	11
67		4	max	0.373	16	0	2	0.072	9	0.001	19	NC	2	NC	18
68			min	-1.054	14	-2.104	6	-0.062	19	-0.002	13	689.589	6	3432.53	11
69		5	max	0.373	16	0	2	0.001	17	0.001	19	NC	19	NC	19
70			min	-1.054	14	-2.276	6	-0.001	11	-0.002	13	NC	1	NC	1
71	M8	1	max	1.054	12	0	2	0.001	17	0.001	19	NC	19	NC	19
72			min	-0.373	18	-2.276	6	-0.001	11	-0.002	13	NC	1	NC	1
73		2	max	1.054	12	0	2	0.072	9	0.001	19	NC	2	NC	18
74			min	-0.373	18	-2.104	6	-0.062	19	-0.002	13	689.589	6	3432.53	11
75		3	max	1.053	12	0	2	0.203	9	0	19	NC	2	NC	18
76			min	-0.373	18	-1.608	6	-0.191	19	-0.001	13	567.555	6	3003.464	11
77		4	max	1.053	12	0	2	0.373	9	0	18	NC	2	NC	18
78			min	-0.373	18	-0.85	14	-0.367	11	-0.001	12	869.175	6	4805.542	11
79		5	max	1.053	12	0.221	8	0.563	9	0	18	NC	19	NC	19

**Envelope Member Section Deflections - Service (Continued)**

Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [rad]	LC	(n) L/y' Ratio	LC	(n) L/z' Ratio	LC	
80		min	-0.373	18	-0.156	18	-0.569	11	-0.002	12	NC	1	NC	1	
81	M9	1	max	0.281	16	0.176	10	0.563	9	0.001	12	NC	19	NC	19
82		min	-0.887	14	-0.126	16	-0.569	11	0	18	NC	1	NC	1	
83	2	max	0.281	16	0	2	0.365	9	0.001	12	NC	2	NC	18	
84		min	-0.888	14	-0.748	6	-0.374	11	0	18	979.302	6	5015.112	9	
85	3	max	0.281	16	0	2	0.191	17	0.001	15	NC	2	NC	18	
86		min	-0.888	14	-1.406	6	-0.2	11	0	17	643.115	6	3134.445	9	
87	4	max	0.281	16	0	2	0.063	17	0.001	15	NC	2	NC	18	
88		min	-0.889	14	-1.83	6	-0.068	11	-0.001	17	788.019	6	3582.223	9	
89	5	max	0.28	16	0	2	0	17	0.001	15	NC	19	NC	19	
90		min	-0.89	14	-1.975	6	0	11	-0.001	17	NC	1	NC	1	
91	M10	1	max	0.89	12	0	0	17	0.001	15	NC	19	NC	19	
92		min	-0.28	18	-1.975	6	0	11	-0.001	17	NC	1	NC	1	
93	2	max	0.889	12	0	2	0.063	17	0.001	15	NC	2	NC	18	
94		min	-0.281	18	-1.83	6	-0.068	11	-0.001	17	788.019	6	3582.223	9	
95	3	max	0.888	12	0	2	0.191	17	0.001	15	NC	2	NC	18	
96		min	-0.281	18	-1.406	6	-0.2	11	0	17	643.115	6	3134.445	9	
97	4	max	0.888	12	0	2	0.365	9	0.001	14	NC	2	NC	18	
98		min	-0.281	18	-0.748	6	-0.374	11	0	16	979.302	6	5015.112	9	
99	5	max	0.887	12	0.176	8	0.563	9	0.001	14	NC	19	NC	19	
100		min	-0.281	18	-0.126	18	-0.569	11	0	16	NC	1	NC	1	
101	M11	1	max	0.224	16	0.212	14	0.563	9	0.002	6	NC	19	NC	19
102		min	-0.644	14	-0.075	16	-0.569	11	0	18	NC	1	NC	1	
103	2	max	0.223	16	0	2	0.362	17	0.002	6	NC	2	NC	18	
104		min	-0.644	14	-0.46	12	-0.378	11	0	2	1368.385	6	4656.556	9	
105	3	max	0.223	16	0	2	0.187	17	0.002	15	NC	2	NC	18	
106		min	-0.644	14	-0.918	6	-0.206	11	0	17	892.689	6	2910.347	9	
107	4	max	0.223	16	0	2	0.058	17	0.002	15	NC	2	NC	18	
108		min	-0.644	14	-1.235	6	-0.074	11	0	17	1083.127	6	3326.111	9	
109	5	max	0.223	16	0	2	0	19	0.002	15	NC	19	NC	19	
110		min	-0.645	14	-1.345	6	0	1	-0.001	17	NC	1	NC	1	
111	M12	1	max	0.645	12	0	0	19	0.002	15	NC	19	NC	19	
112		min	-0.223	18	-1.345	6	0	1	-0.001	17	NC	1	NC	1	
113	2	max	0.644	12	0	2	0.058	17	0.002	15	NC	2	NC	18	
114		min	-0.223	18	-1.235	6	-0.074	11	0	17	1083.127	6	3326.111	9	
115	3	max	0.644	12	0	2	0.187	17	0.002	15	NC	2	NC	18	
116		min	-0.223	18	-0.918	6	-0.206	11	0	17	892.689	6	2910.347	9	
117	4	max	0.644	12	0	2	0.362	17	0.002	6	NC	2	NC	18	
118		min	-0.223	18	-0.46	14	-0.378	11	0	2	1368.385	6	4656.556	9	
119	5	max	0.644	12	0.212	12	0.563	9	0.002	6	NC	19	NC	19	
120		min	-0.224	18	-0.075	18	-0.569	11	0	16	NC	1	NC	1	
121	M14	1	max	0.001	11	0	0.769	8	0	8	NC	19	NC	19	
122		min	-0.001	17	-2.122	6	-0.769	10	0	10	NC	1	NC	1	
123	2	max	0.001	11	0	2	0.747	8	0	10	NC	19	NC	19	
124		min	-0.001	17	-2.171	6	-0.747	10	0	8	NC	1	NC	1	
125	3	max	0.001	11	0	2	0.725	8	0	10	NC	19	NC	19	
126		min	-0.001	17	-2.219	6	-0.725	10	0	8	NC	1	NC	1	
127	4	max	0.001	11	0	2	0.703	8	0	10	NC	19	NC	19	
128		min	-0.001	17	-2.266	6	-0.703	10	0	8	NC	1	NC	1	
129	5	max	0.001	11	0	2	0.681	8	0	10	NC	19	NC	19	
130		min	-0.001	17	-2.312	6	-0.681	10	0	8	NC	1	NC	1	
131	M15	1	max	0.001	11	0	0.681	8	0	10	NC	19	NC	19	
132		min	-0.001	17	-2.312	6	-0.681	10	0	8	NC	1	NC	1	
133	2	max	0.001	11	0	2	0.654	8	0	10	NC	19	NC	19	
134		min	-0.001	17	-2.335	6	-0.654	10	0	8	NC	1	NC	1	

**Envelope Member Section Deflections - Service (Continued)**

Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [rad]	LC	(n) L/y' Ratio	LC	(n) L/z' Ratio	LC	
135	3	max	0.001	11	0	2	0.627	8	0	10	NC	19	NC	19	
136		min	-0.001	17	-2.358	6	-0.627	10	0	8	NC	1	NC	1	
137	4	max	0.001	11	0	2	0.6	8	0	8	NC	19	NC	19	
138		min	-0.001	17	-2.379	6	-0.6	10	0	10	NC	1	NC	1	
139	5	max	0.001	11	0	2	0.574	8	0	8	NC	19	NC	19	
140		min	-0.001	17	-2.399	6	-0.574	10	0	10	NC	1	NC	1	
141	M16	1	max	0.001	11	0	2	0.574	8	0	8	NC	19	NC	19
142		min	-0.001	17	-2.399	6	-0.574	10	0	10	NC	1	NC	1	
143	2	max	0.001	11	0	2	0.545	8	0	8	NC	19	NC	19	
144		min	-0.001	17	-2.321	6	-0.545	10	0	10	NC	1	NC	1	
145	3	max	0.001	11	0	2	0.517	8	0	8	NC	19	NC	19	
146		min	-0.001	17	-2.242	6	-0.517	10	0	10	NC	1	NC	1	
147	4	max	0.001	11	0	2	0.488	8	0	8	NC	19	NC	19	
148		min	0	17	-2.163	6	-0.488	10	0	10	NC	1	NC	1	
149	5	max	0	11	0	2	0.46	8	0	8	NC	19	NC	19	
150		min	0	17	-2.082	6	-0.46	10	0	10	NC	1	NC	1	
151	M17	1	max	0	11	0	2	0.46	8	0	8	NC	19	NC	19
152		min	0	17	-2.082	6	-0.46	10	0	10	NC	1	NC	1	
153	2	max	0	11	0	2	0.435	8	0	8	NC	19	NC	19	
154		min	0	17	-1.917	6	-0.435	10	0	10	NC	1	NC	1	
155	3	max	0	11	0	2	0.41	8	0	8	NC	19	NC	19	
156		min	0	17	-1.752	6	-0.41	10	0	10	NC	1	NC	1	
157	4	max	0	11	0	2	0.385	8	0	8	NC	19	NC	19	
158		min	0	17	-1.585	6	-0.385	10	0	10	NC	1	NC	1	
159	5	max	0	19	0	2	0.36	8	0	10	NC	19	NC	19	
160		min	0	1	-1.418	6	-0.36	10	0	8	NC	1	NC	1	
161	M20	1	max	0	19	0	19	0	19	0	19	NC	19	NC	19
162		min	0	1	0	1	0	1	0	1	NC	1	NC	1	
163	2	max	0	2	0.103	14	0.049	9	0	12	NC	12	NC	18	
164		min	-0.002	6	-0.053	16	-0.05	11	0	18	1164.454	14	2418.856	11	
165	3	max	0	2	0.371	14	0.177	9	0.001	12	NC	12	NC	18	
166		min	-0.004	6	-0.19	16	-0.179	11	-0.001	18	323.537	14	672.066	11	
167	4	max	0	2	0.749	14	0.357	9	0.001	12	NC	12	NC	18	
168		min	-0.006	6	-0.384	16	-0.36	11	-0.001	18	160.297	14	332.976	11	
169	5	max	0	2	1.181	14	0.563	9	0.002	12	NC	12	NC	18	
170		min	-0.007	6	-0.605	16	-0.569	11	-0.001	18	101.587	14	211.021	11	
171	M21	1	max	0	19	0	19	0	19	0	19	NC	19	NC	19
172		min	0	1	0	1	0	1	0	1	NC	1	NC	1	
173	2	max	0	2	0.053	18	0.049	9	0	16	NC	14	NC	18	
174		min	-0.002	6	-0.103	12	-0.05	11	0	14	1164.454	12	2418.856	11	
175	3	max	0	2	0.19	18	0.177	9	0.001	16	NC	14	NC	18	
176		min	-0.004	6	-0.371	12	-0.179	11	-0.001	14	323.537	12	672.066	11	
177	4	max	0	2	0.384	18	0.357	9	0.001	16	NC	14	NC	18	
178		min	-0.006	6	-0.749	12	-0.36	11	-0.001	14	160.297	12	332.976	11	
179	5	max	0	2	0.605	18	0.563	9	0.001	16	NC	14	NC	18	
180		min	-0.007	6	-1.181	12	-0.569	11	-0.002	14	101.587	12	211.021	11	
181	M22	1	max	0	19	0	19	0	19	0	19	NC	19	NC	19
182		min	0	1	0	1	0	1	0	1	NC	1	NC	1	
183	2	max	0	2	0.021	18	0.049	9	0.001	12	NC	19	NC	18	
184		min	-0.001	6	-0.059	12	-0.05	11	0	18	2029.298	12	2418.726	11	
185	3	max	0	2	0.074	18	0.177	9	0.002	12	NC	2	NC	18	
186		min	-0.001	6	-0.213	12	-0.179	11	0	18	563.83	12	672.03	11	
187	4	max	0	2	0.149	18	0.357	9	0.002	12	NC	2	NC	18	
188		min	-0.002	6	-0.43	12	-0.36	11	-0.001	18	279.35	12	332.958	11	
189	5	max	0	2	0.236	18	0.563	9	0.003	12	NC	2	NC	18	

**Envelope Member Section Deflections - Service (Continued)**

Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [rad]	LC	(n) L/y' Ratio	LC	(n) L/z' Ratio	LC	
190		min	-0.003	6	-0.678	12	-0.569	11	-0.001	18	177.036	12	211.01	11	
191	M23	1	max	0	19	0	19	0	0	19	NC	19	NC	19	
192		min	0	1	0	1	0	1	0	1	NC	1	NC	1	
193	2	max	0	2	0.059	14	0.049	9	0	16	NC	19	NC	18	
194		min	-0.001	6	-0.021	16	-0.05	11	-0.001	14	2029.298	14	2418.726	11	
195	3	max	0	2	0.213	14	0.177	9	0	16	NC	2	NC	18	
196		min	-0.001	6	-0.074	16	-0.179	11	-0.002	14	563.83	14	672.03	11	
197	4	max	0	2	0.43	14	0.357	9	0.001	16	NC	2	NC	18	
198		min	-0.002	6	-0.149	16	-0.36	11	-0.002	14	279.35	14	332.958	11	
199	5	max	0	2	0.678	14	0.563	9	0.001	16	NC	2	NC	18	
200		min	-0.003	6	-0.236	16	-0.569	11	-0.003	14	177.036	14	211.01	11	
201	M24	1	max	0.569	11	0	2	1.181	12	0	2	NC	19	NC	19
202		min	-0.563	9	-0.007	6	-0.605	18	-0.013	6	NC	1	595.56	10	
203	2	max	0.569	11	0.009	11	1.175	12	0	2	NC	18	NC	19	
204		min	-0.563	9	-0.001	13	-0.584	18	-0.013	6	6021.106	8	764.957	10	
205	3	max	0.569	11	0.012	11	1.169	12	0	2	NC	17	NC	19	
206		min	-0.563	9	-0.012	6	-0.561	18	-0.013	6	5280.643	19	1120.445	10	
207	4	max	0.569	11	0.009	11	1.161	12	0	2	NC	18	NC	19	
208		min	-0.563	9	-0.036	6	-0.536	18	-0.013	6	2096.856	6	764.211	14	
209	5	max	0.569	11	0.004	19	1.149	12	0	2	NC	18	NC	19	
210		min	-0.563	9	-0.067	6	-0.511	18	-0.013	6	999.463	6	575.481	14	
211	M25	1	max	0.569	11	0.004	19	1.149	12	0	2	NC	19	NC	19
212		min	-0.563	9	-0.067	6	-0.511	18	-0.013	6	NC	1	NC	1	
213	2	max	0.569	11	0	2	1.134	12	0	2	NC	19	NC	19	
214		min	-0.563	9	-0.1	6	-0.485	18	-0.013	6	NC	1	8630.913	12	
215	3	max	0.569	11	0	2	1.114	12	0	2	NC	19	NC	19	
216		min	-0.563	9	-0.132	6	-0.458	18	-0.013	6	7471.702	6	6219.813	6	
217	4	max	0.569	11	0	2	1.09	12	0	2	NC	19	NC	19	
218		min	-0.563	9	-0.159	6	-0.43	18	-0.013	6	8028.691	6	7888.582	6	
219	5	max	0.569	11	0	2	1.06	12	0	2	NC	19	NC	19	
220		min	-0.563	9	-0.18	6	-0.404	18	-0.013	6	NC	1	NC	1	
221	M26	1	max	0.569	11	0	2	1.06	12	0	2	NC	19	NC	19
222		min	-0.563	9	-0.18	6	-0.404	18	-0.013	6	NC	1	NC	1	
223	2	max	0.569	11	0	2	1.025	12	0	2	NC	19	NC	19	
224		min	-0.563	9	-0.19	6	-0.377	18	-0.013	6	3982.215	6	6732.124	6	
225	3	max	0.569	11	0	2	0.985	12	0	2	NC	19	NC	19	
226		min	-0.563	9	-0.191	6	-0.352	18	-0.013	6	2970.939	6	5116.151	6	
227	4	max	0.569	11	0	2	0.94	12	0	2	NC	19	NC	19	
228		min	-0.563	9	-0.181	6	-0.329	18	-0.013	6	3942.679	6	6913.352	6	
229	5	max	0.569	11	0	2	0.891	12	0	2	NC	19	NC	19	
230		min	-0.563	9	-0.161	6	-0.306	18	-0.013	6	NC	1	NC	1	
231	M27	1	max	0.569	11	0	2	0.891	12	0	2	NC	2	NC	2
232		min	-0.563	9	-0.161	6	-0.306	18	-0.013	6	377.498	6	281.81	12	
233	2	max	0.569	11	0	2	0.838	12	0	2	NC	2	NC	2	
234		min	-0.563	9	-0.131	6	-0.286	18	-0.013	6	467.585	6	375.448	12	
235	3	max	0.569	11	0	2	0.783	12	0	2	NC	2	NC	2	
236		min	-0.563	9	-0.092	6	-0.268	18	-0.013	6	667.491	6	570.596	12	
237	4	max	0.569	11	0	2	0.729	12	0	2	NC	2	NC	2	
238		min	-0.563	9	-0.049	6	-0.251	18	-0.013	6	1297.543	6	1173.066	12	
239	5	max	0.569	11	0	2	0.678	12	0	2	NC	19	NC	19	
240		min	-0.563	9	-0.003	6	-0.236	18	-0.013	6	NC	1	NC	1	
241	M30	1	max	0.569	11	0	2	0.605	16	0.013	6	NC	19	NC	19
242		min	-0.563	9	-0.007	6	-1.181	14	0	2	NC	1	595.56	8	
243	2	max	0.569	11	0.009	11	0.584	16	0.013	6	NC	17	NC	19	
244		min	-0.563	9	-0.001	13	-1.175	14	0	2	6021.106	10	764.957	8	

**Envelope Member Section Deflections - Service (Continued)**

Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [rad]	LC	(n) L/y' Ratio	LC	(n) L/z' Ratio	LC	
245	3	max	0.569	11	0.012	11	0.561	16	0.013	6	NC	17	NC	19	
246		min	-0.563	9	-0.012	6	-1.169	14	0	2	5280.643	19	1120.445	8	
247	4	max	0.569	11	0.009	11	0.536	16	0.013	6	NC	18	NC	19	
248		min	-0.563	9	-0.036	6	-1.161	14	0	2	2096.856	6	764.211	12	
249	5	max	0.569	11	0.004	19	0.511	16	0.013	6	NC	18	NC	19	
250		min	-0.563	9	-0.067	6	-1.149	14	0	2	999.463	6	575.481	12	
251	M31	1	max	0.569	11	0.004	19	0.511	16	0.013	6	NC	19	NC	19
252		min	-0.563	9	-0.067	6	-1.149	14	0	2	NC	1	NC	1	
253	2	max	0.569	11	0	2	0.485	16	0.013	6	NC	19	NC	19	
254		min	-0.563	9	-0.1	6	-1.134	14	0	2	NC	1	8630.913	14	
255	3	max	0.569	11	0	2	0.458	16	0.013	6	NC	19	NC	19	
256		min	-0.563	9	-0.132	6	-1.114	14	0	2	7471.702	6	6219.813	6	
257	4	max	0.569	11	0	2	0.43	16	0.013	6	NC	19	NC	19	
258		min	-0.563	9	-0.159	6	-1.09	14	0	2	8028.691	6	7888.582	6	
259	5	max	0.569	11	0	2	0.404	16	0.013	6	NC	19	NC	19	
260		min	-0.563	9	-0.18	6	-1.06	14	0	2	NC	1	NC	1	
261	M32	1	max	0.569	11	0	2	0.404	16	0.013	6	NC	19	NC	19
262		min	-0.563	9	-0.18	6	-1.06	14	0	2	NC	1	NC	1	
263	2	max	0.569	11	0	2	0.377	16	0.013	6	NC	19	NC	19	
264		min	-0.563	9	-0.19	6	-1.025	14	0	2	3982.215	6	6732.124	6	
265	3	max	0.569	11	0	2	0.352	16	0.013	6	NC	19	NC	19	
266		min	-0.563	9	-0.191	6	-0.985	14	0	2	2970.939	6	5116.151	6	
267	4	max	0.569	11	0	2	0.329	16	0.013	6	NC	19	NC	19	
268		min	-0.563	9	-0.181	6	-0.94	14	0	2	3942.679	6	6913.352	6	
269	5	max	0.569	11	0	2	0.306	16	0.013	6	NC	19	NC	19	
270		min	-0.563	9	-0.161	6	-0.891	14	0	2	NC	1	NC	1	
271	M33	1	max	0.569	11	0	2	0.306	16	0.013	6	NC	2	NC	2
272		min	-0.563	9	-0.161	6	-0.891	14	0	2	377.498	6	281.81	14	
273	2	max	0.569	11	0	2	0.286	16	0.013	6	NC	2	NC	2	
274		min	-0.563	9	-0.131	6	-0.838	14	0	2	467.585	6	375.448	14	
275	3	max	0.569	11	0	2	0.268	16	0.013	6	NC	2	NC	2	
276		min	-0.563	9	-0.092	6	-0.783	14	0	2	667.491	6	570.596	14	
277	4	max	0.569	11	0	2	0.251	16	0.013	6	NC	2	NC	2	
278		min	-0.563	9	-0.049	6	-0.729	14	0	2	1297.543	6	1173.066	14	
279	5	max	0.569	11	0	2	0.236	16	0.013	6	NC	19	NC	19	
280		min	-0.563	9	-0.003	6	-0.678	14	0	2	NC	1	NC	1	
281	M31A	1	max	0.569	11	0	2	0.752	16	0.013	6	NC	19	NC	19
282		min	-0.563	9	-0.601	6	-1.206	14	0	2	NC	1	NC	1	
283	2	max	0.569	11	0	2	0.733	16	0.013	6	NC	19	NC	19	
284		min	-0.563	9	-0.507	6	-1.207	14	0	2	NC	1	NC	1	
285	3	max	0.569	11	0	2	0.715	16	0.013	6	NC	19	NC	19	
286		min	-0.563	9	-0.414	6	-1.209	14	0	2	9525.553	6	NC	1	
287	4	max	0.569	11	0	2	0.697	16	0.013	6	NC	19	NC	19	
288		min	-0.563	9	-0.324	6	-1.208	14	0	2	NC	1	NC	1	
289	5	max	0.569	11	0	2	0.679	16	0.013	6	NC	19	NC	19	
290		min	-0.563	9	-0.239	6	-1.206	14	0	2	NC	1	NC	1	
291	M32A	1	max	0.569	11	0	2	0.679	16	0.013	6	NC	2	NC	19
292		min	-0.563	9	-0.239	6	-1.206	14	0	2	258.681	6	667.272	12	
293	2	max	0.569	11	0	2	0.661	16	0.013	6	NC	2	NC	19	
294		min	-0.563	9	-0.161	6	-1.201	14	0	2	391.535	6	907.599	12	
295	3	max	0.569	11	0	2	0.643	16	0.013	6	NC	2	NC	19	
296		min	-0.563	9	-0.093	6	-1.195	14	0	2	702.687	6	1370.655	12	
297	4	max	0.569	11	0	2	0.624	16	0.013	6	NC	2	NC	19	
298		min	-0.563	9	-0.04	6	-1.188	14	0	2	1828.445	6	1778.721	6	
299	5	max	0.569	11	0	2	0.605	16	0.013	6	NC	19	NC	19	

**Envelope Member Section Deflections - Service (Continued)**

Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [rad]	LC	(n) L/y' Ratio	LC	(n) L/z' Ratio	LC	
300		min	-0.563	9	-0.007	6	-1.181	14	0	2	NC	1	1376.903	6	
301	M33A	1	max	0.569	11	0	2	1.206	12	0	2	NC	19	NC	19
302		min	-0.563	9	-0.601	6	-0.752	18	-0.013	6	NC	1	NC	1	
303		2	max	0.569	11	0	2	1.207	12	0	2	NC	19	NC	19
304		min	-0.563	9	-0.507	6	-0.733	18	-0.013	6	NC	1	NC	1	
305		3	max	0.569	11	0	2	1.209	12	0	2	NC	19	NC	19
306		min	-0.563	9	-0.414	6	-0.715	18	-0.013	6	9525.553	6	NC	1	
307		4	max	0.569	11	0	2	1.208	12	0	2	NC	19	NC	19
308		min	-0.563	9	-0.324	6	-0.697	18	-0.013	6	NC	1	NC	1	
309		5	max	0.569	11	0	2	1.206	12	0	2	NC	19	NC	19
310		min	-0.563	9	-0.239	6	-0.679	18	-0.013	6	NC	1	NC	1	
311	M34	1	max	0.569	11	0	2	1.206	12	0	2	NC	2	NC	19
312		min	-0.563	9	-0.239	6	-0.679	18	-0.013	6	258.681	6	667.272	14	
313		2	max	0.569	11	0	2	1.201	12	0	2	NC	2	NC	19
314		min	-0.563	9	-0.161	6	-0.661	18	-0.013	6	391.535	6	907.599	14	
315		3	max	0.569	11	0	2	1.195	12	0	2	NC	2	NC	19
316		min	-0.563	9	-0.093	6	-0.643	18	-0.013	6	702.687	6	1370.655	14	
317		4	max	0.569	11	0	2	1.188	12	0	2	NC	2	NC	19
318		min	-0.563	9	-0.04	6	-0.624	18	-0.013	6	1828.445	6	1778.721	6	
319		5	max	0.569	11	0	2	1.181	12	0	2	NC	19	NC	19
320		min	-0.563	9	-0.007	6	-0.605	18	-0.013	6	NC	1	1376.903	6	
321	M35	1	max	0	19	0	2	0.919	8	0	8	NC	19	NC	19
322		min	0	1	-2.348	6	-0.919	10	0	10	NC	1	NC	1	
323		2	max	0	19	0	2	0.9	8	0	8	NC	19	NC	19
324		min	0	9	-2.318	6	-0.9	10	0	10	NC	1	NC	1	
325		3	max	0	19	0	2	0.882	8	0	8	NC	19	NC	19
326		min	0	9	-2.288	6	-0.882	10	0	10	NC	1	NC	1	
327		4	max	0	19	0	2	0.863	8	0	8	NC	19	NC	19
328		min	0	9	-2.256	6	-0.863	10	0	10	NC	1	NC	1	
329		5	max	0	19	0	2	0.844	8	0	8	NC	19	NC	19
330		min	0	9	-2.224	6	-0.844	10	0	10	NC	1	NC	1	
331	M36	1	max	0	19	0	2	0.844	8	0	8	NC	19	NC	19
332		min	0	9	-2.224	6	-0.844	10	0	10	NC	1	NC	1	
333		2	max	0	19	0	2	0.825	8	0	8	NC	19	NC	19
334		min	-0.001	9	-2.2	6	-0.825	10	0	10	NC	1	NC	1	
335		3	max	0.001	19	0	2	0.807	8	0	8	NC	19	NC	19
336		min	-0.001	17	-2.175	6	-0.807	10	0	10	NC	1	NC	1	
337		4	max	0.001	19	0	2	0.788	8	0	8	NC	19	NC	19
338		min	-0.001	17	-2.149	6	-0.788	10	0	10	NC	1	NC	1	
339		5	max	0.001	11	0	2	0.769	8	0	8	NC	19	NC	19
340		min	-0.001	17	-2.122	6	-0.769	10	0	10	NC	1	NC	1	
341	M37	1	max	0.619	16	0.234	18	0.563	9	0.005	6	NC	19	NC	19
342		min	-1.212	14	-0.312	8	-0.569	11	0	2	NC	1	NC	1	
343		2	max	0.619	16	0.04	18	0.354	17	0.005	6	NC	2	NC	18
344		min	-1.213	14	-0.926	12	-0.4	11	0	2	953.223	6	3450.205	13	
345		3	max	0.619	16	0	2	0.174	17	0.005	15	NC	2	NC	18
346		min	-1.213	14	-1.52	6	-0.243	11	0	2	625.143	6	2156.378	13	
347		4	max	0.618	16	0	2	0.047	17	0.005	15	NC	2	NC	18
348		min	-1.214	14	-1.96	6	-0.114	15	0	2	764.457	6	2464.432	13	
349		5	max	0.618	16	0	2	0	9	0.005	15	NC	19	NC	19
350		min	-1.214	14	-2.11	6	0	19	0	2	NC	1	NC	1	
351	M38	1	max	1.214	12	0	2	0	9	0.005	15	NC	19	NC	19
352		min	-0.618	18	-2.11	6	0	19	0	2	NC	1	NC	1	
353		2	max	1.214	12	0	2	0.047	17	0.005	15	NC	2	NC	18
354		min	-0.618	18	-1.96	6	-0.114	15	0	2	764.457	6	2464.432	13	

**Envelope Member Section Deflections - Service (Continued)**

Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [rad]	LC	(n) L/y' Ratio	LC	(n) L/z' Ratio	LC
355	3	max	1.213	12	0	2	0.174	17	0.005	15	NC	2	NC	18
356		min	-0.619	18	-1.52	6	-0.243	11	0	2	625.143	6	2156.378	13
357	4	max	1.213	12	0.04	16	0.354	17	0.005	6	NC	2	NC	18
358		min	-0.619	18	-0.926	14	-0.4	11	0	2	953.223	6	3450.205	13
359	5	max	1.212	12	0.234	16	0.563	9	0.005	6	NC	19	NC	19
360		min	-0.619	18	-0.312	10	-0.569	11	0	2	NC	1	NC	1

**Envelope Member Section Deflections - Strength**

No Data to Print...														
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**Envelope Beam Deflections**

	Member Label	Span		Location [ft]	y' [in]	(n) L/y' Ratio	LC
1	M1	1	max	0.247	-0.003	NC	19
2		1	min	13.094	-0.39	730	6
3	M2	1	max	23.47	-0.003	NC	19
4		1	min	10.623	-0.39	730	6
5	M3	1	max	0.247	-0.003	NC	17
6		1	min	13.094	-0.486	585	6
7	M4	1	max	23.47	-0.003	NC	17
8		1	min	10.623	-0.486	585	6
9	M5	1	max	0.247	-0.003	NC	19
10		1	min	13.094	-0.513	555	6
11	M6	1	max	23.47	-0.003	NC	19
12		1	min	10.623	-0.513	555	6
13	M7	1	max	0.247	-0.003	NC	19
14		1	min	13.094	-0.507	561	6
15	M8	1	max	23.47	-0.003	NC	19
16		1	min	10.623	-0.507	561	6
17	M9	1	max	0.247	-0.003	NC	19
18		1	min	13.094	-0.447	636	6
19	M10	1	max	23.47	-0.003	NC	19
20		1	min	10.623	-0.447	636	6
21	M11	1	max	0.247	-0.003	NC	19
22		1	min	13.094	-0.323	882	6
23	M12	1	max	23.47	-0.003	NC	19
24		1	min	10.623	-0.323	882	6
25	M14	1	max	4.062	-0.001	NC	6
26		1	min	0	0	NC	1
27	M15	1	max	0.938	-0.001	NC	6
28		1	min	0	0	NC	1
29	M16	1	max	0.938	-0.001	NC	6
30		1	min	0	0	NC	1
31	M17	1	max	4.062	-0.001	NC	15
32		1	min	0	0	NC	1
33	M24	1	max	0.469	-0.001	NC	9
34		1	min	5	-0.14	856	6
35	M25	1	max	1.823	-0.001	NC	8
36		1	min	3.021	-0.008	7097	6
37	M26	1	max	4.688	-0.001	NC	18
38		1	min	2.5	-0.02	2971	6
39	M27	1	max	2.292	0.001	NC	5
40		1	min	0	0.024	4924	6
41	M30	1	max	0.469	-0.001	NC	9
42		1	min	5	-0.14	856	6



**Envelope Beam Deflections (Continued)**

	Member Label	Span		Location [ft]	y' [in]	(n) L/y' Ratio	LC
43	M31	1	max	1.823	-0.001	NC	10
44		1	min	3.021	-0.008	7097	6
45	M32	1	max	4.688	-0.001	NC	16
46		1	min	2.5	-0.02	2971	6
47	M33	1	max	2.292	0.001	NC	5
48		1	min	0	0.024	4924	6
49	M31A	1	max	0.99	0.001	NC	18
50		1	min	2.917	0.006	9243	6
51	M32A	1	max	4.531	-0.001	NC	8
52		1	min	0	-0.152	790	6
53	M33A	1	max	0.99	0.001	NC	16
54		1	min	2.917	0.006	9243	6
55	M34	1	max	4.531	-0.001	NC	10
56		1	min	0	-0.152	790	6
57	M35	1	max	0.938	-0.001	NC	15
58		1	min	0	0	NC	1
59	M36	1	max	0.938	-0.001	NC	6
60		1	min	0	0	NC	1
61	M37	1	max	0.247	-0.003	NC	17
62		1	min	13.094	-0.46	618	6
63	M38	1	max	23.47	-0.003	NC	17
64		1	min	10.623	-0.46	618	6

**Envelope Beam Deflection Checks**

Beam	Design Rule	Span	Defl [in]	Ratio	LC	Defl [in]	Ratio	LC	Defl [in]	Ratio	LC	
1	M1	Typical	1	-0.177	1609	1(DL)	0	NC	2(LL)	-0.177	1609	3(DL+LL)
2	M2	Typical	1	-0.177	1609	1(DL)	0	NC	2(LL)	-0.177	1609	3(DL+LL)
3	M3	Typical	1	-0.181	1569	1(DL)	0	NC	2(LL)	-0.181	1569	3(DL+LL)
4	M4	Typical	1	-0.181	1569	1(DL)	0	NC	2(LL)	-0.181	1569	3(DL+LL)
5	M5	Typical	1	-0.189	1505	1(DL)	0	NC	2(LL)	-0.189	1505	3(DL+LL)
6	M6	Typical	1	-0.189	1505	1(DL)	0	NC	2(LL)	-0.189	1505	3(DL+LL)
7	M7	Typical	1	-0.19	1499	1(DL)	0	NC	2(LL)	-0.19	1499	3(DL+LL)
8	M8	Typical	1	-0.19	1499	1(DL)	0	NC	2(LL)	-0.19	1499	3(DL+LL)
9	M9	Typical	1	-0.174	1631	1(DL)	0	NC	2(LL)	-0.174	1631	3(DL+LL)
10	M10	Typical	1	-0.174	1631	1(DL)	0	NC	2(LL)	-0.174	1631	3(DL+LL)
11	M11	Typical	1	-0.143	1993	1(DL)	0	NC	2(LL)	-0.143	1993	3(DL+LL)
12	M12	Typical	1	-0.143	1993	1(DL)	0	NC	2(LL)	-0.143	1993	3(DL+LL)
13	M14	Typical	1	0	NC	1(DL)	0	NC	2(LL)	0	NC	3(DL+LL)
14	M15	Typical	1	0	NC	1(DL)	0	NC	2(LL)	0	NC	3(DL+LL)
15	M16	Typical	1	0	NC	1(DL)	0	NC	2(LL)	0	NC	3(DL+LL)
16	M17	Typical	1	0	NC	1(DL)	0	NC	2(LL)	0	NC	3(DL+LL)
17	M24	Typical	1	-0.067	1786	1(DL)	0	NC	2(LL)	-0.067	1786	3(DL+LL)
18	M25	Typical	1	0	NC	1(DL)	0	NC	2(LL)	0	NC	3(DL+LL)
19	M26	Typical	1	-0.007	8416	1(DL)	0	NC	2(LL)	-0.007	8416	3(DL+LL)
20	M27	Typical	1	-7.806e-18	NC	1(DL)	0	NC	2(LL)	-7.806e-18	NC	3(DL+LL)
21	M30	Typical	1	-0.067	1786	1(DL)	0	NC	2(LL)	-0.067	1786	3(DL+LL)
22	M31	Typical	1	0	NC	1(DL)	0	NC	2(LL)	0	NC	3(DL+LL)
23	M32	Typical	1	-0.007	8416	1(DL)	0	NC	2(LL)	-0.007	8416	3(DL+LL)
24	M33	Typical	1	-4.337e-19	NC	1(DL)	0	NC	2(LL)	-4.337e-19	NC	3(DL+LL)
25	M31A	Typical	1	0	NC	1(DL)	0	NC	2(LL)	0	NC	3(DL+LL)
26	M32A	Typical	1	-0.071	1688	1(DL)	0	NC	2(LL)	-0.071	1688	3(DL+LL)
27	M33A	Typical	1	0	NC	1(DL)	0	NC	2(LL)	0	NC	3(DL+LL)
28	M34	Typical	1	-0.071	1688	1(DL)	0	NC	2(LL)	-0.071	1688	3(DL+LL)
29	M35	Typical	1	0	NC	1(DL)	0	NC	2(LL)	0	NC	3(DL+LL)
30	M36	Typical	1	0	NC	1(DL)	0	NC	2(LL)	0	NC	3(DL+LL)

**Envelope Beam Deflection Checks (Continued)**

Beam	Design Rule	Span	Defl [in]	Ratio	LC	Defl [in]	Ratio	LC	Defl [in]	Ratio	LC	
31	M37	Typical	1	-0.181	1570	1(DL)	0	NC	2(LL)	-0.181	1570	3(DL+LL)
32	M38	Typical	1	-0.181	1570	1(DL)	0	NC	2(LL)	-0.181	1570	3(DL+LL)

**Envelope AISC 14TH (360-10): ASD Member Steel Code Checks**

Member	Shape	Code Check	Loc [ft]	LC	Shear	Check	Loc [ft]	Dir	LC	Pnc/om [k]	Pnt/om [k]	Mnyy/om [k-ft]	Mnzz/om [k-ft]	Cb	Eqn
1	M1	HSS16X4X6	0.318	23.717	6	0.028	0	y	13	326.56	363.593	39.563	138.184	1	H1-1b
2	M2	HSS16X4X6	0.318	0	6	0.028	23.717	y	13	326.56	363.593	39.563	138.184	1	H1-1b
3	M3	HSS16X4X6	0.331	21.988	6	0.027	0	y	13	326.56	363.593	39.563	138.184	1	H1-1b
4	M4	HSS16X4X6	0.331	1.729	6	0.027	23.717	y	13	326.56	363.593	39.563	138.184	1	H1-1b
5	M5	HSS16X4X6	0.369	23.717	6	0.036	0	y	15	326.56	363.593	39.563	138.184	1	H1-1b
6	M6	HSS16X4X6	0.369	0	6	0.036	23.717	y	15	326.56	363.593	39.563	138.184	1	H1-1b
7	M7	HSS16X4X6	0.349	22.482	6	0.028	0	y	15	326.56	363.593	39.563	138.184	1	H1-1b
8	M8	HSS16X4X6	0.349	1.235	6	0.028	23.717	y	15	326.56	363.593	39.563	138.184	1	H1-1b
9	M9	HSS16X4X6	0.294	20.505	6	0.026	0	y	13	326.56	363.593	39.563	138.184	1	H1-1b
10	M10	HSS16X4X6	0.294	3.212	6	0.026	23.717	y	13	326.56	363.593	39.563	138.184	1	H1-1b
11	M11	HSS16X4X6	0.23	23.223	6	0.021	0	y	13	326.56	363.593	39.563	138.184	1	H1-1b
12	M12	HSS16X4X6	0.23	0.494	6	0.021	23.717	y	13	326.56	363.593	39.563	138.184	1	H1-1b
13	M14	HSS3X3X4	0.007	2.5	15	0.001	5	y	8	66.686	67.21	5.693	5.693	1	H1-1b
14	M15	HSS3X3X4	0.007	2.5	11	0.001	5	y	8	66.686	67.21	5.693	5.693	1	H1-1b
15	M16	HSS3X3X4	0.007	2.5	11	0.001	5	y	8	66.686	67.21	5.693	5.693	1	H1-1b
16	M17	HSS3X3X4	0.008	2.5	11	0.001	5	y	8	66.686	67.21	5.693	5.693	1	H1-1b
17	M20	HSS8X8X10	0.702	0	14	0.074	10	y	10	405.164	451.737	102.605	102.605	1.667	H1-1b
18	M21	HSS8X8X10	0.702	0	12	0.074	10	y	8	405.164	451.737	102.605	102.605	1.667	H1-1b
19	M22	HSS8X8X10	0.486	0	15	0.102	10	y	12	405.164	451.737	102.605	102.605	1.667	H1-1b
20	M23	HSS8X8X10	0.486	0	15	0.102	10	y	14	405.164	451.737	102.605	102.605	1.667	H1-1b
21	M24	HSS12X8X6	0.478	0	6	0.082	0	y	6	355.385	363.593	86.634	121.657	1.603	H1-1b
22	M25	HSS12X8X6	0.269	5	6	0.042	0	y	6	355.385	363.593	86.634	121.657	1.892	H1-1b
23	M26	HSS12X8X6	0.269	1.615	6	0.005	5	z	12	355.385	363.593	86.634	121.657	1.019	H1-1b
24	M27	HSS12X8X6	0.267	0	6	0.038	5	y	6	355.385	363.593	86.634	121.657	1.661	H1-1b
25	M30	HSS12X8X6	0.478	0	6	0.082	0	y	6	355.385	363.593	86.634	121.657	1.603	H1-1b
26	M31	HSS12X8X6	0.269	5	6	0.042	0	y	6	355.385	363.593	86.634	121.657	1.892	H1-1b
27	M32	HSS12X8X6	0.269	1.615	6	0.005	5	z	14	355.385	363.593	86.634	121.657	1.019	H1-1b
28	M33	HSS12X8X6	0.267	0	6	0.038	5	y	6	355.385	363.593	86.634	121.657	1.661	H1-1b
29	M31A	HSS12X8X6	0.167	5	6	0.025	5	y	6	355.385	363.593	86.634	121.657	1.719	H1-1b
30	M32A	HSS12X8X6	0.463	5	6	0.064	5	y	6	355.385	363.593	86.634	121.657	1.42	H1-1b
31	M33A	HSS12X8X6	0.167	5	6	0.025	5	y	6	355.385	363.593	86.634	121.657	1.719	H1-1b
32	M34	HSS12X8X6	0.463	5	6	0.064	5	y	6	355.385	363.593	86.634	121.657	1.42	H1-1b
33	M35	HSS3X3X4	0.009	2.5	9	0.001	5	y	8	55.266	67.21	5.693	5.693	1.136	H1-1b
34	M36	HSS3X3X4	0.007	2.5	11	0.001	5	y	8	55.266	67.21	5.693	5.693	1.136	H1-1b
35	M37	HSS16X4X6	0.328	21.741	6	0.031	0	y	13	326.56	363.593	39.563	138.184	1	H1-1b
36	M38	HSS16X4X6	0.328	1.976	6	0.031	23.717	y	13	326.56	363.593	39.563	138.184	1	H1-1b

**Envelope AISI S100-12: ASD Member Cold Formed Steel Code Checks**

No Data to Print...
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**Envelope AWC NDS-15: ASD Member Wood Code Checks**

No Data to Print...
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**Envelope Concrete Beam Design Results**

No Data to Print...
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**Envelope Concrete Column Design Results**

No Data to Print...

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**Envelope AA ADM1-15: ASD - BUILDING Member Aluminum Code Checks**

No Data to Print...

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**Envelope AISC 14TH (360-10): ASD Member Stainless Steel Code Checks**

No Data to Print...

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**Concrete Beam Bending Reinforcement**

No Data to Print...

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**Concrete Beam Shear Reinforcement**

No Data to Print...

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**Concrete Column Bending Reinforcement**

No Data to Print...

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**Concrete Column Shear Reinforcement**

No Data to Print...

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**Member Suggested Designs**

No Data to Print...

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**Envelope Plate Principal Stresses**

No Data to Print...

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**Envelope Plate Forces (per ft)**

No Data to Print...

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**Envelope Plate/Shell Corner Forces**

No Data to Print...

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**Envelope Solid Stresses**

No Data to Print...

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**Envelope Solid Principal Stresses**

No Data to Print...

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**Envelope Solid Corner Forces**

No Data to Print...

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**Envelope Wall Panel Forces**

No Data to Print...

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**Concrete Wall Reinforcement**

No Data to Print...



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**Masonry Wall Reinforcement**

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No Data to Print...

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**Masonry Lintel Reinforcement**

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No Data to Print...

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**ACI 318-14 Wall Panel Concrete Code Checks (In-Plane)**

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No Data to Print...

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**ACI 318-14 Wall Panel Concrete Code Checks (Out-of-Plane)**

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No Data to Print...

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**ACI 530-13: ASD Wall Panel Masonry Code Checks (In-Plane)**

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No Data to Print...

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**ACI 530-13: ASD Wall Panel Masonry Code Checks (Out-of-Plane)**

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No Data to Print...

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**Wall Panel ACI 530-13: ASD Masonry Code Checks for Lintels**

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No Data to Print...

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**AWC NDS-15: ASD Wall Panel Wood Code Checks (Axial)**

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No Data to Print...

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**AWC NDS-15: ASD Wall Panel Wood Code Checks (In-Plane)**

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No Data to Print...

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**AWC NDS-15: ASD Wall Panel Wood Code Checks (Header)**

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No Data to Print...

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**AISI S100-12: ASD Wall Panel CFS Code Checks (Axial)**

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No Data to Print...

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**AISI S100-12: ASD Wall Panel CFS Code Checks (In-Plane)**

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No Data to Print...

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**ACI 318-14 Wall Panel Concrete Code Checks (Seismic)**

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No Data to Print...

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**ACI 530-13: ASD Wall Panel Masonry Code Checks (Seismic)**

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No Data to Print...

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**Masonry Wall Suggested Design**

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No Data to Print...

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**Wood Wall Suggested Design**

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No Data to Print...



Company : AHBL  
Designer : AMS  
Job Number : 2220197.20  
Model Name : GHS BN COVERED YARD

10/8/2022  
3:31:00 PM  
Checked By : KPL

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***Envelope X-Direction Story Drift - Service***

No Data to Print...

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***Envelope Z-Direction Story Drift - Service***

No Data to Print...

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***Envelope X-Direction Story Drift - Strength***

No Data to Print...

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***Envelope Z-Direction Story Drift - Strength***

No Data to Print...


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Company:  
 Address:  
 Phone | Fax:  
 Design: Concrete - Oct 8, 2022 (1)  
 Fastening point:

Page: 1  
 Specifier:  
 E-Mail:  
 Date: 10/8/2022

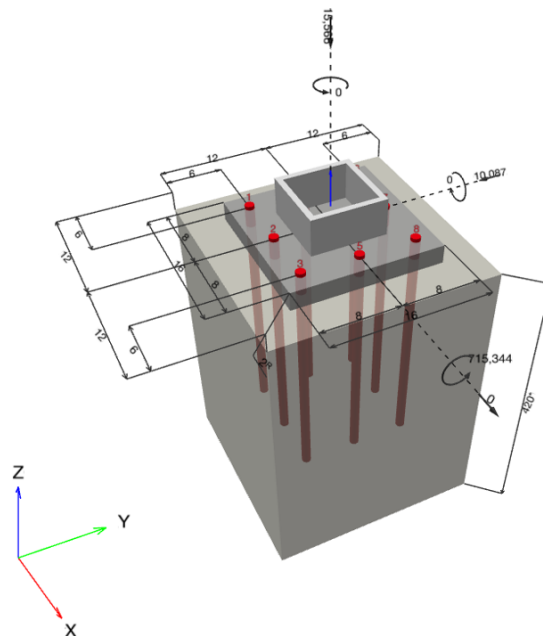
**Specifier's comments:**

**1 Input data**

<b>Anchor type and diameter:</b>	<b>Heavy Hex Head ASTM F 1554 GR. 36 1</b>	
Item number:	not available	
Additional plate or washer (17.4.2.8):	$d_{plate} = 2.000 \text{ in.}$ , $t_{plate} = 0.250 \text{ in.}$	
Effective embedment depth:	$h_{ef} = 24.000 \text{ in.}$ , $h_{ef,17.4.2.8} = 0.000 \text{ in.}$	
Material:	ASTM F 1554	
Evaluation Service Report:	Hilti Technical Data	
Issued   Valid:	-   -	
Proof:	Design Method ACI 318-14 / CIP	
Stand-off installation:	$e_b = 0.000 \text{ in.}$ (no stand-off); $t = 2.000 \text{ in.}$	
Anchor plate <sup>R</sup> :	$l_x \times l_y \times t = 16.000 \text{ in.} \times 16.000 \text{ in.} \times 2.000 \text{ in.}$ ; (Recommended plate thickness: not calculated)	
Profile:	Square HSS (AISC), HSS8X8X.625; (L x W x T) = 8.000 in. x 8.000 in. x 0.625 in.	
Base material:	cracked concrete, 4000, $f_c' = 4,000 \text{ psi}$ ; $h = 420.000 \text{ in.}$	
Reinforcement:	tension: condition A, shear: condition A; anchor reinforcement: tension, shear edge reinforcement: none or < No. 4 bar	

<sup>R</sup> - The anchor calculation is based on a rigid anchor plate assumption.

**Geometry [in.] & Loading [lb, in.lb]**





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Address:		Specifier:	
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Design:	Concrete - Oct 8, 2022 (1)	Date:	10/8/2022
Fastening point:			

1.1 Design results

Case	Description	Forces [lb] / Moments [in.lb]	Seismic	Max. Util. Anchor [%]
1	Combination 1	N = -15,566; V <sub>x</sub> = 0; V <sub>y</sub> = -10,087; M <sub>x</sub> = 715,344; M <sub>y</sub> = 0; M <sub>z</sub> = 0;	no	60



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Address:		Specifier:	
Phone   Fax:		E-Mail:	
Design:	Concrete - Oct 8, 2022 (1)	Date:	10/8/2022
Fastening point:			

## 2 Proof I Utilization (Governing Cases)

Loading	Proof	Design values [lb]		Utilization	Status
		Load	Capacity	$\beta_N / \beta_V$ [%]	
Tension	Steel Strength	14,716	26,361	56 / -	OK
Shear	Pryout Strength	10,087	68,002	- / 15	OK

Loading	$\beta_N$	$\beta_V$	$\zeta$	Utilization $\beta_{N,V}$ [%]	Status
Combined tension and shear loads	0.593	0.148	5/3	47	OK

## 3 Warnings

- Please consider all details and hints/warnings given in the detailed report!

**Fastening meets the design criteria!**





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Company:		Page:	4
Address:		Specifier:	
Phone   Fax:		E-Mail:	
Design:	Concrete - Oct 8, 2022 (1)	Date:	10/8/2022
Fastening point:			

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#### 4 Remarks; Your Cooperation Duties

- Any and all information and data contained in the Software concern solely the use of Hilti products and are based on the principles, formulas and security regulations in accordance with Hilti's technical directions and operating, mounting and assembly instructions, etc., that must be strictly complied with by the user. All figures contained therein are average figures, and therefore use-specific tests are to be conducted prior to using the relevant Hilti product. The results of the calculations carried out by means of the Software are based essentially on the data you put in. Therefore, you bear the sole responsibility for the absence of errors, the completeness and the relevance of the data to be put in by you. Moreover, you bear sole responsibility for having the results of the calculation checked and cleared by an expert, particularly with regard to compliance with applicable norms and permits, prior to using them for your specific facility. The Software serves only as an aid to interpret norms and permits without any guarantee as to the absence of errors, the correctness and the relevance of the results or suitability for a specific application.
- You must take all necessary and reasonable steps to prevent or limit damage caused by the Software. In particular, you must arrange for the regular backup of programs and data and, if applicable, carry out the updates of the Software offered by Hilti on a regular basis. If you do not use the AutoUpdate function of the Software, you must ensure that you are using the current and thus up-to-date version of the Software in each case by carrying out manual updates via the Hilti Website. Hilti will not be liable for consequences, such as the recovery of lost or damaged data or programs, arising from a culpable breach of duty by you.

Project GHS BN  
 Subject moment  
 With/To connection  
 Address \_\_\_\_\_  
 Date 9/29/22

Project No. 2228197.20  
 Phone \_\_\_\_\_  
 Fax # \_\_\_\_\_  
 # Faxed Pages \_\_\_\_\_  
 By CLB

- Page \_\_\_\_ of \_\_\_\_
- Calculations
- Fax
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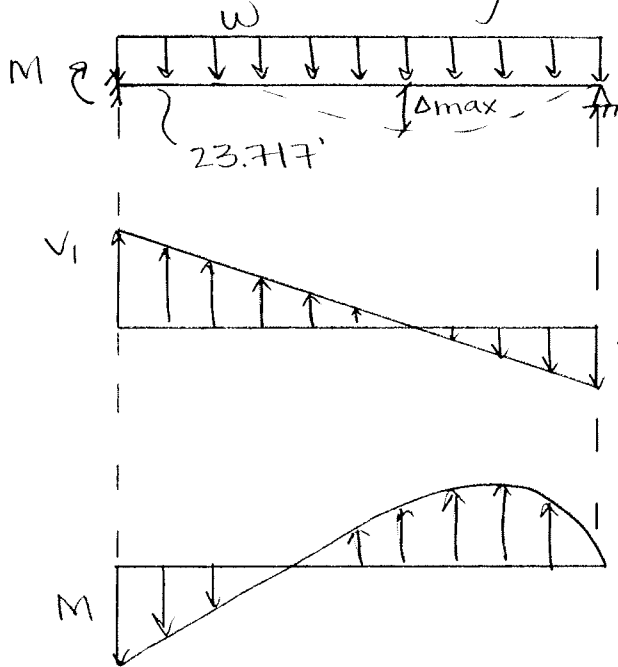
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Moment connection:  
AISC Design Guide 4

DL = 0.075 K/ft  
 SL = 0.125 K/ft



LRFD:  $1.2DL + 1.6SL$   
 $w = 1.2(0.075) + 1.6(0.125)$   
 $= 0.29 \text{ K/ft}$

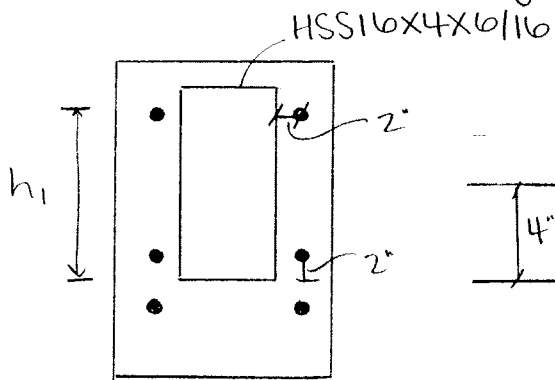
$V_1 = \frac{5wl}{8} = 4.3 \text{ K}$

$V_2 = \frac{3wl}{8} = 2.6 \text{ K}$

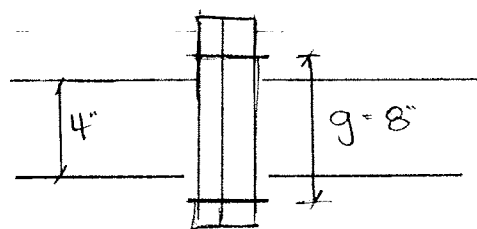
$M = \frac{wl^2}{8} = 20.4 \text{ K-ft}$

total moment =  $2(20.4 \text{ K-ft})(12) = 490 \text{ K-m}$   
 (bolt & weld)  
 $= 245 \text{ K-m}$   
 (ea plate)

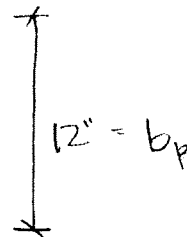
Design Geometry:



TOP VIEW



$h_1 = 16 - 0.349 - 2 - \frac{0.349}{2}$   
 $= 13.48"$



If this does not meet with your understanding, please contact us in writing within seven days. THANK YOU.

Project GHSBN  
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Page \_\_\_\_ of \_\_\_\_  
 Calculations  
 Fax  
 Memorandum  
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Bolt Design:

$$d_{b, req'd} = \sqrt{\frac{2M_{uc}}{\pi \phi F_t (h_i)}} = \sqrt{\frac{2(490 \text{ k}\cdot\text{m})}{\pi(0.75)(90 \text{ ksi})(13.5)}}$$

$$= 0.58" \rightarrow \text{use } \phi = 5/8" \text{ ASTM A325}$$

→ NO prying bolt moment strength:

$$\phi M_{np} = \phi 2 P_t (h_i)$$

$$\hookrightarrow P_t = F_t A_b$$

$$= 0.75(2)(90 \text{ ksi}) \left( \frac{\pi (5/8)^2}{4} \right) (13.5)$$

$$= 559 \text{ k}\cdot\text{m} > 490 \text{ k}\cdot\text{m} \therefore \text{OK}$$

Endplate Design:

$$t_p, req'd = \sqrt{\frac{1.11 \phi M_{np}}{\phi_b F_y \gamma_p}}$$

table 3.1  $\gamma_p = \frac{12}{2} \left[ 13.5 \left( \frac{1}{2} + \frac{1}{4.9} \right) - \frac{1}{2} \right] + \frac{2}{8} [13.5(2+4.9)] = 77.32$

$$S = \frac{1}{2} \sqrt{12(8)} = 4.9' > 2'$$

each plate takes 1/2

$$t_p, req' = \sqrt{\frac{1.11(559 \text{ k}\cdot\text{m})(\frac{1}{2})}{0.9(36 \text{ ksi})(77.32)}}$$

$$= 0.35" \rightarrow \text{use } t_p = 0.5"$$

Weld Design:

strength increase via AISC →  $1.0 + 0.5s m^{1.5} (\theta)$   
 @ 90° = 1.5

$$\phi R_n = 1.392 \frac{\text{k}}{\text{in}} (5)(4")(1.5) = 41.76 \text{ k} > 245/16 = 15.3 \text{ k} \therefore \text{OK}$$

If this does not meet with your understanding, please contact us in writing within seven days. THANK YOU.

USE 5/16" WELD

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Page \_\_\_\_ of \_\_\_\_  
 Calculations  
 Fax  
 Memorandum  
 Meeting Minutes  
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### Checks:

A. Shear Yielding: (plate)  $F_u = \frac{M_{uc}}{d - t_{fb}}$

$$\frac{F_u}{2} \leq \phi R_n = \phi 0.6 F_y p b t_p$$
$$\frac{15.65 \text{ k}}{2} \leq 0.9 (36 \text{ ksi}) (12") (0.5")$$
$$7.83 \text{ k} \leq 194 \text{ k} \therefore \underline{\text{OK}}$$
$$= \frac{245 \text{ k-ft}}{16' - 0.349"} = 15.65 \text{ k}$$

B. Shear Rupture: (plate)

$$\frac{F_u}{2} \leq \phi R_n = \phi 0.6 F_u p A_n$$
$$7.83 \leq 0.75 (0.6) (58 \text{ ksi}) [12" - 2(5/8" + 1/8")] = 274 \text{ k} \therefore \underline{\text{OK}}$$

C. Shear Rupture: (bolts)

$$V_u < \phi R_n = \phi n_b F_v A_b$$

TABLE 7-1, AISC 15th ed.

$$2(4.3) = 8.6 \text{ k} < 24.9 \text{ k} \therefore \underline{\text{OK}}$$

D. Bolt Bearing & Tearout:

$$V_u < \phi R_n \rightarrow \text{TABLE 7-5, AISC 15th ed.}$$
$$8.6 \text{ k} < 65.3 \text{ k} \therefore \underline{\text{OK}}$$

Project GHSBN  
Subject WELD SIZING  
With/To \_\_\_\_\_  
Address \_\_\_\_\_  
Date 10/6/22

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Phone \_\_\_\_\_  
Fax # \_\_\_\_\_  
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Page \_\_\_\_ of \_\_\_\_  
 Calculations  
 Fax  
 Memorandum  
 Meeting Minutes  
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### FILLET WELD SIZING: (AISC 15<sup>th</sup> ED. CHPT. 8)

Strength of weld:

$$R_n = 0.6 F_{EXX} \left( \frac{\sqrt{2}}{2} \right) \left( \frac{D}{16} \right) l$$

→ when  $F_{EXX} = 70 \text{ KSI}$  ←

$$\frac{R_n}{\Omega} = 0.928 \frac{K}{m} (D)(l)$$

#### A. Moment Frame Connection (HSS6X6)

$$R_u = \frac{16.296 \text{ K}\cdot\text{ft}}{(6'/12)} = 32.6 \text{ K} \rightarrow \text{RISA output rxn (using ASD load combo)}$$

→ try 3/8" weld ←

$$\frac{R_n}{\Omega} = 0.928 \frac{K}{m} (6)(6) = 33.4 \text{ K} > 32.6 \text{ K} \therefore \text{OK}$$

USE 3/8" WELD

#### B. Concrete Pile (HSS8X8)

$$R_u = \frac{72.65 \text{ K}\cdot\text{ft}}{(8'/12)} = 108.98 \text{ K} \rightarrow \text{RISA output rxn (using ASD load combo)}$$

→ try 3/8" weld ←

$$\frac{R_n}{\Omega} = 0.928 (6)(8)(1.5) = 66.82 \text{ K} < 108.98 \therefore \text{NG}$$

( $1.0 + 0.5 S_m^{1.5} \theta$ ) @  $\theta = 90$   
AISC pg. 8-9

→ try 5/8" weld ←

$$\frac{R_n}{\Omega} = 0.928 \frac{K}{m} (10)(8)(1.5) = 111.36 \text{ K} > 108.98 \text{ K} \therefore \text{OK}$$

USE 5/8" WELD

## Steel Base Plate

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

(c) ENERCALC INC 1983-2022

**DESCRIPTION:** canopy base plate

### Code Reference

Calculations per AISC Design Guide # 1, IBC 2018, CBC 2019, ASCE 7-16, AISC 360-16  
 Load Combination Set : IBC 2018

### General Information

#### Material Properties

AISC Design Method	Load Resistance Factor Design	$\phi_c$ : LRFD Resistance Factor	0.65
Steel Plate $F_y$	= 36 ksi		
Concrete Support $f'_c$	= 3 ksi		
Assumed Bearing Area	Full Bearing	Nominal Bearing $F_p$ per J8	3.825 ksi

### Column & Plate

#### Column Properties

Steel Section	HSS8x8x5/8		
Depth	8 in	Area	16.4 in <sup>2</sup>
Width	8 in	$I_{xx}$	146 in <sup>4</sup>
Flange Thickness	0.581 in	$I_{yy}$	146 in <sup>4</sup>
Web Thickness	0 in		

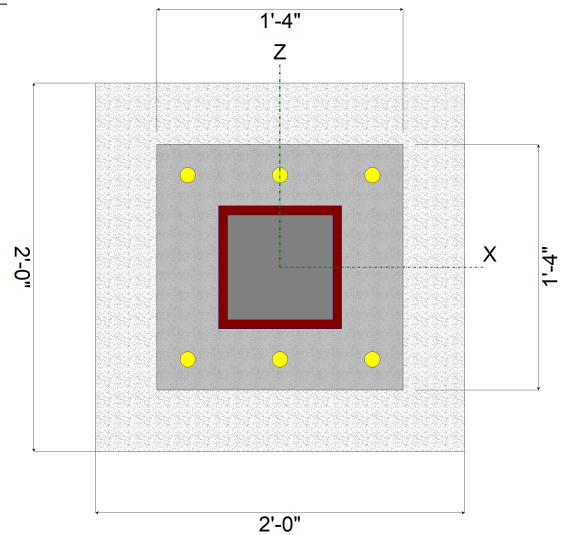
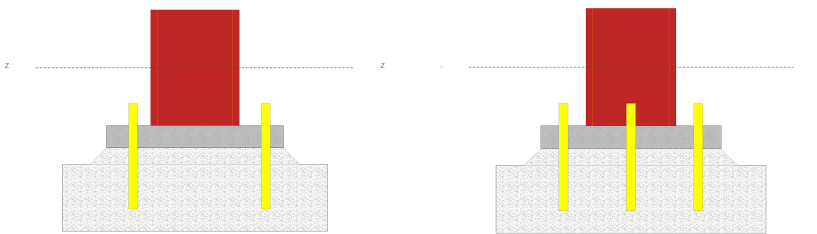
#### Plate Dimensions

N : Length	16.0 in
B : Width	16.0 in
Thickness	2.0 in

#### Support Dimensions

Width along "X"	24.0 in
Length along "Z"	24.0 in

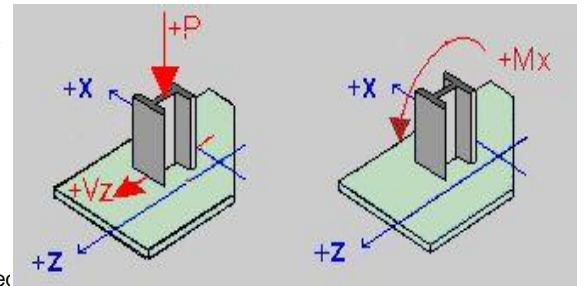
Column assumed welded to base plate



### Applied Loads

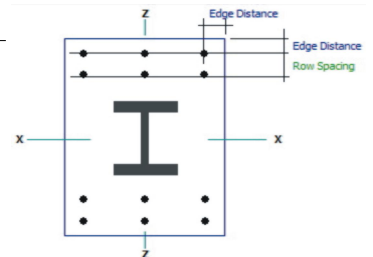
	P-Y	V-Z	M-X
D : Dead Load	10.460 k	1.50 k	15.30 k-ft
L : Live	k	k	k-ft
Lr : Roof Live	k	k	k-ft
S : Snow	13.340 k	2.460 k	25.370 k-ft
W : Wind	k	k	k-ft
E : Earthquake	k	6.730 k	67.30 k-ft
H : Lateral Earth	k	k	k-ft

" P " = Gravity load, "+" sign is downward  
 "+" Moments create higher soil pressure at +Z edge  
 "+" Shears push plate towards +Z edge



### Anchor Bolts

Anchor Bolt or Rod Description	1 1/2"	
Max of Tension or Pullout Capacity.....		k
Shear Capacity.....		k
Edge distance : bolt to plate.....	2.0 in	
Number of Bolts in each Row.....	3.0	
Number of Bolt Rows.....	1	



Project Title:  
 Engineer:  
 Project ID:  
 Project Descr:

**Steel Base Plate**

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

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**DESCRIPTION:** canopy base plate

**GOVERNING DESIGN LOAD CASE SUMMARY**

Plate Design Summary

Design Method **Load Resistance Factor Design**  
 Governing Load Combinat **+1.40D**  
 Governing Load Case Typ **Axial + Moment, L/2 < Eccentricity, Tension**  
 Governing STRESS RATIO **1.0**  
 Design Plate Size **1'-4" x 1'-4" x 2"**  
 Pu : Axial ..... 0.000 k  
 Mu : Moment ..... 0.000 k-ft

Mu : Max. Moment ..... 20.606 k-in  
 fb : Max. Bending Stress ..... 30.909 ksi  
 Fb : Allowable : 32.400 ksi  
 Fy \* Phi  
 Bending Stress Ratio **0.954**  
**Bending Stress OK**  
 fu : Max. Plate Bearing Stress .... 2.486 ksi  
 Fp : Allowable : 2.486 ksi  
 Bearing Stress Ratio **1.000**  
**Bearing Stress OK**

Load Comb. : +1.40D

***Axial Load + Moment, Ecc. > L/2***

Loading

Pu : Axial ..... 14.644 k  
 Mu : Moment ..... 21.420 k-ft  
 Eccentricity ..... 17.553 in  
 A1 : Plate Area ..... 256.000 in^2  
 A2 : Support Area ..... 576.000 in^2  
 sqrt( A2/A1 ) 1.500

Calculate plate moment from bolt tension ...

Tension per Bolt ..... 3.588 k  
 Tension : Allowable ..... 0.000 k  
**Stress Ratio ..... 0.000**  
 Dist. from Bolt to Col. Edge ..... 2.200 in  
 Effective Bolt Width for Bending ..... 13.200 in  
 Plate Moment from Bolt Tension ..... 1.794 k-in

Calculate plate moment from bearing ...

max(m, n) 4.800 in  
 "A" : Bearing Length 1.277 in  
 Mpl : Plate Moment 0.579 k-in

Bearing Stresses

Fp : Allowable ..... 2.486 ksi  
 fu : Max. Bearing Pressure ( set equal to Fp )  
**Stress Ratio ..... 1.000**

Plate Bending Stresses

Mmax ..... 6.946 k-in on 1" strip  
 fb : Actual ..... 10.420 ksi  
 Fb : Allowable ..... 32.400 ksi  
**Stress Ratio ..... 0.322**

Load Comb. : +1.20D

***Axial Load + Moment, Ecc. > L/2***

Loading

Pu : Axial ..... 12.552 k  
 Mu : Moment ..... 18.360 k-ft  
 Eccentricity ..... 17.553 in  
 A1 : Plate Area ..... 256.000 in^2  
 A2 : Support Area ..... 576.000 in^2  
 sqrt( A2/A1 ) 1.500

Calculate plate moment from bolt tension ...

Tension per Bolt ..... 3.042 k  
 Tension : Allowable ..... 0.000 k  
**Stress Ratio ..... 0.000**  
 Dist. from Bolt to Col. Edge ..... 2.200 in  
 Effective Bolt Width for Bending ..... 13.200 in  
 Plate Moment from Bolt Tension ..... 1.521 k-in

Calculate plate moment from bearing ...

max(m, n) 4.800 in  
 "A" : Bearing Length 1.090 in  
 Mpl : Plate Moment 0.501 k-in

Bearing Stresses

Fp : Allowable ..... 2.486 ksi  
 fu : Max. Bearing Pressure ( set equal to Fp )  
**Stress Ratio ..... 1.000**

Plate Bending Stresses

Mmax ..... 6.011 k-in on 1" strip  
 fb : Actual ..... 9.017 ksi  
 Fb : Allowable ..... 32.400 ksi  
**Stress Ratio ..... 0.278**

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**Steel Base Plate**

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**DESCRIPTION: canopy base plate**

Load Comb. : +1.20D+0.50S

***Axial Load + Moment, Ecc. > L/2***

Loading  
 Pu : Axial ..... 19.222 k  
 Mu : Moment ..... 31.045 k-ft  
 Eccentricity ..... 19.381 in  
 A1 : Plate Area ..... 256.000 in<sup>2</sup>  
 A2 : Support Area ..... 576.000 in<sup>2</sup>  
 sqrt( A2/A1 ) ..... 1.500

Calculate plate moment from bolt tension ...  
 Tension per Bolt ..... 5.738 k  
 Tension : Allowable ..... 0.000 k  
**Stress Ratio** ..... **0.000**  
 Dist. from Bolt to Col. Edge ..... 2.200 in  
 Effective Bolt Width for Bending ..... 13.200 in  
 Plate Moment from Bolt Tension ..... 2.869 k-in

Calculate plate moment from bearing ...  
 max(m, n) ..... 4.800 in  
 "A" : Bearing Length ..... 1.832 in  
 Mpl : Plate Moment ..... 0.795 k-in

Bearing Stresses  
 Fp : Allowable ..... 2.486 ksi  
 fu : Max. Bearing Pressure ( set equal to Fp )  
**Stress Ratio** ..... **1.000**

Plate Bending Stresses  
 Mmax ..... 9.541 k-in on 1" strip  
 fb : Actual ..... 14.311 ksi  
 Fb : Allowable ..... 32.400 ksi  
**Stress Ratio** ..... **0.442**

Load Comb. : +1.20D+1.60S

***Axial Load + Moment, Ecc. > L/2***

Loading  
 Pu : Axial ..... 33.896 k  
 Mu : Moment ..... 58.952 k-ft  
 Eccentricity ..... 20.870 in  
 A1 : Plate Area ..... 256.000 in<sup>2</sup>  
 A2 : Support Area ..... 576.000 in<sup>2</sup>  
 sqrt( A2/A1 ) ..... 1.500

Calculate plate moment from bolt tension ...  
 Tension per Bolt ..... 12.405 k  
 Tension : Allowable ..... 0.000 k  
**Stress Ratio** ..... **0.000**  
 Dist. from Bolt to Col. Edge ..... 2.200 in  
 Effective Bolt Width for Bending ..... 13.200 in  
 Plate Moment from Bolt Tension ..... 6.202 k-in

Calculate plate moment from bearing ...  
 max(m, n) ..... 4.800 in  
 "A" : Bearing Length ..... 3.575 in  
 Mpl : Plate Moment ..... 1.336 k-in

Bearing Stresses  
 Fp : Allowable ..... 2.486 ksi  
 fu : Max. Bearing Pressure ( set equal to Fp )  
**Stress Ratio** ..... **1.000**

Plate Bending Stresses  
 Mmax ..... 16.037 k-in on 1" strip  
 fb : Actual ..... 24.055 ksi  
 Fb : Allowable ..... 32.400 ksi  
**Stress Ratio** ..... **0.742**



Project Title:  
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**Steel Base Plate**

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

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**DESCRIPTION: canopy base plate**

Load Comb. : +1.20D+0.70S+E

***Axial Load + Moment, Ecc. > L/2***

Loading  
 Pu : Axial ..... 21.890 k  
 Mu : Moment ..... 103.419 k-ft  
 Eccentricity ..... 56.694 in  
 A1 : Plate Area ..... 256.000 in<sup>2</sup>  
 A2 : Support Area ..... 576.000 in<sup>2</sup>  
 sqrt( A2/A1 ) ..... 1.500

Calculate plate moment from bolt tension ...  
 Tension per Bolt ..... 30.512 k  
 Tension : Allowable ..... 0.000 k  
**Stress Ratio ..... 0.000**  
 Dist. from Bolt to Col. Edge ..... 2.200 in  
 Effective Bolt Width for Bending ..... 13.200 in  
 Plate Moment from Bolt Tension ..... 15.256 k-in

Calculate plate moment from bearing ...  
 max(m, n) ..... 4.800 in  
 "A" : Bearing Length ..... 5.703 in  
 Mpl : Plate Moment ..... 1.717 k-in

Bearing Stresses  
 Fp : Allowable ..... 2.486 ksi  
 fu : Max. Bearing Pressure ( set equal to Fp )  
**Stress Ratio ..... 1.000**

Plate Bending Stresses  
 Mmax ..... 20.606 k-in on 1" strip  
 fb : Actual ..... 30.909 ksi  
 Fb : Allowable ..... 32.400 ksi  
**Stress Ratio ..... 0.954**

Load Comb. : +1.20D+0.70S-E

***Axial Load + Moment, Ecc. > L/2***

Loading  
 Pu : Axial ..... 21.890 k  
 Mu : Moment ..... 31.181 k-ft  
 Eccentricity ..... 17.093 in  
 A1 : Plate Area ..... 256.000 in<sup>2</sup>  
 A2 : Support Area ..... 576.000 in<sup>2</sup>  
 sqrt( A2/A1 ) ..... 1.500

Calculate plate moment from bolt tension ...  
 Tension per Bolt ..... 5.310 k  
 Tension : Allowable ..... 0.000 k  
**Stress Ratio ..... 0.000**  
 Dist. from Bolt to Col. Edge ..... 2.200 in  
 Effective Bolt Width for Bending ..... 13.200 in  
 Plate Moment from Bolt Tension ..... 2.655 k-in

Calculate plate moment from bearing ...  
 max(m, n) ..... 4.800 in  
 "A" : Bearing Length ..... 1.901 in  
 Mpl : Plate Moment ..... 0.821 k-in

Bearing Stresses  
 Fp : Allowable ..... 2.486 ksi  
 fu : Max. Bearing Pressure ( set equal to Fp )  
**Stress Ratio ..... 1.000**

Plate Bending Stresses  
 Mmax ..... 9.848 k-in on 1" strip  
 fb : Actual ..... 14.772 ksi  
 Fb : Allowable ..... 32.400 ksi  
**Stress Ratio ..... 0.456**

Project Title:  
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**Steel Base Plate**

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

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**DESCRIPTION: canopy base plate**

Load Comb. : +0.90D

***Axial Load + Moment, Ecc. > L/2***

Loading

Pu : Axial ..... 9.414 k  
 Mu : Moment ..... 13.770 k-ft  
 Eccentricity ..... 17.553 in  
 A1 : Plate Area ..... 256.000 in<sup>2</sup>  
 A2 : Support Area ..... 576.000 in<sup>2</sup>  
 sqrt( A2/A1 ) ..... 1.500

Calculate plate moment from bolt tension ...

Tension per Bolt ..... 2.245 k  
 Tension : Allowable ..... 0.000 k  
**Stress Ratio ..... 0.000**  
 Dist. from Bolt to Col. Edge ..... 2.200 in  
 Effective Bolt Width for Bending ..... 13.200 in  
 Plate Moment from Bolt Tension ..... 1.123 k-in

Calculate plate moment from bearing ...

max(m, n) ..... 4.800 in  
 "A" : Bearing Length ..... 0.812 in  
 Mpl : Plate Moment ..... 0.381 k-in

Bearing Stresses

Fp : Allowable ..... 2.486 ksi  
 fu : Max. Bearing Pressure ( set equal to Fp )  
**Stress Ratio ..... 1.000**

Plate Bending Stresses

Mmax ..... 4.572 k-in on 1" strip  
 fb : Actual ..... 6.858 ksi  
 Fb : Allowable ..... 32.400 ksi  
**Stress Ratio ..... 0.212**

Load Comb. : +0.90D+E

***Axial Load + Moment, Ecc. > L/2***

Loading

Pu : Axial ..... 9.414 k  
 Mu : Moment ..... 81.070 k-ft  
 Eccentricity ..... 103.340 in  
 A1 : Plate Area ..... 256.000 in<sup>2</sup>  
 A2 : Support Area ..... 576.000 in<sup>2</sup>  
 sqrt( A2/A1 ) ..... 1.500

Calculate plate moment from bolt tension ...

Tension per Bolt ..... 24.018 k  
 Tension : Allowable ..... 0.000 k  
**Stress Ratio ..... 0.000**  
 Dist. from Bolt to Col. Edge ..... 2.200 in  
 Effective Bolt Width for Bending ..... 13.200 in  
 Plate Moment from Bolt Tension ..... 12.009 k-in

Calculate plate moment from bearing ...

max(m, n) ..... 4.800 in  
 "A" : Bearing Length ..... 4.096 in  
 Mpl : Plate Moment ..... 1.457 k-in

Bearing Stresses

Fp : Allowable ..... 2.486 ksi  
 fu : Max. Bearing Pressure ( set equal to Fp )  
**Stress Ratio ..... 1.000**

Plate Bending Stresses

Mmax ..... 17.489 k-in on 1" strip  
 fb : Actual ..... 26.233 ksi  
 Fb : Allowable ..... 32.400 ksi  
**Stress Ratio ..... 0.810**

Project Title:  
 Engineer:  
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**Steel Base Plate**

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

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**DESCRIPTION:** canopy base plate

Load Comb. : +0.90D-E

***Axial Load + Moment, Ecc. > L/2***

Loading

Pu : Axial .....	9.414 k
Mu : Moment .....	53.530 k-ft
Eccentricity .....	68.235 in
A1 : Plate Area .....	256.000 in <sup>2</sup>
A2 : Support Area .....	576.000 in <sup>2</sup>
sqrt( A2/A1 )	1.500

Calculate plate moment from bearing ...

max(m, n)	4.800 in
"A" : Bearing Length	2.681 in
Mpl : Plate Moment	1.085 k-in

Calculate plate moment from bolt tension ...

Tension per Bolt .....	14.636 k
Tension : Allowable .....	0.000 k
<b>Stress Ratio .....</b>	<b>0.000</b>
Dist. from Bolt to Col. Edge .....	2.200 in
Effective Bolt Width for Bending .....	13.200 in
Plate Moment from Bolt Tension .....	7.318 k-in

Bearing Stresses

Fp : Allowable .....	2.486 ksi
fu : Max. Bearing Pressure ( set equal to Fp )	
<b>Stress Ratio .....</b>	<b>1.000</b>

Plate Bending Stresses

Mmax .....	13.018 k-in on 1" strip
fb : Actual .....	19.527 ksi
Fb : Allowable .....	32.400 ksi
<b>Stress Ratio .....</b>	<b>0.603</b>

## Pole Footing Embedded in Soil

Project File: GHS BAKER N.ec6

LIC# : KW-06014847, Build:20.22.8.17

AHBL, INC

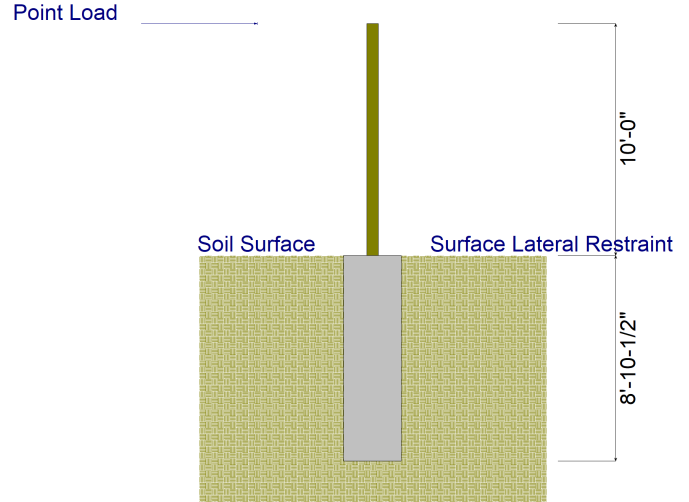
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### Code References

Calculations per IBC 2018 1807.3, CBC 2019, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

### General Information

Pole Footing Shape	Circular
Pole Footing Diameter	30.0 in
Calculate Min. Depth for Allowable Pressures	
Lateral Restraint at Ground Surface	
Allow Passive	300.0 pcf
Max Passive	1,500.0 psf



### Controlling Values

Governing Load Combination	D+0.750S+0.5250E
Lateral Load	6.937 k
Moment	69.368 k-ft

Restraint @ Ground Surface

Pressure at Depth	
Actual	1,497.16 psf
Allowable	1,500.0 psf
Surface Restraint Force	23,545.9 lbs

<b>Minimum Required Depth</b>	<b>8.875 ft</b>
-------------------------------	-----------------

Footing Base Area	4.909 ft <sup>2</sup>
Maximum Soil Pressure	4.859 ksf

### Applied Loads

Lateral Concentrated Load (k)	Lateral Distributed Loads (k)	Applied Moment (kft)	Vertical Load (k)
D : Dead Load	1.530 k	k/ft	10.450 k
Lr : Roof Live	k	k/ft	k
L : Live	k	k/ft	k
S : Snow	2.540 k	k/ft	13.40 k
W : Wind	k	k/ft	k
E : Earthquake	6.670 k	k/ft	k
H : Lateral Earth	k	k/ft	k
Load distance above ground surface	10.0 ft	TOP of Load above ground surface	
		BOTTOM of Load above ground surface	
		ft	
		ft	

### Load Combination Results

Load Combination	Forces @ Ground Surface		Required Depth - (ft)	Pressure at Depth		Soil Increase Factor
	Loads - (k)	Moments - (ft-k)		Actual - (psf)	Allow - (psf)	
D Only	1.530	15.300	4.50	1,284.4	1,350.0	1.000
+D+S	4.070	40.700	6.88	1,463.9	1,500.0	1.000
+D+0.750S	3.435	34.350	6.25	1,494.9	1,500.0	1.000
+0.60D	0.918	9.180	3.75	1,109.8	1,125.0	1.000
+D+0.70E	6.199	61.990	8.50	1,458.6	1,500.0	1.000
+D+0.750S+0.5250E	6.937	69.368	8.88	1,497.2	1,500.0	1.000
+0.60D+0.70E	5.587	55.870	8.00	1,484.0	1,500.0	1.000