Structural Calculations for Prado Regional Gate House (Guard Shack)

Chino, CA

City resubmittal
MI222806.00
01/08/24

Page:	Description:
LD-1	Design Loading
GH-1 to GH-11	Gate House Calculations
GC-1 – GC-32	Gate House Canopy Calculations

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Costa Rica • Colombia • Haiti • Liberia • Italy • Turkey • India • Nepal • Bangladesh • Thailand • Japan • New Zealand

List of all code references:

ASCE - 7-16	Minimum Design Loads And Associated Criteria For Buildings And Other Structures
ACI 318-19	Building Code Requirements for Structural Concrete and Commentary
AISC - 15th Edition	American Institute of Steel construction Manual
ACI -530/530.1-16 TMS 402/602-16	Building Code Requirements and Specification for Masonry Structures and Companion Commentaries
CBC-2022	California Building Code

miyamoto.

Project: **Prado Gate House** Sheet _____

Project No: **MI2228086.00** Calc By: _____ Date: **01.19.23**

 Chk By: _____ Date: _____

Design Loading

Gate House

Roof

Item	Gravity	
Roof finish	2.0	
5/8" Sheating	2.0	
Roof Joist	2.5	
Insulation	1.0	
2x ceiling joist	1.5	
Gypsum bd ceiling	3.2	
Solar (future)	4.0	
Misc	1.8	
Σ DL	**18.0**	psf
Beams	2.0	
Σ DL	**20.0**	psf
Live Load (Reducible)	**20.0**	psf

Walls

Exterior Walls	16	psf
Interior Partition Walls	10	psf

Entry Gate Structure

Roof

Item	Gravity	
Roofing	2.0	
Metal Deck	2.0	
Framing	6.0	
Σ DL	**10.0**	psf
Live Load (Reducible)	**20.0**	psf

Walls

CMU Walls	78	psf

Structural System

Seismic

Site Class : D

Importance Factor : I 1.0

Occupancy Category: II

Seimic Design Category: D

Seimic Coefficients:

Ss= 1.841 S1= 0.625 Sds= 1.473

Gate House: Light Frame Wood Shearwalls

R = 6.5 Cd = 4.0

Ω_o = 3.0

Entry Gate: Ordinary Canteliver Column System

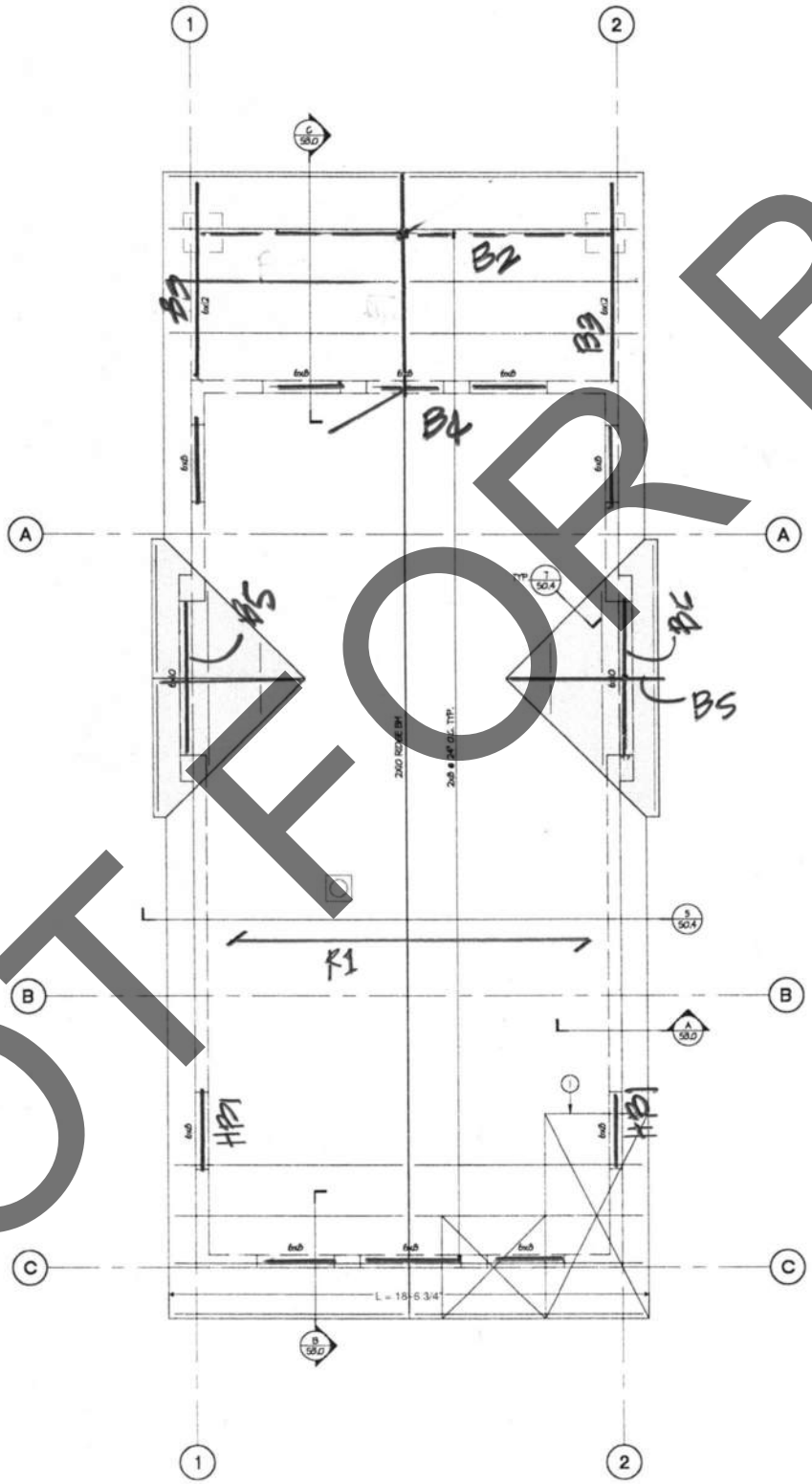
R = 1.3 Cd = 1.3

Ω_o = 1.3

Foundation

Conventional pad and continous footing

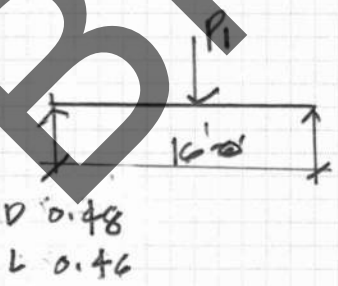
Allowable Soil Bearing Pressure 1500 psf CBC Table 1806.2



ROOF FRAMING KEY PLAN

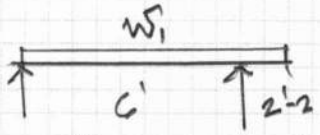
B2

$P_{1D} = 0.82^k$
$L = 0.91^k$
FROM ENERCALC USE: 6X8 DCR = 0.84



B3

$W_D = 18^{\#} \times (7.75/2 + 1.5) = 70^{\#}/_{'}$
$L = 105^{\#}/_{'}$
FROM ENERCALC
USE: 4X6 (MIN) DCR = 0.35
$\Delta_{TL} = 0.013 = L/768$



D 0.16^k 0.65^k
L 0.32 0.76

HD-1 TYPICAL HEADER BEAM

L = 4'-0"
$W_D = 18^{\#} \times (7.75/2 + 1.5) = 97^{\#}/_{'}$
$L = 20 \times 8.5 = 107^{\#}/_{'}$
$204^{\#}/_{'}$

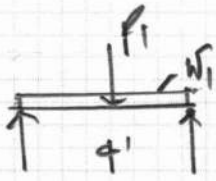
$M = WL^2/8 = 488^{\#-'}$

$f_{b\,6\times6} = \frac{488 \times 12}{27} = 212\ psi$ OK ← USE 6X6

B4

$W_D = 18 \times 2' = 36^{\#}/_{'}$
$L = 220 \times 2' = 40^{\#}/_{'}$

$P = 0.36^k + 0.11^k = 0.47^k$] 0.182^k



$M_T = \frac{76(4)^2}{8} + \frac{0.82 \times 4}{4} = 972^{\#-'}$

USE: 6X8

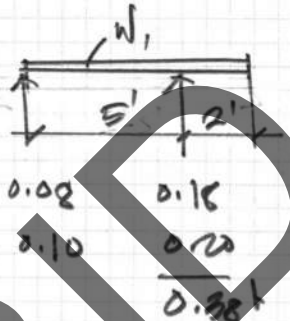
$f_{b\,6\times6} = \frac{972 \times 12}{27.} = 378\ psi$ OK

B5

$W_{DL} = 18^{\#} \times \left[\frac{5.5'}{2} + 1\right] \times 1/2 = 36^{\#}/_{1}$

$L = 20 \times 2' \quad = 40^{\#}/_{1}$

USE: 2x6 MID.



B6

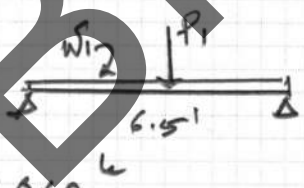
$W_D = 16^{\#} \times [5.5/2 + 1.5] = 99^{\#}/_{1} + 16(4) = 163^{\#}/_{1}$

$L = 20 \times 5.5 \quad = 110$

$P_D = 0.18^{k}$

$L = 0.20$

USE: 6x8 DCK 0.2K



R1 JOIST

$T = M/d = \frac{(18+20)(1.33)(16)^2}{8} \times 1/3.33$

$T = 485^{\#}$ $N_{16D} = \frac{485}{91} = 6$ (5/31 8-16d)

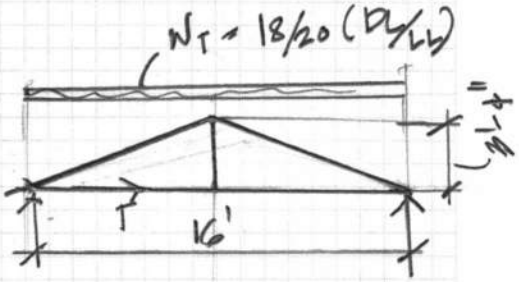
TOP CHORD

$M = \frac{(18+20)(8)^2}{8} \times 2' = 608^{\#-'}$ ← $f_{b\,2\times8} = 519$ psi

BOT. CHORD

$M = \frac{(5+10)(1.33)(16)^2}{8} = 640^{\#-'}$

$f_{b\,2\times6} = \frac{640 \times 12}{7.56} = 1012$ psi ok



USE: 2x8 @ 16" TOP CHORD
2x6 @ 16" BOT. CHORD
W/ 8-16d EA. END

miyamoto. Project:_____ Sheet No:_____

Project No:_____ Calc. By:_____ Date: 1/19/23

Static Design Base Shear:

Notes

- Mapped MCE Spectral Response values are obtained from the ATC Hazard Application
- References below are for ASCE 7-16 except as noted
- Values shown are at Strength Design or LRFD level and may be reduced for ASD

Structural & Site Specific Information

Project Address	= **Prado National Park**						
Latitude	= **33.94585**			Number of stories	=	**1**	
Longitude	= **-117.65**			Roof ht abv base	h_n =	**10** ft	
Mapped Resp Accel, short periods	S_s =	**1.841** g		Regular structure?	=	**Yes**	
Mapped Resp Accel, 1s period	S_1 =	**0.625** g		DSA/OSHPD project?	=	**No**	
Long Period Transition	T_L =	**8** sec	(Figs. 22-14 - 22-17)	ρ = 1.0?	=	**No**	
Seismic Force Resisting System	= **Light Frame Wood**						
Response Modification Coefficient	R =	**6.5**	(Table 12.2-1)	Site Class	=	**D**	(Table 20.3-1)
Building Period Coefficient	C_t =	**0.020**	(Table 12.8-2)	Site Class (for F_a)	=	**D**	(Sec 11.4.8)
Period Parameter	x =	**0.77**	(Table 12.8-2)	Risk Category	=	**II**	(CBC T1604.5)
Using Site Specific Ground Motion?	=	**No**	(sec 21.1)	Importance Factor	I_e =	**1.00**	(Table 1.5-2)
Using Default Site Class?	=	**Yes**	(Sec 11.4.3 & 11.4.4)				

Design Spectral Acceleration Parameters

Short Period Site Coefficient	F_a =	1.200	(CBC T1613.2.3(1))
Long Period Site Coefficient	F_v =	1.700	(See ASCE 7 Sec 11.4.8 for Add'l Reqmts)
Design 5% Damped, Spectral Response Acceleration at short periods	**S_{DS} =**	**1.473 g**	(CBC Eq. 16-36, 16-38)
Design 5% Damped, Spectral Response Acceleration at a period of 1 sec	S_{D1} =	0.750 g	(CBC Eq. 16-37, 16-39)
Seismic Design Category Based on Short-Period Response Acceleration	=	D	(CBC T1613.2.5(1))
Seismic Design Category Based on a 1-Second Period Response Acceleration	=	D	(CBC T1613.2.5(2))
Seismic Design Category for large S1 and Occupancy Category	=		(Sec 11.6)
Minimum Seismic Design Category if DSA/OSHPD	=		(CBC 1613A.2.5)

Seismic Design Category: D (Sec 11.6)

Design Period

Approx Fundamental Period	T_a =	0.118 sec	(Eq. 12.8-7)	
Fundamental Period From Analysis	T_b =	**0.000** sec	*enter 0 if not performed*	
T_0	$0.2(S_{DS}/S_{D1})$ =	0.102 sec	(Sec 11.4.6)	
T_S	S_{DS}/S_{D1} =	0.509 sec	(Sec 11.4.6)	
Coeff for Upper Limit on Period	C_u =	1.4	(Table 12.8-1)	
Maximum Fundamental Period	$C_u T_a$ =	0.165 sec	(Sec 12.8.2)	
Design Period T =		**0.118 sec**	(Sec 12.8.2)	*< Approx Period Used*

Seismic Response Coefficient

S_{DS} value for determination of C_s and E_v	=	1.473	(Sec 12.8.1.3)	
For $T \le T_S$: C_s =	$S_{DS} / (R/I_e)$ =	0.227	(Eq. 12.8-2)	*< Short Period Design*
For $T_S < T \le T_L$: $C_{s\,max}$ =	$S_{D1} / (T(R/I_e))$ =	0.980	(Eq. 12.8-3)	
For $T > T_L$: $C_{s\,max}$ =	$S_{D1}T_L / (T^2(R/I_e))$ =	66.555	(Eq. 12.8-4)	
Minimum: $C_{s\,abs\,min}$ =	$\max(0.044S_{DS}I_e, 0.01)$ =	0.065	(Eq. 12.8-5)	
Where $S_1 \ge 0.6$g: $C_{s\,min}$ =	$0.5S_1/(R/I_e)$ =	0.048	(Eq. 12.8-6)	
Where $S_1 \ge 0.2$g and site class D:	Cs =	0.227	(Sec 11.4.8)	

Base Shear: V_{base} = 0.227 W (Eq. 12.8-1)

⚠ This is a beta release of the new ATC Hazards by Location website. Please contact us with feedback

ℹ The ATC Hazards by Location website will not be updated to support ASCE 7-22. Find out why.

Hazards by Location

Search Information

Address: 16700 Euclid Ave, Chino, CA 91708, USA

Coordinates: 33.9458498, -117.6500505

Elevation: 541 ft

Timestamp: 2023-01-11T01:24:48.689Z

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	89 mph
Risk Category II	95 mph
Risk Category III	102 mph
Risk Category IV	106 mph

ASCE 7-10

MRI 10-Year ⚠ Special Region mph

You are in a special wind region. Please contact the Authority Having Jurisdiction.

MRI 25-Year ⚠ Special Region mph

You are in a special wind region. Please contact the Authority Having Jurisdiction.

MRI 50-Year ⚠ Special Region mph

You are in a special wind region. Please contact the Authority Having Jurisdiction.

MRI 100-Year ⚠ Special Region mph

You are in a special wind region. Please contact the Authority Having Jurisdiction.

Risk Category I ⚠ Special Region mph

You are in a special wind region. Please contact the Authority Having Jurisdiction.

ASCE 7-05

ASCE 7-05 Wind Speed ⚠ Special Region mph

You are in a special wind region. Please contact the Authority Having Jurisdiction.

R.M. BYRD and Associates, Inc.
Consulting Structural Engineers

PROJECT : Cochran Cabin Idaho
CLIENT :
JOB NO. : MI2228102
DATE :

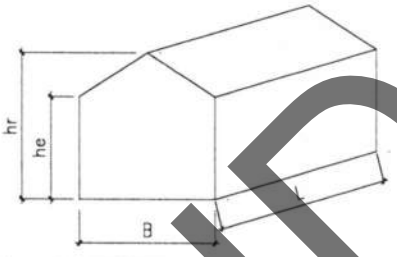
PAGE :
DESIGN BY :
REVIEW BY :

Wind Analysis for Low-rise Building, Based on ASCE 7-16

Prado Gate House

INPUT DATA

Exposure category (B, C or D, ASCE 7-16 26.7.3)			C	
Importance factor (ASCE 7-16 Table 1.5-2)	I_w	=	1.00	for all Category
Basic wind speed (ASCE 7-16 26.5.1 or 2015 IBC)	V	=	95	*mph, (152.89 kph)*
Topographic factor (ASCE 7-16 26.8 & Table 26.8-1)	K_{zt}	=	1	Flat
Building height to eave	h_e	=	10	*ft, (3.05 m)*
Building height to ridge	h_r	=	14	*ft, (4.27 m)*
Building length	L	=	44	*ft, (13.41 m)*
Building width	B	=	19	*ft, (5.79 m)*
Effective area of components (or Solar Panel area)	A	=	10	ft^2, <== Overhang? (Yes or No) No
			(0.93	m^2)



VN = 8.45x0.6 = 5.07k < 0.6 La

; SEISMIC GOVERNS

DESIGN SUMMARY

Max horizontal force normal to building length, L, face	=	8.45	*kips, (38 kN), SD level (LRFD level), Typ.*
Max horizontal force normal to building length, B, face	=	3.65	*kips, (16 kN)*
Max total horizontal torsional load	=	40.32	*ft-kips, (55 kN-m)*
Max total upward force	=	13.38	*kips, (59 kN)*

ANALYSIS

Velocity pressure

$q_h = 0.00256\ K_z\ K_{zt}\ K_d\ K_e\ V^2$ = **16.69** psf

where: q_h = velocity pressure at mean roof height, h. (Eq. 26.10-1 page 268)

K_z = velocity pressure exposure coefficient evaluated at height, h, (Tab. 26.10-1, pg 268) = **0.85**

K_d = wind directionality factor. (Tab. 26.6-1, for building, page 266) = **0.85**

h = mean roof height = **12.00** ft

K_e = ground elevation factor. (***1.0*** per Sec. 26.9, page 268) **< 60 ft, [Satisfactory]** (ASCE 7-16 26.2.1)

< Min (L, B), [Satisfactory] (ASCE 7-16 26.2.2)

Design pressures for MWFRS

$p = q_h\ [(G\ C_{pf}) - (G\ C_{pi})]$

where: p = pressure in appropriate zone. (Eq. 28.3-1, page 311). p_{min} = **16** psf (ASCE 7-16 28.3.4)

$G\ C_{pf}$ = product of gust effect factor and external pressure coefficient, see table below. (Fig. 28.3-1, page 312 & 313)

$G\ C_{pi}$ = product of gust effect factor and internal pressure coefficient.(Tab. 26.13-1, Enclosed Building, page 271)

= **0.18** or **-0.18**

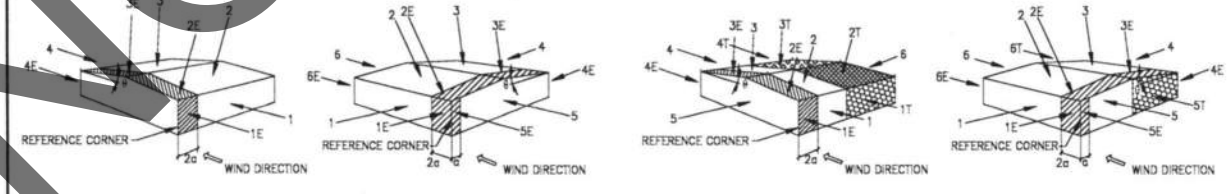
a = width of edge strips, Fig 28.3-1, page 312, MAX[MIN(0.1B, 0.1L, 0.4h), MIN(0.04B, 0.04L), 3] = **3.00** ft

Net Pressures (psf), Basic Load Cases

Surface	Roof angle θ = 22.83			Roof angle θ = 0.00		
	$G\ C_{pf}$	Net Pressure with ($+GC_{pi}$)	Net Pressure with ($-GC_{pi}$)	$G\ C_{pf}$	Net Pressure with ($+GC_{pi}$)	Net Pressure with ($-GC_{pi}$)
1	0.54	5.98	11.99	-0.45	-10.52	-4.51
2	-0.43	-10.27	-4.26	-0.69	-14.52	-8.51
3	-0.47	-10.78	-4.77	-0.37	-9.18	-3.17
4	-0.41	-9.90	-3.89	-0.45	-10.52	-4.51
5				0.40	3.67	9.68
6				-0.29	-7.85	-1.84
1E	0.77	9.83	15.84	-0.48	-11.02	-5.01
2E	-0.69	-14.53	-8.52	-1.07	-20.87	-14.86
3E	-0.64	-13.77	-7.76	-0.53	-11.85	-5.84
4E	-0.59	-12.93	-6.92	-0.48	-11.02	-5.01
5E				0.61	7.18	13.19
6E				-0.43	-10.18	-4.17

Net Pressures (psf), Torsional Load Cases

Surface	Roof angle θ = 22.83		
	$G\ C_{pf}$	Net Pressure with ($+GC_{pi}$)	Net Pressure with ($-GC_{pi}$)
1T	0.54	1.50	3.00
2T	-0.43	-2.57	-1.06
3T	-0.47	-2.70	-1.19
4T	-0.41	-2.47	-0.97
Surface	Roof angle θ = 0.00		
	$G\ C_{pf}$	Net Pressure with ($+GC_{pi}$)	Net Pressure with ($-GC_{pi}$)
5T	0.40	0.92	2.42
6T	-0.29	-1.96	-0.46



Load Case A (Transverse) Load Case B (Longitudinal) Load Case A (Transverse) Load Case B (Longitudinal)

Basic Load Cases Torsional Load Cases

ATC Hazards by Location

ch Information

Address:	16700 Euclid Ave, Chino, CA 91708, USA
Coordinates:	33.9458498, -117.6500505
Elevation:	541 ft
Timestamp:	2023-01-11T01:27:06.778Z
Hazard Type:	Seismic
Reference Document:	ASCE7-16
Risk Category:	II
Site Class:	D-default

Basic Parameters

Name	Value	Description
S_S	1.841	MCE_R ground motion (period=0.2s)
S_1	0.625	MCE_R ground motion (period=1.0s)
S_{MS}	2.209	Site-modified spectral acceleration value
S_{M1}	* null	Site-modified spectral acceleration value
S_{DS}	1.473	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
[illegible]	* null	Seismic design category
	1.2	Site amplification factor at 0.2s
F_v	* null	Site amplification factor at 1.0s
CR_S	0.923	Coefficient of risk (0.2s)
CR_1	0.914	Coefficient of risk (1.0s)
PGA	0.77	MCE_G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	0.924	Site modified peak ground acceleration
T_L	8	Long-period transition period (s)
SsRT	1.841	Probabilistic risk-targeted ground motion (0.2s)
SsUH	1.995	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	1.875	Factored deterministic acceleration value (0.2s)
S1RT	0.653	Probabilistic risk-targeted ground motion (1.0s)
S1UH	0.715	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S1D	0.625	Factored deterministic acceleration value (1.0s)
PGAd	0.77	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.

Please note that the ATC Hazards by Location website will not be updated to support ASCE 7-22. Find out why.

Disclaimer

Hazard loads are provided by the U.S. Geological Survey Seismic Design Web Services.

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LATERAL ANALYSIS

SEISMIC : $V_E = 0.227 W_P$ ← STRENGTH

SEISMIC MASSING

ROOF = 20# × 47' × 19' = 17.7 k

EXT. WALLS = 16# × [(35'×2 + 10') + (13'×17'×2)] = 18.5

INT. WALLS = 10# × 10'/2 × [11'(2) + 16' + 19'] = 2.85

W = 40 k

V_E = 0.227 (40) × 0.7 = 6.5 k

↑ GREATER THAN MIN V_W = 5 k

SHEARWALL:

E-W WALLS L = 13'-0" EQ. SIDE

LINE 1 & 2

$V_E = 7^k \times 1/2 = 3.5^k$

$V/L = \frac{4^k \times 1000}{13'} = 304$ PLF ← SHEARWALL TYPE B

$OM = 3.5^k \times 10' = 35^{k'}$

$U.L. = \frac{35}{12.5'} = 3^k$ ← HOLDOWN HS CAP = 4.9 k

N-S WALLS

SOUTH WALLS

LINE C

LT = 2'-4" + 2'-4" = 4'-8"

MIN WALL = 2.33' × 3.5 = 8.15' 7 1/8" ← PROVIDE CONT. STRAP AT WINDOW HEADER

$V_E = \frac{6,500}{41'} \times 34'/2 = 3.5^k$

$V/L = \frac{3500}{2,333 + 2,333} = 752$ PLF ← TYPE D SHEARWALL W/ CONT. STRAP OVER WINDOWS

$O.M. = 3.5^k \times 7' = 24.5^{k'}$

$U.L. = \frac{24,500 \times 1/2}{2.0} = 6.12^k$ ← HOLDOWN HT, CAP = 6.5 k

NORTH WALLS

LT = 2'-9" + 2'-9" = 5'-6"

LINE

$V_E = \frac{6500}{41} \times [34/2 + 6'] = 3.8^k$

$V/L = \frac{3,800 \times 1/2}{2.75'} = 692$ PLF ← TYPE D

$OM = 3.8 \times 7' = 27^{k'}$

$U.L. = \frac{27 \times 1/2}{2.17'} = 6.12^k$ ← HT

EXTERIOR FOUNDATION

LINE C — SOUTH WALL

$OM = V_{6.5k} \times 1/2 \times 12' = 39\ k'$

RM:

ROOF: $18^{\#} \times 2' \times 16'$ =	0.60 k/LFT	× 16/2	= 4.7 k'
WALL: $16^{\#} \times 11' \times 16'$ =	3.1		= 25
FTG: $150^{\#} \times 2' \times 2' \times 16'$ =	9.6		= 77
SLAB: $4/12 \times 2' \times 150^{\#} \times 16'$ =	1.6		= 13
	ENT = 15 k		ERM = 120 k'

CBC REDUCTION

STABILITY $= \frac{0.9\ RM}{OM} = \frac{0.9 \times 120}{39^{k}} = 2.76 > 1.1$ ∴

S.B.P. $c = OM/ENT = 2.6 < 2/3 = 2.75$ ∴ FULL BEARING

$P/b = 15/16' \times 2 = 0.46$ ksf

$M/s = 39/12 \times 16^{2}/6 = 0.46$

0.91 ksf < 1.5 ksf OK

USE: 24" WIDE CONT. FTG. W/ 3-#5 CONT. MIN

LINE A [NEW] — NORTH WALL

$OM = 3.8^{k} \times 12' = 46^{k'}$

RM: ROOF: $18^{\#} \times 2' \times 16'$ = 0.60 × 16/2 = 4.7

WALL: $16^{\#} \times 11' \times 16'$ = 3.1 = 25

FTG: $150^{\#} \times 2' \times 2' \times 16'$ = 9.6 = 77

SLAB: $4/12 \times 2' \times 150^{\#} \times 16$ = 1.6 = 13

ENT = 15 k ERM = 120 k'

STABILITY $= \frac{0.9 \times 120}{46} = 2.35 > 1.1$

SBP: $c = OM/ENT = 4' > 2/3 = 2.25$

$\bar{x} = ERM/ENT = 8'$: $2' < 3[\bar{x} - c] = 12.51'$

$q_{all} = \frac{2\ ENT}{2'\ W} = \frac{2 \times 15}{8' \times 2} = 1.09$ KSF

USE: 24" WIDE CONT. FOOTING W/ 3-#5 CONT. MIN.

EAST AND WEST WALL (SIMILAR LOADINGS)

$V_B = 7^k \times 1/2 = 3.5^k$

$OM = 3.5^k \times 10' = 35^{k'}$

RM: ROOF: $18'' \times 16'/2 \times 34' = 4.7^{k'} \times 10'/2 = 25^{k'}$

WALLS: $16'' \times 10' \times 34' = 5.4^{k} \times = 27.2$

FTG: $1.5' \times 2' \times 34' \times 150^{\#} = 15^{k} \times = 75$

SLAB: $4/12 \times 1' \times 150^{\#} \times 34' = 1.4^{k} \times 7' = 7$

$\Sigma V = 27^k$ $\Sigma RM = 135^{k'}$

STABILITY: $\frac{0.9\,RM}{OM} = 3.4' < L/6 = 5.7'$

SBP: $P/A = 27/1.5 \times 4' = 0.5$

$M/S = 35/1.5 \times 4^2/6 = 0.20$

$0.72\ ksf < 1.5\ ksf$ ok

USE: 18" WIDE CONT. FTG W/ 4-#5 CONT.
TYPICAL TO EAST & WEST WALLS

CHECK 16"×16" MASONRY COLUMN / FOOTING

FOOTING $P_{ROOF} = [22^{\#} + 20^{\#}] \times [(12'/2 + 1.1')(6'/2)] = 2^{k}$

$CMU = \frac{16\times16}{144} \times 150^{\#} \times 2.67' = 0.8^{k}$

$P_T = 2.8^{k}$

$A_{PTG} = 3^{k}/1.5^{ksf} = 2\,FT^2$

↳ USE 2'×2'×18" THK FTG W/ 3-#5 EA. WAY BOTTOM BOT.

PILASTER: USE: 16"×16" CMU PILASTER W/ 4-#5 VERTICAL, #3 TIES @ 8" o.c.

ENTRY GATE

METAL DECK

LMAX SPAN = 8'-0"

DL+LL = 10 PSF + 20 PSF = 30 PSF

USE: ERER X 20 GA ESR ESR NO 226

AT SINGLE SPAN

ALLOW DL/LL = 86/60 > 10/20 OK

FOR FRAMING STRUCTURE

SEE RISA 3D DESIGN ANALYSIS

PRINT-OUT

EVALUATION REPORT Number: 226

Originally Issued: 06/01/2011 **Revised: 08/01/2022** **Valid Through: 06/30/2023**

TABLE 3.7 - ER2R & ER2RA ALLOWABLE UNIFORM LOAD TABLES (psf)

ER2R

Span Condition	Gage	Design Thick. (in)	Span Length Center to Center of Supports (ft-in)												
			6-0	6-6	7-0	7-6	8-0	9-0	10-0	11-0	12-0	13-0	14-0	15-0	16-0
1	22	0.0295	120/116	102/91	88/73	77/59	68/49	53/34	43/25	-	-	-	-	-	-
	20	0.0358	151/143	129/112	111/90	97/73	86/60	67/42	54/31	45/23	-	-	-	-	-
	18	0.0474	209/192	178/151	153/121	134/98	118/81	93/57	75/41	62/31	52/24	-	-	-	-
	16	0.0600	262/240	223/189	193/151	168/123	148/101	117/71	94/52	78/39	66/30	56/24			
2	22	0.0295	111/278	95/219	82/175	71/142	63/117	49/82	40/60	33/45	28/35	24/27	20/22	-	-
	20	0.0358	138/344	117/271	101/217	88/176	78/145	61/102	50/74	41/56	34/43	29/34	25/27	22/22	-
	18	0.0474	191/400	163/363	140/290	122/236	108/195	85/137	69/100	57/75	48/58	41/45	35/36	31/30	27/23
	16	0.0600	253/400	216/400	186/364	162/296	143/244	113/171	91/125	75/94	63/72	54/57	47/46	41/37	36/29
3 or more	22	0.0295	139/218	118/171	102/137	89/111	78/92	62/64	50/47	41/35	35/27	30/21	-	-	-
	20	0.0358	172/269	147/212	127/170	110/138	97/114	77/80	62/58	51/44	43/34	37/26	32/21	-	-
	18	0.0474	239/361	204/284	176/227	153/185	134/152	106/107	86/78	71/59	60/45	51/35	44/28	38/23	-
	16	0.0600	317/400	270/356	233/285	203/232	178/191	141/134	114/98	94/73	79/57	67/44	58/36	51/29	45/22

ER2RA

Span Condition	Gage	Design Thick. (in)	Span Length Center to Center of Supports (ft-in)												
			6-0	6-6	7-0	7-6	8-0	9-0	10-0	11-0	12-0	13-0	14-0	15-0	16-0
1	22	0.0295	116/109	98/86	85/69	74/56	65/46	51/32	42/24	-	-	-	-	-	-
	20	0.0358	147/134	125/105	108/84	94/68	83/56	65/40	53/29	44/22	-	-	-	-	-
	18	0.0474	204/179	174/141	150/113	131/92	115/76	91/53	74/39	61/29	51/22	-	-	-	-
	16	0.0600	258/225	220/177	189/142	165/115	145/95	115/67	93/49	77/37	64/28	55/22	-	-	-
2	22	0.0295	107/263	91/207	78/166	68/135	60/111	47/78	38/57	32/43	27/33	23/26	20/21	-	-
	20	0.0358	129/322	110/253	95/203	82/165	73/136	57/95	46/70	38/52	32/40	27/32	24/25	21/21	-
	18	0.0474	178/400	151/340	131/172	114/221	100/182	79/128	64/93	53/70	44/54	38/42	33/34	28/28	25/21
	16	0.0600	240/400	204/400	176/341	154/277	135/228	107/160	86/117	71/88	60/68	51/53	44/43	38/35	34/27
3 or more	22	0.0295	133/206	114/162	98/130	85/106	75/87	59/61	48/45	40/33	33/26	28/20	-	-	-
	20	0.0358	161/252	137/198	118/159	103/129	91/106	72/75	58/54	48/41	40/31	34/25	30/20	-	-
	18	0.0474	222/338	189/266	163/213	142/173	125/143	99/100	80/73	66/55	56/42	47/33	41/27	36/22	-
	16	0.0600	300/400	256/333	220/267	192/217	169/179	133/126	108/92	89/69	75/53	64/42	55/33	48/27	42/21

Notes:
1. Table 3.7 assumes that all loading is uniform.
2. Loads are based on ASD Design.
3. Uniform load values listed on the left side of the box, 100 / 75, are goverened by strength and the values listed on the right side, 100 / 75, are governed by deflection.
4. The deflection criteria used for generating Table 3.7 were L/240 or 0.75 inch maximum. The registered desgin professional shall calculate the allowable uniform load if a different deflection criteria is required.
5. Stress goverened values assume a maximum allowable stress of 24 ksi.
6. The tabulated loads are valid where the minimum end bearing length is 1.5 inches and the minimum interior bearing length is 3 inches.

ENTRY CANOPY

SEISMIC $V_E = \frac{S_{DS}}{R/I_e} W$ $S_{DS} = 1.475$ $I_e = 1.0$
$R = 1.25$ ← STEEL ORDINARY CANTILEVER

$V_E = \frac{1.475}{\frac{1.25}{1.0}} \times W = 1.18W$ (LRFD)

SEISMIC MASS

ROOF: $[10''-8''] \times 13' \times 68' = 7^k$

FRAMING - FROM RISA3D
$W_T = 37^k$

W_T: 4-HSS8x8x1/4 $W_T = 25^{\#/'} \times 25' \times 4 \text{ EA} = 2.5^k$

FRAMING $W_T = 37^k - [2.5^k \times 8^{\#} \times \frac{1}{2} \text{ HEIGHT}]$
$= 27^k$

$\therefore V_E = 1.18 W_T = 1.18(29.7^k) = 40^k$

FRAME LOADS 40^k

$E_{x1} = V_E \times 1/3 = 13^k \times 1/8' = 1.62^k/_{FT}$

$E_{x2} = 1.62^k/_{'}$

$E_{x3} = V_E \times 1/3 \times 1/2 = 6.67^k/_{'} \times 1/8' = 0.84^k/_{'}$

$E_{z1} = [40^k \times 1/2] \times 1/3 = 6.67^k$

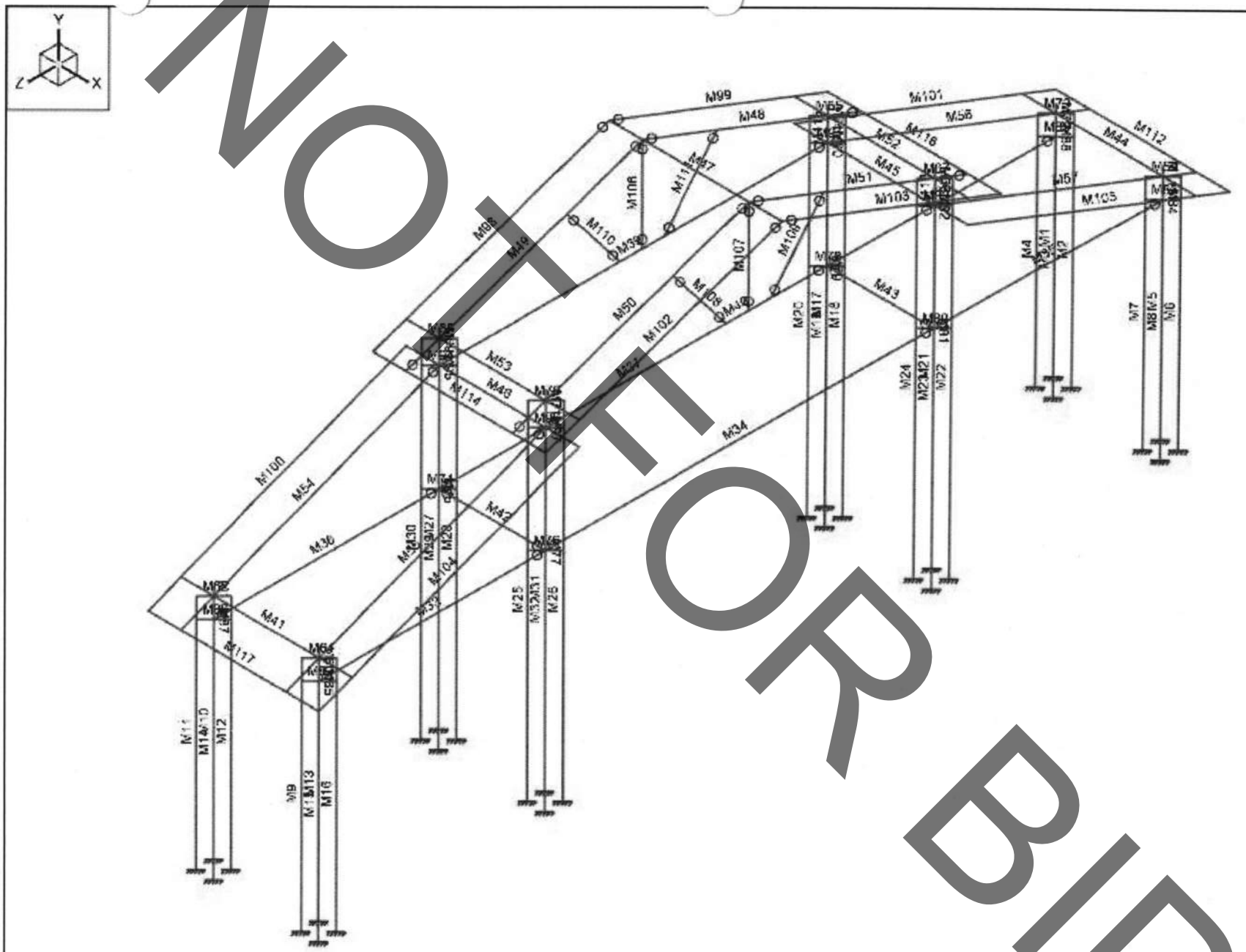
$E_{z2} = [40^k \times 1/2] \times (1/3 \times 1/2) = 3.3^k$

Company : RM Byrd/Mlyamoto International, Inc
Designer : mcabral
Job Number :
Model Name :

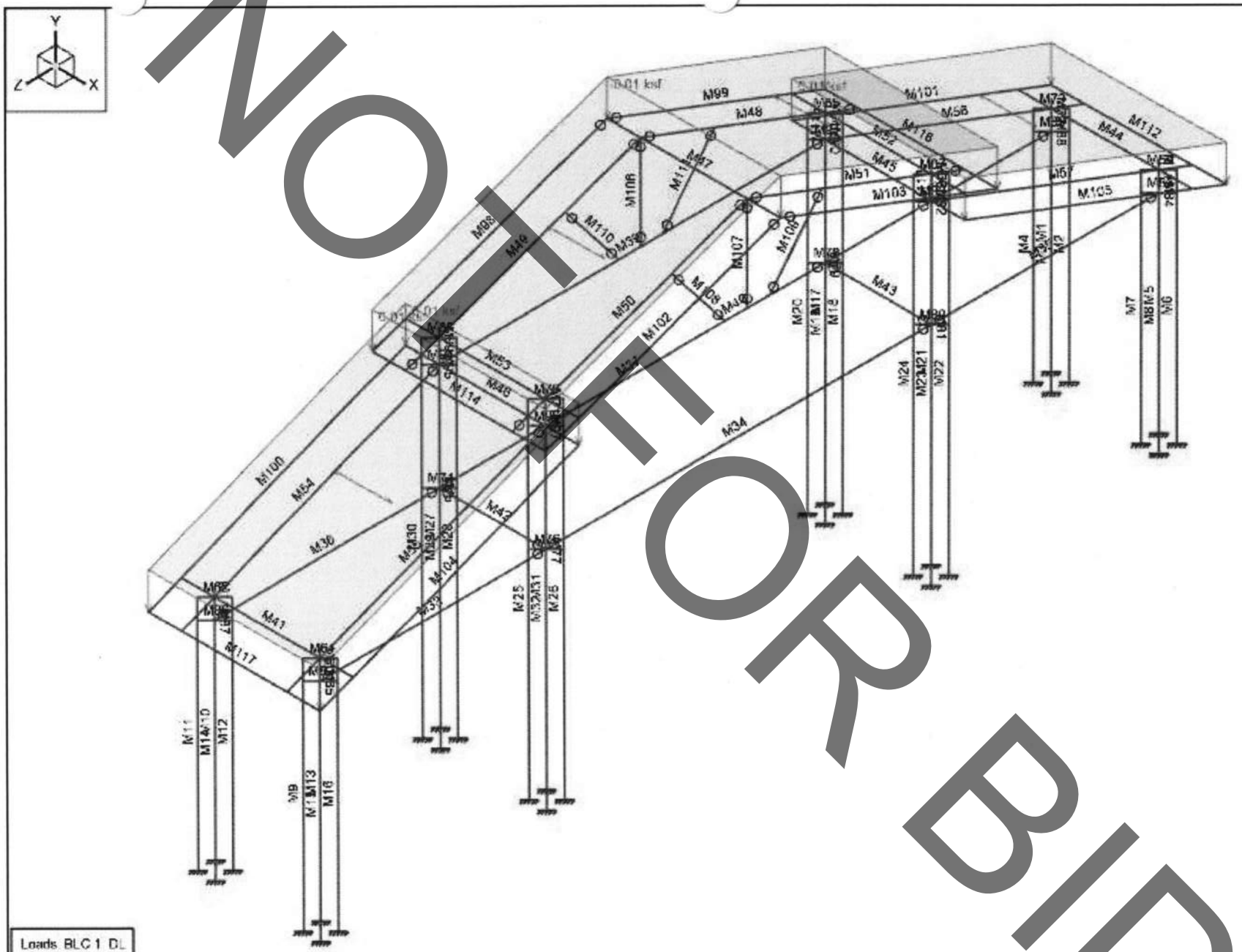
1/23/2023
11:45:26 AM
Checked By : RMB

Material Takeoff

	Material	Size	Pieces	Length[ft]	Weight[K]
1	General Members				
2	RIGID	RE4X4	40	75.4	0
3	Total General		40	75.4	0
4					
5	Hot Rolled Steel				
6	A500 Gr.B RECT	HSS10X2X4	14	211.5	4.055
7	A500 Gr.B RECT	HSS12X8X4	17	291	9.542
8	A500 Gr.B RECT	HSS6X6X4	6	39.7	0.761
9	A500 Gr.B RECT	HSS8X8X4	40	855.9	22.24
10	Total HR Steel		77	1398.1	36.599

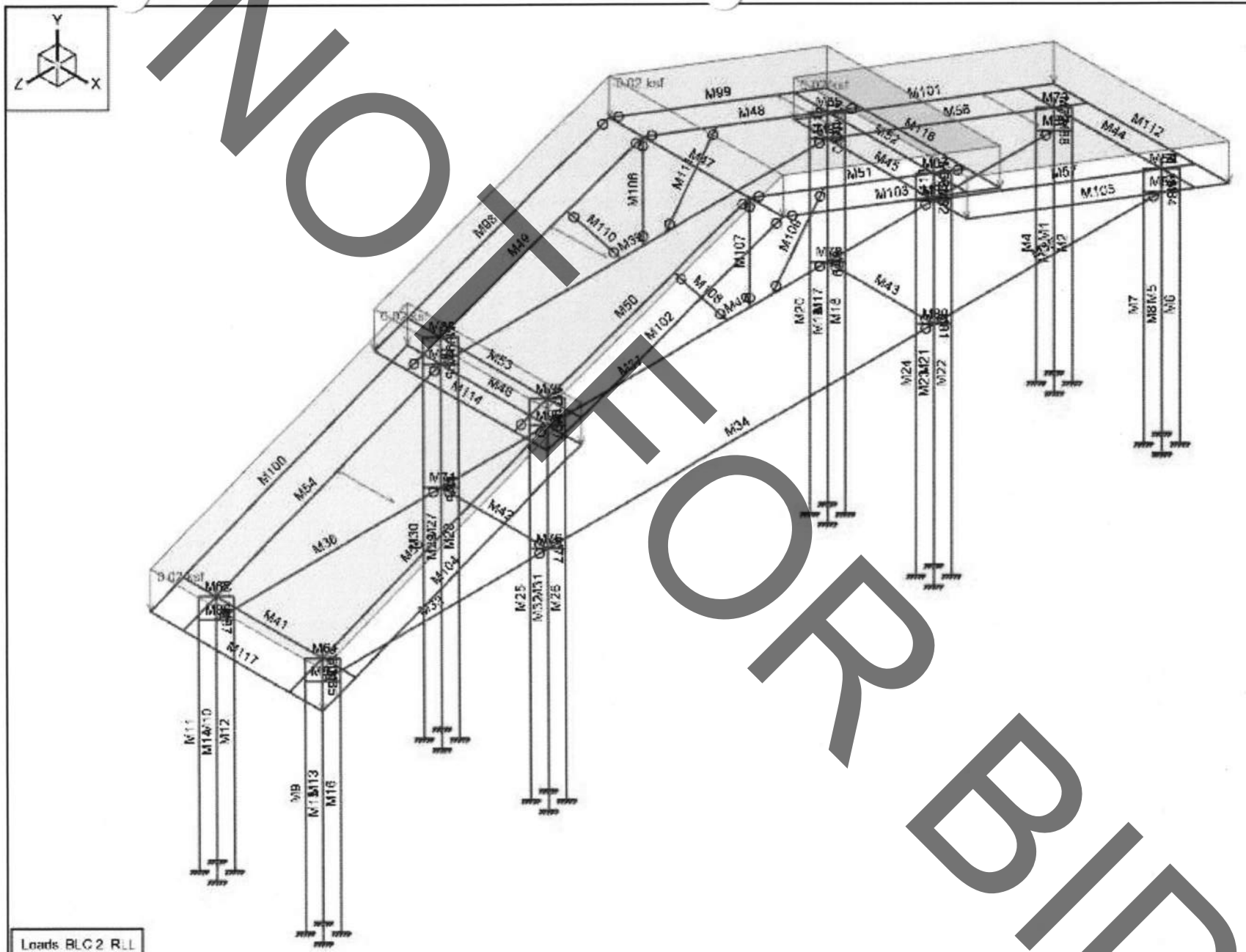


RM Byrd/Miyamoto International, Inc		
mcabral		Jan 23, 2023
		Prado Park Gate House-3b.r3d

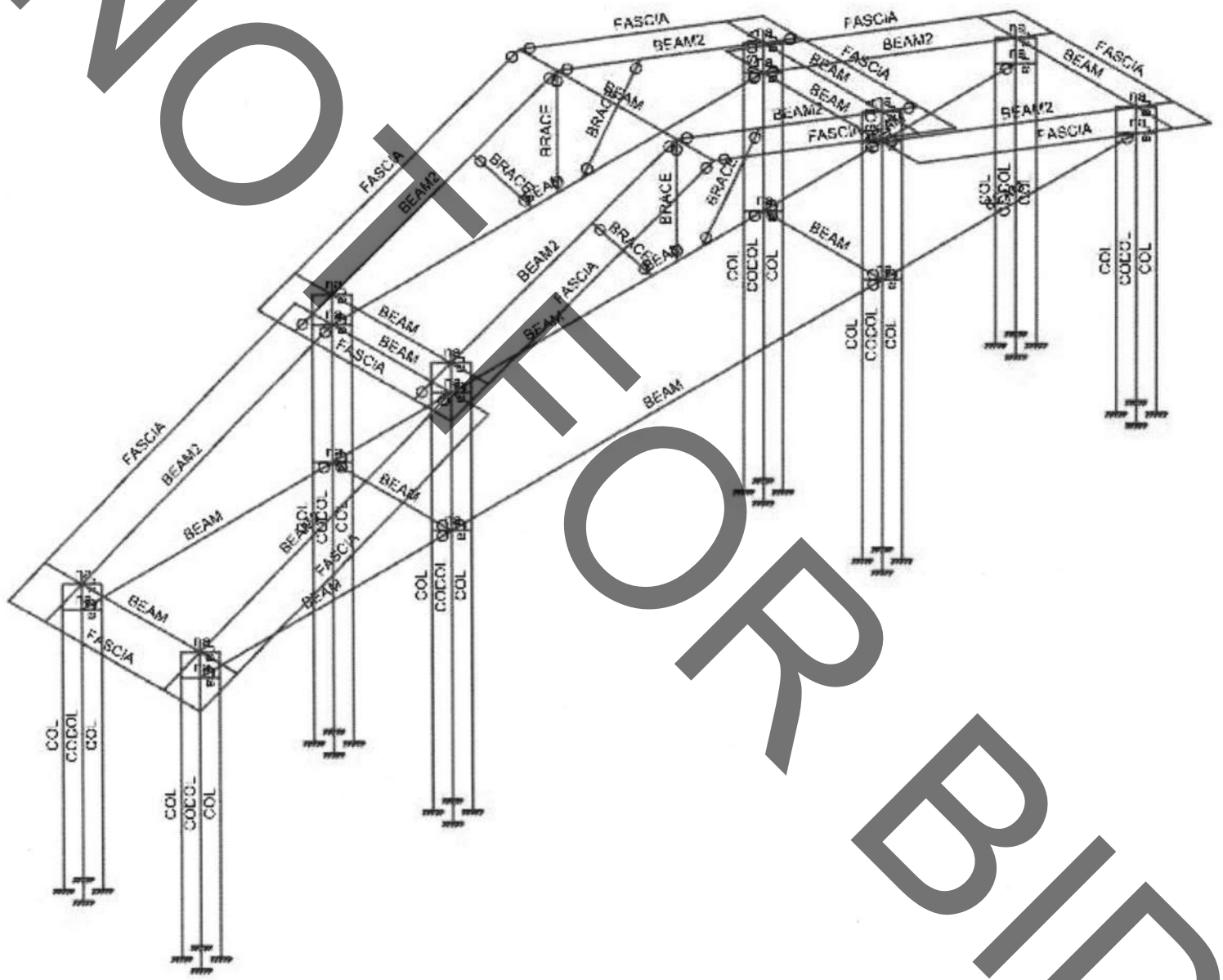


Loads: BLC 1 DL

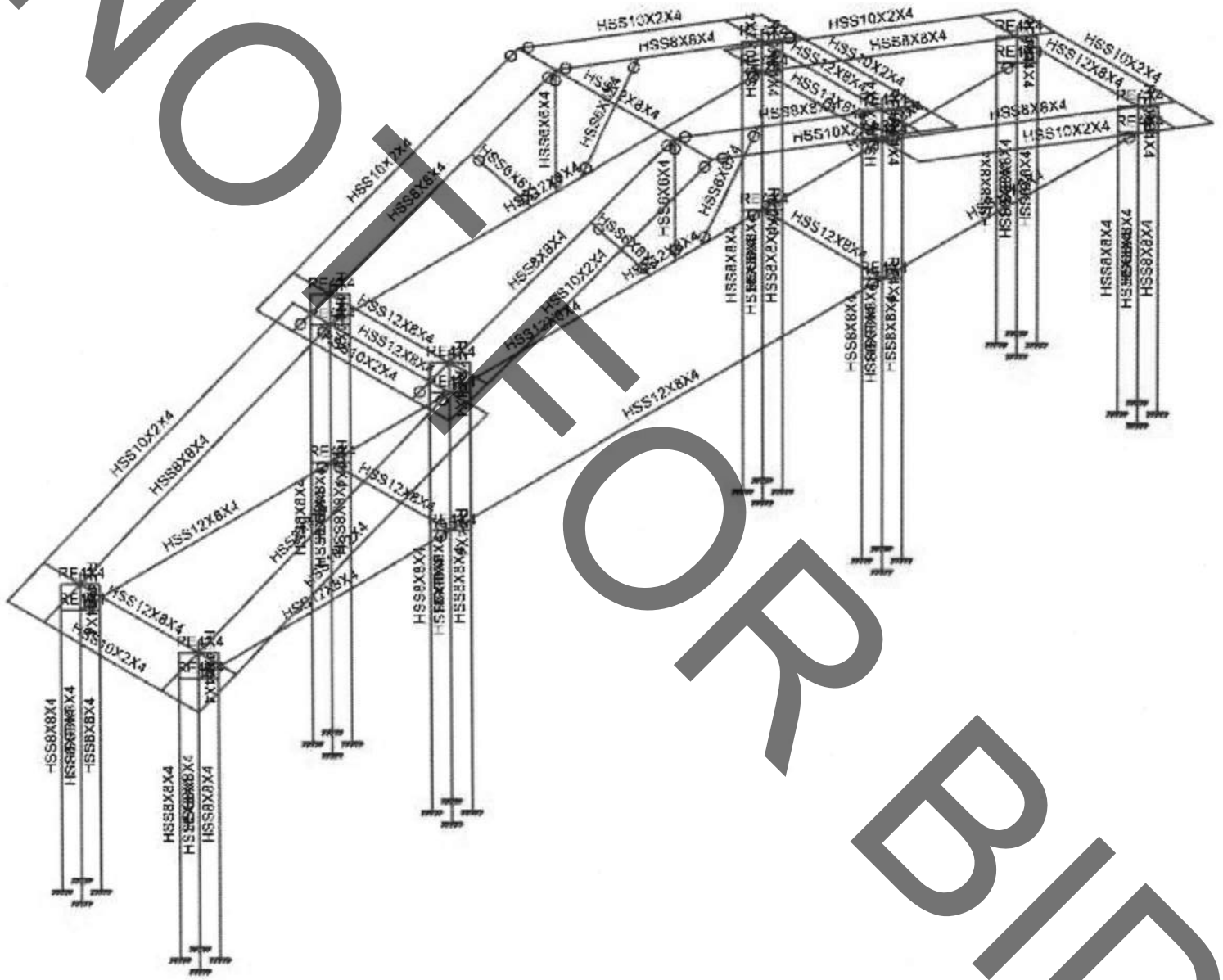
RM Byrd/Mlyamoto International, Inc		
mcabral		Jan 23, 2023
		Prado Park Gate House-3b.r3d



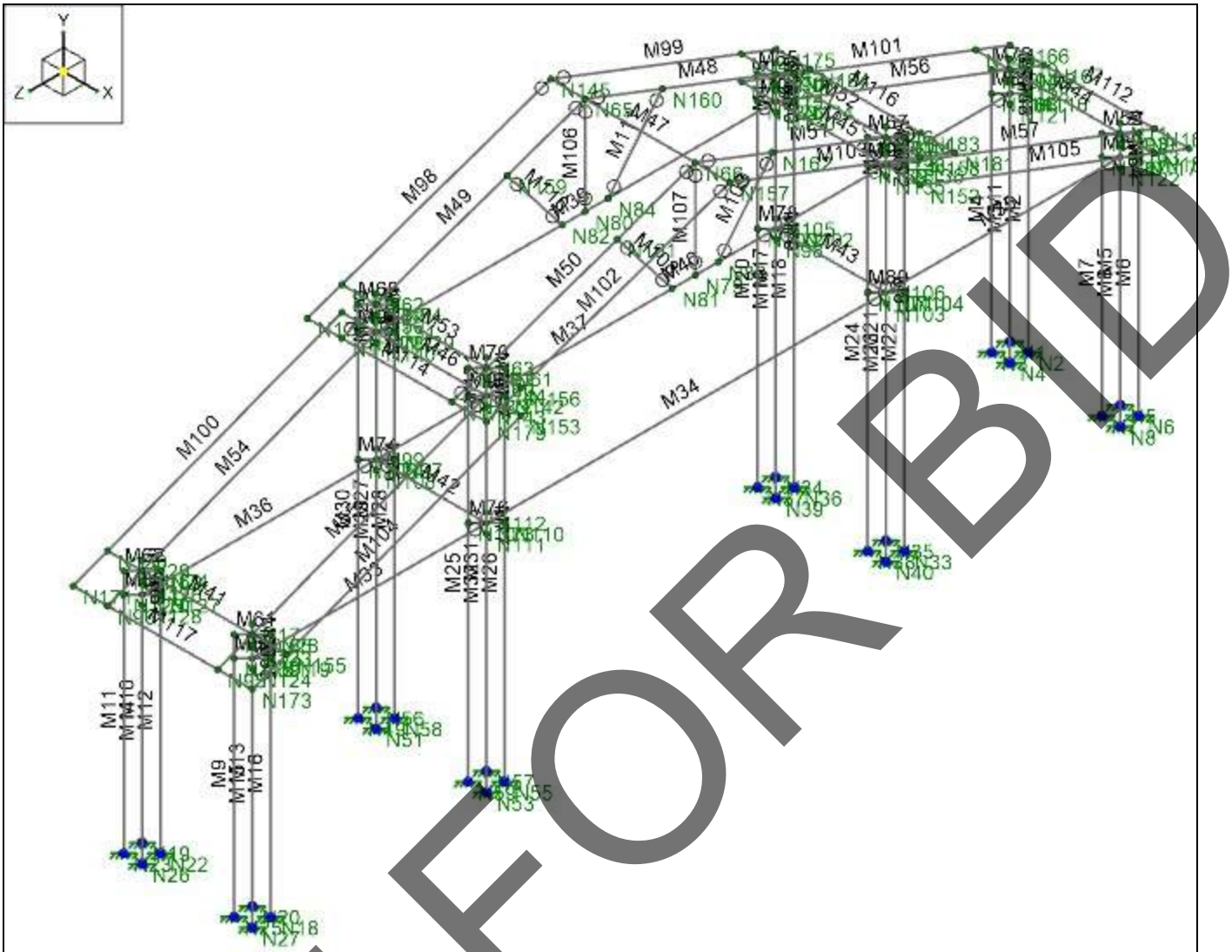
RM Byrd/Miyamoto International, Inc		
mcabral		Jan 23, 2023
		Prado Park Gate House-3b.r3d



RM Byrd/Miyamoto International, Inc		
mcabral		Jan 23, 2023
		Prado Park Gate House-3b.r3d



RM Byrd/Miyamoto International, Inc		
mcabral		Jan 23, 2023
		Prado Park Gate House-3b.r3d



RM Byrd/MIyamoto International,…		
erejuso		Jan 24, 2023
		Prado Park Gate House-3b.r3d

Company : RM Byrd/Miyamoto International, ...
Designer : erejuso
Job Number :
Model Name :

1/23/2023
4:20:46 PM
Checked By : RMB

Model Settings

Number of Reported Sections	5
Number of Internal Sections	100
Member Area Load Mesh Size (in^2)	144
Consider Shear Deformation	Yes
Consider Torsional Warping	Yes
Approximate Mesh Size (in)	24
Transfer Forces Between Intersecting Wood Walls	Yes
Increase Wood Wall Nailing Capacity for Wind Loads	Yes
Include P-Delta for Walls	Yes
Optimize Masonry and Wood Walls	Yes
Maximum Number of Iterations	3
Single	No
Multiple (Optimum)	Yes
Maximum	No

Global Axis corresponding to vertical direction	Y
Convert Existing Data	Yes
Default Global Plane for z-axis	XZ
Plate Local Axis Orientation	Global

Hot Rolled Steel	AISC 15th (360-16): LRFD
Stiffness Adjustment	Yes (Iterative)
Notional Annex	None
Connections	AISC 15th (360-16): LRFD
Cold Formed Steel	AISI S100-16: LRFD
Stiffness Adjustment	Yes (Iterative)
Wood	AWC NDS-18: LRFD
Temperature	< 100F
Concrete	ACI 318-19
Masonry	TMS 402-16: Strength
Aluminum	AA ADM1-15: LRFD
Structure Type	Building
Stiffness Adjustment	Yes (Iterative)
Stainless	AISC 14th (360-10): LRFD
Stiffness Adjustment	Yes (Iterative)

Compression Stress Block	Rectangular Stress Block
Analyze using Cracked Sections	Yes
Leave room for horizontal rebar splices (2*d bar spacing)	No
List forces which were ignored for design in the Detail Report	Yes

Column Min Steel	1
Column Max Steel	8
Rebar Material Spec	ASTM A615
Warn if beam-column framing arrangement is not understood	No
Number of Shear Regions	4
Region 2 & 3 Spacing Increase Increment (in)	4

Code	ASCE 7-16
Risk Category	I or II
Drift Cat	Other

Model Settings (Continued)

Base Elevation (ft)	
Include the weight of the structure in base shear calcs	Yes
S_1 (g)	0.625
SD_1 (g)	1
SD_s (g)	1.473
T_L (sec)	8
T Z (sec)	
T X (sec)	
C_tZ	0.02
C_tX	0.02
$C_tExp.$ Z	0.75
$C_tExp.$ X	0.75
R Z	1.25
R X	1.25
Ω_0Z	1.25
Ω_0X	1.25
C_dZ	1.25
C_dX	1.25
ρ Z	1
ρ X	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	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	A500 Gr.C RND	29000	11154	0.3	0.65	0.527	46	1.4	62	1.3
7	A500 Gr.C RECT	29000	11154	0.3	0.65	0.527	50	1.4	62	1.3
8	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
9	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3
10	A913 Gr.65	29000	11154	0.3	0.65	0.49	65	1.1	80	1.1

General Materials Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	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
9	gen_Ortho	N/A	N/A	N/A	0.65	0.49	Orthotropic

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	COL	HSS8X8X4	Column	SquareTube	A500 Gr.B RECT	Typical	7.1	70.7	70.7	111
2	BEAM	HSS12X8X4	Beam	RECT	A500 Gr.B RECT	Typical	8.96	98.8	184	202
3	BRACE	HSS6X6X4	VBrace	Tube	A500 Gr.B RECT	Typical	5.24	28.6	28.6	45.6
4	FASCIA	HSS10X2X4	Beam	RECT	A500 Gr.B RECT	Typical	5.24	3.67	52.5	12.2
5	BEAM2	HSS8X8X4	Beam	Tube	A500 Gr.B RECT	Typical	7.1	70.7	70.7	111
6	BEAM3	HSS8X6X4	Beam	Tube	A500 Gr.B RECT	Typical	6.17	36.4	56.6	70.3

Deflection Design

	Label	LC	Ratio	LC	Ratio	LC	Ratio
1	Typical	1	240	2	360	3	240
2	DR1	1	240	2	360	3	240

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	BUEEP			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-KaiserB	SMF	High	Yes	High	KBB-B			12	N/A		
7	SMF-KaiserW	SMF	High	Yes	High	KBB-W			12	N/A		
8	SMF-BSEEP	SMF	High	Yes	High	BSEEP			12	N/A		
9	SMF-WUF-W	SMF	High	Yes	High	WUF-W				N/A		

Node Coordinates

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
1	N184	0.66661	25.032815	15.16667	
2	N183	8.66661	25.032815	15.16667	
3	N176	8.666616	25.11755	49.16667	
4	N177	0.666616	25.11755	49.16667	
5	N167	0.666666	16.794118	-1.83333	
6	N168	8.666666	16.794118	-1.83333	
7	N173	11.166666	16.794118	66.16667	
8	N171	-1.833334	16.794118	66.16667	
9	N1	0	0	0	
10	N2	1.333	0	0	
11	N3	0	0	1.33	
12	N4	1.333	0	1.333	
13	N5	8	0	0	
14	N6	9.333	0	0	
15	N7	8	0	1.33	
16	N8	9.333	0	1.333	
17	N9	9.333	17.75	0	
18	N10	0	17.75	0	
19	N11	8	17.75	0	
20	N12	1.333	17.75	0	
21	N13	0	17.75	1.33	
22	N14	8	17.75	1.33	
23	N15	1.333	17.75	1.333	
24	N16	9.333	17.75	1.333	
25	N17	8	17.75	63	
26	N18	9.333	0	63	
27	N19	0	0	63	
28	N20	8	0	63	
29	N21	0	17.75	64.33	
30	N22	1.333	0	63	
31	N23	0	0	64.33	
32	N24	1.333	17.75	63	
33	N25	8	0	64.33	
34	N26	1.333	0	64.333	
35	N27	9.333	0	64.333	
36	N28	9.333	17.75	63	
37	N29	0	17.75	63	
38	N30	8	17.75	64.33	
39	N31	1.333	17.75	64.333	
40	N32	9.333	17.75	64.333	
41	N33	9.333	0	17	
42	N34	0	0	17	
43	N35	8	0	17	
44	N36	1.333	0	17	
45	N37	0	0	18.33	
46	N38	8	0	18.33	
47	N39	1.333	0	18.333	
48	N40	9.333	0	18.333	
49	N41	0	25.99667	18.33	
50	N42	1.333	25.99667	18.333	
51	N43	9.333	25.99667	18.333	
52	N44	9.333	25.99667	17	
53	N45	0	25.99667	17	
54	N46	8	25.99667	17	
55	N47	1.333	25.99667	17	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
56	N48	8	25.99667	18.33	
57	N49	0	0	47.33	
58	N50	1.333	25.99667	47.333	
59	N51	1.333	0	47.333	
60	N52	0	25.99667	47.33	
61	N53	9.333	0	47.333	
62	N54	1.333	25.99667	46	
63	N55	9.333	0	46	
64	N56	0	0	46	
65	N57	8	0	46	
66	N58	1.333	0	46	
67	N59	8	0	47.33	
68	N60	9.333	25.99667	47.333	
69	N61	9.333	25.99667	46	
70	N62	0	25.99667	46	
71	N63	8	25.99667	46	
72	N64	8	25.99667	47.33	
73	N65	0.667	31.33	31.5	
74	N66	8.667	31.33	31.5	
75	N67	8.6667	16.25	0.66667	
76	N68	0.6667	16.25	0.66667	
77	N69	8.6667	16.25	63.66667	
78	N70	0.6667	16.25	63.66667	
79	N71	8.6667	16.25	17.66667	
80	N72	0.6667	16.25	17.66667	
81	N73	8.6667	16.25	46.66667	
82	N74	0.6667	16.25	46.66667	
83	N75	8.6667	24.25	17.66667	
84	N76	0.6667	24.25	17.66667	
85	N77	8.6667	24.25	46.66667	
86	N78	0.6667	24.25	46.66667	
87	N79	8.6667	24.25	31.500003	
88	N80	0.6667	24.25	31.500003	
89	N81	8.6667	24.25	33.170003	
90	N82	0.6667	24.25	33.170003	
91	N83	8.6667	24.25	29.830003	
92	N84	0.6667	24.25	29.830003	
93	N89	0.66667	25.99667	46.66667	
94	N90	0.66667	25.99667	17.66667	
95	N91	8.66667	25.99667	17.66667	
96	N92	8.66667	25.99667	46.66667	
97	N93	8.66667	17.75	0.66667	
98	N94	0.66667	17.75	0.66667	
99	N95	8.666666	16.794118	66.16667	
100	N96	0.666666	16.794118	66.16667	
101	N97	1.333	16.24667	46	
102	N98	1.333	16.24667	18.333	
103	N99	0	16.24667	46	
104	N100	0	16.24667	18.33	
105	N101	8	16.24667	47.33	
106	N102	1.333	16.24667	17	
107	N103	9.333	16.24667	18.333	
108	N104	9.333	16.24667	17	
109	N105	0	16.24667	17	
110	N106	8	16.24667	17	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
111	N107	8	16.24667	18.33	
112	N108	1.333	16.24667	47.333	
113	N109	0	16.24667	47.33	
114	N110	9.333	16.24667	46	
115	N111	9.333	16.24667	47.333	
116	N112	8	16.24667	46	
117	N113	8	16.25	0	
118	N114	0	16.25	1.33	
119	N115	8	16.25	64.33	
120	N116	1.333	16.25	0	
121	N117	9.333	16.25	0	
122	N118	0	16.25	0	
123	N119	9.333	16.25	63	
124	N120	8	16.25	1.33	
125	N121	1.333	16.25	1.333	
126	N122	9.333	16.25	1.333	
127	N123	8	16.25	63	
128	N124	9.333	16.25	64.333	
129	N125	0	16.25	64.33	
130	N126	0	16.25	63	
131	N127	1.333	16.25	63	
132	N129	1.333	24.24967	46	
133	N128	1.333	16.25	64.333	
134	N130	1.333	24.24967	18.333	
135	N131	0	24.24967	46	
136	N132	0	24.24967	18.33	
137	N133	8	24.24967	47.33	
138	N134	1.333	24.24967	17	
139	N135	9.333	24.24967	18.333	
140	N136	9.333	24.24967	17	
141	N137	0	24.24967	17	
142	N138	8	24.24967	17	
143	N139	8	24.24967	18.33	
144	N140	1.333	24.24967	47.333	
145	N141	0	24.24967	47.33	
146	N142	9.333	24.24967	46	
147	N143	9.333	24.24967	47.333	
148	N144	8	24.24967	46	
149	N145	-1.833	31.33	31.5	
150	N146	-1.83333	25.99667	46.66667	
151	N147	-1.8333	24.25	17.66667	
152	N148	-1.83333	25.99667	17.66667	
153	N149	-1.83333	17.75	0.66667	
154	N150	-1.83333	17.75	63.66667	
155	N151	-1.8333	24.25	46.66667	
156	N152	11.1667	24.25	17.66667	
157	N153	11.1667	24.25	46.66667	
158	N154	11.16667	17.75	0.66667	
159	N155	11.16667	17.75	63.66667	
160	N156	11.16667	25.99667	46.66667	
161	N157	11.167	31.33	31.5	
162	N158	11.16667	25.99667	17.66667	
163	N159	0.666877	29.339589	37.160235	
164	N160	0.666866	29.171607	25.901666	
165	N161	8.666877	29.339589	37.160235	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
166	N162	8.666866	29.171607	25.901666	
167	N164	11.166666	16.794118	-1.83333	
168	N166	-1.833334	16.794118	-1.83333	
169	N165	8.66667	17.75	63.66667	
170	N169	0.66667	17.75	63.66667	
171	N178	-1.833384	25.11755	49.16667	
172	N179	11.166616	25.11755	49.16667	
173	N175	-1.83339	25.032815	15.16667	
174	N181	11.16661	25.032815	15.16667	

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	N59	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N27	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N4	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N49	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
5	N55	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
6	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
7	N5	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
8	N56	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
9	N39	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
10	N53	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
11	N2	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
12	N34	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
13	N58	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
14	N40	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
15	N3	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
16	N37	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
17	N36	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
18	N25	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
19	N38	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
20	N19	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
21	N8	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
22	N20	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
23	N26	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
24	N51	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
25	N18	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
26	N35	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
27	N22	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
28	N6	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
29	N7	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
30	N57	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
31	N23	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
32	N33	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Node Loads and Enforced Displacements (BLC 4 : ELZ)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	N69	L	Z	3.5
2	N67	L	Z	3.5
3	N73	L	Z	6.5
4	N71	L	Z	6.5
5	N74	L	Z	6.5
6	N72	L	Z	6.5

Node Loads and Enforced Displacements (BLC 4 : ELZ) (Continued)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
7	N70	L	Z	3.5
8	N68	L	Z	3.5

Member Distributed Loads (BLC 3 : ELX)

	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	M42	X	2.38	1.62	0	%100
2	M43	X	2.38	1.62	0	%100
3	M41	X	1.2	0.82	0	%100
4	M44	X	1.2	0.82	0	%100

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	M49	Y	-0.05	-0.05	0	2.081
2	M49	Y	-0.05	-0.05	2.081	4.162
3	M49	Y	-0.05	-0.05	4.162	6.242
4	M49	Y	-0.05	-0.05	6.242	8.323
5	M49	Y	-0.05	-0.05	8.323	10.404
6	M49	Y	-0.05	-0.05	10.404	12.485
7	M49	Y	-0.05	-0.05	12.485	14.566
8	M49	Y	-0.05	-0.058	14.566	16.646
9	M49	Y	-0.058	-0.074	16.646	18.727
10	M50	Y	-0.05	-0.05	0	2.081
11	M50	Y	-0.05	-0.05	2.081	4.162
12	M50	Y	-0.05	-0.05	4.162	6.242
13	M50	Y	-0.05	-0.05	6.242	8.323
14	M50	Y	-0.05	-0.05	8.323	10.404
15	M50	Y	-0.05	-0.05	10.404	12.485
16	M50	Y	-0.05	-0.05	12.485	14.566
17	M50	Y	-0.05	-0.058	14.566	16.646
18	M50	Y	-0.058	-0.074	16.646	18.727
19	M98	Y	-0.018	-0.014	0	2.081
20	M98	Y	-0.014	-0.012	2.081	4.162
21	M98	Y	-0.012	-0.012	4.162	6.242
22	M98	Y	-0.012	-0.012	6.242	8.323
23	M98	Y	-0.012	-0.012	8.323	10.404
24	M98	Y	-0.012	-0.012	10.404	12.485
25	M98	Y	-0.012	-0.012	12.485	14.566
26	M98	Y	-0.012	-0.012	14.566	16.646
27	M98	Y	-0.012	-0.012	16.646	18.727
28	M102	Y	-0.018	-0.014	0	2.081
29	M102	Y	-0.014	-0.012	2.081	4.162
30	M102	Y	-0.012	-0.012	4.162	6.242
31	M102	Y	-0.012	-0.012	6.242	8.323
32	M102	Y	-0.012	-0.012	8.323	10.404
33	M102	Y	-0.012	-0.012	10.404	12.485
34	M102	Y	-0.012	-0.012	12.485	14.566
35	M102	Y	-0.012	-0.012	14.566	16.646
36	M102	Y	-0.012	-0.012	16.646	18.727
37	M48	Y	-0.05	-0.05	0	2.188
38	M48	Y	-0.05	-0.05	2.188	4.376
39	M48	Y	-0.05	-0.05	4.376	6.564
40	M48	Y	-0.05	-0.05	6.564	8.753
41	M48	Y	-0.05	-0.05	8.753	10.941

Member Distributed Loads (BLC 5 : BLC 1 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
42	M48	Y	-0.05	-0.05	10.941	13.129
43	M48	Y	-0.05	-0.057	13.129	15.317
44	M48	Y	-0.057	-0.071	15.317	17.505
45	M51	Y	-0.05	-0.05	0	2.188
46	M51	Y	-0.05	-0.05	2.188	4.376
47	M51	Y	-0.05	-0.05	4.376	6.564
48	M51	Y	-0.05	-0.05	6.564	8.753
49	M51	Y	-0.05	-0.05	8.753	10.941
50	M51	Y	-0.05	-0.05	10.941	13.129
51	M51	Y	-0.05	-0.057	13.129	15.317
52	M51	Y	-0.057	-0.071	15.317	17.505
53	M99	Y	-0.012	-0.012	0	2.188
54	M99	Y	-0.012	-0.012	2.188	4.376
55	M99	Y	-0.012	-0.012	4.376	6.564
56	M99	Y	-0.012	-0.012	6.564	8.753
57	M99	Y	-0.012	-0.012	8.753	10.941
58	M99	Y	-0.012	-0.012	10.941	13.129
59	M99	Y	-0.012	-0.014	13.129	15.317
60	M99	Y	-0.014	-0.017	15.317	17.505
61	M103	Y	-0.012	-0.012	0	2.188
62	M103	Y	-0.012	-0.012	2.188	4.376
63	M103	Y	-0.012	-0.012	4.376	6.564
64	M103	Y	-0.012	-0.012	6.564	8.753
65	M103	Y	-0.012	-0.012	8.753	10.941
66	M103	Y	-0.012	-0.012	10.941	13.129
67	M103	Y	-0.012	-0.014	13.129	15.317
68	M103	Y	-0.014	-0.017	15.317	17.505
69	M56	Y	-0.05	-0.05	0	2.088
70	M56	Y	-0.05	-0.05	2.088	4.175
71	M56	Y	-0.05	-0.05	4.175	6.263
72	M56	Y	-0.05	-0.05	6.263	8.351
73	M56	Y	-0.05	-0.05	8.351	10.438
74	M56	Y	-0.05	-0.05	10.438	12.526
75	M56	Y	-0.05	-0.063	12.526	14.614
76	M56	Y	-0.063	-0.05	14.614	16.701
77	M56	Y	-0.05	-0.045	16.701	18.789
78	M56	Y	-0.045	-0.087	18.789	20.877
79	M57	Y	-0.05	-0.05	0	2.088
80	M57	Y	-0.05	-0.05	2.088	4.175
81	M57	Y	-0.05	-0.05	4.175	6.263
82	M57	Y	-0.05	-0.05	6.263	8.351
83	M57	Y	-0.05	-0.05	8.351	10.438
84	M57	Y	-0.05	-0.05	10.438	12.526
85	M57	Y	-0.05	-0.063	12.526	14.614
86	M57	Y	-0.063	-0.05	14.614	16.701
87	M57	Y	-0.05	-0.045	16.701	18.789
88	M57	Y	-0.045	-0.087	18.789	20.877
89	M101	Y	-0.012	-0.012	0	2.088
90	M101	Y	-0.012	-0.012	2.088	4.175
91	M101	Y	-0.012	-0.012	4.175	6.263
92	M101	Y	-0.012	-0.012	6.263	8.351
93	M101	Y	-0.012	-0.012	8.351	10.438
94	M101	Y	-0.012	-0.012	10.438	12.526
95	M101	Y	-0.012	-0.015	12.526	14.614
96	M101	Y	-0.015	-0.012	14.614	16.701

Member Distributed Loads (BLC 5 : BLC 1 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
97	M101	Y	-0.012	-0.011	16.701	18.789
98	M101	Y	-0.011	-0.021	18.789	20.877
99	M105	Y	-0.012	-0.012	0	2.088
100	M105	Y	-0.012	-0.012	2.088	4.175
101	M105	Y	-0.012	-0.012	4.175	6.263
102	M105	Y	-0.012	-0.012	6.263	8.351
103	M105	Y	-0.012	-0.012	8.351	10.438
104	M105	Y	-0.012	-0.012	10.438	12.526
105	M105	Y	-0.012	-0.015	12.526	14.614
106	M105	Y	-0.015	-0.012	14.614	16.701
107	M105	Y	-0.012	-0.011	16.701	18.789
108	M105	Y	-0.011	-0.021	18.789	20.877
109	M54	Y	-0.05	-0.05	0	2.088
110	M54	Y	-0.05	-0.05	2.088	4.175
111	M54	Y	-0.05	-0.05	4.175	6.263
112	M54	Y	-0.05	-0.05	6.263	8.351
113	M54	Y	-0.05	-0.05	8.351	10.438
114	M54	Y	-0.05	-0.05	10.438	12.526
115	M54	Y	-0.05	-0.063	12.526	14.614
116	M54	Y	-0.063	-0.05	14.614	16.701
117	M54	Y	-0.05	-0.045	16.701	18.789
118	M54	Y	-0.045	-0.087	18.789	20.877
119	M55	Y	-0.05	-0.05	0	2.088
120	M55	Y	-0.05	-0.05	2.088	4.175
121	M55	Y	-0.05	-0.05	4.175	6.263
122	M55	Y	-0.05	-0.05	6.263	8.351
123	M55	Y	-0.05	-0.05	8.351	10.438
124	M55	Y	-0.05	-0.05	10.438	12.526
125	M55	Y	-0.05	-0.063	12.526	14.614
126	M55	Y	-0.063	-0.05	14.614	16.701
127	M55	Y	-0.05	-0.045	16.701	18.789
128	M55	Y	-0.045	-0.087	18.789	20.877
129	M100	Y	-0.021	-0.011	0	2.088
130	M100	Y	-0.011	-0.012	2.088	4.175
131	M100	Y	-0.012	-0.015	4.175	6.263
132	M100	Y	-0.015	-0.012	6.263	8.351
133	M100	Y	-0.012	-0.012	8.351	10.438
134	M100	Y	-0.012	-0.012	10.438	12.526
135	M100	Y	-0.012	-0.012	12.526	14.614
136	M100	Y	-0.012	-0.012	14.614	16.701
137	M100	Y	-0.012	-0.012	16.701	18.789
138	M100	Y	-0.012	-0.012	18.789	20.877
139	M104	Y	-0.021	-0.011	0	2.088
140	M104	Y	-0.011	-0.012	2.088	4.175
141	M104	Y	-0.012	-0.015	4.175	6.263
142	M104	Y	-0.015	-0.012	6.263	8.351
143	M104	Y	-0.012	-0.012	8.351	10.438
144	M104	Y	-0.012	-0.012	10.438	12.526
145	M104	Y	-0.012	-0.012	12.526	14.614
146	M104	Y	-0.012	-0.012	14.614	16.701
147	M104	Y	-0.012	-0.012	16.701	18.789
148	M104	Y	-0.012	-0.012	18.789	20.877

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	M57	Y	-0.125	-0.1	14.614	16.701
2	M57	Y	-0.1	-0.091	16.701	18.789
3	M57	Y	-0.091	-0.174	18.789	20.877
4	M101	Y	-0.024	-0.024	0	2.088
5	M101	Y	-0.024	-0.024	2.088	4.175
6	M101	Y	-0.024	-0.024	4.175	6.263
7	M101	Y	-0.024	-0.024	6.263	8.351
8	M101	Y	-0.024	-0.024	8.351	10.438
9	M101	Y	-0.024	-0.024	10.438	12.526
10	M101	Y	-0.024	-0.03	12.526	14.614
11	M101	Y	-0.03	-0.024	14.614	16.701
12	M101	Y	-0.024	-0.022	16.701	18.789
13	M101	Y	-0.022	-0.042	18.789	20.877
14	M105	Y	-0.024	-0.024	0	2.088
15	M105	Y	-0.024	-0.024	2.088	4.175
16	M105	Y	-0.024	-0.024	4.175	6.263
17	M105	Y	-0.024	-0.024	6.263	8.351
18	M105	Y	-0.024	-0.024	8.351	10.438
19	M105	Y	-0.024	-0.024	10.438	12.526
20	M105	Y	-0.024	-0.03	12.526	14.614
21	M105	Y	-0.03	-0.024	14.614	16.701
22	M105	Y	-0.024	-0.022	16.701	18.789
23	M105	Y	-0.022	-0.042	18.789	20.877
24	M54	Y	-0.1	-0.1	0	2.088
25	M54	Y	-0.1	-0.1	2.088	4.175
26	M54	Y	-0.1	-0.1	4.175	6.263
27	M54	Y	-0.1	-0.1	6.263	8.351
28	M54	Y	-0.1	-0.1	8.351	10.438
29	M54	Y	-0.1	-0.1	10.438	12.526
30	M54	Y	-0.1	-0.125	12.526	14.614
31	M54	Y	-0.125	-0.1	14.614	16.701
32	M54	Y	-0.1	-0.091	16.701	18.789
33	M54	Y	-0.091	-0.174	18.789	20.877
34	M55	Y	-0.1	-0.1	0	2.088
35	M55	Y	-0.1	-0.1	2.088	4.175
36	M55	Y	-0.1	-0.1	4.175	6.263
37	M55	Y	-0.1	-0.1	6.263	8.351
38	M55	Y	-0.1	-0.1	8.351	10.438
39	M55	Y	-0.1	-0.1	10.438	12.526
40	M55	Y	-0.1	-0.125	12.526	14.614
41	M55	Y	-0.125	-0.1	14.614	16.701
42	M55	Y	-0.1	-0.091	16.701	18.789
43	M55	Y	-0.091	-0.174	18.789	20.877
44	M100	Y	-0.042	-0.022	0	2.088
45	M100	Y	-0.022	-0.024	2.088	4.175
46	M100	Y	-0.024	-0.03	4.175	6.263
47	M100	Y	-0.03	-0.024	6.263	8.351
48	M100	Y	-0.024	-0.024	8.351	10.438
49	M100	Y	-0.024	-0.024	10.438	12.526
50	M100	Y	-0.024	-0.024	12.526	14.614
51	M100	Y	-0.024	-0.024	14.614	16.701
52	M100	Y	-0.024	-0.024	16.701	18.789
53	M100	Y	-0.024	-0.024	18.789	20.877
54	M104	Y	-0.042	-0.022	0	2.088
55	M104	Y	-0.022	-0.024	2.088	4.175

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
56	M104	Y	-0.024	-0.03	4.175	6.263
57	M104	Y	-0.03	-0.024	6.263	8.351
58	M104	Y	-0.024	-0.024	8.351	10.438
59	M104	Y	-0.024	-0.024	10.438	12.526
60	M104	Y	-0.024	-0.024	12.526	14.614
61	M104	Y	-0.024	-0.024	14.614	16.701
62	M104	Y	-0.024	-0.024	16.701	18.789
63	M104	Y	-0.024	-0.024	18.789	20.877
64	M49	Y	-0.101	-0.101	0	2.081
65	M49	Y	-0.101	-0.101	2.081	4.162
66	M49	Y	-0.101	-0.101	4.162	6.242
67	M49	Y	-0.101	-0.101	6.242	8.323
68	M49	Y	-0.101	-0.101	8.323	10.404
69	M49	Y	-0.101	-0.101	10.404	12.485
70	M49	Y	-0.101	-0.101	12.485	14.566
71	M49	Y	-0.101	-0.117	14.566	16.646
72	M49	Y	-0.117	-0.149	16.646	18.727
73	M50	Y	-0.101	-0.101	0	2.081
74	M50	Y	-0.101	-0.101	2.081	4.162
75	M50	Y	-0.101	-0.101	4.162	6.242
76	M50	Y	-0.101	-0.101	6.242	8.323
77	M50	Y	-0.101	-0.101	8.323	10.404
78	M50	Y	-0.101	-0.101	10.404	12.485
79	M50	Y	-0.101	-0.101	12.485	14.566
80	M50	Y	-0.101	-0.117	14.566	16.646
81	M50	Y	-0.117	-0.149	16.646	18.727
82	M98	Y	-0.035	-0.028	0	2.081
83	M98	Y	-0.028	-0.024	2.081	4.162
84	M98	Y	-0.024	-0.024	4.162	6.242
85	M98	Y	-0.024	-0.024	6.242	8.323
86	M98	Y	-0.024	-0.024	8.323	10.404
87	M98	Y	-0.024	-0.024	10.404	12.485
88	M98	Y	-0.024	-0.024	12.485	14.566
89	M98	Y	-0.024	-0.024	14.566	16.646
90	M98	Y	-0.024	-0.024	16.646	18.727
91	M102	Y	-0.035	-0.028	0	2.081
92	M102	Y	-0.028	-0.024	2.081	4.162
93	M102	Y	-0.024	-0.024	4.162	6.242
94	M102	Y	-0.024	-0.024	6.242	8.323
95	M102	Y	-0.024	-0.024	8.323	10.404
96	M102	Y	-0.024	-0.024	10.404	12.485
97	M102	Y	-0.024	-0.024	12.485	14.566
98	M102	Y	-0.024	-0.024	14.566	16.646
99	M102	Y	-0.024	-0.024	16.646	18.727
100	M48	Y	-0.101	-0.101	0	2.188
101	M48	Y	-0.101	-0.101	2.188	4.376
102	M48	Y	-0.101	-0.101	4.376	6.564
103	M48	Y	-0.101	-0.101	6.564	8.753
104	M48	Y	-0.101	-0.101	8.753	10.941
105	M48	Y	-0.101	-0.101	10.941	13.129
106	M48	Y	-0.101	-0.114	13.129	15.317
107	M48	Y	-0.114	-0.141	15.317	17.505
108	M51	Y	-0.101	-0.101	0	2.188
109	M51	Y	-0.101	-0.101	2.188	4.376
110	M51	Y	-0.101	-0.101	4.376	6.564

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
111	M51	Y	-0.101	-0.101	6.564	8.753
112	M51	Y	-0.101	-0.101	8.753	10.941
113	M51	Y	-0.101	-0.101	10.941	13.129
114	M51	Y	-0.101	-0.114	13.129	15.317
115	M51	Y	-0.114	-0.141	15.317	17.505
116	M99	Y	-0.024	-0.024	0	2.188
117	M99	Y	-0.024	-0.024	2.188	4.376
118	M99	Y	-0.024	-0.024	4.376	6.564
119	M99	Y	-0.024	-0.024	6.564	8.753
120	M99	Y	-0.024	-0.024	8.753	10.941
121	M99	Y	-0.024	-0.024	10.941	13.129
122	M99	Y	-0.024	-0.027	13.129	15.317
123	M99	Y	-0.027	-0.034	15.317	17.505
124	M103	Y	-0.024	-0.024	0	2.188
125	M103	Y	-0.024	-0.024	2.188	4.376
126	M103	Y	-0.024	-0.024	4.376	6.564
127	M103	Y	-0.024	-0.024	6.564	8.753
128	M103	Y	-0.024	-0.024	8.753	10.941
129	M103	Y	-0.024	-0.024	10.941	13.129
130	M103	Y	-0.024	-0.027	13.129	15.317
131	M103	Y	-0.027	-0.034	15.317	17.505
132	M56	Y	-0.1	-0.1	0	2.088
133	M56	Y	-0.1	-0.1	2.088	4.175
134	M56	Y	-0.1	-0.1	4.175	6.263
135	M56	Y	-0.1	-0.1	6.263	8.351
136	M56	Y	-0.1	-0.1	8.351	10.438
137	M56	Y	-0.1	-0.1	10.438	12.526
138	M56	Y	-0.1	-0.125	12.526	14.614
139	M56	Y	-0.125	-0.1	14.614	16.701
140	M56	Y	-0.1	-0.091	16.701	18.789
141	M56	Y	-0.091	-0.174	18.789	20.877
142	M57	Y	-0.1	-0.1	0	2.088
143	M57	Y	-0.1	-0.1	2.088	4.175
144	M57	Y	-0.1	-0.1	4.175	6.263
145	M57	Y	-0.1	-0.1	6.263	8.351
146	M57	Y	-0.1	-0.1	8.351	10.438
147	M57	Y	-0.1	-0.1	10.438	12.526
148	M57	Y	-0.1	-0.125	12.526	14.614

Basic Load Cases

	BLC Description	Category	Y Gravity	Nodal	Distributed	Area(Member)
1	DL	DL	-1			4
2	RLL	RLL				4
3	ELX	ELX			4	
4	ELZ	ELZ		8		
5	BLC 1 Transient Area Loads	None			148	
6	BLC 2 Transient Area Loads	None			148	

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	ASCE Strength 6 (a)	Yes	Y	DL	1.2	ELX	1	LL	0.5	LLS	1
2	ASCE Strength 6 (b)	Yes	Y	DL	1.2	ELZ	1	LL	0.5	LLS	1
3	ASCE Strength 7 (a)	Yes	Y	DL	0.9	ELX	1				

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
4	ASCE Strength 7 (b)	Yes	Y	DL	0.9	ELZ	1				
5	ASCE Strength 6 (os-a)	Yes	Y	DL	1.2	Om*ELX	1	LL	0.5	LLS	1
6	ASCE Strength 6 (os-b)	Yes	Y	DL	1.2	Om*ELZ	1	LL	0.5	LLS	1
7	ASCE Strength 7 (os-a)	Yes	Y	DL	0.9	Om*ELX	1				
8	ASCE Strength 7 (os-b)	Yes	Y	DL	0.9	Om*ELZ	1				
9											
10	Deflection 1	Yes	Y	DL	1						
11	Deflection 2	Yes	Y	LL	1						
12	Deflection 3	Yes	Y	DL	1	LL	1				
13	ASCE Strength 1	Yes	Y	DL	1.4						
14	ASCE Strength 2 (a)	Yes	Y	DL	1.2	LL	1.6	LLS	1.6	RLL	0.5
15	ASCE Strength 2 (b)	Yes	Y	DL	1.2	LL	1.6	LLS	1.6		
16	ASCE Strength 3 (a)	Yes	Y	DL	1.2	RLL	1.6	LL	0.5	LLS	1

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	N59	max	0.01	2	8.026	2	0.03	1	0.162	1	0.021	16	17.353	1
2		min	-2.023	3	-6.674	3	-1.329	4	-11.642	2	0	11	-0.057	2
3	N27	max	0.016	16	13.939	1	0	11	0	11	0.015	2	14.603	3
4		min	-1.6	3	0	11	-1.126	2	-10.676	2	0	11	-0.094	16
5	N4	max	0	11	12.695	2	0.051	16	0.302	16	0.012	16	14.686	1
6		min	-1.627	1	0	11	-1.099	4	-10.482	4	-0.004	4	0	11
7	N49	max	0.009	4	8.042	2	0.023	1	0.119	1	0.001	4	17.361	1
8		min	-2.044	1	-10.847	3	-1.329	4	-11.646	2	-0.02	16	-0.048	4
9	N55	max	0.01	4	14.498	1	0.03	1	0.154	1	0.02	16	17.364	1
10		min	-1.926	1	-4.737	4	-1.367	4	-11.644	2	0	11	-0.053	4
11	N1	max	0	11	1.469	16	0.052	16	0.31	16	0.013	16	14.687	1
12		min	-1.717	1	-11.882	3	-1.172	4	-10.483	4	-0.001	4	0	11
13	N5	max	0.018	16	0.971	13	0.051	16	0.304	16	0.005	4	14.604	3
14		min	-1.686	3	-11.045	4	-1.171	4	-10.482	4	-0.012	1	-0.105	16
15	N56	max	0	13	2.832	16	0.014	16	0.062	16	0.001	4	17.354	1
16		min	-2.044	1	-11.125	3	-1.367	4	-11.646	2	-0.02	16	-0.002	13
17	N39	max	0	11	10.65	1	0	11	0	11	0.014	16	17.379	1
18		min	-1.945	1	0	11	-1.344	2	-11.729	2	0	3	0	11
19	N53	max	0.004	16	15.209	1	0.015	16	0.064	16	0.02	16	17.346	1
20		min	-1.921	3	0	11	-1.329	4	-11.645	2	0	11	-0.024	16
21	N2	max	0.01	4	9.122	1	0.051	16	0.304	16	0.012	16	14.693	1
22		min	-1.633	1	-11.027	4	-1.171	4	-10.482	4	-0.004	4	-0.054	4
23	N34	max	0	11	3.965	16	0	11	0	11	0.017	2	17.377	1
24		min	-2.045	1	-10.902	3	-1.377	2	-11.718	2	-0.005	3	0	11
25	N58	max	0.009	4	10.547	1	0.024	1	0.123	1	0	11	17.36	1
26		min	-1.945	1	-4.769	4	-1.367	4	-11.643	2	-0.02	16	-0.048	4
27	N40	max	0.001	16	14.602	1	0	11	0	11	0	11	17.378	1
28		min	-1.926	1	0	11	-1.342	2	-11.719	2	-0.017	2	-0.002	16
29	N3	max	0.01	4	12.754	2	0.052	16	0.311	16	0.013	16	14.691	1
30		min	-1.712	1	-10.739	3	-1.099	4	-10.484	4	-0.001	4	-0.052	4
31	N37	max	0.01	4	8.105	2	0.015	3	0.087	3	0.017	2	17.373	1
32		min	-2.046	1	-11.196	3	-1.342	2	-11.718	2	0	3	-0.053	4
33	N36	max	0.008	4	11.113	1	0.015	3	0.09	3	0.014	16	17.374	1
34		min	-1.943	3	-3.739	4	-1.378	2	-11.726	2	-0.005	3	-0.044	4
35	N25	max	0.025	2	12.505	2	0.017	3	0.083	3	0.017	2	14.601	3

Envelope Node Reactions (Continued)

	Node Label		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
36		min	-1.686	3	-7.618	3	-1.127	2	-10.667	2	0	11	-0.144	2
37	N38	max	0.011	2	8.029	2	0.009	3	0.05	3	0	11	17.37	1
38		min	-2.026	1	-7.352	3	-1.344	2	-11.73	2	-0.013	16	-0.06	2
39	N19	max	0	11	3.658	16	0	11	0	11	0	11	14.695	1
40		min	-1.713	1	-10.715	3	-1.199	2	-10.691	2	-0.015	16	0	11
41	N8	max	0.017	16	13.875	1	0.052	16	0.311	16	0.002	4	14.611	3
42		min	-1.602	3	0	11	-1.099	4	-10.484	4	-0.013	16	-0.097	16
43	N20	max	0.015	16	2.916	16	0	11	0	11	0.017	2	14.606	3
44		min	-1.688	3	-10.143	4	-1.197	2	-10.665	2	0	11	-0.086	16
45	N26	max	0	11	12.446	2	0	11	0	11	0	11	14.698	1
46		min	-1.634	1	0	11	-1.13	2	-10.683	2	-0.015	2	0	11
47	N51	max	0	11	10.943	1	0.016	16	0.073	16	0.001	3	17.358	1
48		min	-1.943	3	0	11	-1.329	4	-11.645	2	-0.02	16	0	11
49	N18	max	0.024	2	13.889	1	0.016	3	0.08	3	0.015	2	14.605	3
50		min	-1.601	3	-9.606	4	-1.196	2	-10.677	2	0	11	-0.134	2
51	N35	max	0.002	16	3.823	16	0	11	0	11	0	11	17.368	1
52		min	-2.024	3	-6.799	3	-1.378	2	-11.727	2	-0.018	1	-0.012	16
53	N22	max	0	11	10.43	1	0	11	0	11	0	11	14.69	1
54		min	-1.627	1	-10.064	4	-1.199	2	-10.681	2	-0.015	2	0	11
55	N6	max	0.016	16	13.975	1	0.052	16	0.31	16	0.002	4	14.606	3
56		min	-1.6	3	-11.044	4	-1.172	4	-10.484	4	-0.013	16	-0.094	16
57	N7	max	0.015	16	12.675	2	0.051	16	0.302	16	0.005	4	14.612	3
58		min	-1.688	3	-7.86	3	-1.099	4	-10.482	4	-0.012	16	-0.087	16
59	N57	max	0.003	16	2.708	16	0.016	16	0.077	16	0.02	16	17.354	1
60		min	-2.025	1	-7.265	3	-1.366	4	-11.64	2	0	11	-0.013	16
61	N23	max	0	11	13.084	2	0	11	0	11	0	11	14.692	1
62		min	-1.717	1	-11.891	3	-1.129	2	-10.69	2	-0.015	16	0	11
63	N33	max	0.012	2	15.324	1	0.01	3	0.06	3	0	11	17.361	1
64		min	-1.921	3	-3.675	4	-1.377	2	-11.719	2	-0.018	1	-0.068	2
65	N66	max	NC		NC		NC		LOCKED		NC		NC	
66		min	NC		NC		NC		LOCKED		NC		NC	
67	Totals:	max	0	4	88.526	16	0	16						
68		min	-58.26	1	0	11	-40	4						

Envelope Node Reactions - Overstrength or Capacity Limit

	Node Label		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N59	max	0.013	6*	9.423	6*	0.036	5*	0.193	5*	0.02	5*	21.692	5*
2		min	-2.541	7*	-8.8	7*	-1.657	8*	-14.563	6*	0.004	8*	-0.069	6*
3	N27	max	0.003	6*	17.126	5*	-0.014	7*	-0.081	7*	0.017	6*	18.263	5*
4		min	-1.985	7*	15.827	8*	-1.392	6*	-13.319	6*	0.007	7*	-0.029	6*
5	N4	max	-0.011	8*	15.505	6*	0.014	5*	0.096	5*	0.002	5*	18.347	5*
6		min	-2.02	5*	12.262	7*	-1.365	8*	-13.121	8*	-0.006	8*	0.058	8*
7	N49	max	0.011	8*	9.429	6*	0.027	5*	0.139	5*	0.003	8*	21.699	5*
8		min	-2.573	5*	-14.026	7*	-1.657	8*	-14.567	6*	0.001	5*	-0.062	8*
9	N55	max	0.012	8*	17.644	5*	0.035	5*	0.184	5*	0.014	5*	21.704	5*
10		min	-2.389	5*	-6.28	8*	-1.716	8*	-14.564	6*	-0.002	8*	-0.066	8*
11	N1	max	-0.011	8*	-13.737	6*	0.015	5*	0.098	5*	0.001	5*	18.347	5*
12		min	-2.16	5*	-15.076	7*	-1.479	8*	-13.123	8*	-0.003	8*	0.055	8*
13	N5	max	-0.012	6*	-9.494	5*	-0.02	5*	-0.097	5*	0.007	8*	18.265	5*
14		min	-2.12	7*	-13.962	8*	-1.479	8*	-13.121	8*	-0.013	5*	0.064	6*
15	N56	max	-0.012	6*	-5.822	6*	-0.019	5*	-0.109	5*	0.003	8*	21.693	5*

Envelope Node Reactions - Overstrength or Capacity Limit (Continued)

	Node Label		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
16		min	-2.574	5*	-14.265	7*	-1.716	8*	-14.566	6*	-0.005	5*	0.064	6*
17	N39	max	-0.013	8*	12.841	5*	-0.026	7*	-0.13	7*	0.014	6*	21.721	5*
18		min	-2.418	5*	9.092	8*	-1.672	6*	-14.651	6*	-0.002	7*	0.07	8*
19	N53	max	-0.011	6*	18.387	5*	-0.011	5*	-0.065	5*	0.02	5*	21.685	5*
20		min	-2.383	7*	8.856	8*	-1.657	8*	-14.565	6*	-0.002	8*	0.057	6*
21	N2	max	0.014	8*	11.196	5*	0.052	5*	0.299	5*	0.001	5*	18.354	5*
22		min	-2.029	5*	-13.94	8*	-1.479	8*	-13.121	8*	-0.006	8*	-0.077	8*
23	N34	max	-0.014	8*	-4.442	6*	-0.026	7*	-0.132	7*	0.02	6*	21.718	5*
24		min	-2.574	5*	-14.098	7*	-1.725	6*	-14.639	6*	-0.007	7*	0.079	8*
25	N58	max	0.011	8*	12.72	5*	0.028	5*	0.143	5*	-0.002	8*	21.699	5*
26		min	-2.418	5*	-6.31	8*	-1.716	8*	-14.564	6*	-0.005	5*	-0.061	8*
27	N40	max	-0.012	6*	17.766	5*	-0.032	7*	-0.167	7*	-0.013	7*	21.723	5*
28		min	-2.389	5*	9.169	8*	-1.67	6*	-14.64	6*	-0.019	6*	0.066	8*
29	N3	max	0.014	8*	15.492	6*	0.052	5*	0.299	5*	0.003	5*	18.352	5*
30		min	-2.154	5*	-13.763	7*	-1.366	8*	-13.124	8*	-0.003	8*	-0.074	8*
31	N37	max	0.012	8*	9.644	6*	0.02	7*	0.116	7*	0.02	6*	21.716	5*
32		min	-2.576	5*	-14.361	7*	-1.67	6*	-14.639	6*	-0.002	7*	-0.066	6*
33	N36	max	0.011	8*	13.279	5*	0.021	7*	0.12	7*	0.014	6*	21.716	5*
34		min	-2.415	7*	-5.133	8*	-1.726	6*	-14.648	6*	-0.007	7*	-0.056	8*
35	N25	max	0.029	6*	15.422	6*	0.024	7*	0.123	7*	0.019	6*	18.261	5*
36		min	-2.12	7*	-9.678	7*	-1.393	6*	-13.309	6*	0.006	7*	-0.168	6*
37	N38	max	0.014	6*	9.565	6*	0.013	7*	0.07	7*	-0.012	8*	21.714	5*
38		min	-2.547	5*	-9.543	7*	-1.672	6*	-14.651	6*	-0.015	5*	-0.073	6*
39	N19	max	-0.026	8*	-11.772	6*	-0.049	7*	-0.276	7*	-0.003	7*	18.357	5*
40		min	-2.154	5*	-13.732	7*	-1.505	6*	-13.338	6*	-0.015	6*	0.142	8*
41	N8	max	-0.012	6*	16.892	5*	-0.019	5*	-0.089	5*	0.004	8*	18.273	5*
42		min	-1.988	7*	15.062	8*	-1.366	8*	-13.125	8*	-0.012	5*	0.062	6*
43	N20	max	0.002	6*	-9.726	5*	-0.013	7*	-0.078	7*	0.019	6*	18.268	5*
44		min	-2.122	7*	-12.951	8*	-1.503	6*	-13.307	6*	0.005	7*	-0.018	6*
45	N26	max	-0.027	8*	15.349	6*	-0.049	7*	-0.275	7*	-0.001	7*	18.359	5*
46		min	-2.03	5*	10.916	7*	-1.397	6*	-13.329	6*	-0.017	6*	0.151	8*
47	N51	max	-0.012	8*	13.07	5*	-0.019	5*	-0.108	5*	0.003	7*	21.696	5*
48		min	-2.416	7*	8.793	8*	-1.658	8*	-14.566	6*	-0.005	6*	0.065	8*
49	N18	max	0.028	6*	16.91	5*	0.024	7*	0.12	7*	0.017	6*	18.266	5*
50		min	-1.987	7*	-12.345	8*	-1.502	6*	-13.32	6*	0.005	7*	-0.157	6*
51	N35	max	-0.011	6*	-4.532	6*	-0.033	7*	-0.176	7*	-0.012	8*	21.711	5*
52		min	-2.543	7*	-8.958	7*	-1.726	6*	-14.648	6*	-0.021	5*	0.055	6*
53	N22	max	0	8*	12.677	5*	-0.011	7*	-0.072	7*	-0.003	7*	18.351	5*
54		min	-2.021	5*	-12.852	8*	-1.506	6*	-13.326	6*	-0.017	6*	0.004	8*
55	N6	max	0.012	6*	17.172	5*	0.018	5*	0.112	5*	0.004	8*	18.268	5*
56		min	-1.985	7*	-14.026	8*	-1.479	8*	-13.124	8*	-0.014	5*	-0.066	6*
57	N7	max	0.013	6*	15.48	6*	0.017	5*	0.103	5*	0.007	8*	18.275	5*
58		min	-2.123	7*	-10.096	7*	-1.365	8*	-13.121	8*	-0.012	5*	-0.069	6*
59	N57	max	-0.011	6*	-5.862	6*	-0.01	5*	-0.053	5*	0.014	5*	21.694	5*
60		min	-2.545	5*	-9.43	7*	-1.716	8*	-14.561	6*	0.004	8*	0.058	6*
61	N23	max	-0.001	8*	16.057	6*	-0.012	7*	-0.074	7*	-0.002	7*	18.353	5*
62		min	-2.161	5*	-15.089	7*	-1.396	6*	-13.337	6*	-0.015	6*	0.013	8*
63	N33	max	0.015	6*	18.526	5*	0.014	7*	0.081	7*	-0.017	8*	21.705	5*
64		min	-2.383	7*	-5.065	8*	-1.725	6*	-14.64	6*	-0.02	5*	-0.082	6*
65	N66	max	NC		NC		NC		LOCKED		NC		NC	
66		min	NC		NC		NC		LOCKED		NC		NC	
67	Totals:	max	0	8*	56.084	6*	0	5*						
68		min	-72.825	5*	42.063	7*	-50	8*						

Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	M1	HSS8X8X4	0.243	0	1	0.02	17.75	y	3	216.349	293.94	66.288	66.288	2.249	H1-1b
2	M2	HSS8X8X4	0.247	0	1	0.02	16.086	y	1	216.349	293.94	66.288	66.288	2.249	H1-1b
3	M3	HSS8X8X4	0.247	0	1	0.02	16.086	y	1	216.349	293.94	66.288	66.288	2.249	H1-1b
4	M4	HSS8X8X4	0.243	0	3	0.02	17.75	y	1	216.349	293.94	66.288	66.288	2.25	H1-1b
5	M5	HSS8X8X4	0.235	0	3	0.02	16.086	y	1	216.349	293.94	66.288	66.288	2.257	H1-1b
6	M6	HSS8X8X4	0.254	0	1	0.02	17.75	y	1	216.349	293.94	66.288	66.288	2.258	H1-1b
7	M7	HSS8X8X4	0.235	0	3	0.02	16.086	y	1	216.349	293.94	66.288	66.288	2.257	H1-1b
8	M8	HSS8X8X4	0.253	0	1	0.02	17.75	y	1	216.349	293.94	66.288	66.288	2.258	H1-1b
9	M9	HSS8X8X4	0.234	0	3	0.02	16.086	y	1	216.349	293.94	66.288	66.288	2.257	H1-1b
10	M10	HSS8X8X4	0.243	0	3	0.02	17.75	y	1	216.349	293.94	66.288	66.288	2.25	H1-1b
11	M11	HSS8X8X4	0.243	0	1	0.02	17.75	y	3	216.349	293.94	66.288	66.288	2.249	H1-1b
12	M12	HSS8X8X4	0.247	0	1	0.02	16.086	y	1	216.349	293.94	66.288	66.288	2.249	H1-1b
13	M13	HSS8X8X4	0.235	0	3	0.02	16.086	y	1	216.349	293.94	66.288	66.288	2.257	H1-1b
14	M14	HSS8X8X4	0.247	0	1	0.02	16.086	y	1	216.349	293.94	66.288	66.288	2.248	H1-1b
15	M15	HSS8X8X4	0.254	0	1	0.02	17.75	y	1	216.349	293.94	66.288	66.288	2.258	H1-1b
16	M16	HSS8X8X4	0.253	0	1	0.02	17.75	y	1	216.349	293.94	66.288	66.288	2.258	H1-1b
17	M17	HSS8X8X4	0.282	0	3	0.026	25.997	z	16	152.315	293.94	66.288	66.288	2.301	H1-1b
18	M18	HSS8X8X4	0.3	0	1	0.024	25.997	z	16	152.315	293.94	66.288	66.288	2.301	H1-1b
19	M19	HSS8X8X4	0.299	0	1	0.024	15.977	y	1	152.315	293.94	66.288	66.288	2.301	H1-1b
20	M20	HSS8X8X4	0.282	0	3	0.025	25.997	z	16	152.315	293.94	66.288	66.288	2.3	H1-1b
21	M21	HSS8X8X4	0.276	0	3	0.024	25.997	z	16	152.315	293.94	66.288	66.288	2.301	H1-1b
22	M22	HSS8X8X4	0.313	0	1	0.026	25.997	z	16	152.315	293.94	66.288	66.288	2.301	H1-1b
23	M23	HSS8X8X4	0.312	0	1	0.025	25.997	z	16	152.315	293.94	66.288	66.288	2.301	H1-1b
24	M24	HSS8X8X4	0.275	0	3	0.024	15.977	y	1	152.315	293.94	66.288	66.288	2.301	H1-1b
25	M25	HSS8X8X4	0.275	0	3	0.024	15.977	y	1	152.315	293.94	66.288	66.288	2.299	H1-1b
26	M26	HSS8X8X4	0.312	0	1	0.024	15.977	y	1	152.315	293.94	66.288	66.288	2.299	H1-1b
27	M27	HSS8X8X4	0.282	0	3	0.024	15.977	y	1	152.315	293.94	66.288	66.288	2.299	H1-1b
28	M28	HSS8X8X4	0.298	0	1	0.024	15.977	y	1	152.315	293.94	66.288	66.288	2.299	H1-1b
29	M29	HSS8X8X4	0.299	0	1	0.024	15.977	y	1	152.315	293.94	66.288	66.288	2.299	H1-1b
30	M30	HSS8X8X4	0.282	0	3	0.024	15.977	y	1	152.315	293.94	66.288	66.288	2.299	H1-1b
31	M31	HSS8X8X4	0.275	0	3	0.024	15.977	y	1	152.315	293.94	66.288	66.288	2.299	H1-1b
32	M32	HSS8X8X4	0.312	0	1	0.024	15.977	y	1	152.315	293.94	66.288	66.288	2.298	H1-1b
33	M33	HSS12X8X4	0.016	8.5	13	0.003	17	y	13	267.227	370.944	73.797	116.951	1.136	H1-1b
34	M34	HSS12X8X4	0.043	14.5	13	0.005	29	y	13	177.198	370.944	73.797	116.951	1.136	H1-1b
35	M35	HSS12X8X4	0.016	8.5	13	0.003	17	y	13	267.227	370.944	73.797	116.951	1.136	H1-1b
36	M36	HSS12X8X4	0.016	8.5	13	0.003	17	y	13	267.227	370.944	73.797	116.951	1.136	H1-1b
37	M37	HSS12X8X4	0.043	14.5	13	0.005	29	y	13	177.198	370.944	73.797	116.951	1.136	H1-1b
38	M38	HSS12X8X4	0.016	8.5	13	0.003	17	y	13	267.227	370.944	73.797	116.951	1.136	H1-1b
39	M39	HSS12X8X4	0.025	9.969	16	0.01	15.104	y	16	177.198	370.944	73.797	116.951	1.516	H1-1b
40	M40	HSS12X8X4	0.025	9.969	16	0.01	15.104	y	16	177.198	370.944	73.797	116.951	1.515	H1-1b
41	M41	HSS12X8X4	0.243	10.427	1	0.057	10.427	y	1	290.825	370.944	73.797	116.951	1.688	H1-1b
42	M42	HSS12X8X4	0.026	0	1	0.002	8	y	1	313.132	370.944	73.797	116.951	1.136	H1-1b*
43	M43	HSS12X8X4	0.026	0	1	0.002	8	y	1	313.132	370.944	73.797	116.951	1.136	H1-1b*
44	M44	HSS12X8X4	0.242	2.573	1	0.057	2.573	y	1	290.825	370.944	73.797	116.951	1.688	H1-1b
45	M45	HSS12X8X4	0.137	2.573	1	0.032	2.573	y	1	290.825	370.944	73.797	116.951	1.696	H1-1b
46	M46	HSS12X8X4	0.131	2.573	1	0.031	2.573	y	1	290.825	370.944	73.797	116.951	1.697	H1-1b
47	M47	HSS12X8X4	0.016	2.573	1	0.004	2.438	y	1	290.825	370.944	73.797	116.951	1.778	H1-1b
48	M48	HSS8X8X4	0.102	14.77	16	0.021	14.77	y	16	218.173	293.94	66.288	66.288	2.245	H1-1b
49	M49	HSS8X8X4	0.103	15.996	16	0.021	15.996	y	16	208.976	293.94	66.288	66.288	2.363	H1-1b
50	M50	HSS8X8X4	0.104	15.996	16	0.029	16.191	y	1	208.976	293.94	66.288	66.288	2.363	H1-1b
51	M51	HSS8X8X4	0.102	14.77	16	0.026	14.952	y	1	218.173	293.94	66.288	66.288	2.245	H1-1b
52	M52	HSS12X8X4	0.122	2.573	1	0.03	2.438	y	16	290.825	370.944	73.797	116.951	1.7	H1-1b

Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks (Continued)

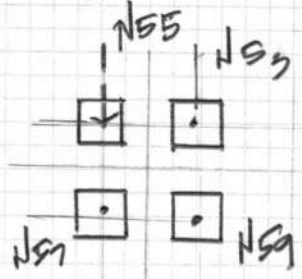
	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
53	M53	HSS12X8X4	0.129	2.573	1	0.033	2.438	y	16	290.825	370.944	73.797	116.951	1.697	H1-1b
54	M54	HSS8X8X4	0.15	18.05	16	0.045	20.877	z	3	192.367	293.94	66.288	66.288	3	H1-1b
55	M55	HSS8X8X4	0.15	18.05	16	0.054	18.267	z	1	192.367	293.94	66.288	66.288	3	H1-1b
56	M56	HSS8X8X4	0.15	18.05	16	0.045	20.877	z	3	192.367	293.94	66.288	66.288	3	H1-1b
57	M57	HSS8X8X4	0.15	18.05	16	0.054	18.267	z	1	192.367	293.94	66.288	66.288	3	H1-1b
58	M98	HSS10X2X4	0.095	2.731	16	0.014	2.536	z	16	16.417	216.936	11.824	49.68	1.948	H1-1b
59	M99	HSS10X2X4	0.085	14.77	16	0.013	17.505	z	16	18.789	216.936	11.824	49.68	2.021	H1-1b
60	M100	HSS10X2X4	0.103	2.827	2	0.012	2.61	z	2	13.21	216.936	11.824	49.68	2.26	H1-1b
61	M101	HSS10X2X4	0.061	18.05	1	0.011	18.267	y	3	13.21	216.936	11.824	49.68	1.933	H1-1b
62	M102	HSS10X2X4	0.095	2.731	16	0.014	2.536	z	16	16.417	216.936	11.824	49.68	1.949	H1-1b
63	M103	HSS10X2X4	0.085	14.77	16	0.013	17.505	z	16	18.789	216.936	11.824	49.68	2.022	H1-1b
64	M104	HSS10X2X4	0.094	2.827	2	0.013	0	y	1	13.21	216.936	11.824	49.68	2.315	H1-1b
65	M105	HSS10X2X4	0.058	18.05	16	0.013	20.877	y	1	13.21	216.936	11.824	49.68	1.617	H1-1b
66	M106	HSS6X6X4	0.012	7.08	16	0	7.08	y	2	198.471	216.936	38.64	38.64	1	H1-1b*
67	M107	HSS6X6X4	0.012	7.08	16	0	7.08	y	1	198.471	216.936	38.64	38.64	1	H1-1b*
68	M108	HSS6X6X4	0.007	0	16	0.002	6.467	y	1	201.416	216.936	38.64	38.64	1.136	H1-1b*
69	M109	HSS6X6X4	0.005	0	16	0.002	6.297	y	1	202.194	216.936	38.64	38.64	1.136	H1-1b*
70	M110	HSS6X6X4	0.007	0	16	0.002	6.467	y	1	201.416	216.936	38.64	38.64	1.136	H1-1b*
71	M111	HSS6X6X4	0.005	0	16	0.002	6.297	y	1	202.194	216.936	38.64	38.64	1.136	H1-1b*
72	M117	HSS10X2X4	0.073	10.427	1	0.019	13	z	1	34.069	216.936	11.824	49.68	1.673	H1-1b
73	M112	HSS10X2X4	0.073	10.427	1	0.019	13	z	1	34.069	216.936	11.824	49.68	1.678	H1-1b
74	M114	HSS10X2X4	0.042	2.573	1	0.01	13	z	1	34.069	216.936	11.824	49.68	1.628	H1-1b
75	M113	HSS10X2X4	0.021	1.747	16	0.012	1.747	z	16	196.608	216.936	11.824	49.68	2.203	H1-1b
76	M115	HSS10X2X4	0.021	1.747	16	0.012	1.747	z	16	196.608	216.936	11.824	49.68	2.203	H1-1b
7	M116	HSS10X2X4	0.04	2.573	1	0.01	2.437	z	1	34.069	216.936	11.824	49.68	1.651	H1-1b

Material Take-Off

	Material	Size	Pieces	Length[ft]	Weight[K]
1	General Members				
2	RIGID	RE4X4	40	75.4	0
3	RIGID		2	3.5	0
4	Total General		42	78.9	0
5					
6	Hot Rolled Steel				
7	A500 Gr.B RECT	HSS10X2X4	14	211.5	4.055
8	A500 Gr.B RECT	HSS12X8X4	17	291	9.542
9	A500 Gr.B RECT	HSS6X6X4	6	39.7	0.761
10	A500 Gr.B RECT	HSS8X8X4	40	855.9	22.24
11	Total HR Steel		77	1398.1	36.599

BASEPLATE DESIGN

FROM RISA3D PRINT-OUT NODE LOADS



DL+RL

RISA LOADS

	X	Y	Z	Mx	Mz
N57	2k	3	1.4	11.6k	17.4 k-1
N53	1.92	3	1.4	11.6k	17.4
N55	1.92	3	1.4	11.6k	17.4
N59	2.0	3	1.4	11.6k	17.4
	8k	12k	5.6k	46.6k'	69.6 k'

Mx = 47 k' x = 8 k

Mz = 70 k' z = 5.6 k

FROM SIMPSON ANCHOR DESIGNER

USE: 1¼" Ø F1554 GRADE 55
× 36" EMBEDMENT

USE: 36" × 36" CONC. PIER
W/ 8-#7 VERT. BARS
3-#4 TIES @ 3" O.C.
#4 TIES @ 12" O.C.

SIMPSON Strong-Tie

Anchor Designer™ Software
Version 3.1.2301.3

Company:		Date:	1/23/2023
Engineer:		Page:	1/6
Project:			
Address:			
Phone:			
E-mail:			

1.Project information

Customer company:
Customer contact name:
Customer e-mail:
Comment:

Project description:
Location:
Fastening description:

2. Input Data & Anchor Parameters

General
Design method:ACI 318-19
Units: Imperial units

Anchor Information:
Anchor type: Cast-in-place
Material: F1554 Grade 55
Diameter (inch): 1.250
Effective Embedment depth, h_{ef} (inch): 36.000
Anchor category: -
Anchor ductility: Yes
h_{min} (inch): 38.00
C_{min} (inch): 1.65
S_{min} (inch): 5.00

Base Material
Concrete: Normal-weight
Concrete thickness, h (inch): 84.00
State: Cracked
Compressive strength, f'_c (psi): 4000
$\Psi_{c,V}$: 1.0
Reinforcement condition: Supplementary reinforcement present
Supplemental edge reinforcement: Not applicable
Reinforcement provided at corners: Yes
Ignore concrete breakout in tension: Yes
Ignore concrete breakout in shear: No
Ignore 6do requirement: Yes
Build-up grout pad: Yes

Base Plate
Length x Width x Thickness (inch): 26.00 x 26.00 x 0.50

Recommended Anchor
Anchor Name: Heavy Hex Bolt - 1 1/4"Ø Heavy Hex Bolt, F1554 Gr. 55

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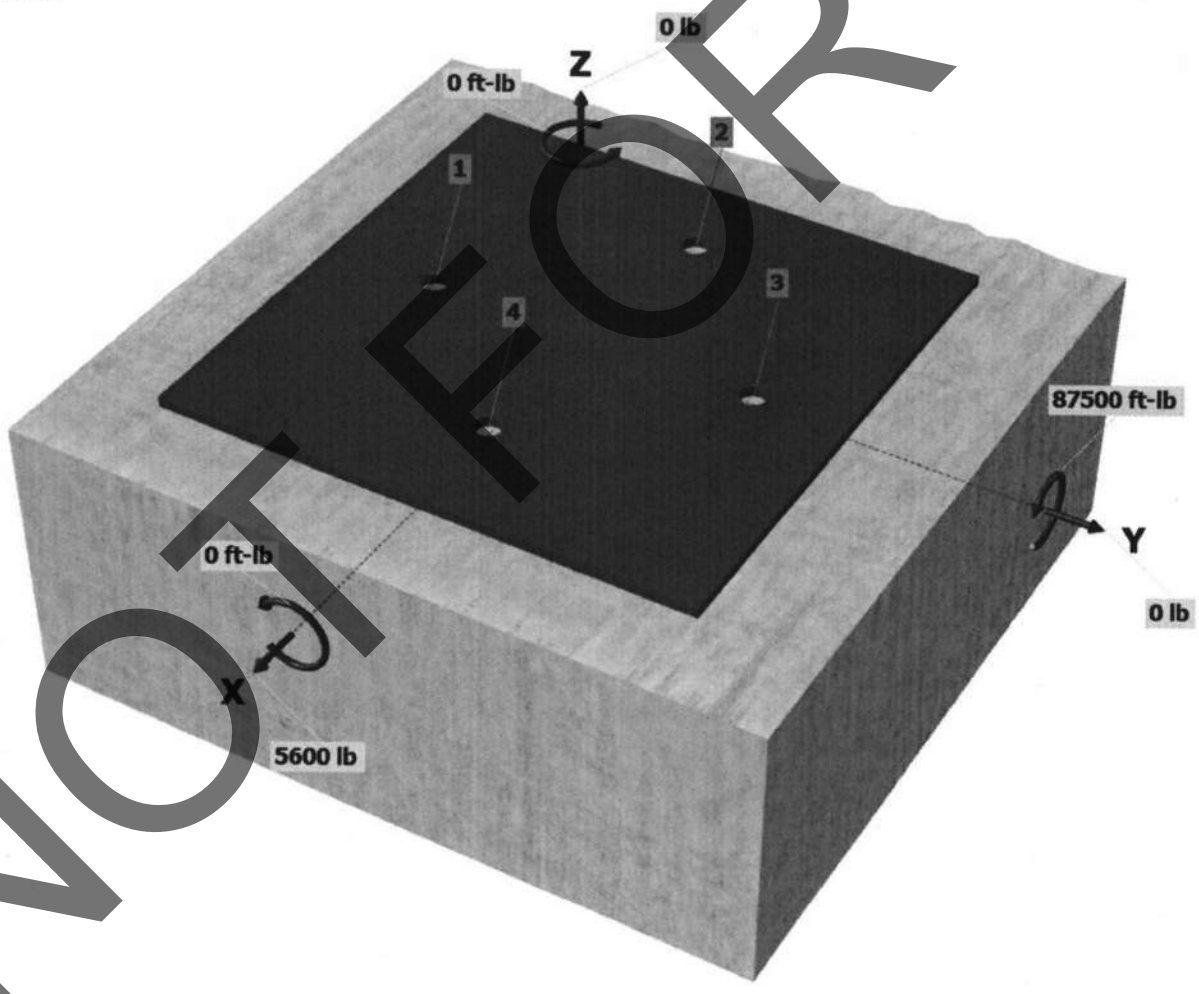
Load and Geometry
Load factor source: ACI 318 Section 5.3
Load combination: not set
Seismic design: No
Anchors subjected to sustained tension: Not applicable
Apply entire shear load at front row: No
Anchors only resisting wind and/or seismic loads: No

Strength level loads:

N_{ua} [lb]: 0
V_{uax} [lb]: 5600
V_{uay} [lb]: 0
M_{ux} [ft-lb]: 0
M_{uy} [ft-lb]: 87500
M_{uz} [ft-lb]: 0

<Figure 1>



CHECK FOUNDATION

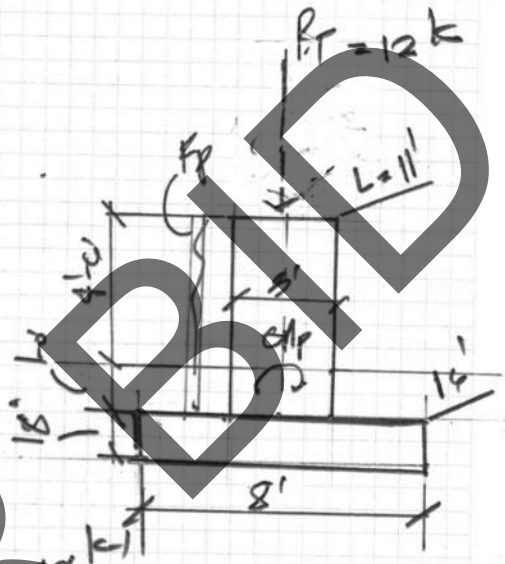
$F_p = 0.5 W_p$ $\quad W_p = 150^{\#} \times 3' = 450^{\#/ft}$

$= 0.5(450) = 225$ PSF

$V_T = 40^k \times 0.7 = 28^k \times 1/4 = 7^k$

$OM_p = 7^k \times [16.5' + 7']$

$(RM) = 165$ K-FT



RM:

$P_T = 12^k \quad = 12^k \times 8/2 = 48$

$P_{ISR} = 3' \times 11' \times 5.5' \times .150 \quad = 27^k \times 4' = 108$

$P_{TC} = 1.5' \times 8' \times 16' \times .150 \quad = 28.8 \times 4' = 116$

$\Sigma M = 68^{k'}$ $\qquad 272$ K-FT

CASE REDUCTION

$SF_O = \dfrac{0.9RM}{OM} = 1.48 \geq 1.0$

SOIL BEARING

$e = M/P = 165/68 = 2.42'$ $\qquad L/6 = 1.33'$

$x' = RM/P_T = \dfrac{272}{68} = 4'$

$L' = 3[x' - e] = 4.75'$

$q_s = \dfrac{2WT}{L' \times 16'} = 1.78$ KSF $< 1.5 \times 1.33 = 2$ KSF

18" THK x 8'-0" WIDE

W/ #6 @ 12" O.C. TRANSVERSE

W/ 8 - #6 CONT. BARS