2141 E BROADWAY ROAD, STE 207
TEMPE, AZ 85282
P: 480 | 580 | 4420
web:www.eiffelindustries.com
mail: sam@eiffelindustries.com

Design Documents

For Gravity & Lateral

Project:

Container Model STL3640K3,
STL industrial llc
1356 N 107th St. Mesa AZ
85207. 480-560-4390

Project No. AZ24082

Date: August 30, 2024

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Design Criteria: -

Building Code: ASCE 7-16, IBC 2018.

Materials: -

Structural Steel

Structural steel shall be designed in accordance with the specification given in steel construction manual - AISC 16th edition.

Structural Steel Shapes:

Shapes	ASTM Designation	Mechanical Properties	
Angle	A36	F_y = 36 ksi	F_u = 58 ksi
SHS	A500 Gr. B	F_y = 46 ksi	F_u = 65 ksi
Plate	A36	F_y = 36 ksi	F_u = 58 ksi
Bolts	A325N	F_{nv} = 54ksi	F_{nt} = 90 ksi

Criteria and Approach for Design of Framing for Gravity Loads: -

Loads are calculated for the Framing members provided & they are checked in bending, shear, and deflection. The posts/column are designed as compression members and checked for compressive stresses.

Soil Bearing: -

Bottoms of bearing footings shall bear on native undisturbed soil or controlled compacted engineered fill min. 1'-6" below undisturbed ground surface. Presumptive soil load - bearing capacity for class 5 soils (CL, ML, MH & CH) taken as 1500 psf per table1806.2 of IBC 2018.

Design Loading: -

Roof Dead Load	=	05 psf
Roof Live Load	=	20 psf
Roof Snow Design Load	=	30 psf
Container (8x40x9.5 ft)	=	28 psf

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Criteria and Approach for Lateral Design: -

The wind load calculations are done per IBC 2018 & ASCE7-16.

Wind Load: -

Wind Speed	=	115 mph (3-second gust) (Figure 1609.3, IBC2018)
Exposure Category	=	"C"
Importance factor, I_w	=	1
Enclosure Condition	=	Enclosed

Seismic Load: -

Ss	=	1.5
S1	=	0.6
Sm1	=	1.020
Sds	=	1.790
Sd1	=	0.6
Seismic Design Category	=	B

WIND LOAD CALCULATION

Code: ASCE 7 - 16

Occupancy:

Occupancy Group =	U	Utility & Miscellaneous

Risk Category & Importance Factors:

Risk Category =	II
Wind factor =	1.00
Snow factor =	1.00
Seismic factor =	1.00

Type of Construction:

Fire Rating:

Roof =	1.0 hr
Floor =	1.0 hr

Building Geometry:

Roof angle (θ)	3.50 / 12	16.3 deg
Building length (L)	40.0 ft	
Least width (B)	37.0 ft	
Mean Roof Ht (h)	17.5 ft	
Parapet ht above grd	0.0 ft	
Minimum parapet ht	0.0 ft	

Wind Loads : ASCE 7- 16

Ultimate Wind Speed	115 mph
Nominal Wind Speed	89.1 mph
Risk Category	II
Exposure Category	C
Enclosure Classif.	Enclosed Building
Internal pressure	+/-0.18
Directionality (Kd)	0.85
Kh case 1	0.877
Kh case 2	0.877
Type of roof	Gable

Topographic Factor (Kzt)

Topography		Flat
Hill Height	(H)	80.0 ft
Half Hill Length (Lh)		100.0 ft
Actual H/Lh	=	0.80
Use H/Lh	=	0.50
Modified Lh	=	160.0 ft
From top of crest: x =		50.0 ft
Bldg up/down wind?		downwind

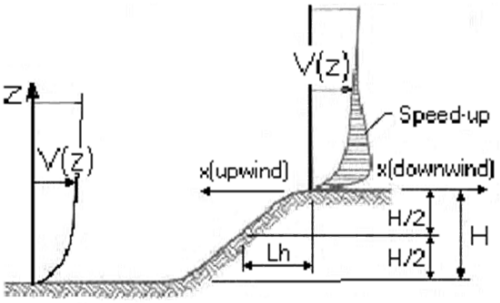
H/Lh= 0.50 K_1 = 0.000

x/Lh = 0.31 K_2 = 0.792

z/Lh = 0.11 K_3 = 1.000

At Mean Roof Ht:

$Kzt = (1+K_1K_2K_3)^2 = 1.00$



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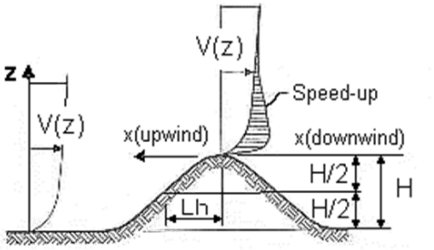


2D RIDGE or 3D AXISYMMETRICAL HILL

Gust Effect Factor

h =	17.5 ft
B =	37.0 ft
/z (0.6h) =	15.0 ft

Flexible structure if natural frequency < 1 Hz (T > 1 second).

If building h/B>4 then may be flexible and should be investigated.

h/B = 0.47 Rigid structure (low rise bldg)

G = 0.85 Using rigid structure default

eiffel

Wind Loads - MWFRS h≤60' (Low-rise Buildings) except for open buildings

Kz = Kh (case 1) =	0.88	Edge Strip (a) =	3.7 ft
Base pressure (qh) =	**25.2 psf**	End Zone (2a) =	7.4 ft
GCpi =	+/-0.18	Zone 2 length =	18.5 ft

Wind Pressure Coefficients

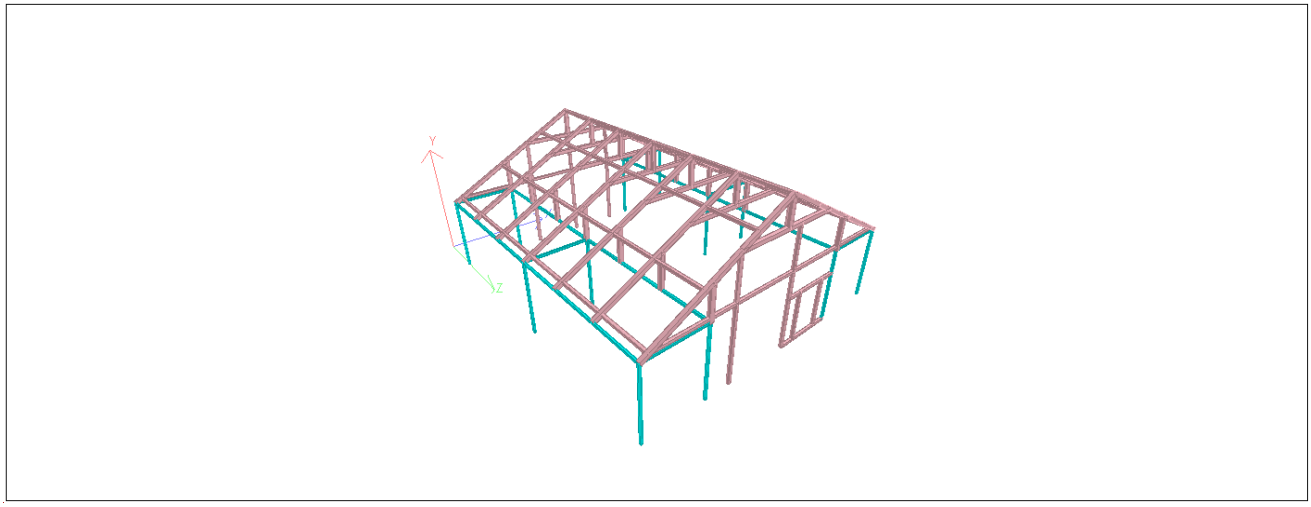
	CASE A				CASE B		
		θ = 16.3 deg					
Surface	GCpf	w/-GCpi	w/+GCpi		GCpf	w/-GCpi	w/+GCpi
1	0.50	0.68	0.32		-0.45	-0.27	-0.63
2	-0.69	-0.51	-0.87		-0.69	-0.51	-0.87
3	-0.45	-0.27	-0.63		-0.37	-0.19	-0.55
4	-0.40	-0.22	-0.58		-0.45	-0.27	-0.63
5					0.40	0.58	0.22
6					-0.29	-0.11	-0.47
1E	0.75	0.93	0.57		-0.48	-0.30	-0.66
2E	-1.07	-0.89	-1.25		-1.07	-0.89	-1.25
3E	-0.65	-0.47	-0.83		-0.53	-0.35	-0.71
4E	-0.59	-0.41	-0.77		-0.48	-0.30	-0.66
5E					0.61	0.79	0.43
6E					-0.43	-0.25	-0.61

Ultimate Wind Surface Pressures (psf)

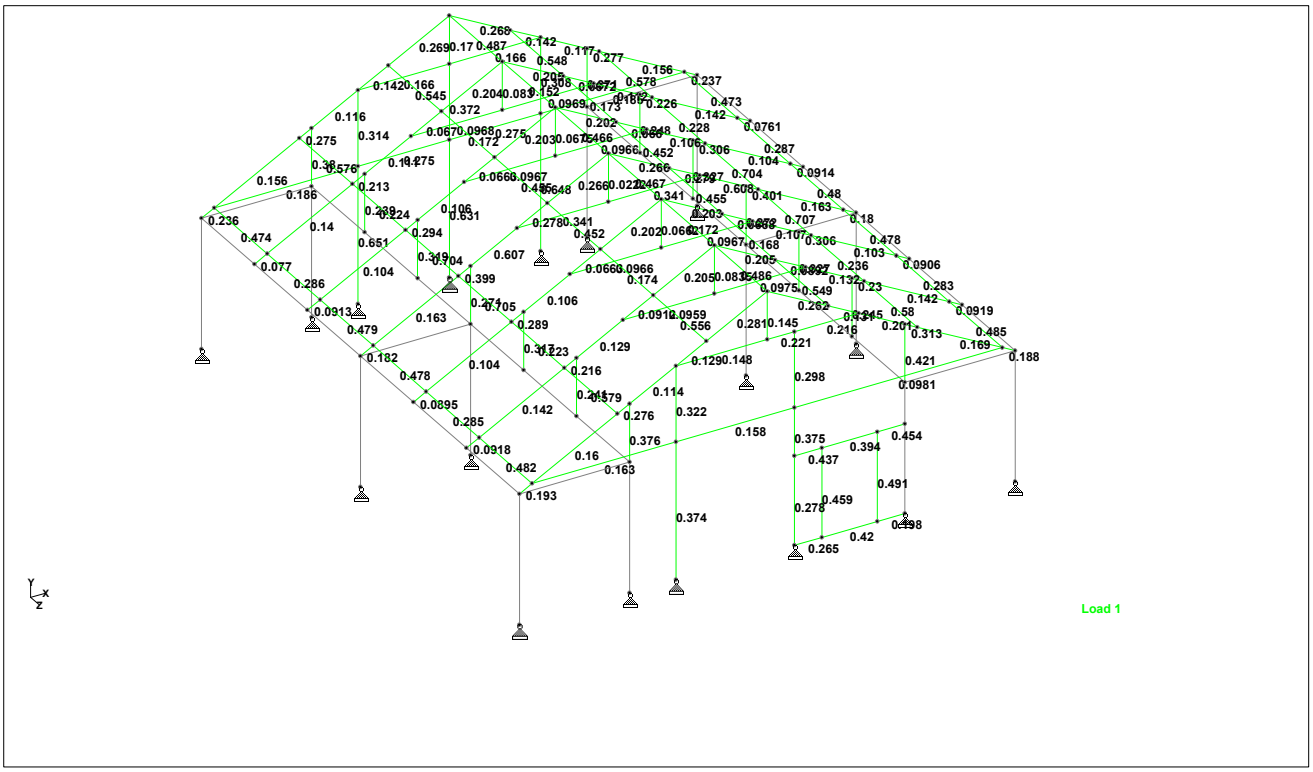
1		17.1	8.0		-6.8	-15.9
2		-12.9	-22.0		-12.9	-22.0
3		-6.9	-16.0		-4.8	-13.9
4		-5.4	-14.5		-6.8	-15.9
5					14.6	5.6
6					-2.8	-11.9
1E		23.5	14.5		-7.6	-16.7
2E		-22.5	-31.5		-22.5	-31.5
3E		-11.9	-20.9		-8.8	-17.9
4E		-10.3	-19.4		-7.6	-16.7
5E					19.9	10.9
6E					-6.3	-15.4

	Wind pressure		26	psf	
	Tributory		6.67	ft	
	Coeff				
	WL+	0.32	-0.87	-0.64	-0.58
	WR+	-0.58	-0.64	-0.87	0.32
	WL-	0.68	-0.51	-0.28	-0.22
	WR-	-0.22	-0.28	-0.51	0.68
	WE+	-0.63	-0.87	-0.87	-0.63
	WE-	-0.27	-0.51	-0.51	-0.27
Forces					
	WL+	0.055494	-0.15088	-0.11099	-0.10058
	WR+	-0.10058	-0.11099	-0.15088	0.055494
	WL-	0.117926	-0.08844	-0.04856	-0.03815
	WR-	-0.03815	-0.04856	-0.08844	0.117926
	WE+	-0.10925	-0.15088	-0.15088	-0.10925
	WE-	-0.04682	-0.08844	-0.08844	-0.04682

Bentley	Job No	Sheet No 1	Rev
	Part		
Job Title	Ref		
	By	Date	Chd
Client	File Container Building Config		Date/Time



3D Rendered View



Stress Ratio

Bentley	Job No	Sheet No 2	Rev
	Part		
Job Title	Ref		
	By	Date	Chd
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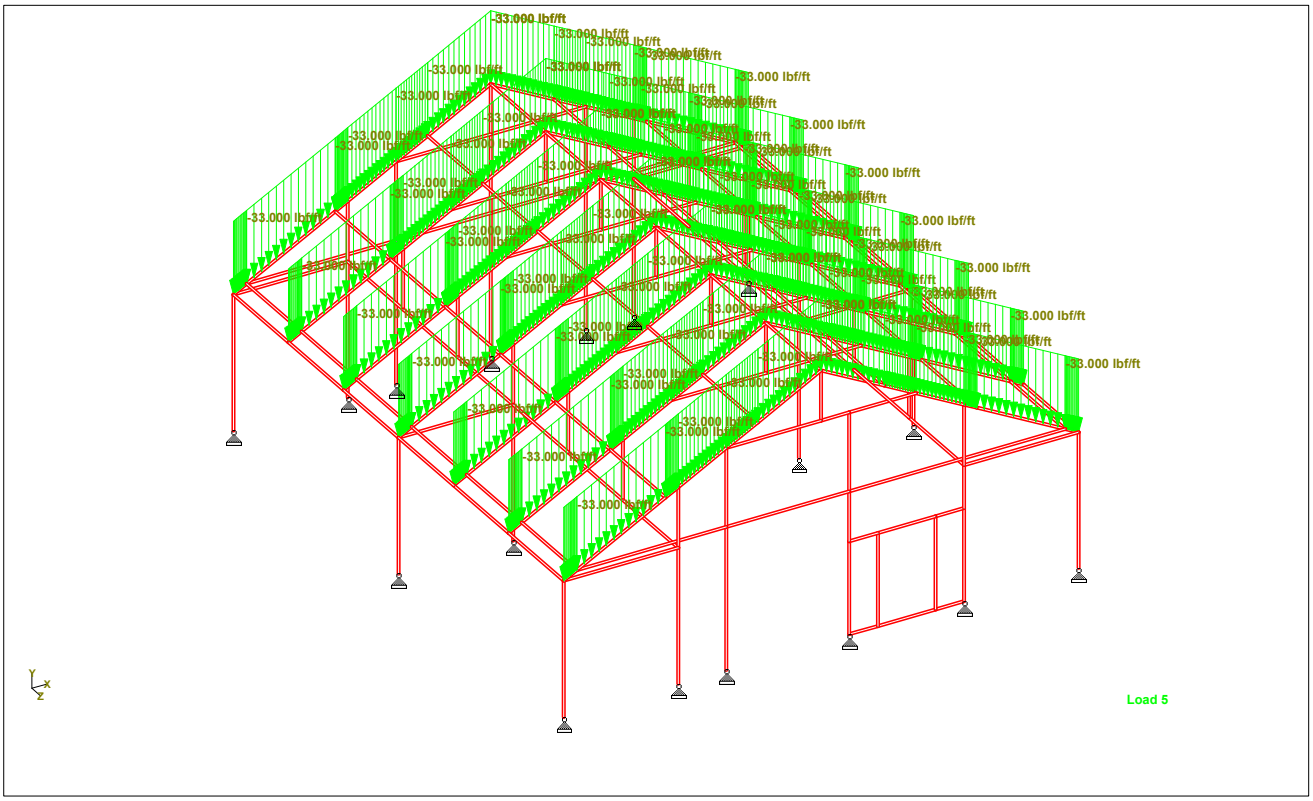

Dead load

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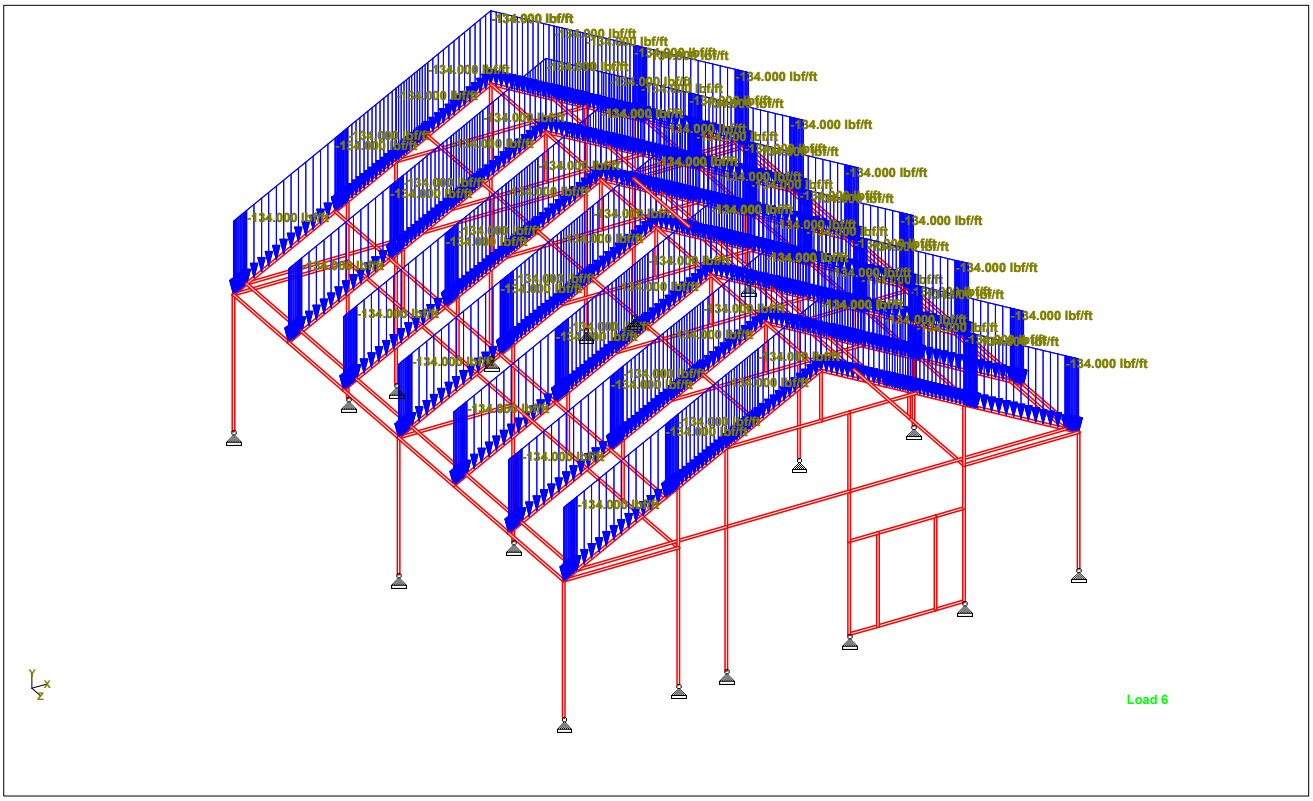

Live Load

Bentley	Job No	Sheet No 4	Rev
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Job Title	Ref		
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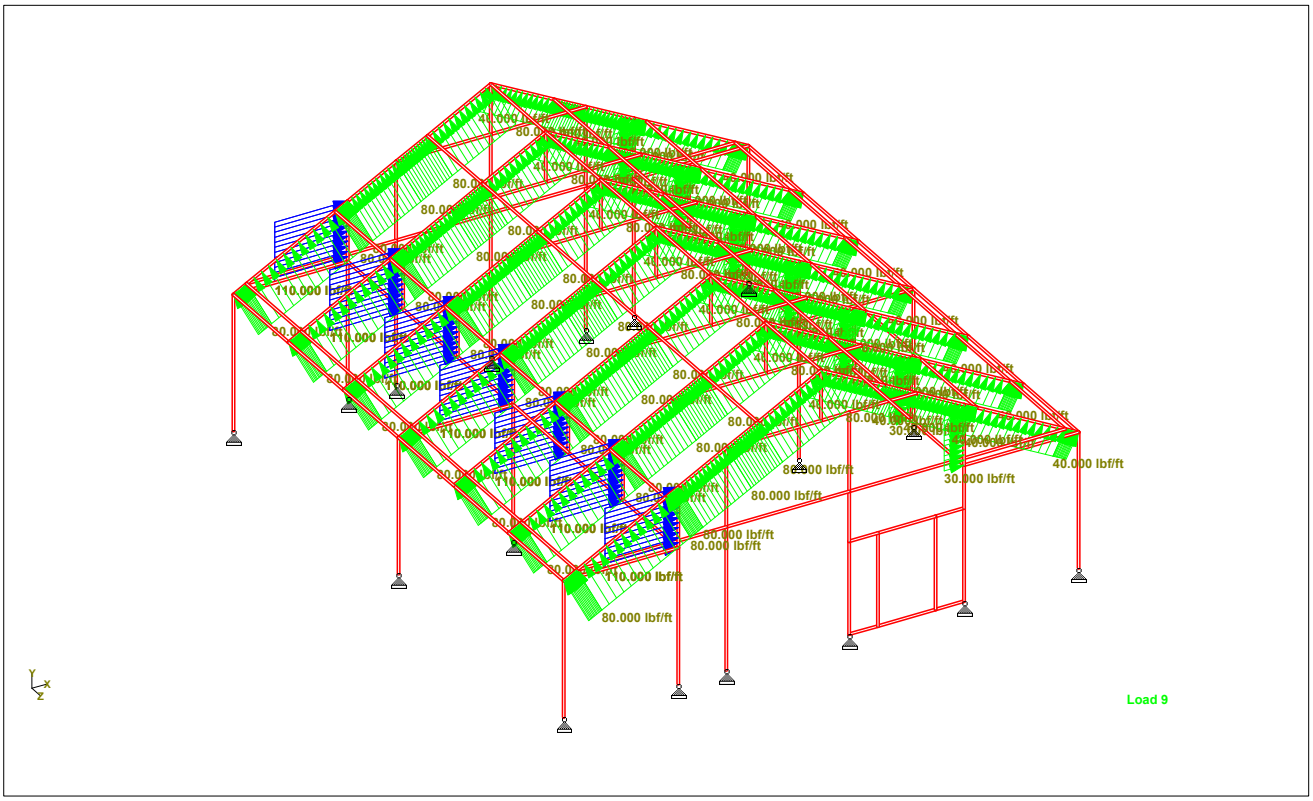
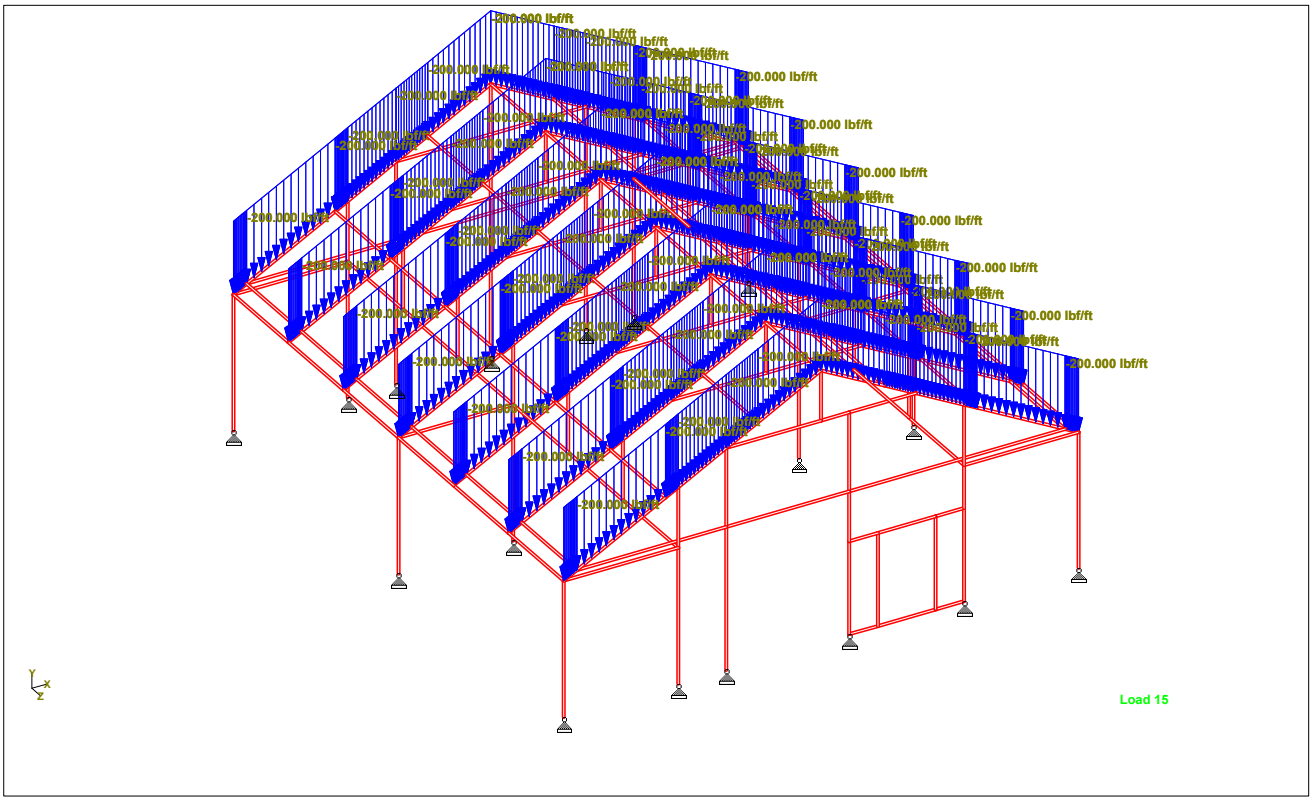
Client	File Container Building Config		Date/Time

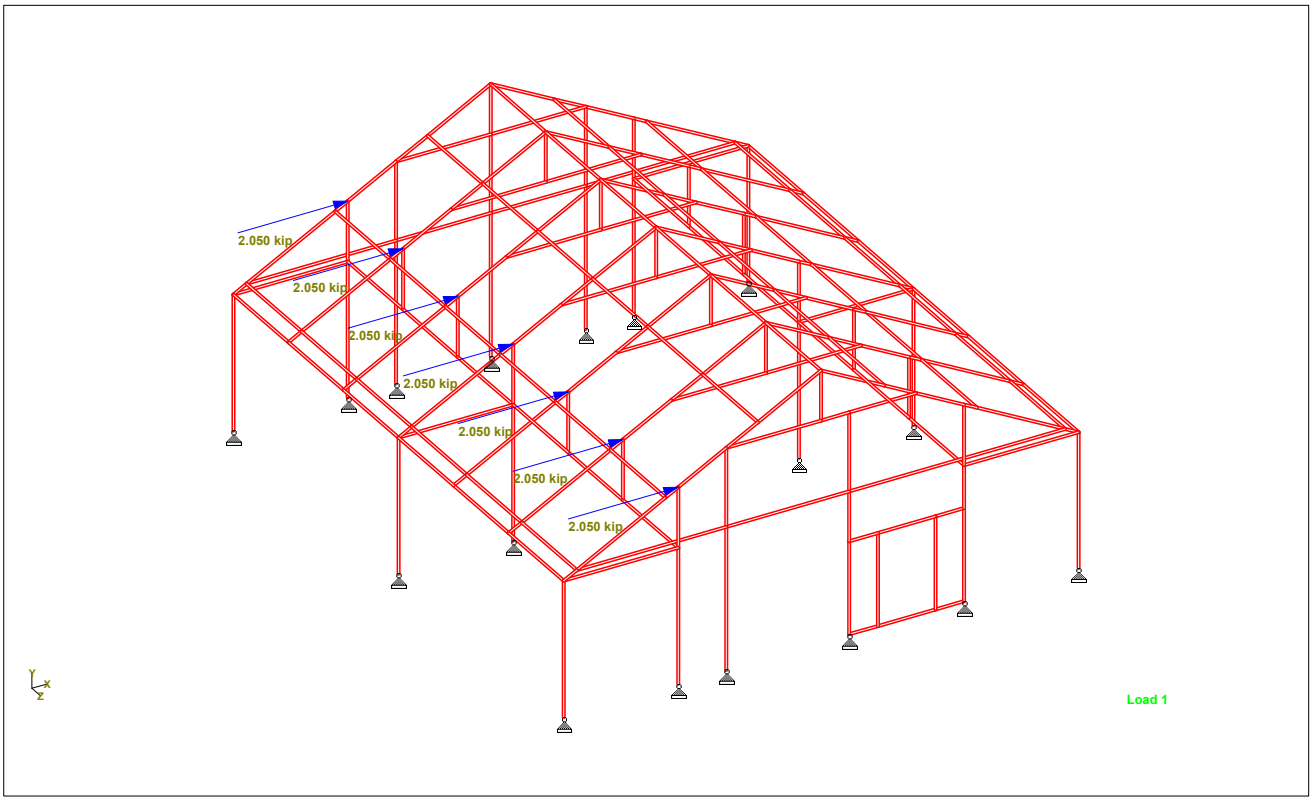


Wind Load

Bentley	Job No	Sheet No 5	Rev
	Part		
Job Title	Ref		
	By	Date	Chd
Client	File Container Building Config	Date/Time	



Snow Load


2.050 kip
2.050 kip
2.050 kip
2.050 kip
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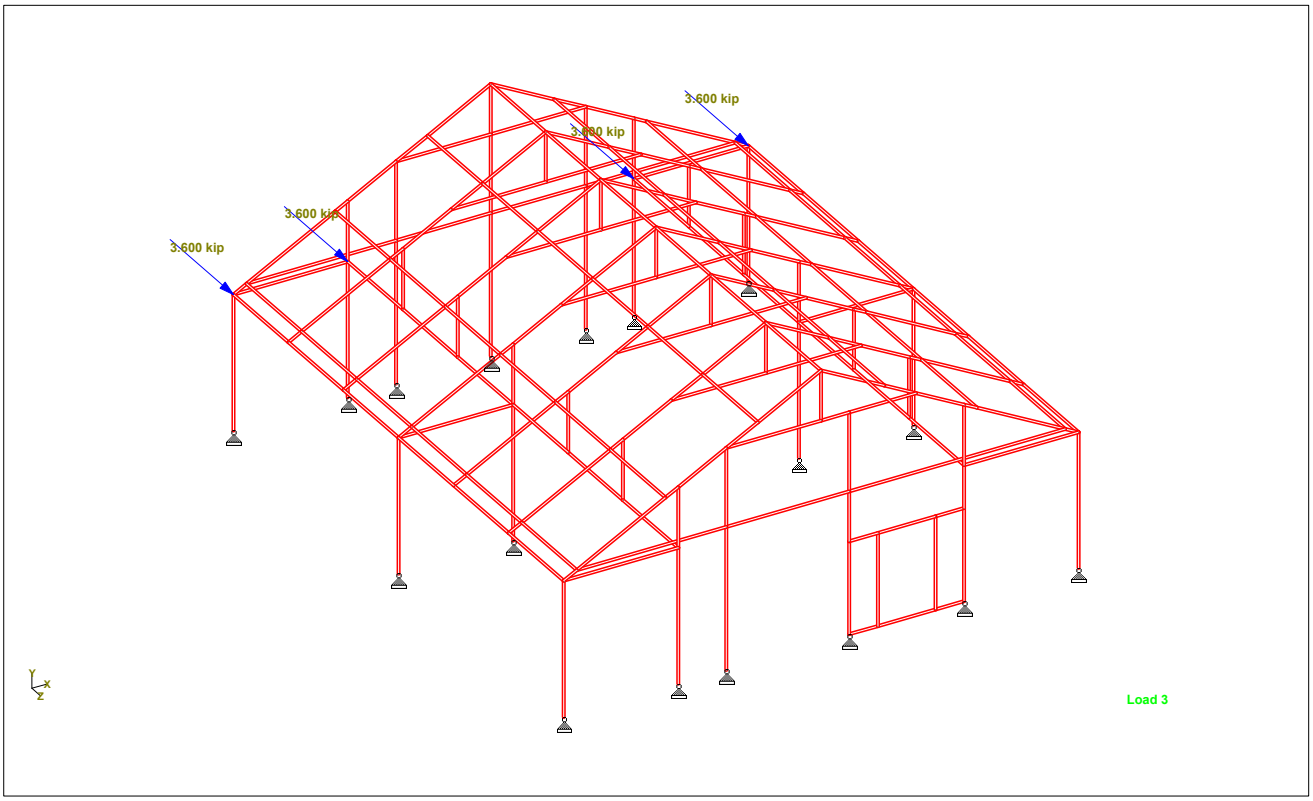
2.050 kip
Load 1

Seismic +X

Bentley	Job No	Sheet No 7	Rev
	Part		
Job Title	Ref		
	By	Date	Chd
Client	File Container Building Config		Date/Time



Seismic +Z

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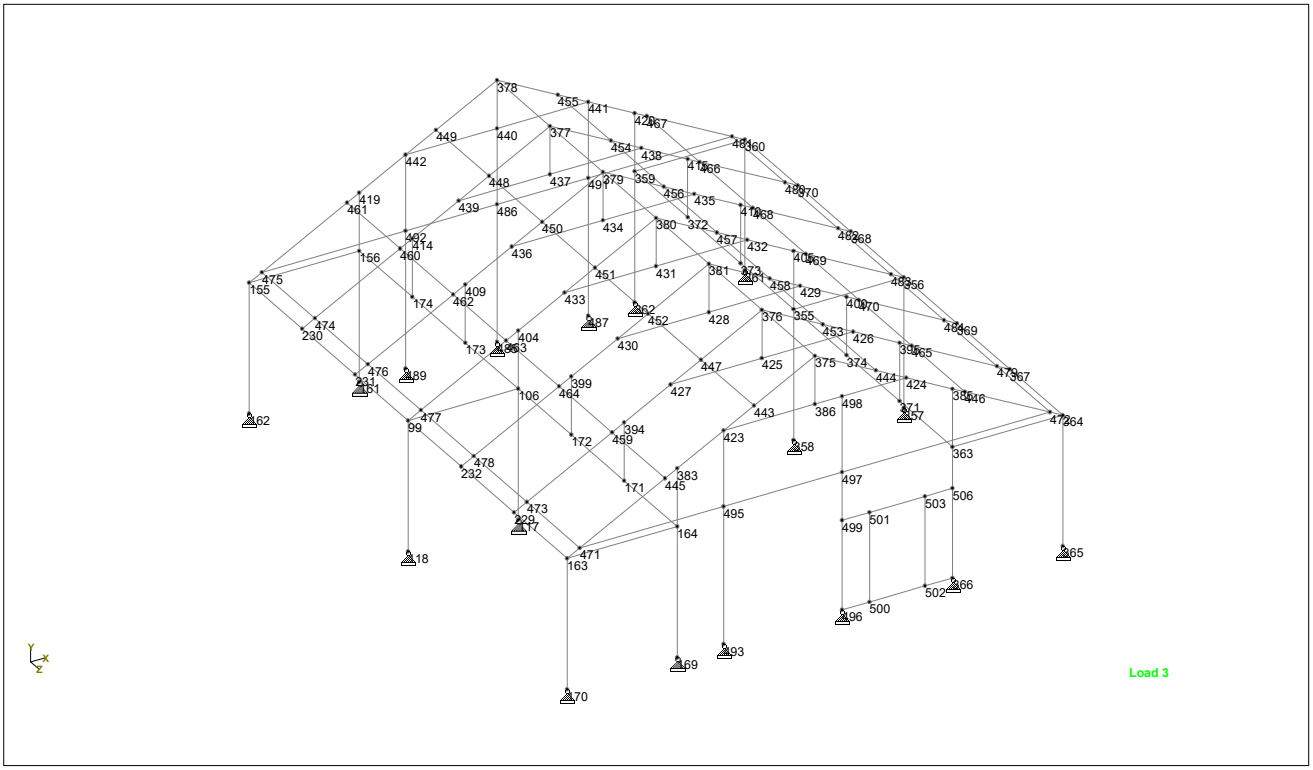
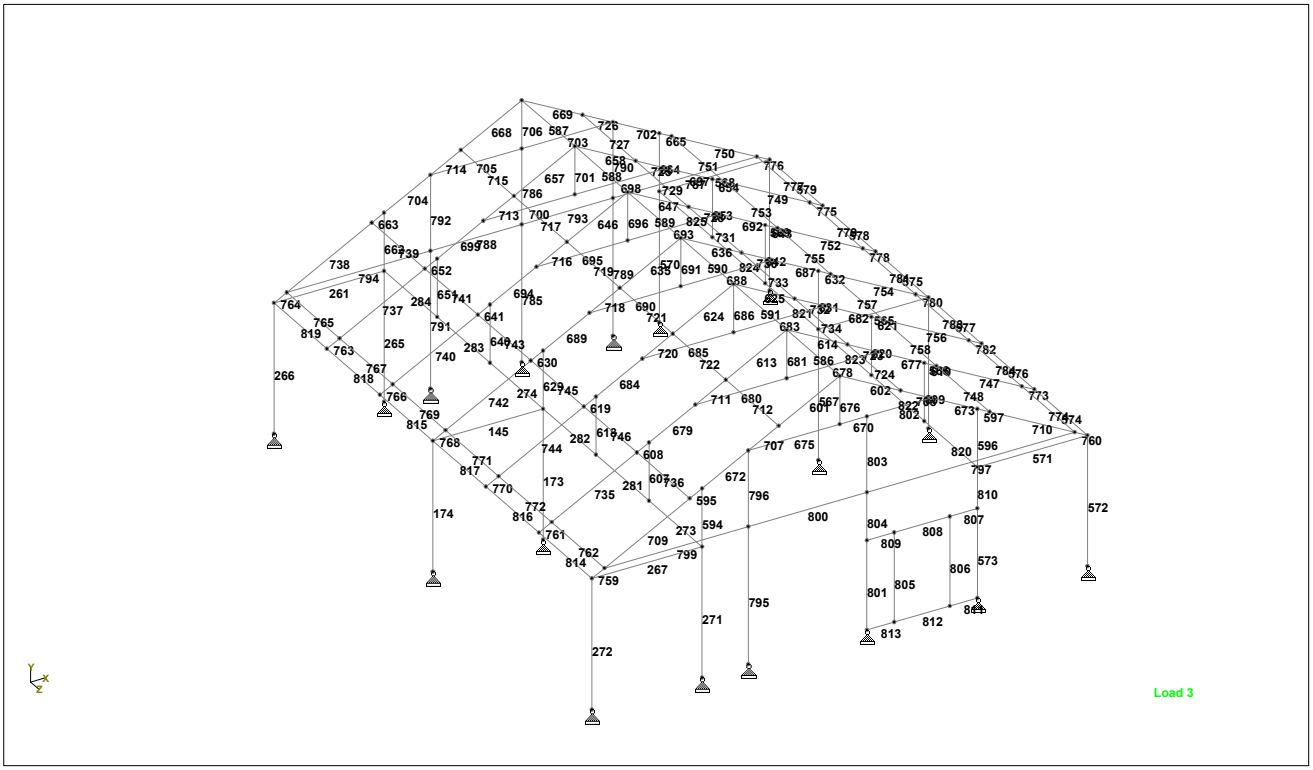


Node Number



Beam Number

Nodes

Node	X (ft)	Y (ft)	Z (ft)
99	-0.000	9.500	26.600
106	8.000	9.500	26.600
117	8.000	0	26.600
118	0	0	26.600
155	-0.000	9.500	6.600
156	8.000	9.500	6.600
161	8.000	0	6.600
162	0	0	6.600
163	-0.000	9.500	46.600
164	8.000	9.500	46.600
169	8.000	0	46.600
170	0	0	46.600
171	8.000	9.500	39.933
172	8.000	9.500	33.267
173	8.000	9.500	19.933
174	8.000	9.500	13.267
229	0	9.500	39.933
230	0	9.500	13.267
231	0	9.500	19.933
232	0	9.500	33.267
355	28.000	9.500	26.600
356	36.000	9.500	26.600
357	36.000	0	26.600
358	28.000	0	26.600
359	28.000	9.500	6.600
360	36.000	9.500	6.600
361	36.000	0	6.600
362	28.000	0	6.600
363	28.000	9.500	46.600
364	36.000	9.500	46.600
365	36.000	0	46.600
366	28.000	0	46.600
367	36.000	9.500	39.933
368	36.000	9.500	19.933
369	36.000	9.500	33.267
370	36.000	9.500	13.267
371	28.000	9.500	39.933
372	28.000	9.500	13.267
373	28.000	9.500	19.933
374	28.000	9.500	33.267
375	18.000	19.000	46.600
376	18.000	19.000	39.933
377	18.000	19.000	13.267
378	18.000	19.000	6.600
379	18.000	19.000	19.933
380	18.000	19.000	26.600

Nodes Cont...

Node	X (ft)	Y (ft)	Z (ft)
381	18.000	19.000	33.267
383	8.000	13.722	46.600
385	28.000	13.722	46.600
386	18.000	15.500	46.600
394	8.000	13.722	39.933
395	28.000	13.722	39.933
399	8.000	13.722	33.267
400	28.000	13.722	33.267
404	8.000	13.722	26.600
405	28.000	13.722	26.600
409	8.000	13.722	19.933
410	28.000	13.722	19.933
414	8.000	13.722	13.267
415	28.000	13.722	13.267
419	8.000	13.722	6.600
420	28.000	13.722	6.600
423	11.368	15.500	46.600
424	24.632	15.500	46.600
425	18.000	15.500	39.933
426	24.632	15.500	39.933
427	11.368	15.500	39.933
428	18.000	15.500	33.267
429	24.632	15.500	33.267
430	11.368	15.500	33.267
431	18.000	15.500	26.600
432	24.632	15.500	26.600
433	11.368	15.500	26.600
434	18.000	15.500	19.933
435	24.632	15.500	19.933
436	11.368	15.500	19.933
437	18.000	15.500	13.267
438	24.632	15.500	13.267
439	11.368	15.500	13.267
440	18.000	15.500	6.600
441	24.632	15.500	6.600
442	11.368	15.500	6.600
443	13.578	16.666	46.600
444	22.422	16.666	46.600
445	7.116	13.256	46.600
446	28.884	13.256	46.600
447	13.578	16.666	39.933
448	13.578	16.666	13.267
449	13.578	16.666	6.600
450	13.578	16.666	19.933
451	13.578	16.666	26.600
452	13.578	16.666	33.267

Nodes Cont...

Node	X (ft)	Y (ft)	Z (ft)
453	22.422	16.666	39.933
454	22.422	16.666	13.267
455	22.422	16.666	6.600
456	22.422	16.666	19.933
457	22.422	16.666	26.600
458	22.422	16.666	33.267
459	7.116	13.256	39.933
460	7.116	13.256	13.267
461	7.116	13.256	6.600
462	7.116	13.256	19.933
463	7.116	13.256	26.600
464	7.116	13.256	33.267
465	28.884	13.256	39.933
466	28.884	13.256	13.267
467	28.884	13.256	6.600
468	28.884	13.256	19.933
469	28.884	13.256	26.600
470	28.884	13.256	33.267
471	0.925	9.988	46.600
472	35.075	9.988	46.600
473	0.925	9.988	39.933
474	0.925	9.988	13.267
475	0.925	9.988	6.600
476	0.925	9.988	19.933
477	0.925	9.988	26.600
478	0.925	9.988	33.267
479	35.075	9.988	39.933
480	35.075	9.988	13.267
481	35.075	9.988	6.600
482	35.075	9.988	19.933
483	35.075	9.988	26.600
484	35.075	9.988	33.267
485	18.000	0	6.600
486	18.000	9.988	6.600
487	24.632	0	6.600
489	11.368	0	6.600
491	24.632	9.988	6.600
492	11.368	9.988	6.600
493	11.368	0	46.600
495	11.368	9.988	46.600
496	19.968	0	46.600
497	19.968	9.988	46.600
498	19.968	15.500	46.600
499	19.968	6.500	46.600
500	21.968	0	46.600
501	21.968	6.500	46.600

Nodes Cont...

Node	X (ft)	Y (ft)	Z (ft)
502	26.000	0	46.600
503	26.000	6.500	46.600
506	28.000	6.500	46.600

Beams

Beam	Node A	Node B	Length (ft)	Property	β (degrees)
145	99	106	8.000	1	0
173	117	106	9.500	1	0
174	118	99	9.500	1	0
261	155	156	8.000	1	0
265	161	156	9.500	1	0
266	162	155	9.500	1	0
267	163	164	8.000	1	0
271	169	164	9.500	1	0
272	170	163	9.500	1	0
273	164	171	6.667	1	0
274	106	173	6.667	1	0
281	171	172	6.667	1	0
282	172	106	6.667	1	0
283	173	174	6.667	1	0
284	174	156	6.667	1	0
565	355	356	8.000	1	0
566	357	356	9.500	1	0
567	358	355	9.500	1	0
568	359	360	8.000	1	0
569	361	360	9.500	1	0
570	362	359	9.500	1	0
571	363	364	8.000	1	0
572	365	364	9.500	1	0
573	366	506	6.500	1	0
574	364	367	6.667	1	0
575	356	368	6.667	1	0
576	367	369	6.667	1	0
577	369	356	6.667	1	0
578	368	370	6.667	1	0
579	370	360	6.667	1	0
586	375	376	6.667	4	0
587	377	378	6.667	4	0
588	379	377	6.667	4	0
589	380	379	6.667	4	0
590	381	380	6.667	4	0
591	376	381	6.667	4	0
594	164	383	4.222	3	0
595	383	445	1.000	2	0

Beams Cont...

Beam	Node A	Node B	Length (ft)	Property	β (degrees)
596	363	385	4.222	3	0
597	385	446	1.000	2	0
601	375	443	5.000	2	0
602	375	444	5.000	2	0
607	171	394	4.222	3	0
608	394	459	1.000	2	0
609	371	395	4.222	3	0
610	395	465	1.000	2	0
613	376	447	5.000	2	0
614	376	453	5.000	2	0
618	172	399	4.222	3	0
619	399	464	1.000	2	0
620	374	400	4.222	3	0
621	400	470	1.000	2	0
624	381	452	5.000	2	0
625	381	458	5.000	2	0
629	106	404	4.222	3	0
630	404	463	1.000	2	0
631	355	405	4.222	3	0
632	405	469	1.000	2	0
635	380	451	5.000	2	0
636	380	457	5.000	2	0
640	173	409	4.222	3	0
641	409	462	1.000	2	0
642	373	410	4.222	3	0
643	410	468	1.000	2	0
646	379	450	5.000	2	0
647	379	456	5.000	2	0
651	174	414	4.222	3	0
652	414	460	1.000	2	0
653	372	415	4.222	3	0
654	415	466	1.000	2	0
657	377	448	5.000	2	0
658	377	454	5.000	2	0
662	156	419	4.222	3	0
663	419	461	1.000	2	0
664	359	420	4.222	3	0
665	420	467	1.000	2	0
668	378	449	5.000	2	0
669	378	455	5.000	2	0
670	386	498	1.968	2	0
672	423	383	3.809	2	0
673	424	385	3.809	2	0
675	423	386	6.632	2	0
676	375	386	3.500	2	0
677	426	395	3.809	2	0

Beams Cont...

Beam	Node A	Node B	Length (ft)	Property	β (degrees)
678	425	426	6.632	2	0
679	427	394	3.809	2	0
680	427	425	6.632	2	0
681	376	425	3.500	2	0
682	429	400	3.809	2	0
683	428	429	6.632	2	0
684	430	399	3.809	2	0
685	430	428	6.632	2	0
686	381	428	3.500	2	0
687	432	405	3.809	2	0
688	431	432	6.632	2	0
689	433	404	3.809	2	0
690	433	431	6.632	2	0
691	380	431	3.500	2	0
692	435	410	3.809	2	0
693	434	435	6.632	2	0
694	436	409	3.809	2	0
695	436	434	6.632	2	0
696	379	434	3.500	2	0
697	438	415	3.809	2	0
698	437	438	6.632	2	0
699	439	414	3.809	2	0
700	439	437	6.632	2	0
701	377	437	3.500	2	0
702	441	420	3.809	2	0
703	440	441	6.632	2	0
704	442	419	3.809	2	0
705	442	440	6.632	2	0
706	378	440	3.500	2	0
707	443	423	2.499	2	0
708	444	424	2.499	2	0
709	445	471	7.000	2	0
710	446	472	7.000	2	0
711	447	427	2.499	2	0
712	443	447	6.667	4	0
713	448	439	2.499	2	0
714	449	442	2.499	2	0
715	448	449	6.667	4	0
716	450	436	2.499	2	0
717	450	448	6.667	4	0
718	451	433	2.499	2	0
719	451	450	6.667	4	0
720	452	430	2.499	2	0
721	452	451	6.667	4	0
722	447	452	6.667	4	0
723	453	426	2.499	2	0

Beams Cont...

Beam	Node A	Node B	Length (ft)	Property	β (degrees)
724	444	453	6.667	4	0
725	454	438	2.499	2	0
726	455	441	2.499	2	0
727	454	455	6.667	4	0
728	456	435	2.499	2	0
729	456	454	6.667	4	0
730	457	432	2.499	2	0
731	457	456	6.667	4	0
732	458	429	2.499	2	0
733	458	457	6.667	4	0
734	453	458	6.667	4	0
735	459	473	7.000	2	0
736	445	459	6.667	4	0
737	460	474	7.000	2	0
738	461	475	7.000	2	0
739	460	461	6.667	4	0
740	462	476	7.000	2	0
741	462	460	6.667	4	0
742	463	477	7.000	2	0
743	463	462	6.667	4	0
744	464	478	7.000	2	0
745	464	463	6.667	4	0
746	459	464	6.667	4	0
747	465	479	7.000	2	0
748	446	465	6.667	4	0
749	466	480	7.000	2	0
750	467	481	7.000	2	0
751	466	467	6.667	4	0
752	468	482	7.000	2	0
753	468	466	6.667	4	0
754	469	483	7.000	2	0
755	469	468	6.667	4	0
756	470	484	7.000	2	0
757	470	469	6.667	4	0
758	465	470	6.667	4	0
759	471	163	1.046	2	0
760	472	364	1.046	2	0
761	473	229	1.046	2	0
762	471	473	6.667	4	0
763	474	230	1.046	2	0
764	475	155	1.046	2	0
765	474	475	6.667	4	0
766	476	231	1.046	2	0
767	476	474	6.667	4	0
768	477	99	1.046	2	0
769	477	476	6.667	4	0

Beams Cont...

Beam	Node A	Node B	Length (ft)	Property	β (degrees)
770	478	232	1.046	2	0
771	478	477	6.667	4	0
772	473	478	6.667	4	0
773	479	367	1.046	2	0
774	472	479	6.667	4	0
775	480	370	1.046	2	0
776	481	360	1.046	2	0
777	480	481	6.667	4	0
778	482	368	1.046	2	0
779	482	480	6.667	4	0
780	483	356	1.046	2	0
781	483	482	6.667	4	0
782	484	369	1.046	2	0
783	484	483	6.667	4	0
784	479	484	6.667	4	0
785	485	486	9.988	4	0
786	486	440	5.512	4	0
787	481	491	10.443	4	0
788	486	492	6.632	4	0
789	487	491	9.988	4	0
790	491	441	5.512	4	0
791	489	492	9.988	4	0
792	492	442	5.512	4	0
793	491	486	6.632	4	0
794	492	475	10.443	4	0
795	493	495	9.988	4	0
796	495	423	5.512	4	0
797	472	497	15.107	4	0
799	495	471	10.443	4	0
800	497	495	8.600	4	0
801	496	499	6.500	4	0
802	498	424	4.663	2	0
803	497	498	5.512	4	0
804	499	497	3.488	4	0
805	500	501	6.500	4	0
806	502	503	6.500	4	0
807	503	506	2.000	4	0
808	501	503	4.032	4	0
809	499	501	2.000	4	0
810	506	363	3.000	1	0
811	502	366	2.000	4	0
812	500	502	4.032	4	0
813	496	500	2.000	4	0
814	163	229	6.667	1	0
815	99	231	6.667	1	0
816	229	232	6.667	1	0

Beams Cont...

Beam	Node A	Node B	Length (ft)	Property	β (degrees)
817	232	99	6.667	1	0
818	231	230	6.667	1	0
819	230	155	6.667	1	0
820	363	371	6.667	1	0
821	355	373	6.667	1	0
822	371	374	6.667	1	0
823	374	355	6.667	1	0
824	373	372	6.667	1	0
825	372	359	6.667	1	0

Section Properties

Prop	Section	Area (in^2)	I_{yy} (in^4)	I_{zz} (in^4)	J (in^4)	Material
1	HSST3X3X0.375	3.390	3.780	3.780	6.502	STEEL
2	TUB1401405.0	4.085	18.993	18.993	29.555	STEEL
3	TUB1401405.0	4.085	18.993	18.993	29.555	STEEL
4	TUB1001005.0	2.845	6.513	6.513	10.299	STEEL

Materials

Mat	Name	E (kip/in^2)	ν	Density (kip/in^3)	α (/°F)
1	STEEL	29E+3	0.300	0.000	6.5E -6
2	CONCRETE	3.15E+3	0.170	8.68e-05	5.5E -6
3	ALUMINUM	10E+3	0.330	9.8e-05	12.8E -6
4	STAINLESSSTEEL	28E+3	0.300	0.000	9.9E -6
5	STEEL_36_KSI	29E+3	0.300	0.000	6.5E -6
6	STEEL_50_KSI	29E+3	0.300	0.000	6.5E -6
7	STEEL_275_NMM2	29.7E+3	0.300	0.000	6.67E -6
8	STEEL_355_NMM2	29.7E+3	0.300	0.000	6.67E -6
9	Q235	29.9E+3	0.300	0.000	6.67E -6
10	Q345	29.9E+3	0.300	0.000	6.67E -6
11	Q355	29.9E+3	0.300	0.000	6.67E -6
12	Q390	29.9E+3	0.300	0.000	6.67E -6
13	Q420	29.9E+3	0.300	0.000	6.67E -6
14	Q460	29.9E+3	0.300	0.000	6.67E -6
15	TIMBER	1.5E+3	0.150	0.000	3E -6
16	SPFR_SS_2X6	1.5E+3	0.150	0.000	3E -6

Supports

Node	X (kip/in)	Y (kip/in)	Z (kip/in)	rX (kip-ft/deg)	rY (kip-ft/deg)	rZ (kip-ft/deg)
117	Fixed	Fixed	Fixed	-	-	-
118	Fixed	Fixed	Fixed	-	-	-
161	Fixed	Fixed	Fixed	-	-	-
162	Fixed	Fixed	Fixed	-	-	-
169	Fixed	Fixed	Fixed	-	-	-
170	Fixed	Fixed	Fixed	-	-	-
357	Fixed	Fixed	Fixed	-	-	-
358	Fixed	Fixed	Fixed	-	-	-
361	Fixed	Fixed	Fixed	-	-	-
362	Fixed	Fixed	Fixed	-	-	-
365	Fixed	Fixed	Fixed	-	-	-
366	Fixed	Fixed	Fixed	-	-	-
485	Fixed	Fixed	Fixed	-	-	-
487	Fixed	Fixed	Fixed	-	-	-
489	Fixed	Fixed	Fixed	-	-	-
493	Fixed	Fixed	Fixed	-	-	-
496	Fixed	Fixed	Fixed	-	-	-

Primary Load Cases

Number	Name	Type
1	+X	None
2	-X	None
3	+Z	None
4	-Z	None
5	DL	Dead
6	LL	Roof Live
7	WL1	Wind
8	WL2	Wind
9	WL3	Wind
10	WL4	Wind
11	WL5	Wind
12	WL6	Wind
13	WL7	Wind
14	WL8	Wind
15	SL	Snow

Combination Load Cases

Comb.	Combination L/C Name	Primary	Primary L/C Name	Factor
101	COMB - 1 DEAD	5	DL	1.00
102	COMB - 1 DEAD + 1 ROOF LIVE	5	DL	1.00
		6	LL	1.00
103	COMB - 1 DEAD + 1 SNOW	5	DL	1.00
		15	SL	1.00
104	COMB - 1 DEAD + 0.75 ROOF LIVE	5	DL	1.00
		6	LL	0.75
105	COMB - 1 DEAD + 0.75 SNOW	5	DL	1.00
		15	SL	0.75
106	COMB - 1 DEAD + 0.6 WIND (1)	5	DL	1.00
		7	WL1	0.60
107	COMB - 1 DEAD + 0.6 WIND (2)	5	DL	1.00
		8	WL2	0.60
108	COMB - 1 DEAD + 0.6 WIND (3)	5	DL	1.00
		9	WL3	0.60
109	COMB - 1 DEAD + 0.6 WIND (4)	5	DL	1.00
		10	WL4	0.60
110	COMB - 1 DEAD + 0.6 WIND (5)	5	DL	1.00
		11	WL5	0.60
111	COMB - 1 DEAD + 0.6 WIND (6)	5	DL	1.00
		12	WL6	0.60
112	COMB - 1 DEAD + 0.6 WIND (7)	5	DL	1.00
		13	WL7	0.60
113	COMB - 1 DEAD + 0.6 WIND (8)	5	DL	1.00
		14	WL8	0.60
114	COMB - 1 DEAD + 0.6 SEISMIC-H (1)	5	DL	1.00
		1	+X	0.60
115	COMB - 1 DEAD + 0.6 SEISMIC-H (2)	5	DL	1.00
		2	-X	0.60
116	COMB - 1 DEAD + 0.6 SEISMIC-H (3)	5	DL	1.00
		3	+Z	0.60
117	COMB - 1 DEAD + 0.6 SEISMIC-H (4)	5	DL	1.00
		4	-Z	0.60
118	COMB - 1 DEAD + 0.75 ROOF LIVE + 0.4	5	DL	1.00
		6	LL	0.75
		7	WL1	0.45
119	COMB - 1 DEAD + 0.75 ROOF LIVE + 0.4	5	DL	1.00
		6	LL	0.75
		8	WL2	0.45
120	COMB - 1 DEAD + 0.75 ROOF LIVE + 0.4	5	DL	1.00
		6	LL	0.75
		9	WL3	0.45
121	COMB - 1 DEAD + 0.75 ROOF LIVE + 0.4	5	DL	1.00
		6	LL	0.75
		10	WL4	0.45
122	COMB - 1 DEAD + 0.75 ROOF LIVE + 0.4	5	DL	1.00

Combination Load Cases Cont...

Comb.	Combination L/C Name	Primary	Primary L/C Name	Factor
		6	LL	0.75
		11	WL5	0.45
123	COMB - 1 DEAD + 0.75 ROOF LIVE + 0.4	5	DL	1.00
		6	LL	0.75
		12	WL6	0.45
124	COMB - 1 DEAD + 0.75 ROOF LIVE + 0.4	5	DL	1.00
		6	LL	0.75
		13	WL7	0.45
125	COMB - 1 DEAD + 0.75 ROOF LIVE + 0.4	5	DL	1.00
		6	LL	0.75
		14	WL8	0.45
126	COMB - 1 DEAD + 0.45 WIND + 0.75 SNC	5	DL	1.00
		7	WL1	0.45
		15	SL	0.75
127	COMB - 1 DEAD + 0.45 WIND + 0.75 SNC	5	DL	1.00
		8	WL2	0.45
		15	SL	0.75
128	COMB - 1 DEAD + 0.45 WIND + 0.75 SNC	5	DL	1.00
		9	WL3	0.45
		15	SL	0.75
129	COMB - 1 DEAD + 0.45 WIND + 0.75 SNC	5	DL	1.00
		10	WL4	0.45
		15	SL	0.75
130	COMB - 1 DEAD + 0.45 WIND + 0.75 SNC	5	DL	1.00
		11	WL5	0.45
		15	SL	0.75
131	COMB - 1 DEAD + 0.45 WIND + 0.75 SNC	5	DL	1.00
		12	WL6	0.45
		15	SL	0.75
132	COMB - 1 DEAD + 0.45 WIND + 0.75 SNC	5	DL	1.00
		13	WL7	0.45
		15	SL	0.75
133	COMB - 1 DEAD + 0.45 WIND + 0.75 SNC	5	DL	1.00
		14	WL8	0.45
		15	SL	0.75
134	COMB - 1 DEAD + 0.75 ROOF LIVE + 0.4	5	DL	1.00
		6	LL	0.75
		1	+X	0.45
135	COMB - 1 DEAD + 0.75 ROOF LIVE + 0.4	5	DL	1.00
		6	LL	0.75
		2	-X	0.45
136	COMB - 1 DEAD + 0.75 ROOF LIVE + 0.4	5	DL	1.00
		6	LL	0.75
		3	+Z	0.45
137	COMB - 1 DEAD + 0.75 ROOF LIVE + 0.4	5	DL	1.00
		6	LL	0.75

Combination Load Cases Cont...

Comb.	Combination L/C Name	Primary	Primary L/C Name	Factor
		4	-Z	0.45
138	COMB - 1 DEAD + 0.45 SEISMIC-H + 0.7	5	DL	1.00
		1	+X	0.45
		15	SL	0.75
139	COMB - 1 DEAD + 0.45 SEISMIC-H + 0.7	5	DL	1.00
		2	-X	0.45
		15	SL	0.75
140	COMB - 1 DEAD + 0.45 SEISMIC-H + 0.7	5	DL	1.00
		3	+Z	0.45
		15	SL	0.75
141	COMB - 1 DEAD + 0.45 SEISMIC-H + 0.7	5	DL	1.00
		4	-Z	0.45
		15	SL	0.75
142	COMB - 0.6 DEAD + 0.6 WIND (1)	5	DL	0.60
		7	WL1	0.60
143	COMB - 0.6 DEAD + 0.6 WIND (2)	5	DL	0.60
		8	WL2	0.60
144	COMB - 0.6 DEAD + 0.6 WIND (3)	5	DL	0.60
		9	WL3	0.60
145	COMB - 0.6 DEAD + 0.6 WIND (4)	5	DL	0.60
		10	WL4	0.60
146	COMB - 0.6 DEAD + 0.6 WIND (5)	5	DL	0.60
		11	WL5	0.60
147	COMB - 0.6 DEAD + 0.6 WIND (6)	5	DL	0.60
		12	WL6	0.60
148	COMB - 0.6 DEAD + 0.6 WIND (7)	5	DL	0.60
		13	WL7	0.60
149	COMB - 0.6 DEAD + 0.6 WIND (8)	5	DL	0.60
		14	WL8	0.60
150	COMB - 0.6 DEAD + 0.6 SEISMIC-H (1)	5	DL	0.60
		1	+X	0.60
151	COMB - 0.6 DEAD + 0.6 SEISMIC-H (2)	5	DL	0.60
		2	-X	0.60
152	COMB - 0.6 DEAD + 0.6 SEISMIC-H (3)	5	DL	0.60
		3	+Z	0.60
153	COMB - 0.6 DEAD + 0.6 SEISMIC-H (4)	5	DL	0.60
		4	-Z	0.60

Node Displacement Summary

	Node	L/C	X (ft)	Y (ft)	Z (ft)	Resultant (ft)	rX (rad)	rY (rad)	rZ (rad)
Max X	461	1:+X	**0.274**	-0.001	-0.051	0.279	0.000	-0.004	0.000
Min X	467	2:-X	**-0.274**	-0.001	-0.048	0.278	0.000	0.004	-0.000
Max Y	230	12:WL6	-0.004	**0.026**	-0.092	0.096	-0.002	-0.000	-0.000
Min Y	458	103:COMB - 1	-0.000	**-0.047**	0.002	0.047	0.002	-0.001	0.000
Max Z	378	3:+Z	-0.003	0.000	**0.443**	0.443	0.003	0.000	0.000
Min Z	378	4:-Z	0.003	-0.000	**-0.443**	0.443	-0.003	-0.000	-0.000
Max rX	118	3:+Z	0	0	0	0	**0.067**	0.002	0.000
Min rX	118	4:-Z	0	0	0	0	**-0.067**	-0.002	-0.000
Max rY	503	4:-Z	-0.001	-0.000	-0.328	0.328	-0.046	**0.010**	0.000
Min rY	503	3:+Z	0.001	0.000	0.327	0.327	0.046	**-0.010**	-0.000
Max rZ	362	2:-X	0	0	0	0	-0.006	0.004	**0.042**
Min rZ	161	1:+X	0	0	0	0	-0.007	-0.004	**-0.042**
Max Rst	378	3:+Z	-0.003	0.000	0.443	**0.443**	0.003	0.000	0.000

Beam Displacement Detail Summary

Displacements shown in italic indicate the presence of an offset

	Beam	L/C	d (ft)	X (ft)	Y (ft)	Z (ft)	Resultant (ft)
Max X	792	1:+X	2.205	**0.276**	0.000	-0.030	0.278
Min X	790	2:-X	2.205	**-0.276**	0.000	-0.028	0.278
Max Y	767	12:WL6	4.667	-0.004	**0.028**	-0.093	0.097
Min Y	734	103:COMB - 1	3.333	-0.002	**-0.050**	0.002	0.050
Max Z	587	3:+Z	6.667	-0.003	0.000	**0.443**	0.443
Min Z	587	4:-Z	6.667	0.003	-0.000	**-0.443**	0.443
Max Rst	587	3:+Z	6.667	-0.003	0.000	0.443	**0.443**

Beam End Displacement Summary

Displacements shown in italic indicate the presence of an offset

	Beam	Node	L/C	X (ft)	Y (ft)	Z (ft)	Resultant (ft)
Max X	663	461	1:+X	**0.274**	-0.001	-0.051	0.279
Min X	665	467	2:-X	**-0.274**	-0.001	-0.048	0.278
Max Y	763	230	12:WL6	-0.004	**0.026**	-0.092	0.096
Min Y	625	458	103:COMB - 1	-0.000	**-0.047**	0.002	0.047
Max Z	587	378	3:+Z	-0.003	0.000	**0.443**	0.443
Min Z	587	378	4:-Z	0.003	-0.000	**-0.443**	0.443
Max Rst	587	378	3:+Z	-0.003	0.000	0.443	**0.443**

Beam End Force Summary

The signs of the forces at end B of each beam have been reversed. For example: this means that the Min Fx entry gives the largest tension value for an beam.

				Axial	Shear		Torsion	Bending	
	Beam	Node	L/C	Fx (kip)	Fy (kip)	Fz (kip)	Mx (kip-ft)	My (kip-ft)	Mz (kip-ft)
Max Fx	567	358	103:COMB - 1	**14.729**	0.014	-0.005	0	0.000	-0.000
Min Fx	688	431	103:COMB - 1	**-10.189**	1.227	-0.000	0.003	0.000	2.163
Max Fy	632	405	103:COMB - 1	-4.070	**4.624**	0.020	-0.027	-0.032	7.296
Min Fy	687	405	103:COMB - 1	2.432	**-5.573**	-0.005	0.008	-0.016	11.411
Max Fz	760	472	4:-Z	-0.274	0.148	**3.144**	4.344	1.146	0.154
Min Fz	766	476	140:COMB - 1	0.188	-0.093	**-2.923**	-0.409	1.637	-0.059
Max Mx	768	477	3:+Z	0.007	-0.002	2.047	**4.626**	1.361	0.018
Min Mx	768	477	4:-Z	0.008	0.006	-2.047	**-4.626**	-1.360	-0.014
Max My	810	363	4:-Z	-0.943	-0.045	1.993	1.290	**12.157**	0.085
Min My	810	363	3:+Z	0.974	0.045	-1.981	-1.275	**-12.090**	-0.086
Max Mz	687	405	103:COMB - 1	2.432	-5.573	-0.005	0.008	-0.016	**11.411**
Min Mz	785	486	1:+X	-0.351	0.966	0.001	-0	0.008	**-9.652**

Reaction Summary

			Horizontal	Vertical	Horizontal	Moment		
	Node	L/C	FX (kip)	FY (kip)	FZ (kip)	MX (kip-ft)	MY (kip-ft)	MZ (kip-ft)
Max FX	496	2:-X	**3.198**	5.690	-0.163	0	0	0
Min FX	496	1:+X	**-3.195**	-6.414	0.161	0	0	0
Max FY	358	103:COMB - 1	-0.014	**14.729**	-0.005	0	0	0
Min FY	496	1:+X	-3.195	**-6.414**	0.161	0	0	0
Max FZ	366	4:-Z	0.031	-1.007	**1.716**	0	0	0
Min FZ	366	3:+Z	-0.031	1.037	**-1.707**	0	0	0
Max MX	117	1:+X	-0.482	2.136	0.104	**0**	0	0
Min MX	117	1:+X	-0.482	2.136	0.104	**0**	0	0
Max MY	117	1:+X	-0.482	2.136	0.104	0	**0**	0
Min MY	117	1:+X	-0.482	2.136	0.104	0	**0**	0
Max MZ	117	1:+X	-0.482	2.136	0.104	0	0	**0**
Min MZ	117	1:+X	-0.482	2.136	0.104	0	0	**0**

Utilization Ratio

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
145	HSST3X3	N/A						3.390	3.780	3.780	6.640
173	HSST3X3	N/A						3.390	3.780	3.780	6.640
174	HSST3X3	N/A						3.390	3.780	3.780	6.640
261	HSST3X3	N/A						3.390	3.780	3.780	6.640
265	HSST3X3	N/A						3.390	3.780	3.780	6.640
266	HSST3X3	N/A						3.390	3.780	3.780	6.640
267	HSST3X3	N/A						3.390	3.780	3.780	6.640
271	HSST3X3	N/A						3.390	3.780	3.780	6.640
272	HSST3X3	N/A						3.390	3.780	3.780	6.640
273	HSST3X3	N/A						3.390	3.780	3.780	6.640
274	HSST3X3	N/A						3.390	3.780	3.780	6.640
281	HSST3X3	N/A						3.390	3.780	3.780	6.640
282	HSST3X3	N/A						3.390	3.780	3.780	6.640
283	HSST3X3	N/A						3.390	3.780	3.780	6.640
284	HSST3X3	N/A						3.390	3.780	3.780	6.640
565	HSST3X3	N/A						3.390	3.780	3.780	6.640
566	HSST3X3	N/A						3.390	3.780	3.780	6.640
567	HSST3X3	N/A						3.390	3.780	3.780	6.640
568	HSST3X3	N/A						3.390	3.780	3.780	6.640
569	HSST3X3	N/A						3.390	3.780	3.780	6.640
570	HSST3X3	N/A						3.390	3.780	3.780	6.640
571	HSST3X3	N/A						3.390	3.780	3.780	6.640
572	HSST3X3	N/A						3.390	3.780	3.780	6.640
573	HSST3X3	N/A						3.390	3.780	3.780	6.640
574	HSST3X3	N/A						3.390	3.780	3.780	6.640
575	HSST3X3	N/A						3.390	3.780	3.780	6.640
576	HSST3X3	N/A						3.390	3.780	3.780	6.640
577	HSST3X3	N/A						3.390	3.780	3.780	6.640
578	HSST3X3	N/A						3.390	3.780	3.780	6.640
579	HSST3X3	N/A						3.390	3.780	3.780	6.640
586	TUB1001(	TUB1001(	0.486	1.000	0.486	Eq.H1-1b	139	2.845	6.513	6.513	10.299
587	TUB1001(	TUB1001(	0.487	1.000	0.487	Eq.H1-1b	103	2.845	6.513	6.513	10.299
588	TUB1001(	TUB1001(	0.152	1.000	0.152	Eq.H1-1b	140	2.845	6.513	6.513	10.299
589	TUB1001(	TUB1001(	0.466	1.000	0.466	Eq.H1-1b	103	2.845	6.513	6.513	10.299
590	TUB1001(	TUB1001(	0.467	1.000	0.467	Eq.H1-1b	103	2.845	6.513	6.513	10.299
591	TUB1001(	TUB1001(	0.172	1.000	0.172	Eq.H1-1b	139	2.845	6.513	6.513	10.299
594	TUB1401⁴	TUB1401⁴	0.376	1.000	0.376	Eq.H1-1b	141	4.085	18.993	18.993	29.555
595	TUB1401⁴	TUB1401⁴	0.276	1.000	0.276	Eq.H1-1b	103	4.085	18.993	18.993	29.555
596	TUB1401⁴	TUB1401⁴	0.421	1.000	0.421	Eq.H1-1b	141	4.085	18.993	18.993	29.555
597	TUB1401⁴	TUB1401⁴	0.313	1.000	0.313	Eq.H1-1b	103	4.085	18.993	18.993	29.555
601	TUB1401⁴	TUB1401⁴	0.281	1.000	0.281	Eq.H1-1b	103	4.085	18.993	18.993	29.555
602	TUB1401⁴	TUB1401⁴	0.262	1.000	0.262	Eq.H1-1b	103	4.085	18.993	18.993	29.555
607	TUB1401⁴	TUB1401⁴	0.241	1.000	0.241	Eq.H1-1b	140	4.085	18.993	18.993	29.555
608	TUB1401⁴	TUB1401⁴	0.216	1.000	0.216	Eq.H3-6	140	4.085	18.993	18.993	29.555
609	TUB1401⁴	TUB1401⁴	0.245	1.000	0.245	Eq.H1-1b	140	4.085	18.993	18.993	29.555
610	TUB1401⁴	TUB1401⁴	0.230	1.000	0.230	Eq.H3-6	140	4.085	18.993	18.993	29.555

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
613	TUB1401⁄	TUB1401⁄	0.205	1.000	0.205	Eq.H1-1b	103	4.085	18.993	18.993	29.555
614	TUB1401⁄	TUB1401⁄	0.205	1.000	0.205	Eq.H1-1b	103	4.085	18.993	18.993	29.555
618	TUB1401⁄	TUB1401⁄	0.317	1.000	0.317	Eq.H1-1b	141	4.085	18.993	18.993	29.555
619	TUB1401⁄	TUB1401⁄	0.289	1.000	0.289	Eq.H3-6	141	4.085	18.993	18.993	29.555
620	TUB1401⁄	TUB1401⁄	0.327	1.000	0.327	Eq.H1-1b	141	4.085	18.993	18.993	29.555
621	TUB1401⁄	TUB1401⁄	0.306	1.000	0.306	Eq.H3-6	141	4.085	18.993	18.993	29.555
624	TUB1401⁄	TUB1401⁄	0.202	1.000	0.202	Eq.H1-1b	103	4.085	18.993	18.993	29.555
625	TUB1401⁄	TUB1401⁄	0.203	1.000	0.203	Eq.H1-1b	103	4.085	18.993	18.993	29.555
629	TUB1401⁄	TUB1401⁄	0.271	1.000	0.271	Eq.H1-1b	103	4.085	18.993	18.993	29.555
630	TUB1401⁄	TUB1401⁄	0.399	1.000	0.399	Eq.H1-1b	103	4.085	18.993	18.993	29.555
631	TUB1401⁄	TUB1401⁄	0.272	1.000	0.272	Eq.H1-1b	103	4.085	18.993	18.993	29.555
632	TUB1401⁄	TUB1401⁄	0.401	1.000	0.401	Eq.H1-1b	103	4.085	18.993	18.993	29.555
635	TUB1401⁄	TUB1401⁄	0.266	1.000	0.266	Eq.H1-1b	103	4.085	18.993	18.993	29.555
636	TUB1401⁄	TUB1401⁄	0.266	1.000	0.266	Eq.H1-1b	103	4.085	18.993	18.993	29.555
640	TUB1401⁄	TUB1401⁄	0.319	1.000	0.319	Eq.H1-1b	140	4.085	18.993	18.993	29.555
641	TUB1401⁄	TUB1401⁄	0.294	1.000	0.294	Eq.H3-6	140	4.085	18.993	18.993	29.555
642	TUB1401⁄	TUB1401⁄	0.327	1.000	0.327	Eq.H1-1b	140	4.085	18.993	18.993	29.555
643	TUB1401⁄	TUB1401⁄	0.306	1.000	0.306	Eq.H3-6	140	4.085	18.993	18.993	29.555
646	TUB1401⁄	TUB1401⁄	0.203	1.000	0.203	Eq.H1-1b	103	4.085	18.993	18.993	29.555
647	TUB1401⁄	TUB1401⁄	0.202	1.000	0.202	Eq.H1-1b	103	4.085	18.993	18.993	29.555
651	TUB1401⁄	TUB1401⁄	0.239	1.000	0.239	Eq.H1-1b	141	4.085	18.993	18.993	29.555
652	TUB1401⁄	TUB1401⁄	0.213	1.000	0.213	Eq.H3-6	141	4.085	18.993	18.993	29.555
653	TUB1401⁄	TUB1401⁄	0.248	1.000	0.248	Eq.H1-1b	141	4.085	18.993	18.993	29.555
654	TUB1401⁄	TUB1401⁄	0.226	1.000	0.226	Eq.H3-6	141	4.085	18.993	18.993	29.555
657	TUB1401⁄	TUB1401⁄	0.204	1.000	0.204	Eq.H1-1b	103	4.085	18.993	18.993	29.555
658	TUB1401⁄	TUB1401⁄	0.205	1.000	0.205	Eq.H1-1b	103	4.085	18.993	18.993	29.555
662	TUB1401⁄	TUB1401⁄	0.380	1.000	0.380	Eq.H1-1b	140	4.085	18.993	18.993	29.555
663	TUB1401⁄	TUB1401⁄	0.275	1.000	0.275	Eq.H1-1b	103	4.085	18.993	18.993	29.555
664	TUB1401⁄	TUB1401⁄	0.371	1.000	0.371	Eq.H1-1b	140	4.085	18.993	18.993	29.555
665	TUB1401⁄	TUB1401⁄	0.277	1.000	0.277	Eq.H1-1b	103	4.085	18.993	18.993	29.555
668	TUB1401⁄	TUB1401⁄	0.269	1.000	0.269	Eq.H1-1b	140	4.085	18.993	18.993	29.555
669	TUB1401⁄	TUB1401⁄	0.268	1.000	0.268	Eq.H1-1b	103	4.085	18.993	18.993	29.555
670	TUB1401⁄	TUB1401⁄	0.221	1.000	0.221	Eq.H1-1b	103	4.085	18.993	18.993	29.555
672	TUB1401⁄	TUB1401⁄	0.114	1.000	0.114	Eq.H1-1b	103	4.085	18.993	18.993	29.555
673	TUB1401⁄	TUB1401⁄	0.201	1.000	0.201	Eq.H1-1b	103	4.085	18.993	18.993	29.555
675	TUB1401⁄	TUB1401⁄	0.148	1.000	0.148	Eq.H1-1b	141	4.085	18.993	18.993	29.555
676	TUB1401⁄	TUB1401⁄	0.145	1.000	0.145	Eq.H1-1b	140	4.085	18.993	18.993	29.555
677	TUB1401⁄	TUB1401⁄	0.132	1.000	0.132	Eq.H1-1b	138	4.085	18.993	18.993	29.555
678	TUB1401⁄	TUB1401⁄	0.098	1.000	0.098	Eq.H1-1b	103	4.085	18.993	18.993	29.555
679	TUB1401⁄	TUB1401⁄	0.129	1.000	0.129	Eq.H1-1b	139	4.085	18.993	18.993	29.555
680	TUB1401⁄	TUB1401⁄	0.096	1.000	0.096	Eq.H1-1b	103	4.085	18.993	18.993	29.555
681	TUB1401⁄	TUB1401⁄	0.083	1.000	0.083	Eq.H1-1b	103	4.085	18.993	18.993	29.555
682	TUB1401⁄	TUB1401⁄	0.107	1.000	0.107	Eq.H1-1b	103	4.085	18.993	18.993	29.555
683	TUB1401⁄	TUB1401⁄	0.097	1.000	0.097	Eq.H1-1b	103	4.085	18.993	18.993	29.555
684	TUB1401⁄	TUB1401⁄	0.106	1.000	0.106	Eq.H1-1b	103	4.085	18.993	18.993	29.555
685	TUB1401⁄	TUB1401⁄	0.097	1.000	0.097	Eq.H1-1b	103	4.085	18.993	18.993	29.555

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
686	TUB1401⁄	TUB1401⁄	0.066	1.000	0.066	Eq.H1-1b	141	4.085	18.993	18.993	29.555
687	TUB1401⁄	TUB1401⁄	0.608	1.000	0.608	Eq.H1-1b	103	4.085	18.993	18.993	29.555
688	TUB1401⁄	TUB1401⁄	0.341	1.000	0.341	Eq.H1-1b	103	4.085	18.993	18.993	29.555
689	TUB1401⁄	TUB1401⁄	0.607	1.000	0.607	Eq.H1-1b	103	4.085	18.993	18.993	29.555
690	TUB1401⁄	TUB1401⁄	0.341	1.000	0.341	Eq.H1-1b	103	4.085	18.993	18.993	29.555
691	TUB1401⁄	TUB1401⁄	0.022	1.000	0.022	Cl.D2	103	4.085	18.993	18.993	29.555
692	TUB1401⁄	TUB1401⁄	0.106	1.000	0.106	Eq.H1-1b	103	4.085	18.993	18.993	29.555
693	TUB1401⁄	TUB1401⁄	0.097	1.000	0.097	Eq.H1-1b	103	4.085	18.993	18.993	29.555
694	TUB1401⁄	TUB1401⁄	0.106	1.000	0.106	Eq.H1-1b	103	4.085	18.993	18.993	29.555
695	TUB1401⁄	TUB1401⁄	0.097	1.000	0.097	Eq.H1-1b	103	4.085	18.993	18.993	29.555
696	TUB1401⁄	TUB1401⁄	0.068	1.000	0.068	Eq.H1-1b	140	4.085	18.993	18.993	29.555
697	TUB1401⁄	TUB1401⁄	0.112	1.000	0.112	Eq.H1-1b	138	4.085	18.993	18.993	29.555
698	TUB1401⁄	TUB1401⁄	0.097	1.000	0.097	Eq.H1-1b	103	4.085	18.993	18.993	29.555
699	TUB1401⁄	TUB1401⁄	0.111	1.000	0.111	Eq.H1-1b	139	4.085	18.993	18.993	29.555
700	TUB1401⁄	TUB1401⁄	0.097	1.000	0.097	Eq.H1-1b	103	4.085	18.993	18.993	29.555
701	TUB1401⁄	TUB1401⁄	0.083	1.000	0.083	Eq.H1-1b	141	4.085	18.993	18.993	29.555
702	TUB1401⁄	TUB1401⁄	0.117	1.000	0.117	Eq.H1-1b	103	4.085	18.993	18.993	29.555
703	TUB1401⁄	TUB1401⁄	0.166	1.000	0.166	Eq.H1-1b	140	4.085	18.993	18.993	29.555
704	TUB1401⁄	TUB1401⁄	0.116	1.000	0.116	Eq.H1-1b	103	4.085	18.993	18.993	29.555
705	TUB1401⁄	TUB1401⁄	0.166	1.000	0.166	Eq.H1-1b	140	4.085	18.993	18.993	29.555
706	TUB1401⁄	TUB1401⁄	0.170	1.000	0.170	Eq.H1-1b	117	4.085	18.993	18.993	29.555
707	TUB1401⁄	TUB1401⁄	0.129	1.000	0.129	Cl.H3.1	140	4.085	18.993	18.993	29.555
708	TUB1401⁄	TUB1401⁄	0.131	1.000	0.131	Eq.H1-1b	103	4.085	18.993	18.993	29.555
709	TUB1401⁄	TUB1401⁄	0.160	1.000	0.160	Eq.H1-1b	139	4.085	18.993	18.993	29.555
710	TUB1401⁄	TUB1401⁄	0.169	1.000	0.169	Eq.H1-1b	138	4.085	18.993	18.993	29.555
711	TUB1401⁄	TUB1401⁄	0.091	1.000	0.091	Eq.H1-1b	139	4.085	18.993	18.993	29.555
712	TUB1001(	TUB1001(	0.556	1.000	0.556	Eq.H1-1b	139	2.845	6.513	6.513	10.299
713	TUB1401⁄	TUB1401⁄	0.067	1.000	0.067	Eq.H1-1b	139	4.085	18.993	18.993	29.555
714	TUB1401⁄	TUB1401⁄	0.142	1.000	0.142	Cl.H3.1	141	4.085	18.993	18.993	29.555
715	TUB1001(	TUB1001(	0.545	1.000	0.545	Eq.H1-1b	103	2.845	6.513	6.513	10.299
716	TUB1401⁄	TUB1401⁄	0.066	1.000	0.066	Eq.H1-1b	103	4.085	18.993	18.993	29.555
717	TUB1001(	TUB1001(	0.172	1.000	0.172	Eq.H1-1b	103	2.845	6.513	6.513	10.299
718	TUB1401⁄	TUB1401⁄	0.278	1.000	0.278	Eq.H1-1b	103	4.085	18.993	18.993	29.555
719	TUB1001(	TUB1001(	0.455	1.000	0.455	Eq.H1-1b	103	2.845	6.513	6.513	10.299
720	TUB1401⁄	TUB1401⁄	0.066	1.000	0.066	Eq.H1-1b	103	4.085	18.993	18.993	29.555
721	TUB1001(	TUB1001(	0.452	1.000	0.452	Eq.H1-1b	103	2.845	6.513	6.513	10.299
722	TUB1001(	TUB1001(	0.174	1.000	0.174	Eq.H1-1b	103	2.845	6.513	6.513	10.299
723	TUB1401⁄	TUB1401⁄	0.089	1.000	0.089	Eq.H1-1b	138	4.085	18.993	18.993	29.555
724	TUB1001(	TUB1001(	0.549	1.000	0.549	Eq.H1-1b	138	2.845	6.513	6.513	10.299
725	TUB1401⁄	TUB1401⁄	0.067	1.000	0.067	Eq.H1-1b	138	4.085	18.993	18.993	29.555
726	TUB1401⁄	TUB1401⁄	0.142	1.000	0.142	Cl.H3.1	141	4.085	18.993	18.993	29.555
727	TUB1001(	TUB1001(	0.548	1.000	0.548	Eq.H1-1b	103	2.845	6.513	6.513	10.299
728	TUB1401⁄	TUB1401⁄	0.066	1.000	0.066	Eq.H1-1b	103	4.085	18.993	18.993	29.555
729	TUB1001(	TUB1001(	0.173	1.000	0.173	Eq.H1-1b	103	2.845	6.513	6.513	10.299
730	TUB1401⁄	TUB1401⁄	0.279	1.000	0.279	Eq.H1-1b	103	4.085	18.993	18.993	29.555
731	TUB1001(	TUB1001(	0.452	1.000	0.452	Eq.H1-1b	103	2.845	6.513	6.513	10.299

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
732	TUB1401	TUB1401	0.067	1.000	0.067	Eq.H1-1b	103	4.085	18.993	18.993	29.555
733	TUB1001(	TUB1001(	0.455	1.000	0.455	Eq.H1-1b	103	2.845	6.513	6.513	10.299
734	TUB1001(	TUB1001(	0.168	1.000	0.168	Eq.H1-1b	103	2.845	6.513	6.513	10.299
735	TUB1401	TUB1401	0.142	1.000	0.142	Eq.H1-1b	139	4.085	18.993	18.993	29.555
736	TUB1001(	TUB1001(	0.579	1.000	0.579	Eq.H1-1b	103	2.845	6.513	6.513	10.299
737	TUB1401	TUB1401	0.140	1.000	0.140	Eq.H1-1b	140	4.085	18.993	18.993	29.555
738	TUB1401	TUB1401	0.156	1.000	0.156	Eq.H1-1b	139	4.085	18.993	18.993	29.555
739	TUB1001(	TUB1001(	0.576	1.000	0.576	Eq.H1-1b	103	2.845	6.513	6.513	10.299
740	TUB1401	TUB1401	0.104	1.000	0.104	Eq.H1-1b	103	4.085	18.993	18.993	29.555
741	TUB1001(	TUB1001(	0.224	1.000	0.224	Eq.H1-1b	140	2.845	6.513	6.513	10.299
742	TUB1401	TUB1401	0.163	1.000	0.163	Eq.H1-1b	103	4.085	18.993	18.993	29.555
743	TUB1001(	TUB1001(	0.704	1.000	0.704	Eq.H1-1b	103	2.845	6.513	6.513	10.299
744	TUB1401	TUB1401	0.104	1.000	0.104	Eq.H1-1b	103	4.085	18.993	18.993	29.555
745	TUB1001(	TUB1001(	0.705	1.000	0.705	Eq.H1-1b	103	2.845	6.513	6.513	10.299
746	TUB1001(	TUB1001(	0.223	1.000	0.223	Eq.H1-1b	141	2.845	6.513	6.513	10.299
747	TUB1401	TUB1401	0.142	1.000	0.142	Eq.H1-1b	138	4.085	18.993	18.993	29.555
748	TUB1001(	TUB1001(	0.580	1.000	0.580	Eq.H1-1b	138	2.845	6.513	6.513	10.299
749	TUB1401	TUB1401	0.142	1.000	0.142	Eq.H1-1b	140	4.085	18.993	18.993	29.555
750	TUB1401	TUB1401	0.156	1.000	0.156	Eq.H1-1b	138	4.085	18.993	18.993	29.555
751	TUB1001(	TUB1001(	0.578	1.000	0.578	Eq.H1-1b	103	2.845	6.513	6.513	10.299
752	TUB1401	TUB1401	0.104	1.000	0.104	Eq.H1-1b	103	4.085	18.993	18.993	29.555
753	TUB1001(	TUB1001(	0.228	1.000	0.228	Eq.H1-1b	140	2.845	6.513	6.513	10.299
754	TUB1401	TUB1401	0.163	1.000	0.163	Eq.H1-1b	103	4.085	18.993	18.993	29.555
755	TUB1001(	TUB1001(	0.704	1.000	0.704	Eq.H1-1b	103	2.845	6.513	6.513	10.299
756	TUB1401	TUB1401	0.103	1.000	0.103	Eq.H1-1b	103	4.085	18.993	18.993	29.555
757	TUB1001(	TUB1001(	0.707	1.000	0.707	Eq.H1-1b	103	2.845	6.513	6.513	10.299
758	TUB1001(	TUB1001(	0.236	1.000	0.236	Eq.H1-1b	141	2.845	6.513	6.513	10.299
759	TUB1401	TUB1401	0.193	1.000	0.193	Eq.H1-1b	141	4.085	18.993	18.993	29.555
760	TUB1401	TUB1401	0.188	1.000	0.188	Eq.H1-1b	141	4.085	18.993	18.993	29.555
761	TUB1401	TUB1401	0.092	1.000	0.092	Eq.H1-1b	139	4.085	18.993	18.993	29.555
762	TUB1001(	TUB1001(	0.482	1.000	0.482	Eq.H1-1b	139	2.845	6.513	6.513	10.299
763	TUB1401	TUB1401	0.077	1.000	0.077	Eq.H1-1b	141	4.085	18.993	18.993	29.555
764	TUB1401	TUB1401	0.236	1.000	0.236	Eq.H1-1b	139	4.085	18.993	18.993	29.555
765	TUB1001(	TUB1001(	0.474	1.000	0.474	Eq.H1-1b	103	2.845	6.513	6.513	10.299
766	TUB1401	TUB1401	0.091	1.000	0.091	Cl.G1	140	4.085	18.993	18.993	29.555
767	TUB1001(	TUB1001(	0.286	1.000	0.286	Eq.H1-1b	140	2.845	6.513	6.513	10.299
768	TUB1401	TUB1401	0.182	1.000	0.182	Cl.H3.1	116	4.085	18.993	18.993	29.555
769	TUB1001(	TUB1001(	0.479	1.000	0.479	Eq.H1-1b	103	2.845	6.513	6.513	10.299
770	TUB1401	TUB1401	0.090	1.000	0.090	Cl.G1	141	4.085	18.993	18.993	29.555
771	TUB1001(	TUB1001(	0.478	1.000	0.478	Eq.H1-1b	103	2.845	6.513	6.513	10.299
772	TUB1001(	TUB1001(	0.285	1.000	0.285	Eq.H1-1b	141	2.845	6.513	6.513	10.299
773	TUB1401	TUB1401	0.092	1.000	0.092	Eq.H1-1b	138	4.085	18.993	18.993	29.555
774	TUB1001(	TUB1001(	0.485	1.000	0.485	Eq.H1-1b	138	2.845	6.513	6.513	10.299
775	TUB1401	TUB1401	0.076	1.000	0.076	Eq.H1-1b	141	4.085	18.993	18.993	29.555
776	TUB1401	TUB1401	0.237	1.000	0.237	Eq.H1-1b	138	4.085	18.993	18.993	29.555
777	TUB1001(	TUB1001(	0.473	1.000	0.473	Eq.H1-1b	103	2.845	6.513	6.513	10.299

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
778	TUB1401⁴	TUB1401⁴	0.091	1.000	0.091	Cl.G1	140	4.085	18.993	18.993	29.555
779	TUB1001(	TUB1001(	0.287	1.000	0.287	Eq.H1-1b	140	2.845	6.513	6.513	10.299
780	TUB1401⁴	TUB1401⁴	0.180	1.000	0.180	Cl.H3.1	116	4.085	18.993	18.993	29.555
781	TUB1001(	TUB1001(	0.480	1.000	0.480	Eq.H1-1b	103	2.845	6.513	6.513	10.299
782	TUB1401⁴	TUB1401⁴	0.091	1.000	0.091	Cl.G1	141	4.085	18.993	18.993	29.555
783	TUB1001(	TUB1001(	0.478	1.000	0.478	Eq.H1-1b	103	2.845	6.513	6.513	10.299
784	TUB1001(	TUB1001(	0.283	1.000	0.283	Eq.H1-1b	141	2.845	6.513	6.513	10.299
785	TUB1001(	TUB1001(	0.631	1.000	0.631	Eq.H1-1b	114	2.845	6.513	6.513	10.299
786	TUB1001(	TUB1001(	0.372	1.000	0.372	Eq.H1-1b	117	2.845	6.513	6.513	10.299
787	TUB1001(	TUB1001(	0.185	1.000	0.185	Eq.H1-1b	115	2.845	6.513	6.513	10.299
788	TUB1001(	TUB1001(	0.275	1.000	0.275	Eq.H1-1b	115	2.845	6.513	6.513	10.299
789	TUB1001(	TUB1001(	0.648	1.000	0.648	Eq.H1-1b	115	2.845	6.513	6.513	10.299
790	TUB1001(	TUB1001(	0.308	1.000	0.308	Eq.H1-1b	117	2.845	6.513	6.513	10.299
791	TUB1001(	TUB1001(	0.651	1.000	0.651	Eq.H1-1b	114	2.845	6.513	6.513	10.299
792	TUB1001(	TUB1001(	0.314	1.000	0.314	Eq.H1-1b	117	2.845	6.513	6.513	10.299
793	TUB1001(	TUB1001(	0.275	1.000	0.275	Eq.H1-1b	114	2.845	6.513	6.513	10.299
794	TUB1001(	TUB1001(	0.186	1.000	0.186	Eq.H1-1b	114	2.845	6.513	6.513	10.299
795	TUB1001(	TUB1001(	0.374	1.000	0.374	Eq.H1-1b	116	2.845	6.513	6.513	10.299
796	TUB1001(	TUB1001(	0.322	1.000	0.322	Eq.H1-1b	116	2.845	6.513	6.513	10.299
797	TUB1001(	TUB1001(	0.098	1.000	0.098	Eq.H1-1b	115	2.845	6.513	6.513	10.299
799	TUB1001(	TUB1001(	0.163	1.000	0.163	Eq.H1-1b	140	2.845	6.513	6.513	10.299
800	TUB1001(	TUB1001(	0.158	1.000	0.158	Eq.H1-1b	114	2.845	6.513	6.513	10.299
801	TUB1001(	TUB1001(	0.278	1.000	0.278	Eq.H1-1b	115	2.845	6.513	6.513	10.299
802	TUB1401⁴	TUB1401⁴	0.216	1.000	0.216	Eq.H1-1b	103	4.085	18.993	18.993	29.555
803	TUB1001(	TUB1001(	0.298	1.000	0.298	Eq.H1-1b	116	2.845	6.513	6.513	10.299
804	TUB1001(	TUB1001(	0.375	1.000	0.375	Eq.H1-1b	114	2.845	6.513	6.513	10.299
805	TUB1001(	TUB1001(	0.459	1.000	0.459	Eq.H1-1b	115	2.845	6.513	6.513	10.299
806	TUB1001(	TUB1001(	0.491	1.000	0.491	Eq.H1-1b	114	2.845	6.513	6.513	10.299
807	TUB1001(	TUB1001(	0.454	1.000	0.454	Eq.H1-1b	114	2.845	6.513	6.513	10.299
808	TUB1001(	TUB1001(	0.394	1.000	0.394	Eq.H1-1b	115	2.845	6.513	6.513	10.299
809	TUB1001(	TUB1001(	0.437	1.000	0.437	Eq.H1-1b	115	2.845	6.513	6.513	10.299
810	HSST3X3	N/A						3.390	3.780	3.780	6.640
811	TUB1001(	TUB1001(	0.198	1.000	0.198	Eq.H1-1b	114	2.845	6.513	6.513	10.299
812	TUB1001(	TUB1001(	0.420	1.000	0.420	Eq.H1-1b	114	2.845	6.513	6.513	10.299
813	TUB1001(	TUB1001(	0.265	1.000	0.265	Eq.H1-1b	115	2.845	6.513	6.513	10.299
814	HSST3X3	N/A						3.390	3.780	3.780	6.640
815	HSST3X3	N/A						3.390	3.780	3.780	6.640
816	HSST3X3	N/A						3.390	3.780	3.780	6.640
817	HSST3X3	N/A						3.390	3.780	3.780	6.640
818	HSST3X3	N/A						3.390	3.780	3.780	6.640
819	HSST3X3	N/A						3.390	3.780	3.780	6.640
820	HSST3X3	N/A						3.390	3.780	3.780	6.640
821	HSST3X3	N/A						3.390	3.780	3.780	6.640
822	HSST3X3	N/A						3.390	3.780	3.780	6.640
823	HSST3X3	N/A						3.390	3.780	3.780	6.640
824	HSST3X3	N/A						3.390	3.780	3.780	6.640

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
825	HSST3X3	N/A						3.390	3.780	3.780	6.640

Failed Members

There is no data of this type.

Project Title:
Engineer:
Project ID:
Project Descr:

General Footing

Project File: new.ec6

DESCRIPTION: FTG - 24SQ x 12

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	=	145.0	pcf
φ Values Flexure	=	0.90	
Shear	=	0.750	

Analysis Settings

Min Steel % Bending Reinf.	=	
Min Allow % Temp Reinf.	=	0.00180
Min. Overturning Safety Factor	=	1.50 : 1
Min. Sliding Safety Factor	=	1.50 : 1
Add Ftg Wt for Soil Pressure	:	Yes
Use ftg wt for stability, moments & shears	:	Yes
Add Pedestal Wt for Soil Pressure	:	No
Use Pedestal wt for stability, mom & shear	:	No

Soil Design Values

Allowable Soil Bearing	=	1.50	ksf
Soil Density	=	110.0	pcf
Increase Bearing By Footing Weight	=	Yes	
Soil Passive Resistance (for Sliding)	=	250.0	pcf
Soil/Concrete Friction Coeff.	=	0.350	

Increases based on footing Depth

Footing base depth below soil surface	=	2.0	ft
Allow press. increase per foot of depth	=		ksf
when footing base is below	=		ft

Increases based on footing plan dimension

Allowable pressure increase per foot of depth	=		ksf
when max. length or width is greater than	=		ft

Dimensions

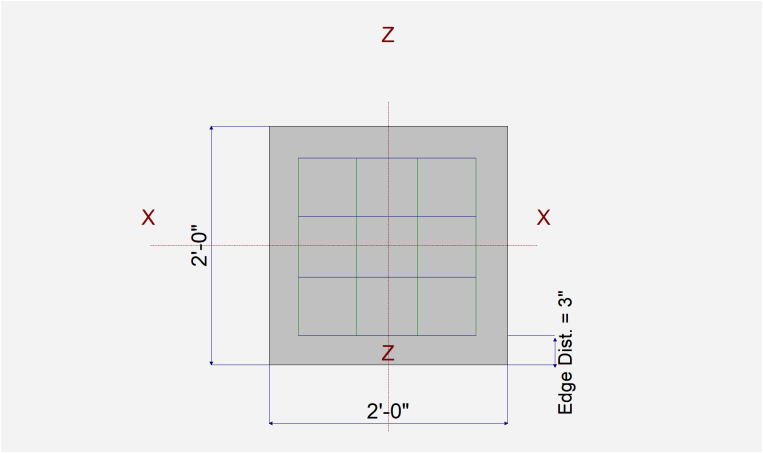
Width parallel to X-X Axis	=	2.0	ft
Length parallel to Z-Z Axis	=	2.0	ft
Footing Thickness	=	12.0	in

Pedestal dimensions...

px : parallel to X-X Axis	=		in
pz : parallel to Z-Z Axis	=		in
Height	=		in

Rebar Centerline to Edge of Concrete...

at Bottom of footing	=	3.0	in

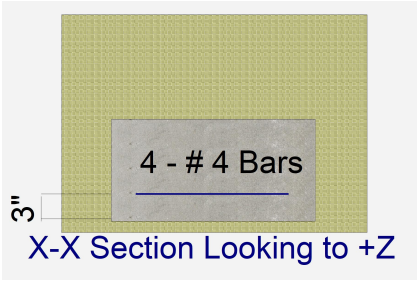


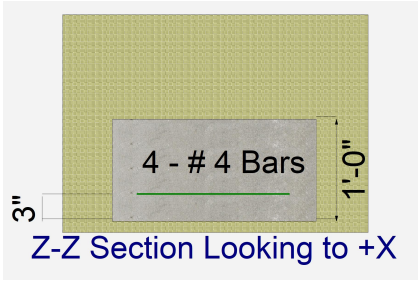
Reinforcing

Bars parallel to X-X Axis			
Number of Bars	=		4.0
Reinforcing Bar Size	=	#	4
Bars parallel to Z-Z Axis			
Number of Bars	=		4.0
Reinforcing Bar Size	=	#	4

Bandwidth Distribution Check (ACI 15.4.4.2)

Direction Requiring Closer Separation	
	n/a
# Bars required within zone	n/a
# Bars required on each side of zone	n/a





Applied Loads

		D	Lr	L	S	W	E	H	
P : Column Load	=	2.20	1.50						k
OB : Overburden	=								ksf
M-xx	=								k-ft
M-zz	=								k-ft
V-x	=								k
V-z	=								k

Project Title:
Engineer:
Project ID:
Project Descr:

General Footing

Project File: new.ec6

DESCRIPTION: FTG - 24SQ x 12

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.7867	Soil Bearing	1.180 ksf	1.50 ksf	+D+Lr about Z-Z axis
PASS	n/a	Overturning - X-X	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Overturning - Z-Z	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	n/a	Sliding - Z-Z	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.04066	Z Flexure (+X)	0.630 k-ft/ft	15.494 k-ft/ft	+1.20D+1.60Lr
PASS	0.04066	Z Flexure (-X)	0.630 k-ft/ft	15.494 k-ft/ft	+1.20D+1.60Lr
PASS	0.04066	X Flexure (+Z)	0.630 k-ft/ft	15.494 k-ft/ft	+1.20D+1.60Lr
PASS	0.04066	X Flexure (-Z)	0.630 k-ft/ft	15.494 k-ft/ft	+1.20D+1.60Lr
PASS	0.03408	1-way Shear (+X)	2.80 psi	82.158 psi	+1.20D+1.60Lr
PASS	0.03408	1-way Shear (-X)	2.80 psi	82.158 psi	+1.20D+1.60Lr
PASS	0.03408	1-way Shear (+Z)	2.80 psi	82.158 psi	+1.20D+1.60Lr
PASS	0.03408	1-way Shear (-Z)	2.80 psi	82.158 psi	+1.20D+1.60Lr
PASS	0.0810	2-way Punching	13.309 psi	164.317 psi	+1.20D+1.60Lr

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc (in)	Zecc (in)	Actual Soil Bearing Stress @ Location Bottom, -Z	Top, +Z	Left, -X	Right, +X	Actual / Allow Ratio
X-X, D Only	1.50	n/a	0.0	0.8050	0.8050	n/a	n/a	0.537
X-X, +D+Lr	1.50	n/a	0.0	1.180	1.180	n/a	n/a	0.787
X-X, +D+0.750Lr	1.50	n/a	0.0	1.086	1.086	n/a	n/a	0.724
X-X, +0.60D	1.50	n/a	0.0	0.4830	0.4830	n/a	n/a	0.322
Z-Z, D Only	1.50	0.0	n/a	n/a	n/a	0.8050	0.8050	0.537
Z-Z, +D+Lr	1.50	0.0	n/a	n/a	n/a	1.180	1.180	0.787
Z-Z, +D+0.750Lr	1.50	0.0	n/a	n/a	n/a	1.086	1.086	0.724
Z-Z, +0.60D	1.50	0.0	n/a	n/a	n/a	0.4830	0.4830	0.322

Overturning Stability

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status
Footing Has NO Overturning				

Sliding Stability

All units k

Force Application Axis Load Combination...	Sliding Force	Resisting Force	Stability Ratio	Status
Footing Has NO Sliding				

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	0.3850	+Z	Bottom	0.2592	AsMin	0.40	15.494	OK
X-X, +1.40D	0.3850	-Z	Bottom	0.2592	AsMin	0.40	15.494	OK
X-X, +1.20D+0.50Lr	0.4238	+Z	Bottom	0.2592	AsMin	0.40	15.494	OK
X-X, +1.20D+0.50Lr	0.4238	-Z	Bottom	0.2592	AsMin	0.40	15.494	OK
X-X, +1.20D	0.330	+Z	Bottom	0.2592	AsMin	0.40	15.494	OK
X-X, +1.20D	0.330	-Z	Bottom	0.2592	AsMin	0.40	15.494	OK
X-X, +1.20D+1.60Lr	0.630	+Z	Bottom	0.2592	AsMin	0.40	15.494	OK
X-X, +1.20D+1.60Lr	0.630	-Z	Bottom	0.2592	AsMin	0.40	15.494	OK
X-X, +0.90D	0.2475	+Z	Bottom	0.2592	AsMin	0.40	15.494	OK
X-X, +0.90D	0.2475	-Z	Bottom	0.2592	AsMin	0.40	15.494	OK
Z-Z, +1.40D	0.3850	-X	Bottom	0.2592	AsMin	0.40	15.494	OK
Z-Z, +1.40D	0.3850	+X	Bottom	0.2592	AsMin	0.40	15.494	OK
Z-Z, +1.20D+0.50Lr	0.4238	-X	Bottom	0.2592	AsMin	0.40	15.494	OK
Z-Z, +1.20D+0.50Lr	0.4238	+X	Bottom	0.2592	AsMin	0.40	15.494	OK
Z-Z, +1.20D	0.330	-X	Bottom	0.2592	AsMin	0.40	15.494	OK
Z-Z, +1.20D	0.330	+X	Bottom	0.2592	AsMin	0.40	15.494	OK
Z-Z, +1.20D+1.60Lr	0.630	-X	Bottom	0.2592	AsMin	0.40	15.494	OK

Project Title:
Engineer:
Project ID:
Project Descr:

General Footing

Project File: new.ec6

DESCRIPTION: FTG - 24SQ x 12

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
Z-Z, +1.20D+1.60Lr	0.630	+X	Bottom	0.2592	AsMin	0.40	15.494	OK
Z-Z, +0.90D	0.2475	-X	Bottom	0.2592	AsMin	0.40	15.494	OK
Z-Z, +0.90D	0.2475	+X	Bottom	0.2592	AsMin	0.40	15.494	OK

One Way Shear

Load Combination...	Vu @ -X	Vu @ +X	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	1.71 psi	1.71 psi	1.71 psi	1.71 psi	1.71 psi	82.16 psi	0.02	OK
+1.20D+0.50Lr	1.88 psi	1.88 psi	1.88 psi	1.88 psi	1.88 psi	82.16 psi	0.02	OK
+1.20D	1.47 psi	1.47 psi	1.47 psi	1.47 psi	1.47 psi	82.16 psi	0.02	OK
+1.20D+1.60Lr	2.80 psi	2.80 psi	2.80 psi	2.80 psi	2.80 psi	82.16 psi	0.03	OK
+0.90D	1.10 psi	1.10 psi	1.10 psi	1.10 psi	1.10 psi	82.16 psi	0.01	OK

Two-Way "Punching" Shear

All units k

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	8.13 psi	164.32 psi	0.0495	OK
+1.20D+0.50Lr	8.95 psi	164.32 psi	0.05448	OK
+1.20D	6.97 psi	164.32 psi	0.04243	OK
+1.20D+1.60Lr	13.31 psi	164.32 psi	0.081	OK
+0.90D	5.23 psi	164.32 psi	0.03182	OK

Project Title:
Engineer:
Project ID:
Project Descr:

General Footing

Project File: new.ec6

DESCRIPTION: FTG - 36SQ x 12

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	=	145.0	pcf
φ Values Flexure	=	0.90	
Shear	=	0.750	

Analysis Settings

Min Steel % Bending Reinf.	=	
Min Allow % Temp Reinf.	=	0.00180
Min. Overturning Safety Factor	=	1.50 : 1
Min. Sliding Safety Factor	=	1.50 : 1
Add Ftg Wt for Soil Pressure	:	Yes
Use ftg wt for stability, moments & shears	:	Yes
Add Pedestal Wt for Soil Pressure	:	No
Use Pedestal wt for stability, mom & shear	:	No

Soil Design Values

Allowable Soil Bearing	=	1.50	ksf
Soil Density	=	110.0	pcf
Increase Bearing By Footing Weight	=	Yes	
Soil Passive Resistance (for Sliding)	=	250.0	pcf
Soil/Concrete Friction Coeff.	=	0.350	

Increases based on footing Depth

Footing base depth below soil surface	=	2.0	ft
Allow press. increase per foot of depth	=		ksf
when footing base is below	=		ft

Increases based on footing plan dimension

Allowable pressure increase per foot of depth	=		ksf
when max. length or width is greater than	=		ft

Dimensions

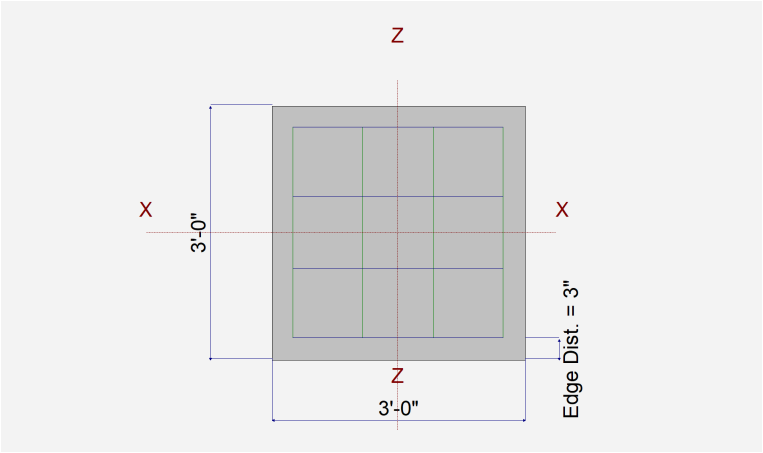
Width parallel to X-X Axis	=	3.0	ft
Length parallel to Z-Z Axis	=	3.0	ft
Footing Thickness	=	12.0	in

Pedestal dimensions...

px : parallel to X-X Axis	=		in
pz : parallel to Z-Z Axis	=		in
Height	=		in

Rebar Centerline to Edge of Concrete...

at Bottom of footing	=	3.0	in

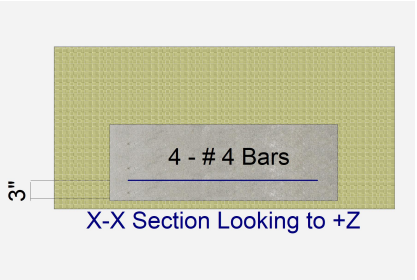


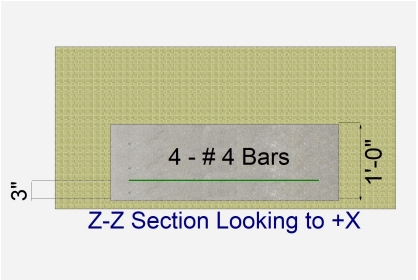
Reinforcing

Bars parallel to X-X Axis			
Number of Bars	=		4.0
Reinforcing Bar Size	=	#	4
Bars parallel to Z-Z Axis			
Number of Bars	=		4.0
Reinforcing Bar Size	=	#	4

Bandwidth Distribution Check (ACI 15.4.4.2)

Direction Requiring Closer Separation	n/a
# Bars required within zone	n/a
# Bars required on each side of zone	n/a





Applied Loads

		D	Lr	L	S	W	E	H	
P : Column Load	=	4.50	3.0						k
OB : Overburden	=								ksf
M-xx	=								k-ft
M-zz	=								k-ft
V-x	=								k
V-z	=								k

Project Title:
Engineer:
Project ID:
Project Descr:

General Footing

Project File: new.ec6

DESCRIPTION: FTG - 36SQ x 12

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.7253	Soil Bearing	1.088 ksf	1.50 ksf	+D+Lr about Z-Z axis
PASS	n/a	Overturning - X-X	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Overturning - Z-Z	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	n/a	Sliding - Z-Z	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.1216	Z Flexure (+X)	1.275 k-ft/ft	10.486 k-ft/ft	+1.20D+1.60Lr
PASS	0.1216	Z Flexure (-X)	1.275 k-ft/ft	10.486 k-ft/ft	+1.20D+1.60Lr
PASS	0.1216	X Flexure (+Z)	1.275 k-ft/ft	10.486 k-ft/ft	+1.20D+1.60Lr
PASS	0.1216	X Flexure (-Z)	1.275 k-ft/ft	10.486 k-ft/ft	+1.20D+1.60Lr
PASS	0.09580	1-way Shear (+X)	7.870 psi	82.158 psi	+1.20D+1.60Lr
PASS	0.09580	1-way Shear (-X)	7.870 psi	82.158 psi	+1.20D+1.60Lr
PASS	0.09580	1-way Shear (+Z)	7.870 psi	82.158 psi	+1.20D+1.60Lr
PASS	0.09580	1-way Shear (-Z)	7.870 psi	82.158 psi	+1.20D+1.60Lr
PASS	0.1796	2-way Punching	29.514 psi	164.317 psi	+1.20D+1.60Lr

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc (in)	Zecc (in)	Actual Soil Bearing Stress @ Location Bottom, -Z	Top, +Z	Left, -X	Right, +X	Actual / Allow Ratio
X-X, D Only	1.50	n/a	0.0	0.7550	0.7550	n/a	n/a	0.503
X-X, +D+Lr	1.50	n/a	0.0	1.088	1.088	n/a	n/a	0.725
X-X, +D+0.750Lr	1.50	n/a	0.0	1.005	1.005	n/a	n/a	0.670
X-X, +0.60D	1.50	n/a	0.0	0.4530	0.4530	n/a	n/a	0.302
Z-Z, D Only	1.50	0.0	n/a	n/a	n/a	0.7550	0.7550	0.503
Z-Z, +D+Lr	1.50	0.0	n/a	n/a	n/a	1.088	1.088	0.725
Z-Z, +D+0.750Lr	1.50	0.0	n/a	n/a	n/a	1.005	1.005	0.670
Z-Z, +0.60D	1.50	0.0	n/a	n/a	n/a	0.4530	0.4530	0.302

Overturning Stability

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status
Footing Has NO Overturning				

Sliding Stability

All units k

Force Application Axis Load Combination...	Sliding Force	Resisting Force	Stability Ratio	Status
Footing Has NO Sliding				

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	0.7875	+Z	Bottom	0.2592	AsMin	0.2667	10.486	OK
X-X, +1.40D	0.7875	-Z	Bottom	0.2592	AsMin	0.2667	10.486	OK
X-X, +1.20D+0.50Lr	0.8625	+Z	Bottom	0.2592	AsMin	0.2667	10.486	OK
X-X, +1.20D+0.50Lr	0.8625	-Z	Bottom	0.2592	AsMin	0.2667	10.486	OK
X-X, +1.20D	0.6750	+Z	Bottom	0.2592	AsMin	0.2667	10.486	OK
X-X, +1.20D	0.6750	-Z	Bottom	0.2592	AsMin	0.2667	10.486	OK
X-X, +1.20D+1.60Lr	1.275	+Z	Bottom	0.2592	AsMin	0.2667	10.486	OK
X-X, +1.20D+1.60Lr	1.275	-Z	Bottom	0.2592	AsMin	0.2667	10.486	OK
X-X, +0.90D	0.5063	+Z	Bottom	0.2592	AsMin	0.2667	10.486	OK
X-X, +0.90D	0.5063	-Z	Bottom	0.2592	AsMin	0.2667	10.486	OK
Z-Z, +1.40D	0.7875	-X	Bottom	0.2592	AsMin	0.2667	10.486	OK
Z-Z, +1.40D	0.7875	+X	Bottom	0.2592	AsMin	0.2667	10.486	OK
Z-Z, +1.20D+0.50Lr	0.8625	-X	Bottom	0.2592	AsMin	0.2667	10.486	OK
Z-Z, +1.20D+0.50Lr	0.8625	+X	Bottom	0.2592	AsMin	0.2667	10.486	OK
Z-Z, +1.20D	0.6750	-X	Bottom	0.2592	AsMin	0.2667	10.486	OK
Z-Z, +1.20D	0.6750	+X	Bottom	0.2592	AsMin	0.2667	10.486	OK
Z-Z, +1.20D+1.60Lr	1.275	-X	Bottom	0.2592	AsMin	0.2667	10.486	OK

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DESCRIPTION: FTG - 36SQ x 12

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
Z-Z, +1.20D+1.60Lr	1.275	+X	Bottom	0.2592	AsMin	0.2667	10.486	OK
Z-Z, +0.90D	0.5063	-X	Bottom	0.2592	AsMin	0.2667	10.486	OK
Z-Z, +0.90D	0.5063	+X	Bottom	0.2592	AsMin	0.2667	10.486	OK

One Way Shear

Load Combination...	Vu @ -X	Vu @ +X	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	4.86 psi	4.86 psi	4.86 psi	4.86 psi	4.86 psi	82.16 psi	0.06	OK
+1.20D+0.50Lr	5.32 psi	5.32 psi	5.32 psi	5.32 psi	5.32 psi	82.16 psi	0.06	OK
+1.20D	4.17 psi	4.17 psi	4.17 psi	4.17 psi	4.17 psi	82.16 psi	0.05	OK
+1.20D+1.60Lr	7.87 psi	7.87 psi	7.87 psi	7.87 psi	7.87 psi	82.16 psi	0.10	OK
+0.90D	3.13 psi	3.13 psi	3.13 psi	3.13 psi	3.13 psi	82.16 psi	0.04	OK

Two-Way "Punching" Shear

All units k

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	18.23 psi	164.32 psi	0.1109	OK
+1.20D+0.50Lr	19.97 psi	164.32 psi	0.1215	OK
+1.20D	15.63 psi	164.32 psi	0.09509	OK
+1.20D+1.60Lr	29.51 psi	164.32 psi	0.1796	OK
+0.90D	11.72 psi	164.32 psi	0.07132	OK