HARABOR ENGINEERING

* STRUCTURAL DESIGN *

38884 Cherry Point Ln
MURRIETA, CA 92563
Phone (951) 461 - 9296

STRUCTURAL CALCULATIONS

FOR

PROJECT : 6030 AVENIDA ENCINAS
- FLOOR ADDITION -

PROJECT No 05-14

CLIENT : Kelly CRANE - Architect -

DESIGNED BY :
MIHAI HARABOR, PE
DATE : 11/10/05

REVISIONS and SUPPLEMENTS :

HARABOR ENGINEERING

THIS SIGNATURE IS TO BE A WET SIGNATURE, NOT A COPY

REGISTERED PROFESSIONAL ENGINEER
MIHAI HARABOR
No C 32658
Exp 12/31/07
CIVIL
STATE OF CALIFORNIA

APPROVED BY :

DATE SIGNED : 1/3/06

THIS SET OF CALCS. HAS A TOTAL OF : 123 PAGES

CBD60126

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* STRUCTURAL DESIGN *

PAGE No. 2 OF 123

PROJECT : 6030 AVENIDA ENCINAS - FLOOR Addition

PROJECT No 05-14

DATE . 11/10/05 BY : MH

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(NOTE: CONNECTION-DETAILS PROVIDED SEPARATELY!)

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* STRUCTURAL DESIGN *

PAGE No. 3	OF 123
PROJECT 6030 AVENIDA ENCINAS - FLOOR Addition	
PROJECT No 05-14	
DATE . 11/10/05	BY : MH

BASIS FOR DESIGN :

* BUILDING CODE : UBC 1997	SEISMIC ZONE 4 (Z = 04)
* LOADS :	
ROOF DL = N/A PSF	WIND LOAD = N/A PSF
ROOF LL = N/A PSF	
FLOOR DL = 17.0 PSF	
FLOOR LL = 125.0 PSF	

MATERIALS :

* ALLOWABLE SOIL BEARING : (ASSUMED) →	Fb = N/A PSF
(According to Table No 18-I-A, UBC 1997, page 2-49)	
* CONCRETE	F'c = N/A PSI
* REINFORCING (A-615, Grade 60)	Fy = 60 KSI
* MASONRY (Type N-1)	F'm = 1500 PSI
MORTAR (Type "S")	F'c = 1800 PSI
GROUT	F'c = 2000 PSI
REINFORCING (A-615, Grade 60)	Fy = 60 KSI
* STRUCTURAL STEEL	
ROLED SECTIONS & PLATES (ASTM A-36)	Fy = 36 KSI
PIPES (ASTM A-53, Grade B)	Fy = 35 KSI
STRUCTURAL TUBING (ASTM A-500)	Fy = 46 KSI
BOLTS & ANCHORS for STEEL BASE PLATES (ASTM A-307, Grade B)	Fy = 60 KSI
* GLUE-LAMINATED BEAMS (Combination 24F - V8, DF/DF) →	Fb = 2400 PSI
	Fv = 165 PSI
* STRUCTURAL LUMBER (See NEXT PAGE)	E = 18×10^6 PSI

BASIS FOR DESIGN - MATERIALS (CONT'D)

* **STRUCTURAL LUMBER**

** ROOF RAFTERS and FLOOR JOISTS , Douglas Fir Larch No 2

(According to UBC 1997)

Fb = 900 PSI , Fv = 95 PSI , E = 16×10^6 PSI

** BEAMS, STRINGERS & HEADERS , Douglas Fir Larch

* 4x6s and wider , DFL No 2

Fb = 900 PSI , Fv = 95 PSI , E = 16×10^6 PSI

* 6x6s and wider , DFL No 1

Fb = 1350 PSI , Fv = 85 PSI , E = 16×10^6 PSI

** WOOD POSTS & TIMBERS , Douglas Fir Larch No 1

Fc = 1000 PSI , Fv = 85 PSI , E = 16×10^6 PSI

** STRUCTURAL STUDS

* For 2x4 studs, use STUD Grade,

Fb = 700 PSI , Fc = 850 PSI , Fv = 95 PSI , E = 14×10^6 PSI

* For 2x6 studs, use STUD Grade,

Fb = 700 PSI , Fc = 850 PSI , Fv = 95 PSI , E = 14×10^6 PSI

** LEDGERS , Douglas Fir Larch, CONSTR Grade

* 4x6s and wider

Fb = 1000 PSI , Fv = 95 PSI , E = 15×10^6 PSI

** BOLTS & ANCHOR BOLTS , (ASTM A-307) , Fy = 330 KSI

(for WOOD FRAME Construction)

* **FRAMING CONNECTORS** Use approved framing connectors SIMPSON, or equal

* **NAILING SCHEDULE** Use TABLE No 23-II-B-1, UBC - 1997, page 2 - 282

TABLE 23-II-B-1—NAILING SCHEDULE

CONNECTION	NAILING[1]
1 Joist to sill or girder toenail	3-8d
2 Bridging to joist, toenail each end	2 8d
3 1" × 6" (25 mm × 152 mm) subfloor or less to each joist, face nail	2-8d
4 Wider than 1" × 6" (25 mm × 152 mm) subfloor to each joist, face nail	3-8d
5 2" (51 mm) subfloor to joist or girder blind and face nail	2-16d
6 Sole plate to joist or blocking, typical face nail Sole plate to joist or blocking, at braced wall panels	16d at 16" (406 mm) o c. 3 16d per 16" (406 mm)
7 Top plate to stud, end nail	2 16d
8 Stud to sole plate	4-8d, toenail or 2-16d end nail
9 Double studs, face nail	16d at 24" (610 mm) o c.
10 Doubled top plates, typical face nail Double top plates, lap splice	16d at 16" (406 mm) o c. 8 16d
11 Blocking between joists or rafters to top plate toenail	3 8d
12 Rim joist to top plate toenail	8d at 6" (152 mm) o c.
13 Top plates, laps and intersections, face nail	2 16d
14 Continuous header two pieces	16d at 16" (406 mm) o c along each edge
15 Ceiling joists to plate, toenail	3-8d
16 Continuous header to stud, toenail	4-8d
17 Ceiling joists, laps over partitions, face nail	3-16d
18 Ceiling joists to parallel rafters, face nail	3-16d
19 Rafter to plate, toenail	3-8d
20 1" (25 mm) brace to each stud and plate face nail	2 8d
21 1" × 8" (25 mm × 203 mm) sheathing or less to each bearing face nail	2 8d
22. Wider than 1" × 8" (25 mm × 203 mm) sheathing to each bearing face nail	3-8d
23 Built up corner studs	16d at 24" (610 mm) o c
24 Built up girder and beams	20d at 32" (813 mm) o c at top and bottom and staggered 2 20d at ends and at each splice
25 2" (51 mm) planks	2 16d at each bearing
26 Wood structural panels and particleboard [2] Subfloor and wall sheathing (to framing) 1/2" (12 7 mm) and less 19/32" 3/4" (15 mm-19 mm) 7/8" 1" (22 mm 25 mm) 1 1/8" 1 1/4" (29 mm-32 mm) Combination subfloor-underlayment (to framing) 3/4" (19 mm) and less 7/8" 1" (22 mm 25 mm) 1 1/8" 1 1/4" (29 mm-32 mm)	 6d[3] 8d[4] or 6d[5] 8d[3] 10d[4] or 8d[5] 6d[5] 8d[5] 10d[4] or 8d[5]
27 Panel siding (to framing)[2] 1/2" (12.7 mm) or less 5/8" (16 mm)	 6d[6] 8d[6]
28 Fiberboard sheathing [7] 1/2" (12.7 mm) 25/32" (20 mm)	 No 11 ga [8] 6d[4] No 16 ga [9] No 11 ga [8] 8d[4] No 16 ga [9]
29 Interior paneling 1/4" (6.4 mm) 3/8" (9.5 mm)	 4d[10] 6d[11]

[1]Common or box nails may be used except where otherwise stated
[2]Nails spaced at 6 inches (152 mm) on center at edges, 12 inches (305 mm) at intermediate supports except 6 inches (152 mm) at all supports where spans are 48 inches (1219 mm) or more For nailing of wood structural panel and particleboard diaphragms and shear walls refer to Sections 2315 3 3 and 2315 4 Nails for wall sheathing may be common box or casing
[3]Common or deformed shank.
[4]Common
[5]Deformed shank.
[6]Corrosion resistant siding or casing nails conforming to the requirements of Section 2304 3
[7]Fasteners spaced 3 inches (76 mm) on center at exterior edges and 6 inches (152 mm) on center at intermediate supports
[8]Corrosion-resistant roofing nails with 7/16 inch-diameter (11 mm) head and 1 1/2 inch (38 mm) length for 1/2 inch (12.7 mm) sheathing and 1 3/4 inch (44 mm) length for 25/32 inch (20 mm) sheathing conforming to the requirements of Section 2304 3
[9]Corrosion resistant staples with nominal 7/16-inch (11 mm) crown and 1 1/8 inch (29 mm) length for 1/2-inch (12 7 mm) sheathing and 1 1/2 inch (38 mm) length for 25/32-inch (20 mm) sheathing conforming to the requirements of Section 2304.3
[10]Panel supports at 16 inches (406 mm) [20 inches (508 mm) if strength axis in the long direction of the panel unless otherwise marked] Casing or finish nails spaced 6 inches (152 mm) on panel edges, 12 inches (305 mm) at intermediate supports
[11]Panel supports at 24 inches (610 mm) Casing or finish nails spaced 6 inches (152 mm) on panel edges, 12 inches (305 mm) at intermediate supports

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* STRUCTURAL DESIGN *

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PROJECT :	6030 AVENIDA ENCINAS – FLOOR Addition
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UNIT LOADS.

(N/A)

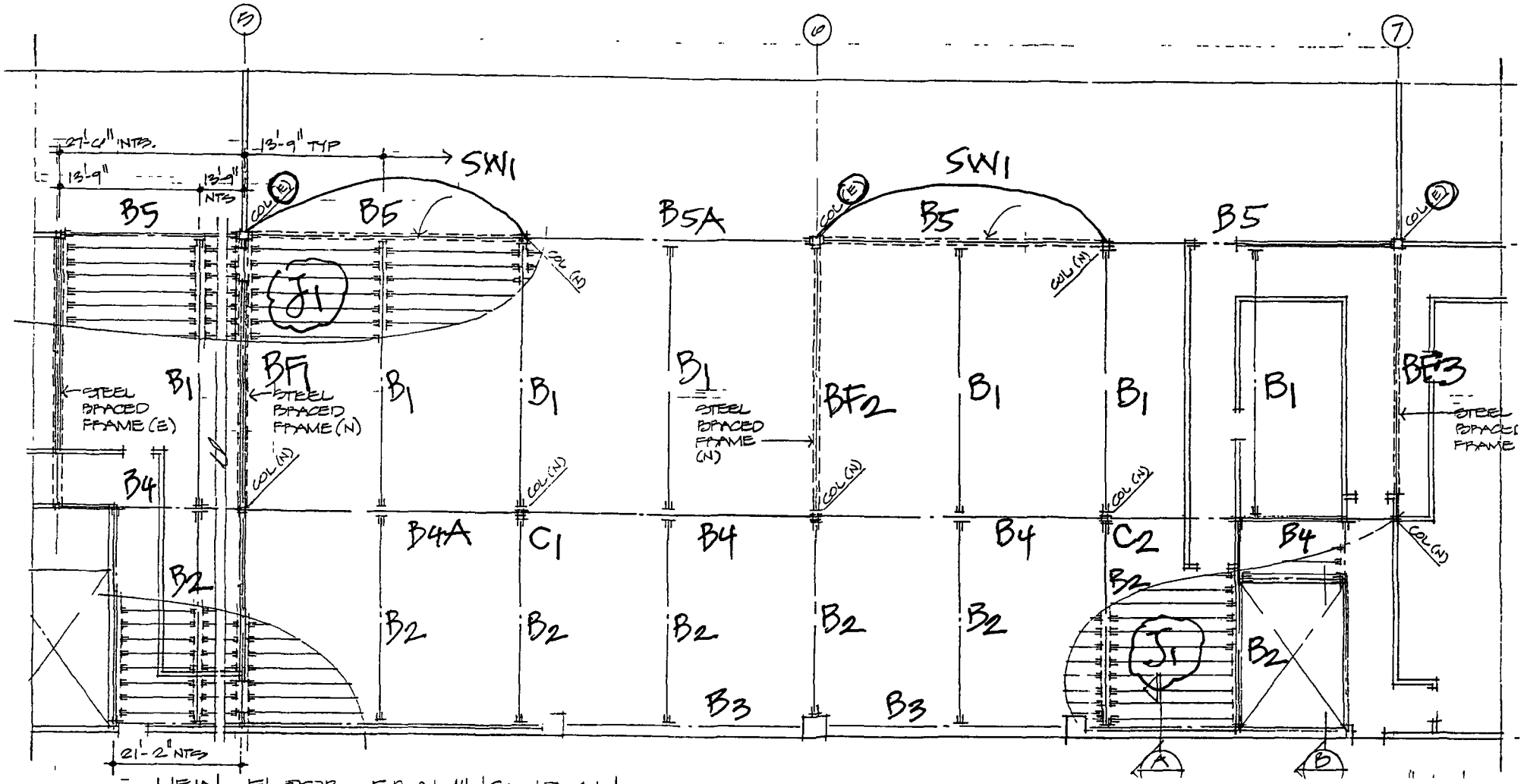
FLAT ROOF DL		
Roofing		psf
Plywood ( )		psf
Framing		psf
Insulation		psf
Ceiling		psf
El / Mech		psf
Others		psf
MISC		psf
TOTAL DL =		psf
LL =		psf

FLOOR DL		
Flooring	1.5	psf
Concrete	–	psf
Plywood (3/4)	2.2	psf
Framing	4.5	psf
Insulation	1.0	psf
Ceiling 2-½" Gyp. bd.	4.0	psf
El / Mech	0.5	psf
Others Sprinklers	1.5	psf
MISC ~	1.8	psf
TOTAL DL =	17.0	psf
LL =	125.0	psf

BALCONIES DL (N/A)		
Flooring		psf
Concrete		psf
Plywood ( )		psf
Framing		psf
Insulation		psf
Ceiling		psf
Others		psf
MISC		psf
TOTAL DL =		psf
LL =		psf

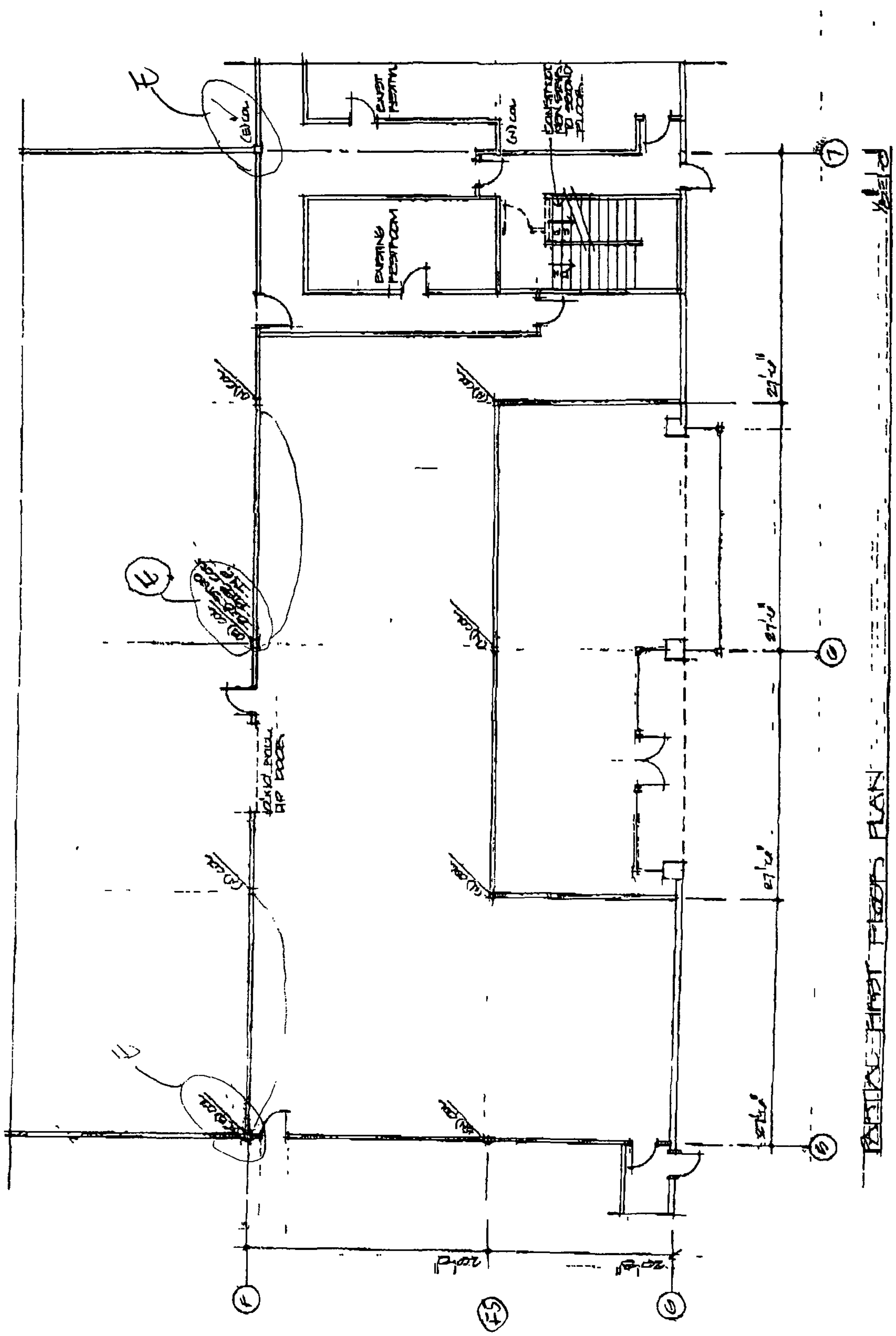
(N/A)

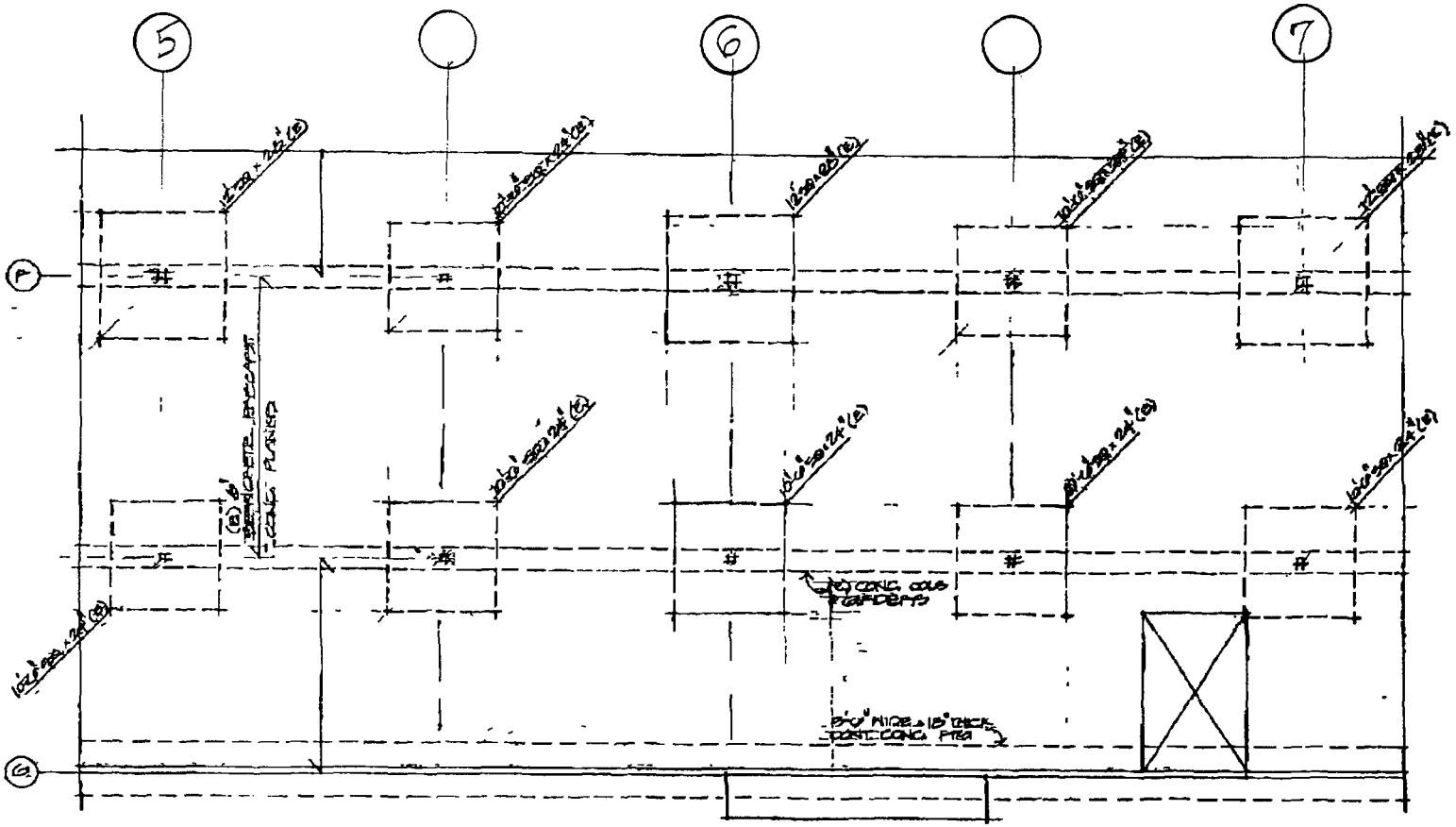
WIND LOAD (UBC 1997)		
Wind Load,	$p = C_e * C_q * q_s * I$	
Exposure		
Wind Speed =	mph	
C_e =	q_s =	
C_q =	I =	
Computed Wind Load =		psf



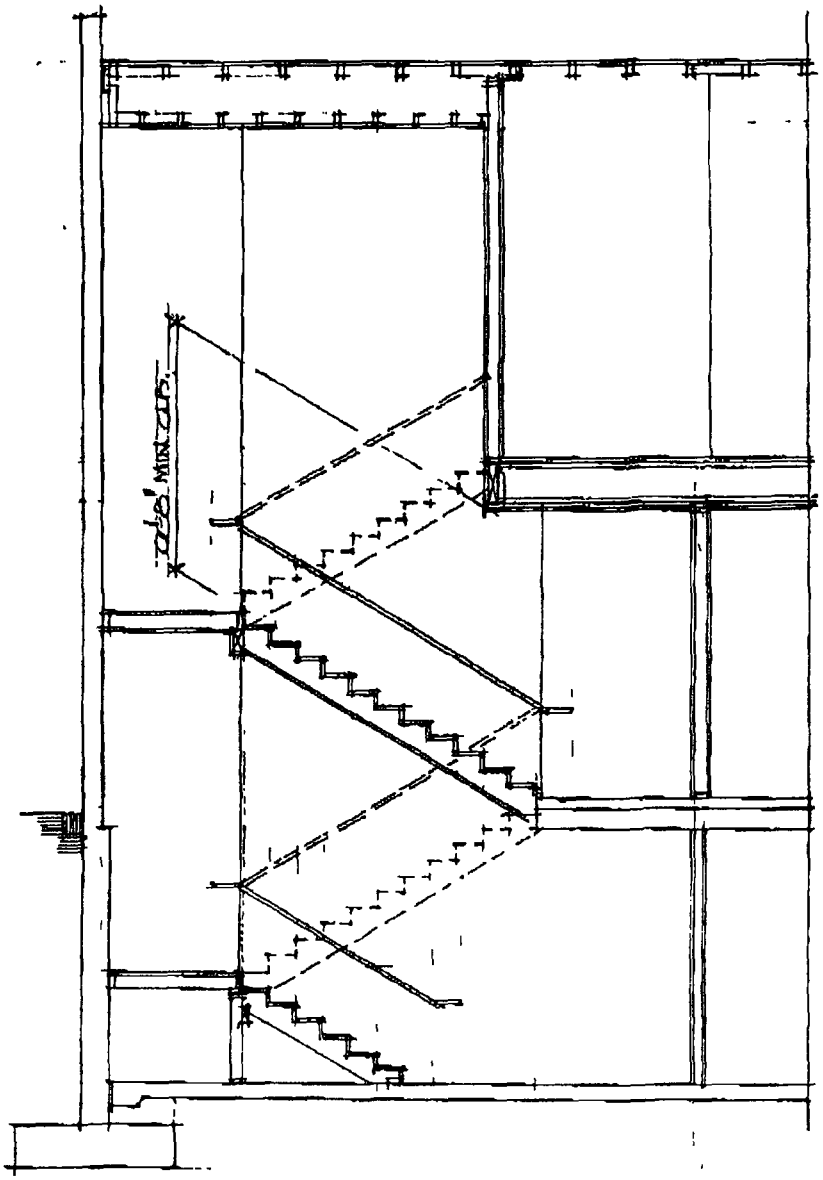
NEW FLOOR FRAMING PLAN

- KEY PLAN -





EXISTING BASEMENT FOUNDATION/FIRST FLOOR PRECAST FLOOR PLAN 1/8"=1'-0"



(B) STAIR SECTION 1/4" = 1'-0"

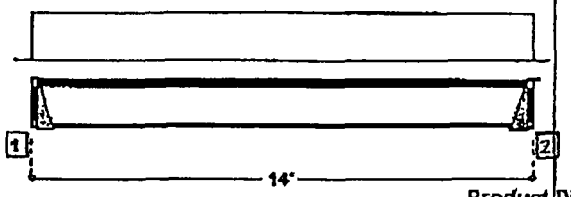
TJ-Beam® 6.20 Serial Number 7005122095
User 4 1/12/2006 11 25.33 AM
Page 1 Engine Version, 6 20 18

(951) 461-7576
run on behalf of Enrique Lima

FLOOR JOISTS

11 7/8" TJI®/L65 @ 16" o/c

THIS PRODUCT MEETS OR EXCEEDS THE SET DESIGN CONTROLS FOR THE APPLICATION AND LOADS LISTED



Product Diagram is Conceptual

LOADS

Analysis is for a Joist Member
Primary Load Group Storage Light (psf) 125 0 Live at 100 % duration, 17 0 Dead

SUPPORTS

		Input Width	Bearing Length	Vertical Reactions (lbs) Live/Dead/Uplift/Total	Ply	Depth	Nailing Depth	Detail	Other
1	Timberstrand LSL Beam	1 50"	Hanger	1167 / 159 / 0 / 1325	1	11 88"	N/A	Top Mount Hanger	None
2	Timberstrand LSL Beam	1 50"	Hanger	1167 / 159 / 0 / 1325	1	11 88"	N/A	Top Mount Hanger	None

HANGERS Simpson Strong-Tie® Connectors

Support		Model	Slope	Skew	Reverse Flanges	Top Flange Offset	Top Flange Slope	Support Wood Species
1	Top Mount Hanger	ITT311 88	0/12	0	N/A	No	0	N/A
2	Top Mount Hanger	ITT311 88	0/12	0	N/A	No	0	N/A

-Nailing for Support 1 Face 2 N10, Top 4-N10 Member 2-N10
-Nailing for Support 2 Face 2 N10 Top 4-N10 Member 2-N10

DESIGN CONTROLS

	Maximum	Design	Control	Control	Location
Shear (lbs)	1302	1302	1925	Passed (88%)	Rt. end Span 1 under Floor (Primary Load Group) loading
Vertical Reaction (lbs)	1302	1302	1885	Passed (69%)	Bearing 2 under Floor (Primary Load Group) loading
Moment (Ft-Lbs)	4474	4474	6750	Passed (66%)	MID Span 1 under Floor (Primary Load Group) loading
Live Load Defl (in)		0 331	0 458	Passed (L/498)	MID Span 1 under Floor (Primary Load Group) loading
Total Load Defl (in)		0.376	0 888	Passed (L/438)	MID Span 1 under Floor (Primary Load Group) loading
TJPro		52	25	Passed	Span 1

-Deflection Criteria MINIMUM(LL L/360,TL L/240,ALT L/480@50 0 psf)
-Deflection analysis is based on composite action with single layer of 19/32" Panels (20" Span Rating) NAILED wood decking
-Bracing(Lu) All compression edges (top and bottom) must be braced at 4' 6" o/c unless detailed otherwise Proper attachment and positioning of lateral bracing is required to achieve member stability
-2000 lbs concentrated load requirements for standard non-residential floors have been considered for reaction and shear

TJ-Pro RATING SYSTEM

-The TJ-Pro Rating System value provides additional floor performance information and is based on a NAILED 19/32" Panels (20" Span Rating) decking The controlling span is supported by beams Additional considerations for this rating include: Ceiling - None A structural analysis of the deck has not been performed by the program Comparison Value 1 85

ADDITIONAL NOTES:

-IMPORTANT! The analysis presented is output from software developed by Trus Joist (TJ) Allowable product values shown are in accordance with current TJ materials and code accepted design values TJ Engineering has verified the analysis The input loads and dimensions have been provided by others ( ) and must be verified and approved for the specific application by the design professional for the project
-THIS ANALYSIS FOR TRUS JOIST PRODUCTS ONLY! PRODUCT SUBSTITUTION VOIDS THIS ANALYSIS
-Allowable Stress Design methodology was used for Building Code UBC analyzing the TJ Custom product listed above

PROJECT INFORMATION.

OPERATOR INFORMATION

Cynthia Cerecedes
Phone (949) 885-5936

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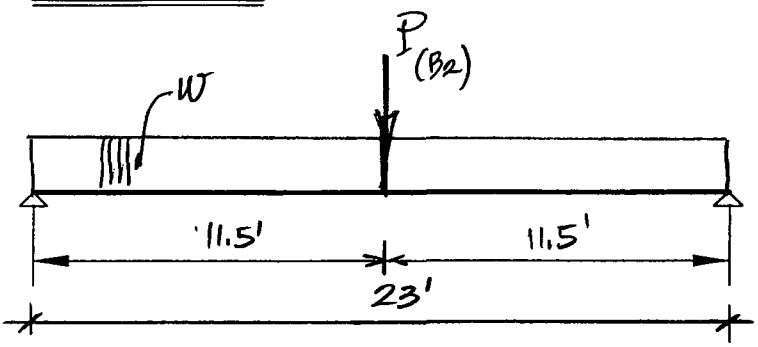
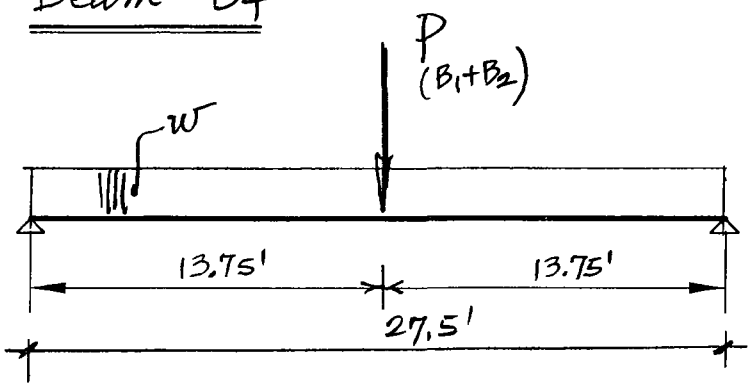
Beam B3



$P_{(B_2)} = \begin{cases} 2380 \\ 15{,}680\ \# \end{cases}$

$w = 3'(17+125) = \begin{cases} 51 \\ 375\ plf \end{cases}$

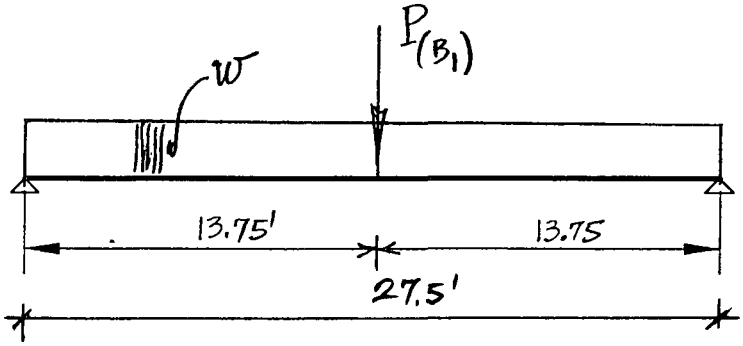
Beam B4



$P = \begin{cases} (3094+2380) = 5{,}474 \\ (18{,}928+15{,}680) = 34{,}608\ \# \end{cases}$

$w = \begin{cases} 51 \\ 375\ plf \end{cases}$

Beam B5



$P = \begin{cases} 3094\ \# \\ 18{,}928\ \# \end{cases}$

$w = \begin{cases} 51 \\ 375\ plf \end{cases}$

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Title
Dsgnr
Description
Scope

Job #
Date 12 21PM, 4 DEC 05

Rev 580004
User KW-0600017, Ver 5 8 0 1-Dec-2003
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General Timber Beam

Description 6030 Avenida Encinas - Floor Addition
Beam B1

General Information

Code Ref 1997/2001 NDS, 2000/2003 IBC, 2003 NFPA 5000 Base allowables are user defined

Section Name	8 75x24	Center Span	26 00 ft	Lu	2 00 ft
Beam Width	8 750 in	Left Cantilever	ft	Lu	0 00 ft
Beam Depth	24 000 in	Right Cantilever	ft	Lu	0 00 ft
Member Type	GluLam	Douglas Fir, 24F - V8			
		Fb Base Allow	2,400 0 psi		
Load Dur Factor	1 250	Fv Allow	240 0 psi		
Beam End Fixity	Pin-Pin	Fc Allow	650 0 psi		
		E	1,700 0 ksi		

Full Length Uniform Loads

Center	DL	238 00 #/ft	LL	1,456 00 #/ft
Left Cantilever	DL	#/ft	LL	#/ft
Right Cantilever	DL	#/ft	LL	#/ft

Summary

Beam Design OK

Span= 26 00ft, Beam Width = 8 750in x Depth = 24 in, Ends are Pin-Pin

Max Stress Ratio 0 789 1

Maximum Moment	143 1 k-ft	Maximum Shear * 1 5	28 0 k
Allowable	181 4 k-ft	Allowable	63 0 k

Max Positive Moment	143 14 k-ft	at	13 000 ft	Shear	@ Left	22 02 k
Max Negative Moment	0 00 k-ft	at	0 000 ft		@ Right	22 02 k
Max @ Left Support	0 00 k-ft			Camber	@ Left	0 000 in
Max @ Right Support	0 00 k-ft				@ Center	0 214 in
Max M allow	181 44				@ Right	0 000 in

				Reactions			
fb	2,044 90 psi	fv	133 39 psi	Left DL	3 09 k	Max	22 02 k
Fb	2,592 00 psi	Fv	300 00 psi	Right DL	3 09 k	Max	22 02 k

Deflections

Center Span	Dead Load	Total Load
Deflection	-0 143 in	-1 016 in
Location	13 000 ft	13 000 ft
Length/Defl	2,184 9	306 96

Camber (using 1 5 * D L Defl)

@ Center	0 214 in
@ Left	0 000 in
@ Right	0 000 in

Left Cantilever	Dead Load	Total Load
Deflection	0 000 in	0 000 in
Length/Defl	0 0	0 0

Right Cantilever		
Deflection	0 000 in	0 000 in
Length/Defl	0 0	0 0

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General Timber Beam

Description 6030 Avenida Encinas - Floor Addition
Beam B2

General Information

Code Ref 1997/2001 NDS, 2000/2003 IBC, 2003 NFPA 5000 Base allowables are user defined

Section Name	**6 75x21**	Center Span	20 00 ft	Lu	2 00 ft
Beam Width	6 750 in	Left Cantilever	ft	Lu	0 00 ft
Beam Depth	21 000 in	Right Cantilever	ft	Lu	0 00 ft
Member Type	GluLam	Douglas Fir, 24F - V8			
		Fb Base Allow	2,400 0 psi		
Load Dur Factor	1 250	Fv Allow	240 0 psi		
Beam End Fixity	Pin-Pin	Fc Allow	650 0 psi		
		E	1,700 0 ksi		

Full Length Uniform Loads

Center	DL	238 00 #/ft	LL	1,568 00 #/ft
Left Cantilever	DL	#/ft	LL	#/ft
Right Cantilever	DL	#/ft	LL	#/ft

Summary

Beam Design OK

Span= 20 00ft, Beam Width = 6 750in x Depth = 21 in, Ends are Pin-Pin

Max Stress Ratio 0 790 1

Maximum Moment	90 3 k-ft	Maximum Shear * 1 5	22 5 k
Allowable	114 3 k-ft	Allowable	42 5 k

Max Positive Moment	90 30 k-ft	at	10 000 ft	Shear	@ Left	18 06 k
Max Negative Moment	0 00 k-ft	at	0 000 ft		@ Right	18 06 k
Max @ Left Support	0 00 k-ft			Camber	@ Left	0 000 in
Max @ Right Support	0 00 k-ft				@ Center	0 145 in
Max M allow	114 28				@ Right	0 000 in

				Reactions			
fb	2,184 13 psi	fv	159 00 psi	Left DL	2 38 k	Max	18 06 k
Fb	2,764 21 psi	Fv	300 00 psi	Right DL	2 38 k	Max	18 06 k

Deflections

Center Span	Dead Load	Total Load
Deflection	-0 097 in	-0 734 in
Location	10 000 ft	10 000 ft
Length/Defl	2,480 7	326 91
Camber (using 1 5 * D L Defl)		
@ Center	0 145 in	
@ Left	0 000 in	
@ Right	0 000 in	

Left Cantilever	Dead Load	Total Load
Deflection	0 000 in	0 000 in
Length/Defl	0 0	0 0
Right Cantilever		
Deflection	0 000 in	0 000 in
Length/Defl	0 0	0 0

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General Timber Beam

Description 6030 Avenida Encinas - Floor Addition
Beam B3

General Information

Code Ref 1997/2001 NDS, 2000/2003 IBC, 2003 NFPA 5000 Base allowables are user defined

Section Name	8 75x22 5	Center Span	23 00 ft	Lu	2 00 ft
Beam Width	8 750 in	Left Cantilever	ft	Lu	0 00 ft
Beam Depth	22 500 in	Right Cantilever	ft	Lu	0 00 ft
Member Type	GluLam	Douglas Fir, 24F - V8			
		Fb Base Allow	2,400 0 psi		
Load Dur Factor	1 250	Fv Allow	240 0 psi		
Beam End Fixity	Pin-Pin	Fc Allow	650 0 psi		
		E	1,700 0 ksi		

Full Length Uniform Loads

Center	DL	51 00 #/ft	LL	375 00 #/ft
Left Cantilever	DL	#/ft	LL	#/ft
Right Cantilever	DL	#/ft	LL	#/ft

Point Loads

Dead Load	2,380 0 lbs	lbs	lbs	lbs	lbs	lbs	lbs
Live Load	15,680 0 lbs	lbs	lbs	lbs	lbs	lbs	lbs
distance	11 500 ft	0 000 ft	0 000 ft	0 000 ft	0 000 ft	0 000 ft	0 000 ft

Summary

Beam Design OK

Span= 23 00ft, Beam Width = 8 750in x Depth = 22 5in, Ends are Pin-Pin

Max Stress Ratio	0 812 1				
Maximum Moment	132 0 k-ft		Maximum Shear * 1 5		19 7 k
Allowable	162 5 k-ft		Allowable		59 1 k
Max Positive Moment	132 01 k-ft	at 11 500 ft	Shear	@ Left	13 93 k
Max Negative Moment	0 00 k-ft	at 23 000 ft		@ Right	13 93 k
Max @ Left Support	0 00 k-ft		Camber	@ Left	0 000 in
Max @ Right Support	0 00 k-ft			@ Center	0 145 in
Max M allow	162 50			@ Right	0 000 in

fb	2,145 76 psi	fv	100 15 psi	Reactions			
Fb	2,641 22 psi	Fv	300 00 psi	Left DL	1 78 k	Max	13 93 k
				Right DL	1 78 k	Max	13 93 k

Deflections

Center Span	Dead Load	Total Load
Deflection	-0 097 in	-0 750 in
Location	11 500 ft	11 500 ft
Length/Defl	2,858 0	367 90

Left Cantilever	Dead Load	Total Load
Deflection	0 000 in	0 000 in
Length/Defl	0 0	0 0

Right Cantilever		
Deflection	0 000 in	0 000 in
Length/Defl	0 0	0 0

Camber (using 1 5 * D L Defl)

@ Center	0 145 in
@ Left	0 000 in
@ Right	0 000 in

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38884 Cherry Point Ln
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Phone (951) 461-9296

Title
Dsgnr
Description
Scope

Job #
Date 12 26PM, 4 DEC 05

Rev 580004
User KW-0600017, Ver 5 8 0 1 Dec-2003
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General Timber Beam

Description 6030 Avenida Encinas - Floor Addition
Beam B4

General Information

Code Ref 1997/2001 NDS, 2000/2003 IBC, 2003 NFPA 5000 Base allowables are user defined

Section Name	8 75x34 5	Center Span	27 50 ft	Lu	2 00 ft
Beam Width	8 750 in	Left Cantilever	ft	Lu	0 00 ft
Beam Depth	34 500 in	Right Cantilever	ft	Lu	0 00 ft
Member Type	GluLam	Douglas Fir, 24F - V8			
		Fb Base Allow	2,400 0 psi		
Load Dur Factor	1 250	Fv Allow	240 0 psi		
Beam End Fixity	Pin-Pin	Fc Allow	650 0 psi		
		E	1,700 0 ksi		

Full Length Uniform Loads

Center	DL	51 00 #/ft	LL	375 00 #/ft
Left Cantilever	DL	#/ft	LL	#/ft
Right Cantilever	DL	#/ft	LL	#/ft

Point Loads

Dead Load	5,474 0 lbs	lbs	lbs	lbs	lbs	lbs	lbs
Live Load	34,608 0 lbs	lbs	lbs	lbs	lbs	lbs	lbs
distance	13 750 ft	0 000 ft	0 000 ft	0 000 ft	0 000 ft	0 000 ft	0 000 ft

Summary

Beam Design OK

Span= 27 50ft, Beam Width = 8 750in x Depth = 34 5in, Ends are Pin-Pin

Max Stress Ratio 0 879 1

Maximum Moment	315 8 k-ft		Maximum Shear * 1 5		37 0 k
Allowable	359 3 k-ft		Allowable		90 6 k
Max Positive Moment	315 83 k-ft	at 13 750 ft	Shear	@ Left	25 90 k
Max Negative Moment	0 00 k-ft	at 0 000 ft		@ Right	25 90 k
Max @ Left Support	0 00 k-ft		Camber	@ Left	0 000 in
Max @ Right Support	0 00 k-ft			@ Center	0 140 in
Max M allow	359 26			@ Right	0 000 in

				Reactions			
fb	2,183 46 psi	fv	122 63 psi	Left DL	3 44 k	Max	25 90 k
Fb	2,483 65 psi	Fv	300 00 psi	Right DL	3 44 k	Max	25 90 k

Deflections

Center Span	Dead Load	Total Load
Deflection	-0 093 in	-0 697 in
Location	13 750 ft	13 750 ft
Length/Defl	3,533 0	473 30

Left Cantilever	Dead Load	Total Load
Deflection	0 000 in	0 000 in
Length/Defl	0 0	0 0

Right Cantilever		
Deflection	0 000 in	0 000 in
Length/Defl	0 0	0 0

Camber (using 1 5 * D L Defl)

@ Center	0 140 in
@ Left	0 000 in
@ Right	0 000 in

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General Timber Beam

Description 6030 Avenida Encinas - Floor Addition
Beam B5

General Information

Code Ref 1997/2001 NDS, 2000/2003 IBC, 2003 NFPA 5000 Base allowables are user defined

Section Name	8 75x27	Center Span	27 50 ft	Lu	2 00 ft
Beam Width	8 750 in	Left Cantilever	ft	Lu	0 00 ft
Beam Depth	27 000 in	Right Cantilever	ft	Lu	0 00 ft
Member Type	GluLam	Douglas Fir, 24F - V8			
		Fb Base Allow	2,400 0 psi		
Load Dur Factor	1 250	Fv Allow	240 0 psi		
Beam End Fixity	Pin-Pin	Fc Allow	650 0 psi		
		E	1,700 0 ksi		

Full Length Uniform Loads

Center	DL	51 00 #/ft	LL	375 00 #/ft
Left Cantilever	DL	#/ft	LL	#/ft
Right Cantilever	DL	#/ft	LL	#/ft

Point Loads

Dead Load	3,094 0 lbs	lbs	lbs	lbs	lbs	lbs	lbs
Live Load	18,928 0 lbs	lbs	lbs	lbs	lbs	lbs	lbs
distance	13 750 ft	0 000 ft	0 000 ft	0 000 ft	0 000 ft	0 000 ft	0 000 ft

Summary

Beam Design OK

Span= 27 50ft, Beam Width = 8 750in x Depth = 27 in, Ends are Pin-Pin

Max Stress Ratio 0 850 1

Maximum Moment	191 7 k-ft	Maximum Shear * 1 5	23 9 k
Allowable	225 6 k-ft	Allowable	70 9 k

Max Positive Moment	191 67 k-ft	at	13 750 ft	Shear	@ Left	16 87 k
Max Negative Moment	0 00 k-ft	at	0 000 ft		@ Right	16 87 k
Max @ Left Support	0 00 k-ft			Camber	@ Left	0 000 in
Max @ Right Support	0 00 k-ft				@ Center	0 183 in
Max M allow	225 63				@ Right	0 000 in

				Reactions			
fb	2,163 49 psi	fv	101 15 psi	Left DL	2 25 k	Max	16 87 k
Fb	2,546 76 psi	Fv	300 00 psi	Right DL	2 25 k	Max	16 87 k

Deflections

Center Span	Dead Load	Total Load
Deflection	-0 122 in	-0 900 in
Location	13 750 ft	13 750 ft
Length/Defl	2,708 5	366 50

Camber (using 1 5 * D L Defl)

@ Center	0 183 in
@ Left	0 000 in
@ Right	0 000 in

Left Cantilever	Dead Load	Total Load
Deflection	0 000 in	0 000 in
Length/Defl	0 0	0 0
Right Cantilever		
Deflection	0 000 in	0 000 in
Length/Defl	0 0	0 0

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Steel Beam Design

Description 6030 Avenida Encinas - Floor Addition
Beam B4A

General Information

Code Ref AISC 9th ASD, 1997 UBC, 2003 IBC, 2003 NFPA 5000

Steel Section : W18X97

		Pinned-Pinned	Fy	36 00ksi
Center Span	27 50 ft	Bm Wt Added to Loads	Load Duration Factor	1 00
Left Cant	0 00 ft	LL & ST Act Together	Elastic Modulus	29,000 0ksi
Right Cant	0 00 ft			
Lu Unbraced Length	2 00 ft			

Distributed Loads

Note! Short Term Loads Are WIND Loads

	#1	#2	#3	#4	#5	#6	#7	
DL	0 051							k/ft
LL	0 375							k/ft
ST								k/ft
Start Location								ft
End Location								ft

Point Loads

Note! Short Term Loads Are WIND Loads

	#1	#2	#3	#4	#5	#6	#7	
Dead Load	5 480							k
Live Load	34 610							k
Short Term								k
Location	13 750							ft

Summary

Beam OK
Static Load Case Governs Stress

Using W18X97 section, Span = 27 50ft, Fy = 36 0ksi
End Fixity = Pinned-Pinned, Lu = 2 00ft, LDF = 1 000

	Actual	Allowable
Moment	325 040 k-ft	372 240 k-ft
fb Bending Stress	20 747 ksi	23 760 ksi
fb / Fb	**0 873 1**	
Shear	27 234 k	143 217 k
fv Shear Stress	2 738 ksi	14 400 ksi
fv / Fv	**0 190 1**	

Max Deflection	-0 724 in
Length/DL Defl	2,789 1 1
Length/(DL+LL Defl)	455 8 1

Force & Stress Summary

<<-- These columns are Dead + Live Load placed as noted -->>

	Maximum	DL Only	LL @ Center	LL+ST @ Center	LL @ Cants	LL+ST @ Cants	
Max M +	325 04 k-ft	51 65	325 04				k-ft
Max M -							k-ft
Max M @ Left							k-ft
Max M @ Right							k-ft
Shear @ Left	27 23 k	4 77	27 23				k
Shear @ Right	27 23 k	4 77	27 23				k
Center Defl	-0 724 in	-0 118	-0 724	-0 724	0 000	0 000	in
Left Cant Defl	0 000 in	0 000	0 000	0 000	0 000	0 000	in
Right Cant Defl	0 000 in	0 000	0 000	0 000	0 000	0 000	in
Query Defl @	0 000 ft	0 000	0 000	0 000	0 000	0 000	in
Reaction @ Left	27 23	4 77	27 23	27 23			k
Reaction @ Rt	27 23	4 77	27 23	27 23			k

Fa calc'd per Eq E2-1, K*L/r < Cc
I Beam Passes Table B5 1, Fb per Eq F1-1, Fb = 0 66 Fy

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Steel Beam Design

Description 6030 Avenida Encinas - Floor Addition
Beam B5A

General Information

Code Ref AISC 9th ASD, 1997 UBC, 2003 IBC, 2003 NFPA 5000

Steel Section . W18X60

		Pinned-Pinned	Fy	36 00ksi
Center Span	27 50 ft	Bm Wt Added to Loads	Load Duration Factor	1 00
Left Cant	0 00 ft	LL & ST Act Together	Elastic Modulus	29,000 0ksi
Right Cant	0 00 ft			
Lu Unbraced Length	2 00 ft			

Distributed Loads

Note! Short Term Loads Are WIND Loads

	#1	#2	#3	#4	#5	#6	#7	
DL	0 051							k/ft
LL	0 375							k/ft
ST								k/ft
Start Location								ft
End Location								ft

Point Loads

Note! Short Term Loads Are WIND Loads

	#1	#2	#3	#4	#5	#6	#7	
Dead Load	3 100							k
Live Load	18 930							k
Short Term								k
Location	13 750							ft

Summary

Beam OK
Static Load Case Governs Stress

Using W18X60 section, Span = 27 50ft, Fy = 36 0ksi
End Fixity = Pinned-Pinned, Lu = 2 00ft, LDF = 1 000

	Actual	Allowable
Moment	197 378 k-ft	213 840 k-ft
fb Bending Stress	21 931 ksi	23 760 ksi
fb / Fb	**0 923 . 1**	
Shear	17 694 k	109 002 k
fv Shear Stress	2 338 ksi	14 400 ksi
fv / Fv	**0 162 1**	

Max Deflection	-0 797 in
Length/DL Defl	2,513 6 1
Length/(DL+LL Defl)	414 0 1

Force & Stress Summary

<<-- These columns are Dead + Live Load placed as noted -->>

	Maximum	DL Only	LL @ Center	LL+ST @ Center	LL @ Cants	LL+ST @ Cants	
Max M +	197 38 k-ft	31 78	197 38				k-ft
Max M -							k-ft
Max M @ Left							k-ft
Max M @ Right							k-ft
Shear @ Left	17 69 k	3 07	17 69				k
Shear @ Right	17 69 k	3 07	17 69				k
Center Defl	-0 797 in	-0 131	-0 797	-0 797	0 000	0 000	in
Left Cant Defl	0 000 in	0 000	0 000	0 000	0 000	0 000	in
Right Cant Defl	0 000 in	0 000	0 000	0 000	0 000	0 000	in
Query Defl @	0 000 ft	0 000	0 000	0 000	0 000	0 000	in
Reaction @ Left	17 69	3 07	17 69	17 69			k
Reaction @ Rt	17 69	3 07	17 69	17 69			k

Fa calc'd per Eq E2-1, K*L/r < Cc
I Beam Passes Table B5 1, Fb per Eq F1-1, Fb = 0 66 Fy

HARABOR ENGINEERING

* STRUCTURAL DESIGN *

PROJECT 6030 AVENIDA ENCINAS - FLOOR Addition

PROJECT No 05-14

DATE : 11/10/05 BY : MH

RAFTERS, JOISTS, HEADERS & BEAMS

ELEM MARK	LOCATION	SPAN (ft)	LOAD (plf)	DURATION FACTOR	ELEMENT SIZE	REACTION (lbs)
J1		13.5'	1.33'(17+250) = 355 plf	1.0	18" TJI/L65 @ 16" oc	
					(see design by TRUS JOIST)	

HARABOR ENGINEERING

* STRUCTURAL DESIGN *

PAGE No 21 OF 123

PROJECT : 6030 AVENIDA ENCINAS - FLOOR Addition

PROJECT No 05-14

DATE : 11/10/05 BY : MH

BEAMS.

ELEM MARK	LOCATION	SPAN (ft)	LOAD (LLred - (plf))	DURATION FACTOR	ELEMENT SIZE	REACTION (lbs)
B_1		26'	14'(17+104) = < 238 / 1456 plf	1.0	8¾x24" GLBm w/¼" camber	3094 DL / 18,928 LL
B_2		20'	14'(17+112) = < 238 / 1568 plf	1.0	6¾x21" GLBm w/3/16" camber	2380 DL / 15,680 LL
* B_3			(see loading diagr.)		8¾x22½" GLBm w/3/16" camber	1780 DL / 12,150 LL
* B_4			— " —		8¾x34½" GLBm w/3/16" camber	3440 DL / 22,460 LL
* B_5			— " —		8¾x27" GLBm w/3/16" camber	2250 DL / 14,620 LL
B_{4A}	STEEL				W18x97 w/½" camber	
B_{5A}	STEEL				W18x60 w/½" camber	

CHECK EXISTING R/C COLS for (E) Load + Added Loads from the Additional FLOOR -

NOTE! By inspection, the (A) COL @ GL. 6 & GL. F1 (or) (B) COL. @ GL. 6 & GL. F5 is the most loaded

COND. (A)

Determine (E) ROOF loads

ROOF Trib. area $= \frac{1}{2}(46.67' + 40') \times 55' = 2383.4$ sq ft

Load $\cong 2383(\underset{DL}{12} + \underset{\text{reduced } LL}{16}) = 66{,}736^{\#} = \begin{cases} DL = 28{,}596^{\#} \\ LL = 38{,}128^{\#} \end{cases}$

Determine (E) FLOOR loads

FLOOR Trib area $= (27.5') \times (\frac{1}{2})(26 + 19.67) = 628$ sq ft

$DL \cong \left(\frac{10''}{12} \times 145\right) = 121$ psf ; $LL = 250$ psf

Load $= 628(121 + 250) = 232{,}988^{\#} = \begin{cases} DL = 75{,}988^{\#} \\ LL = 157{,}000^{\#} \end{cases}$

Conser. - Not reduced!

Determine NEW Load. $(2B_5 + B_1)$

Load $= 2(2250 + 14{,}620) + (3094 + 18{,}928) = \begin{cases} DL = 7594^{\#} \\ LL = 48{,}168 \end{cases}$

TOTAL load $= \begin{cases} DL = 112{,}178^{\#} \\ LL = 243{,}296^{\#} \end{cases}$

(MAX. Load!)

$\Sigma = 355.5^{K}$

See COND. (B) - next page -

COND. (B)

- NO ROOF LOAD

DETERMINE (E) FLOOR loads

FLOOR Trib. area $= (27.5) \times (1/2)(26' + 20.67') = 641.7$ sq.ft

Load $= 642 \cdot (121 + 250) = 238{,}182^{\#} = \begin{cases} DL = 77{,}682 \\ LL = 160{,}500^{\#} \end{cases}$

conservative -

DETERMINE NEW load - $(B_1 + B_2 + 2 \cdot B_4)$

Load $= (3094 + 18{,}928) + (2380 + 15{,}680) + 2(3440 + 22{,}460) =$

$= \begin{cases} DL = 12{,}354^{\#} \\ LL = 79{,}528^{\#} \end{cases}$

TOTAL load $= \begin{cases} DL = 90{,}036^{\#} \\ LL = 240{,}028^{\#} \end{cases}$

COND (A) - Governs.

$TL \cong 330.07^{K}$

Conclusion: Based on the existing data and our computer check, the COLs are - OK -

check FTGs

FTG for COND (A) SIZE: (12'-0") SQ. Area = 144 sq.ft

TOTAL capacity = 144 (2500 psf) = 360 K

FTG, OK

FTG for COND (B) SIZE: (10'-6") SQ. Area = 110.25 sq.ft

TOTAL Capacity = 110.25 (2500 psf) = 275.6 K

(cont'd on pg. 30.)

ORIGINAL DESIGN

S P A N C R E T E

OF

CALIFORNIA

CALCULATIONS FOR

**********CARLSBAD DIST.CENTER**********

DESIGN CRITERIA:

REGISTERED PROFESSIONAL ENGINEER
No. 43046
Exp. 3-31-96
CIVIL
STATE OF CALIFORNIA

GOVERNING CODE - UBC

FIRE SEPARATION - 2 Hour

CONCRETE
- Planks - 4000 psi
- Girders - 6000 psi
- Columns - 6000 psi
- Topping - 4000 psi - 4 IN. (Hardrock Concrete)

WELDING REQUIRED @ COLUMN TOPS (MAX. ONE END EACH BEAM)

LOADING (uniform u.n.o.)
- Live - 250 psf
- Dead - 0 psf

PRINTED
NOV 9 1992

08-24-1992
AB

SPANCRETE JOB # 596
TOTAL PAGES - 15

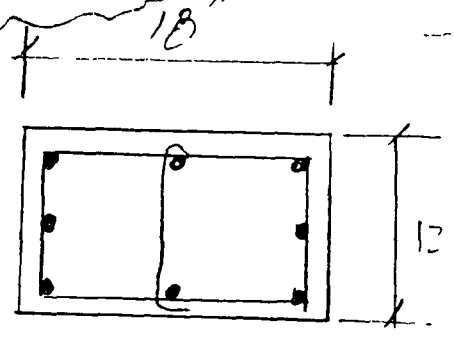
ORIGINAL DESIGN-

```
+-------------+
+ INPUT DATA +
+-------------+
      TOTAL STEEL AREA (IN^2) = 10.12
      AREA CORNER BARS (IN^2) = 5.06
      BARS ALONG FACES PARALLEL TO X DIRECTION (IN^2) = 2.53
      BARS ALONG FACES PARALLEL TO Y DIRECTION (IN^2) = 2.53

LENGTH UNSUPPORTED (FT) = 9
------
IN X DIRECTION
       BRACED AGAINST SIDESWAY
      EFFECTIVE LENGTH FACTOR (K) = 1
IN Y DIRECTION
       BRACED AGAINST SIDESWAY
      EFFECTIVE LENGTH FACTOR (K) = 1

ECCENTRICITY
------------
          IN X DIRECTION =     2.00
          IN Y DIRECTION =     0.00

RATIO OF END MOMENTS SMALLER/LARGER IN X DIRECTION = 0

+-----------------+
+ ALLOWABLE LOAD +
+-----------------+

(ULT.--FACTORED LOADS)

(KIPS)     = 667.9
(FT-KIPS) = 111.3   X DIRECTION
            0       Y DIRECTION
```

SPECIAL NOTES

1) @ FLFS FROM 1 TO 4 5 WE HAVE COL FROM MEZ COMING ON TOP OF P/C COL. C2 COL HAS 1" DESIGN FOR 275K EXTA LOAD IF COL ABOVE > 275K ∴ C2 DESIGN SHOULD BE RC DISIGNED

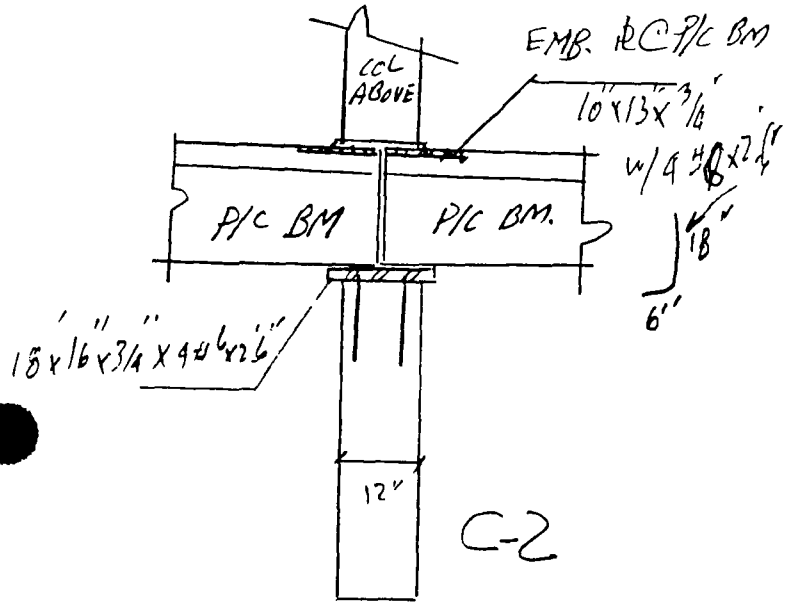
2) THERE IS A COL FROM MEZ. COMMING ON P/C BM ABOU 4' AWAY @ LINE 2 @ GIRD F.5 BEAM SHOULD BE CHKED FOR THIS LOAD I ASKED ENG. OF REC SHON LAWSON HE SAID HE DOES KNOW THE MAG. OF [illegible]



USE C2 for ALL COL

10-19-92

C2 @ LINE 2 · COL. ABOVE AND/OR COL from RF



USE 8#10 MAIN BARS

TIES #3 @12" O/C

#3 @6" for L/6 EE

USE 18"x20"x1' BASE R

w/4 ∿ 1" ϕ A.B. x 18"

USE 18"x16"x3/4" TOR R w/4 ∿

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Job #
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User KW-0600017 Ver 5 8 0 1 Dec-2003
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Rectangular Concrete Column

Description 6030 Avenida Encinas - Floor Addition
Existing R/C Col - Check

General Information

Code Ref ACI 318-02, 1997 UBC, 2003 IBC, 2003 NFPA 5000

Width	12 000 in	f'c	6,000 0 psi	Total Height	9 000 ft
Depth	18 000 in	Fy	60,000 0 psi	Unbraced Length	9 000 ft
Rebar		Seismic Zone	4	Eff Length Factor	1 000
3- # 10 d =	2 000 in	LL & ST Loads Act Separately		Column is BRACED	
2- # 10 d =	9 000 in				
3 - # 10 d =	16 000 in				

Loads

Note Load factoring supports 2003 IBC and 2003 NFPA 5000 by virtue of their references to ACI 318-02 for concrete design
Factoring of entered loads to ultimate loads within this program is according to ACI 318-02 C 2

	Dead Load	Live Load	Short Term	Eccentricity
Axial Loads	112 200 k	243 300 k	k	2 000 in

Summary

Column is OK

12 00 x 18 00in Column, Rebar 3-#10 @ 2 00in, 2-#10 @ 9 00in, 3-#10 @ 16 00in

	ACI C-1	ACI C-2	ACI C-3
Applied Pu Max Factored	**570 69 k**	**157 08 k**	**100 98 k**
Allowable Pn * Phi @ Design Ecc	**829 32 k**	**829 32 k**	**829 32 k**
M-critical	95 11 k-ft	26 18 k-ft	16 83 k-ft
Combined Eccentricity	2 000 in	2 000 in	2 000 in
Magnification Factor	1 00	1 00	1 00
Design Eccentricity	2 000 in	2 000 in	2 000 in
Magnified Design Moment	95 11 k-ft	26 18 k-ft	16 83 k-ft
Po * 80	1,327 51 k	1,327 51 k	1,327 51 k
P Balanced	365 89 k	365 89 k	365 89 k
Ecc Balanced	14 130 in	14 130 in	14 130 in

Slenderness

per ACI 318-95 Section 10 12 & 10 13

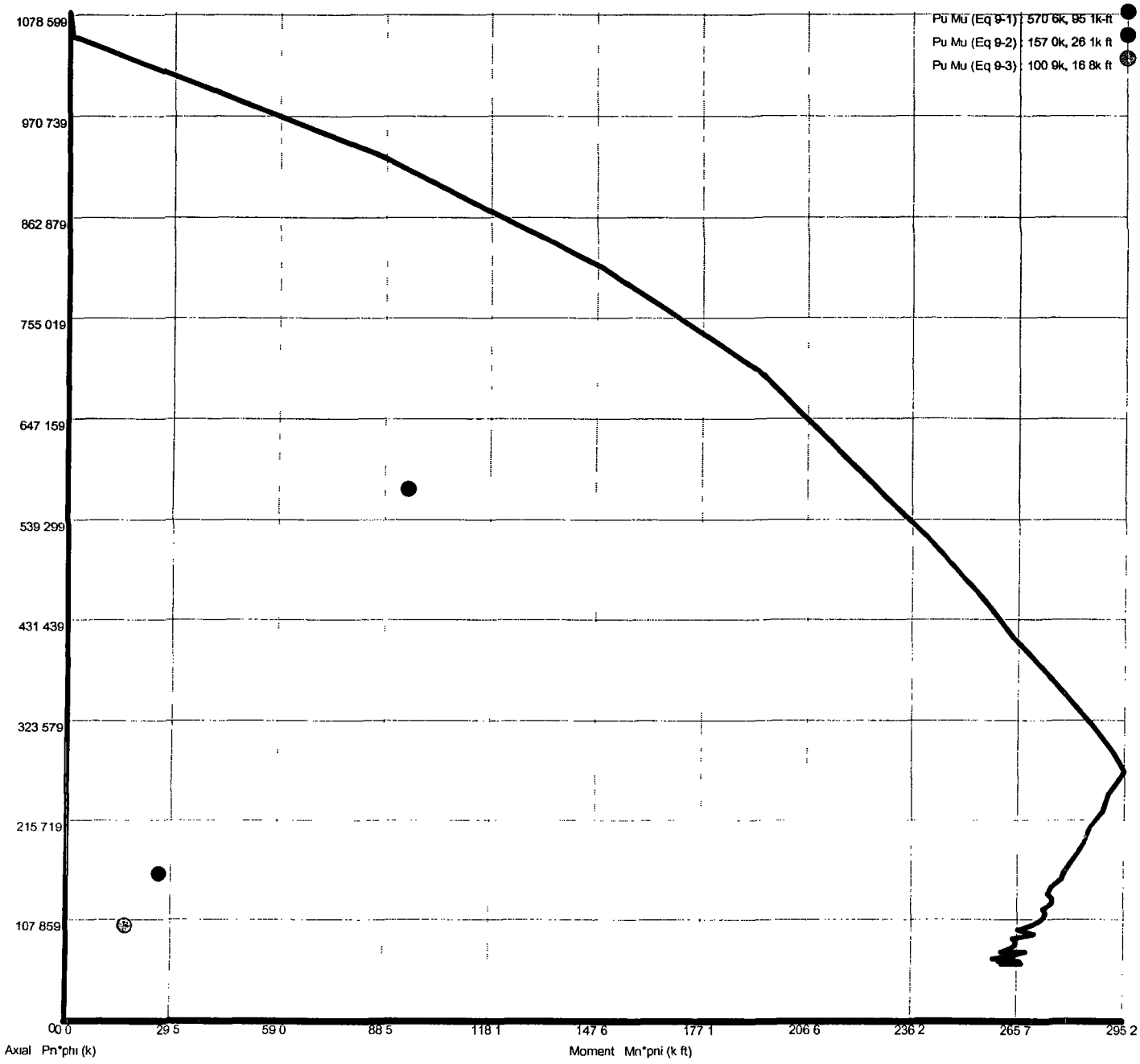
Actual k Lu / r 30 000 | Elastic Modulus 4,415 2 ksi | Beta 0 750

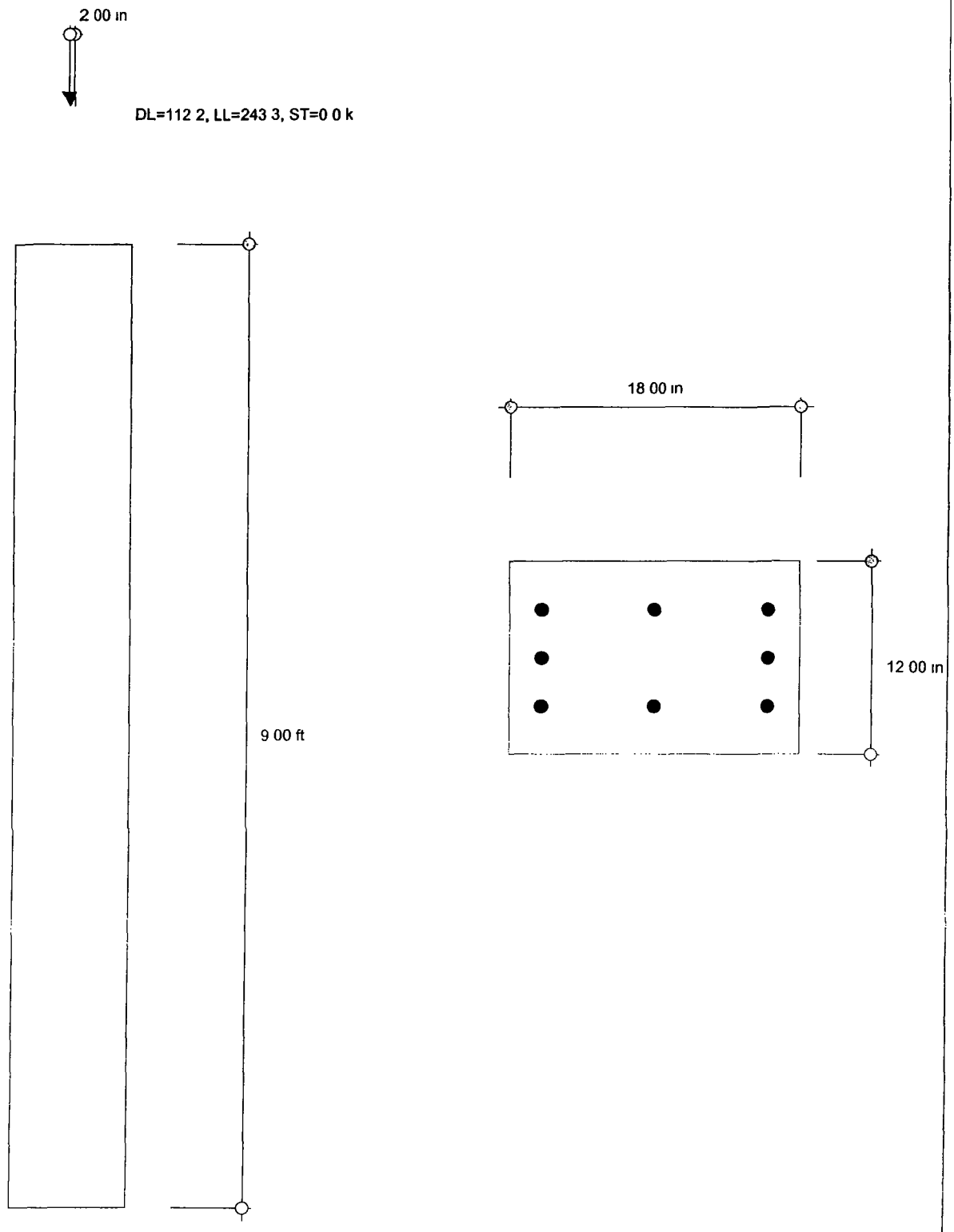
	ACI Eq C-1	ACI Eq C-2	ACI Eq C-3
Neutral Axis Distance	19 8950 in	19 8950 in	19 8950 in
Phi	0 6500	0 6500	0 6500
Max Limit kl/r	34 0000	34 0000	34 0000
Beta = M sustained/M max	0 2752	1 0000	1 0000
Cm	1 0000	1 0000	1 0000
EI / 1000	0 00	0 00	0 00
Pc pi^2 E I / (k Lu)^2	0 00	0 00	0 00
alpha MaxPu / (75 Pc)	0 0000	0 0000	0 0000
Delta	1 0000	1 0000	1 0000
Ecc Ecc Loads + Moments	2 000	2 000	2 000 in
Design Ecc = Ecc * Delta	**2 000**	**2 000**	**2 000 in**

ACI Factors

(per ACI 318-02, applied internally to entered loads)

ACI C-1 & C-2 DL	1 400	ACI C-2 Group Factor	0 750	Add"l "1 4" Factor for Seismic	1 400
ACI C-1 & C-2 LL	1 700	ACI C-3 Dead Load Factor	0 900	Add"l "0 9" Factor for Seismic	0 900
ACI C-1 & C-2 ST	1 700	ACI C-3 Short Term Factor	1 300		
seismic = ST *	1 100				

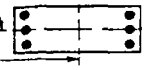

Pu Mu (Eq 9-1) : 570 6k, 95 1k-ft
Pu Mu (Eq 9-2) : 157 0k, 26 1k ft
Pu Mu (Eq 9-3) : 100 9k, 16 8k ft
1078 599
970 739
862 879
755 019
647 159
539 299
431 439
323 579
215 719
107 859
0
0 0
29 5
59 0
88 5
118 1
147 6
177 1
206 6
236 2
265 7
295 2
Axial Pn*phi (k)
Moment Mn*phi (k ft)


2 00 in
DL=112 2, LL=243 3, ST=0 0 k
9 00 ft
18 00 in
12 00 in

RECTANGULAR TIED COLUMNS

BARS Grade 60

Short columns (1)—no sidesway
Bending on major or minor axis MI MA



12" × 16"

$0.10 f'_c A_g = 115$ kips (2)

Concrete $f'_c = 6{,}000$ psi		0.80 ϕP_o			ϕP_n (kips) ULTIMATE USABLE CAPACITY, $\phi = 0.70$ (2) Eccentricity, $e = \phi M_n / \phi P_n$										For ϕP_n at (2): OT (3)	Balance		115 k (2)	O (2)
(4) Bars	P %	ϕP_n (kips)	AXIS	e (in)	2"	3"	4"	6"	8"	12"	16"	20"	24"	28"	e (in)	e (in)	ϕP_b (in)	e (in)	ϕM_n (k-ft)
6-#9	3.13	733	MA	1.43	667	561	470	345	270	168	119	0	0	0	3.06	8.69	251	16.45	163
3L-2S			MI	1.11	608	488	397	279	215	124	0	0	0	0	2.67	8.21	209	12.72	113
6-#10	3.97	782	MA	1.40	708	595	500	372	293	192	136	0	0	0	3.10	9.74	246	18.58	200
3L-2S			MI	1.09	646	521	426	302	233	148	0	0	0	0	2.72	9.71	195	14.61	138
6-#11	4.88	836	MA	1.35	749	627	528	394	311	211	151	117	0	0	3.14	11.08	232	20.41	225
3L-2S			MI	1.05	682	549	442	314	242	166	116	0	0	0	2.76	11.94	167	16.21	161
6-#14	7.03	963	MA	1.28	849	709	599	453	360	251	189	147	120	0	3.18	14.47	211	25.06	285
3L-2S			MI	.99	774	621	500	356	276	191	145	117	0	0	2.80	19.69	119	20.37	216
8-#8	3.29	742	MA	1.47	682	578	489	365	288	185	130	0	0	0	3.16	9.39	251	17.81	172
3E			MI	1.05	597	470	377	260	192	116	0	0	0	0	2.46	7.34	215	12.14	120
8-#9	4.17	794	MA	1.44	726	615	523	395	314	213	151	116	0	0	3.22	10.62	247	20.25	212
3E			MI	1.02	633	499	402	280	214	133	0	0	0	0	2.49	8.51	202	13.64	144
8-#10	5.29	861	MA	1.40	782	663	565	431	345	246	176	136	0	0	3.28	12.25	242	23.38	257
3E			MI	.98	678	535	432	303	233	153	0	0	0	0	2.50	10.26	185	15.47	168
8-#8	3.29	742	MA	1.41	671	558	464	334	260	164	118	0	0	0	2.92	8.19	255	16.45	161
4L-2S			MI	1.12	617	498	408	289	223	131	0	0	0	0	2.67	8.43	212	13.25	120
8-#9	4.17	794	MA	1.37	712	591	492	358	279	183	133	0	0	0	2.94	9.09	251	18.38	192
4L-2S			MI	1.09	657	532	440	313	242	156	0	0	0	0	2.73	9.97	199	15.24	146
8-#10	5.29	861	MA	1.34	763	633	528	387	304	207	151	118	0	0	2.95	10.28	246	20.64	229
4L 2S			MI	1.06	708	576	477	342	266	184	130	0	0	0	2.78	12.29	180	17.74	179
8 #11	6.50	932	MA	1.28	815	673	561	412	325	226	166	130	0	0	2.98	11.89	229	22.54	263
4L-2S			MI	1.01	757	614	499	357	278	192	147	0	0	0	2.81	16.30	144	19.78	207
10 #10	6.61	939	MA	1.35	838	704	596	447	356	256	189	148	122	0	3.13	12.81	241	25.36	288
4L 3S			MI	.97	742	592	485	344	266	183	134	0	0	0	2.58	13.06	170	18.44	203

RECTANGULAR TIED COLUMNS 12" × 20"

$0.10 f'_c A_g = 144$ kips

4 #7	1.00	759	MA	2.02	759	673	589	447	347	182	0	0	0	0	3.69	8.39	332	13.57	93
2E			MI	1.17	633	495	383	224	0	0	0	0	0	0	2.47	5.11	296	7.59	55
4-#8	1.32	782	MA	2.02	782	695	611	470	370	217	0	0	0	0	3.80	9.13	329	15.18	120
2E			MI	1.16	652	512	401	254	155	0	0	0	0	0	2.52	5.54	289	8.36	69
4 #9	1.67	808	MA	2.02	808	719	634	493	393	252	157	0	0	0	3.91	9.96	327	16.93	149
2E			MI	1.15	672	531	419	282	179	0	0	0	0	0	2.56	6.03	281	9.17	83
4 #10	2.12	841	MA	2.01	841	749	663	521	420	289	189	0	0	0	4.04	11.02	323	19.15	185
2E			MI	1.13	698	553	439	300	206	0	0	0	0	0	2.61	6.69	270	10.19	101
4-#11	2.60	877	MA	1.99	876	780	691	546	444	321	217	157	0	0	4.19	12.14	318	21.28	221
2E			MI	1.10	721	571	450	309	228	0	0	0	0	0	2.67	7.52	249	11.09	118
4-#14	3.75	962	MA	1.97	958	854	760	608	501	368	283	210	165	0	4.42	14.86	310	26.65	308
2E			MI	1.06	783	617	489	341	260	165	0	0	0	0	2.72	9.79	215	13.39	157
4-#18	6.67	1177	MA	1.88	1162	1039	929	754	630	473	379	316	262	217	4.83	22.07	291	39.62	516
2E			MI	.96	930	714	567	398	306	210	159	0	0	0	2.75	22.74	113	17.80	244
6-#6	1.10	766	MA	2.03	766	680	597	456	356	196	0	0	0	0	3.70	8.62	333	14.14	102
2L 3S			MI	1.13	628	481	365	212	0	0	0	0	0	0	2.36	4.79	299	7.75	60
6 #7	1.50	796	MA	2.03	796	708	624	484	385	238	146	0	0	0	3.84	9.57	330	16.20	136
2L 3S			MI	1.11	648	498	383	235	157	0	0	0	0	0	2.38	5.17	292	8.53	78
6-#8	1.98	831	MA	2.03	831	741	655	514	415	281	182	0	0	0	3.98	10.70	327	18.61	175
2L-3S			MI	1.09	671	518	401	261	176	0	0	0	0	0	2.39	5.64	284	9.38	98

(Continued)

(1) See "Slender Columns, Capacity Reduction for", page 2-11.
(2) See "Control Points for Interaction Curves", "Typical Interaction Curve", Fig. 3-11.
(3) "OT" is zero tension in bars on the tension side. At lesser eccentricities all splices carry design compression only.

- Cont'd from pg 23 -

Based on the fact that existing FLOOR Loads for COND (B) (see pg 23) are conservative (250 psf - LL) and knowing that this floor will never be loaded to this level, and assuming LL = 125 psf max, the TOTAL Load will be: $(77.68^k + 80.25^k + 12.35^k + 79.53^k) = 249.8^k$

So, $275.6^k > 249.8^k$
capacity Actual max load

FTG. for cond (B) is also OK -

LATERAL ANALYSIS.

GENERAL ASSUMPTIONS .

The Structural System employed is a Bearing Wall System - Light-framed walls with shear panels

The Lateral Forces (Shear Base generated by Wind or Seismic Forces, whichever will be greater), will be resisted by The Roof Diaphragm action and shear walls

For Shear Walls locations please see Key Plan or Blueprints

In order to perform a complete and accurate Lateral Analysis, a Shear Wall Analysis Computer Program will be used

The PROGRAM (SHEAR WALL ANALYSIS) will determine

1 Actual shear (plf) on every Shear Wall
2 Uplift Force (lbs) - if there is any
3 OverTurning Safety Factor
4 Actual Soil Pressure value (psf)

TYPICAL SHEAR WALL ANALYSIS.

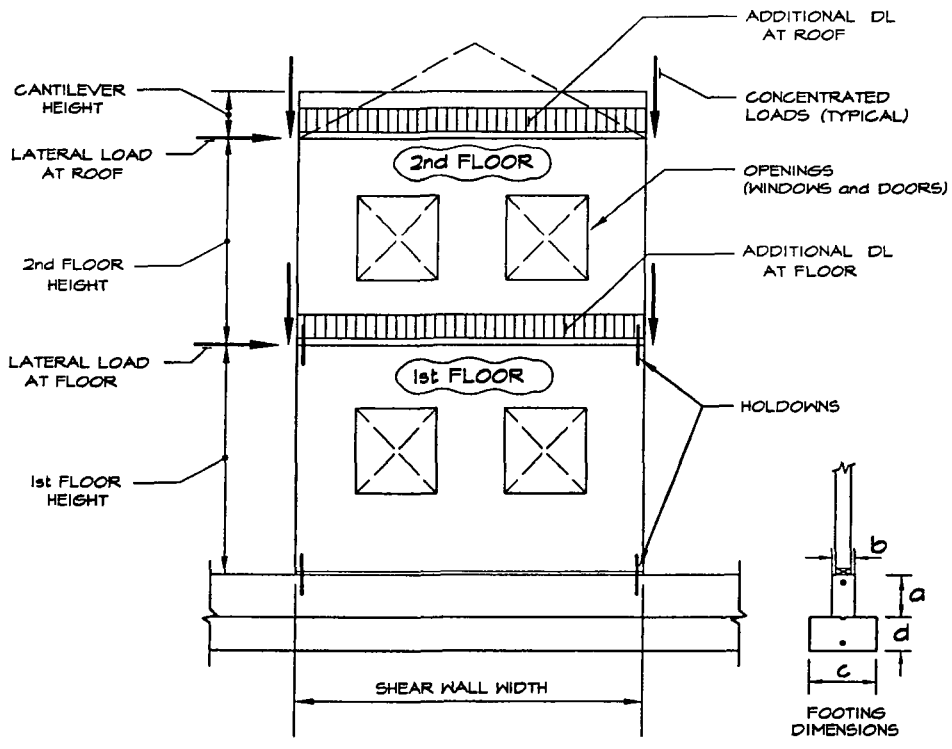
USING A COMPUTER PROGRAM

This Computer Program analyses one, two, three or four story SHEAR WALL

- The INPUT ALLOWS TO ENTER
  - Up to three openings per level,
  - ADDITIONAL DL (@ Roof and/or Floor), to allow for framing load
  - CONCENTRATED DL (@ Roof and/or Floor), to allow for an equivalent Concentrated Load, representing the effect of wall connections at each end, to walls oriented perpendicular to The Shear Wall Analized (IF ANY)
- The PROGRAM computes The Actual Shear value, The Uplift Force, The Resisting Moment, The OverTurning Safety Factor and The Actual Soil Pressure, considering the Openings in every situation
  - The PROGRAM also allows for a footing extension INPUT, in order to satisfy The OverTurning and/or The Soil Pressure conditions In this Case, The Bending of The Footing it is checked and The Req'd Reinforcing it is designed
  - Basicaly, The INPUT Elements could be CHANGED (increased or decreased as required) CONTINUOUSLY, until an acceptabile solution it is reached (in The OUTPUT column)

THIS SKETCH IT IS A SCHEMATIC REPRESENTATION OF A TWO STORY SHEAR WALL

USING THE TERMS OF SHEAR WALL ANALYSIS PROGRAM



HARABOR ENGINEERING

* STRUCTURAL DESIGN *

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ROOF/FLOOR DIAPHRAGM TYPES.

DIAPHR. TYPE	DESCRIPTION	MAX. ALLOW. SHEAR (plf)
D	15/32" (or *1/2") APA RATED SHEATING,* BLOCKED and nailed with ** 8d @ 6 inches OC at diaphragm boundaries (all CASES), at continuous panel edges paralel to load (CASE 3 & 4), and at all panel edges (CASE 5 & 6), ** 8d @ 6 inches OC at other panel edges (CASE 1, 2, 3 & 4), and ** 8d @ 12 inches OC (8d @ 10 inches OC at FLOORS), along intermediate framing members	270
E	15/32" (or *5/8") APA RATED SHEATING,* BLOCKED and nailed with ** 10d @ 6 inches OC at diaphragm boundaries (all CASES), at continuous panel edges paralel to load (CASE 3 & 4), and at all panel edges (CASE 5 & 6), ** 10d @ 6 inches OC at other panel edges (CASE 1, 2, 3 & 4), and ** 10d @ 12 inches OC (8d @ 10 inches OC at FLOORS), along intermediate framing members	290
F	19/32" (or *3/4") APA RATED SHEATING,* BLOCKED and nailed with ** 10d @ 6 inches OC at diaphragm boundaries (all CASES), at continuous panel edges paralel to load (CASE 3 & 4), and at all panel edges (CASE 5 & 6), ** 10d @ 6 inches OC at other panel edges (CASE 1, 2, 3 & 4), and ** 10d @ 12 inches OC (8d @ 10 inches OC at FLOORS), along intermediate framing members	✓ 320

* APA RATED SHEATING could be

a STURD-I-FLOOR Exp 1, Exp 2 or EXT, or

b APA STRUCTURAL II Rated Sheating Exp 1, or EXT (CD-X for Example)

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TABLE 23-II-H—ALLOWABLE SHEAR IN POUNDS PER FOOT FOR HORIZONTAL WOOD STRUCTURAL PANEL DIAPHRAGMS WITH FRAMING OF DOUGLAS FIR-LARCH OR SOUTHERN PINE[1]

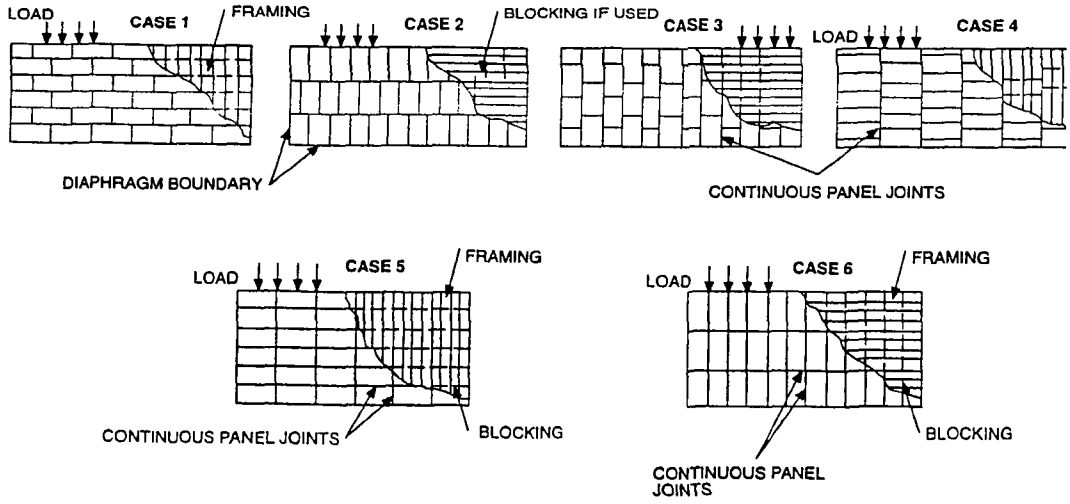
PANEL GRADE	COMMON NAIL SIZE	MINIMUM NAIL PENETRATION IN FRAMING (Inches)	MINIMUM NOMINAL PANEL THICKNESS (Inches)	MINIMUM NOMINAL WIDTH OF FRAMING MEMBER (Inches)	BLOCKED DIAPHRAGMS: Nail spacing (in.) at diaphragm boundaries (all cases), at continuous panel edges parallel to load (Cases 3 and 4) and at all panel edges (Cases 5 and 6) × 25.4 for mm: 6	4	2½[2]	2[2]	UNBLOCKED DIAPHRAGMS: Nails spaced 6" (152 mm) max. at supported edges: Case 1 (No unblocked edges or continuous joints parallel to load)	All other configurations (Cases 2, 3, 4 5 and 6)
					Nail spacing (in.) at other panel edges × 25.4 for mm: 6	6	4	3		
		× 25.4 for mm			× 0.0146 for N/mm					
Structural 1	6d	1¼	5/16	2 3	185 210	250 280	375 420	420 475	165 185	125 140
	8d	1½	3/8	2 3	270 300	360 400	530 600	600 675	240 265	180 200
	10d[3]	1⅝	15/32	2 3	320 360	425 480	640 720	730 820	285 320	215 240
C-D C-C, Sheathing and other grades covered in UBC Standard 23 2 or 23-3	6d	1¼	5/16	2 3	170 190	225 250	335 380	380 430	150 170	110 125
			3/8	2 3	185 210	250 280	375 420	420 475	165 185	125 140
	8d	1½	3/8	2 3	240 270	320 360	480 540	545 610	215 240	160 180
			7/16	2 3	255 285	340 380	505 570	575 645	230 255	170 190
			15/32	2 3	270 300	360 400	530 600	600 675	240 265	180 200
	10d[3]	1⅝	15/32	2 3	290 325	385 430	575 650	655 735	255 290	190 215
			19/32	2 3	320 360	425 480	640 720	730 820	285 320	215 240

[1]These values are for short time loads due to wind or earthquake and must be reduced 25 percent for normal loading Space nails 12 inches (305 mm) on center along intermediate framing members

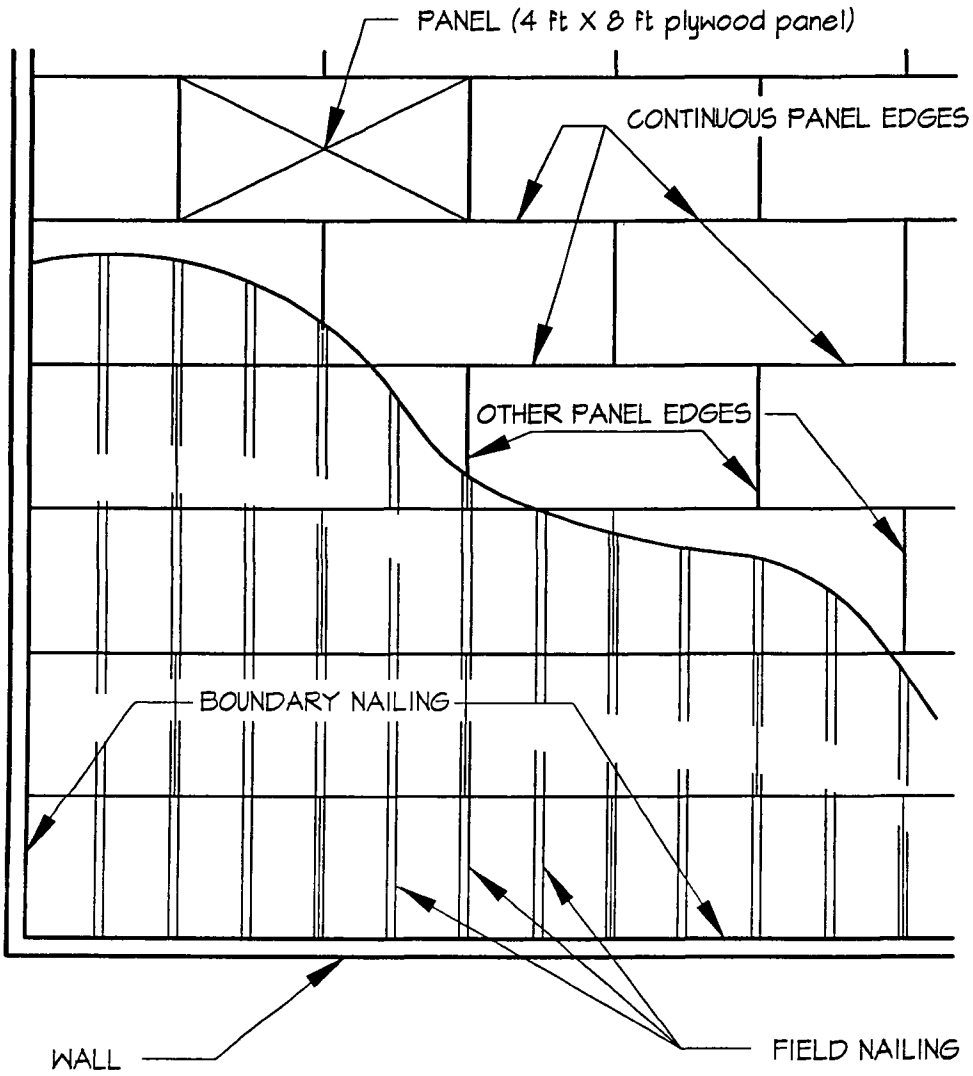
Allowable shear values for nails in framing members of other species set forth in Division III Part III, shall be calculated for all other grades by multiplying the shear capacities for nails in Structural I by the following factors 0 82 for species with specific gravity greater than or equal to 0 42 but less than 0 49 and 0 65 for species with a specific gravity less than 0 42

[2]Framing at adjoining panel edges shall be 3 inch (76 mm) nominal or wider and nails shall be staggered where nails are spaced 2 inches (51 mm) or 2½ inches (64 mm) on center

[3]Framing at adjoining panel edges shall be 3 inch (76 mm) nominal or wider and nails shall be staggered where 10d nails having penetration into framing of more than 1⅜ inches (41 mm) are spaced 3 inches (76 mm) or less on center



NOTE Framing may be oriented in either direction for diaphragms provided sheathing is properly designed for vertical loading



ROOF/FLOOR DIAPHRAGM NAILING

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SHEAR WALL TYPE	MAX. ALLOW. SHEAR (plf)	SHEAR WALL TYPEs (See NOTE 1a & 1b)		SEE NOTE
		Sheathing	Nailing	
A	180	7/8" CEMENT PLASTER w/WOVEN WIRE LATH	No 11ga x 1 1/2" LONG w/ 7/16" HEADS @ 6" oc	
B	230	3/8" STRUCT 1 PLY ONE SIDE	8d @ 6" oc EN, BN 8d @ 12" oc FN	
C	280	15/32" STRUCT 1 PLY ONE SIDE	8d @ 6" oc EN, BN 8d @ 12" oc FN	
D	360	3/8" STRUCT 1 PLY ONE SIDE	8d @ 4" oc EN, BN 8d @ 12" oc FN	Note 3
E	430	15/32" STRUCT 1 PLY ONE SIDE	8d @ 4" oc EN, BN 8d @ 12" oc FN	Note 3
F	460	3/8" STRUCT 1 PLY ONE SIDE	8d @ 3" oc EN, BN 8d @ 12" oc FN	Note 3
G	550	15/32" STRUCT 1 PLY ONE SIDE	8d @ 3" oc EN, BN 8d @ 12" oc FN	Note 3
H	665	15/32" STRUCT 1 PLY ONE SIDE	10d @ 3" oc EN, BN 10d @ 12" oc FN	Note 3
I	(2x360) 720	3/8" STRUCT 1 PLY BOTH SIDES	8d @ 4" oc EN, BN 8d @ 12" oc FN	Note 2 & 3
J	(2x430) 860	15/32" STRUCT 1 PLY BOTH SIDES	8d @ 4" oc EN, BN 8d @ 12" oc FN	Note 2 & 3
K	(2x460) 920	3/8" STRUCT 1 PLY BOTH SIDES	8d @ 3" oc EN, BN 8d @ 12" oc FN	Note 2 & 3
L	(2x550) 1100	15/32" STRUCT 1 PLY BOTH SIDES	8d @ 3" oc EN, BN 8d @ 12" oc FN	Note 2 & 3
M	(2x665) 1330	15/32" STRUCT 1 PLY BOTH SIDES	10d @ 3" oc EN, BN 10d @ 12" oc FN	Note 2 & 3

NOTES For SHEAR TRANSFER Connections and ALL NOTEs see next three pages

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SHEAR TRANSFER CONNECTIONS (See NOTE 4, 5, 6 & 7)

SHEAR WALL TYPE	MAX ALLOW SHEAR (plf)	BOTTOM PLATE CONN			TOP PLATE CONN		
		CONNECTION TYPE - A	CONNECTION TYPE - B	CONNECTION TYPE - C	CONNECTION TYPE - D (OR)	CONNECTION TYPE - E (OR)	TYPE - E alt.
A	180	5/8" AB @ 40" oc	SHOT PINS @ 14" oc	16d @ 8" oc	16d @ 8" oc	A34 @ 24" oc	A35 @ 24" oc
B	230	5/8" AB @ 36" oc	SHOT PINS @ 10" oc	16d @ 6" oc	16d @ 6" oc	A34 @ 18" oc	A35 @ 21" oc
C	280	5/8" AB @ 32" oc	SHOT PINS @ 9" oc	16d @ 5" oc	16d @ 5" oc	A34 @ 15" oc	A35 @ 18" oc
D	360	5/8" AB @ 24" oc	SHOT PINS @ 7" oc	16d @ 4" oc	16d @ 4" oc	A34 @ 12" oc	A35 @ 15" oc
E	430	5/8" AB @ 21" oc	SHOT PINS @ 6" oc	16d @ 3" oc	16d @ 3" oc	A34 @ 10" oc	A35 @ 12" oc
F	460	5/8" AB @ 18" oc	SHOT PINS @ 5" oc	16d @ 3" oc	16d @ 3" oc	A34 @ 9" oc	A35 @ 10" oc
G	550	5/8" AB @ 16" oc	SHOT PINS @ 4" oc	LAG BOLTS @ 10" oc	LAG BOLTS @ 10" oc	A34 @ 8" oc	A35 @ 9" oc
H	665	5/8" AB @ 14" oc	SHOT PINS @ 4" oc	LAG BOLTS @ 9" oc	LAG BOLTS @ 9" oc	A34 @ 6" oc	A35 @ 8" oc
I	(2x360) 720	5/8" AB @ 12" oc	—	LAG BOLTS @ 8" oc	LAG BOLTS @ 8" oc	A34 @ 6" oc	A35 @ 7" oc
J	(2x430) 860	5/8" AB @ 10" oc	—	LAG BOLTS @ 7" oc	LAG BOLTS @ 7" oc	A34 @ 5" oc	A35 @ 6" oc
K	(2x460) 920	5/8" AB @ 8" oc	—	LAG BOLTS @ 6" oc	LAG BOLTS @ 6" oc	A34 @ 4" oc	A35 @ 5" oc
L	(2x550) 1100	3/4" AB @ 10" oc	—	LAG BOLTS @ 5" oc	LAG BOLTS @ 5" oc	—	A35 @ 4" oc
M	(2x665) 1330	3/4" AB @ 8" oc	—	LAG BOLTS @ 4" oc	LAG BOLTS @ 4" oc	—	A35 @ 4" oc

NOTES For SHEAR TRANSFER Connections and NOTE #4 through #7 see next two pages

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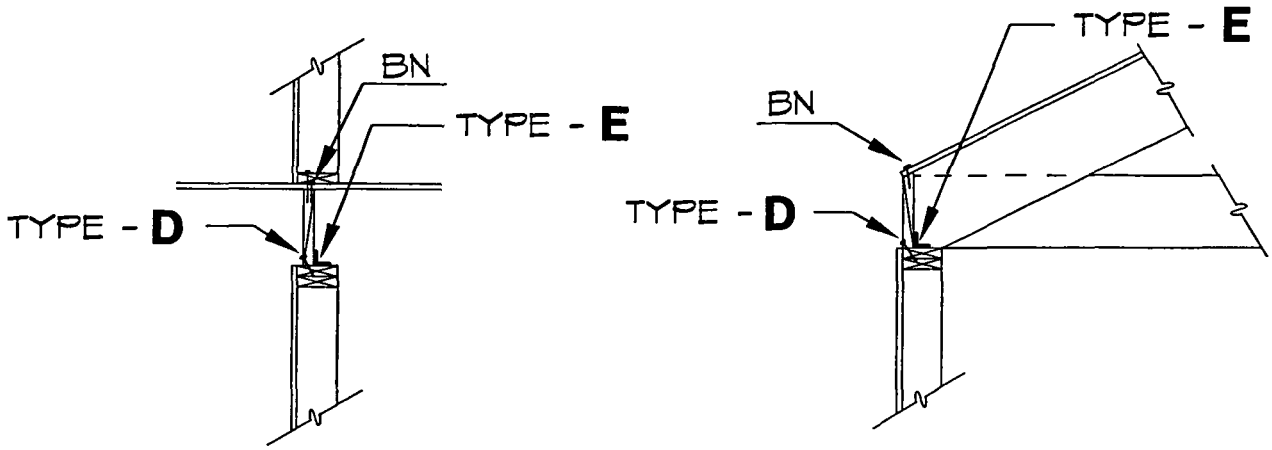
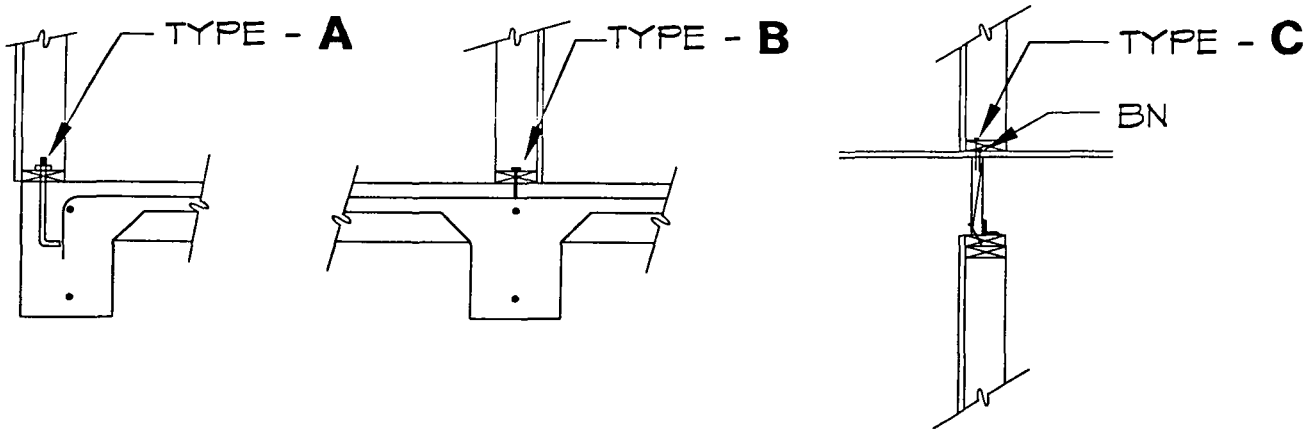


SHEAR TRANSFER CONNECTIONS @ TOP PLATES



SHEAR TRANSFER CONNECTIONS @ BOTTOM PLATES

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NOTES:

(For SHEAR WALL TYPEs and SHEAR TRANSFER CONNECTIONs)

1a. ALL PANEL EDGES SHALL BE BACKED WITH 2" NOMINAL OR WIDER BLOCKING

1b. PLYWOOD PANELS SHALL BE INSTALLED EITHER HORIZONTALLY OR VERTICALLY, UNLESS OTHERWISE NOTED

2. WHERE PANELS ARE APPLIED ON BOTH FACES OF A WALL AND NAIL SPACING IS LESS THAN 6 inches ON CENTER ON EITHER SIDE, PANEL JOINTS SHALL BE OFFSET TO FALL ON DIFFERENT FRAMING MEMBERS OR FRAMING SHALL BE 3-inch NOMINAL OR THICKER AND NAILS ON EACH SIDE SHALL BE STAGGERED

3. WHERE ALLOWABLE SHEAR VALUES EXCEED 350 pounds per foot, FOUNDATION SILL PLATES AND ALL FRAMING MEMBERS RECEIVING EDGE NAILING FROM ABUTTING PANELS SHALL NOT BE LESS THAN A SINGLE 3-inch NOMINAL MEMBER AND FOUNDATION SILL PLATES SHALL NOT BE LESS THAN A SINGLE 3-inch NOMINAL MEMBER PLYWOOD JOINT AND SILL PLATE NAILING SHALL BE STAGGERED IN ALL CASES

4. ALL ANCHOR BOLTS SHALL BE 10" (MIN) LONG, AND MINIMUM ANCHOR BOLT EMBEDMENT SHALL BE 7 inches

5. SHOT PINS ARE HILTI DS72, WITH 0 177" DIAMETER (ICBO # 2388), AND SHALL HAVE MINIMUM OF 1 3/8" CONCRETE PENETRATION AND MINIMUM OF 3 inches END EDGE DISTANCE

6. LAG BOLTS SHALL BE 3/8" DIAMETER AND 4" LONG (MIN) FOR DOUBLE PLATES AND 3/8" DIAMETER AND 5" LONG FOR OTHER CONDITIONS (BLOCKING BELOW BOTTOM PLATE)

7. A34 AND A35 ARE SIMPSON CONNECTORS

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TABLE 23-II-I-1—ALLOWABLE SHEAR FOR WIND OR SEISMIC FORCES IN POUNDS PER FOOT FOR WOOD STRUCTURAL PANEL SHEAR WALLS WITH FRAMING OF DOUGLAS FIR-LARCH OR SOUTHERN PINE[1,2,3]

PANEL GRADE	MINIMUM NOMINAL PANEL THICKNESS (Inches) × 25.4 for mm	MINIMUM NAIL PENETRATION IN FRAMING (Inches)	PANELS APPLIED DIRECTLY TO FRAMING: Nail Size (Common or Galvanized Box)[5]	Nail Spacing at Panel Edges (in.) × 25.4 for mm: 6	4	3	2 (× 0.0146 for N/mm)	PANELS APPLIED OVER 1/2-INCH (13 mm) OR 5/8-INCH (16 mm) GYPSUM SHEATHING: Nail Size (Common or Galvanized Box)[5]	Nail Spacing at Panel Edges (in.) × 25.4 for mm: 6	4	3	2 (× 0.0146 for N/mm)
Structural I	5/16	1 1/4	6d	200	300	390	510	8d	200	300	390	510
	3/8	1 1/2	8d	230[4]	360[4]	460[4]	610[4]	10d	280	430	550	730
	7/16			255[4]	395[4]	505[4]	670[4]					
	15/32			280	430	550	730					
	15/32	1 5/8	10d	340	510	665	870	—	—	—	—	—
C D C-C Sheathing plywood panel siding and other grades covered in UBC Standard 23-2 or 23-3	5/16	1 1/4	6d	180	270	350	450	8d	180	270	350	450
	3/8			200	300	390	510		200	300	390	510
	3/8	1 1/2	8d	220[4]	320[4]	410[4]	530[4]	10d	260	380	490	640
	7/16			240[4]	350[4]	450[4]	585[4]					
	15/32			260	380	490	640					
	15/32	1 5/8	10d	310	460	600	770	—	—	—	—	—
	19/32			340	510	665	870					
			Nail Size (Galvanized Casing)					Nail Size (Galvanized Casing)				
Plywood panel siding in grades covered in UBC Standard 23 2	5/16	1 1/4	6d	140	210	275	360	8d	140	210	275	360
	3/8	1 1/2	8d	160	240	310	410	10d	160	240	310	410

[1] All panel edges backed with 2 inch (51 mm) nominal or wider framing Panels installed either horizontally or vertically Space nails at 6 inches (152 mm) on center along intermediate framing members for 3/8 inch (9 5 mm) and 7/16 inch (11 mm) panels installed on studs spaced 24 inches (610 mm) on center and 12 inches (305 mm) on center for other conditions and panel thicknesses These values are for short time loads due to wind or earthquake and must be reduced 25 percent for normal loading

Allowable shear values for nails in framing members of other species set forth in Division III Part III shall be calculated for all other grades by multiplying the shear capacities for nails in Structural I by the following factors 0 82 for species with specific gravity greater than or equal to 0 42 but less than 0 49 and 0 65 for species with a specific gravity less than 0 42

[2] Where panels are applied on both faces of a wall and nail spacing is less than 6 inches (152 mm) on center on either side panel joints shall be offset to fall on different framing members or framing shall be 3-inch (76 mm) nominal or thicker and nails on each side shall be staggered

[3] In Seismic Zones 3 and 4 where allowable shear values exceed 350 pounds per foot (5 11 N/mm) foundation sill plates and all framing members receiving edge nailing from abutting panels shall not be less than a single 3 inch (76 mm) nominal member and foundation sill plates shall not be less than a single 3 inch (76 mm) nominal member In shear walls where total wall design shear does not exceed 600 pounds per foot (8 76 N/mm) a single 2 inch (51 mm) nominal sill plate may be used provided anchor bolts are designed for a load capacity of 50 percent or less of the allowable capacity and bolts have a minimum of 2 inch-by-2 inch-by-3/16 inch (51 mm by 51 mm by 5 mm) thick plate washers Plywood joint and sill plate nailing shall be staggered in all cases

[4] The values for 3/8 inch (9 5 mm) and 7/16 inch (11 mm) panels applied direct to framing may be increased to values shown for 15/32 inch (12 mm) panels provided studs are spaced a maximum of 16 inches (406 mm) on center or panels are applied with long dimension across studs

[5] Galvanized nails shall be hot-dipped or tumbled

HARABOR ENGINEERING

* STRUCTURAL DESIGN *

PAGE No. 41 OF 123

PROJECT : 6030 AVENIDA ENCINAS - FLOOR Addition

PROJECT No. 05-14

DATE . 11/10/05 BY : MH

CHORD CAPACITIES and CHORD SPLICES

using 16d common nails. (101 lbs per 16d nail)

For 2-2x4s, (DF-Larch No 1) 101 lbs x 1.33 = 134 lbs/16d nail

Max Tension = 2 x (1.5x3.5) x (1.5x500psi) x 1.33 = 10,474 lbs

At SPLICE one 2x4, allows a max capacity of 5237 lbs (GOVERNS)

SPLICE TYPE	SPLICE CONSTRUCTION	Tension Capacity (lbs)
A	5 - 16d nails @ 2.5 in OC, each side of splice	670
B	6 - 16d nails @ 2.5 in OC, each side of splice	804
C	7 - 16d nails @ 2.5 in OC, each side of splice	938
D	8 - 16d nails @ 2.5 in OC, each side of splice	1072
E	9 - 16d nails @ 2.5 in OC, each side of splice	1206
F	10 - 16d nails @ 2.5 in OC, each side of splice	1340
G	11 - 16d nails @ 2.5 in OC, each side of splice	1474
H	12 - 16d nails @ 2.5 in OC, each side of splice	1608
I	13 - 16d nails @ 2.5 in OC, each side of splice	1742
J	14 - 16d nails @ 2.5 in OC, each side of splice	1876
K	15 - 16d nails @ 2.5 in OC, each side of splice	2010
L	16 - 16d nails @ 2.5 in OC, each side of splice	2144
M	17 - 16d nails @ 2.5 in OC, each side of splice	2278
N	18 - 16d nails @ 2.5 in OC, each side of splice	2412

DETERMINE LATERAL FORCE GOVERNING THE DESIGN. (WIND or SEISMIC)

(A) WIND LOAD (N/A)	
Wind Load, $p = C_e * C_q * q_s * I$	
Exposure	
Wind Speed = mph	
C_e =	q_s =
C_q =	I =
Computed Wind Load = ϕ psf	

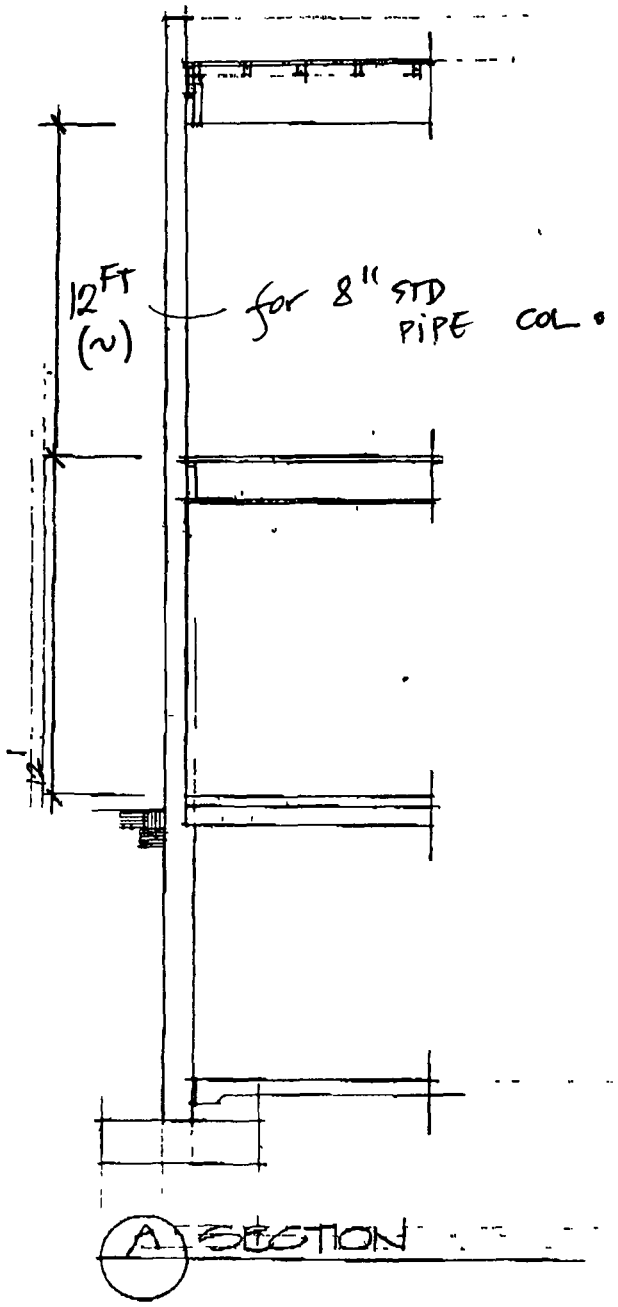
No WIND LOAD.

(B) LATERAL SEISMIC LOAD (see SECTION - next page).

TOTAL FLOOR AREA = 47' x 110' = 5170 sq ft

TOTAL Base SHEAR for Braced Frames $= 5170(\underset{DL}{17} + \overbrace{0.25 \times \underset{LL}{125}}^{31.25})(0.231) = 57{,}624^{\#}$ for Braced Frames

TOTAL BASE SHEAR for shear walls $= 5170(17 + \overbrace{0.25 \times 125}^{31.25})(0.186) = 46{,}398^{\#}/2 = 23199^{\#}$ for 2 shear walls


12 FT
(~)
for 8" STD
PIPE COL.
A SECTION

SEISMIC LOADs - 1997 UBC

Seismic ZONE 4. (Z = 0.4)

For Wood Shear Walls

2 Km or LESS from FAULT

$R = 5.5$
$\Omega_o = 2.8$
$N_a = 1.3$
$N_v = 1.6$

$N_a = 1.3$	(Table 16 - S)
Soil Type = S_D (assumed)	(Table 16 - J)
$C_a = 0.44 \cdot N_a = 0.44 \cdot (1.3) = 0.57$	(Table 16 - Q)
$N_v = 1.6$	(Table 16 - T)
$C_v = 0.64 \cdot N_v = 0.64 \cdot (1.6) = 1.03$	(Table 16 - R)
$R = 5.5$; $\Omega_o = 2.8$	(Table 16 - N)
$I = 1.0$	(Table 16 - K)
$C_t = 0.02$	(1630.2.2)
$T = C_t (h_n)^{3/4} =$ SEC ; ($h_n =$ FT)	(30 - 8)
* $V = (C_v I / RT) \cdot W$	* (30 - 4)
$V = (1.03 \cdot 1.0 / 5.5 \cdot \quad) \cdot W = \quad \cdot W$	
but need NOT EXCEED	
* $V = (2.5\, C_a I / R) \cdot W$	* (30 - 5)
$V = (2.5 \cdot 0.57 \cdot 1.0 / 5.5) \cdot W = \underline{0.26 \cdot W}$ (GOVERNS)	
but NOT LESS than	
* $V = (0.11\, C_a I) \cdot W$	* (30 - 6)
$V = (0.11 \cdot 0.57 \cdot 1.0) \cdot W = 0.063 \cdot W$	
also for Seismic Zone 4, NOT LESS than	
* $V = (0.8\, Z N_v I / R) \cdot W$	* (30 - 7)
$V = (0.8 \cdot 0.4 \cdot 1.6 \cdot 1.0 / 5.5) \cdot W = 0.093 \cdot W$	

NOTE $V = 0.26 \cdot W$ is at "strength-level"

$0.26 / 1.4 = 0.186$; $\underline{V = 0.186 \cdot W}$ SHALL be USED for DESIGN

SEISMIC LOADs - 1997 UBC

R = 44
Ω_o = 22
N_a = 13
N_v = 16

Seismic ZONE 4. (Z = 0.4)

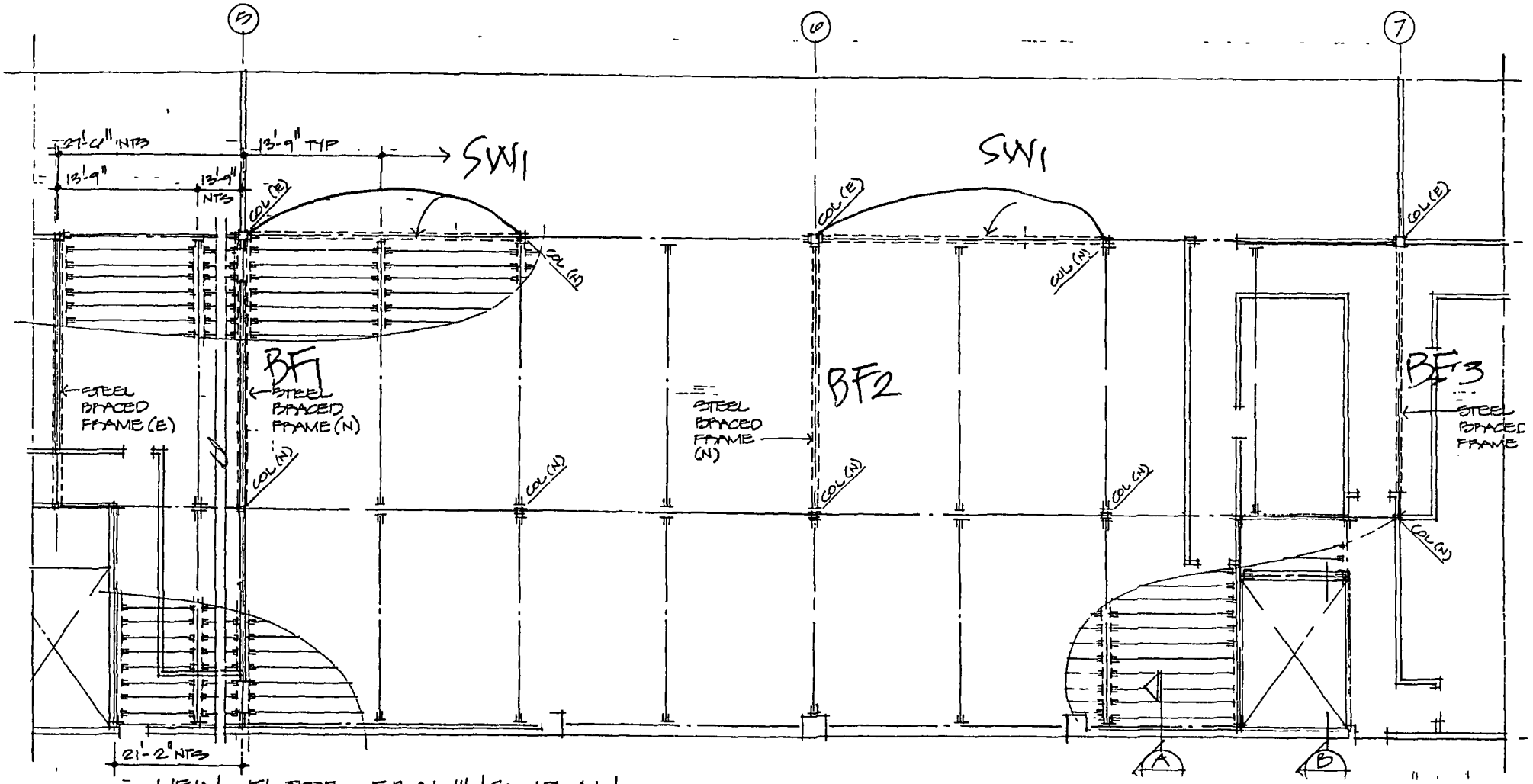
For Steel Braced Frames - or "Z" Walls

2 Km or LESS from FAULT

N_a = 13	(Table 16 - S)
Soil Type = S_D (assumed)	(Table 16 - J)
C_a = 0.44 ▪ N_a = 0.44 ▪ (13) = 0.57	(Table 16 - Q)
N_v = 16	(Table 16 - T)
C_v = 0.64 ▪ N_v = 0.64 ▪ (16) = 1.03	(Table 16 - R)
R = 4.4 ; Ω_o = 2.2	(Table 16 - N)
I = 1.0	(Table 16 - K)
C_t = 0.02	(1630.2.2)
T = $C_t (h_n)^{3/4}$ = SEC ; (h_n = FT)	(30 - 8)
* V = (C_v I / RT) ▪ W	* (30 - 4)
V = (1.03 ▪ 1.0 / 4.4 ▪) ▪ W = ▪ W	
but need NOT EXCEED	
* V = (2.5 C_a I / R) ▪ W	* (30 - 5)
V = (2.5 ▪ 0.57 ▪ 1.0 / 4.4) ▪ W = 0.324 ▪ W (GOVERNS)	
but NOT LESS than	
* V = (0.11 C_a I) ▪ W	* (30 - 6)
V = (0.11 ▪ 0.57 ▪ 1.0) ▪ W = 0.063 ▪ W	
also for Seismic Zone 4, NOT LESS than .	
* V = (0.8 Z N_v I / R) ▪ W	* (30 - 7)
V = (0.8 ▪ 0.4 ▪ 1.6 ▪ 1.0 / 4.4) ▪ W = 0.116 ▪ W	

NOTE V = 0.324 ▪ W is at "strength-level"

0.324 / 1.4 = 0.231 ; V = 0.231 ▪ W SHALL be USED for DESIGN



NEW FLOOR FRAMING PLAN

BRACED Frames = Key PLAN =

and SHEAR WALLS

FLOOR DIAPHRAGM DESIGN (55' x 47')

$w = 523$ plf ; $V = \frac{1}{2}\, 57'(523) = 14{,}906^{\#}$

shear ; $v = 14{,}906 / 47' = 317$ plf

- For FLOOR DIAPHRAGM USE
  3/4" STRUCT. I Plywood (Panel INDEX 40/20)
  with 10d @ 6" oc boundary nailing
  10d @ 6" oc edge nailing
  10d @ 10" oc field nailing and
  all supported edges blocked
  - USE common wire nails - ONLY
    (For Plywood Panel lay-out use CASE I)
    (Diaphragm Capacity = 320 plf) OK.

FLOOR CHORDs DESIGN

$$T = \frac{w L^2}{8 b} = \frac{523(55)^2}{8 \times 47} = 4208^{\#} \text{ TOTAL load.}$$

N/A (- USE 2 - 2 x (min) for FLOOR CHORDS
with Type " " Chord Splices)

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PROJECT · 6030 AVENIDA ENCINAS - FLOOR Addition

PROJECT No 05-14

DATE 12/28/05 BY . MH

DETERMINE MAXIMUM LATERAL FORCE for EVERY SHEAR WALL

SHEAR WALL	LOCATION	Length ft	Height ft	LATERAL LOAD CALCULATION
SW1	(2 walls)	27'	10.5'	V = 23199/2 = 11600# / per wall
				(11600/27' = 430 plf) shear
BF1				V = 57,624/4 = 14,406#
BF3				V = (same) = 14,406#
BF2				V = 57,624/2 = 28,812#
load for diaph design				= 57,624/110' = 523 plf

H A R A B O R ENGINEERING
* STRUCTURAL DESIGN *
38884 Cherry Point Ln.,
Murrieta, CA 92563-8813
Phone : (951) 461-9296

PROJECT . 6030 Avenida Encinas
Floor Addition
Project No . 05 - 14
Date · 12 / 30 / 05 BY MH

* * * WALL LAT. ANALYSIS - ONE LEVEL * * * SW'

INPUT

WALL WIDTH,	ft	=27.00
FTG Extended,	ft	= 0 00
First Floor Height,	ft	=10.50
Cantilever Height,	ft	= 0 00
Stem wall Height,	ft	= 0.00
Stem wall Width,	ft	= 0 00
FTG Width,	ft	= 0.00
FTG Thick.,	ft	= 0.00
WALL DL,	psf	= 12.0
Additional DL @ ROOF,	plf	= 85
Concentrated DL @ ROOF,	lbs	= 3094
LAT Load @ ROOF,	lbs	=11600
SEISMIC ? (y/n)		=y
Allow. soil pressure,	psf	= 0

Wall OPENINGS	"W"	"H"
ft :	0.00	0.00
ft	0.00	0.00
ft :	0.00	0.00

* * * FTG. DESIGN * * *

f'c 2.50 ksi ; fy = 60 ksi
d selected = 14.0 in
*** USE 2 # 4

OUTPUT

Actual Shear-wall, plf = 430

UPLIFT for WIND, kips = N/A
UPLIFT for SEISMIC, kips = -1 7
(If negative, holdown req)

TOTAL OVERTURNING MOM., k*ft =121.8
TOTAL RESISTING MOM., k*ft =136.4
OverTurning SF = 1.12 > 1 5

SOIL PRESS = ERR < 0 psf
e = 10.25 ; b/6 = 4 50 ft
L' = 9.76 ft

* * * FTG DESIGN * * *

FTG Bending, M = ERR k*ft
d req. = ERR in
As req. = ERR sq in.

fc = ERR ksi < 1 50 ksi
fs = ERR ksi < 39.90 ksi

* * * WALL LAT. ANALYSIS - ONE LEVEL * * *

INPUT

WALL WIDTH,	ft	=
FTG Extended,	ft	= 0.67
First Floor Height,	ft	=
Cantilever Height,	ft	=
Stem wall Height,	ft	=
Stem wall Width,	ft	=
FTG. Width,	ft	=
FTG. Thick.,	ft	=
WALL DL,	psf	= 12 0
Additional DL @ ROOF,	plf	=
Concentrated DL @ ROOF,	lbs	= 432
LAT Load @ ROOF,	lbs	=
SEISMIC ? (y/n)		=
Allow soil pressure,	psf	= 1000

Wall OPENINGS	"W"	"H"
ft ·	0.00	0 00
ft :	0.00	0 00
ft	0.00	0 00

* * * FTG DESIGN * * *

f'c 2 50 ksi , fy = 60 ksi
d selected = 14 0 in
*** USE 2 # 4

OUTPUT

Actual Shear-wall, plf = ERR

UPLIFT for WIND, kips = ERR
UPLIFT for SEISMIC, kips = N/A
(If negative, holdown req)

TOTAL OVERTURNING MOM , k*ft = 0.0
TOTAL RESISTING MOM., k*ft = 0.6
OverTurning SF = ERR > 1.5

SOIL PRESS.= ERR < 1330 psf
e = 0.00 ; b/6 = 0.22 ft
L' = 2 01 ft

* * * FTG DESIGN * * *

FTG Bending, M = ERR k*ft
d req = ERR in
As req. = ERR sq in

fc = ERR ksi < 1 50 ksi
fs = ERR ksi < 39 90 ksi

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* STRUCTURAL DESIGN *

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SHEAR WALLS DESIGN.

SHEAR WALL	LOCATION (LEVEL)	COMPUTED		USE:		
		SHEAR (plf)	UPLIFT (Kips)	S. W. TYPE	HOLDOWNS	FOOTINGS
SW1		430	1.7	"E"	MST48 ea. end	(N/A)

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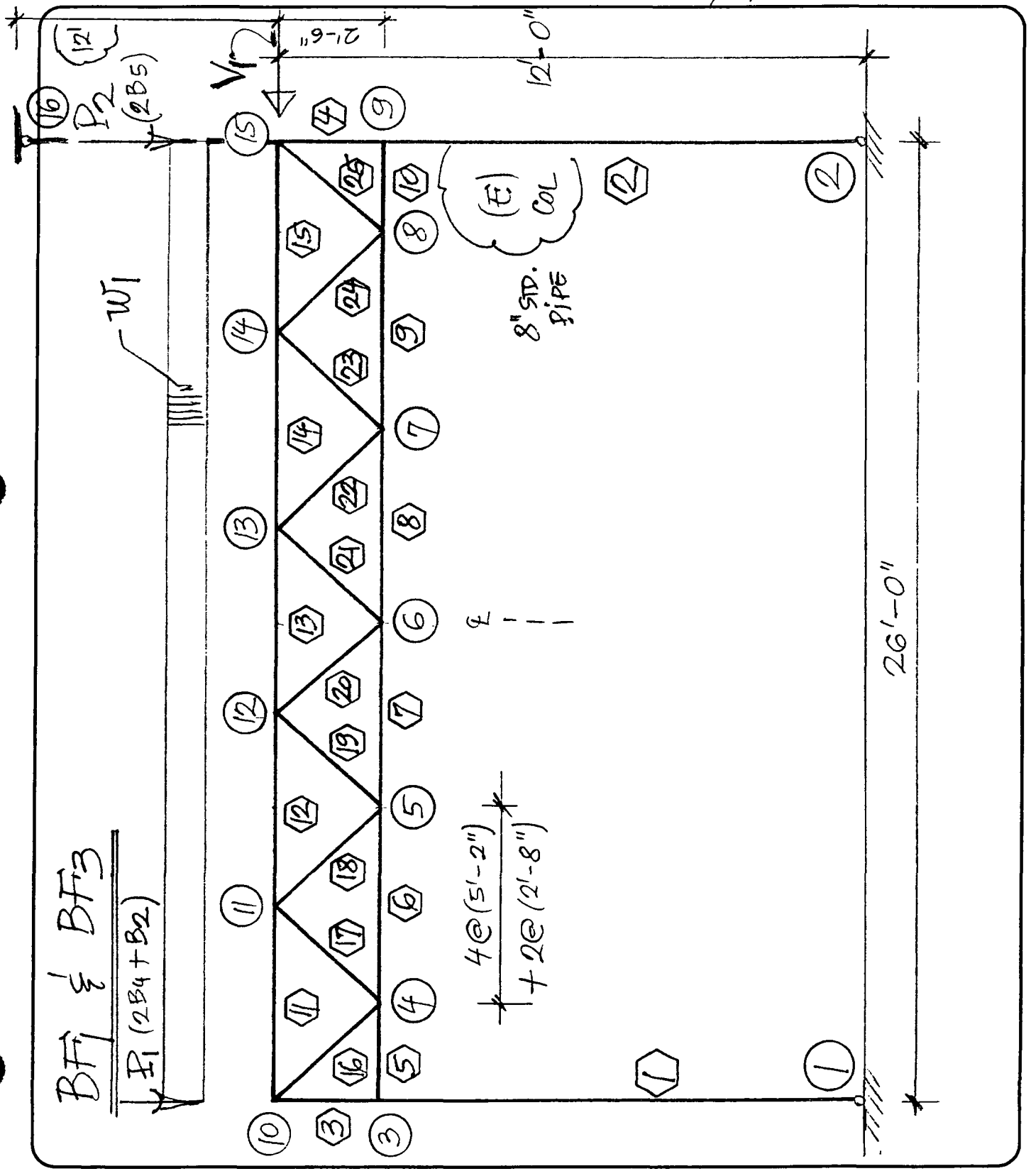

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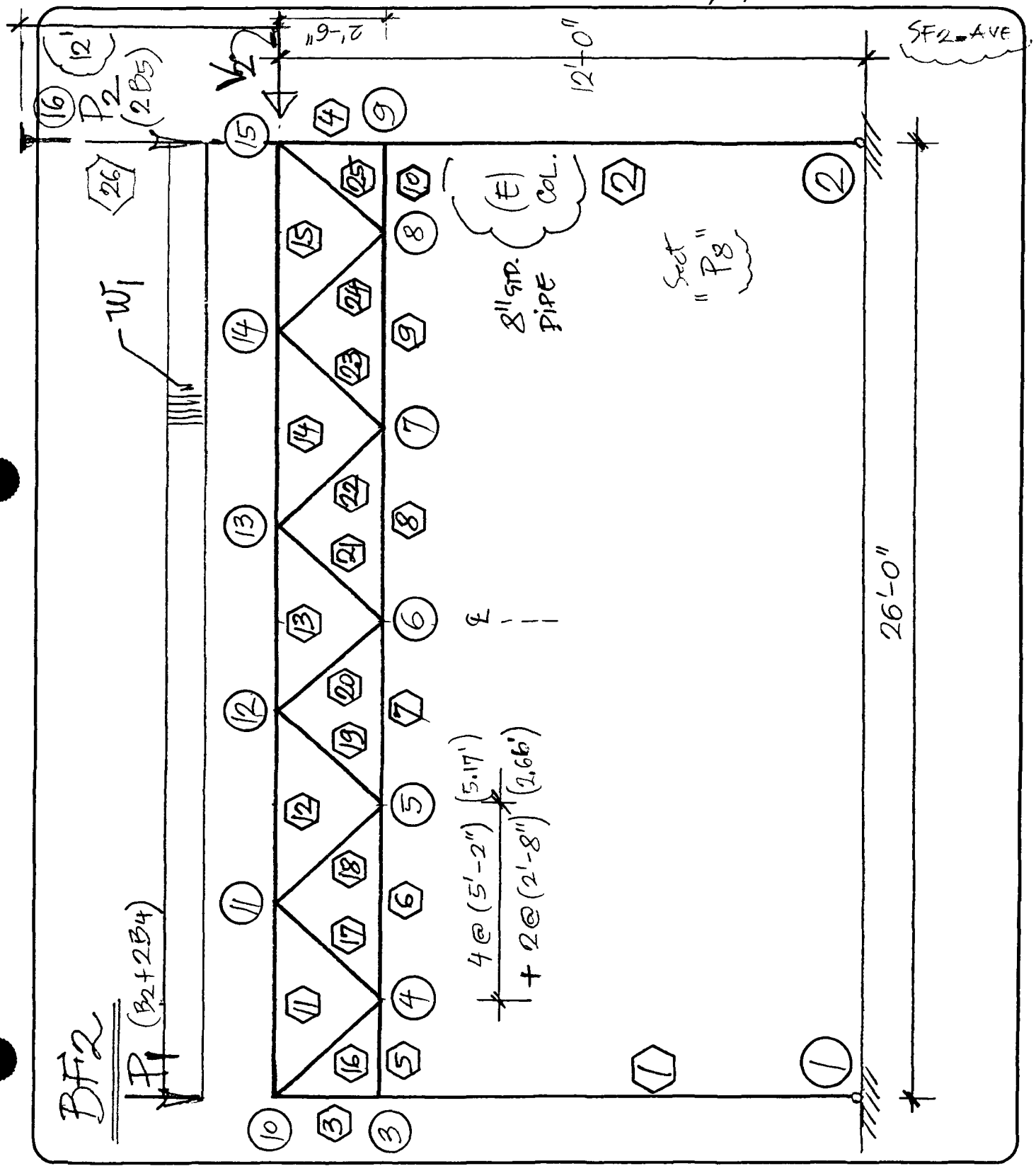

LOADS Computations for BRACED FRAMES.

A) BF_1 & BF_3

$w_1 = \begin{cases} 238 \text{ plf} & DL \\ 1456 \text{ plf} & LL \end{cases}$

$P_1 = 2(3440 + 22{,}460) + (2380 + 15{,}680) = \begin{cases} 9260^{\#} & DL \\ 60{,}600^{\#} & LL \end{cases}$

$P_2 = 2(2250 + 14{,}620) = \begin{cases} 4500^{\#} & DL \\ 29{,}240^{\#} & LL \end{cases}$

$V_1 = 14{,}406^{\#}$

B) BF_2 ← GOVERNS the DESIGN.

$w_1 = \begin{cases} 238 \\ 1456 \text{ plf} \end{cases}$

$P_1 = (2380 + 15{,}680) + 2(3440 + 22{,}460) = \begin{cases} 9260^{\#} & DL \\ 60{,}600^{\#} & LL \end{cases}$

$P_2 = 2(2250 + 14{,}620) = \begin{cases} 4500^{\#} & DL \\ 29{,}240^{\#} & LL \end{cases}$

$V_2 = 28{,}812^{\#}$

NOTE: Both cases (A & B) are the same - except Lat. load is double for BF_2 (case B) -

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6277 Caminito Carrena
San Diego, CA 92122-3415

6030 Avenida Encinas
BF#_2

==========

Units ... . US Standard
Steel Code .. . . AISC 9th Edition ASD
Allowable Stress Increase Factor . 1.333
Include Shear Deformation .. .. No
No. of Sections for Member Calcs . 3
Do Redesign ... . No
P-Delta Analysis Tolerance 0 50%

==========< Joint Coordinates >==========

Joint No	X Coordinate ft	Y Coordinate ft	Joint Temperature °F
1	0.000	0.000	0 00
2	26.000	0.000	0 00
3	0.000	9 500	0 00
4	2.660	9.500	0 00
5	7.830	9 500	0.00
6	13.000	9 500	0 00
7	18.750	9.500	0.00
8	23.340	9.500	0.00
9	26.000	9.500	0 00
10	0.000	12.000	0 00
11	5.200	12 000	0.00
12	10.400	12.000	0 00
13	15.600	12.000	0 00
14	20.800	12.000	0.00
15	26.000	12.000	0.00
16	26.000	24.000	0 00

==========< Boundary Conditions >==========

Joint No	Translation X K/in	Translation Y K/in	Rotation K-ft/rad
1	Reaction	Reaction	
2	Reaction	Reaction	
16	Reaction	Reaction	
10	STORY 1		

==========< Materials (General) >==========

Material Label	Young's Modulus Ksi	Shear Modulus Ksi	Poisson's Ratio	Thermal Coef 10^5°F	Weight Density K/ft3	Yield Stress Ksi
STL1	29000 00		0.3000	0 65000	0.490	35.00
STL2	29000 00		0 3000	0.65000	0.490	46 00

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6030 Avenida Encinas
BF#_2

Sections

Section Label	Database Shape	Material Label	Area (in^2)	As 0,2	As 1,3	I 1,3 (in^4)	I 0,2 (in^4)	T C
C1	TU12X12X8	STL2	22.40	1.2	1.2	485.00	485 00	
C2	P8	STL1	8.40	1.2	1.2	72 49	72 49	
C3	TU12X12X8	STL2	22.40	1.2	1.2	485.00	485.00	
B1	TU5X5X6	STL2	6.58	1.2	1 2	22.80	22 80	
B2	TU5X5X6	STL2	6.58	1.2	1.2	22.80	22 80	
D1	TU4X4X4	STL2	3.59	1.2	1 2	8.22	8.22	

Members

Memb No.	Joints I	Joints J	Rotate 90°	Section Set	Releases I AVM	Releases J:AVM	Offsets I-End (in)	Offsets J-End (in)	Inactive? Label ↓	Length (ft)
1	1	3		C1						9.50
2	2	9		C3						9.50
3	3	10		C1						2.50
4	9	15		C3						2.50
5	3	4		B1						2 66
6	4	5		B1						5.17
7	5	6		B1						5.17
8	6	7		B1						5.75
9	7	8		B1						4.59
10	8	9		B1		PIN				2.66
11	10	11		B2						5.20
12	11	12		B2						5.20
13	12	13		B2						5.20
14	13	14		B2						5.20
15	14	15		B2		PIN				5.20
16	10	4		D1	PIN	PIN				3.65
17	4	11		D1	PIN	PIN				3.56
18	11	5		D1	PIN	PIN				3.63
19	5	12		D1	PIN	PIN				3.59
20	12	6		D1	PIN	PIN				3.61
21	6	13		D1	PIN	PIN				3.61
22	13	7		D1	PIN	PIN				4 02
23	7	14		D1	PIN	PIN				3.23
24	14	8		D1	PIN	PIN				3.56
25	8	15		D1	PIN	PIN				3.65

AISC,NDS Parameters

Member	Section Set	Length (ft)	Lb-out le-out (ft)	Lb-in le-in (ft)	Lcomp le-bend (ft)	K out	K in	CH	Cm	Cb,B	Sway o i
1	C1	9 50				0 80					
2	C3	9.50				0 80					
3	C1	2.50				0 65					
4	C3	2.50				0 65					
5	B1	2.66				0 65					

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6030 Avenida Encinas
BF#_2

==========< AISC,NDS Parameters >==========

Member	Section Set	Length ft	Lb-out le-out ft	Lb-in le-in ft	Lcomp le-bend ft	K out	K in	Cm CH	Cb,B Sway o i
6	B1	5.17					0 65		
7	B1	5.17					0.65		
8	B1	5 75					0.65		
9	B1	4.59					0.65		
10	B1	2.66					0 80		
11	B2	5.20					0.65		
12	B2	5.20					0 65		
13	B2	5.20					0.65		
14	B2	5.20					0 65		
15	B2	5.20					0.80		
16	D1	3.65					1 00		
17	D1	3.56					1.00		
18	D1	3.63					1 00		
19	D1	3.59					1.00		
20	D1	3.61					1 00		
21	D1	3.61					1.00		
22	D1	4.02					1.00		
23	D1	3.23					1.00		
24	D1	3.56					1.00		
25	D1	3.65					1.00		

==========< Redesign Criteria >==========

Section Set	Depth Maximum in	Depth Minimum in	Width Maximum in	Width Minimum in	Unity Check Max	Unity Check Min
C1					0 90	0.50
B1					0.90	0 50

==========< Basic Load Case Data >==========

BLC No	Basic Load Case Description	Load Type Totals Nodal	Point	Dist.
1	DEAD LOAD	2		5
2	LIVE LOAD	2		5
3	SEISMIC LOAD	1		

==========< Joint Loads/Enforced Displacements, BLC 1 >==========

Joint Number	Is this a Load or a Displacement?	Direction (X,Y,Mz)	Magnitude K,K-ft,in,rad
10	L	Y	-9.260
15	L	Y	-4 500

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==========< Member Distributed Loads, BLC 1 >==========

Member	Joints I	Joints J	Load Pattern Label	Pattern Multiplier
11	10	11	UNIFORM	0 2380
12	11	12	UNIFORM	0.2380
13	12	13	UNIFORM	0 2380
14	13	14	UNIFORM	0 2380
15	14	15	UNIFORM	0 2380

==========< Joint Loads/Enforced Displacements, BLC 2 >==========

Joint Number	Is this a Load or a Displacement?	Direction (X,Y,Mz)	Magnitude K,K-ft,in,rad
10	L	Y	-60 600
15	L	Y	-29 240

==========< Member Distributed Loads, BLC 2 >==========

Member	Joints I	Joints J	Load Pattern Label	Pattern Multiplier
11	10	11	UNIFORM	1 4560
12	11	12	UNIFORM	1 4560
13	12	13	UNIFORM	1 4560
14	13	14	UNIFORM	1 4560
15	14	15	UNIFORM	1 4560

==========< Joint Loads/Enforced Displacements, BLC 3 >==========

Joint Number	Is this a Load or a Displacement?	Direction (X,Y,Mz)	Magnitude K,K-ft,in,rad
10	L	X	28 810

==========< Load Patterns >==========

Pattern Label	Dir	Magnitudes Start K/ft,F	Magnitudes End K/ft,F	Locations Start ft or %	Locations End ft or %
UNIFORM	Y	-1.000	-1.000	0.000	0.000

==========< Load Combinations >==========

No.	Description	BLC	Fac	BLC	Fac	BLC	Fac	BLC	Fac	BLC	Fac	RWPE SSdv
1	DL + LL	Y	-1	1	1	2	1					y
2	DL+LL+SEISMIC	Y	-1	1	1	2	1	3	1			y y
3	DL+LL-SEISMIC	Y	-1	1	1	2	1	3	-1			y y
4	.85DL + SEISMIC	Y	-1	1	85			3	1			y y
5	85DL - SEISMIC	Y	-1	1	85			3	-1			y y
6	DL + SEISMIC	Y	-1	1	1			3	1			y y
7	DL - SEISMIC	Y	-1	1	1			3	-1			y y

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==========

Dynamics Input.

Number of Modes ...	3	
Load Combination Number. .	1	
Acceleration of Gravity.	32.20	ft/sec^2
Convergence Tolerance. . ..	0.001	
Converge Work Vectors. ..	No	

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==========< Joint Displacements, LC 1 : DL + LL >==========

Joint No	Translation X (in)	Translation Y (in)	Rotation θz (rad)
1	0.000	0.000	0.00071
2	0.000	0.000	-0.00073
3	-0.016	-0.016	-0.00099
4	-0.019	-0.077	-0.00216
5	-0.012	-0.172	-0.00103
6	0.001	-0.207	0.00000
7	0.016	-0.161	0.00125
8	0.022	-0 073	0.00188
9	0.019	-0.010	0.00097
10	0.022	-0.021	-0.00143
11	0.019	-0.131	-0.00165
12	0.008	-0.200	-0.00058
13	-0 006	-0 199	0.00069
14	-0.017	-0.128	0.00125
15	-0.019	-0.013	0.00141
16	0.000	0.000	0.00000

==========< Story Drift, LC 1 : DL + LL >==========

Story No.	Joint	X Direction Drift (in)	% of Ht
1	10	0 02	0 01

==========< Reactions, LC 1 : DL + LL >==========

Joint No	Forces X (K)	Forces Y (K)	Moment Mz (K-ft)
1	3.68	93 60	0.00
2	-3.68	57.48	0.00
16	0.00	0.00	0.00
Totals	0.00	151.08	

Center of Gravity Coords (X,Y,Z) (ft) 9.854, 11.914, 0.000

==========< Member Section Forces, LC 1 . DL + LL >==========

Member	Joints I - J	Section ↓	Axial (K)	Shear (K)	Moment (K-ft)
1	1- 3	1	93 60	-3.68	0.00
		2	93.24	-3.68	17 47
		3	92.87	-3.68	34 95
2	2- 9	1	57.48	3.68	0 00
		2	57 12	3.68	-17 47
		3	56.76	3.68	-34 95
3	3- 10	1	90 32	9 73	29.55

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==========< Member Section Forces, LC 1 · DL + LL >==========

Member	Joints I - J	Section ↓	Axial K	Shear K	Moment K-ft
		2	90.22	9.73	17.39
		3	90.13	9 73	5.23
4	9- 15	1	56 55	-13.98	-34.95
		2	56 46	-13.98	-17.47
		3	56 36	-13.98	0.00
5	3- 4	1	13.41	2.56	5.40
		2	13.41	2.53	2.02
		3	13.41	2.50	-1.33
6	4- 5	1	-21 06	-0.08	-1.33
		2	-21.06	-0.14	-1 03
		3	-21.06	-0.20	-0.59
7	5- 6	1	-40 12	0 16	-0.59
		2	-40.12	0.11	-0.94
		3	-40.12	0.05	-1.13
8	6- 7	1	-39.91	0.00	-1.13
		2	-39 91	-0.07	-1.03
		3	-39.91	-0.13	-0.74
9	7- 8	1	-21.73	-0.01	-0.74
		2	-21 73	-0.06	-0.66
		3	-21 73	-0.11	-0.46
10	8- 9	1	17.66	-0.14	-0.46
		2	17.66	-0.17	-0 25
		3	17.66	-0.20	0 00
11	10- 11	1	6.58	4.91	5.23
		2	6.58	0.45	-1.74
		3	6 58	-4.01	2 88
12	11- 12	1	34.59	4.45	2.88
		2	34 59	-0.01	-2.88
		3	34 59	-4.48	2 96
13	12- 13	1	43.69	4.54	2 96
		2	43 69	0.08	-3 05
		3	43 69	-4.38	2.54
14	13- 14	1	32 66	4.14	2 54
		2	32 66	-0 32	-2 43
		3	32 66	-4 78	4.20

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==========< Member Section Forces, LC 1 . DL + LL >==========

Member	Joints I - J	Section ↓	Axial K	Shear K	Moment K-ft
15	14- 15	1	6 18	5 27	4 20
		2	6.18	0 81	-3.70
		3	6.18	-3 65	0.00
16	10- 4	1	-22 40	0.02	0.00
		2	-22.38	0 00	-0.01
		3	-22.37	-0 02	0.00
17	4- 11	1	25.49	0 02	0.00
		2	25.47	0.00	-0.01
		3	25 46	-0.02	0.00
18	11- 5	1	-13.61	0 02	0.00
		2	-13.59	0.00	-0.01
		3	-13.58	-0.02	0.00
19	5- 12	1	12.86	0.02	0.00
		2	12.85	0.00	-0.01
		3	12 83	-0.02	0.00
20	12- 6	1	0.14	0.02	0.00
		2	0.15	0.00	-0.01
		3	0 17	-0.02	0.00
21	6- 13	1	-0.13	0.02	0.00
		2	-0 14	0.00	-0.01
		3	-0.16	-0.02	0.00
22	13- 7	1	13 93	0.02	0.00
		2	13.95	0 00	-0.02
		3	13.96	-0.02	0.00
23	7- 14	1	-11.42	0.01	0 00
		2	-11.43	0.00	-0.01
		3	-11.45	-0 01	0 00
24	14- 8	1	26.97	0.02	0.00
		2	26 99	0.00	-0 01
		3	27 01	-0 02	0 00
25	8- 15	1	-27.65	0.02	0 00
		2	-27 66	0.00	-0 01
		3	-27 68	-0 02	0 00

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==========< Member Stresses, LC 1 . DL + LL >==========

Member	Joints I - J	Section ↓	Axial Ksi	Shear Ksi	Bending Top Ksi	Bending Bottom Ksi
1	1 - 3	1	4 18	-0.37	0 00	0.00
		2	4.16	-0.37	-2.59	2 59
		3	4.15	-0 37	-5.19	5 19
2	2 - 9	1	2.57	0.37	0.00	0.00
		2	2.55	0.37	2.59	-2.59
		3	2.53	0.37	5.19	-5 19
3	3 - 10	1	4.03	0.97	-4.39	4.39
		2	4 03	0.97	-2.58	2.58
		3	4.02	0.97	-0.78	0.78
4	9 - 15	1	2.52	-1.40	5.19	-5.19
		2	2.52	-1.40	2.59	-2.59
		3	2.52	-1.40	0.00	0.00
5	3 - 4	1	2.04	0.82	-7.10	7.10
		2	2.04	0.81	-2.65	2 65
		3	2.04	0.80	1.75	-1.75
6	4 - 5	1	-3.20	-0.03	1.75	-1.75
		2	-3.20	-0.05	1.36	-1 36
		3	-3.20	-0.06	0.78	-0.78
7	5 - 6	1	-6.10	0.05	0.78	-0.78
		2	-6.10	0.03	1.23	-1 23
		3	-6.10	0.02	1.49	-1.49
8	6 - 7	1	-6.06	0.00	1.49	-1.49
		2	-6.06	-0.02	1.35	-1.35
		3	-6.06	-0.04	0.97	-0.97
9	7 - 8	1	-3.30	0.00	0.97	-0 97
		2	-3.30	-0.02	0.86	-0.86
		3	-3.30	-0.04	0.60	-0.60
10	8 - 9	1	2.68	-0.05	0.60	-0 60
		2	2.68	-0.06	0.33	-0.33
		3	2 68	-0.06	0.00	0 00
11	10 - 11	1	1.00	1 57	-6.88	6 88
		2	1 00	0.14	2.30	-2.30
		3	1.00	-1.28	-3 80	3 80
12	11 - 12	1	5 26	1 42	-3.80	3.80
		2	5.26	0.00	3 79	-3.79

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==========< Member Stresses, LC 1 : DL + LL >==========

Member	Joints I	- J	Section ↓	Axial Ksi	Shear Ksi	Bending Top Ksi	Bending Bottom Ksi
			3	5 26	-1.43	-3.90	3 90
13	12	13	1	6.64	1 45	-3 90	3.90
			2	6.64	0 03	4.01	-4.01
			3	6.64	-1.40	-3.34	3.34
14	13	14	1	4 96	1.33	-3 34	3.34
			2	4.96	-0.10	3.20	-3 20
			3	4.96	-1 53	-5.53	5 53
15	14	15	1	0 94	1.69	-5.53	5.53
			2	0.94	0.26	4 87	-4.87
			3	0.94	-1.17	0 00	0 00
16	10	4	1	-6.24	0.01	0.00	0 00
			2	-6 24	0.00	0.04	-0.04
			3	-6.23	-0.01	0.00	0.00
17	4	11	1	7 10	0 01	0.00	0 00
			2	7.10	0.00	0.04	-0.04
			3	7.09	-0.01	0.00	0.00
18	11	5	1	-3.79	0.01	0.00	0 00
			2	-3.79	0.00	0.04	-0.04
			3	-3 78	-0.01	0.00	0.00
19	5	12	1	3.58	0.01	0.00	0.00
			2	3.58	0.00	0.04	-0.04
			3	3.57	-0.01	0.00	0.00
20	12	6	1	0.04	0.01	0.00	0.00
			2	0 04	0 00	0.04	-0.04
			3	0.05	-0.01	0.00	0 00
21	6	13	1	-0 04	0 01	0.00	0.00
			2	-0.04	0.00	0.04	-0.04
			3	-0 04	-0.01	0.00	0 00
22	13	7	1	3.88	0.01	0 00	0.00
			2	3 88	0.00	0.06	-0 06
			3	3 89	-0.01	0 00	0 00
23	7	14	1	-3 18	0.01	0 00	0 00
			2	-3 18	0.00	0.03	-0 03
			3	-3 19	-0 01	0.00	0.00

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==========< Member Stresses, LC 1 · DL + LL >==========

Member	Joints I - J	Section ↓	Axial Ksi	Shear Ksi	Bending Top Ksi	Bending Bottom Ksi
24	14 - 8	1	7.51	0.01	0 00	0.00
		2	7.52	0.00	0.04	-0 04
		3	7.52	-0.01	0.00	0 00
25	8 - 15	1	-7.70	0.01	0.00	0 00
		2	-7.71	0.00	0.04	-0 04
		3	-7.71	-0.01	0.00	0.00

==========< Member Deflections, LC 1 : DL + LL >==========

Member	Joints I - J	Section ↓	x in	y in	L/n
1	1 - 3	1	0.000	0.000	NC
		2	-0.008	0.032	4706.8
		3	-0.016	0.016	NC
2	2 - 9	1	0 000	0.000	NC
		2	-0.005	-0.034	4706 8
		3	-0.010	-0.019	NC
3	3 - 10	1	-0.016	0.016	NC
		2	-0.018	-0.001	1735.4
		3	-0.021	-0.022	791 3
4	9 - 15	1	-0.010	-0.019	NC
		2	-0.011	-0.002	NC
		3	-0 013	0.019	NC
5	3 - 4	1	-0.016	-0.016	NC
		2	-0 018	-0.042	1244.2
		3	-0.019	-0.077	526.4
6	4 - 5	1	-0 019	-0.077	NC
		2	-0.015	-0.133	6961 5
		3	-0 012	-0.172	NC
7	5 - 6	1	-0.012	-0 172	NC
		2	-0 005	-0 197	7695 1
		3	0 001	-0.207	NC
8	6 - 7	1	0 001	-0.207	NC
		2	0 008	-0 195	6313.2
		3	0 016	-0 161	NC
9	7 - 8	1	0 016	-0.161	NC

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==========< Member Deflections, LC 1 DL + LL >==========

Member	Joints I	J	Section ↓	x in	y in	L/n
			2	0.019	-0.121	NC
			3	0 022	-0 073	NC
10	8	9	1	0 022	-0.073	NC
			2	0.020	-0.042	NC
			3	0.019	-0.010	NC
11	10	11	1	0.022	-0.021	NC
			2	0.020	-0.082	9084 1
			3	0.019	-0.131	NC
12	11	12	1	0 019	-0 131	NC
			2	0 014	-0.182	3695 0
			3	0.008	-0.200	NC
13	12	13	1	0.008	-0.200	NC
			2	0.001	-0.218	3388.9
			3	-0.006	-0.199	NC
14	13	14	1	-0.006	-0.199	NC
			2	-0.012	-0.177	4821.4
			3	-0.017	-0.128	NC
15	14	15	1	-0.017	-0.128	NC
			2	-0.018	-0.095	2583.2
			3	-0.019	-0.013	NC
16	10	4	1	0.030	0.000	NC
			2	0.034	-0.035	NC
			3	0.039	-0.069	NC
17	4	11	1	-0.067	-0.042	NC
			2	-0.073	-0.074	NC
			3	-0.078	-0.107	NC
18	11	5	1	0.104	-0.081	NC
			2	0 107	-0 107	NC
			3	0 110	-0 132	NC
19	5	12	1	-0 128	-0 115	NC
			2	-0 131	-0 132	NC
			3	-0 133	-0.149	NC
20	12	6	1	0 144	-0.138	NC
			2	0 144	-0 143	NC
			3	0 144	-0 148	NC

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==========< Member Deflections, LC 1 · DL + LL >==========

Member	Joints I	- J	Section ↓	x in	y in	L/n
21	6	13	1	-0.142	-0.150	NC
			2	-0 142	-0.144	NC
			3	-0.142	-0.139	NC
22	13	7	1	0.119	-0.160	NC
			2	0.115	-0.138	NC
			3	0.112	-0.116	NC
23	7	14	1	-0.114	-0.114	NC
			2	-0 112	-0.091	NC
			3	-0 110	-0.068	NC
24	14	8	1	0 078	-0.103	NC
			2	0 072	-0.070	NC
			3	0.067	-0.037	NC
25	8	15	1	-0 034	-0.068	NC
			2	-0 028	-0.032	NC
			3	-0.022	0.004	NC

==========< Member AISC Unity Checks, LC 1 · DL + LL >==========

Member	Joints I	- J	Unity Chk	Loc	Shear Chk	Loc	Fa Ksi	Fb Ksi	Cb	Cm	ASD Eqn.
1	1	3	0.321	3	0.020	1	25 69	30.36	1.00	0.60	H1-2
2	2	9	0.263	3	0.020	1	25.69	30.36	1.00	0.60	H1-2
3	3	10	0.291	1	0.053	1	27.20	30.36	1.00	0.67	H1-2
4	9	15	0.262	1	0.076	1	27.20	30.36	1.00	0.60	H1-2
5	3	4	0 308	1	0.044	1	26.37	30.36	1.00	0.85	H1-2
6	4	5	0.173	1	0.003	3	24.75	30 36	1.00	0.85	H2-1
7	5	6	0.270	3	0.003	1	24.75	30.36	1 00	0.85	H2-1
8	6	7	0 269	1	0.002	3	24.32	30.36	1.00	0.85	H2-1
9	7	8	0.152	1	0.002	3	25.16	30.36	1.00	0.85	H2-1
10	8	9	0.122	1	0 004	3	26.37	30.36	1 00	1.00	H1-3
11	10	11	0.263	1	0.085	1	24 73	30.36	1 00	0.85	H1-2
12	11	12	0.323	3	0.078	3	24.73	30.36	1.00	0.85	H1-1
13	12	13	0.383	2	0 079	1	24.73	30.36	1 00	0.85	H1-1
14	13	14	0 362	3	0.083	3	24 73	30.36	1 00	0.85	H1-2
15	14	15	0.220	1	0.092	1	24 73	30.36	1 00	1.00	H1-3
16	10	4	0.227	2	0 001	1	25.23	30.36	1 00	1.00	H2-1
17	4	11	0.282	2	0 001	3	25.30	30 36	1 00	1.00	H1-1
18	11	5	0.139	2	0.001	1	25.25	30 36	1.00	1.00	H2-1
19	5	12	0 143	2	0.001	1	25 28	30.36	1 00	1.00	H1-3
20	12	6	0.003	2	0 001	1	25 27	30.36	1 00	1.00	H1-3

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==========< Member AISC Unity Checks, LC 1 DL + LL >==========

Member	Joints I	- J	Unity Chk	Loc	Shear Chk	Loc	Fa (Ksi)	Fb (Ksi)	Cb	Cm	ASD Eqn.
21	6	13	0.003	2	0 001	1	25 27	30.36	1 00	1.00	H2-1
22	13	7	0 158	2	0.001	1	24.91	30 36	1 00	1.00	H1-1
23	7	14	0 116	2	0.000	1	25.57	30.36	1 00	1.00	H2-1
24	14	8	0 299	2	0.001	3	25.30	30.36	1 00	1.00	H1-1
25	8	15	0.281	2	0 001	1	25 23	30.36	1 00	1.00	H2-1

==========< Member NDS Unity Checks, LC 1 : DL + LL >==========

Memb	Unity Chk	Loc	Shear Chk	Loc	Fc' (Ksi)	Ft' (Ksi)	Fb' (Ksi)	Fv' (Ksi)	RB	CL	CP	Eqn

==========< Redesign Shapes, LC 1 : DL + LL >==========

Section Set	Member	1st Choice	2nd Choice	3rd Choice	4th Choice
Redesign not performed...					
C1	N/A	No acceptable shapes found...			
B1	N/A	No acceptable shapes found ..			

==========< Material Takeoff, LC 1 : DL + LL >==========

Section Set	Database Shape	Total Length (ft)	Total Weight (K)
C1	TU12X12X8	12.00	0.91
C2	P8	0.00	0.00
C3	TU12X12X8	12.00	0 91
B1	TU5X5X6	26 00	0.58
B2	TU5X5X6	26 00	0.58
D1	TU4X4X4	36 11	0 44
		Total Wts:	3.43

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==========< Joint Displacements, LC 2 : DL+LL+SEISMIC >==========

Joint No	Translation X (in)	Translation Y (in)	Rotation θz (rad)
1	0.000	0.000	-0.00865
2	0 000	0 000	-0.01022
3	0.807	-0.014	-0.00394
4	0.815	-0.114	-0.00256
5	0.835	-0.223	-0.00092
6	0.851	-0.231	0.00065
7	0 860	-0 146	0.00160
8	0.853	-0.057	0.00149
9	0.839	-0 012	-0.00162
10	0.902	-0.018	-0.00280
11	0.878	-0.182	-0.00194
12	0.854	-0.240	-0.00009
13	0.835	-0.202	0.00129
14	0.830	-0.108	0.00125
15	0.842	-0.016	0.00064
16	0 000	0.000	0.00000

==========< Story Drift, LC 2 DL+LL+SEISMIC >==========

Story No.	Joint	X Direction Drift (in)	% of Ht
1	10	0 90	0.63

==========< Reactions, LC 2 · DL+LL+SEISMIC >==========

Joint No	Forces X (K)	Forces Y (K)	Moment Mz (K-ft)
1	-10.20	80 30	0.00
2	-18.61	70.78	0.00
16	0.00	0.00	0.00
Totals:	-28.81	151 08	

Center of Gravity Coords (X,Y,Z) (ft) : 9.854, 11.914, 0.000

==========< Member Section Forces, LC 2 : DL+LL+SEISMIC >==========

Member	Joints I - J	Section ↓	Axial (K)	Shear (K)	Moment (K-ft)
1	1- 3	1	80 30	10.20	0 00
		2	79.94	10.20	-48.45
		3	79 58	10.20	-96 90
2	2- 9	1	70 78	18.61	0 00
		2	70.41	18 61	-88 40
		3	70 05	18 61	-176.80
3	3- 10	1	80 33	-39 18	-93 49

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==========< Member Section Forces, LC 2 · DL+LL+SEISMIC >==========

Member	Joints I - J	Section ↓	Axial K	Shear K	Moment K-ft
		2	80 23	-39.18	-44.52
		3	80.14	-39 18	4 46
4	9- 15	1	70.20	-70 72	-176.80
		2	70 11	-70.72	-88 40
		3	70 01	-70 72	0.00
5	3- 4	1	-49 38	-0 75	-3.41
		2	-49.38	-0.78	-2.39
		3	-49.38	-0.81	-1.33
6	4- 5	1	-59.40	0.09	-1.33
		2	-59 40	0 03	-1.48
		3	-59.40	-0.03	-1.48
7	5- 6	1	-51 12	0 01	-1.48
		2	-51.12	-0.05	-1.42
		3	-51 12	-0.11	-1.22
8	6- 7	1	-23.66	-0.11	-1.22
		2	-23 66	-0.18	-0.79
		3	-23.66	-0.24	-0 19
9	7- 8	1	21.59	-0.09	-0.19
		2	21.59	-0.15	0.09
		3	21.59	-0.20	0.48
10	8- 9	1	89.33	0 21	0.48
		2	89.33	0.18	0.22
		3	89.33	0.15	0.00
11	10- 11	1	73.61	4.98	4.46
		2	73.61	0.52	-2.69
		3	73.61	-3.94	1 77
12	11- 12	1	73.86	4.28	1.77
		2	73.86	-0.18	-3 57
		3	73.86	-4 64	2.69
13	12- 13	1	56.02	4 48	2.69
		2	56.02	0 02	-3 15
		3	56 02	-4 45	2 60
14	13- 14	1	14 96	3 96	2 60
		2	14.96	-0 50	-1 90
		3	14 96	-4 96	5 20

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==========< Member Section Forces, LC 2 DL+LL+SEISMIC >==========

Member	Joints I - J	Section ↓	Axial K	Shear K	Moment K-ft
15	14- 15	1	-35.83	5 46	5 20
		2	-35.83	1 00	-3 20
		3	-35.83	-3.46	0.00
16	10- 4	1	-7.72	0.02	0.00
		2	-7 70	0.00	-0 01
		3	-7.69	-0.02	0 00
17	4- 11	1	6.19	0.02	0.00
		2	6.18	0.00	-0.01
		3	6.16	-0.02	0.00
18	11- 5	1	5 70	0.02	0.00
		2	5.72	0 00	-0 01
		3	5 73	-0 02	0.00
19	5- 12	1	-5.75	0.02	0.00
		2	-5.76	0.00	-0.01
		3	-5 78	-0.02	0.00
20	12- 6	1	19.01	0.02	0.00
		2	19.02	0.00	-0 01
		3	19.04	-0.02	0 00
21	6- 13	1	-19.06	0.02	0.00
		2	-19.08	0.00	-0.01
		3	-19.09	-0.02	0.00
22	13- 7	1	34 85	0.02	0.00
		2	34.87	0.00	-0.02
		3	34 88	-0.02	0.00
23	7- 14	1	-28.27	0.01	0.00
		2	-28.28	0 00	-0.01
		3	-28.30	-0 01	0 00
24	14- 8	1	46 08	0.02	0.00
		2	46.10	0.00	-0.01
		3	46.11	-0 02	0 00
25	8- 15	1	-47 86	0.02	0 00
		2	-47 88	0 00	-0.01
		3	-47 89	-0 02	0 00

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==========< Member Stresses, LC 2 . DL+LL+SEISMIC >==========

Member	Joints I - J	Section ↓	Axial Ksi	Shear Ksi	Bending Top Ksi	Bending Bottom Ksi
1	1 - 3	1	3.58	1 02	0 00	0.00
		2	3 57	1 02	7.19	-7.19
		3	3.55	1 02	14 39	-14.39
2	2 - 9	1	3.16	1 86	0 00	0.00
		2	3 14	1.86	13.12	-13.12
		3	3.13	1 86	26 25	-26.25
3	3 - 10	1	3.59	-3 92	13.88	-13.88
		2	3.58	-3.92	6 61	-6.61
		3	3.58	-3 92	-0 66	0.66
4	9 - 15	1	3.13	-7 07	26 25	-26.25
		2	3.13	-7 07	13 12	-13.12
		3	3.13	-7 07	0 00	0.00
5	3 - 4	1	-7.50	-0 24	4.48	-4.48
		2	-7.50	-0.25	3.14	-3.14
		3	-7 50	-0 26	1 75	-1.75
6	4 - 5	1	-9.03	0.03	1.75	-1.75
		2	-9.03	0.01	1 94	-1.94
		3	-9 03	-0 01	1.94	-1.94
7	5 - 6	1	-7.77	0 00	1.94	-1.94
		2	-7.77	-0 02	1 87	-1.87
		3	-7.77	-0 03	1.60	-1.60
8	6 - 7	1	-3.60	-0.04	1 60	-1.60
		2	-3 60	-0.06	1 04	-1.04
		3	-3.60	-0 08	0 25	-0.25
9	7 - 8	1	3.28	-0 03	0 25	-0.25
		2	3.28	-0.05	-0.12	0.12
		3	3.28	-0 06	-0 63	0 63
10	8 - 9	1	13 58	0 07	-0 63	0.63
		2	13.58	0.06	-0.29	0.29
		3	13 58	0 05	0 00	0.00
11	10 - 11	1	11 19	1 59	-5 87	5.87
		2	11.19	0 17	3.54	-3.54
		3	11 19	-1 26	-2 32	2.32
12	11 - 12	1	11 23	1 37	-2 32	2.32
		2	11 23	-0 06	4 70	-4 70

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==========< Member Stresses, LC 2 DL+LL+SEISMIC >==========

Member	Joints I	- J	Section ↓	Axial Ksi	Shear Ksi	Bending Top Ksi	Bending Bottom Ksi
			3	11 23	-1 49	-3 54	3.54
13	12	13	1	8 51	1.43	-3 54	3.54
			2	8 51	0.01	4 15	-4.15
			3	8.51	-1 42	-3 43	3.43
14	13	14	1	2 27	1.27	-3 43	3.43
			2	2.27	-0.16	2.50	-2.50
			3	2 27	-1.59	-6.85	6.85
15	14	15	1	-5 45	1 75	-6 85	6.85
			2	-5 45	0 32	4 21	-4.21
			3	-5 45	-1.11	0 00	0.00
16	10	4	1	-2 15	0.01	0.00	0.00
			2	-2 15	0.00	0 04	-0.04
			3	-2.14	-0.01	0 00	0.00
17	4	11	1	1.73	0 01	0.00	0.00
			2	1.72	0.00	0.04	-0.04
			3	1 72	-0.01	0 00	0.00
18	11	5	1	1 59	0.01	0.00	0.00
			2	1 59	0 00	0.04	-0.04
			3	1 60	-0.01	0.00	0.00
19	5	12	1	-1 60	0.01	0.00	0.00
			2	-1 61	0.00	0 04	-0 04
			3	-1 61	-0.01	0.00	0.00
20	12	6	1	5 29	0 01	0.00	0.00
			2	5 30	0.00	0.04	-0.04
			3	5 30	-0.01	0.00	0.00
21	6	13	1	-5 31	0.01	0.00	0.00
			2	-5 31	0.00	0.04	-0.04
			3	-5 32	-0.01	0.00	0.00
22	13	7	1	9 71	0.01	0.00	0.00
			2	9 71	0 00	0 06	-0.06
			3	9.72	-0 01	0 00	0.00
23	7	14	1	-7.87	0 01	0 00	0 00
			2	-7 88	0 00	0 03	-0.03
			3	-7 88	-0 01	0.00	0 00

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==========< Member Stresses, LC 2 DL+LL+SEISMIC >==========

Member	Joints I	- J	Section ↓	Axial Ksi	Shear Ksi	Bending Top Ksi	Bending Bottom Ksi
24	14	8	1	12.84	0.01	0 00	0 00
			2	12.84	0 00	0.04	-0 04
			3	12.85	-0.01	0.00	0 00
25	8	15	1	-13.33	0.01	0.00	0 00
			2	-13.34	0 00	0.04	-0.04
			3	-13.34	-0.01	0.00	0.00

==========< Member Deflections, LC 2 : DL+LL+SEISMIC >==========

Member	Joints I	- J	Section ↓	x in	y in	L/n
1	1	3	1	0.000	0 000	NC
			2	-0.007	-0.471	1697.7
			3	-0.014	-0.807	NC
2	2	9	1	0.000	0 000	NC
			2	-0.006	-0 542	930.5
			3	-0.012	-0 839	NC
3	3	10	1	-0.014	-0.807	NC
			2	-0.016	-0.859	7021.1
			3	-0 018	-0 902	NC
4	9	15	1	-0.012	-0.839	NC
			2	-0.014	-0.849	3535.8
			3	-0.016	-0.842	NC
5	3	4	1	0.807	-0 014	NC
			2	0.811	-0.070	5795.6
			3	0.815	-0.114	NC
6	4	5	1	0 815	-0.114	NC
			2	0.825	-0.182	4854.0
			3	0.835	-0.223	NC
7	5	6	1	0.835	-0 223	NC
			2	0 843	-0.239	5045.9
			3	0 851	-0.231	NC
8	6	7	1	0 851	-0.231	NC
			2	0.855	-0 196	8211.8
			3	0 860	-0 146	NC
9	7	8	1	0.860	-0 146	623 6

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==========< Member Deflections, LC 2 . DL+LL+SEISMIC >==========

Member	Joints I	- J	Section ↓	x (in)	y (in)	L/n
			2	0 857	-0 101	1266 5
			3	0.853	-0 057	NC
10	8	9	1	0.853	-0.057	711.5
			2	0.846	-0 034	1456.4
			3	0.839	-0 012	NC
11	10	11	1	0.902	-0.018	NC
			2	0.890	-0.115	4104.9
			3	0.878	-0.182	NC
12	11	12	1	0.878	-0 182	NC
			2	0.866	-0.234	2711.6
			3	0.854	-0.240	NC
13	12	13	1	0.854	-0.240	NC
			2	0.844	-0.240	3231.1
			3	0.835	-0 202	NC
14	13	14	1	0.835	-0 202	NC
			2	0.833	-0.163	7588.5
			3	0.830	-0.108	NC
15	14	15	1	0.830	-0.108	NC
			2	0.836	-0.081	3163.6
			3	0.842	-0.016	NC
16	10	4	1	0.669	0.605	337.6
			2	0.671	0.540	676.8
			3	0.672	0.475	NC
17	4	11	1	0.501	-0.653	NC
			2	0 499	-0 699	NC
			3	0.498	-0 745	NC
18	11	5	1	0.761	0.473	725.0
			2	0.760	0 443	1457.0
			3	0.759	0.413	NC
19	5	12	1	0 442	-0 742	NC
			2	0 444	-0 755	NC
			3	0 445	-0.767	NC
20	12	6	1	0.781	0.419	NC
			2	0 777	0.421	NC
			3	0 773	0 424	8925.1

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==========< Member Deflections, LC 2 : DL+LL+SEISMIC >==========

Member	Joints I	- J	Section ↓	x (in)	y (in)	L/n
21	6	13	1	0.454	-0.756	NC
			2	0.458	-0.741	NC
			3	0.462	-0.725	NC
22	13	7	1	0.780	0.361	NC
			2	0.772	0.390	1625.9
			3	0.764	0.420	806.5
23	7	14	1	0.433	-0.757	NC
			2	0.438	-0.734	NC
			3	0.443	-0.710	NC
24	14	8	1	0.667	0.506	NC
			2	0.658	0.532	1643.5
			3	0.648	0.558	817.6
25	8	15	1	0.583	-0.626	NC
			2	0.593	-0.607	NC
			3	0.603	-0.588	NC

==========< Member AISC Unity Checks, LC 2 · DL+LL+SEISMIC >==========

Member	Joints I	- J	Unity Chk	Loc	Shear Chk	Loc	Fa (Ksi)	Fb (Ksi)	Cb	Cm	ASD Eqn.
1	1	3	0.452	3	0.042	1	34.24	40.47	1.00	0.60	H1-2
2	2	9	0.734	3	0.076	1	34.24	40.47	1.00	0 60	H1-2
3	3	10	0.440	1	0.160	1	36 26	40.47	1.00	0.58	H1-2
4	9	15	0.734	1	0.288	1	36.26	40.47	1.00	0.60	H1-2
5	3	4	0.315	1	0.011	3	35.15	40.47	1.00	0 85	H2-1
6	4	5	0.293	3	0 001	1	33.00	40.47	1.00	0 85	H2-1
7	5	6	0.259	1	0.001	3	33 00	40.47	1.00	0 85	H2-1
8	6	7	0.137	1	0 003	3	32 42	40.47	1.00	0.85	H2-1
9	7	8	0.111	3	0.003	3	33.54	40.47	1.00	0 85	H1-1
10	8	9	0.402	1	0.003	1	35.15	40.47	1.00	1 00	H1-1
11	10	11	0.466	1	0.065	1	32.97	40.47	1.00	0 85	H1-1
12	11	12	0.442	2	0.061	3	32.97	40.47	1.00	0.85	H1-1
13	12	13	0.347	2	0.058	1	32 97	40.47	1.00	0.85	H1-1
14	13	14	0.231	3	0.065	3	32 97	40.47	1.00	0 85	H1-2
15	14	15	0.317	1	0.071	1	32 97	40.47	1 00	1 00	H2-1
16	10	4	0.059	2	0.000	1	33 63	40.47	1.00	1 00	H2-1
17	4	11	0.052	2	0 000	3	33 73	40 47	1.00	1 00	H1-3
18	11	5	0 048	2	0 000	1	33.66	40.47	1.00	1 00	H1-3
19	5	12	0 045	2	0 000	1	33.70	40.47	1.00	1 00	H2-1
20	12	6	0 158	2	0 000	1	33 68	40 47	1 00	1 00	H1-1

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==========< Member AISC Unity Checks, LC 2 . DL+LL+SEISMIC >==========

Member	Joints I	- J	Unity Chk	Loc	Shear Chk	Loc	Fa Ksi	Fb Ksi	Cb	Cm	ASD Eqn.
21	6	13	0.145	2	0.000	1	33 68	40 47	1.00	1.00	H2-1
22	13	7	0.294	2	0 000	1	33 21	40 47	1 00	1.00	H1-1
23	7	14	0.215	2	0 000	1	34.09	40.47	1.00	1.00	H2-1
24	14	8	0.382	2	0 000	3	33.73	40.47	1.00	1.00	H1-1
25	8	15	0.364	2	0.000	1	33.63	40.47	1.00	1.00	H2-1

==========< Member NDS Unity Checks, LC 2 DL+LL+SEISMIC >==========

Memb	Unity Chk	Loc	Shear Chk	Loc	Fc' Ksi	Ft' Ksi	Fb' Ksi	Fv' Ksi	RB	CL	CP	Eqn

==========< Redesign Shapes, LC 2 . DL+LL+SEISMIC >==========

Section Set	Member	1st Choice	2nd Choice	3rd Choice	4th Choice
Redesign not performed.					
C1	N/A	No acceptable shapes found..			
B1	N/A	No acceptable shapes found..			

==========< Material Takeoff, LC 2 DL+LL+SEISMIC >==========

Section Set	Database Shape	Total Length ft	Total Weight K
C1	TU12X12X8	12.00	0.91
C2	P8	0.00	0 00
C3	TU12X12X8	12.00	0.91
B1	TU5X5X6	26.00	0.58
B2	TU5X5X6	26.00	0 58
D1	TU4X4X4	36.11	0.44
		Total Wts.	3 43

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==========< Joint Displacements, LC 3 DL+LL-SEISMIC >==========

Joint No	Translation X (in)	Translation Y (in)	Rotation θz (rad)
1	0.000	0.000	0 01007
2	0.000	0 000	0 00876
3	-0.840	-0.019	0.00196
4	-0.853	-0.040	-0.00176
5	-0.858	-0.120	-0.00113
6	-0.849	-0.183	-0.00065
7	-0.828	-0.176	0.00089
8	-0.810	-0.089	0.00227
9	-0.801	-0.008	0 00356
10	-0.859	-0.023	-0.00007
11	-0.839	-0.080	-0.00135
12	-0.837	-0.160	-0.00107
13	-0.848	-0.195	0.00008
14	-0.864	-0.149	0.00125
15	-0.880	-0.010	0.00219
16	0.000	0.000	0.00000

==========< Story Drift, LC 3 : DL+LL-SEISMIC >==========

Story No.	Joint	X Direction Drift (in)	% of Ht
1	10	-0.86	0.60

==========< Reactions, LC 3 : DL+LL-SEISMIC >==========

Joint No	Forces X (K)	Forces Y (K)	Moment Mz (K-ft)
1	17.56	106.90	0 00
2	11.25	44.18	0.00
16	0.00	0.00	0 00
Totals·	28.81	151.08	

Center of Gravity Coords (X,Y,Z) (ft) : 9.854, 11.914, 0.000

==========< Member Section Forces, LC 3 : DL+LL-SEISMIC >==========

Member	Joints I - J	Section ↓	Axial (K)	Shear (K)	Moment (K-ft)
1	1- 3	1	106 90	-17.56	0.00
		2	106.53	-17 56	83.40
		3	106 17	-17 56	166.80
2	2- 9	1	44 18	-11 25	0 00
		2	43.82	-11 25	53.45
		3	43 46	-11 25	106.90
3	3- 10	1	100 30	58 64	152.60

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==========< Member Section Forces, LC 3 DL+LL-SEISMIC >==========

Member	Joints I - J	Section ↓	Axial K	Shear K	Moment K-ft
		2	100.21	58 64	79.30
		3	100 11	58 64	6 00
4	9- 15	1	42.90	42 76	106.90
		2	42.81	42 76	53.45
		3	42.71	42.76	0.00
5	3- 4	1	76.20	5 87	14.20
		2	76.20	5 84	6.42
		3	76.20	5.81	-1.33
6	4- 5	1	17 28	-0 26	-1 33
		2	17 28	-0 31	-0.59
		3	17.28	-0 37	0.30
7	5- 6	1	-29.12	0.32	0.30
		2	-29.12	0.26	-0.45
		3	-29.12	0.20	-1.05
8	6- 7	1	-56.15	0.11	-1.05
		2	-56 15	0.04	-1.26
		3	-56.15	-0.02	-1.29
9	7- 8	1	-65 06	0 08	-1.29
		2	-65.06	0.02	-1.40
		3	-65.06	-0.03	-1.40
10	8- 9	1	-54.01	-0.50	-1.40
		2	-54.01	-0.53	-0.72
		3	-54.01	-0.56	0.00
11	10- 11	1	-60.44	4.85	6.00
		2	-60.44	0.38	-0.80
		3	-60.44	-4 08	4.00
12	11- 12	1	-4.68	4.61	4.00
		2	-4.68	0.15	-2.19
		3	-4.68	-4 31	3.23
13	12- 13	1	31 36	4.61	3 23
		2	31 36	0 15	-2.95
		3	31 36	-4.32	2.47
14	13- 14	1	50 37	4.32	2 47
		2	50 37	-0 14	-2.97
		3	50 37	-4 60	3 20

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==========< Member Section Forces, LC 3 : DL+LL-SEISMIC >==========

Member	Joints I - J	Section ↓	Axial K	Shear K	Moment K-ft
15	14- 15	1	48 19	5.08	3 20
		2	48.19	0.61	-4 20
		3	48 19	-3 85	0.00
16	10- 4	1	-37.08	0.02	0 00
		2	-37 06	0 00	-0.01
		3	-37.05	-0.02	0.00
17	4- 11	1	44.79	0.02	0.00
		2	44 77	0.00	-0.01
		3	44.76	-0.02	0.00
18	11- 5	1	-32.92	0.02	0.00
		2	-32 91	0.00	-0.01
		3	-32.89	-0 02	0.00
19	5- 12	1	31.48	0.02	0.00
		2	31.46	0.00	-0.01
		3	31.44	-0.02	0.00
20	12- 6	1	-18.73	0.02	0.00
		2	-18.71	0.00	-0.01
		3	-18.70	-0.02	0.00
21	6- 13	1	18.81	0.02	0.00
		2	18.79	0.00	-0.01
		3	18.77	-0.02	0.00
22	13- 7	1	-6.99	0.02	0.00
		2	-6.98	0.00	-0.02
		3	-6.96	-0.02	0 00
23	7- 14	1	5.44	0.01	0.00
		2	5.42	0.00	-0.01
		3	5.41	-0.01	0.00
24	14- 8	1	7.86	0.02	0.00
		2	7.88	0.00	-0 01
		3	7.90	-0 02	0 00
25	8- 15	1	-7.44	0 02	0.00
		2	-7.45	0 00	-0.01
		3	-7.47	-0.02	0 00

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==========< Member Stresses, LC 3 · DL+LL-SEISMIC >==========

Member	Joints I	- J	Section ↓	Axial Ksi	Shear Ksi	Bending Top Ksi	Bending Bottom Ksi
1	1	3	1	4.77	-1 76	0 00	0 00
			2	4 76	-1.76	-12 38	12.38
			3	4 74	-1.76	-24 76	24.76
2	2	9	1	1 97	-1.13	0.00	0.00
			2	1.96	-1.13	-7.93	7 93
			3	1 94	-1.13	-15 87	15.87
3	3	10	1	4.48	5.86	-22.65	22.65
			2	4 47	5.86	-11.77	11.77
			3	4 47	5.86	-0.89	0.89
4	9	15	1	1 92	4.28	-15.87	15 87
			2	1.91	4.28	-7.93	7 93
			3	1.91	4.28	0 00	0.00
5	3	4	1	11.58	1.88	-18.69	18.69
			2	11.58	1 87	-8 44	8.44
			3	11 58	1 86	1.75	-1.75
6	4	5	1	2 63	-0 08	1.75	-1.75
			2	2.63	-0.10	0 78	-0.78
			3	2.63	-0.12	-0 39	0.39
7	5	6	1	-4 43	0.10	-0 39	0.39
			2	-4.43	0.08	0 59	-0.59
			3	-4.43	0.06	1.38	-1.38
8	6	7	1	-8.53	0.03	1 38	-1.38
			2	-8.53	0.01	1.66	-1 66
			3	-8.53	-0.01	1 69	-1 69
9	7	8	1	-9.89	0.02	1.69	-1 69
			2	-9.89	0.01	1.84	-1 84
			3	-9.89	-0.01	1.84	-1 84
10	8	9	1	-8.21	-0.16	1 84	-1 84
			2	-8.21	-0.17	0.95	-0.95
			3	-8 21	-0.18	0.00	0.00
11	10	11	1	-9.19	1.55	-7.89	7 89
			2	-9 19	0 12	1.05	-1 05
			3	-9.19	-1.31	-5 27	5 27
12	11	12	1	-0.71	1 48	-5 27	5 27
			2	-0 71	0 05	2.88	-2 88

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==========< Member Stresses, LC 3 · DL+LL-SEISMIC >==========

Member	Joints I	- J	Section ↓	Axial Ksi	Shear Ksi	Bending Top Ksi	Bending Bottom Ksi
			3	-0 71	-1 38	-4 25	4.25
13	12	13	1	4 77	1.47	-4.25	4 25
			2	4 77	0.05	3.88	-3 88
			3	4 77	-1 38	-3.25	3 25
14	13	14	1	7.65	1.38	-3 25	3.25
			2	7 65	-0.04	3.90	-3.90
			3	7 65	-1.47	-4 21	4.21
15	14	15	1	7 32	1.62	-4 21	4 21
			2	7.32	0.20	5.53	-5.53
			3	7.32	-1.23	0.00	0.00
16	10	4	1	-10.33	0.01	0 00	0.00
			2	-10 32	0.00	0.04	-0 04
			3	-10.32	-0.01	0 00	0 00
17	4	11	1	12 48	0.01	0 00	0 00
			2	12.47	0.00	0.04	-0 04
			3	12.47	-0 01	0.00	0 00
18	11	5	1	-9.17	0.01	0.00	0.00
			2	-9 17	0 00	0.04	-0.04
			3	-9.16	-0 01	0.00	0 00
19	5	12	1	8.77	0.01	0 00	0 00
			2	8.76	0.00	0.04	-0.04
			3	8.76	-0.01	0.00	0.00
20	12	6	1	-5.22	0.01	0.00	0 00
			2	-5.21	0.00	0.04	-0.04
			3	-5.21	-0.01	0.00	0 00
21	6	13	1	5.24	0.01	0.00	0.00
			2	5 23	0.00	0.04	-0 04
			3	5.23	-0 01	0 00	0.00
22	13	7	1	-1.95	0.01	0.00	0.00
			2	-1.94	0 00	0 06	-0 06
			3	-1 94	-0.01	0.00	0 00
23	7	14	1	1 51	0 01	0 00	0 00
			2	1 51	0 00	0 03	-0 03
			3	1 51	-0 01	0 00	0 00

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==========< Member Stresses, LC 3 : DL+LL-SEISMIC >==========

Member	Joints I	- J	Section ↓	Axial Ksi	Shear Ksi	Bending Top Ksi	Bending Bottom Ksi
24	14	8	1	2.19	0 01	0.00	0 00
			2	2.19	0.00	0.04	-0 04
			3	2.20	-0.01	0.00	0 00
25	8	15	1	-2.07	0.01	0.00	0 00
			2	-2 08	0.00	0.04	-0 04
			3	-2.08	-0.01	0 00	0 00

==========< Member Deflections, LC 3 : DL+LL-SEISMIC >==========

Member	Joints I	- J	Section ↓	x in	y in	L/n
1	1	3	1	0.000	0 000	NC
			2	-0.009	0.535	986.2
			3	-0.019	0.840	NC
2	2	9	1	0.000	0.000	NC
			2	-0.004	0 474	1538.9
			3	-0.008	0 801	NC
3	3	10	1	-0.019	0.840	NC
			2	-0.021	0.857	3941.6
			3	-0.023	0.859	NC
4	9	15	1	-0.008	0.801	NC
			2	-0.009	0.845	5847 9
			3	-0.010	0.880	NC
5	3	4	1	-0.840	-0.019	NC
			2	-0.846	-0.014	7199.8
			3	-0.853	-0.040	1533.3
6	4	5	1	-0.853	-0.040	NC
			2	-0.855	-0.085	NC
			3	-0 858	-0.120	NC
7	5	6	1	-0.858	-0 120	NC
			2	-0.853	-0 155	NC
			3	-0.849	-0 183	NC
8	6	7	1	-0.849	-0.183	NC
			2	-0.839	-0 193	5127 7
			3	-0 828	-0 176	NC
9	7	8	1	-0 828	-0 176	NC

==========< Member Deflections, LC 3 : DL+LL-SEISMIC >==========

Member	Joints I	J	Section ↓	x (in)	y (in)	L/n
			2	-0.819	-0.142	5750.3
			3	-0 810	-0.089	NC
10	8	9	1	-0.810	-0.089	NC
			2	-0.805	-0.050	NC
			3	-0.801	-0.008	NC
11	10	11	1	-0.859	-0.023	NC
			2	-0 849	-0.050	2342.4
			3	-0.839	-0.080	1110.2
12	11	12	1	-0.839	-0.080	NC
			2	-0 838	-0.130	5797 8
			3	-0.837	-0.160	NC
13	12	13	1	-0.837	-0.160	NC
			2	-0 843	-0.195	3562.9
			3	-0 848	-0.195	NC
14	13	14	1	-0.848	-0.195	NC
			2	-0 856	-0.190	3533.1
			3	-0.864	-0.149	NC
15	14	15	1	-0.864	-0.149	NC
			2	-0.872	-0.108	2182.8
			3	-0.880	-0.010	NC
16	10	4	1	-0.610	-0.605	NC
			2	-0 602	-0.609	NC
			3	-0.594	-0.613	NC
17	4	11	1	-0.635	0.570	1124.2
			2	-0.644	0 551	2264.1
			3	-0.654	0.532	NC
18	11	5	1	-0.553	-0.636	NC
			2	-0.546	-0 657	NC
			3	-0.539	-0.678	NC
19	5	12	1	-0.699	0.513	998 4
			2	-0 705	0 491	2009.5
			3	-0.712	0.469	NC
20	12	6	1	-0.493	-0.695	NC
			2	-0 489	-0 708	NC
			3	-0.485	-0 720	NC

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==========< Member Deflections, LC 3 DL+LL-SEISMIC >==========

Member	Joints I	- J	Section ↓	x (in)	y (in)	L/n
21	6	13	1	-0 738	0 457	4519.1
			2	-0 742	0 452	9311.7
			3	-0.746	0.447	NC
22	13	7	1	-0.543	-0 680	NC
			2	-0.541	-0.666	NC
			3	-0 540	-0.653	NC
23	7	14	1	-0 661	0.529	NC
			2	-0 662	0.551	1746 1
			3	-0.663	0.574	869.9
24	14	8	1	-0.511	-0.712	NC
			2	-0.513	-0 672	NC
			3	-0.515	-0.631	NC
25	8	15	1	-0.651	0 490	NC
			2	-0 649	0 542	828.9
			3	-0.648	0.596	413.3

==========< Member AISC Unity Checks, LC 3 : DL+LL-SEISMIC >==========

Member	Joints I	- J	Unity Chk	Loc	Shear Chk	Loc	Fa (Ksi)	Fb (Ksi)	Cb	Cm	ASD Eqn.
1	1	3	0.741	3	0 072	1	34.24	40.47	1 00	0.60	H1-2
2	2	9	0.445	3	0 046	1	34.24	40.47	1 00	0.60	H1-2
3	3	10	0 681	1	0.239	1	36.26	40 47	1.00	0.62	H1-2
4	9	15	0 444	1	0.174	1	36 26	40.47	1 00	0.60	H1-2
5	3	4	0.777	1	0 077	1	35.15	40.47	1 00	0.85	H1-2
6	4	5	0.117	1	0 005	3	33.00	40.47	1.00	0.85	H1-1
7	5	6	0 154	3	0 004	1	33.00	40.47	1 00	0.85	H2-1
8	6	7	0 274	3	0.001	1	32.42	40.47	1 00	0.85	H2-1
9	7	8	0.314	2	0.001	1	33.54	40.47	1 00	0.85	H2-1
10	8	9	0 269	1	0.007	3	35.15	40.47	1 00	1.00	H2-1
11	10	11	0 445	1	0 063	1	32.97	40 47	1 00	0.85	H2-1
12	11	12	0 149	1	0 060	1	32.97	40.47	1 00	0.85	H2-1
13	12	13	0 235	1	0.060	1	32.97	40.47	1 00	0.85	H1-1
14	13	14	0 322	3	0 060	3	32.97	40.47	1.00	0.85	H1-1
15	14	15	0 363	2	0 066	1	32.97	40.47	1 00	1.00	H1-1
16	10	4	0.282	2	0 000	1	33.63	40.47	1.00	1.00	H2-1
17	4	11	0 371	2	0.000	3	33.73	40.47	1 00	1.00	H1-1
18	11	5	0 250	2	0 000	1	33.66	40.47	1 00	1.00	H2-1
19	5	12	0.261	2	0.000	1	33 70	40.47	1 00	1 00	H1-1
20	12	6	0 143	2	0 000	1	33 68	40.47	1 00	1.00	H2-1

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==========< Member AISC Unity Checks, LC 3 : DL+LL-SEISMIC >==========

Member	Joints I	- J	Unity Chk	Loc	Shear Chk	Loc	Fa (Ksi)	Fb (Ksi)	Cb	Cm	ASD Eqn.
21	6	13	0.156	2	0.000	1	33 68	40 47	1 00	1.00	H1-1
22	13	7	0.054	2	0.000	1	33 21	40 47	1.00	1 00	H2-1
23	7	14	0.045	2	0.000	1	34.09	40.47	1.00	1.00	H1-3
24	14	8	0.066	2	0 000	3	33.73	40 47	1.00	1.00	H1-3
25	8	15	0.057	2	0.000	1	33.63	40.47	1.00	1.00	H2-1

==========< Member NDS Unity Checks, LC 3 . DL+LL-SEISMIC >==========

Memb	Unity Chk	Loc	Shear Chk	Loc	Fc' (Ksi)	Ft' (Ksi)	Fb' (Ksi)	Fv' (Ksi)	RB	CL	CP	Eqn

==========< Redesign Shapes, LC 3 : DL+LL-SEISMIC >==========

Section Set	Member	1st Choice	2nd Choice	3rd Choice	4th Choice
Redesign not performed ..					
C1	N/A	No acceptable shapes found...			
B1	N/A	No acceptable shapes found...			

==========< Material Takeoff, LC 3 : DL+LL-SEISMIC >==========

Section Set	Database Shape	Total Length (ft)	Total Weight (K)
C1	TU12X12X8	12.00	0 91
C2	P8	0.00	0.00
C3	TU12X12X8	12.00	0.91
B1	TU5X5X6	26.00	0.58
B2	TU5X5X6	26.00	0.58
D1	TU4X4X4	36.11	0.44
		Total Wts·	3.43

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==========< Joint Displacements, LC 4 · .85DL + SEISMIC >==========

Joint No	Translation X (in)	Translation Y (in)	Rotation θz (rad)
1	0.000	0 000	-0 00925
2	0.000	0 000	-0 00960
3	0.821	0 000	-0 00310
4	0.831	-0.049	-0.00072
5	0.845	-0.077	-0.00005
6	0.850	-0.055	0.00064
7	0 846	-0.009	0.00054
8	0.835	0.005	-0.00011
9	0 822	-0.004	-0.00245
10	0 884	0.000	-0.00158
11	0.861	-0.070	-0.00054
12	0.847	-0.070	0.00040
13	0.841	-0.033	0.00071
14	0.845	0.002	0.00019
15	0.858	-0.005	-0.00056
16	0.000	0.000	0.00000

==========< Story Drift, LC 4 . .85DL + SEISMIC >==========

Story No.	Joint	X Direction Drift (in)	% of Ht
1	10	0.88	0.61

==========< Reactions, LC 4 . 85DL + SEISMIC >==========

Joint No	Forces X (K)	Forces Y (K)	Moment Mz (K-ft)
1	-13.33	-1.08	0.00
2	-15.48	21.47	0.00
16	0.00	0.00	0.00
Totals:	-28.81	20.39	

Center of Gravity Coords (X,Y,Z) (ft) . 10.383, 11 363, 0.000

==========< Member Section Forces, LC 4 · .85DL + SEISMIC >==========

Member	Joints I - J	Section ↓	Axial (K)	Shear (K)	Moment (K-ft)
1	1- 3	1	-1.08	13.33	0.00
		2	-1 44	13 33	-63.30
		3	-1 80	13 33	-126.60
2	2- 9	1	21 47	15 48	0 00
		2	21 11	15 48	-73 55
		3	20 75	15.48	-147 10
3	3- 10	1	1 12	-47.41	-118 59

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==========< Member Section Forces, LC 4 . .85DL + SEISMIC >==========

Member	Joints I - J	Section ↓	Axial K	Shear K	Moment K-ft
		2	1 02	-47.41	-59 32
		3	0.93	-47.41	-0 06
4	9- 15	1	21.05	-58.84	-147.10
		2	20 96	-58.84	-73.55
		3	20.86	-58.84	0 00
5	3- 4	1	-60.74	-2.92	-8.01
		2	-60.74	-2 95	-4 10
		3	-60.74	-2.98	-0.16
6	4- 5	1	-41.47	0 21	-0.16
		2	-41.47	0.15	-0.62
		3	-41.47	0.09	-0.93
7	5- 6	1	-17.00	-0.08	-0 93
		2	-17.00	-0 14	-0 64
		3	-17.00	-0.20	-0.20
8	6- 7	1	10.28	-0.06	-0.20
		2	10.28	-0.12	0.05
		3	10.28	-0.18	0.49
9	7- 8	1	40.09	-0.04	0.49
		2	40.09	-0.09	0.63
		3	40.09	-0.14	0.89
10	8- 9	1	74.32	0.37	0.89
		2	74.32	0.34	0.43
		3	74.32	0.31	0.00
11	10- 11	1	68 05	0.72	-0.06
		2	68.05	0.14	-1.17
		3	68.05	-0.45	-0.76
12	11- 12	1	44.51	0.42	-0.76
		2	44.51	-0 17	-1.09
		3	44.51	-0.75	0.10
13	12- 13	1	18 94	0.53	0.10
		2	18.94	-0.05	-0.52
		3	18.94	-0.64	0.38
14	13- 14	1	-12.76	0 36	0.38
		2	-12 76	-0 22	0.20
		3	-12 76	-0 81	1 54

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==========< Member Section Forces, LC 4 .85DL + SEISMIC >==========

Member	Joints I - J	Section ↓	Axial K	Shear K	Moment K-ft
15	14- 15	1	-41.04	0.88	1 54
		2	-41.04	0.30	0.01
		3	-41.04	-0.29	0.00
16	10- 4	1	11.21	0.02	0 00
		2	11.22	0.00	-0 01
		3	11.24	-0.02	0.00
17	4- 11	1	-15 55	0.02	0.00
		2	-15.56	0.00	-0.01
		3	-15.58	-0.02	0.00
18	11- 5	1	17.16	0.02	0.00
		2	17.17	0.00	-0 01
		3	17.19	-0 02	0.00
19	5- 12	1	-16 76	0.02	0.00
		2	-16.78	0.00	-0.01
		3	-16.79	-0.02	0.00
20	12- 6	1	18.77	0.02	0.00
		2	18.79	0.00	-0.01
		3	18.80	-0.02	0.00
21	6- 13	1	-19.04	0.02	0.00
		2	-19.06	0.00	-0.01
		3	-19.07	-0.02	0.00
22	13- 7	1	22.92	0.02	0.00
		2	22 93	0.00	-0.02
		3	22.95	-0.02	0.00
23	7- 14	1	-18.67	0.01	0.00
		2	-18.68	0.00	-0.01
		3	-18 70	-0.01	0.00
24	14- 8	1	23 04	0.02	0.00
		2	23 06	0.00	-0.01
		3	23 08	-0.02	0.00
25	8- 15	1	-24.41	0.02	0.00
		2	-24.42	0.00	-0 01
		3	-24.44	-0.02	0 00

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==========< Member Stresses, LC 4 · .85DL + SEISMIC >==========

Member	Joints I - J	Section ↓	Axial Ksi	Shear Ksi	Bending Top Ksi	Bending Bottom Ksi
1	1 - 3	1	-0.05	1.33	0 00	0.00
		2	-0.06	1 33	9 40	-9.40
		3	-0.08	1 33	18.79	-18.79
2	2 - 9	1	0.96	1.55	0 00	0 00
		2	0.94	1 55	10.92	-10.92
		3	0.93	1 55	21 84	-21.84
3	3 - 10	1	0.05	-4.74	17.61	-17.61
		2	0 05	-4.74	8.81	-8.81
		3	0.04	-4.74	0 01	-0.01
4	9 - 15	1	0 94	-5.88	21.84	-21.84
		2	0.94	-5.88	10.92	-10.92
		3	0.93	-5.88	0.00	0.00
5	3 - 4	1	-9.23	-0.93	10.53	-10.53
		2	-9.23	-0.94	5.40	-5.40
		3	-9.23	-0.95	0.21	-0.21
6	4 - 5	1	-6.30	0.07	0.21	-0.21
		2	-6.30	0.05	0.82	-0.82
		3	-6.30	0.03	1.23	-1.23
7	5 - 6	1	-2.58	-0.03	1.23	-1.23
		2	-2.58	-0.05	0.85	-0.85
		3	-2.58	-0.06	0.27	-0.27
8	6 - 7	1	1 56	-0.02	0.27	-0.27
		2	1.56	-0 04	-0.06	0.06
		3	1.56	-0.06	-0.64	0.64
9	7 - 8	1	6 09	-0.01	-0.64	0.64
		2	6.09	-0.03	-0 83	0.83
		3	6.09	-0.04	-1.18	1.18
10	8 - 9	1	11.30	0.12	-1 18	1.18
		2	11.30	0.11	-0 56	0 56
		3	11.30	0.10	0.00	0 00
11	10 - 11	1	10.34	0.23	0 07	-0.07
		2	10.34	0.04	1 54	-1.54
		3	10.34	-0.14	1 00	-1 00
12	11 - 12	1	6.76	0.13	1.00	-1 00
		2	6.76	-0.05	1.43	-1.43

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==========< Member Stresses, LC 4 .85DL + SEISMIC >==========

Member	Joints I	- J	Section ↓	Axial Ksi	Shear Ksi	Bending Top Ksi	Bending Bottom Ksi
			3	6.76	-0.24	-0.13	0.13
13	12	13	1	2.88	0.17	-0.13	0.13
			2	2.88	-0.02	0.69	-0.69
			3	2.88	-0.20	-0.50	0.50
14	13	14	1	-1.94	0 12	-0.50	0.50
			2	-1.94	-0.07	-0.26	0.26
			3	-1.94	-0.26	-2.03	2.03
15	14	15	1	-6.24	0.28	-2.03	2.03
			2	-6.24	0 09	-0.01	0 01
			3	-6.24	-0 09	0.00	0.00
16	10	4	1	3.12	0 01	0.00	0.00
			2	3.13	0.00	0.04	-0.04
			3	3.13	-0.01	0.00	0.00
17	4	11	1	-4.33	0.01	0.00	0 00
			2	-4 34	0.00	0.04	-0.04
			3	-4.34	-0.01	0.00	0.00
18	11	5	1	4.78	0.01	0.00	0.00
			2	4.78	0.00	0.04	-0 04
			3	4.79	-0.01	0.00	0.00
19	5	12	1	-4.67	0.01	0.00	0.00
			2	-4.67	0.00	0.04	-0.04
			3	-4.68	-0.01	0.00	0.00
20	12	6	1	5.23	0.01	0.00	0.00
			2	5.23	0.00	0.04	-0.04
			3	5.24	-0.01	0.00	0.00
21	6	13	1	-5.30	0.01	0.00	0.00
			2	-5.31	0 00	0.04	-0.04
			3	-5.31	-0 01	0.00	0 00
22	13	7	1	6 38	0 01	0 00	0.00
			2	6.39	0.00	0 06	-0.06
			3	6 39	-0 01	0 00	0.00
23	7	14	1	-5.20	0 01	0 00	0 00
			2	-5.20	0 00	0 03	-0.03
			3	-5.21	-0 01	0 00	0.00

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==========< Member Stresses, LC 4 85DL + SEISMIC >==========

Member	Joints I	- J	Section ↓	Axial Ksi	Shear Ksi	Bending Top Ksi	Bending Bottom Ksi
24	14	8	1	6 42	0 01	0 00	0.00
			2	6 42	0 00	0.04	-0.04
			3	6.43	-0 01	0 00	0.00
25	8	15	1	-6.80	0 01	0.00	0.00
			2	-6.80	0.00	0.04	-0.04
			3	-6.81	-0.01	0.00	0.00

==========< Member Deflections, LC 4 : .85DL + SEISMIC >==========

Member	Joints I	- J	Section ↓	x in	y in	L/n
1	1	3	1	0.000	0.000	NC
			2	0 000	-0.498	1299.4
			3	0 000	-0 821	NC
2	2	9	1	0.000	0.000	NC
			2	-0.002	-0.513	1118.3
			3	-0.004	-0.822	NC
3	3	10	1	0 000	-0.821	NC
			2	0 000	-0.858	5268.7
			3	0 000	-0 884	NC
4	9	15	1	-0.004	-0.822	NC
			2	-0.004	-0.847	4249.6
			3	-0 005	-0.858	NC
5	3	4	1	0.821	0.000	NC
			2	0.826	-0.034	3368.8
			3	0.831	-0.049	NC
6	4	5	1	0.831	-0.049	NC
			2	0.838	-0.068	NC
			3	0.845	-0.077	NC
7	5	6	1	0.845	-0.077	NC
			2	0.847	-0.072	NC
			3	0.850	-0 055	NC
8	6	7	1	0 850	-0.055	1502.4
			2	0 848	-0 031	3098.8
			3	0 846	-0.009	NC
9	7	8	1	0 846	-0 009	NC

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==========< Member Deflections, LC 4 : .85DL + SEISMIC >==========

Member	Joints I	- J	Section ↓	x (in)	y (in)	L/n
			2	0 841	0 003	NC
			3	0 835	0.005	NC
10	8	9	1	0.835	0.005	NC
			2	0.829	0.002	NC
			3	0.822	-0.004	NC
11	10	11	1	0.884	0.000	NC
			2	0.872	-0.044	6788.7
			3	0.861	-0.070	NC
12	11	12	1	0.861	-0 070	NC
			2	0 854	-0.078	7337 6
			3	0.847	-0 070	NC
13	12	13	1	0.847	-0.070	NC
			2	0.844	-0.055	NC
			3	0.841	-0.033	NC
14	13	14	1	0.841	-0.033	1787.2
			2	0.843	-0 013	4279.8
			3	0.845	0.002	NC
15	14	15	1	0.845	0.002	NC
			2	0.851	0.000	NC
			3	0.858	-0.005	9924.8
16	10	4	1	0.644	0 605	612.7
			2	0.641	0.569	1230.5
			3	0.639	0 534	NC
17	4	11	1	0 558	-0 618	NC
			2	0 561	-0.636	NC
			3	0 565	-0 654	NC
18	11	5	1	0 673	0.543	2616.1
			2	0 669	0.534	5325.0
			3	0.665	0.526	NC
19	5	12	1	0.552	-0 644	NC
			2	0.555	-0 642	NC
			3	0.558	-0 640	NC
20	12	6	1	0 659	0 537	NC
			2	0 655	0.543	6784 4
			3	0.651	0.550	3319.0

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==========< Member Deflections, LC 4 . 85DL + SEISMIC >==========

Member	Joints I	- J	Section ↓	x in	y in	L/n
21	6	13	1	0 575	-0.629	NC
			2	0.579	-0.618	NC
			3	0.583	-0 607	NC
22	13	7	1	0.679	0 496	NC
			2	0.674	0.508	4312 1
			3	0.668	0.519	2111.5
23	7	14	1	0.530	-0.660	NC
			2	0.533	-0.656	NC
			3	0.537	-0.652	NC
24	14	8	1	0.601	0.594	9639.7
			2	0.596	0 591	NC
			3	0.591	0.589	NC
25	8	15	1	0.612	-0 568	NC
			2	0 617	-0 580	NC
			3	0.622	-0.591	NC

==========< Member AISC Unity Checks, LC 4 : .85DL + SEISMIC >==========

Member	Joints I	- J	Unity Chk	Loc	Shear Chk	Loc	Fa Ksi	Fb Ksi	Cb	Cm	ASD Eqn.
1	1	3	0 467	3	0.054	1	34.24	40.47	1.00	0.60	H2-1
2	2	9	0.565	3	0.063	1	34.24	40.47	1.00	0.60	H1-2
3	3	10	0.436	1	0.193	1	36.26	40.47	1.00	0.60	H1-2
4	9	15	0.565	1	0 240	1	36.26	40.47	1.00	0.60	H1-2
5	3	4	0.511	1	0.039	3	35.15	40.47	1.00	0.85	H2-1
6	4	5	0 202	3	0.003	1	33.00	40.47	1.00	0.85	H2-1
7	5	6	0.101	1	0 003	3	33.00	40.47	1.00	0.85	H2-1
8	6	7	0.062	3	0 002	3	32.42	40.47	1 00	0.85	H1-1
9	7	8	0.207	3	0 002	3	33.54	40.47	1.00	0.85	H1-1
10	8	9	0 351	1	0.005	1	35 15	40.47	1.00	1 00	H1-1
11	10	11	0 347	2	0 009	1	32 97	40.47	1.00	0.85	H1-1
12	11	12	0 236	2	0 010	3	32.97	40.47	1.00	0 85	H1-1
13	12	13	0 102	2	0 008	3	32.97	40.47	1.00	0.85	H1-1
14	13	14	0.103	3	0 011	3	32 97	40.47	1 00	0.85	H2-1
15	14	15	0 220	1	0 011	1	32 97	40.47	1.00	1.00	H2-1
16	10	4	0 094	2	0.000	1	33.63	40.47	1 00	1 00	H1-3
17	4	11	0 119	2	0 000	3	33 73	40.47	1.00	1 00	H2-1
18	11	5	0 143	2	0 000	1	33 66	40.47	1.00	1.00	H1-3
19	5	12	0 128	2	0 000	1	33 70	40.47	1.00	1.00	H2-1
20	12	6	0 156	2	0 000	1	33 68	40.47	1 00	1 00	H1-1

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==========< Member AISC Unity Checks, LC 4 85DL + SEISMIC >==========

Member	Joints I	- J	Unity Chk	Loc	Shear Chk	Loc	Fa Ksi	Fb Ksi	Cb	Cm	ASD Eqn.
21	6	13	0.145	2	0.000	1	33 68	40 47	1.00	1 00	H2-1
22	13	7	0.194	2	0 000	1	33 21	40.47	1.00	1.00	H1-1
23	7	14	0.142	2	0.000	1	34 09	40 47	1.00	1.00	H2-1
24	14	8	0 191	2	0.000	3	33 73	40 47	1.00	1 00	H1-1
25	8	15	0.186	2	0.000	1	33.63	40.47	1.00	1 00	H2-1

==========< Member NDS Unity Checks, LC 4 : .85DL + SEISMIC >==========

Memb	Unity Chk	Loc	Shear Chk	Loc	Fc' Ksi	Ft' Ksi	Fb' Ksi	Fv' Ksi	RB	CL	CP	Eqn

==========< Redesign Shapes, LC 4 : .85DL + SEISMIC >==========

Section Set	Member	Suggested Alternate Shapes 1st Choice	2nd Choice	3rd Choice	4th Choice
Redesign not performed...					
C1	N/A	No acceptable shapes found..			
B1	N/A	No acceptable shapes found...			

==========< Material Takeoff, LC 4 : .85DL + SEISMIC >==========

Section Set	Database Shape	Total Length ft	Total Weight K
C1	TU12X12X8	12.00	0.91
C2	P8	0.00	0.00
C3	TU12X12X8	12.00	0.91
B1	TU5X5X6	26.00	0.58
B2	TU5X5X6	26.00	0 58
D1	TU4X4X4	36.11	0.44
		Total Wts:	3.43

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==========< Joint Displacements, LC 5 85DL - SEISMIC >==========

Joint No	Translation X (in)	Translation Y (in)	Rotation θz (rad)
1	0.000	0 000	0.00947
2	0.000	0 000	0.00938
3	-0.826	-0.004	0 00280
4	-0.837	0.026	0.00007
5	-0.848	0.026	-0 00026
6	-0.850	-0.007	-0.00065
7	-0.842	-0 039	-0.00016
8	-0.828	-0.027	0 00067
9	-0.817	0.001	0 00273
10	-0.877	-0 005	0.00115
11	-0.855	0.032	0 00005
12	-0.844	0 010	-0.00058
13	-0.842	-0 026	-0.00050
14	-0.850	-0.040	0 00019
15	-0.864	0 001	0.00099
16	0.000	0.000	0 00000

==========< Story Drift, LC 5 : .85DL - SEISMIC >==========

Story No.	Joint	X Direction Drift (in)	% of Ht
1	10	-0.88	0.61

==========< Reactions, LC 5 · .85DL - SEISMIC >==========

Joint No	Forces X (K)	Forces Y (K)	Moment Mz (K-ft)
1	14.43	25.51	0.00
2	14.38	-5.12	0.00
16	0.00	0.00	0.00
Totals:	28.81	20.39	

Center of Gravity Coords (X,Y,Z) (ft) : 10.383, 11.363, 0.000

==========< Member Section Forces, LC 5 : .85DL - SEISMIC >==========

Member	Joints I - J	Section ↓	Axial (K)	Shear (K)	Moment (K-ft)
1	1- 3	1	25.51	-14.43	0.00
		2	25 15	-14 43	68.55
		3	24.79	-14 43	137 10
2	2- 9	1	-5.12	-14 38	0.00
		2	-5.49	-14 38	68.30
		3	-5 85	-14 38	136 59
3	3- 10	1	21.09	50 41	127 50

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==========< Member Section Forces, LC 5 : .85DL - SEISMIC >==========

Member	Joints I - J	Section ↓	Axial K	Shear K	Moment K-ft
		2	20.99	50.41	64.49
		3	20.90	50 41	1 48
4	9- 15	1	-6.25	54 64	136.59
		2	-6 34	54 64	68.30
		3	-6.44	54.64	0.00
5	3- 4	1	64.84	3.70	9.60
		2	64.84	3.67	4.70
		3	64.84	3.64	-0.16
6	4- 5	1	35.21	-0.14	-0.16
		2	35.21	-0.19	0.26
		3	35.21	-0.25	0.84
7	5- 6	1	5.00	0.23	0.84
		2	5 00	0.17	0.33
		3	5.00	0.11	-0.04
8	6- 7	1	-22.21	0.16	-0.04
		2	-22.21	0.10	-0.42
		3	-22.21	0.04	-0.61
9	7- 8	1	-46 55	0.13	-0 61
		2	-46 55	0.08	-0 86
		3	-46 55	0.03	-0 98
10	8- 9	1	-69 02	-0.34	-0.98
		2	-69 02	-0.37	-0.51
		3	-69 02	-0.40	0.00
11	10- 11	1	-66 00	0.59	1.48
		2	-66.00	0.00	0 72
		3	-66 00	-0.58	1.48
12	11- 12	1	-34.04	0.75	1.48
		2	-34.04	0 16	0.30
		3	-34.04	-0.42	0 64
13	12- 13	1	-5.73	0.66	0.64
		2	-5.73	0.08	-0.32
		3	-5.73	-0.51	0.25
14	13- 14	1	22 65	0 72	0.25
		2	22.65	0.14	-0.87
		3	22 65	-0.45	-0 47

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==========< Member Section Forces, LC 5 85DL - SEISMIC >==========

Member	Joints I - J	Section ↓	Axial K	Shear K	Moment K-ft
15	14- 15	1	42.98	0.49	-0.47
		2	42.98	-0 09	-0.99
		3	42.98	-0.67	0.00
16	10- 4	1	-18.15	0.02	0.00
		2	-18 14	0.00	-0.01
		3	-18.12	-0.02	0.00
17	4- 11	1	23 04	0.02	0.00
		2	23.03	0.00	-0.01
		3	23 01	-0.02	0.00
18	11- 5	1	-21 47	0.02	0.00
		2	-21 45	0.00	-0.01
		3	-21.44	-0.02	0.00
19	5- 12	1	20.46	0.02	0.00
		2	20 45	0.00	-0.01
		3	20 43	-0.02	0.00
20	12- 6	1	-18 96	0.02	0.00
		2	-18.95	0.00	-0.01
		3	-18 93	-0 02	0.00
21	6- 13	1	18.82	0.02	0.00
		2	18 81	0.00	-0.01
		3	18.79	-0.02	0.00
22	13- 7	1	-18.93	0.02	0.00
		2	-18 91	0.00	-0.02
		3	-18.90	-0.02	0.00
23	7- 14	1	15.04	0.01	0.00
		2	15 02	0.00	-0.01
		3	15.01	-0.01	0.00
24	14- 8	1	-15.18	0.02	0 00
		2	-15 16	0 00	-0.01
		3	-15.14	-0.02	0 00
25	8- 15	1	16.02	0 02	0 00
		2	16.00	0 00	-0 01
		3	15.99	-0 02	0.00

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==========< Member Stresses, LC 5 : 85DL - SEISMIC >==========

Member	Joints I	- J	Section ↓	Axial Ksi	Shear Ksi	Bending Top Ksi	Bending Bottom Ksi
1	1	3	1	1.14	-1.44	0.00	0 00
			2	1.12	-1.44	-10 18	10 18
			3	1 11	-1.44	-20.35	20.35
2	2	9	1	-0.23	-1 44	0.00	0.00
			2	-0.24	-1.44	-10.14	10.14
			3	-0 26	-1.44	-20.28	20.28
3	3	10	1	0.94	5 04	-18.93	18.93
			2	0 94	5.04	-9.57	9.57
			3	0.93	5.04	-0.22	0.22
4	9	15	1	-0.28	5.46	-20.28	20.28
			2	-0.28	5.46	-10.14	10.14
			3	-0.29	5.46	0.00	0.00
5	3	4	1	9.85	1.18	-12.64	12.64
			2	9.85	1.17	-6.19	6.19
			3	9.85	1.17	0.21	-0.21
6	4	5	1	5.35	-0.04	0.21	-0.21
			2	5.35	-0.06	-0.35	0.35
			3	5.35	-0.08	-1.11	1.11
7	5	6	1	0.76	0.07	-1.11	1.11
			2	0.76	0.05	-0.43	0 43
			3	0.76	0.04	0.05	-0.05
8	6	7	1	-3.38	0.05	0.05	-0 05
			2	-3.38	0.03	0.55	-0.55
			3	-3.38	0.01	0.81	-0.81
9	7	8	1	-7.07	0.04	0.81	-0.81
			2	-7.07	0.03	1.13	-1 13
			3	-7 07	0.01	1.30	-1 30
10	8	9	1	-10 49	-0.11	1 30	-1.30
			2	-10.49	-0.12	0.67	-0.67
			3	-10 49	-0 13	0 00	0 00
11	10	11	1	-10 03	0 19	-1 95	1.95
			2	-10 03	0.00	-0 95	0.95
			3	-10 03	-0 19	-1 94	1 94
12	11	12	1	-5 17	0 24	-1.94	1 94
			2	-5 17	0 05	-0 39	0 39

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==========< Member Stresses, LC 5 : 85DL - SEISMIC >==========

Member	Joints I - J	Section ↓	Axial Ksi	Shear Ksi	Bending Top Ksi	Bending Bottom Ksi
		3	-5.17	-0 14	-0.84	0 84
13	12 13	1	-0.87	0.21	-0.84	0 84
		2	-0.87	0 02	0.42	-0.42
		3	-0.87	-0.16	-0.33	0 33
14	13 14	1	3.44	0 23	-0.33	0.33
		2	3.44	0.04	1.14	-1 14
		3	3.44	-0.14	0.61	-0 61
15	14 15	1	6 53	0.16	0.61	-0.61
		2	6.53	-0.03	1 31	-1 31
		3	6 53	-0.22	0 00	0 00
16	10 4	1	-5.06	0 01	0 00	0 00
		2	-5 05	0.00	0.04	-0.04
		3	-5 05	-0.01	0.00	0 00
17	4 11	1	6 42	0.01	0 00	0.00
		2	6 41	0.00	0.04	-0 04
		3	6.41	-0.01	0.00	0.00
18	11 5	1	-5.98	0.01	0.00	0.00
		2	-5 98	0.00	0.04	-0.04
		3	-5.97	-0.01	0.00	0.00
19	5 12	1	5.70	0.01	0.00	0.00
		2	5.70	0.00	0.04	-0.04
		3	5.69	-0.01	0.00	0.00
20	12 6	1	-5.28	0.01	0.00	0.00
		2	-5.28	0.00	0.04	-0.04
		3	-5.27	-0.01	0.00	0 00
21	6 13	1	5.24	0.01	0.00	0.00
		2	5.24	0.00	0.04	-0.04
		3	5.23	-0.01	0.00	0 00
22	13 7	1	-5.27	0.01	0.00	0.00
		2	-5.27	0.00	0.06	-0 06
		3	-5.26	-0.01	0 00	0 00
23	7 14	1	4 19	0.01	0.00	0 00
		2	4 18	0 00	0.03	-0.03
		3	4 18	-0.01	0 00	0 00

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==========< Member Stresses, LC 5 : 85DL - SEISMIC >==========

Member	Joints I - J	Section ↓	Axial Ksi	Shear Ksi	Bending Top Ksi	Bending Bottom Ksi
24	14 - 8	1	-4 23	0.01	0.00	0 00
		2	-4.22	0.00	0.04	-0.04
		3	-4 22	-0 01	0.00	0 00
25	8 - 15	1	4 46	0.01	0.00	0 00
		2	4.46	0.00	0.04	-0.04
		3	4 45	-0.01	0.00	0 00

==========< Member Deflections, LC 5 : .85DL - SEISMIC >==========

Member	Joints I - J	Section ↓	x in	y in	L/n
1	1 - 3	1	0.000	0.000	NC
		2	-0 002	0.508	1199.9
		3	-0.004	0.826	NC
2	2 - 9	1	0.000	0 000	NC
		2	0.000	0.503	1204.3
		3	0.001	0.817	NC
3	3 - 10	1	-0.004	0.826	NC
		2	-0.005	0 857	4846.6
		3	-0 005	0 877	NC
4	9 - 15	1	0.001	0.817	NC
		2	0.001	0.847	4576.5
		3	0.001	0.864	NC
5	3 - 4	1	-0 826	-0.004	NC
		2	-0.831	0.022	2935.3
		3	-0.837	0.026	NC
6	4 - 5	1	-0.837	0.026	NC
		2	-0.842	0.029	NC
		3	-0.848	0.026	NC
7	5 - 6	1	-0.848	0.026	NC
		2	-0.849	0.013	NC
		3	-0 850	-0.007	NC
8	6 - 7	1	-0 850	-0.007	NC
		2	-0 846	-0.027	NC
		3	-0.842	-0 039	NC
9	7 - 8	1	-0.842	-0.039	NC

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==========< Member Deflections, LC 5 : .85DL - SEISMIC >==========

Member	Joints I	- J	Section ↓	x in	y in	L/n
			2	-0 835	-0 039	9434 9
			3	-0.828	-0.027	NC
10	8	9	1	-0.828	-0 027	NC
			2	-0.822	-0 014	NC
			3	-0.817	0 001	NC
11	10	11	1	-0.877	-0 005	NC
			2	-0.866	0 021	8350.7
			3	-0.855	0 032	NC
12	11	12	1	-0 855	0 032	NC
			2	-0.850	0.025	NC
			3	-0.844	0.010	NC
13	12	13	1	-0.844	0 010	NC
			2	-0.843	-0 009	NC
			3	-0.842	-0 026	NC
14	13	14	1	-0 842	-0.026	NC
			2	-0 846	-0.039	9510 4
			3	-0.850	-0.040	NC
15	14	15	1	-0.850	-0.040	NC
			2	-0.857	-0 027	8154 1
			3	-0.864	0.001	NC
16	10	4	1	-0.635	-0.604	NC
			2	-0.631	-0 579	NC
			3	-0 628	-0.554	NC
17	4	11	1	-0.578	0.606	NC
			2	-0.582	0 614	5100.4
			3	-0.587	0.623	2510.5
18	11	5	1	-0.642	-0.566	NC
			2	-0.637	-0.566	NC
			3	-0 633	-0.565	NC
19	5	12	1	-0.589	0.610	3016 9
			2	-0.594	0.603	6151.6
			3	-0 598	0 596	NC
20	12	6	1	-0 616	-0 578	NC
			2	-0 612	-0 586	NC
			3	-0.608	-0 594	NC

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==========< Member Deflections, LC 5 .85DL - SEISMIC >==========

Member	Joints I	- J	Section ↓	x in	y in	L/n
21	6	13	1	-0.617	0.584	2303.7
			2	-0 621	0 574	4677.4
			3	-0.625	0 565	NC
22	13	7	1	-0.644	-0 544	NC
			2	-0 639	-0.549	NC
			3	-0.635	-0 554	NC
23	7	14	1	-0 564	0.626	NC
			2	-0.567	0.629	NC
			3	-0.569	0.632	6667.1
24	14	8	1	-0.578	-0.624	NC
			2	-0 575	-0.612	NC
			3	-0.571	-0.600	NC
25	8	15	1	-0 622	0.548	NC
			2	-0.625	0.570	1971.8
			3	-0 629	0.592	979.3

==========< Member AISC Unity Checks, LC 5 .85DL - SEISMIC >==========

Member	Joints I	- J	Unity Chk	Loc	Shear Chk	Loc	Fa Ksi	Fb Ksi	Cb	Cm	ASD Eqn.
1	1	3	0 533	3	0.059	1	34.24	40.47	1.00	0.60	H1-2
2	2	9	0.508	3	0.059	1	34.24	40.47	1.00	0.60	H2-1
3	3	10	0.493	1	0.206	1	36.26	40.47	1.00	0.60	H1-2
4	9	15	0.509	1	0.223	1	36.26	40.47	1.00	0.60	H2-1
5	3	4	0.580	1	0.048	1	35.15	40.47	1.00	0.85	H1-2
6	4	5	0.186	3	0.003	3	33 00	40.47	1 00	0.85	H1-1
7	5	6	0.048	1	0.003	1	33.00	40.47	1.00	0.85	H1-2
8	6	7	0 112	3	0.002	1	32.42	40.47	1.00	0.85	H2-1
9	7	8	0 224	3	0.002	1	33 54	40.47	1.00	0.85	H2-1
10	8	9	0.317	1	0.005	3	35 15	40.47	1.00	1.00	H2-1
11	10	11	0 321	1	0.008	1	32.97	40.47	1.00	0.85	H2-1
12	11	12	0 189	1	0.010	1	32 97	40.47	1.00	0.85	H2-1
13	12	13	0 044	1	0.009	1	32 97	40.47	1.00	0.85	H2-1
14	13	14	0 129	2	0.009	1	32.97	40.47	1.00	0.85	H1-1
15	14	15	0.231	2	0 009	3	32 97	40.47	1.00	1.00	H1-1
16	10	4	0 138	2	0.000	1	33 63	40.47	1.00	1.00	H2-1
17	4	11	0 191	2	0.000	3	33 73	40 47	1.00	1 00	H1-1
18	11	5	0 163	2	0 000	1	33.66	40.47	1.00	1 00	H2-1
19	5	12	0 170	2	0 000	1	33 70	40 47	1 00	1 00	H1-1
20	12	6	0 144	2	0 000	1	33 68	40.47	1.00	1.00	H2-1

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==========< Member AISC Unity Checks, LC 5 : 85DL - SEISMIC >==========

Member	Joints I	- J	Unity Chk	Loc	Shear Chk	Loc	Fa Ksi	Fb Ksi	Cb	Cm	ASD Eqn
21	6	13	0.157	2	0 000	1	33.68	40.47	1 00	1 00	H1-1
22	13	7	0 145	2	0 000	1	33 21	40 47	1.00	1.00	H2-1
23	7	14	0.123	2	0 000	1	34 09	40.47	1 00	1.00	H1-3
24	14	8	0.116	2	0 000	3	33.73	40.47	1 00	1.00	H2-1
25	8	15	0.134	2	0.000	1	33 63	40.47	1.00	1.00	H1-3

==========< Member NDS Unity Checks, LC 5 : .85DL - SEISMIC >==========

Memb	Unity Chk	Loc	Shear Chk	Loc	Fc' Ksi	Ft' Ksi	Fb' Ksi	Fv' Ksi	RB	CL	CP	Eqn

==========< Redesign Shapes, LC 5 : .85DL - SEISMIC >==========

Section Set	Member	Suggested Alternate Shapes 1st Choice	2nd Choice	3rd Choice	4th Choice
Redesign not performed. .					
C1	N/A	No acceptable shapes found ..			
B1	N/A	No acceptable shapes found...			

==========< Material Takeoff, LC 5 : 85DL - SEISMIC >==========

Section Set	Database Shape	Total Length ft	Total Weight K
C1	TU12X12X8	12 00	0 91
C2	P8	0.00	0.00
C3	TU12X12X8	12 00	0.91
B1	TU5X5X6	26.00	0.58
B2	TU5X5X6	26 00	0.58
D1	TU4X4X4	36.11	0.44
		Total Wts	3.43

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==========< Joint Displacements, LC 6 DL + SEISMIC >==========

Joint No	Translation X (in)	Translation Y (in)	Rotation θz (rad)
1	0.000	0.000	-0 00924
2	0 000	0.000	-0 00961
3	0 821	0.000	-0.00312
4	0 831	-0.050	-0.00077
5	0.844	-0.081	-0.00007
6	0.850	-0 059	0.00064
7	0.847	-0 012	0.00057
8	0.835	0.004	-0.00007
9	0.823	-0.004	-0.00243
10	0 884	0.000	-0.00161
11	0.862	-0.073	-0 00058
12	0.847	-0.074	0 00039
13	0.840	-0.037	0 00072
14	0.844	-0.001	0.00022
15	0.858	-0.005	-0.00053
16	0.000	0.000	0.00000

==========< Story Drift, LC 6 . DL + SEISMIC >==========

Story No.	Joint	X Direction Drift (in)	% of Ht
1	10	0 88	0.61

==========< Reactions, LC 6 : DL + SEISMIC >==========

Joint No	Forces X (K)	Forces Y (K)	Moment Mz (K-ft)
1	-13.25	0.77	0.00
2	-15.56	22.61	0.00
16	0 00	0.00	0 00
Totals:	-28 81	23.38	

Center of Gravity Coords (X,Y,Z) (ft) : 10.316, 11.445, 0.000

==========< Member Section Forces, LC 6 : DL + SEISMIC >==========

Member	Joints I - J	Section ↓	Axial (K)	Shear (K)	Moment (K-ft)
1	1- 3	1	0.77	13 25	0.00
		2	0.41	13 25	-62.94
		3	0.05	13 25	-125.89
2	2- 9	1	22.61	15.56	0.00
		2	22.25	15.56	-73.90
		3	21 88	15 56	-147.81
3	3- 10	1	2.92	-47.22	-117.99

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==========< Member Section Forces, LC 6 . DL + SEISMIC >==========

Member	Joints I - J	Section ↓	Axial K	Shear K	Moment K-ft
		2	2 82	-47.22	-58 97
		3	2 73	-47.22	0.05
4	9- 15	1	22.19	-59.12	-147.81
		2	22.09	-59.12	-73 90
		3	22.00	-59.12	0 00
5	3- 4	1	-60.47	-2.87	-7.90
		2	-60.47	-2.90	-4.06
		3	-60.47	-2.93	-0.19
6	4- 5	1	-41.90	0.21	-0.19
		2	-41.90	0.15	-0.64
		3	-41.90	0.09	-0 95
7	5- 6	1	-17.81	-0.08	-0.95
		2	-17.81	-0.14	-0.66
		3	-17.81	-0.20	-0.23
8	6- 7	1	9.47	-0.06	-0.23
		2	9.47	-0.12	0.03
		3	9.47	-0 19	0.47
9	7- 8	1	39.65	-0.04	0 47
		2	39.65	-0.09	0.62
		3	39.65	-0.14	0 88
10	8- 9	1	74.68	0.36	0.88
		2	74.68	0.33	0 42
		3	74.68	0.30	0.00
11	10- 11	1	68.18	0 82	0.05
		2	68.18	0 14	-1.20
		3	68.18	-0 53	-0.70
12	11- 12	1	45.21	0.51	-0.70
		2	45.21	-0.17	-1.15
		3	45.21	-0 84	0.16
13	12- 13	1	19 83	0 63	0 16
		2	19.83	-0 05	-0.58
		3	19 83	-0 73	0 43
14	13- 14	1	-12 10	0 45	0 43
		2	-12.10	-0 23	0 15
		3	-12.10	-0 91	1.63

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==========< Member Section Forces, LC 6 . DL + SEISMIC >==========

Member	Joints I - J	Section ↓	Axial K	Shear K	Moment K-ft
15	14- 15	1	-40 92	0.99	1.63
		2	-40 92	0 31	-0 07
		3	-40.92	-0.36	0 00
16	10- 4	1	10.75	0.02	0.00
		2	10.77	0.00	-0.01
		3	10 78	-0.02	0.00
17	4- 11	1	-15 03	0.02	0.00
		2	-15.04	0.00	-0.01
		3	-15.06	-0.02	0.00
18	11- 5	1	16.88	0.02	0.00
		2	16.90	0.00	-0.01
		3	16.91	-0.02	0.00
19	5- 12	1	-16.50	0 02	0.00
		2	-16.51	0 00	-0.01
		3	-16.53	-0.02	0.00
20	12- 6	1	18.78	0 02	0.00
		2	18.79	0.00	-0.01
		3	18.81	-0 02	0.00
21	6- 13	1	-19 04	0.02	0.00
		2	-19.06	0.00	-0.01
		3	-19.08	-0.02	0.00
22	13- 7	1	23.20	0.02	0.00
		2	23.22	0.00	-0.02
		3	23.23	-0.02	0.00
23	7- 14	1	-18.90	0.01	0.00
		2	-18 91	0.00	-0.01
		3	-18.93	-0.01	0.00
24	14- 8	1	23.60	0.02	0.00
		2	23 61	0 00	-0.01
		3	23 63	-0 02	0 00
25	8- 15	1	-24 97	0 02	0.00
		2	-24 98	0 00	-0 01
		3	-25 00	-0 02	0.00

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==========< Member Stresses, LC 6 DL + SEISMIC >==========

Member	Joints I - J	Section ↓	Axial Ksi	Shear Ksi	Bending Top Ksi	Bending Bottom Ksi
1	1 - 3	1	0.03	1 33	0.00	0 00
		2	0 02	1 33	9.34	-9 34
		3	0.00	1 33	18.69	-18.69
2	2 - 9	1	1 01	1 56	0.00	0.00
		2	0.99	1.56	10.97	-10.97
		3	0.98	1 56	21.94	-21.94
3	3 - 10	1	0.13	-4 72	17.52	-17.52
		2	0.13	-4.72	8.75	-8.75
		3	0.12	-4.72	-0.01	0.01
4	9 - 15	1	0.99	-5.91	21.94	-21.94
		2	0 99	-5 91	10.97	-10.97
		3	0.98	-5.91	0.00	0.00
5	3 - 4	1	-9.19	-0.92	10.39	-10.39
		2	-9.19	-0.93	5.34	-5.34
		3	-9.19	-0 94	0.25	-0.25
6	4 - 5	1	-6.37	0.07	0.25	-0.25
		2	-6.37	0 05	0.84	-0.84
		3	-6.37	0.03	1.25	-1.25
7	5 - 6	1	-2 71	-0.03	1.25	-1.25
		2	-2.71	-0.04	0.87	-0.87
		3	-2 71	-0.06	0.30	-0.30
8	6 - 7	1	1.44	-0.02	0.30	-0.30
		2	1.44	-0 04	-0.04	0.04
		3	1 44	-0.06	-0.62	0.62
9	7 - 8	1	6.03	-0 01	-0.62	0.62
		2	6 03	-0.03	-0.81	0.81
		3	6 03	-0.05	-1.16	1.16
10	8 - 9	1	11.35	0.12	-1.16	1.16
		2	11 35	0 11	-0.56	0.56
		3	11 35	0 10	0.00	0 00
11	10 - 11	1	10 36	0 26	-0.07	0.07
		2	10 36	0 05	1.58	-1.58
		3	10.36	-0 17	0.92	-0.92
12	11 - 12	1	6 87	0 16	0.92	-0.92
		2	6 87	-0.05	1 51	-1.51

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==========< Member Stresses, LC 6 : DL + SEISMIC >==========

Member	Joints I	- J	Section ↓	Axial Ksi	Shear Ksi	Bending Top Ksi	Bending Bottom Ksi
			3	6 87	-0 27	-0.21	0 21
13	12	13	1	3.01	0.20	-0 21	0 21
			2	3 01	-0.02	0 77	-0.77
			3	3.01	-0.23	-0.57	0 57
14	13	14	1	-1 84	0.14	-0.57	0 57
			2	-1.84	-0.07	-0.20	0.20
			3	-1.84	-0.29	-2.14	2.14
15	14	15	1	-6 22	0.32	-2.14	2.14
			2	-6.22	0.10	0.09	-0.09
			3	-6.22	-0.12	0.00	0.00
16	10	4	1	3.00	0.01	0.00	0.00
			2	3.00	0.00	0.04	-0.04
			3	3.00	-0.01	0.00	0.00
17	4	11	1	-4 19	0.01	0.00	0.00
			2	-4.19	0 00	0.04	-0.04
			3	-4.19	-0.01	0.00	0.00
18	11	5	1	4 70	0.01	0.00	0.00
			2	4.71	0.00	0 04	-0.04
			3	4.71	-0.01	0.00	0.00
19	5	12	1	-4.60	0.01	0.00	0.00
			2	-4.60	0.00	0.04	-0.04
			3	-4.60	-0.01	0 00	0.00
20	12	6	1	5 23	0.01	0.00	0.00
			2	5.24	0.00	0.04	-0.04
			3	5.24	-0.01	0.00	0.00
21	6	13	1	-5.30	0.01	0.00	0.00
			2	-5.31	0.00	0 04	-0.04
			3	-5.31	-0.01	0.00	0.00
22	13	7	1	6.46	0.01	0 00	0.00
			2	6.47	0.00	0.06	-0.06
			3	6 47	-0.01	0 00	0 00
23	7	14	1	-5.26	0.01	0.00	0.00
			2	-5 27	0 00	0 03	-0 03
			3	-5 27	-0.01	0 00	0.00

==========< Member Stresses, LC 6 DL + SEISMIC >==========

Member	Joints I - J	Section ↓	Axial Ksi	Shear Ksi	Bending Top Ksi	Bending Bottom Ksi
24	14 - 8	1	6.57	0 01	0 00	0 00
		2	6.58	0.00	0 04	-0.04
		3	6.58	-0 01	0 00	0 00
25	8 - 15	1	-6.96	0 01	0 00	0 00
		2	-6.96	0.00	0.04	-0 04
		3	-6.96	-0 01	0.00	0.00

==========< Member Deflections, LC 6 : DL + SEISMIC >==========

Member	Joints I - J	Section ↓	x in	y in	L/n
1	1 - 3	1	0.000	0.000	NC
		2	0.000	-0.498	1306.8
		3	0.000	-0.821	NC
2	2 - 9	1	0 000	0.000	NC
		2	-0 002	-0.514	1112.9
		3	-0.004	-0.823	NC
3	3 - 10	1	0.000	-0.821	NC
		2	0.000	-0.858	5300.4
		3	0 000	-0.884	NC
4	9 - 15	1	-0.004	-0.823	NC
		2	-0 004	-0.847	4229.2
		3	-0.005	-0.858	NC
5	3 - 4	1	0.821	0.000	NC
		2	0.826	-0.035	3402.7
		3	0.831	-0.050	NC
6	4 - 5	1	0.831	-0.050	NC
		2	0 838	-0.071	NC
		3	0 844	-0.081	NC
7	5 - 6	1	0 844	-0.081	NC
		2	0 847	-0.076	NC
		3	0.850	-0.059	NC
8	6 - 7	1	0 850	-0.059	1472.5
		2	0 849	-0 035	3006 5
		3	0 847	-0 012	NC
9	7 - 8	1	0 847	-0 012	3515 6

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==========< Member Deflections, LC 6 DL + SEISMIC >==========

Member	Joints I	- J	Section ↓	x in	y in	L/n
			2	0.841	0 000	NC
			3	0.835	0.004	NC
10	8	9	1	0.835	0.004	NC
			2	0.829	0.001	NC
			3	0.823	-0.004	NC
11	10	11	1	0.884	0.000	NC
			2	0.873	-0.046	6684.1
			3	0.862	-0.073	NC
12	11	12	1	0.862	-0.073	NC
			2	0.854	-0.082	7049.7
			3	0.847	-0.074	NC
13	12	13	1	0.847	-0.074	NC
			2	0.844	-0.059	NC
			3	0.840	-0.037	NC
14	13	14	1	0.840	-0.037	1717.0
			2	0.842	-0.017	4010.4
			3	0.844	-0.001	NC
15	14	15	1	0.844	-0.001	NC
			2	0.851	-0.002	NC
			3	0.858	-0.005	NC
16	10	4	1	0.644	0.605	600.9
			2	0.642	0.569	1206.8
			3	0 640	0 532	NC
17	4	11	1	0.557	-0 619	NC
			2	0.560	-0.638	NC
			3	0.563	-0.656	NC
18	11	5	1	0 675	0 541	2462.2
			2	0 671	0 532	5006.4
			3	0.668	0.523	NC
19	5	12	1	0 549	-0 647	NC
			2	0 552	-0 645	NC
			3	0.556	-0.643	NC
20	12	6	1	0 662	0 534	NC
			2	0 658	0.540	6891.2
			3	0 654	0 547	3370.1

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==========< Member Deflections, LC 6 · DL + SEISMIC >==========

Member	Joints I	- J	Section ↓	x in	y in	L/n
21	6	13	1	0.572	-0 632	NC
			2	0.576	-0 621	NC
			3	0.580	-0.609	NC
22	13	7	1	0.682	0.493	NC
			2	0.676	0 505	4148.4
			3	0.671	0.517	2032.9
23	7	14	1	0.528	-0.662	NC
			2	0.531	-0.658	NC
			3	0.535	-0.654	NC
24	14	8	1	0 603	0.592	NC
			2	0 598	0.590	NC
			3	0 593	0.589	NC
25	8	15	1	0.611	-0.569	NC
			2	0.616	-0.580	NC
			3	0.622	-0.591	NC

==========< Member AISC Unity Checks, LC 6 . DL + SEISMIC >==========

Member	Joints I	- J	Unity Chk	Loc	Shear Chk	Loc	Fa Ksi	Fb Ksi	Cb	Cm	ASD Eqn.
1	1	3	0.462	3	0.054	1	34 24	40.47	1.00	0.60	H1-2
2	2	9	0 569	3	0 063	1	34 24	40.47	1.00	0.60	H1-2
3	3	10	0 436	1	0 193	1	36 26	40.47	1.00	0.60	H1-2
4	9	15	0 569	1	0 241	1	36 26	40 47	1.00	0.60	H1-2
5	3	4	0.507	1	0 038	3	35.15	40 47	1.00	0.85	H2-1
6	4	5	0.204	3	0 003	1	33.00	40 47	1.00	0 85	H2-1
7	5	6	0.104	1	0 003	3	33.00	40 47	1.00	0.85	H2-1
8	6	7	0 057	3	0 002	3	32.42	40.47	1.00	0.85	H1-1
9	7	8	0.204	3	0 002	3	33.54	40 47	1.00	0.85	H1-1
10	8	9	0 352	1	0 005	1	35.15	40.47	1.00	1.00	H1-1
11	10	11	0 348	2	0 011	1	32.97	40.47	1.00	0.85	H1-1
12	11	12	0 241	2	0 011	3	32.97	40.47	1.00	0.85	H1-1
13	12	13	0 108	2	0 010	3	32.97	40 47	1.00	0 85	H1-1
14	13	14	0.103	3	0 012	3	32.97	40 47	1.00	0.85	H2-1
15	14	15	0.222	1	0 013	1	32.97	40 47	1.00	1 00	H2-1
16	10	4	0 090	2	0 000	1	33.63	40.47	1.00	1.00	H1-3
17	4	11	0.115	2	0 000	3	33.73	40 47	1.00	1.00	H2-1
18	11	5	0 141	2	0 000	1	33.66	40 47	1 00	1.00	H1-3
19	5	12	0 126	2	0 000	1	33.70	40 47	1.00	1.00	H2-1
20	12	6	0 156	2	0 000	1	33 68	40 47	1 00	1.00	H1-1

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==========< Member AISC Unity Checks, LC 6 DL + SEISMIC >==========

Member	Joints I	- J	Unity Chk	Loc	Shear Chk	Loc	Fa Ksi	Fb Ksi	Cb	Cm	ASD Eqn
21	6	13	0.145	2	0.000	1	33.68	40.47	1.00	1 00	H2-1
22	13	7	0.196	2	0 000	1	33.21	40.47	1 00	1 00	H1-1
23	7	14	0 144	2	0 000	1	34.09	40.47	1 00	1.00	H2-1
24	14	8	0.196	2	0.000	3	33.73	40.47	1 00	1.00	H1-1
25	8	15	0.190	2	0.000	1	33.63	40.47	1 00	1.00	H2-1

==========< Member NDS Unity Checks, LC 6 DL + SEISMIC >==========

Memb	Unity Chk	Loc	Shear Chk	Loc	Fc' Ksi	Ft' Ksi	Fb' Ksi	Fv' Ksi	RB	CL	CP	Eqn

==========< Redesign Shapes, LC 6 : DL + SEISMIC >==========

Section Set	Member	Suggested Alternate Shapes 1st Choice	2nd Choice	3rd Choice	4th Choice
Redesign not performed. .					
C1	N/A	No acceptable shapes found...			
B1	N/A	No acceptable shapes found. .			

==========< Material Takeoff, LC 6 : DL + SEISMIC >==========

Section Set	Database Shape	Total Length ft	Total Weight K
C1	TU12X12X8	12.00	0.91
C2	P8	0.00	0.00
C3	TU12X12X8	12.00	0.91
B1	TU5X5X6	26.00	0.58
B2	TU5X5X6	26.00	0.58
D1	TU4X4X4	36.11	0.44
		Total Wts:	3.43

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==========< Joint Displacements, LC 7 DL - SEISMIC >==========

Joint No	Translation X (in)	Translation Y (in)	Rotation θz (rad)
1	0.000	0 000	0.00948
2	0 000	0.000	0 00936
3	-0.826	-0.005	0 00278
4	-0.837	0.025	0 00003
5	-0.848	0 023	-0.00028
6	-0.850	-0.011	-0.00065
7	-0 841	-0.042	-0.00014
8	-0.828	-0.028	0 00071
9	-0.816	0 001	0.00275
10	-0 876	-0.006	0.00112
11	-0.855	0 029	0.00001
12	-0.844	0 006	-0.00059
13	-0.842	-0.030	-0.00049
14	-0.850	-0.042	0.00022
15	-0.864	0 001	0.00102
16	0.000	0 000	0 00000

==========< Story Drift, LC 7 : DL - SEISMIC >==========

Story No.	Joint	X Direction Drift (in)	% of Ht
1	10	-0.88	0 61

==========< Reactions, LC 7 · DL - SEISMIC >==========

Joint No	Forces X (K)	Forces Y (K)	Moment Mz (K-ft)
1	14.51	27 37	0.00
2	14.30	-3.98	0.00
16	0.00	0 00	0.00
Totals·	28.81	23.38	

Center of Gravity Coords (X,Y,Z) (ft) : 10.316, 11.445, 0.000

==========< Member Section Forces, LC 7 : DL - SEISMIC >==========

Member	Joints I - J	Section ↓	Axial (K)	Shear (K)	Moment (K-ft)
1	1- 3	1	27.37	-14.51	0 00
		2	27.01	-14.51	68 91
		3	26.64	-14.51	137 81
2	2- 9	1	-3.98	-14 30	0.00
		2	-4.35	-14 30	67 94
		3	-4.71	-14 30	135 88
3	3- 10	1	22 89	50.60	128.10

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==========< Member Section Forces, LC 7 DL - SEISMIC >==========

Member	Joints I - J	Section ↓	Axial K	Shear K	Moment K-ft
		2	22 80	50 60	64.84
		3	22.70	50 60	1 59
4	9- 15	1	-5 11	54.35	135.88
		2	-5.21	54 35	67 94
		3	-5 30	54.35	0.00
5	3- 4	1	65.11	3.75	9.71
		2	65 11	3.72	4.74
		3	65.11	3.69	-0.19
6	4- 5	1	34.78	-0.14	-0.19
		2	34.78	-0.20	0 24
		3	34.78	-0.25	0.83
7	5- 6	1	4.19	0.23	0.83
		2	4.19	0.17	0.31
		3	4 19	0.11	-0.06
8	6- 7	1	-23.02	0.16	-0.06
		2	-23.02	0.10	-0.44
		3	-23.02	0.03	-0.63
9	7- 8	1	-46.99	0.13	-0.63
		2	-46 99	0.08	-0.87
		3	-46.99	0.03	-0.99
10	8- 9	1	-68.66	-0.34	-0.99
		2	-68.66	-0.37	-0.52
		3	-68 66	-0 40	0.00
11	10- 11	1	-65 87	0 69	1.59
		2	-65 87	0 01	0.68
		3	-65.87	-0.67	1.54
12	11- 12	1	-33.34	0 84	1.54
		2	-33 34	0 16	0.24
		3	-33 34	-0 52	0.70
13	12- 13	1	-4 84	0 75	0 70
		2	-4.84	0.08	-0.38
		3	-4 84	-0 60	0 30
14	13- 14	1	23 31	0 81	0.30
		2	23 31	0.13	-0 92
		3	23 31	-0 55	-0 38

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==========< Member Section Forces, LC 7 . DL - SEISMIC >==========

Member	Joints I - J	Section ↓	Axial K	Shear K	Moment K-ft
15	14- 15	1	43.10	0 60	-0.38
		2	43.10	-0 07	-1.07
		3	43.10	-0.75	0.00
16	10- 4	1	-18.61	0.02	0.00
		2	-18.59	0.00	-0.01
		3	-18.57	-0.02	0.00
17	4- 11	1	23 56	0.02	0.00
		2	23.55	0.00	-0.01
		3	23.53	-0.02	0.00
18	11- 5	1	-21.74	0.02	0.00
		2	-21.73	0.00	-0.01
		3	-21.71	-0.02	0.00
19	5- 12	1	20.73	0.02	0.00
		2	20.71	0.00	-0.01
		3	20.70	-0.02	0.00
20	12- 6	1	-18 96	0.02	0.00
		2	-18.94	0.00	-0.01
		3	-18 92	-0.02	0.00
21	6- 13	1	18.82	0 02	0.00
		2	18.81	0.00	-0.01
		3	18.79	-0 02	0.00
22	13- 7	1	-18.64	0 02	0.00
		2	-18.63	0 00	-0.02
		3	-18.61	-0 02	0.00
23	7- 14	1	14.81	0 01	0.00
		2	14.79	0 00	-0.01
		3	14.78	-0 01	0.00
24	14- 8	1	-14.62	0 02	0.00
		2	-14.61	0 00	-0.01
		3	-14.59	-0 02	0.00
25	8- 15	1	15 46	0.02	0.00
		2	15 44	0 00	-0.01
		3	15.43	-0 02	0.00

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==========< Member Stresses, LC 7 : DL - SEISMIC >==========

Member	Joints I	- J	Section ↓	Axial Ksi	Shear Ksi	Bending Top Ksi	Bending Bottom Ksi
1	1	3	1	1.22	-1 45	0.00	0 00
			2	1 21	-1 45	-10.23	10.23
			3	1 19	-1.45	-20.46	20 46
2	2	9	1	-0 18	-1 43	0.00	0 00
			2	-0.19	-1.43	-10.09	10 09
			3	-0.21	-1 43	-20.17	20.17
3	3	10	1	1.02	5 06	-19.02	19.02
			2	1 02	5 06	-9.63	9.63
			3	1 01	5.06	-0.24	0.24
4	9	15	1	-0.23	5 44	-20.17	20.17
			2	-0 23	5.44	-10.09	10.09
			3	-0 24	5 44	0.00	0.00
5	3	4	1	9 90	1.20	-12.78	12.78
			2	9 90	1 19	-6.24	6.24
			3	9 90	1 18	0.25	-0.25
6	4	5	1	5 29	-0 04	0.25	-0.25
			2	5.29	-0.06	-0.32	0.32
			3	5.29	-0 08	-1.09	1.09
7	5	6	1	0 64	0.07	-1.09	1.09
			2	0.64	0 06	-0.40	0.40
			3	0.64	0.04	0.08	-0.08
8	6	7	1	-3.50	0 05	0.08	-0.08
			2	-3.50	0 03	0.58	-0.58
			3	-3.50	0.01	0.83	-0.83
9	7	8	1	-7 14	0 04	0.83	-0.83
			2	-7.14	0.03	1.15	-1.15
			3	-7.14	0.01	1.31	-1.31
10	8	9	1	-10.43	-0 11	1.31	-1.31
			2	-10 43	-0.12	0.68	-0.68
			3	-10.43	-0.13	0 00	0.00
11	10	11	1	-10.01	0.22	-2.09	2.09
			2	-10.01	0.00	-0.90	0 90
			3	-10.01	-0 21	-2.02	2 02
12	11	12	1	-5 07	0 27	-2.02	2.02
			2	-5.07	0.05	-0 31	0 31

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==========< Member Stresses, LC 7 DL - SEISMIC >==========

Member	Joints I	- J	Section ↓	Axial Ksi	Shear Ksi	Bending Top Ksi	Bending Bottom Ksi
			3	-5 07	-0.17	-0.92	0 92
13	12	13	1	-0 74	0.24	-0.92	0 92
			2	-0 74	0.02	0.50	-0 50
			3	-0 74	-0.19	-0.40	0.40
14	13	14	1	3.54	0.26	-0.40	0 40
			2	3 54	0 04	1 21	-1.21
			3	3 54	-0.17	0.50	-0.50
15	14	15	1	6.55	0.19	0.50	-0 50
			2	6 55	-0.02	1 41	-1.41
			3	6 55	-0.24	0 00	0.00
16	10	4	1	-5 18	0.01	0.00	0 00
			2	-5.18	0.00	0.04	-0.04
			3	-5 17	-0.01	0.00	0 00
17	4	11	1	6 56	0.01	0.00	0.00
			2	6.56	0.00	0 04	-0 04
			3	6 56	-0.01	0.00	0 00
18	11	5	1	-6.06	0.01	0.00	0.00
			2	-6.05	0.00	0.04	-0.04
			3	-6.05	-0.01	0.00	0.00
19	5	12	1	5.77	0.01	0.00	0.00
			2	5.77	0.00	0.04	-0.04
			3	5.76	-0.01	0.00	0.00
20	12	6	1	-5.28	0.01	0 00	0.00
			2	-5.28	0.00	0.04	-0 04
			3	-5.27	-0.01	0.00	0.00
21	6	13	1	5.24	0.01	0.00	0.00
			2	5.24	0.00	0.04	-0.04
			3	5 23	-0.01	0.00	0.00
22	13	7	1	-5 19	0.01	0.00	0 00
			2	-5.19	0.00	0.06	-0 06
			3	-5 18	-0.01	0.00	0.00
23	7	14	1	4 13	0.01	0 00	0.00
			2	4 12	0.00	0.03	-0 03
			3	4 12	-0 01	0 00	0 00

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==========< Member Stresses, LC 7 DL - SEISMIC >==========

Member	Joints I	J	Section ↓	Axial Ksi	Shear Ksi	Bending Top Ksi	Bending Bottom Ksi
24	14	8	1	-4 07	0.01	0.00	0 00
			2	-4 07	0.00	0.04	-0 04
			3	-4.06	-0.01	0.00	0 00
25	8	15	1	4.31	0.01	0.00	0 00
			2	4.30	0.00	0.04	-0 04
			3	4.30	-0.01	0.00	0.00

==========< Member Deflections, LC 7 DL - SEISMIC >==========

Member	Joints I	J	Section ↓	x in	y in	L/n
1	1	3	1	0.000	0.000	NC
			2	-0.002	0 509	1193.7
			3	-0.005	0.826	NC
2	2	9	1	0.000	0.000	NC
			2	0 000	0 502	1210.6
			3	0 001	0.816	NC
3	3	10	1	-0.005	0.826	NC
			2	-0.005	0.857	4820.1
			3	-0 006	0.876	NC
4	9	15	1	0.001	0.816	NC
			2	0.001	0.847	4600.4
			3	0.001	0.864	NC
5	3	4	1	-0.826	-0.005	NC
			2	-0.831	0.021	2910.0
			3	-0 837	0.025	NC
6	4	5	1	-0.837	0.025	NC
			2	-0.843	0.026	NC
			3	-0 848	0.023	NC
7	5	6	1	-0.848	0.023	NC
			2	-0 849	0.009	NC
			3	-0 850	-0.011	NC
8	6	7	1	-0 850	-0.011	NC
			2	-0 845	-0 031	NC
			3	-0 841	-0.042	NC
9	7	8	1	-0 841	-0.042	NC

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==========< Member Deflections, LC 7 DL - SEISMIC >==========

Member	Joints I	- J	Section ↓	x in	y in	L/n
			2	-0.835	-0 041	9292.9
			3	-0.828	-0 028	NC
10	8	9	1	-0.828	-0 028	NC
			2	-0.822	-0 015	NC
			3	-0 816	0.001	NC
11	10	11	1	-0.876	-0 006	NC
			2	-0.866	0.019	8514.6
			3	-0.855	0.029	NC
12	11	12	1	-0.855	0.029	NC
			2	-0.849	0.021	NC
			3	-0.844	0.006	NC
13	12	13	1	-0.844	0.006	NC
			2	-0.843	-0.014	NC
			3	-0.842	-0.030	NC
14	13	14	1	-0.842	-0.030	NC
			2	-0.846	-0.043	9140.3
			3	-0.850	-0.042	NC
15	14	15	1	-0.850	-0.042	NC
			2	-0.857	-0.029	7653 1
			3	-0.864	0.001	NC
16	10	4	1	-0.635	-0.604	NC
			2	-0.631	-0.580	NC
			3	-0.627	-0.555	NC
17	4	11	1	-0.579	0.605	NC
			2	-0.584	0.612	5536 0
			3	-0.589	0.620	2721 3
18	11	5	1	-0 640	-0.568	NC
			2	-0.635	-0.568	NC
			3	-0.631	-0 568	NC
19	5	12	1	-0 592	0.608	2877 3
			2	-0.596	0 600	5861 7
			3	-0 601	0 593	NC
20	12	6	1	-0.613	-0 580	NC
			2	-0 609	-0 589	NC
			3	-0 605	-0 597	NC

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==========< Member Deflections, LC 7 : DL - SEISMIC >==========

Member	Joints I	- J	Section ↓	x in	y in	L/n
21	6	13	1	-0.620	0.581	2330.8
			2	-0.624	0.572	4733 4
			3	-0.628	0.562	NC
22	13	7	1	-0.641	-0.547	NC
			2	-0.637	-0.552	NC
			3	-0.633	-0.556	NC
23	7	14	1	-0.566	0.624	NC
			2	-0.569	0.627	NC
			3	-0.572	0.630	5751.3
24	14	8	1	-0.576	-0.626	NC
			2	-0.573	-0.614	NC
			3	-0.570	-0.601	NC
25	8	15	1	-0.622	0.546	NC
			2	-0.626	0.569	1908.9
			3	-0.629	0.593	948.3

==========< Member AISC Unity Checks, LC 7 : DL - SEISMIC >==========

Member	Joints I	- J	Unity Chk	Loc	Shear Chk	Loc	Fa Ksi	Fb Ksi	Cb	Cm	ASD Eqn.
1	1	3	0.538	3	0.059	1	34.24	40 47	1.00	0.60	H1-2
2	2	9	0.504	3	0.058	1	34.24	40.47	1.00	0.60	H2-1
3	3	10	0.498	1	0.206	1	36.26	40.47	1.00	0.60	H1-2
4	9	15	0.505	1	0.222	1	36.26	40.47	1.00	0.60	H2-1
5	3	4	0.585	1	0.049	1	35.15	40.47	1 00	0.85	H1-2
6	4	5	0.183	3	0.003	3	33.00	40.47	1.00	0.85	H1-1
7	5	6	0.044	1	0.003	1	33.00	40 47	1 00	0.85	H1-2
8	6	7	0.116	3	0.002	1	32.42	40 47	1 00	0 85	H2-1
9	7	8	0.226	3	0.002	1	33.54	40 47	1.00	0.85	H2-1
10	8	9	0.316	1	0.005	3	35.15	40 47	1 00	1.00	H2-1
11	10	11	0.324	1	0.009	1	32.97	40 47	1 00	0.85	H2-1
12	11	12	0.188	1	0.011	1	32.97	40.47	1.00	0.85	H2-1
13	12	13	0.043	1	0.010	1	32.97	40.47	1.00	0.85	H2-1
14	13	14	0.133	2	0.011	1	32.97	40.47	1.00	0.85	H1-1
15	14	15	0.234	2	0.010	3	32.97	40 47	1 00	1.00	H1-1
16	10	4	0 142	2	0 000	1	33.63	40 47	1 00	1.00	H2-1
17	4	11	0 196	2	0 000	3	33 73	40 47	1.00	1 00	H1-1
18	11	5	0.166	2	0 000	1	33 66	40.47	1 00	1.00	H2-1
19	5	12	0 172	2	0 000	1	33 70	40.47	1 00	1 00	H1-1
20	12	6	0 144	2	0.000	1	33 68	40 47	1 00	1 00	H2-1

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==========< Member AISC Unity Checks, LC 7 · DL - SEISMIC >==========

Member	Joints I	- J	Unity Chk	Loc	Shear Chk	Loc	Fa (Ksi)	Fb (Ksi)	Cb	Cm	ASD Eqn.
21	6	13	0.157	2	0.000	1	33.68	40 47	1.00	1.00	H1-1
22	13	7	0.142	2	0 000	1	33.21	40 47	1 00	1.00	H2-1
23	7	14	0.122	2	0.000	1	34 09	40.47	1.00	1.00	H1-3
24	14	8	0.112	2	0.000	3	33.73	40.47	1 00	1.00	H2-1
25	8	15	0.129	2	0.000	1	33.63	40.47	1 00	1.00	H1-3

==========< Member NDS Unity Checks, LC 7 : DL - SEISMIC >==========

Memb	Unity Chk	Loc	Shear Chk	Loc	Fc' (Ksi)	Ft' (Ksi)	Fb' (Ksi)	Fv' (Ksi)	RB	CL	CP	Eqn

==========< Redesign Shapes, LC 7 : DL - SEISMIC >==========

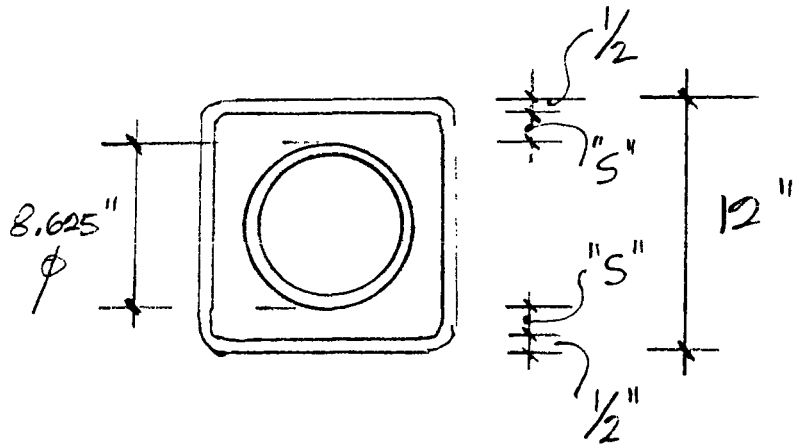
Section Set	Member	Suggested Alternate Shapes 1st Choice	2nd Choice	3rd Choice	4th Choice
Redesign not performed...					
C1	N/A	No acceptable shapes found...			
B1	N/A	No acceptable shapes found..			

==========< Material Takeoff, LC 7 : DL - SEISMIC >==========

Section Set	Database Shape	Total Length (ft)	Total Weight (K)
C1	TU12X12X8	12.00	0.91
C2	P8	0.00	0.00
C3	TU12X12X8	12.00	0 91
B1	TU5X5X6	26.00	0.58
B2	TU5X5X6	26.00	0.58
D1	TU4X4X4	36.11	0 44
		Total Wts:	3 43

CHECK NEW BRACED FRAME displacements -

- Max displacement at NODE (10) & (15) is 0.9"



S = space provided = (11" − 8.625) 1/2 = 1.1875"

Space provided > displacement -

OK

- SEE DETAILS -

HARABOR ENGINEERING

• STRUCTURAL DESIGN •

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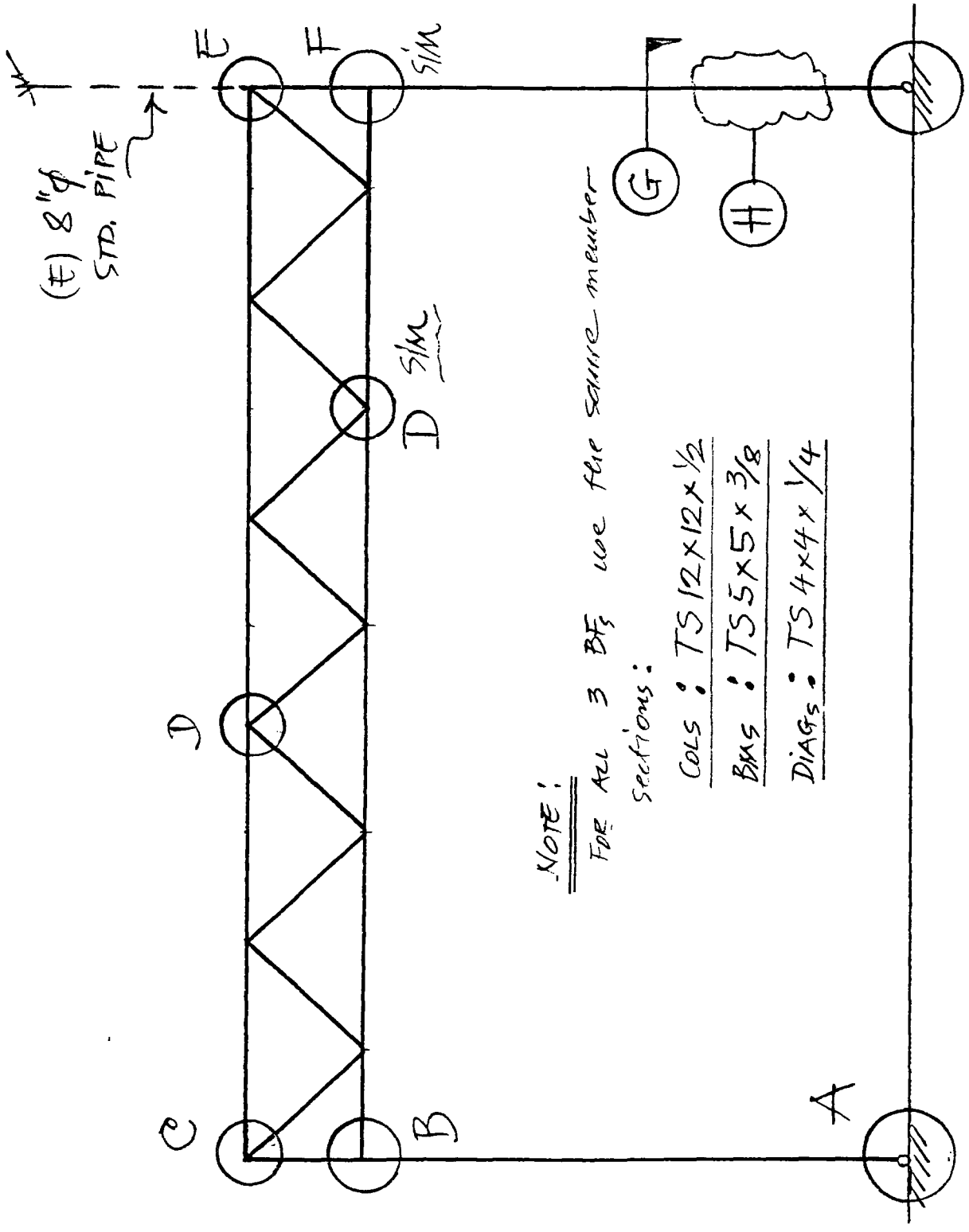
BRACED FRAMES DESIGN -



NOTE: FOR ALL 3 BFs use the same member sections:

COLS : TS 12×12×1/2

BMS : TS 5×5×3/8

DIAGS : TS 4×4×1/4

NOTE: ALL DETAILS ARE PROVIDED SEPARATELY.