MIKE SURPRENANT & ASSOCIATES

Consulting Structural Engineers

STRUCTURAL CALCULATIONS

Project:
Palomar Airport Business Park Renovation
2055 Corte Del Nogal
Carlsbad, California 92008

Prepared for:
MPA Architectural Group
3578 30th Street
San Diego, California 92104

Project No.:
06087

Date:
July 11, 2006

REGISTERED PROFESSIONAL ENGINEER
MIKE SURPRENANT
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CB06-2009

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JOB 06287
SHEET NO 4 OF 29
CALCULATED BY _____ DATE _____
CHECKED BY _____ DATE _____
SCALE _____

DESIGN LOADS

	CASE 1	CASE II
MATERIAL:	BUILT-UP MEMBRANE	
SLOPE:	FLAT	
ROOF		
DEAD LOAD		
ROOFING MATERIAL	5 0 PSF	PSF
SHEATHING	15	15
RAFTERS/C.J (or) TRUSSES	40	40
INSULATION	15	15
DRYWALL	25	25
OTHER (ELEC , MECH , MISC)	05	05
TOTAL DEAD LOAD	15 0 PSF	0 PSF
LIVE LOAD	20 0 PSF	0 PSF
TOTAL LOAD	35 .0 PSF	.0 PSF

	FLOOR	DECK
MATERIAL:	FAKE TILES	
FLOOR		
DEAD LOAD		
MOVEABLE PARTITION LOAD	15 0	
FLOORING FINISH	4 0 PSF	PSF
LT WEIGHT CONCRETE (_____in)	—	
SHEATHING	20	20
JOISTS	35	35
DRYWALL	25	25
OTHER (ELEC , MECH , MISC)	30	30
TOTAL DEAD LOAD	30 0 PSF	0 PSF
LIVE LOAD	50 0 PSF	0 PSF
TOTAL LOAD	80 .0 PSF	.0 PSF

EXTERIOR WALL		
FINISH:		
STUDS	10 PSF	10 PSF
DRYWALL	25	25
INSULATION	15	15
EXTERIOR FINISH	0	0
OTHER	10	10
TOTAL LOAD	.0 PSF	.0 PSF

INTERIOR WALL	
STUDS	10 PSF
DRYWALL	50
OTHER	10
TOTAL LOAD:	PSF

Mike Surprenant
& Associates
Consulting Structural Engineers

Job 06087
Sheet No 2 of 29
Calculated by _____ Date _____
Checked by _____ Date _____
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PROJECT SCOPE

- Provide vertical load calculations for a proposed approximate 2500 square foot two story addition to a two-story commercial building at the Palomar Airport Business Park in Carlsbad, California Residence to be constructed utilizing primarily wood-frame and steel construction Use existing roof framing, and the foundation system to consist of a concrete slab-on-grade with deepened perimeter footings A soils report was provided for this project by Christian Wheeler Engineering Therefore, the foundation design will be based on the aforementioned soils report

These calculations have been prepared for the exclusive use of MPA Architects INC and their design consultants for the specific site listed above Should modifications be made to the project subsequent to the preparation of these calculations, Mike Surprenant & Associates should be notified to review the modifications with respect to the recommendations/conclusions provided herein, to determine if any additional calculations and/or recommendations are necessary Our professional services have been performed, our findings obtained, and our recommendations prepared in accordance with generally accepted engineering principles and practices

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JOB 06087
SHEET NO 3 OF 29
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DESIGN CRITERIA SUMMARY

GOVERNING CODE:	**2001 C B.C.**
CONCRETE:	f'_c = 2500 PSI, NO SPECIAL INSPECTION REQ'D, (U N O)
MASONRY.	ASTM C90, f'_m = 1500 PSI, NO SPECIAL INSPECTION REQ'D, (U N O)
MORTAR·	ASTM C270, f'_c = 1800 PSI, TYPE S
GROUT.	ASTM C476, f'_c = 2000 PSI
REINFORCING STEEL:	ASTM A615, F_y = 40 KSI FOR #3 AND SMALLER ASTM A615, F_y = 60 KSI FOR #4 AND LARGER (U N O)
STRUCTURAL STEEL·	ASTM A992, F_y = 50 KSI (ALL 'W' SHAPES, ONLY) ASTM A36, F_y = 36 KSI (STRUCTURAL PLATES, ANGLES, CHANNELS) ASTM A500, GRADE B, F_y = 46 KSI (STRUCTURAL TUBES-HSS) ASTM A53, GRADE B, F_y = 35 KSI (STRUCTURAL PIPES)
WELDING:	E70-T6-TYP FOR STRUCTURAL STEEL E90 SERIES FOR A615 GRADE 60 REINFORCING BARS
SAWN LUMBER:	DOUG FIR LARCH, ALLOWABLE UNIT STRESSES PER 1997 UBC
I-JOISTS:	TrusJoist MacMillan - ICBO PFC-4354 (TJI & TJI/PRO MEMBERS)
MICROLLAMS/ PARALLAMS/ TIMBERSTRAND	TrusJoist MacMillan - ICBO PFC-4354 - (LVL/PSL/LSL MEMBERS)
GLULAMS:	DOUGLAS FIR OR DOUGLAS FIR/HEM GRADE 24F-V4 (SIMPLE SPANS) GRADE 24F-V8 (CANTILEVERS)

SOIL:

☐ EXISTING NATURAL SOIL VALUES PER UBC TABLE 18-I-A
SOIL CLASSIFICATION - _____

☒ SOILS REPORT BY CHRISTIAN WHEELER ENGINEERING
DATED 6 DEC 05

ALLOWABLE BEARING PRESSURE	= 2000	PSF
ACTIVE SOIL PRESSURE (CANTILEVER)	= _____	PCF
ACTIVE SOIL PRESSURE (RESTRAINED)	= _____	PCF
PASSIVE SOIL PRESSURE	= _____	PCF
COEFFICIENT OF FRICTION	= _____	

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DESIGN LOADS

	CASE 1	CASE II
MATERIAL:	BUILT UP MEMBRANE	
SLOPE:	FLAT	

ROOF

DEAD LOAD		
ROOFING MATERIAL	5 0 PSF	PSF
SHEATHING	1 5	1 5
RAFTERS/C J (or) TRUSSES	4 0	4 0
INSULATION	1 5	1 5
DRYWALL	2 5	2 5
OTHER (ELEC , MECH , MISC)	0 5	0 5
TOTAL DEAD LOAD	15 0 PSF	0 PSF
LIVE LOAD	20 0 PSF	0 PSF
TOTAL LOAD	35 .0 PSF	.0 PSF

	FLOOR	DECK
MATERIAL:	FAKE TILES	

FLOOR

DEAD LOAD		
MOVEABLE PARTITION LOAD	15 0	
FLOORING FINISH	4 0 PSF	PSF
LT WEIGHT CONCRETE (_____in)	—	
SHEATHING	2 0	2 0
JOISTS	3 5	3 5
DRYWALL	2 5	2 5
OTHER (ELEC , MECH , MISC)	3 0	3 0
TOTAL DEAD LOAD	30 0 PSF	0 PSF
LIVE LOAD	50 0 PSF	0 PSF
TOTAL LOAD	80 .0 PSF	.0 PSF

EXTERIOR WALL

FINISH:		
STUDS	1 0 PSF	1 0 PSF
DRYWALL	2 5	2 5
INSULATION	1 5	1 5
EXTERIOR FINISH	0	0
OTHER	1 0	1 0
TOTAL LOAD	.0 PSF	.0 PSF

INTERIOR WALL

STUDS	1 0 PSF
DRYWALL	5 0
OTHER	1 0
TOTAL LOAD:	PSF

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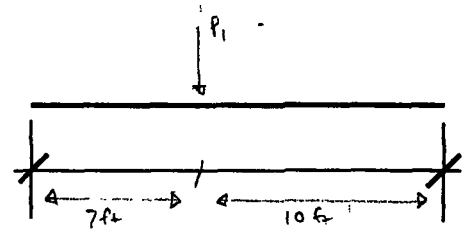
HORIZONTAL MEMBER DESIGN

LEVEL: ROOF
MEMBERS: BEAMS

LABEL: RB-1 **SPAN=** 17 **FT.**

- ☐ UNIFORM LOAD
- ☐ POINT LOAD (CENTERED)
- ☒ CUSTOM LOADING (SEE DIAGRAM)



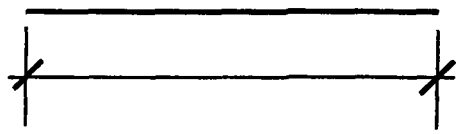
W_1 =
W_2 =
P_1 = 11760# + 9880# = 21640#
P_2 =

R_L = 12729 lbs R_R = 8911 lbs
V_{MAX} = 12729 lbs E = 1600 ksi
M_{MAX} = 88950 ft-lbs $I_{REQ'D}$ = 2701 in^4

USE: 12 1/4 x 15 GLULAM **GRADE:** _____ **C:** _____
ALT: _____ **GRADE:** _____ **C:** _____

LABEL: RB-2 **SPAN=** 17 **FT.**

- ☒ UNIFORM LOAD
- ☐ POINT LOAD (CENTERED)
- ☐ CUSTOM LOADING (SEE DIAGRAM)



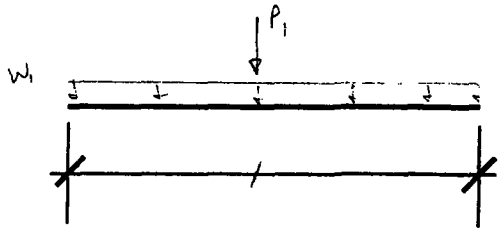
W_1 = 158 #/ft
W_2 =
P_1 =
P_2 =

R_L = 1343 lbs R_R = 1343 lbs
V_{MAX} = 1343 lbs E = 1600 ksi
M_{MAX} = 5708 ft-lbs $I_{REQ'D}$ = 219 in^4

USE: 5 1/8 x 18 GLULAM **GRADE:** _____ **C:** _____
ALT: _____ **GRADE:** _____ **C:** _____

LABEL: RB-3 **SPAN=** 16 **FT.**

- ☐ UNIFORM LOAD
- ☐ POINT LOAD (CENTERED)
- ☒ CUSTOM LOADING (SEE DIAGRAM)



W_1 = 123#/ft
W_2 =
P_1 = 8960# + 5880# = 14840#
P_2 =

R_L = 8404 lbs R_R = 8404 lbs
V_{MAX} = 8404 lbs E = 1600 ksi
M_{MAX} = 63180 ft-lbs $I_{REQ'D}$ = 1852 in^4

USE: 12 1/4 x 15 GLULAM **GRADE:** _____ **C:** _____
ALT: _____ **GRADE:** _____ **C:** _____

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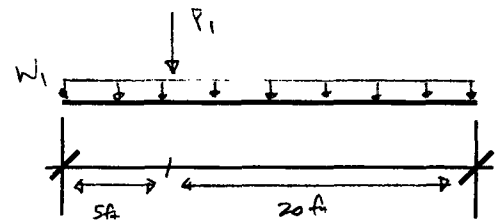
LEVEL: ROOF
MEMBERS: BEAM

LABEL: RB-4 **SPAN=** 20 **FT.**

- ☐ UNIFORM LOAD
- ☐ POINT LOAD (CENTERED)
- ☒ CUSTOM LOADING (SEE DIAGRAM)

W_1 = (20ft/2)/2 ft (35 psf) = 248 #/ft
W_2 =
P_1 = 21133#
P_2 =



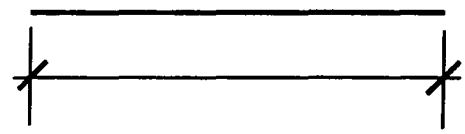
R_L = 18330 lbs R_R = 7763 lbs
V_{MAX} = 18330 lbs E = 1600 ksi
M_{MAX} = 88510 ft-lbs $I_{REQ'D}$ = 3209 in^4

USE: 12 1/4 x 15 GLULAM **GRADE:** _____ **C:** _____
ALT: _____ **GRADE:** _____ **C:** _____

LABEL: _____ **SPAN=** _____ **FT.**

- ☐ UNIFORM LOAD
- ☐ POINT LOAD (CENTERED)
- ☐ CUSTOM LOADING (SEE DIAGRAM)

W_1 =
W_2 =
P_1 =
P_2 =



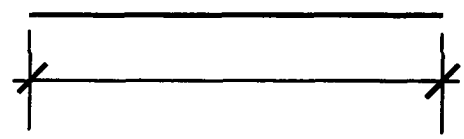
R_L = _____ lbs R_R = _____ lbs
V_{MAX} = _____ lbs E = _____ ksi
M_{MAX} = _____ ft-lbs $I_{REQ'D}$ = _____ in^4

USE: _____ **GRADE:** _____ **C:** _____
ALT: _____ **GRADE:** _____ **C:** _____

LABEL: _____ **SPAN=** _____ **FT.**

- ☐ UNIFORM LOAD
- ☐ POINT LOAD (CENTERED)
- ☐ CUSTOM LOADING (SEE DIAGRAM)

W_1 =
W_2 =
P_1 =
P_2 =



R_L = _____ lbs R_R = _____ lbs
V_{MAX} = _____ lbs E = _____ ksi
M_{MAX} = _____ ft-lbs $I_{REQ'D}$ = _____ in^4

USE: _____ **GRADE:** _____ **C:** _____
ALT: _____ **GRADE:** _____ **C:** _____

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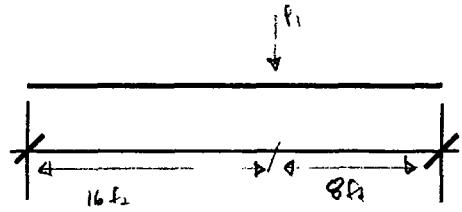
LEVEL: FLOOR
MEMBERS: BEAMS

LABEL: FB-1 **SPAN=** 22 **FT.**

- ☐ UNIFORM LOAD
- ☐ POINT LOAD (CENTERED)
- ☒ CUSTOM LOADING (SEE DIAGRAM)

$W_1 = \left(\frac{32ft}{2}\right)(80psf) + \left(\frac{32ft}{2}\right)(80psf) = 2560\#/ft$
$W_2 =$
$P_1 = 14560\#$
$P_2 =$



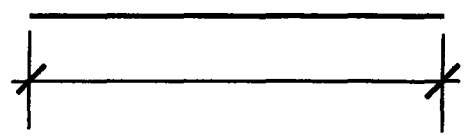
R_L = 32131 lbs R_R = 38749 lbs
V_{MAX} = 38749 lbs E = 1600 ksi
M_{MAX} = 201640 ft-lbs $I_{REQ'D}$ = 7000 in^4

USE: $14\frac{1}{4} \times 22\frac{1}{2}$ GLULAM **GRADE:** _____ **C:** _____
ALT: _____ **GRADE:** _____ **C:** _____

LABEL: FB-2 **SPAN=** 14 **FT.**

- ☒ UNIFORM LOAD
- ☐ POINT LOAD (CENTERED)
- ☐ CUSTOM LOADING (SEE DIAGRAM)

$W_1 = \left(2ft + \frac{4.5ft}{2}\right)(80psf) = 340\#/ft$
$W_2 =$
$P_1 =$
$P_2 =$



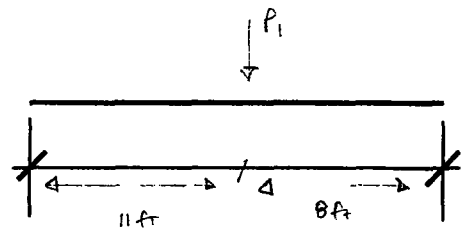
R_L = 2380 lbs R_R = 2380 lbs
V_{MAX} = 2380 lbs E = 1600 ksi
M_{MAX} = 8330 ft-lbs $I_{REQ'D}$ = 263 in^4

USE: $5\frac{1}{8}$ 9 GLULAM **GRADE:** _____ **C:** _____
ALT: _____ **GRADE:** _____ **C:** _____

LABEL: FB-3 **SPAN=** 19 **FT.**

- ☐ UNIFORM LOAD
- ☐ POINT LOAD (CENTERED)
- ☒ CUSTOM LOADING (SEE DIAGRAM)

$W_1 =$
$W_2 =$
$P_1 = 2380\#$
$P_2 =$



R_L = 1002 lbs R_R = 1378 lbs
V_{MAX} = 1378 lbs E = 1600 ksi
M_{MAX} = 11020 ft-lbs $I_{REQ'D}$ = 375 in^4

USE: $8\frac{3}{4} \times 15$ GLULAM **GRADE:** _____ **C:** _____
ALT: _____ **GRADE:** _____ **C:** _____

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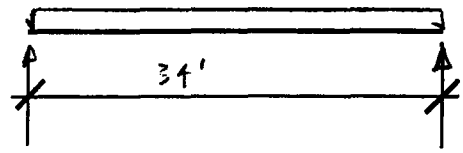
LEVEL: FLOOR
MEMBERS: BEAMS

LABEL: FB-4 **SPAN=** 34 **FT.**

- [x] UNIFORM LOAD
- [ ] POINT LOAD (CENTERED)
- [ ] CUSTOM LOADING (SEE DIAGRAM)

AWNING .. LIVE LOAD = 10 psf & DL - 10 psf

W_1 = D_L: (10psf)(10/2) = 50 lf
W_2 = L_R: (10psf)(10/2) = 50 lf
P_1 =
P_2 =



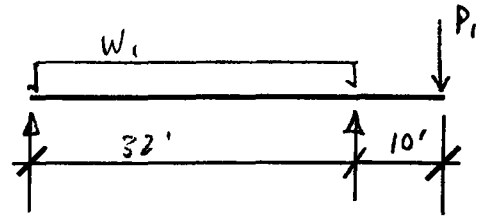
R_L = 1700 lbs R_R = 1700 lbs
V_{MAX} = 1700 lbs E = 29000 ksi
M_{MAX} = 14450 ft-lbs $I_{REQ'D}$ = - in^4

USE: MC 12x40 **GRADE:** ____ **C:** ____
ALT: ____ **GRADE:** ____ **C:** ____

LABEL: FB-5 **SPAN=** 32 **FT.**

- [ ] UNIFORM LOAD
- [ ] POINT LOAD (CENTERED)
- [ ] CUSTOM LOADING (SEE DIAGRAM)

W_1 = SAME AS FB-4
W_2 =
P_1 = D_L = 850 lbs
P_2 = L_R = 850 lbs



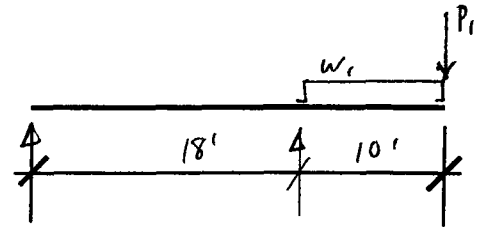
R_L = 1910 lbs R_R = 4940 lbs
V_{MAX} = 2570 lbs E = 29000 ksi
M_{MAX} = 19000 ft-lbs $I_{REQ'D}$ = - in^4

USE: MC 12x40 **GRADE:** ____ **C:** ____
ALT: ____ **GRADE:** ____ **C:** ____

LABEL: FB-6 **SPAN=** 18 **FT.**

- [ ] UNIFORM LOAD
- [ ] POINT LOAD (CENTERED)
- [ ] CUSTOM LOADING (SEE DIAGRAM)

W_1 = SAME AS FB-4
W_2 =
P_1 = D_L = 4940 lbs/2 = 2470 lbs
P_2 = L_R = 2470 lbs



R_L = 3770 lbs R_R = 9840 lbs
V_{MAX} = 6330 lbs E = 29000 ksi
M_{MAX} = 56400 ft-lbs $I_{REQ'D}$ = - in^4

USE: MC 12x 40 **GRADE:** ____ **C:** ____
ALT: ____ **GRADE:** ____ **C:** ____

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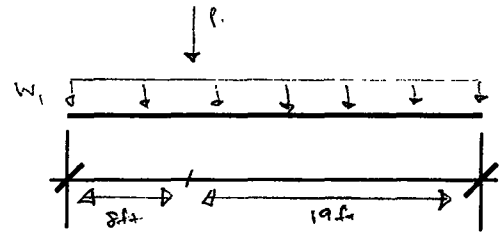
LEVEL: _____
MEMBERS: _____

LABEL: FB-7 **SPAN=** 27 **FT.**

- ☐ UNIFORM LOAD
- ☐ POINT LOAD (CENTERED)
- ☐ CUSTOM LOADING (SEE DIAGRAM)

$W_1 = \left(\frac{6ft}{2}\right)(80psf) = 240\#/ft$
$W_2 =$
$P_1 = 2380$
$P_2 =$



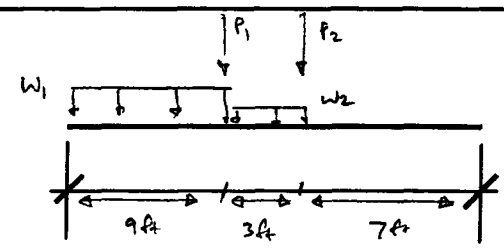
R_L = 4915 lbs R_R = 3945 lbs
V_{MAX} = 4915 lbs E = 1600 ksi
M_{MAX} = 32430 ft-lbs $I_{REQ'D}$ = 1944 in^4

USE: $8\frac{3}{4} \times 15$ GLULAM **GRADE:** _____ **C:** _____
ALT: _____ **GRADE:** _____ **C:** _____

LABEL: FB-8 **SPAN=** 19 **FT.**

- ☐ UNIFORM LOAD
- ☐ POINT LOAD (CENTERED)
- ☒ CUSTOM LOADING (SEE DIAGRAM)

$W_1 = \left(\frac{20ft}{2}\right)(\sqrt{2})(80psf) = 566\#/ft$
$W_2 = (4.5ft/2)(80psf) = 180\#/ft$
$P_1 = 1378$
$P_2 = 4915$



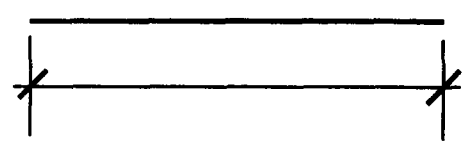
R_L = 6383 lbs R_R = 4779 lbs
V_{MAX} = 6383 lbs E = 1600 ksi
M_{MAX} = 34520 ft-lbs $I_{REQ'D}$ = 1419 in^4

USE: $8\frac{3}{4} \times 15$ GLULAM **GRADE:** _____ **C:** _____
ALT: _____ **GRADE:** _____ **C:** _____

LABEL: _____ **SPAN=** _____ **FT.**

- ☐ UNIFORM LOAD
- ☐ POINT LOAD (CENTERED)
- ☐ CUSTOM LOADING (SEE DIAGRAM)

$W_1 =$
$W_2 =$
$P_1 =$
$P_2 =$



R_L = _____ lbs R_R = _____ lbs
V_{MAX} = _____ lbs E = _____ ksi
M_{MAX} = _____ ft-lbs $I_{REQ'D}$ = _____ in^4

USE: _____ **GRADE:** _____ **C:** _____
ALT: _____ **GRADE:** _____ **C:** _____

Rev 580005
User KW 0603057 Ver 5 8 0 1 Dec-2003
(c)1983-2003 ENERCALC Engineering Software

Steel Beam Design

Description FB-4

General Information

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

Steel Section : MC12X40

		Pinned-Pinned	Fy	36 00 ksi
Center Span	34 00 ft	Bm Wt Added to Loads	Load Duration Factor	1 25
Left Cant	0 00 ft	LL & ST Act Together	Elastic Modulus	29,000 0 ksi
Right Cant	0 00 ft			
Lu Unbraced Length	0 00 ft			

Distributed Loads

Note! Short Term Loads Are WIND Loads

	#1	#2	#3	#4	#5	#6	#7	
DL	0 050							k/ft
LL	0 050							k/ft
ST								k/ft
Start Location								ft
End Location								ft

Summary

Beam OK
Static Load Case Governs Stress

Using MC12X40 section, Span = 34 00ft, Fy = 36 0ksi
End Fixity = Pinned-Pinned, Lu = 0 00ft, LDF = 1 250

	Actual	Allowable		
Moment	20 242 k-ft	77 220 k-ft	Max Deflection	-0 621 in
fb Bending Stress	6 228 ksi	23 760 ksi	Length/DL Defl	1,022 2 1
fb / Fb	**0 262 1**		Length/(DL+LL Defl)	657 4 1
Shear	2 381 k	101 952 k		
fv Shear Stress	0 336 ksi	14 400 ksi		
fv / Fv	**0 023 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 +	20 24 k-ft	13 02	20 24				k-ft
Max M -							k-ft
Max M @ Left							k-ft
Max M @ Right							k-ft
Shear @ Left	2 38 k	1 53	2 38				k
Shear @ Right	2 38 k	1 53	2 38				k
Center Defl	-0 621 in	-0 399	-0 621	-0 621	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	2 38	1 53	2 38	2 38			k
Reaction @ Rt	2 38	1 53	2 38	2 38			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 FB-4

Section Properties MC12X40

Depth	12 000 in	Weight	40 08 #/ft
Web Thick	0 590 in	Ixx	234 000 in4
Width	3 890 in	Iyy	14 200 in4
Flange Thick	0 700 in	Sxx	39 000 in3
Area	11 80 in2	Syy	4 980 in3
Xcg Dist	1 040 in	R-xx	4 460 in
Values for LRFD Design		R-yy	1 100 in
J	1 690 in4	Zx	47 700 in3
Cw	336 00 in6	Zy	9 310 in3
		K	1 313 in

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Steel Beam Design

Description FB-5

General Information

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

Steel Section MC12X40

		Pinned-Pinned	Fy	36 00ksi
Center Span	32 00 ft	Bm Wt Added to Loads	Load Duration Factor	1 25
Left Cant	0 00 ft	LL & ST Act Together	Elastic Modulus	29,000 0ksi
Right Cant	10 00 ft			
Lu Unbraced Length	0 00 ft			

Distributed Loads

Note! Short Term Loads Are WIND Loads

	#1	#2	#3	#4	#5	#6	#7	
DL	0 050							k/ft
LL	0 050							k/ft
ST								k/ft
Start Location								ft
End Location	32 000							ft

Point Loads

Note! Short Term Loads Are WIND Loads

	#1	#2	#3	#4	#5	#6	#7	
Dead Load	0 850							k
Live Load	0 850							k
Short Term								k
Location	42 000							ft

Summary

Beam OK
Static Load Case Governs Stress

Using MC12X40 section, Span = 32 00ft, Fy = 36 0ksi, Left Cant = 0 00ft, Right Cant = 10 00ft
End Fixity = Pinned-Pinned, Lu = 0 00ft, LDF = 1 250

	Actual	Allowable
Moment	19 004 k-ft	77 220 k-ft
fb Bending Stress	5 847 ksi	23 760 ksi
fb / Fb	**0 246 1**	
Shear	2 570 k	101 952 k
fv Shear Stress	0 363 ksi	14 400 ksi
fv / Fv	**0 025 1**	

Max Deflection	0 359 in
Length/DL Defl	2,633 0 1
Length/(DL+LL Defl)	667 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 +	19 00 k-ft	6 88	13 06		3 99		k-ft
Max M -		-10 50	-10 50		-19 00		k-ft
Max M @ Left							k-ft
Max M @ Right		-10 50	-10 50		-19 00		k-ft
Shear @ Left	1 91 k	1 11	1 91		0 85		k
Shear @ Right	2 57 k	1 77	2 57		2 09		k
Center Defl	-0 318 in	-0 146	-0 318	-0 318	0 052	0 052	in
Left Cant Defl	0 000 in	0 000	0 000	0 000	0 000	0 000	in
Right Cant Defl	0 359 in	-0 055	0 122	0 122	-0 359	-0 359	in
Query Defl @	0 000 ft	0 000	0 000	0 000	0 000	0 000	in
Reaction @ Left	1 91	1 11	1 91	1 91	0 85	0 85	k
Reaction @ Rt	4 94	3 02	3 82	3 82	4 14	4 14	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 FB-5

Section Properties MC12X40

Depth	12 000 in	Weight	40 08 #/ft
Web Thick	0 590 in	Ixx	234 000 in4
Width	3 890 in	Iyy	14 200 in4
Flange Thick	0 700 in	Sxx	39 000 in3
Area	11 80 in2	Syy	4 980 in3
Xcg Dist	1 040 in	R-xx	4 460 in
Values for LRFD Design		R-yy	1 100 in
J	1 690 in4	Zx	47 700 in3
Cw	336 00 in6	Zy	9 310 in3
		K	1 313 in

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Steel Beam Design

Description FB-6

General Information

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

Steel Section . MC12X40

		Pinned-Pinned	Fy	36 00ksi
Center Span	18 00 ft	Bm Wt Added to Loads	Load Duration Factor	1 25
Left Cant	0 00 ft	LL & ST Act Together	Elastic Modulus	29,000 0ksi
Right Cant	10 00 ft			
Lu Unbraced Length	0 00 ft			

Distributed Loads

Note! Short Term Loads Are WIND Loads

	#1	#2	#3	#4	#5	#6	#7	
DL	0 050							k/ft
LL	0 050							k/ft
ST								k/ft
Start Location	18 000							ft
End Location	28 000							ft

Point Loads

Note! Short Term Loads Are WIND Loads

	#1	#2	#3	#4	#5	#6	#7	
Dead Load	2 470							k
Live Load	2 470							k
Short Term								k
Location	28 000							ft

Summary

Beam OK
Static Load Case Governs Stress

Using MC12X40 section, Span = 18 00ft, Fy = 36 0ksi, Left Cant = 0 00ft, Right Cant = 10 00ft
End Fixity = Pinned-Pinned, Lu = 0 00ft, LDF = 1 250

	Actual	Allowable
Moment	56 404 k-ft	77 220 k-ft
fb Bending Stress	17 355 ksi	23 760 ksi
fb / Fb	**0 730 1**	
Shear	6 325 k	101 952 k
fv Shear Stress	0 893 ksi	14 400 ksi
fv / Fv	**0 062 1**	

Max Deflection	1 299 in
Length/DL Defl	362 7 1
Length/(DL+LL Defl)	184 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 +	56 40 k-ft						k-ft
Max M -		-29 20	-29 20		-56 40		k-ft
Max M @ Left							k-ft
Max M @ Right		-29 20	-29 20		-56 40		k-ft
Shear @ Left	2 77 k	1 26	1 26		2 77		k
Shear @ Right	6 33 k	3 36	3 36		6 33		k
Center Defl	0 285 in	0 141	0 141	0 141	0 285	0 285	in
Left Cant Defl	0 000 in	0 000	0 000	0 000	0 000	0 000	in
Right Cant Defl	1 299 in	-0 662	-0 662	-0 662	-1 299	-1 299	in
Query Defl @	0 000 ft	0 000	0 000	0 000	0 000	0 000	in
Reaction @ Left	-2 77	-1 26	-1 26	-1 26	-2 77	-2 77	k
Reaction @ Rt	9 84	5 35	5 35	5 35	9 84	9 84	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

Description FB-6

Section Properties MC12X40

Depth	12 000 in	Weight	40 08 #/ft
Web Thick	0 590 in	Ixx	234 000 in4
Width	3 890 in	Iyy	14 200 in4
Flange Thick	0 700 in	Sxx	39 000 in3
Area	11 80 in2	Syy	4 980 in3
Xcg Dist	1 040 in	R-xx	4 460 in
Values for LRFD Design		R-yy	1 100 in
J	1 690 in4	Zx	47 700 in3
Cw	336 00 in6	Zy	9 310 in3
		K	1 313 in

TJ-Beam® 6 20 Serial Number 7005102660
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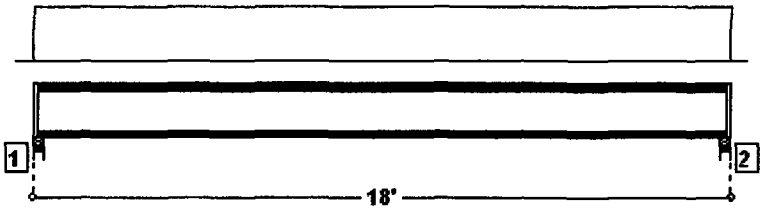
Floor Joists for Palomar Airport Renovation Job # 06087

14" TJI® 360 @ 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 - Office Bldgs - Offices (psf) 50 0 Live at 100 % duration, 30 0 Dead, 20 0 Partition

SUPPORTS

		Input Width	Bearing Length	Vertical Reactions (lbs) Live/Dead/Uplift/Total	Detail	Other
1	Stud wall	3 50"	2 25"	600 / 600 / 0 / 1200	A3 Rim Board	1 Ply 1 1/4" x 14" 0 8E TJ-Strand Rim Board®
2	Stud wall	3 50"	2 25"	600 / 600 / 0 / 1200	A3 Rim Board	1 Ply 1 1/4" x 14" 0 8E TJ-Strand Rim Board®

-See TJ SPECIFIER'S / BUILDERS GUIDE for detail(s) A3 Rim Board

DESIGN CONTROLS.

	Maximum	Design	Control	Control	Location
Shear (lbs)	1172	-1161	1955	Passed (59%)	Rt end Span 1 under Floor loading
Vertical Reaction (lbs)	1172	1172	1202	Passed (98%)	Bearing 2 under Floor loading
Moment (Ft-Lbs)	5153	5153	7335	Passed (70%)	MID Span 1 under Floor loading
Live Load Defl (in)		0 239	0 440	Passed (L/882)	MID Span 1 under Floor loading
Total Load Defl (in)		0 478	0 879	Passed (L/441)	MID Span 1 under Floor loading
TJPro		48	30	Passed	Span 1

-Deflection Criteria STANDARD(LL L/480,TL L/240)
-Deflection analysis is based on composite action with single layer of 19/32" Panels (20" Span Rating) GLUED & NAILED wood decking
-Bracing(Lu) All compression edges (top and bottom) must be braced at 4' 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 GLUED & NAILED 19/32" Panels (20" Span Rating) decking The controlling span is supported by walls Additional considerations for this rating include Ceiling - None A structural analysis of the deck has not been performed by the program Comparison Value 1 77

ADDITIONAL NOTES

-IMPORTANT! The analysis presented is output from software developed by Trus Joist (TJ) TJ warrants the sizing of its products by this software will *be accomplished in accordance with TJ product design criteria and code accepted design values The specific product application, input design* loads, and stated dimensions have been provided by the software user This output has not been reviewed by a TJ Associate
-Not all products are readily available Check with your supplier or TJ technical representative for product availability
-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 Distribution product listed above

PROJECT INFORMATION

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TJ-Beam® 6 20 Serial Number 7005102660
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Page 2 Engine Version 6 20 16

Floor Joists for Palomar Airport Renovation Job # 06087

14" TJI® 360 @ 16" o/c

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

Load Group Primary Load Group

	^	17' 7 00"	^
Max Vertical Reaction Total (lbs)	1200		1200
Max Vertical Reaction Live (lbs)	600		600
Selected Bearing Length (in)	2 25(W)		2 25(W)
Max Unbraced Length (in)		48	

Loading on all spans, LDF = 0 90 , 1 0 Dead

Shear at Support (lbs)		581	-581
Max Shear at Support (lbs)		586	-586
Member Reaction (lbs)	586		586
Support Reaction (lbs)	600		600
Moment (Ft-Lbs)		2576	

Loading on all spans, LDF = 1 00 , 1 0 Dead + 1 0 Floor

Shear at Support (lbs)		1161	-1161
Max Shear at Support (lbs)		1172	-1172
Member Reaction (lbs)	1172		1172
Support Reaction (lbs)	1200		1200
Moment (Ft-Lbs)		5153	
Live Deflection (in)		0 239	
Total Deflection (in)		0 478	

PROJECT INFORMATION

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Steel Column

Description downstairs column

General Information

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

Steel Section	**P4STD**	Fy	36 00 ksi	X-X Sidesway	Restrained
		Duration Factor	1 250	Y-Y Sidesway	Restrained
Column Height	13 000 ft	Elastic Modulus	29,000 00 ksi		
End Fixity	Pin-Pin	X-X Unbraced	0 000 ft	Kxx	1 000
Live & Short Term Loads Combined		Y-Y Unbraced	0 000 ft	Kyy	1 000

Loads

Axial Load

Dead Load	20 62 k	Ecc for X-X Axis Moments	0 000 in
Live Load	31 51 k	Ecc for Y-Y Axis Moments	0 000 in
Short Term Load	k		

Summary

Column Design OK

Section P4STD, Height = 13 00ft, Axial Loads DL = 20 62, LL = 31 51, ST = 0 00k, Ecc = 0 000in

Unbraced Lengths X-X = 0 00ft, Y-Y = 0 00ft

Combined Stress Ratios	Dead	Live	DL + LL	DL + ST + (LL if Chosen)
AISC Formula H1 - 1	0 3011	0 4602	0 7613	0 6091
AISC Formula H1 - 2	0 3011	0 4602	0 7613	0 6091
AISC Formula H1 - 3				

XX Axis Fa calc'd per Eq E2-1, K*L/r < Cc
YY Axis Fa calc'd per Eq E2-1, K*L/r < Cc

Stresses

Allowable & Actual Stresses	Dead	Live	DL + LL	DL + Short
Fa Allowable	21 60 ksi	21 60 ksi	21 60 ksi	27 00 ksi
fa Actual	6 50 ksi	9 94 ksi	16 44 ksi	16 44 ksi
Fb xx Allow [F1-6]	23 76 ksi	23 76 ksi	23 76 ksi	29 70 ksi
Fb xx Allow [F1-7] & [F1-8]	23 76 ksi	23 76 ksi	23 76 ksi	29 70 ksi
fb xx Actual	0 00 ksi	0 00 ksi	0 00 ksi	0 00 ksi
Fb yy Allow [F1-6]	23 76 ksi	23 76 ksi	23 76 ksi	29 70 ksi
Fb yy Allow [F1-7] & [F1-8]	23 76 ksi	23 76 ksi	23 76 ksi	29 70 ksi
fb yy Actual	0 00 ksi	0 00 ksi	0 00 ksi	0 00 ksi

Analysis Values

F'ex DL+LL	0 psi	Cm x DL+LL	0 60	Cb x DL+LL	1 00
F'ey DL+LL	0 psi	Cm y DL+LL	0 60	Cb y DL+LL	1 00
F'ex DL+LL+ST	124999,999 psi	Cm x DL+LL+ST	0 60	Cb x DL+LL+ST	1 00
F'ey DL+LL+ST	124999,999 psi	Cm y DL+LL+ST	0 60	Cb y DL+LL+ST	1 00

Max X-X Axis Deflection 0 000 in at 0 000 ft Max Y-Y Axis Deflection 0 000 in at 0 000 ft

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Steel Column

Description downstairs column

Section Properties P4STD

Diameter	4 500 in	Weight	10 77 #/ft	Values for LRFD Design	
		Ixx	7 230 in4	J	14 500 in4
		Iyy	7 230 in4		0 00
Thickness	0 237 in	Sxx	3 210 in3	Zx	4 310 in3
Area	3 17 in2	Syy	3 210 in3	Zy	4 310 in3
		Rxx	1 510 in		0 000
		Ryy	1 510 in		

Section Type = Pipe

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Steel Column

Description Hangman Column

General Information

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

Steel Section	**HSS8X4X1/2**	Fy	46 00 ksi	X-X Sidesway	Sway Allowed
		Duration Factor	1 250	Y-Y Sidesway	Sway Allowed
Column Height	13 000 ft	Elastic Modulus	29,000 00 ksi		
End Fixity	Fix-Free	X-X Unbraced	0 000 ft	Kxx	2 100
Live & Short Term Loads Combined		Y-Y Unbraced	0 000 ft	Kyy	2 100

Loads

Axial Load

Dead Load	0 59 k	Ecc for X-X Axis Moments	0 000 in
Live Load	0 59 k	Ecc for Y-Y Axis Moments	0 000 in
Short Term Load	k		

Applied Moments

X-X Axis Moments	DL	LL	ST		Height
At TOP	7 64	7 64		k-ft	
Between Ends				k-ft	13 000 ft
At BOTTOM				k-ft	

Summary

Column Design OK

Section HSS8X4X1/2, Height = 13 00ft, Axial Loads DL = 0 59, LL = 0 59, ST = 0 00k, Ecc = 0 000in

Unbraced Lengths X-X = 0 00ft, Y-Y = 0 00ft

Combined Stress Ratios	Dead	Live	DL + LL	DL + ST + (LL if Chosen)
AISC Formula H1 - 1				
AISC Formula H1 - 2				
AISC Formula H1 - 3	0 1709	0 1709	0 3418	0 2734

XX Axis Fa calc'd per Eq E2-1, K*L/r < Cc
YY Axis Fa calc'd per Eq E2-1, K*L/r < Cc

Stresses

Allowable & Actual Stresses	Dead	Live	DL + LL	DL + Short
Fa Allowable	27 60 ksi	27 60 ksi	27 60 ksi	34 50 ksi
fa Actual	0 06 ksi	0 06 ksi	0 12 ksi	0 12 ksi
Fb xx Allow [F1-6]	30 36 ksi	30 36 ksi	30 36 ksi	37 95 ksi
Fb xx Allow [F1-7] & [F1-8]	30 36 ksi	30 36 ksi	30 36 ksi	37 95 ksi
fb xx Actual	5 12 ksi	5 12 ksi	10 24 ksi	10 24 ksi
Fb yy Allow [F1-6]	30 36 ksi	30 36 ksi	30 36 ksi	37 95 ksi
Fb yy Allow [F1-7] & [F1-8]	30 36 ksi	30 36 ksi	30 36 ksi	37 95 ksi
fb yy Actual	0 00 ksi	0 00 ksi	0 00 ksi	0 00 ksi

Analysis Values

F'ex DL+LL	0 psi	Cm x DL+LL	0 85	Cb x DL+LL	1 00
F'ey DL+LL	0 psi	Cm y DL+LL	0 85	Cb y DL+LL	1 75
F'ex DL+LL+ST	124999,999 psi	Cm x DL+LL+ST	0 85	Cb x DL+LL+ST	1 00
F'ey DL+LL+ST	124999,999 psi	Cm y DL+LL+ST	0 85	Cb y DL+LL+ST	1 75

Max X-X Axis Deflection 1 072 in at 13 000 ft Max Y-Y Axis Deflection 0 000 in at 0 000 ft

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Steel Column

Description Hangman Column

Section Properties HSS8X4X1/2

Depth	8 000 in	Weight	33 08 #/ft	Values for LRFD Design	
Web Thick	0 465 in	Ixx	71 800 in4	J	61 100 in4
Width	4 000 in	Iyy	23 600 in4	Cw	24 40 in6
Flange Thick	0 465 in	Sxx	17 900 in3	Zx	23 500 in3
Area	9 74 in2	Syy	11 800 in3	Zy	14 300 in3
Rt	2 000 in	Rxx	2 710 in		0 000
		Ryy	1 560 in		

Section Type = HSS-Rectan

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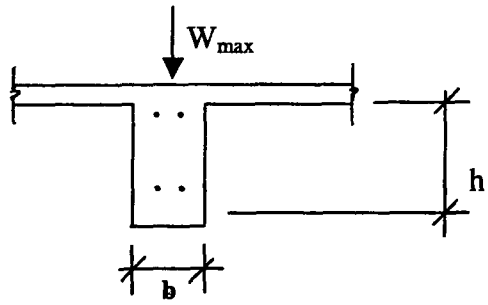
FOUNDATION DESIGN

ALLOWABLE APPLIED LOADS

Allowable Soil Bearing Pressure (ASBP) = 2000 psf (Per Design Criteria)

CONTINUOUS FOOTINGS



MARK: CF-1 (15") (24")

Ftg Width (b) = $1\frac{1}{4}$ ft Depth of Ftg (h) = 2 ft

W_{ALLOW} = ASBP (b) = 2500 plf

USE: 15 " WIDE x 24 " DEEP WITH 2 # 5 TOP & BOTTOM

MARK: CF-2

Ftg Width (b) = _____ ft Depth of Ftg (h) = _____ ft

W_{ALLOW} = ASBP (b) = _____ plf

USE _____ " WIDE x _____ " DEEP WITH _____ # _____ TOP & BOTTOM

W_{MAX} @ Gridline _____ = _____ plf USE CF- _____
W_{MAX} @ Gridline _____ = _____ plf USE CF- _____
W_{MAX} @ Gridline _____ = _____ plf USE CF- _____
W_{MAX} @ Gridline _____ = _____ plf USE CF- _____

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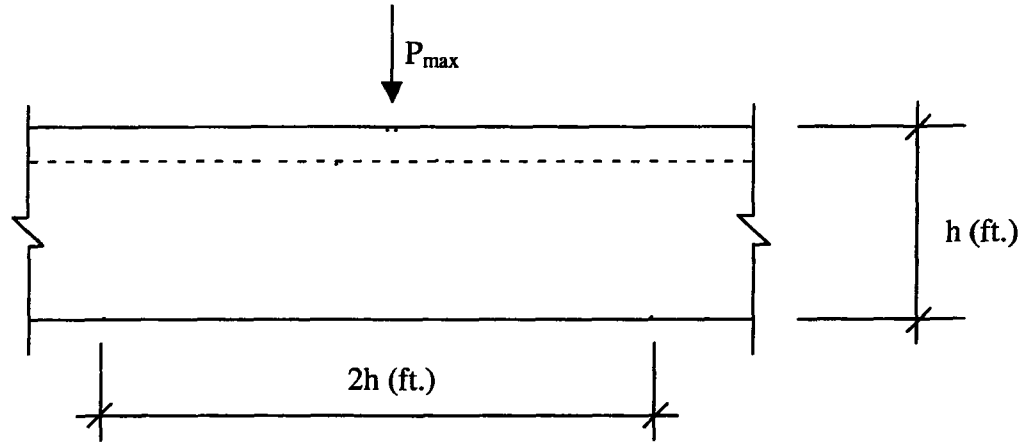
SCALE _____

CONTINUOUS FOOTINGS – MAX POST LOADS



MARK: CF-1

P_{MAX} = ASBP(b)(2h) = 10000 LBS

MARK: CF-2

P_{MAX} = ASBP(b)(2h) = _____ LBS

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SHEET NO 24 OF 29
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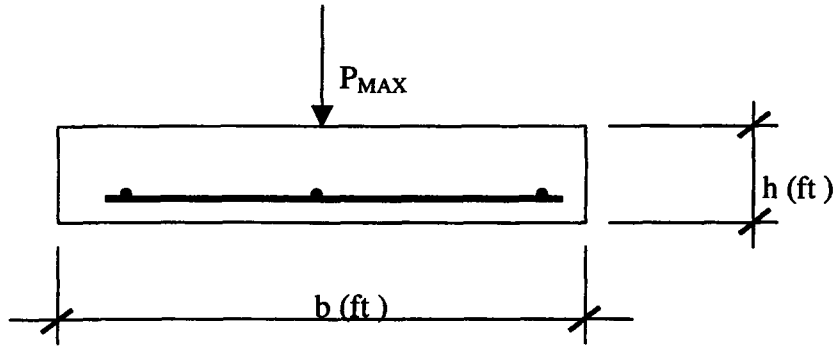
SCALE _____

SPREAD FOOTINGS – MAX. ALLOWABLE CONCENTRATED LOADS



MARK: P-1

P_{MAX} = ASBP $(b)^2$ = 8000 LBS.

USE. 24" SQUARE x 24" DEEP WITH (2) # 4 EACH WAY @ BOTTOM

MARK. P-2

P_{MAX} = ASBP $(b)^2$ = 12500 LBS

USE: 30" SQUARE x 24 " DEEP WITH (3) # 4 EACH WAY @ BOTTOM

MARK: P-3

P_{MAX} = ASBP $(b)^2$ = 18000 LBS.

USE 36" SQUARE x 24 " DEEP WITH (4) # 4 EACH WAY @ BOTTOM

MARK. P-4

P_{MAX} = ASBP $(b)^2$ = 24500 LBS.

USE 42" SQUARE x [illegible] " DEEP WITH (5) # 4 EACH WAY @ BOTTOM

MARK P-5

P_{MAX} = ASBP $(b)^2$ = 50000 LBS

USE. 45" SQUARE x [illegible] " DEEP WITH (6) # 4 EACH WAY @ BOTTOM

MARK P-6

P_{MAX} = ASBP $(b)^2$ = 50000 LBS

USE 60" SQUARE x 24" DEEP WITH (8) # 4 EACH WAY @ BOTTOM

MARK P-7

P_{MAX} = SBP $(b)^2$ = 72000 LBS

USE 72" SQUARE x [illegible] DEEP WITH (10) # 4 EACH WAY @ BOTTOM

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JOB 06087

SHEET NO 25 OF 20

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

SCHEDULES

REV JAN. 2001

SHEARWALL SCHEDULE

DESCRIPTION				SHEARWALL NAILING (11)(12)			SHEAR TRANSFER		
SYMBOL	VALUE (PLF)	MATERIAL (1)(9)(10)(13)	3x (6) FRAMING REQ'D	NAIL SIZE	B.N. & E.N.	F.N.	SILL ATTACHMENT (1)(2)(5) 5/8"ϕ A.B. SPACING (3)(4)	BOTTOM PLATE (5) NAILS & LAGS	TOP PLATE CLIPS
0	180	7/8" PORTLAND CEMENT ON WOVEN WIRE MESH	NO	NO 11 GA, 1-1/2" LONG, 7/16" HEAD	6"	6"	48" O.C.	16d @ 8" O.C.	A35 @ 24" O.C.
1	260	3/8" APA RATED SHEATHING	NO	8d	6"	12"	48" O.C.	16d @ 8" O.C.	A35 @ 16" O.C.
2	350	3/8" APA RATED SHEATHING	NO	8d	4"	12"	32" O.C.	16d @ 6" O.C.	A35 @ 12" O.C.
3	550	3/8" STRUCTURAL I RATED SHEATHING	YES	8d	3"	12"	24" O.C.	3/8"ϕ X 6" LAGS @ 12" O.C. (STAGGERED TO 4x BLK'G)	A35 @ 8" O.C.
4	730	3/8" STRUCTURAL I RATED SHEATHING	YES	8d	2"	12"	24" O.C.	3/8"ϕ X 6" LAGS @ 8" O.C. (STAGGERED TO 4x BLK'G)	LTP4 @ 12" O.C.
5	870	15/32" STRUCTURAL I RATED SHEATHING	YES	10d	2"	12"	16" O.C.	3/8"ϕ X 6" LAGS @ 8" O.C. (STAGGERED TO 4x BLK'G)	LTP4 @ 8" O.C.
6	1280	15/32" STRUCTURAL I RATED SHEATHING (APPLIED TO BOTH SIDES OF WALL) (8)	YES	8d	3"	12"	12" O.C.	3/8"ϕ X 6" LAGS @ 6" O.C. (STAGGERED TO 4x BLK'G)	LTP4 @ 6" O.C.

SHEARWALL SCHEDULE FOOTNOTES

1. ANCHOR BOLTS MUST BE EMBEDDED 7" MINIMUM INTO NEW CONCRETE, UNLESS NOTED OTHERWISE. WHERE SHEARWALLS ARE TO BE ATTACHED TO EXISTING CONCRETE, 5/8"ϕ THREADED ROD ANCHORS SHALL BE EPOXIED WITH 5" MINIMUM EMBEDMENT INTO THE EXISTING FOOTINGS AT THE SPACING INDICATED IN ABOVE SCHEDULE. USE SIMPSON "SET" EPOXY, ICBO "ER-5273". (SPECIAL INSPECTION REQUIRED.)
2. SILL PLATES TO BE ATTACHED USING A MINIMUM OF (2) ANCHOR BOLTS PER PIECE WITH ANCHOR BOLTS LOCATED 12" MAXIMUM FROM EACH END
3. ANCHOR BOLT HOLES TO BE DRILLED 1/32" MAXIMUM OVERSIZED
4. FOUNDATION ANCHOR BOLTS IN ALL SHEARWALLS SHALL HAVE SIMPSON "BPS5/8" PLATE WASHERS UNDER EACH NUT. THE NUTS SHALL BE TIGHTENED JUST PRIOR TO COVERING WALL FRAMING.
5. USE DOUGLAS FIR NO. 2 PRESSURE TREATED SILL PLATES. ENGINEER TO BE NOTIFIED FOR RE-DESIGN IF OTHER SPECIES OF SILL PLATES ARE USED OR ARE PART OF THE EXISTING BUILDING.
6. WHERE NOTED, FRAMING AT FOUNDATION SILL PLATES, AND ALL FRAMING MEMBERS RECEIVING EDGE NAILING FROM ABUTTING PANELS, SHALL BE 3x NOMINAL OR THICKER. ALL SILL PLATE AND SHEATHING JOINT NAILING SHALL BE STAGGERED
7. SHEAR PANELS SHALL BE APPLIED DIRECTLY TO STUD FRAMING AT 16" ON CENTER MAXIMUM.
8. WHERE SHEATHING PANELS ARE APPLIED ON BOTH FACES OF THE SHEARWALL, SHEATHING PANEL JOINTS SHALL OCCUR AT 3x NOMINAL OR THICKER FRAMING MEMBERS. PANEL JOINTS ON EACH SIDE OF WALL SHALL BE STAGGERED
9. ALL WOOD SHEATHING PANEL EDGES SHALL BE BLOCKED WITH MINIMUM 2x BLOCKING, UNLESS NOTED OTHERWISE.
10. SHEARWALLS WITH MORE THAN ONE VERTICAL PANEL IN HEIGHT SHALL HAVE EITHER VERTICAL OR HORIZONTAL STAGGERED SPLICED JOINTS.
11. ONLY COMMON NAILS ARE TO BE USED FOR ALL SHEATHING ATTACHMENT. NAIL GUNS USING "CLIPPED HEAD" OR "SINKER" NAILS ARE NOT ACCEPTABLE.
12. PROVIDE 3/8" MINIMUM EDGE DISTANCES FOR ALL SHEATHING AND FRAMING MEMBER EDGE NAILING.
13. STUCCO AND/OR EXTERIOR VENEER OVER A WOOD SHEATHING SHEARWALL SHALL BE WATERPROOFED WITH A MINIMUM OF (2) LAYERS OF 15 lb. FELT PAPER.

MIKE SURPRENANT & ASSOCIATES
Consulting Structural Engineers

JOB 06087
SHEET NO 26 OF 29
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JOB 0628
SHEET NO 27 OF 29
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SCALE _____

HOLD-DOWN SCHEDULE

A	4x POST w/ MSTC40 FLR-To-FLR HOLD-DOWN
B	4x POST w/ MSTC52 FLR-To-FLR HOLD-DOWN
C	4x POST w/ MSTC66 FLR-To-FLR HOLD-DOWN
D	4x POST w/ MSTC78 FLR-To-FLR HOLD-DOWN
E	4x POST w/ CMST14 FLR-To-FLR HOLD-DOWN (34" END LENGTH & (33) 16d TO EA POST)
F	4x POST w/ CMST12 FLR-To-FLR HOLD-DOWN (45" END LENGTH & (43) 16d TO EA POST)
G	4x POST w/ STHD8 HOLD-DOWN
H	4x POST w/ STHD10 HOLD-DOWN
J	4x POST w/ STHD14 HOLD-DOWN
K	4x POST w/ PHD2 ON SSTB16 A B
L	4x POST w/ PHD5 ON SSTB24 A B
M	4x POST w/ PHD6 ON SSTB28 A B
N	4x POST w/ HDQ8 ON SSTB28 A B
P	4x POST w/ HHDQ11 PER DETAIL _/SD-_
R	4x POST w/ HHDQ14 PER DETAIL _/SD-_
S	_____

NOTES

1) HOLD DOWN ANCHORS MUST BE TIED IN PLACE PRIOR TO FOUNDATION INSPECTION

2) DEEPEN FOOTINGS TO PROVIDE 3" MIN CONCRETE COVER WHERE HOLD DOWN ANCHORS ARE LONGER THAN THE FTG DEPTH

3) USE (RJ) OPTION ON STHD HOLD-DOWNS FOR RAISED WOOD SUB-FLOOR CONDITION

REV APR 2005

MIKE SURPRENANT
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SHEET NO 28 OF 29
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SIMPSON STRONGWALL

REV SEP 2002

A SW16x7-4HD	G SW22x8-4	N SW18x9	V SW48x10
B SW16x7-6HD	H SW22x8-6	P SW24x9	W SW24x12x6
C SW16x8-4HD	J SW18x8	R SW32x9	X SW32x12x6
D SW16x8-6HD	K SW24x8	S SW48x9	Y SW48x12x6
E SW22x7-4	L SW32x8	T SW24x10	Z
F SW22x7-6	M SW48x8	U SW32x10	

SIMPSON STRONGWALL FOOTNOTES- (APPLY TO ALL)

1. ICBO # PFC-5485
2. FOR SINGLE POUR APPLICATIONS, USE SSTB28 HOLDOWN ANCHOR BOLTS AND 5/8" x 12" (MIN.) MUDSILL ANCHORS
3. FOR TWO-POUR APPLICATIONS, USE SSTB34 HOLDOWN ANCHOR BOLTS AND 5/8" x 16" (MIN.) MUDSILL ANCHORS
4. PLACE ALL ANCHORS USING A STRONGWALL TEMPLATE APPROPRIATE FOR THE APPLICATION AND LENGTH OF WALL.
   FOR EXTERIOR APPLICATIONS, USE 'SWT' TYPE TEMPLATES
   FOR INTERIOR APPLICATIONS, USE 'SWTI' TYPE TEMPLATES
   FOR PANEL FORM APPLICATIONS, USE 'SWTPF' TYPE TEMPLATES
5. USE ALL PROVIDED HARDWARE FOR ANCHORAGE TO FOUNDATION.
6. USE PROVIDED SCREWS AND SHIM (IF PROVIDED) FOR CONNECTION TO DBL. TOP PLATE.
7. FOR GARAGE PORTALS, CONNECT 4X12 (MIN.) HEADER AT TOP OF WALL WITH PROVIDED SCREWS, PROVIDED 'MST' STRAP WITH (10) 10d COMMONS, AND PANEL EXTENSION WITH 10d COMMONS @ 3" o/c. (VERT.) & 4" o/c. (HORIZ.)
8. NO HOLES, NOTCHES, CUTS, OR OTHER MODIFICATIONS SHALL BE MADE TO THE STRONGWALL IN ANY CASE EXCEPT AS PERMITTED BY SIMPSON STRONG-TIE, INC AND ICBO REPORT
9. -RF DENOTES RAISED FLOOR OPTION OF STRONGWALL. PLEASE MAKE NOTE OF THIS WHEN ORDERING MATERIALS ALL -RF MODEL STRONGWALLS SHALL USE A SIMPSON 'TUD 7/8-1' (NOT SUPPLIED) AT EACH HOLDOWN ANCHOR.

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SPREAD FOOTING SCHEDULE

SYMBOL	SIZE AND REINFORCEMENT (f'c=2500 psi & fy=60ksi)
P-1	24" SQUARE X 24" DEEP W/ (2) # 4 EACH WAY
P-2	30" SQUARE X 24" DEEP W/ (3) # 4 EACH WAY
P-3	36" SQUARE X 24" DEEP W/ (4) # 4 EACH WAY
P-4	42" SQUARE X 24" DEEP W/ (5) # 4 EACH WAY
P-5	48" SQUARE X 24" DEEP W/ (6) # 4 EACH WAY
P-6	60' SQUARE X 24" DEEP (18) #4 EACH WAY
P-7	72' SQUARE X 24" DEEP (10) #4 EACH WAY