DUNN SAVOIE INC.
STRUCTURAL ENGINEERS

988 S. CLEVELAND ST.
OCEANSIDE, CA 92054
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STRUCTURAL CALCULATIONS

FOR

VISTA PARK VILLAS PATIO COVER

OCEANSIDE, CA.

(DSI PROJECT NO. 12-104.00)

(CATSPAW CONSTRUCTION)

JANUARY 30, 2012

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Dunn Savoie Inc.
Structural Engineers
908 S. Cleveland St.
Oceanside, CA 92054
Tel: (760) 966-6355
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JOB VISTA PARK VILLAS
SHEET NO. OF
CALCULATED BY SDA DATE 01/30/12
CHECKED BY DATE
SCALE

DESIGN CRITERIA

CODE:

2009 International Building Code (IBC)
2010 California Building Code (CBC)

SEISMIC:

Building Occupancy Category	IV
Seismic Design Category:	D
I_E =	1.00
Fa =	1.000
Fv =	1.500
S_{DS} =	0.779
S_{D1} =	0.443

WIND: Basic Wind Speed = 85 MPH (3-sec Gust)
Exposure = C

FOUNDATION CRITERIA

FDN DESIGN BASED ON CLASS 5 MATERIAL PER IBC 2009 TABLE 1804.2

a. ALLOW SOIL BEARING PRESSURE	=	1500
b. LATERAL SLIDING RESISTANCE	=	130 PSF
c. PASSIVE PRESSURE	=	100 PCF
d. SHORT TERM INCREASE	=	1.33

Design Loads

Dunn Savole Inc.
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JOB VISTA PARK VILLAS
SHEET NO.
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DESIGN LOADS

0:12

ROOF		x slope factor
DEAD LOADS	(psf)	1
2X2 Trellis cover	2.8	2.8
Joists @ 24" o.c.	1.1	1.1
Misc.	1.1	
Σ Dead Load	**5.0**	
Live Load	**20.0**	

Design Loads

Conterminous 48 States
2005 ASCE 7 Standard
Latitude = 33.1618
Longitude = -117.267004
Spectral Response Accelerations Ss and S1
Ss and S1 = Mapped Spectral Acceleration Values
Site Class B - Fa = 1.0 ,Fv = 1.0
Data are based on a 0.01 deg grid spacing

Period (sec)	Sa (g)
0.2	1.104 (Ss, Site Class B)
1.0	0.421 (S1, Site Class B)

Conterminous 48 States
2005 ASCE 7 Standard
Latitude = 33.1618
Longitude = -117.267004
Spectral Response Accelerations SMs and SM1
SMs = Fa x Ss and SM1 = Fv x S1
Site Class D - Fa = 1.058 ,Fv = 1.579

Period (sec)	Sa (g)
0.2	1.168 (SMs, Site Class D)
1.0	0.664 (SM1, Site Class D)

Conterminous 48 States
2005 ASCE 7 Standard
Latitude = 33.1618
Longitude = -117.267004
Design Spectral Response Accelerations SDs and SD1
SDs = 2/3 x SMs and SD1 = 2/3 x SM1
Site Class D - Fa = 1.058 ,Fv = 1.579

Period (sec)	Sa (g)
0.2	0.779 (SDs, Site Class D)
1.0	0.443 (SD1, " " ")

Site Latitude: **33.1618000** Site Longitude: **-117.2670040**

Importance Factor	I	**1**	Tables 1-1 & 11.5-1
Response Factor	R	**1.5**	Table 12.2-1
Short Period Response Acceleration:	S_S	**1.104**	Section 11.4.1
1 Second Response Acceleration:	S_1	**0.421**	Section 11.4.1
Seismic Design Category		**D**	Table 11.6-1 & 2
Site Coefficient	F_a	**1.058**	Table 11.4-1
Site Coefficient	F_v	**1.579**	Table 11.4-2
Max Considered Short Earthquake	$S_{MS} = F_a S_S$	**1.168**	Equation 11.4-1
Max Considered 1 second Earthquake	$S_{M1} = F_v S_1$	**0.664**	Equation 11.4-2
Spectral Response Acceleration	$S_{DS} = \frac{2}{3} S_{MS}$	**0.779**	Equation 11.4-3
Spectral Response Acceleration, 1s	$S_{D1} = \frac{2}{3} S_{M1}$	**0.443**	Equation 11.4-4
Period Parameter 1	C_t	**0.02**	Table 12.8-2
Period Parameter 2	x	**0.75**	Table 12.2-2
Approximate Fundamental Period (sec)	$T_a = C_t h_n^x$	**0.21**	Equation 12.8-7
Coefficient for Upper Limit	C_u	**1.4**	Table 12.8-1
Actual Building Period	n/a	n/a	Section 12.8.2
Upper Limit on Fundamental Period	$C_u T_a$	**0.294**	Section 12.8.2
Long-Building Transition Period (sec)	TL	**8**	Figure 22-15
Period (sec)	T	**0.21**	Section 12.8-2
Seismic Response Factor	$C_S = \frac{S_{DS}}{(R/I)}$	**0.519**	Equation 12.8-2
	$C_{S,MAX} = \frac{S_{D1}}{T(R/I)}$	**1.406**	Equation 12.8-3
	$C_{S,MAX} = \frac{S_{D1}T_L}{T^2(R/I)}$	**T <= TL**	Equation 12.8-4
	$C_{S,MIN} = \frac{0.5\, S_1}{(R/I)}$	**0.14**	Equation 12.8-6
	$C_{S,MIN}$	**0.01**	Equation 12.8-5

V = 1.0E = 0.519 *W

ASD → V = 0.7E = 0.363 *W

Title Block Line 1
You can changes this area using the "Settings" menu item and then using the "Printing & Title Block" selection.
Title Block Line 6

Title : VISTA PARA VILLAS Job #
Engineer:
Project Desc.:
Project Notes :

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Wood Beam

ENERCALC, INC. 1983-2011, Build:6.11.12.15, Ver:6.11.12.15

Lic. # : KW-06002936 Licensee : DUNN SAVOIE INC, STRUCTURAL ENGINEERS

Description : TRELLIS JOIST

Material Properties

Calculations per NDS 2005, IBC 2009, CBC 2010, ASCE 7-05

Analysis Method : Allowable Stress Design
Load Combination 2006 IBC & ASCE 7-05

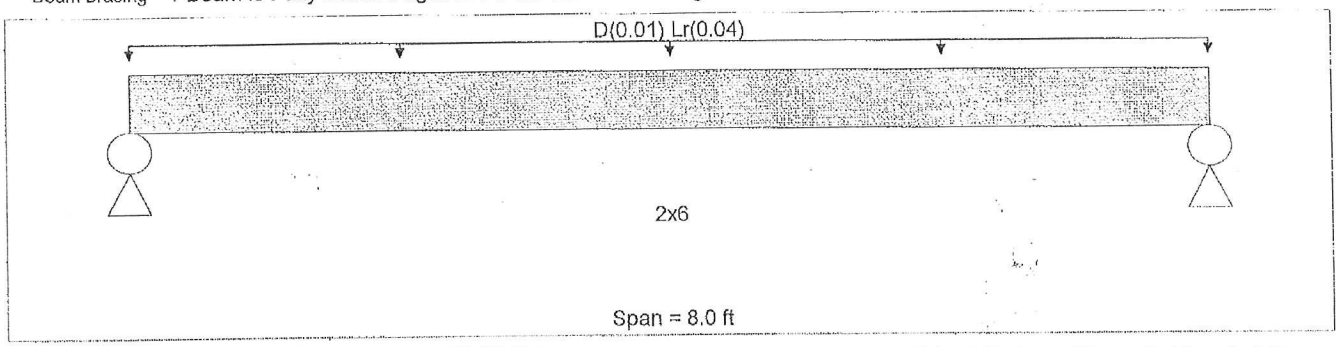
Wood Species : Douglas Fir - Larch (North)
Wood Grade : No. 1/No. 2

Fb - Tension	850.0 psi
Fb - Compr	850.0 psi
Fc - Prll	1,400.0 psi
Fc - Perp	625.0 psi
Fv	180.0 psi
Ft	500.0 psi

E : Modulus of Elasticity

Ebend- xx	1,600.0 ksi
Eminbend - xx	580.0 ksi
Density	31.570 pcf

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



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.010, Lr = 0.040 , Tributary Width = 1.0 ft, (TRELLIS)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.574 : 1	Maximum Shear Stress Ratio	=	0.180 : 1
Section used for this span		2x6	Section used for this span		2x6
fb : Actual	=	634.71 psi	fv : Actual	=	32.36 psi
FB : Allowable	=	1,105.00 psi	Fv : Allowable	=	180.00 psi
Load Combination		+D+Lr+H	Load Combination		+D+Lr+H
Location of maximum on span	=	4.000 ft	Location of maximum on span	=	7.560 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward L+Lr+S Deflection	0.112 in	Ratio =	859
Max Upward L+Lr+S Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.140 in	Ratio =	687
Max Upward Total Deflection	0.000 in	Ratio =	0 <180

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_r	C_m	C_t	C_L	Moment Values M	fb	Fb	Shear Values V	fv	Fv
+D												0.00	0.00	0.00	0.00
Length = 8.0 ft	1	0.115	0.036	1.000	1.300	1.000	1.000	1.000	1.000	0.08	126.94	1105.00	0.04	6.47	180.00
+D+Lr+H					1.300	1.000	1.000	1.000	1.000			0.00	0.00	0.00	0.00
Length = 8.0 ft	1	0.574	0.180	1.000	1.300	1.000	1.000	1.000	1.000	0.40	634.71	1105.00	0.18	32.36	180.00
+D+0.750Lr+0.750L+H					1.300	1.000	1.000	1.000	1.000			0.00	0.00	0.00	0.00
Length = 8.0 ft	1	0.460	0.144	1.000	1.300	1.000	1.000	1.000	1.000	0.32	507.77	1105.00	0.14	25.89	180.00
+D+0.750Lr+0.750L+0.750W+H					1.300	1.000	1.000	1.000	1.000			0.00	0.00	0.00	0.00
Length = 8.0 ft	1	0.460	0.144	1.000	1.300	1.000	1.000	1.000	1.000	0.32	507.77	1105.00	0.14	25.89	180.00
+D+0.750Lr+0.750L+0.5250E+H					1.300	1.000	1.000	1.000	1.000			0.00	0.00	0.00	0.00
Length = 8.0 ft	1	0.460	0.144	1.000	1.300	1.000	1.000	1.000	1.000	0.32	507.77	1105.00	0.14	25.89	180.00

Overall Maximum Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D+Lr	1	0.1396	4.040		0.0000	0.000

Title Block Line 1
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Title Block" selection.
Title Block Line 6

Title :
Engineer:
Project Desc.:

Project Notes :

Job #

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Wood Beam

ENERCALC, INC. 1983-2011, Build:6.11.12.15, Ver:6.11.12.15

File # : KW-06002958

Licensee : DUNN SAVOIE INC. STRUCTURAL ENGINEERS

Description : TRELLIS JOIST

Vertical Reactions - Unfactored

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.200	0.200
D Only	0.040	0.040
Lr Only	0.160	0.160
D+Lr	0.200	0.200

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Title Block Line 6

Title :
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Project Desc.:
Project Notes :

Job #

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Wood Beam

ENERCALC, INC. 1983-2011, Build:6.11.12.15, Ver:6.11.12.15

Lic. # : KW-06002938 — Licensee : DUNN SAVOIE INC. STRUCTURAL ENGINEERS

Description : TRELLIS BEAM

Material Properties

Calculations per NDS 2005, IBC 2009, CBC 2010, ASCE 7-05

Analysis Method : Allowable Stress Design
Load Combination 2009 IBC & ASCE 7-05

Wood Species : Douglas Fir - Larch (North)
Wood Grade : No. 1/No. 2

Fb - Tension	850.0 psi
Fb - Compr	850.0 psi
Fc - Prll	1,400.0 psi
Fc - Perp	625.0 psi
Fv	180.0 psi
Ft	500.0 psi

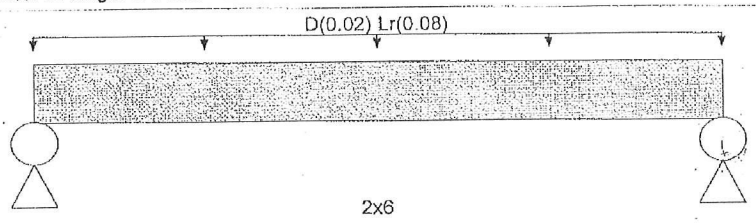
E : Modulus of Elasticity

Ebend- xx	1,600.0 ksi
Eminbend - xx	580.0 ksi
Density	31.570 pcf

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

Unbraced Lengths

First Brace starts at ft from Left-Most support
Regular spacing of lateral supports on length of beam = 2.0 ft



Span = 5.0 ft

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loads
Uniform Load : D = 0.020, Lr = 0.080 , Tributary Width = 1.0 ft, (TRELLIS)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.459 : 1	Maximum Shear Stress Ratio	=	0.211 : 1
Section used for this span		2x6	Section used for this span		2x6
fb : Actual	=	504.84 psi	fv : Actual	=	37.95 psi
FB : Allowable	=	1,099.43 psi	Fv : Allowable	=	180.00 psi
Load Combination		+D+Lr+H	Load Combination		+D+Lr+H
Location of maximum on span	=	2.500 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward L+Lr+S Deflection	0.034 in	Ratio =	1760
Max Upward L+Lr+S Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.043 in	Ratio =	1383
Max Upward Total Deflection	0.000 in	Ratio =	0 <180

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	C_d	$C_{F/V}$	C_r	C_m	C_t	C_L	Moment Values M	Moment Values fb	Moment Values Fb	Shear Values V	Shear Values fv	Shear Values Fv
+D					1.300	1.000	1.000	1.000	0.995			0.00	0.00	0.00	0.00
Length = 2.0 ft	1	0.094	0.045	1.000	1.300	1.000	1.000	1.000	0.995	0.07	103.82	1099.43	0.04	8.13	180.00
Length = 2.0 ft	1	0.098	0.045	1.000	1.300	1.000	1.000	1.000	0.995	0.07	108.14	1099.43	0.03	8.13	180.00
Length = 1.0 ft	1	0.063	0.045	1.000	1.300	1.000	1.000	1.000	0.998	0.04	69.21	1102.34	0.04	8.13	180.00
+D+Lr+H					1.300	1.000	1.000	1.000	0.998			0.00	0.00	0.00	0.00
Length = 2.0 ft	1	0.441	0.211	1.000	1.300	1.000	1.000	1.000	0.995	0.31	484.64	1099.43	0.21	37.95	180.00
Length = 2.0 ft	1	0.459	0.211	1.000	1.300	1.000	1.000	1.000	0.995	0.32	504.84	1099.43	0.15	37.95	180.00
Length = 1.0 ft	1	0.293	0.211	1.000	1.300	1.000	1.000	1.000	0.998	0.20	323.10	1102.34	0.21	37.95	180.00
+D+0.750Lr+0.750L+H					1.300	1.000	1.000	1.000	0.998			0.00	0.00	0.00	0.00
Length = 2.0 ft	1	0.354	0.169	1.000	1.300	1.000	1.000	1.000	0.995	0.25	389.44	1099.43	0.17	30.49	180.00
Length = 2.0 ft	1	0.369	0.169	1.000	1.300	1.000	1.000	1.000	0.995	0.26	405.66	1099.43	0.12	30.49	180.00
Length = 1.0 ft	1	0.236	0.169	1.000	1.300	1.000	1.000	1.000	0.998	0.16	259.62	1102.34	0.17	30.49	180.00

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Wood Beam

Description : TRELLIS BEAM

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_r	C_m	C_t	C_L	Moment Values M	fb	Fb	Shear Values V	fv	Fv
+D+0.750Lr+0.750L+0.750W+H					1.300	1.000	1.000	1.000	0.998			0.00	0.00	0.00	0.00
Length = 2.0 ft	1	0.354	0.169	1.000	1.300	1.000	1.000	1.000	0.995	0.25	389.44	1099.43	0.17	30.49	180.00
Length = 2.0 ft	1	0.369	0.169	1.000	1.300	1.000	1.000	1.000	0.995	0.26	405.66	1099.43	0.12	30.49	180.00
Length = 1.0 ft	1	0.236	0.169	1.000	1.300	1.000	1.000	1.000	0.998	0.16	259.62	1102.34	0.17	30.49	180.00
+D+0.750Lr+0.750L+0.5250E+H					1.300	1.000	1.000	1.000	0.998			0.00	0.00	0.00	0.00
Length = 2.0 ft	1	0.354	0.169	1.000	1.300	1.000	1.000	1.000	0.995	0.25	389.44	1099.43	0.17	30.49	180.00
Length = 2.0 ft	1	0.369	0.169	1.000	1.300	1.000	1.000	1.000	0.995	0.26	405.66	1099.43	0.12	30.49	180.00
Length = 1.0 ft	1	0.236	0.169	1.000	1.300	1.000	1.000	1.000	0.998	0.16	259.62	1102.34	0.17	30.49	180.00

Overall Maximum Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D+Lr	1	0.0434	2.525		0.0000	0.000

Vertical Reactions - Unfactored

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.255	0.255
D Only	0.055	0.055
Lr Only	0.200	0.200
D+Lr	0.255	0.255

DSI STRUCTURAL ENGINEERS	Project: VISTA PARK VILLAS	Engineer:	Project #
		Date: 25-Jan	
	Subject: POSTMASTER TRELLIS POST	Checker:	Page:
		Date:	

PROPERTIES OF SECTION DESCRIBED BY NODES COORDINATES

Units: in

Nodes Coordinates		
	X	Y
1	0.000	0.000
2	-0.750	0.000
3	-0.750	1.625
4	-1.750	1.625
5	-1.750	1.745
6	-0.630	1.745
7	-0.630	0.120
8	0.630	0.120
9	0.630	1.745
10	1.750	1.745
11	1.750	1.625
12	0.750	1.625
13	0.750	0.000
14	0.000	0.000
15		
16		
17		
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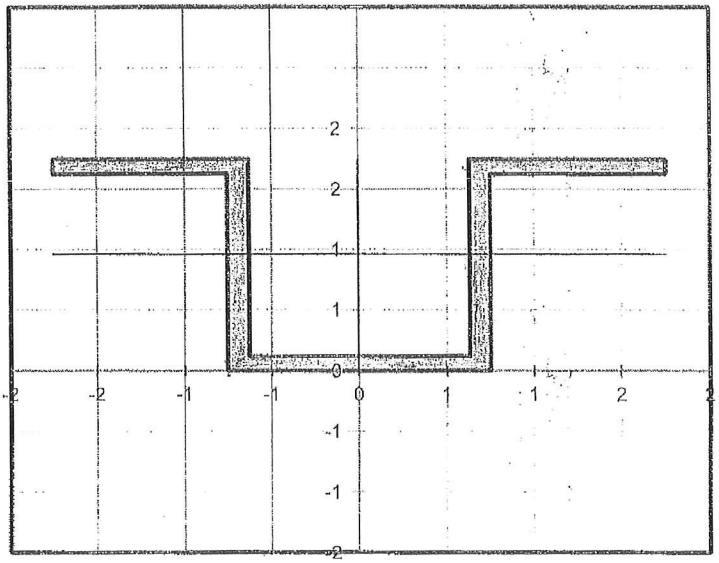
38		

Section Properties About Centroidal Axis Parallel to Original Axis			
ϕ =	0.000 deg	X-dim =	3.5 in
A =	0.81 in^2	Y-dim =	1.745 in
Xcg =	0.000 in	Sx(top) =	0.5 in^3
Ycg =	0.962 in	Sx(bot) =	0.4 in^3
Ixo =	0.4 in^4	Sy(left) =	0.4 in^3
Iyo =	0.6 in^4	Sy(right)=	0.4 in^3
Ixyo =	0.0 in^4		

Section Properties About Principal Axis			
ϕ =	0.000 deg	Sxp(top) =	0.5 in^3
Ixp =	0.4 in^4	Sxp(bot) =	0.4 in^3
Iyp =	0.6 in^4	Syp(left) =	0.4 in^3
Ixyp =	0.0 in^4	Syp(right)=	0.4 in^3
J =	1.0 in^4		



$F_y = 36 ksi$ $F_b = 0.66 F_y = 23.8 ksi$

$M = 8' \times 26 lbs. = 208 ft.lbs. = 2496 in.lbs.$

$S_{req.} = \frac{M}{F_b} = \frac{2496 \text{ in-lbs.}}{23800 lbs/in^2} = 0.105 in^3 < 0.4 in^3$ ok

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Engineer:
Project Desc.:

Project Notes :

Job #

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Pole Footing Embedded in Soil

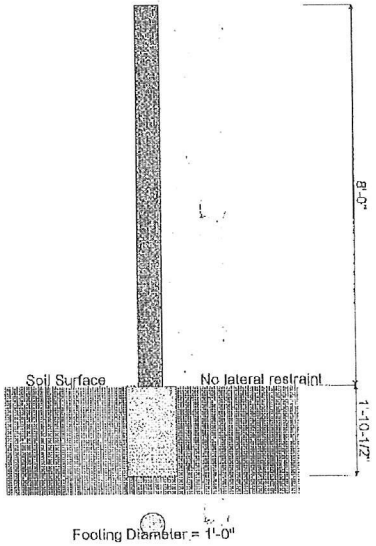
Lic. # : KW-06002438 Licensee : DUNN SAVOIE INC. STRUCTURAL ENGINEERS

Description : TRELLIS FOOTING

General Information

Calculations per IBC 2009 1807.3, CBC 2010, ASCE 7-05

Pole Footing Shape	Circular
Footing Diameter	12.0 in
Calculate Min. Depth for Allowable Pressures	
No Lateral Restraint at Ground Surface	
Allow Passive	250.0 pcf
Max Passive	1,500.0 psf



Controlling Values

Governing Load Combination : +D+0.70E+H

Lateral Load	0.01820 k
Moment	0.1456 k-ft
NO Ground Surface Restraint	
Pressures at 1/3 Depth	
Actual	**144.32** psf
Allowable	**146.54** psf
Minimum Required Depth	**1.875 ft**
Footing Base Area	0.7854 ft^2
Maximum Soil Pressure	0.6366 ksf

Assumes footing is square

Applied Loads

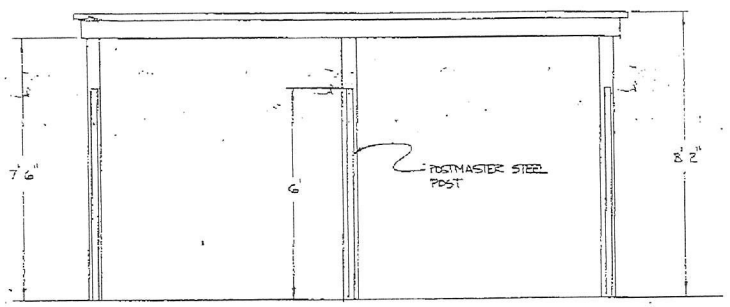
	Lateral Concentrated Load	Lateral Distributed Load	Applied Moment	Vertical Load
D : Dead Load	k	k/ft	k-ft	0.10 k
Lr : Roof Live	k	k/ft	k-ft	0.40 k
L : Live	k	k/ft	k-ft	k
S : Snow	k	k/ft	k-ft	k
W : Wind	k	k/ft	k-ft	k
E : Earthquake	0.0260 k	k/ft	k-ft	k
H : Lateral Earth	k	k/ft	k-ft	k
Load distance above ground surface	8.0 ft	TOP of Load above ground surface ft		
		BOTTOM of Load above ground surface ft		

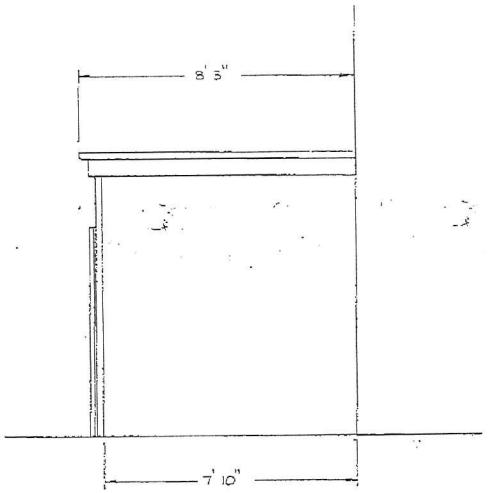
Load Combination Results

Load Combination	Forces @ Ground Surface Loads - (k)	Moments - (ft-k)	Required Depth - (ft)	Pressure at 1/3 Depth Actual - (psf)	Allow - (psf)	Soil Increase Factor
+D	0.000	0.000	0.13	0.0	0.0	1.000
+D+Lr+H	0.000	0.000	0.13	0.0	0.0	1.000
+D+0.750Lr+0.750L+H	0.000	0.000	0.13	0.0	0.0	1.000
+D+0.70E+H	0.018	0.146	1.88	144.3	146.5	1.000
+D+0.750Lr+0.750L+0.750W+H	0.000	0.000	0.13	0.0	0.0	1.000
+D+0.750Lr+0.750L+0.5250E+H	0.014	0.109	1.63	130.9	132.2	1.000
+D+0.750L+0.750S+0.5250E+H	0.014	0.109	1.63	130.9	132.2	1.000
+0.60D+0.70E+H	0.018	0.146	1.88	144.3	146.5	1.000

FRONT ELEVATION

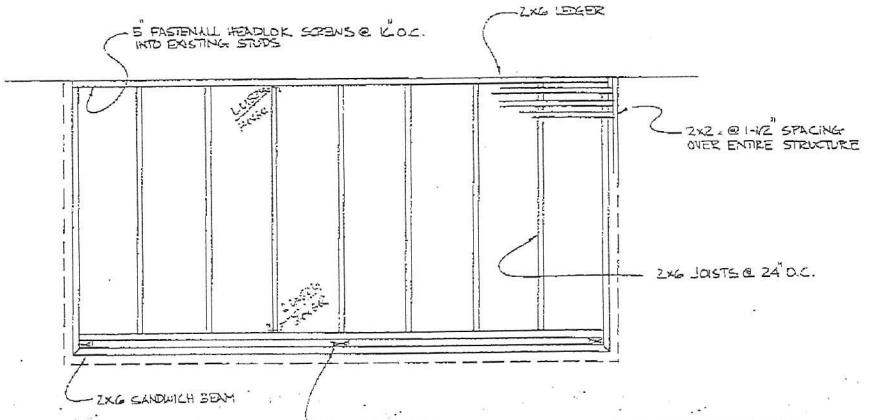
SCALE 1/2"=1'





SIDE ELEVATION

SCALE 1/2"=1



FRAMING DETAILS

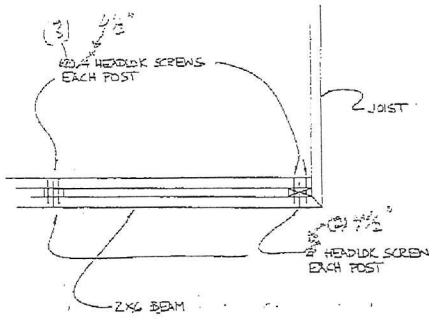
SCALE 1/2"=1'

ELEVATION / FRAMING PLAN

SCALE: 1/2"=1'	APPROVED BY:	DRAWN BY:
DATE: 20 JAN 12		REVISED

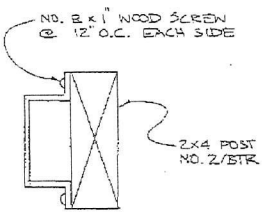
CATSPAW CONSTRUCTION 7607160595
1145 REDMONTOR VISTA CA 92084

DRAWING NUMBER



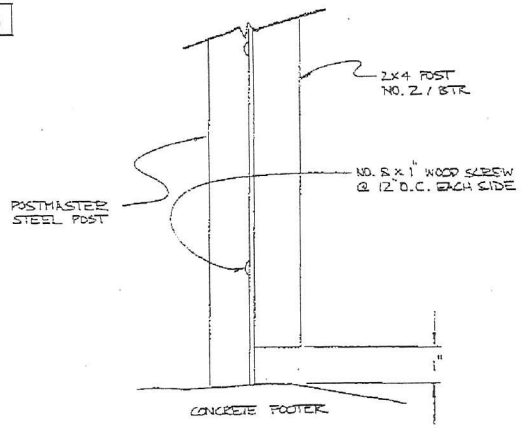
POST-BEAM CONNECTION

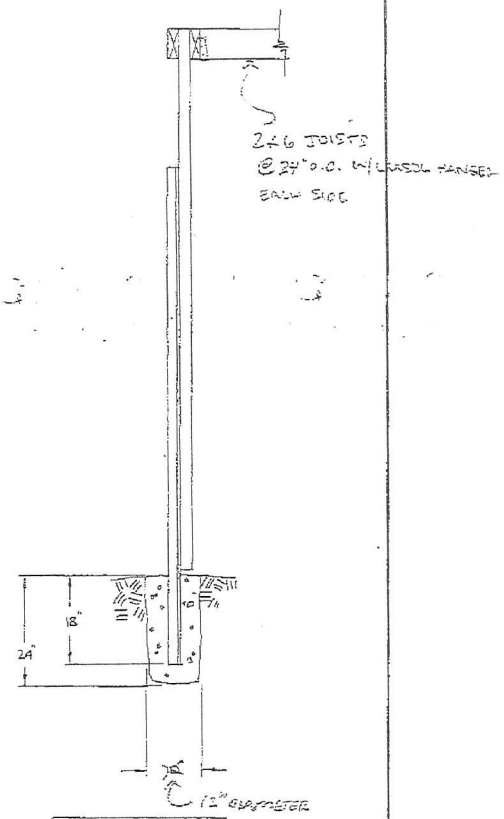
NO SCALE



WOOD-STEEL POST CONN.

NO SCALE





FOOTER DETAIL

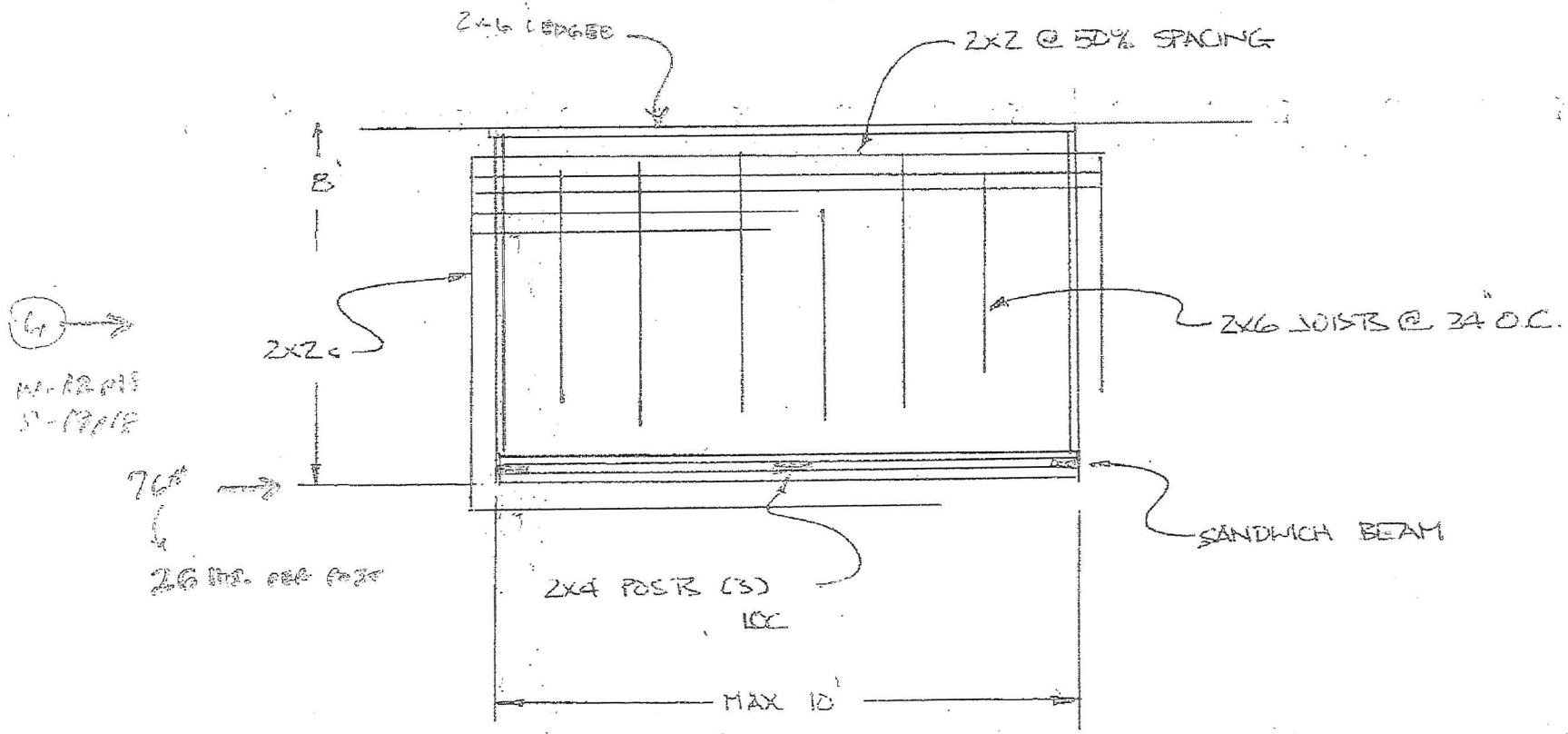
NO SCALE

DETAILS

SCALE: NONE	APPROVED BY:	DRAWN BY:
DATE: 20 JAN 12		REVISED

CATSPAW CONSTRUCTION 760 716 0535
145 BEAUMONT DR. VISTA CA. 92084

DRAWING NUMBER 2

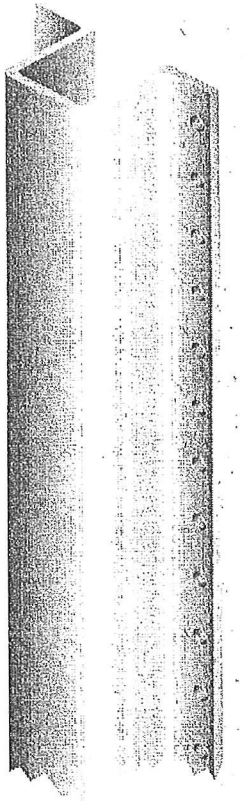

2x6 LEDGER
2x2 @ 50% SPACING
8'
2x2
2x6 JOISTS @ 24" O.C.
76"
SANDWICH BEAM
2x4 POSTS (3)
MAX 10'

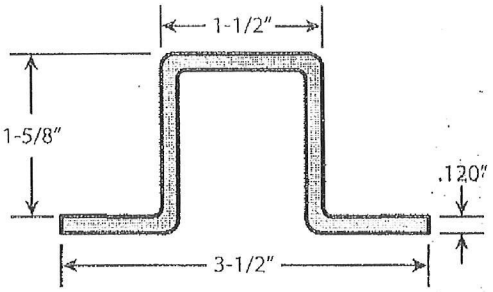
FRAMING

Technical Information

The Original!

PostMaster by Master Halco





Dimensions:	3-1/2" x 1-3/4"	88.90mm x 44.45mm
Dimensions (hole):	Dia. .200" @ 1" O.C.	Dia. 5.08mm @ 25.40mm O.C.
Thickness:	.120"	3.05mm
Weight:	2.64 lbs/ft	3.93 kg/m
Material:	Galvanized (Zinc) Coated Steel	
Coating Designation:	G90	

US Patents 6,173,945 and 6,530,561

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