



HOMSI & ASSOCIATES

structural engineers

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CALCULATIONS

Valley of the Sun Jewish Community Center
12701 N. Scottsdale Rd.
Scottsdale, AZ 85254

HASE Job No.: 08128
Client: Shade N' Net

<u>ITEM</u>		<u>SHEET</u>
Design Criteria		D1 – D2
Frame Analysis		A1 – A11
Cable Specs		CB1 – CB2
Foundations		F1 – F1





DESIGN CRITERIA

Project Name: Valley of the Sun Jewish Community Center
Job Number: 08128

Code

Compliance with the 2006 International Building Code with City of Scottsdale Amendments.

Loading

Wind Loads

Open Structures:

Exposure C, Basic wind speed 90 mph, Category II & per ASCE 7-05 section 6.5.13

$$P = q_h * G * C_N$$

$$q_h = 0.00256 * K_z * K_{zt} * K_d * V^2 * I \quad \text{EQ. 6-15 (Velocity Pressure)}$$

$$K_z = 0.85 \quad (0 - 15')$$

$$K_{zt} = 1.0 \quad \text{Sec. 6.5.7.2 (Topographic Factor)}$$

$$K_d = 1.0 \quad \text{Sec. 6.5.4.4 (Directionality Factor)}$$

$$V = 90 \text{ MPH} \quad \text{Fig. 6-1}$$

$$I = 0.87$$

$$G = 0.85 \quad \text{Sec. 6.5.8}$$

$$q_h = 0.00256 * 0.85 * 1.0 * 1.0 * 90^2 * 0.87 = 15.43 \text{ (lb/ft}^2\text{)}$$

$$P = 15.43 * 0.85 * 1.1 = 16.0 \text{ psf} \quad (\text{case A windward})$$

$$P = 15.43 * 0.85 * -1.1 = -12.0 \text{ psf} \quad (\text{case B leeward})$$

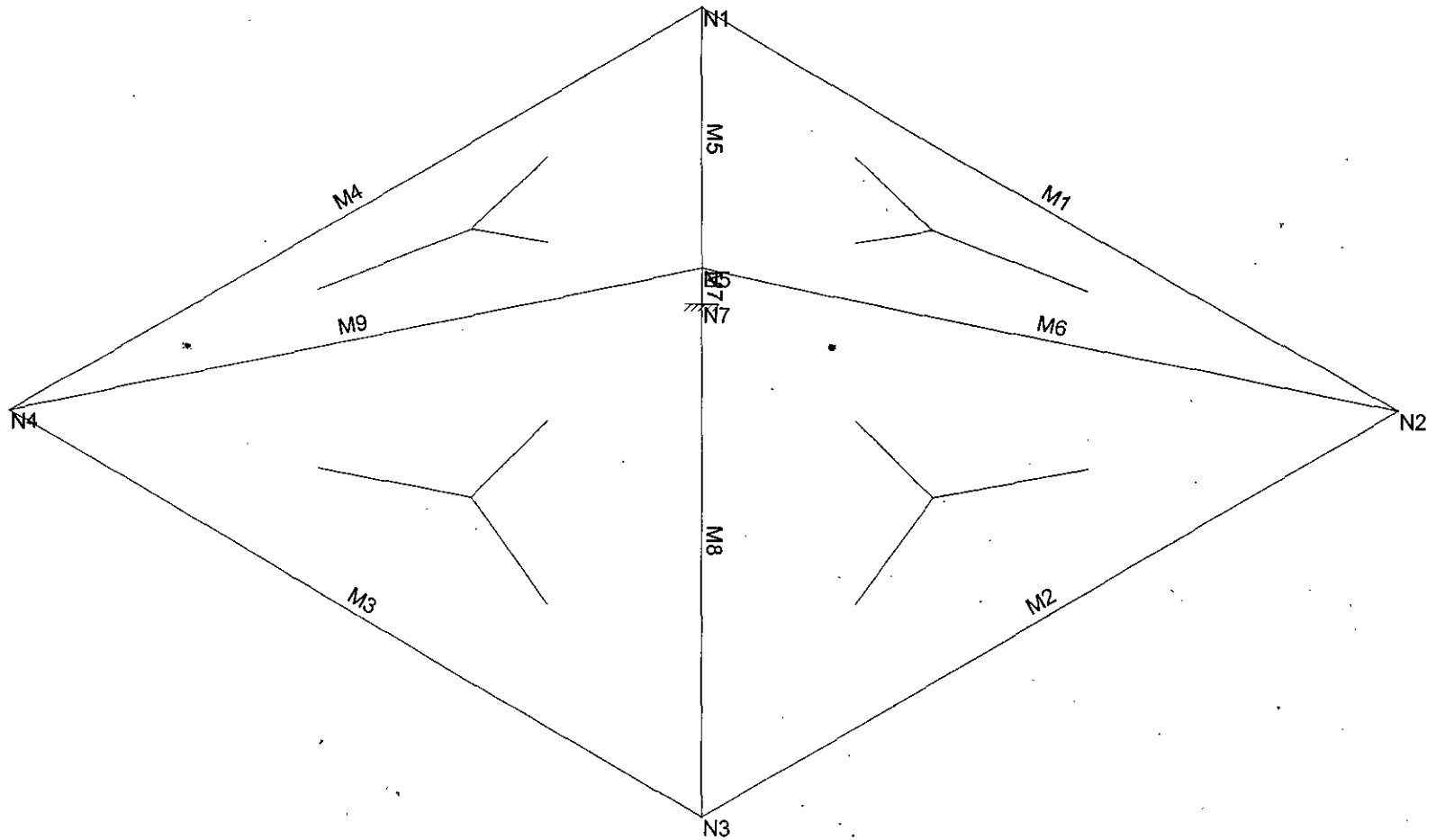
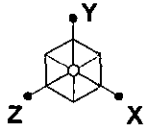


Soil Loads

Soil Weight 110 pcf
Soil Equivalent Fluid Pressure (Lateral) 30 pcf

Material Properties

Concrete: (145 pcf)		fc' psi
Foundations, slabs		2500
Steel: (490 pcf)		Fy psi
Rebar:	ASTM A615, Grade 60	60,000
Bolts and Anchors:	A307 or A36	36,000
Structural	A36	36,000
High Strength Bolts	A325	81,000 (Fu = 105 ksi)
	A490	120,000 (Fu = 150 ksi)
Soil:		Allowable bearing
Foundation Pressure		psf
(1'-6" Minimum foundation bearing below grade)		
City of Scottsdale w/o Soils Report		1500
Lateral Bearing (Passive Pressure)		150 psf/ft
Coefficient of Friction (Applied to Dead Load)		0.35
Active Fluid Pressure (Restrained)		60pcf



Solution: Envelope

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08128

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July 3, 2008

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17

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July 3, 2008

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Global

Steel Code	AISC 9th Edition ASD
Allowable Stress Increase Factor (ASIF)	1.000
Include Shear Deformation	Yes
Include Warping	Yes
No. of Sections for Member Calcs	3
Redesign Sections	Yes
P-Delta Analysis Tolerance	0.50%
Vertical Axis	Y

Joint Coordinates

Joint Label	X Coordinate (Ft)	Y Coordinate (Ft)	Z Coordinate (Ft)	Joint Temperature (F)
N1	0	0	0	0
N2	15	0	0	0
N3	15	0	15	0
N4	0	0	15	0
N5	7.5	2.67	7.5	0
N7	7.5	2	7.5	0

Boundary Conditions

Joint Label	X Translation (K/in)	Y Translation (K/in)	Z Translation (K/in)	MX Rotation (K-ft/rad)	MY Rotation (K-ft/rad)	MZ Rotation (K-ft/rad)
N7	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Materials (General)

Material Label	Young's Modulus (Ksi)	Shear Modulus (Ksi)	Poisson's Ratio	Thermal Coef. (per 10^5 F)	Weight Density (K/ft^3)	Yield Stress (Ksi)
STL	29000	11154	.3	.65	.49	50
FABRIC	10	100	.3	.1	.036	1

Basic Load Case Data

BLC No.	Basic Load Case Description	Category Code	Category Description	Nodal	Load Type Totals Point	Distributed	Surface
1	LIVE LOAD	None					4
2	SIDE WIND	None					1
3	DEAD LOAD	None					4
4	UPLIFT	None					4

Load Combinations

Num	Description	Env	WS	PD	SRSS	CD	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	Total Load	y				1	1	1	3	1				
2	wind + dead	y				1	2	1	3	1				
3	UPLIFT+SIDE	y				1	2	1	3	1	4	1		

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July 3, 2008

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Plate Surface Loads, Category : None, BLC 1 : LIVE LOAD

Plate Label	Direction	Magnitude (Ksf)
P1	Y	-.005
P2	Y	-.005
P3	Y	-.005
P4	Y	-.005

Plate Surface Loads, Category : None, BLC 2 : SIDE WIND

Plate Label	Direction	Magnitude (Ksf)
P1	Z	.015

Plate Surface Loads, Category : None, BLC 3 : DEAD LOAD

Plate Label	Direction	Magnitude (Ksf)
P1	Y	-.003
P2	Y	-.003
P3	Y	-.003
P4	Y	-.003

Plate Surface Loads, Category : None, BLC 4 : UPLIFT

Plate Label	Direction	Magnitude (Ksf)
P1	Y	.012
P2	Y	.012
P3	Y	.012
P4	Y	.012

Plate/Shell Elements

Plate Label	A Node	B Node	C Node	D Node	Material Set	Thickness (In)	Stress Location		Inactive?
P1	N1	N2	N5		FABRIC	1	'R'	'S'	
P2	N2	N3	N5		FABRIC	1	0	0	
P3	N3	N4	N5		FABRIC	1	0	0	
P4	N1	N4	N5		FABRIC	1	0	0	

Member Data

Member Label	I Node	J Node	K Node	X-Axis Rotate (degrees)	Section Set	End Releases		End Offsets		Inactive Code	Member Length (Ft)
M1	N1	N2			SEC1	I-End xyz xyz	J-End xyz xyz	I-End (In)	J-End (In)		15
M2	N2	N3			SEC1						15
M3	N3	N4			SEC1						15
M4	N1	N4			SEC1						15
M5	N1	N5			SEC1						10.937
M6	N2	N5			SEC1						10.937
M7	N5	N7			SEC1						.67
M8	N3	N5			SEC1						10.937
M9	N4	N5			SEC1						10.937

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Sections

Section Label	Database Shape	Material Label	Area (In^2)	SA(yy)	SA(zz)	I y-y (In^4)	I z-z (In^4)	J (Torsion) (In^4)	T/C Only
SEC1	PIPE 2.5	STL	1.704	1.2	1.2	1.53	1.53	3.059	

Envelope Reactions

Joint Label		X Force (K)	Lc	Y Force (K)	Lc	Z Force (K)	Lc	X Moment (K-ft)	Lc	Y Moment (K-ft)	Lc	Z Moment (K-ft)	Lc
N7	max	0.000	1	3.233	1	0.000	1	0.994	3	0	1	0	2
	min	0.000	2	-0.828	3	-0.896	3	0	1	0	3	0.000	1
Reaction Totals :	max	0.000	1	3.233	1	0.000	1						
	min	0.000	2	-0.828	3	-0.896	3						

Envelope Member Section Forces

Member Label	Section		Axial (K)	Lc	Shear y-y (K)	Lc	Shear z-z (K)	Lc	Torque (K-ft)	Lc	Moment y-y (K-ft)	Lc	Moment z-z (K-ft)	Lc
M1	1	max	1.417	1	0.042	1	0.002	2	0.003	2	0.005	3	0.181	2
		min	-0.551	3	0.041	2	0	1	0	1	-0.002	1	0.105	1
	2	max	1.417	1	-0.001	1	0.002	2	0.003	2	0.019	2	0.033	2
		min	-0.551	3	-0.002	2	0	1	0	1	0.002	1	-0.051	1
	3	max	1.417	1	-0.044	1	0.002	2	0.003	2	0.034	2	0.212	2
		min	-0.551	3	-0.046	2	0	1	0	1	0.005	1	0.12	1
M2	1	max	1.415	1	0.061	2	0.007	2	0.001	1	-0.006	1	0.244	2
		min	-0.276	3	0.044	1	0.001	1	-0.07	3	-0.055	2	0.12	1
	2	max	1.415	1	0.018	2	0.007	2	0.001	1	0	1	-0.049	1
		min	-0.276	3	0.001	1	0.001	1	-0.07	3	-0.006	2	-0.066	3
	3	max	1.415	1	-0.026	2	0.007	2	0.001	1	0.043	2	0.109	1
		min	-0.276	3	-0.043	1	0.001	1	-0.07	3	0.006	1	-0.035	3
M3	1	max	1.414	1	0.043	3	0	1	0	1	-0.004	1	0.11	1
		min	-0.287	3	0.043	1	-0.001	3	-0.003	2	-0.006	2	-0.003	3
	2	max	1.414	1	-0.001	3	0	1	0	1	-0.002	1	-0.047	1
		min	-0.287	3	-0.001	1	-0.001	3	-0.003	2	-0.014	2	-0.162	3
	3	max	1.414	1	-0.044	3	0	1	0	1	0	1	0.122	1
		min	-0.287	3	-0.044	1	-0.001	3	-0.003	2	-0.023	3	0.006	3
M4	1	max	1.416	1	0.059	3	-0.001	1	0.07	3	0.049	2	0.215	2
		min	-0.27	3	0.042	1	-0.007	2	-0.001	1	0.004	1	0.105	1
	2	max	1.416	1	0.015	3	-0.001	1	0.07	3	0	1	-0.049	1
		min	-0.27	3	0.001	1	-0.007	2	-0.001	1	-0.001	2	-0.073	3
	3	max	1.416	1	-0.028	3	-0.001	1	0.07	3	-0.005	1	0.123	1
		min	-0.27	3	-0.045	1	-0.007	2	-0.001	1	-0.052	2	-0.023	3
M5	1	max	0.785	3	0.022	1	0.01	2	0	1	-0.001	1	0.077	2
		min	-2.042	1	0.008	2	0.001	1	-0.04	2	-0.028	2	0.014	1
	2	max	0.777	3	-0.009	1	0.01	2	0	1	0.025	2	0.117	2
		min	-2.05	1	-0.023	2	0.001	1	-0.04	2	0.003	1	-0.023	1
	3	max	0.769	3	-0.039	1	0.01	2	0	1	0.078	2	0.325	2
		min	-2.058	1	-0.053	2	0.001	1	-0.04	2	0.007	1	0.109	1
M6	1	max	0.789	3	0.025	1	0.002	1	0.045	2	0.002	3	0.131	2
		min	-2.039	1	0.018	2	-0.006	3	0.002	1	-0.01	1	0.032	1
	2	max	0.781	3	-0.005	1	0.002	1	0.045	2	0	1	0.117	2
		min	-2.047	1	-0.013	2	-0.006	3	0.002	1	-0.03	2	-0.023	1
	3	max	0.773	3	-0.036	1	0.002	1	0.045	2	0.01	1	0.271	2
		min	-2.055	1	-0.044	2	-0.006	3	0.002	1	-0.061	3	0.09	1
M7	1	max	3.229	1	0	1	0	1	0	1	1.594	3	0	2
		min	-0.831	3	0	1	-0.896	2	0	3	0	1	0	1
	2	max	3.231	1	0	1	0	1	0	1	1.294	3	0	2

Envelope Member Section Forces, (continued)

Member Label	Section		Axial (K)	Lc	Shear y-y (K)	Lc	Shear z-z (K)	Lc	Torque (K-ft)	Lc	Moment y-y (K-ft)	Lc	Moment z-z (K-ft)	Lc
M8	3	min	-0.829	3	0	1	-0.896	2	0	3	0	1	0	1
		max	3.233	1	0	1	0	1	0	1	0.994	3	0	2
		min	-0.828	3	0	1	-0.896	2	0	3	0	1	0	1
		max	0.426	3	0.037	3	0.002	1	0.04	2	0.035	3	0.032	1
	1	min	-2.036	1	0.026	1	-0.01	3	0.001	1	-0.01	1	-0.075	3
		max	0.418	3	0.006	3	0.002	1	0.04	2	0	1	-0.023	1
	2	min	-2.044	1	-0.005	1	-0.01	3	0.001	1	-0.019	3	-0.191	3
		max	0.411	3	-0.025	3	0.002	1	0.04	2	0.01	1	0.089	1
	3	min	-2.052	1	-0.036	1	-0.01	3	0.001	1	-0.074	3	-0.14	3
		max	0.419	3	0.034	3	0.009	2	-0.001	1	-0.001	1	0.042	1
M9	1	min	-2.034	1	0.027	1	0.001	1	-0.044	2	-0.022	2	-0.088	3
		max	0.411	3	0.003	3	0.009	2	-0.001	1	0.029	2	-0.022	1
	2	min	-2.041	1	-0.004	1	0.001	1	-0.044	2	0.003	1	-0.19	3
		max	0.403	3	-0.027	3	0.009	2	-0.001	1	0.079	2	0.081	1
	3	min	-2.049	1	-0.034	1	0.001	1	-0.044	2	0.008	1	-0.125	3
		max												
		min												
		max												

Member Deflection

Member Label	Section		x-Translate (in)	Lc	y-Translate (in)	Lc	z-Translate (in)	Lc	x-Rotate (radians)	Lc	(n) L/y Ratio	Lc	(n) L/z Ratio	Lc
M1	1	max	0.003	2	-0.05	1	0.224	2	0	1	NC		NC	
		min	-0.002	1	-0.676	2	0.012	1	-0.008	2	4392.267	2	NC	
	2	max	0.002	3	-0.068	1	0.197	2	0	1	7021.315	1	NC	
		min	-0.005	1	-0.59	2	0.003	1	-0.008	2	3942.626	2	NC	
	3	max	0.003	3	-0.036	1	0.212	2	0	1	NC		NC	
		min	-0.008	1	-0.635	2	-0.003	1	-0.008	2	NC		NC	
M2	1	max	0.212	2	-0.036	1	0.008	1	0	1	NC		NC	
		min	-0.003	1	-0.635	2	-0.003	3	-0.002	2	NC		NC	
	2	max	0.211	3	-0.019	3	0.004	2	0.001	3	309.101	3	NC	
		min	-0.006	1	-0.059	1	0.002	3	0	1	7674.116	1	NC	
	3	max	0.211	3	0.647	3	-0.004	1	0.003	3	144.137	3	NC	
		min	-0.008	1	-0.034	1	-0.008	3	0	1	NC		NC	
M3	1	max	-0.004	1	0.647	3	0.008	1	0.008	3	NC		NC	
		min	-0.008	3	-0.034	1	-0.211	3	0	1	NC		NC	
	2	max	-0.007	1	0.494	3	0.003	1	0.008	3	1273.818	3	NC	
		min	-0.008	2	-0.054	1	-0.201	3	0	1	8204.238	1	NC	
	3	max	-0.007	3	0.635	3	-0.007	1	0.008	3	NC		NC	
		min	-0.01	2	-0.029	1	-0.221	3	0	1	NC		NC	
M4	1	max	0.224	2	-0.05	1	0.002	1	0.002	2	NC		NC	
		min	0.012	1	-0.676	2	-0.003	2	0	1	NC		NC	
	2	max	0.222	2	-0.053	3	-0.002	3	0	1	3569.628	3	NC	
		min	0.009	1	-0.073	2	-0.005	2	0	3	5006.652	2	NC	
	3	max	0.221	3	0.635	3	-0.007	3	0	1	NC		NC	
		min	0.007	1	-0.029	1	-0.01	2	-0.003	3	NC		NC	
M5	1	max	-0.005	3	-0.05	1	0.156	2	0	1	NC		802.57	2
		min	-0.01	2	-0.695	2	0.01	1	-0.004	2	188.525	2	NC	
	2	max	-0.003	1	-0.03	1	0.06	2	0	1	NC		1954.819	2
		min	-0.008	2	-0.27	2	0.003	1	-0.003	2	483.124	2	NC	
	3	max	0	1	0.002	3	0	1	0	1	NC		NC	
		min	-0.007	2	-0.001	1	-0.007	3	-0.002	2	NC		NC	
M6	1	max	-0.005	3	-0.035	1	0.007	1	0.004	2	NC		NC	
		min	-0.01	2	-0.653	2	-0.151	3	0	1	200.707	2	832.586	3
	2	max	-0.003	1	-0.023	1	0.004	1	0.003	2	NC		NC	
		min	-0.008	2	-0.249	2	-0.054	3	0	1	523.779	2	2135.089	3
	3	max	0	1	0.002	3	0.007	3	0.002	3	NC		NC	
		min	-0.007	2	-0.001	1	0	1	0	1	NC		NC	

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Member Deflections, (continued)

Member Label	Section		x-Translate (in)	Lc	x-Translate (in)	Lc	x-Translate (in)	Lc	x-Rotate (radians)	Lc	(n) L/y Ratio	Lc	(n) L/z Ratio	Lc
M7	1	max	0.001	1	0	1	0.01	3	0	1	NC		805.054	3
		min	0	3	0	1	0	1	0	1	NC		NC	
	2	max	0	1	0	1	0.002	3	0	1	NC		3714.567	3
		min	0	3	0	1	0	1	0	1	NC		NC	
	3	max	0	1	0	1	0	1	0	1	NC		NC	
		min	0	1	0	1	0	1	0	1	NC		NC	
M8	1	max	0.008	3	0.666	3	0.009	1	0.004	2	196.706	3	NC	
		min	-0.006	1	-0.034	1	-0.144	3	0	1	NC		870.285	3
	2	max	0.007	3	0.229	3	0.004	1	0.003	2	569.841	3	NC	
		min	-0.003	1	-0.023	1	-0.057	3	0	1	NC		2043.092	3
	3	max	0.007	3	-0.001	1	0.007	3	0.002	3	NC		NC	
		min	0	1	-0.002	2	0	1	0	1	NC		NC	
M9	1	max	0.008	3	0.653	3	0.163	2	0	1	200.589	3	773.089	2
		min	-0.006	1	-0.029	1	0.011	1	-0.004	2	NC		NC	
	2	max	0.007	3	0.223	3	0.061	2	0	1	584.999	3	1922.374	2
		min	-0.003	1	-0.02	1	0.004	1	-0.003	2	NC		NC	
	3	max	0.007	3	-0.001	1	0	1	0	1	NC		NC	
		min	0	1	-0.002	2	-0.007	3	-0.002	2	NC		NC	

Envelope Member Section Stresses

Member Label	Section		Axial (Ksi)	Lc	Shear y-y (Ksi)	Lc	Shear z-z (Ksi)	Lc	Bending y-top (Ksi)	Lc	Bending y-bot (Ksi)	Lc	Bending z-top (Ksi)	Lc	Bending z-bot (Ksi)	Lc
M1	1	max	0.831	1	0.03	1	0.001	2	-1.184	1	2.04	2	0.056	3	0.019	1
		min	-0.323	3	0.029	2	0	1	-2.04	2	1.184	1	-0.019	1	-0.056	3
	2	max	0.831	1	-0.001	1	0.001	2	0.57	1	0.374	2	0.216	2	-0.019	1
		min	-0.323	3	-0.001	2	0	1	-0.374	2	-0.57	1	0.019	1	-0.216	2
	3	max	0.831	1	-0.031	1	0.001	2	-1.354	1	2.387	2	0.379	2	-0.057	1
		min	-0.323	3	-0.032	2	0	1	-2.387	2	1.354	1	0.057	1	-0.379	2
M2	1	max	0.831	1	0.043	2	0.005	2	-1.35	1	2.755	2	-0.066	1	0.625	2
		min	-0.162	3	0.031	1	0.001	1	-2.755	2	-1.35	1	-0.625	2	0.066	1
	2	max	0.831	1	0.013	2	0.005	2	0.74	3	-0.548	1	-0.002	1	0.071	2
		min	-0.162	3	0	1	0.001	1	-0.548	1	-0.74	3	-0.071	2	0.002	1
	3	max	0.831	1	-0.018	2	0.005	2	0.398	3	1.233	1	0.483	2	-0.063	1
		min	-0.162	3	-0.03	1	0.001	1	-1.233	1	-0.398	3	0.063	1	-0.483	2
M3	1	max	0.83	1	0.03	3	0	1	0.039	3	1.241	1	-0.046	1	0.064	2
		min	-0.169	3	0.03	1	-0.001	3	-1.241	1	-0.039	3	-0.064	2	0.046	1
	2	max	0.83	1	0	3	0	1	1.826	3	-0.532	1	-0.02	1	0.16	2
		min	-0.169	3	-0.001	1	-0.001	3	0.532	1	-1.826	3	-0.16	2	0.02	1
	3	max	0.83	1	-0.031	3	0	1	-0.067	3	1.373	1	0.005	1	0.257	3
		min	-0.169	3	-0.031	1	-0.001	3	-1.373	1	0.067	3	-0.257	3	-0.005	1
M4	1	max	0.831	1	0.041	3	0	1	-1.18	1	2.424	2	0.551	2	-0.05	1
		min	-0.158	3	0.03	1	-0.005	2	-2.424	2	-1.18	1	-0.05	1	-0.551	2
	2	max	0.831	1	0.011	3	0	1	0.826	3	-0.555	1	-0.003	1	0.015	2
		min	-0.158	3	-0.001	1	-0.005	2	0.555	1	-0.826	3	-0.015	2	0.003	1
	3	max	0.831	1	-0.02	3	0	1	0.262	3	1.388	1	-0.056	1	0.582	2
		min	-0.158	3	-0.031	1	-0.005	2	-1.388	1	-0.262	3	-0.582	2	0.056	1
M5	1	max	0.46	3	0.016	1	0.007	2	-0.161	1	0.87	2	-0.016	1	0.315	2
		min	-1.199	1	0.006	2	0.001	1	-0.87	2	0.161	1	-0.315	2	0.016	1
	2	max	0.456	3	-0.006	1	0.007	2	0.255	1	1.322	2	0.283	2	-0.033	1
		min	-1.203	1	-0.016	2	0.001	1	-1.322	2	-0.255	1	0.033	1	-0.283	2
	3	max	0.451	3	-0.028	1	0.007	2	-1.225	1	3.669	2	0.881	2	-0.081	1
		min	-1.208	1	-0.038	2	0.001	1	-3.669	2	1.225	1	0.081	1	-0.881	2
M6	1	max	0.463	3	0.018	1	0.001	1	-0.365	1	1.479	2	0.019	3	0.115	1
	2	max	0.458	3	-0.004	1	0.001	1	0.257	1	1.321	2	-0.002	1	0.336	2

Company : HOMSI & ASSOCIATES
 Designer : DS
 Job Number : 08128

Valley of the Sun Jewish Community Center

July 3, 2008

Checked By: _____

Member Stresses, (continued)

Member Label	Section	Axial (Ksi)	Lc	Shear y-y (Ksi)	Lc	Shear z-z (Ksi)	Lc	Bending y-top (Ksi)	Lc	Bending y-bot (Ksi)	Lc	Bending z-top (Ksi)	Lc	Bending z-bot (Ksi)	Lc
M7	min	-1.201	1	-0.009	2	-0.004	3	-1.321	2	-0.257	1	-0.336	2	0.002	1
	3 max	0.454	3	-0.025	1	0.001	1	-1.019	1	3.059	2	0.111	1	0.691	3
	min	-1.206	1	-0.031	2	-0.004	3	-3.059	2	-1.019	1	-0.691	3	-0.111	1
	1 max	1.895	1	0	1	0	1	0	1	0	2	17.979	3	0	1
	min	-0.488	3	0	1	-0.631	2	0	2	0	1	0	1	-17.979	3
	2 max	1.896	1	0	1	0	1	0	1	0	2	14.595	3	0	1
M8	min	-0.487	3	0	1	-0.631	2	0	2	0	1	0	1	-14.595	3
	3 max	1.897	1	0	1	0	1	0	1	0	2	11.212	3	0	1
	min	-0.486	3	0	1	-0.631	2	0	2	0	1	0	1	-11.212	3
	1 max	0.25	3	0.026	3	0.001	1	0.84	3	0.366	1	0.398	3	0.112	1
	min	-1.195	1	0.018	1	-0.007	3	-0.366	1	-0.84	3	-0.112	1	-0.398	3
	2 max	0.246	3	0.004	3	0.001	1	2.158	3	-0.261	1	0.003	1	0.216	3
M9	min	-1.199	1	-0.004	1	-0.007	3	0.261	1	-2.158	3	-0.216	3	-0.003	1
	3 max	-0.241	3	-0.017	3	0.001	1	1.579	3	1.009	1	0.118	1	0.83	3
	min	-1.204	1	-0.025	1	-0.007	3	-1.009	1	-1.579	3	-0.83	3	-0.118	1
	1 max	0.246	3	0.024	3	0.007	2	0.989	3	0.472	1	-0.007	1	0.252	2
	min	-1.193	1	0.019	1	0.001	1	-0.472	1	-0.989	3	-0.252	2	0.007	1
	2 max	0.241	3	0.002	3	0.007	2	2.148	3	-0.253	1	0.322	2	-0.039	1
M9	min	-1.198	1	-0.003	1	0.001	1	0.253	1	-2.148	3	0.039	1	-0.322	2
	3 max	0.237	3	-0.019	3	0.007	2	1.41	3	0.918	1	0.895	2	-0.085	1
	min	-1.203	1	-0.024	1	0.001	1	-0.918	1	-1.41	3	0.085	1	-0.895	2

Envelope Joint Displacements

Joint Label		X Translate (In)		Y Translate (In)		Z Translate (In)		X Rotate (radians)		Y Rotate (radians)		Z Rotate (radians)	
			Lc		Lc		Lc		Lc		Lc		Lc
N1	max	0.003	2	-0.05	1	0.224	2	0	1	0	2	0.002	2
	min	-0.002	1	-0.676	2	0.012	1	-0.008	2	0	1	0	1
N2	max	0.003	3	-0.036	1	0.212	2	0	1	0	1	0	1
	min	-0.008	1	-0.635	2	-0.003	1	-0.008	2	-0.001	3	-0.002	2
N3	max	0.008	3	0.647	3	0.211	3	0	1	0	1	0.003	3
	min	0.004	1	-0.034	1	-0.008	1	-0.008	3	0	3	0	1
N4	max	0.01	2	0.635	3	0.221	3	0	1	0	2	0	1
	min	0.007	3	-0.029	1	0.007	1	-0.008	3	0	1	-0.003	3
N5	max	0.000	2	0	3	0.000	1	0.000	1	0.000	3	0.000	1
	min	0.000	1	-0.001	1	-0.01	3	-0.003	3	0.000	1	0.000	2
N7	max	0.000	2	0.000	3	0.000	3	0.000	1	0.000	3	0.000	1
	min	0.000	1	0.000	1	0.000	1	0.000	3	0.000	1	0.000	2

Steel Design / NDS Parameters

Member Label	Section Set	Length (Ft)	Lb y-y le2 (Ft)	Lb z-z le1 (Ft)	L_comp le_bend (Ft)	K y-y	K z-z	Cm y-y CH	Cm z-z	Cb B	Sway y z
M1	SEC1	15				1.	1.				
M2	SEC1	15				1.	1.				
M3	SEC1	15				1.	1.				
M4	SEC1	15				1.	1.				
M5	SEC1	10.937				1.	1.				
M6	SEC1	10.937				1.	1.				
M7	SEC1	.67				1.	1.				
M8	SEC1	10.937				1.	1.				
M9	SEC1	10.937				1.	1.				

Company : HOMSI & ASSOCIATES

July 3, 2008

Designer : DS

Job Number : 08128

Valley of the Sun Jewish Community Center

Checked By: _____

Envelope Member AISC ASD 9th Code Checks

Member Label	Code Chk	Loc (Ft)	Lc	Shear Chk	Loc (Ft)	Dir	Lc	Fa (Ksi)	Fb y-y (Ksi)	Fb z-z (Ksi)	ASD Eqn.
M1	0.245	15	1	0.003	15	15	2	4.137	33	33	H1-1
M2	0.244	0	1	0.022	0	0	3	4.137	33	33	H1-1
M3	0.245	15	1	0.002	15	15	2	4.137	33	33	H1-1
M4	0.246	15	1	0.022	0	0	3	4.137	33	33	H1-1
M5	0.155	10.937	3	0.013	10.937	10.937	2	7.781	33	33	H1-1
M6	0.139	10.937	3	0.014	10.937	10.937	2	7.781	33	33	H1-1
M7	0.585	0	2	0.032	0	0	2	29.382	33	33	H1-2
M8	0.091	6.62	2	0.013	0	0	2	7.781	33	33	H2-1
M9	0.091	6.332	2	0.014	0	0	2	7.781	33	33	H2-1

Company : HOMSI & ASSOCIATES
 Designer : DS
 Job Number : 08128

Valley of the Sun Jewish Community Center

July 3, 2008

Checked By: _____

Global

Steel Code	AISC 9th Edition ASD
Allowable Stress Increase Factor (ASIF)	1.000
Include Shear Deformation	Yes
Include Warping	Yes
No. of Sections for Member Calcs	3
Redesign Sections	Yes
P-Delta Analysis Tolerance	0.50%
Vertical Axis	Y

Joint Coordinates

Joint Label	X Coordinate (Ft)	Y Coordinate (Ft)	Z Coordinate (Ft)	Joint Temperature (F)
N1	0	0	0	0
N2	0	9	0	0

Boundary Conditions

Joint Label	X Translation (K/in)	Y Translation (K/in)	Z Translation (K/in)	MX Rotation (K-ft/rad)	MY Rotation (K-ft/rad)	MZ Rotation (K-ft/rad)
N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Materials (General)

Material Label	Young's Modulus (Ksi)	Shear Modulus (Ksi)	Poisson's Ratio	Thermal Coef. (per 10^5 F)	Weight Density (K/ft^3)	Yield Stress (Ksi)
STL	29000	11154	.3	.65	.49	50
FABRIC	1000	100	.3	1	.001	1

Basic Load Case Data

BLC No.	Basic Load Case Description	Category Code	Category Description	Nodal	Load Type Point	Totals Distributed	Surface
1	Total	None			1		
2	Side	None			1		

Load Combinations

Num	Description	Env	WS	PD	SRSS	CD	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	Total Load	y				1	1	1	2	1				

Member Point Loads, Category : None, BLC 1 : Total

Member Label	I Joint	J Joint	Direction	Magnitude (K, K-ft)	Location (Ft or %)
M1	N1	N2	Y	-3.233	9

Member Point Loads, Category : None, BLC 2 : Side

Member Label	I Joint	J Joint	Direction	Magnitude (K, K-ft)	Location (Ft or %)
M1	N1	N2	Z	.225	9

Plate/Shell Elements

Plate Label	A Node	B Node	C Node	D Node	Material Set	Thickness (In)	Stress Location 'R' 'S'	Inactive?
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Member Data

Member Label	I Node	J Node	K Node	X-Axis Rotate (degrees)	Section Set	End Releases I-End J-End xyz xyz	End Offsets I-End J-End (In) (In)	Inactive Code	Member Length (Ft)
M1	N1	N2			SEC1				9

Sections

Section Label	Database Shape	Material Label	Area (In) ²	SA(yy)	SA(zz)	I y-y (In ⁴)	I z-z (In ⁴)	J (Torsion) (In ⁴)	T/C Only
SEC1	TU5X5X2	STL	2.4	1.2	1.2	9.41	9.41	14.7	

Envelope Reactions

Joint Label		X Force (K)	Lc	Y Force (K)	Lc	Z Force (K)	Lc	X Moment (K-ft)	Lc	Y Moment (K-ft)	Lc	Z Moment (K-ft)	Lc
N1	max	0.000	1	3.306	1	-0.225	1	-2.025	1	0.000	1	0.000	1
	min	0.000	1	3.306	1	-0.225	1	-2.025	1	0.000	1	0.000	1
Reaction Totals :	max	0.000	1	3.306	1	-0.225	1						
	min	0.000	1	3.306	1	-0.225	1						

Envelope Member Section Forces

Member Label	Section		Axial (K)	Lc	Shear y-y (K)	Lc	Shear z-z (K)	Lc	Torque (K-ft)	Lc	Moment y-y (K-ft)	Lc	Moment z-z (K-ft)	Lc
M1	1	max	3.307	1	0	1	-0.225	1	0	1	2.025	1	0	1
		min	3.307	1	0	1	-0.225	1	0	1	2.025	1	0	1
	2	max	3.27	1	0	1	-0.225	1	0	1	1.012	1	0	1
		min	3.27	1	0	1	-0.225	1	0	1	1.012	1	0	1
	3	max	0	1	0	1	0	1	0	1	0	1	0	1
		min	0	1	0	1	0	1	0	1	0	1	0	1

Member Deflection

Member Label	Section		x-Translate (In)	Lc	y-Translate (In)	Lc	z-Translate (In)	Lc	x-Rotate (radians)	Lc	(n) L/y Ratio	Lc	(n) L/z Ratio	Lc
M1	1	max	0	1	0	1	0	1	0	1	NC		NC	
		min	0	1	0	1	0	1	0	1	NC		NC	
	2	max	-0.003	1	0	1	0.109	1	0	1	NC		988.682	1
		min	-0.003	1	0	1	0.109	1	0	1	NC		988.682	1
	3	max	-0.005	1	0	1	0.348	1	0	1	NC		310.077	1
		min	-0.005	1	0	1	0.348	1	0	1	NC		310.077	1

Envelope Member Section Stresses

Member Label	Section		Axial (Ksi)	Lc	Shear y-y (Ksi)	Lc	Shear z-z (Ksi)	Lc	Bending y-top (Ksi)	Lc	Bending y-bot (Ksi)	Lc	Bending z-top (Ksi)	Lc	Bending z-bot (Ksi)	Lc
M1	1	max	1.378	1	0	1	-0.216	1	0	1	0	1	6.456	1	-6.456	1
		min	1.378	1	0	1	-0.216	1	0	1	0	1	6.456	1	-6.456	1
	2	max	1.362	1	0	1	-0.216	1	0	1	0	1	3.228	1	-3.228	1
		min	1.362	1	0	1	-0.216	1	0	1	0	1	3.228	1	-3.228	1
	3	max	0	1	0	1	0	1	0	1	0	1	0	1	0	1
		min	0	1	0	1	0	1	0	1	0	1	0	1	0	1

Company : HOMSI & ASSOCIATES
 Designer : DS
 Job Number : 08128

Valley of the Sun Jewish Community Center

July 3, 2008

Checked By: _____

Envelope Joint Displacements

Joint Label		X Translate (In)		Y Translate (In)		Z Translate (In)		X Rotate (radians)		Y Rotate (radians)		Z Rotate (radians)	
		Lc		Lc		Lc		Lc		Lc		Lc	
N1	max	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
	min	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
N2	max	0.000	1	-0.005	1	0.348	1	0.005	1	0.000	1	0.000	1
	min	0.000	1	-0.005	1	0.348	1	0.005	1	0.000	1	0.000	1

Steel Design / NDS Parameters

Member Label	Section Set	Length (Ft)	Lb y-y le2 (Ft)	Lb z-z le1 (Ft)	L_comp le_bend (Ft)	K y-y	K z-z	Cm y-y CH	Cm z-z	Cb B	Sway y z
M1	SEC1	9				1.	1.				

Envelope Member AISC ASD 9th Code Checks

Member Label	Code Chk	Loc (Ft)	Lc	Shear Chk	Loc (Ft)	Dir	Lc	Fa (Ksi)	Fb y-y (Ksi)	Fb z-z (Ksi)	ASD Eqn.
M1	0.26	0	1	0.011	0	z	1	22.041	30	30	H1-2



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STRUCTURAL ENGINEERS

531 E. 27th Street, Tucson, AZ, 85713
Tel: (520) 206-9000 Fax: (480) 446-7373

SHADE CABLE DESIGN

JOB NAME: Valley of the Sun Jewish Community Center

JOB NUMBER: 08128

DESCRIPTION: 15' X 15' Umbrella

Width (W)	C8	15
Length (L)	C9	15
psf (Wind Up & Down)	C10	16
psf (Side Wind)	C11	15
Struct. Ave Thickness	C12	4
DL	C13	3
LL	C14	5
S1	C15	1
S2	C16	1
Height (.5L)	C17	7.5
Height (.5W)	C18	7.5
CABLE #1 EQ. TRIB. WIDTH	C19 = $(1.33 * ((D17 * D8) / 2) / D8)'$	4.99
CABLE #2 EQ. TRIB. LENGTH	C20 = $(1.33 * ((D18 * D9) / 2) / D9)'$	4.99
HOOPS LENGTH	C21 = $((C8/2)^2 + ((C8/2)^2))^{0.5}'$	10.61
HOOPS EQ TRIB. WIDTH	C22 = $+(C19 + C20) / 2'$	4.99
CABLE #1 WIND UP & DOWN	C23 = $+C10 * C19'$	79.80 plf
CABLE #2 WIND UP & DOWN	C24 = $+C10 * C20'$	79.80 plf
SIDE WIND	C25 = $+C11 * (C12 / 2)'$	30.00 plf
CABLE #1 DEAD PLUS LIVE LOAD	C26 = $+(C13 + C14) * C19'$	39.90
CABLE #2 DEAD PLUS LIVE LOAD	C27 = $+(C13 + C14) * C20'$	39.90
CABLE #1 DESIGN	C28 = $+(C23 * (C8^2)) / (8 * C15) * ((1 + (16 * ((C15 / C8)^2)))^{0.5})'$	2322.80
CABLE #2 DESIGN	C29 = $+(C24 * (C9^2)) / (8 * C16) * ((1 + (16 * ((C16 / C9)^2)))^{0.5})'$	2322.80

CB1



HOMSI & ASSOCIATES

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6 X 37 IWRC														
1 X 7			1 X 19			7 X 7			7 X 19			7 X 37		
Dia. In Inches	Breaking Stress		Weight In Lbs.	Breaking Stress		Weight In Lbs.	Breaking Stress		Weight In Lbs.	Breaking Stress		Weight In Lbs.	Break- ing Str. S/S	Weight In Lbs.
	Galv.	S/S		Galv.	S/S		Galv.	S/S		Galv.	S/S			
1/64	60	—	0.7	—	—	—	—	—	—	—	—	—	—	—
1/32	180	150	2.5	185	185	2.5	110	110	1.7	—	—	—	—	—
3/64	375	975	5.5	375	375	5.5	270	270	4.2	—	—	—	—	—
1/16	500	500	8.5	500	500	8.5	480	480	7.5	—	500	7.5	—	—
5/64	800	800	14	800	800	14	650	650	11	—	—	—	—	—
3/32	1,200	1,200	20	1,200	1,200	20	920	920	16	1,050	1,000	16	—	—
7/64	1,600	1,600	27	1,600	1,600	27	1,260	1,260	22	1,260	—	22	—	—
1/8	2,100	2,100	35	2,100	2,100	35	1,700	1,700	28.5	2,000	1,260	29	—	—
5/32	3,300	3,300	55	3,300	3,300	55	2,600	2,400	43	2,800	2,400	45	—	—
3/16	4,700	4,700	77	4,700	4,700	77	3,700	3,700	62	4,200	3,700	65	3,000	65
7/32	6,300	6,300	102	6,300	6,300	102	4,800	4,800	83	5,600	5,000	86	4,100	86
1/4	—	8,500	135	8,200	8,200	136	6,100	6,100	106	7,000	6,400	110	5,400	110
9/32	—	10,700	170	9,900	10,300	170	7,400	7,600	134	8,000	7,800	139	—	—
5/16	—	13,200	212	12,500	12,500	210	9,200	9,100	167	9,800	9,000	173	8,300	180
3/8	—	18,000	282	18,00	17,500	300	13,300	12,600	236	14,400	12,000	243	11,700	240
7/16	—	26,000	416	—	—	—	—	16,500	342	17,600	16,300	356	15,800	330
1/2	—	33,700	535	—	—	—	—	21,300	440	22,800	22,800	458	20,400	430

Data covering larger diameters available on request.

Construction Features of Wire Rope

1 X 7



Range: 1/4" to above 1/2" diameter. Smaller sizes are used for fishing line, dials, lead-ers, etc. Larger sizes for guying and other semi-rigid application.

1 X 19



Mainly used for rigging, bracing, and other non-flexible requirements on boats. It is often used with swaged-type cable terminals.

7 X 7



This is the semiflexible construction mainly specified for aircraft cable in 1/64" and 1/16" sizes. It is strong, long-lasting, ideal for supporting weights and for transmitting of mechanical power.

7 X 19



Standard flexible aircraft and stainless steel cable in 1/64" to 1/2" sizes. Tough construction resists crushing of heavy loads, used flexibility and good resistance to wear is required.

6 X 37—I.W.R.C.—(7 X 37)



Extra Flexible. Designed for use on pulleys or drums of minimal size. These cables offer great flexibility but are not as resistant to abrasion or abuse as other construction shown here.

Title :
Dsgnr:
Description :

Job #
Date:

Scope :

Rev: 508001

Pole Embedment in Soil

Page 1

Description

General Information

Allow Passive	150.00 pcf	Applied Loads...	
Max Passive	1,500.00 psf	Point Load	225.00 lbs
Load duration factor	1.333	distance from base	9.000 ft
Pole is Round			
Diameter	30.000 in	Distributed Load	0.00 #/ft
No Surface Restraint		distance to top	0.000 ft
		distance to bottom	0.000 ft

Summary

Moments @ Surface...

Point load	2,025.00 ft-#	Total Moment	2,025.00 ft-#
Distributed load	0.00	Total Lateral	225.00 lbs

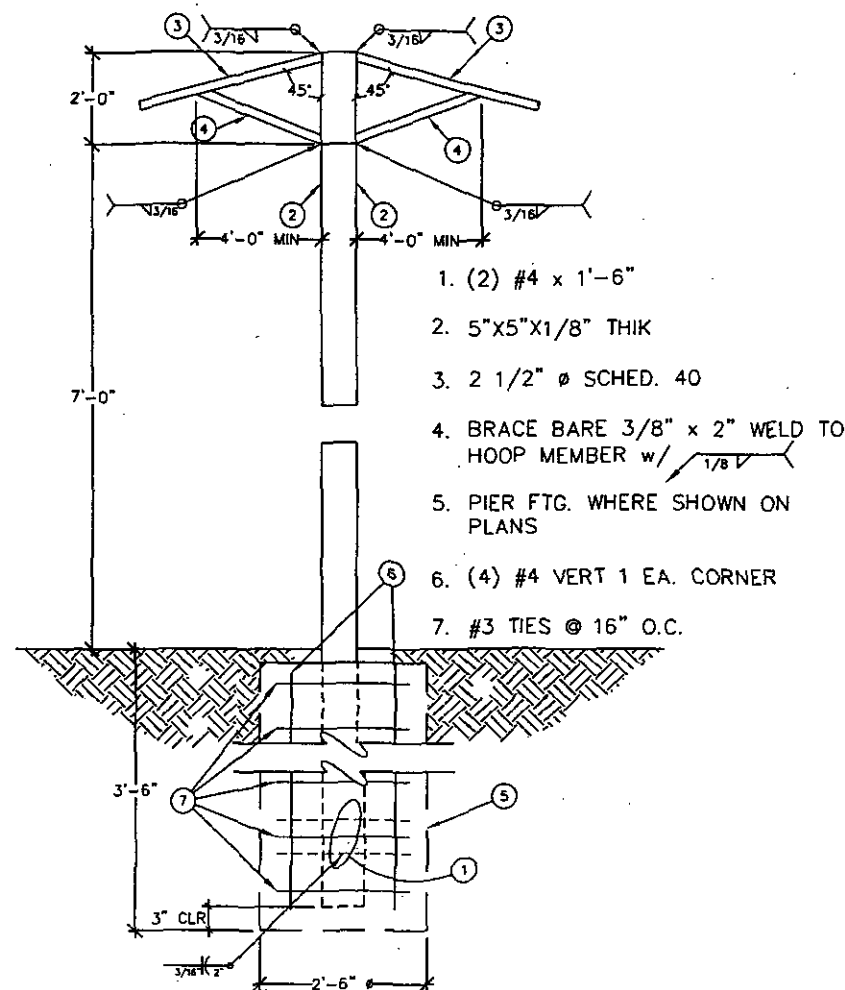
Without Surface Restraint...

Required Depth	3.461 ft
Press @ 1/3 Embed...	
Actual	233.27 psf
Allowable	230.70 psf

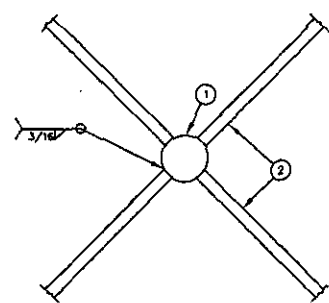
With Surface Restraint...

Req'd Depth	0.000 ft
Pressure @ Base...	
Actual	0.00 psf
Allowable	0.00 psf
Surface Restraint Force	0.00 lbs

F1

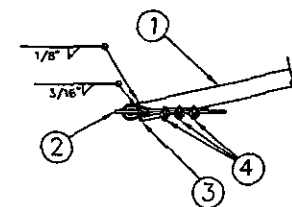


1 COLUMN DETAIL



2 CONNECTION AT PEAK

1. 6" SCHED. 40
2. 3" SCHED. 40



3 HOOP & CABLE TO COLUMN CONNECTION

1. 2 1/2" SCHEDULE 40
2. 5/8" ROD x 3" LONG
3. 3/16" CAP PLATE WELDED TO HOOP
4. DROP FORGED WIRE ROPE CLIPS FOR MID CAPACITY

GENERAL STRUCTURAL NOTES

APPLY UNLESS OTHERWISE NOTED ON STRUCTURAL DRAWINGS IN CASE OF CONFLICT GREATER REQUIREMENTS GOVERN

CODE:

2006 INTERNATIONAL BUILDING CODE
ASCE 7-05

SOIL PROFILE TYPE:

SOIL PROFILE TYPE (TABLE 1804.2).....CLASS 4

FOUNDATION:

FOOTINGS SHALL BEAR ON FIRM, UNDISTURBED SOIL AT DEPTH SHOWN ON DETAILS. ALLOWABLE SOIL BEARING 1000 PSF

REINFORCING

ASTM STANDARD A-615, GRADE 60 U.N.O. ON PLANS. CRSI AND ACI MANUALS APPLY. CLEAR CONCRETE COVERAGE PER DETAILS. LAP SPLICES IN MASONRY 48 DIAMETERS LAP SPLICES IN CONCRETE 32 DIAMETERS

STRUCTURAL STEEL

ASTM STANDARD A-36 EXCEPT AS FOLLOWS:
BOLTS AND PLAIN ANCHORS ASTM-A307.
TUBE STEEL: ASTM A-500 GRADE B.
PIPE STEEL: ASTM A53 GR B
STRANDED CABLE WITH ZINC COATING: CLASS A, MINIMUM TENSILE STRENGTH EQUALS 200 KSI

WELDING

PER AMERICAN WELDING SOCIETY CODES AND RECOMMENDATIONS ALL WELDING SHALL BE BY CERTIFIED WELDERS. WELDING RODS TO BE LOW HYDROGEN TYPE E70. ALL WELD IN SHOP

CONCRETE

2500 PSI

LOADS

90 MPH WIND EXPOSURE C

WIND: WINDWARD 16 PSF

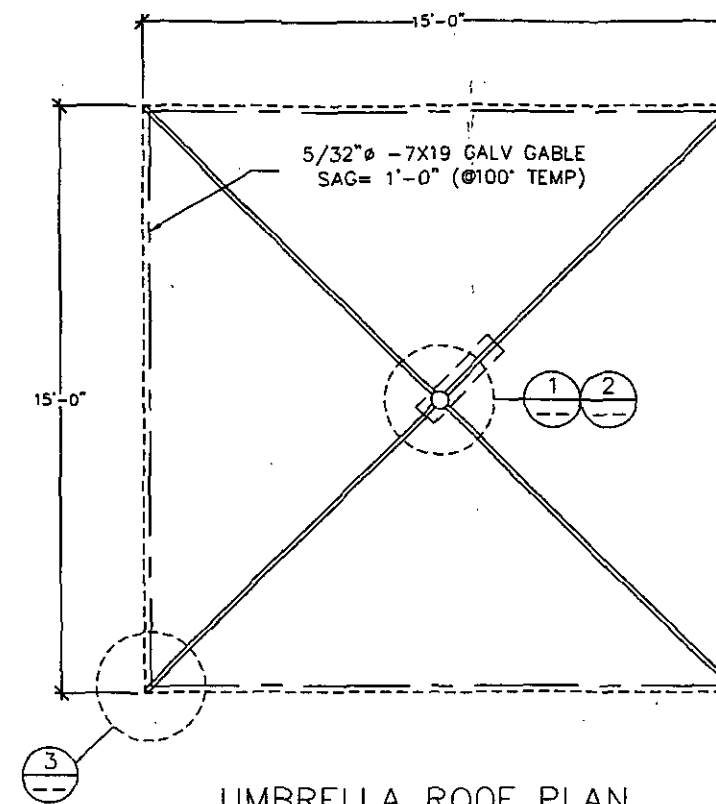
LEEWARD 12 PSF

DEAD LOAD: 3 PSF

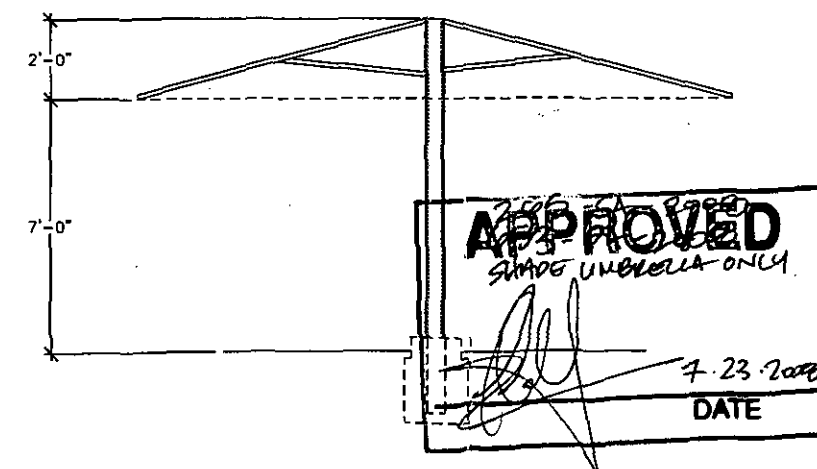
LIVE LOAD: 5 PSF PER SECTION 1607.11.2.4

SPECIAL INSPECTIONS

1. FIELD WELDING (IF ANY)
2. PIER FOUNDATION PLACEMENT & REINFORCING
3. EPOXY (IF ANY)



UMBRELLA ROOF PLAN



UMBRELLA ELEVATION

SPECIAL INSPECTION REQUIRED:

- CONCRETE
- BOLTS IN CONCRETE
- WELDING
- DRILLED PIERS
- REINFORCING

*THIS DRAWING IS NOT VALID UNLESS SIGNED WITH A "WET" SIGNATURE IN RED INK.



REVISIONS	BY

SHADE & NET

UMBRELLA SHADE STRUCTURE
FOR VALLEY OF THE SUN JEWISH COMMUNITY CENTER
12701 N. SCOTTSDALE RD.
SCOTTSDALE, AZ 85254

HASE

HOMSI & ASSOCIATES
STRUCTURAL ENGINEERS
1310 E. Apache Blvd. Suite 204
Phoenix, AZ 85020

DESIGN	DS
CHECKED	A.F.H.
DATE	7-3-06
SCALE	N.T.S.
JOB NO.	06128
SHEET NO.	1

S. 1