

SUNAIR AWNINGS & SCREENS
MITO PERGOLA UNITS

Engineering Report published revision 02/19/18

CALCULATIONS ENGINEERED BY
Sullaway Engineering



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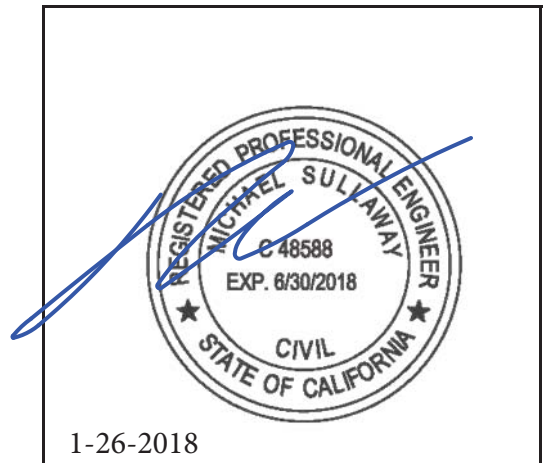
Options available:

- You may use the enclosed documents in conjunction with you existing or future efforts to obtain your permit.
- You may have the enclosed document stamped, with your state and project referenced, for a flat fee of \$340.00 which you will pay directly to Sullaway Engineering to the contact below. *(price may change, contact Sullaway Eng. directly for costing)*
- If you need a full site specific engineering package done for your project you will need to contact Sullaway Engineering and reference project ID #16017. They will then price your job and you will work directly with them.
 - Sullaway Engineering : Attn Pruthvi (Raji) Chauhan
10815 Rancho Bernardo Rd, Ste 260 San Diego, CA
92198 phone: 858-312-5150

These signed engineering calculations may be utilized by your engineer to certify your Sunair/Pratic Pergola Awning system project. In order to secure your permit this engineering report may also require alterations or recalculations by a local engineer in your state. Any such alterations and costs is the responsibility of the customer. Neither Sunair Awnings or Pratic will be liable for the use of these calculations to certify and secure permits for your project. Sunair or Pratic will not be liable for the performance of subject Pergola structures in the field using any calculations we provide. It is up to each customer to do site specific engineering calculations for each project signed by a local engineer licensed in the state in which the project resides. Sunair is not responsible for any lack of or unsuitability of structure to properly fasten the Pergola to the customer's existing structure, walls, decking, floors or footers. Sunair's current Pergola warranty and current "Sales Terms" also applies to all projects and these engineering calculations. The most recent revisions of engineered drawings apply.

STRUCTURAL CALCULATIONS
for
Pratic MITO Pergola Awning

PROJECT: 16589A
DATE: 1/25/2018



STRUCTURAL CALCULATIONS

for

Pratic MITO Pergola Awning

This structural calculation package addresses the maximum allowable windspeeds for the Pratic MITO pergola awning distributed by Sunair Awnings and Solar Screens. The evaluation is solely based on the ASCE 7-10 Minimum Design Loads for Buildings and Other Structures as referenced in the 2015 International Building Code.

This report establishes the maximum allowable windspeeds derived from ultimate windspeeds under exposure C conditions for various dimensional configurations of the MITO model pergola awning based on the above mentioned references. The intent of this report is to allow an end-user, supplier, or designer to make an educated decision in selecting dimensions for planning purposes. All factors affecting wind speed and structural performance are site-specific and cannot be captured in a report of this nature as to completely assess structural adequacy.

As such, this report is not intended to substitute site specific engineering documentation. Such engineering services to check connections of members to each other, connections to existing structure, and anchorage to the ground is highly recommended. Additionally, certain topographical features may contribute to a higher wind pressure and lower the structural performance contained herein. Under no circumstance shall Sullaway Engineering, Sunair, or Pratic be held liable for the performance of any connections or any loading conditions not specified in this report.

1. The maximum allowable and ultimate wind speeds for various configurations are presented on pages 4 and 5.
2. Reaction outputs are available on pages 6 and 7 for use by a designer for site-specific anchorage.
3. Frames should be anchored to the ground to prevent uplift as listed on pages 6 and 7.
4. Unit is assumed to be a fully open structure for wind analysis.
5. Unit is analyzed with a ground snow load of 30 psf in the retracted position. Snow load was not applied to the expanded position.
6. Aluminum should be 6061-T6.

These signed engineering calculations may be utilized by your engineer to certify your Sunair/Pratic Pergola Awning system project. In order to secure your permit this engineering report may also require alterations or recalculations by a local engineer in your state. Any such alterations and costs is the responsibility of the customer. Neither Sunair Awnings or Pratic will be liable for the use of these calculations to certify and secure permits for your project. Sunair or Pratic will not be liable for the performance of subject Pergola structures in the field using any calculations we provide. It is up to each customer to do site specific engineering calculations for each project signed by a local engineer licensed in the state in which the project resides. Sunair is not responsible for any lack of or unsuitability of structure to properly fasten the Pergola to the customer's existing structure, walls, decking, floors or footers. Sunair's current Pergola warranty and current "Sales Terms" also applies to all projects and these engineering calculations.

TYPICAL INSTALLATIONS



SINGLE-BAY MAXIMUM ALLOWABLE WINDSPEEDS

		FABRIC FULLY EXPANDED					
		Bay Length, L					
		8	10	12	14	16	16.5
Projection, P (ft)	8	139	139	139	139	139	139
	10	139	139	139	139	139	139
	12	139	139	139	139	139	139
	14	139	139	139	139	139	139
	16	139	139	139	139	128	128
	18	139	139	132	124	116	112
	20	139	132	120	108	101	101
	22	136	120	108	101	93	89
	24	124	108	97	89	85	81
	26	112	101	89	81	77	74
	28	105	93	81	77	70	70
	30	97	85	77	70	66	62

		FABRIC FULLY RETRACTED					
		Bay Length, L					
		8	10	12	14	16	16.5
Projection, P (ft)	8	139	139	139	139	139	139
	10	139	139	139	139	139	139
	12	139	139	139	139	139	139
	14	139	139	139	139	139	139
	16	139	139	139	139	139	139
	18	139	139	139	139	139	139
	20	139	139	139	139	139	139
	22	139	139	139	139	139	139
	24	139	139	139	139	139	139
	26	139	139	139	139	139	139
	28	139	139	139	139	139	139
	30	139	139	139	139	139	139

SINGLE-BAY ASCE 7-10 ULTIMATE WINDSPEEDS

		FABRIC FULLY EXPANDED					
		Bay Length, L					
		8	10	12	14	16	16.5
Projection, P (ft)	8	180	180	180	180	180	180
	10	180	180	180	180	180	180
	12	180	180	180	180	180	180
	14	180	180	180	180	180	180
	16	180	180	180	180	165	165
	18	180	180	170	160	150	145
	20	180	170	155	140	130	130
	22	175	155	140	130	120	115
	24	160	140	125	115	110	105
	26	145	130	115	105	100	95
	28	135	120	105	100	90	90
	30	125	110	100	90	85	80

		FABRIC FULLY RETRACTED					
		Bay Length, L					
		8	10	12	14	16	16.5
Projection, P (ft)	8	180	180	180	180	180	180
	10	180	180	180	180	180	180
	12	180	180	180	180	180	180
	14	180	180	180	180	180	180
	16	180	180	180	180	180	180
	18	180	180	180	180	180	180
	20	180	180	180	180	180	180
	22	180	180	180	180	180	180
	24	180	180	180	180	180	180
	26	180	180	180	180	180	180
	28	180	180	180	180	180	180
	30	180	180	180	180	180	180

MULTI-BAY MAXIMUM ALLOWABLE WINDSPEEDS

		FABRIC FULLY EXPANDED					
		Bay Length, L					
		8	10	12	14	16	16.5
Projection, P (ft)	8	139	139	139	139	139	139
	10	139	139	139	139	139	139
	12	139	139	139	128	120	116
	14	139	132	120	108	101	101
	16	128	116	105	97	89	85
	18	116	101	93	85	77	77
	20	101	89	81	74	70	66
	22	93	81	74	66	62	62
	24	85	74	66	58	54	54
	26	77	66	58	54	50	46
	28	70	62	54	50	43	43
	30	66	54	50	43	39	39

		FABRIC FULLY RETRACTED					
		Bay Length, L					
		8	10	12	14	16	16.5
Projection, P (ft)	8	139	139	139	139	139	139
	10	139	139	139	139	139	139
	12	139	139	139	139	139	139
	14	139	139	139	139	139	139
	16	139	139	139	139	139	139
	18	139	139	139	139	139	139
	20	139	139	139	139	139	139
	22	139	139	139	139	139	139
	24	139	139	139	139	139	139
	26	139	139	139	139	139	139
	28	139	139	139	139	139	139
	30	139	139	139	139	139	139

MULTI-BAY ASCE 7-10 ULTIMATE WINDSPEEDS

		FABRIC FULLY EXPANDED					
		Bay Length, L					
		8	10	12	14	16	16.5
Projection, P (ft)	8	180	180	180	180	180	180
	10	180	180	180	180	180	180
	12	180	180	180	165	155	150
	14	180	170	155	140	130	130
	16	165	150	135	125	115	110
	18	150	130	120	110	100	100
	20	130	115	105	95	90	85
	22	120	105	95	85	80	80
	24	110	95	85	75	70	70
	26	100	85	75	70	65	60
	28	90	80	70	65	55	55
	30	85	70	65	55	50	50

		FABRIC FULLY RETRACTED					
		Bay Length, L					
		8	10	12	14	16	16.5
Projection, P (ft)	8	180	180	180	180	180	180
	10	180	180	180	180	180	180
	12	180	180	180	180	180	180
	14	180	180	180	180	180	180
	16	180	180	180	180	180	180
	18	180	180	180	180	180	180
	20	180	180	180	180	180	180
	22	180	180	180	180	180	180
	24	180	180	180	180	180	180
	26	180	180	180	180	180	180
	28	180	180	180	180	180	180
	30	180	180	180	180	180	180

SINGLE-BAY SERVICE REACTIONS

		VERTICAL WALL LOAD PER GUIDE (lb)					
		Bay Length, L					
		8	10	12	14	16	16.5
Projection, P (ft)	8	688	860	1032	1204	1376	1419
	10	845	1056	1267	1479	1690	1743
	12	1006	1257	1509	1760	2012	2075
	14	1166	1458	1750	2041	2333	2406
	16	1326	1658	1990	2321	2278	2349
	18	1487	1859	2018	2119	2170	2114
	20	1647	1862	1906	1875	1900	1960
	22	1721	1744	1765	1825	1839	1777
	24	1603	1601	1601	1642	1756	1692
	26	1468	1536	1523	1553	1655	1590
	28	1604	1457	1432	1558	1544	1592
	30	1328	1366	1429	1445	1535	1469

		ORTHO. WALL LOAD PER GUIDE (lb)					
		Bay Length, L					
		8	10	12	14	16	16.5
Projection, P (ft)	8	515	634	752	871	990	1020
	10	557	686	816	945	1074	1106
	12	606	748	889	1031	1172	1208
	14	654	807	961	1114	1268	1306
	16	700	865	1030	1195	1163	1199
	18	750	928	997	1039	1057	1028
	20	797	889	901	878	883	910
	22	805	804	805	826	826	796
	24	726	714	706	718	764	734
	26	644	665	652	659	698	668
	28	602	616	598	647	635	655
	30	554	562	582	583	615	586

		DOWNWARD FOOTING LOAD PER COL (lb)					
		Bay Length, L					
		8	10	12	14	16	16.5
Projection, P (ft)	8	755	944	1133	1322	1511	1558
	10	916	1145	1374	1603	1832	1889
	12	1083	1354	1625	1896	2167	2235
	14	1250	1563	1876	2188	2501	2579
	16	1417	1771	2125	2479	2431	2506
	18	1585	1981	2149	2255	2308	2247
	20	1751	1979	2023	1988	2012	2075
	22	1826	1848	1868	1930	1943	1876
	24	1697	1692	1690	1731	1849	1780
	26	1550	1619	1603	1632	1738	1668
	28	1480	1533	1504	1635	1616	1667
	30	1397	1434	1498	1512	1604	1533

		UPLIFT FOOTING LOAD PER COL (lb)					
		Bay Length, L					
		8	10	12	14	16	16.5
Projection, P (ft)	8	73	92	110	128	147	151
	10	91	114	137	159	182	188
	12	109	136	163	191	218	225
	14	127	158	190	222	254	261
	16	145	181	217	253	193	199
	18	162	203	189	160	119	91
	20	180	175	125	57	3	3
	22	176	115	54	3	0	0
	24	122	49	0	0	0	0
	26	63	2	0	0	0	0
	28	23	0	0	0	0	0
	30	0	0	0	0	0	0

SINGLE-BAY FACTORED REACTIONS

		VERTICAL WALL LOAD PER GUIDE (lb)					
		Bay Length, L					
		8	10	12	14	16	16.5
Projection, P (ft)	8	1420	1775	2129	2484	2839	2928
	10	1740	2176	2611	3046	3481	3590
	12	2071	2588	3106	3624	4141	4271
	14	2400	3000	3600	4200	4800	4950
	16	2728	3410	4092	4774	4623	4767
	18	3058	3823	4113	4278	4329	4190
	20	3386	3796	3824	3687	3674	3789
	22	3522	3497	3469	3529	3484	3328
	24	3234	3147	3064	3074	3244	3081
	26	2906	2967	2849	2827	2966	2799
	28	2737	2757	2606	2791	2663	2746
	30	2541	2522	2559	2492	2588	2417

		ORTHO. WALL LOAD PER GUIDE (lb)					
		Bay Length, L					
		8	10	12	14	16	16.5
Projection, P (ft)	8	936	1160	1384	1608	1832	1888
	10	1022	1267	1513	1758	2003	2065
	12	1123	1393	1664	1934	2205	2273
	14	1220	1515	1810	2105	2400	2474
	16	1315	1633	1952	2271	2192	2259
	18	1417	1762	1888	1956	1975	1909
	20	1513	1686	1691	1624	1614	1664
	22	1531	1511	1492	1513	1490	1421
	24	1370	1325	1285	1284	1352	1283
	26	1201	1219	1166	1153	1206	1137
	28	1111	1113	1047	1119	1064	1097
	30	1008	995	1006	976	1011	943

		DOWNWARD FOOTING LOAD PER COL (lb)					
		Bay Length, L					
		8	10	12	14	16	16.5
Projection, P (ft)	8	1565	1956	2347	2738	3130	3227
	10	1894	2367	2841	3314	3788	3906
	12	2239	2798	3358	3918	4477	4617
	14	2582	3227	3873	4518	5164	5325
	16	2924	3655	4386	5117	4952	5107
	18	3269	4087	4396	4571	4624	4474
	20	3612	4047	4076	3928	3912	4034
	22	3750	3722	3689	3751	3702	3534
	24	3437	3342	3252	3260	3439	3265
	26	3082	3145	3017	2991	3137	2959
	28	2899	2918	2755	2950	2811	2899
	30	2687	2664	2701	2628	2727	2545

		UPLIFT FOOTING LOAD PER GUIDE (lb)					
		Bay Length, L					
		8	10	12	14	16	16.5
Projection, P (ft)	8	0	0	0	0	0	0
	10	0	0	0	0	0	0
	12	0	0	0	0	0	0
	14	0	0	0	0	0	0
	16	0	0	0	0	0	0
	18	0	0	0	0	0	0
	20	0	0	0	0	0	0
	22	0	0	0	0	0	0
	24	0	0	0	0	0	0
	26	0	0	0	0	0	0
	28	0	0	0	0	0	0
	30	0	0	0	0	0	0

MULTI-BAY SERVICE REACTIONS

		VERTICAL WALL LOAD PER GUIDE (lb)					
		Bay Length, L					
		8	10	12	14	16	16.5
Projection, P (ft)	8	1376	1720	2065	2409	2753	2839
	10	1690	2112	2535	2957	3380	3485
	12	2012	2515	3018	3022	3101	3025
	14	2333	2637	2698	2653	2688	2772
	16	2278	2419	2438	2514	2525	2436
	18	2170	2268	2018	2319	2309	2381
	20	1900	1962	2058	2086	2217	2124
	22	1839	1883	1963	1980	2100	2165
	24	1756	1782	1848	1856	1965	2026
	26	1655	1666	1721	1860	1969	1881
	28	1544	1664	1716	1855	1820	1877
	30	1535	1531	1701	1705	1808	1864

		ORTHO. WALL LOAD PER GUIDE (lb)					
		Bay Length, L					
		8	10	12	14	16	16.5
Projection, P (ft)	8	910	1127	1344	1562	1779	1834
	10	994	1232	1471	1709	1947	2007
	12	1092	1355	1618	1611	1646	1602
	14	1187	1331	1352	1321	1332	1373
	16	1096	1153	1154	1183	1182	1138
	18	1002	979	1029	1046	1035	1067
	20	841	860	896	902	955	913
	22	791	801	830	831	878	905
	24	734	737	759	757	798	823
	26	674	671	688	740	780	742
	28	615	658	673	724	705	727
	30	597	589	652	648	684	705

		DOWNWARD FOOTING LOAD PER COL (lb)					
		Bay Length, L					
		8	10	12	14	16	16.5
Projection, P (ft)	8	1511	1889	2266	2644	3022	3116
	10	1832	2290	2748	3206	3664	3778
	12	2167	2709	3250	3252	3335	3251
	14	2501	2825	2887	2836	2870	2959
	16	2431	2578	2595	2673	2681	2584
	18	2308	2275	2404	2454	2439	2516
	20	2012	2074	2171	2197	2333	2232
	22	1943	1984	2065	2077	2200	2269
	24	1849	1872	1937	1939	2051	2115
	26	1738	1744	1797	1939	2050	1954
	28	1616	1738	1788	1929	1886	1944
	30	1604	1593	1768	1765	1868	1926

		UPLIFT FOOTING LOAD PER COL (lb)					
		Bay Length, L					
		8	10	12	14	16	16.5
Projection, P (ft)	8	147	183	220	257	294	303
	10	182	228	273	319	365	376
	12	218	272	327	255	202	164
	14	254	246	176	80	4	4
	16	193	132	40	0	0	0
	18	119	3	0	0	0	0
	20	3	0	0	0	0	0
	22	0	0	0	0	0	0
	24	0	0	0	0	0	0
	26	0	0	0	0	0	0
	28	0	0	0	0	0	0
	30	0	0	0	0	0	0

MULTI-BAY FACTORED REACTIONS

		VERTICAL WALL LOAD PER GUIDE (lb)					
		Bay Length, L					
		8	10	12	14	16	16.5
Projection, P (ft)	8	2839	3549	4259	4969	5678	5856
	10	3481	4351	5221	6091	6962	7179
	12	4141	5177	6212	6139	6234	6044
	14	4800	5380	5419	5225	5206	5368
	16	4623	4827	4759	4819	4735	4509
	18	4329	4147	4300	4290	4144	4274
	20	3674	3675	3750	3675	3830	3589
	22	3484	3430	3458	3343	3459	3567
	24	3244	3138	3120	2972	3050	3146
	26	2966	2812	2755	2887	2951	2710
	28	2663	2739	2662	2777	2508	2586
	30	2588	2522	2547	2348	2372	2446

		ORTHO. WALL LOAD PER GUIDE (lb)					
		Bay Length, L					
		8	10	12	14	16	16.5
Projection, P (ft)	8	1752	2180	2608	3036	3464	3571
	10	1923	2394	2865	3335	3806	3924
	12	2125	2646	3167	3122	3165	3066
	14	2320	2590	2602	2502	2488	2565
	16	2124	2172	1952	2195	2152	2047
	18	1919	1831	1893	1884	1816	1872
	20	1572	1566	1594	1558	1621	1517
	22	1454	1426	1433	1382	1427	1471
	24	1322	1274	1263	1199	1228	1266
	26	1182	1116	1089	1139	1162	1065
	28	1044	1069	1036	1078	970	1000
	30	993	995	970	891	897	925

		DOWNWARD FOOTING LOAD PER COL (lb)					
		Bay Length, L					
		8	10	12	14	16	16.5
Projection, P (ft)	8	3130	3912	4694	5477	6259	6455
	10	3788	4735	5682	6629	7576	7812
	12	4477	5597	6716	6635	6734	6528
	14	5164	5786	5826	5614	5590	5765
	16	4952	5169	5093	5155	5061	4817
	18	4624	4426	4586	4572	4412	4550
	20	3912	3909	3986	3902	4065	3806
	22	3702	3640	3666	3540	3659	3567
	24	3439	3322	3299	3137	3216	3317
	26	3137	2969	2904	3040	3103	2846
	28	2811	2887	2801	2919	2628	2710
	30	2727	2664	2674	2458	2478	2555

		UPLIFT FOOTING LOAD PER GUIDE (lb)					
		Bay Length, L					
		8	10	12	14	16	16.5
Projection, P (ft)	8	0	0	0	0	0	0
	10	0	0	0	0	0	0
	12	0	0	0	0	0	0
	14	0	0	0	0	0	0
	16	0	0	0	0	0	0
	18	0	0	0	0	0	0
	20	0	0	0	0	0	0
	22	0	0	0	0	0	0
	24	0	0	0	0	0	0
	26	0	0	0	0	0	0
	28	0	0	0	0	0	0
	30	0	0	0	0	0	0

MEMBER PROFILE INFORMATION

MITO GUIDE

y	160 mm	=	6.299 in	c _x	3.15 in	A	2403 mm ²	=	3.725 in ²
x	100 mm	=	3.937 in	c _y	1.969 in				
I _x	6929572 mm ⁴	=	16.65 in ⁴	S _x	5.286 in ³			r _x	2.114 in
I _y	2937668 mm ⁴	=	7.058 in ⁴	S _y	3.585 in ³			r _y	1.376 in
J	2010615 mm ⁴	=	4.831 in ⁴						

MITO COLUMN

y	150 mm	=	5.906 in	c _x	2.953 in	A	1200 mm ²	=	1.86 in ²
x	100 mm	=	3.937 in	c _y	1.969 in				
I _x	3916313 mm ⁴	=	9.409 in ⁴	S _x	3.187 in ³			r _x	2.249 in
I _y	2101132 mm ⁴	=	5.048 in ⁴	S _y	2.564 in ³			r _y	1.647 in
J	1867621 mm ⁴	=	4.487 in ⁴						

MITO GUTTER

y	150 mm	=	5.906 in	c _x	2.953 in	A	1293 mm ²	=	2.005 in ²
x	156 mm	=	6.142 in	c _y	3.071 in				
I _x	2301480 mm ⁴	=	5.529 in ⁴	S _x	1.873 in ³			r _x	1.661 in
I _y	5299077 mm ⁴	=	12.73 in ⁴	S _y	4.146 in ³			r _y	2.52 in
J	3165161 mm ⁴	=	7.604 in ⁴						

6061-T6 ALUMINUM PROPERTIES AND CONSTANTS

MATERIAL PROPERTIES

F _{tu}	42 ksi	E	10100 ksi
F _{ty}	35 ksi	G	3787.5 ksi
F _{cy}	35 ksi		
F _{su}	24 ksi		

BUCKLING CONSTANTS

B _c	39.37	k ₁	0.35
D _c	0.246	k ₂	2.27
C _c	65.67	k _t	1
C _b	1		

REDUCTION FACTORS

φ _y	0.9
φ _b	0.9

LOAD VALUES AND REFERENCES

K _d	0.85	Table 26.6-1	Roof Live Load	5 psf	θ	C _{NW}	C _{NL}	
K _z	0.85	Table 27.3-1	Dead Load	1 psf	7.5	A	0.9	1.5
K _{zt}	1	26.8.2	Ground Snow Load	30 psf	15	A	1.3	1.6
G	0.85				22.5	A	1.7	1.8
					7.5	B	1.6	0.3
					15	B	1.8	0.6
					22.5	B	2.2	0.7

WIDTHS (FT):	8	10	12	14	16	16.5						
PROJECTIONS (FT):	8	10	12	14	16	18	20	22	24	26	28	30
EAVE HEIGHT (FT):	8	8	8	8	8	8	8	8	8	8	8	8
ROOF HEIGHT DELTA (FT):	2.23	2.52	2.83	3.13	3.42	3.73	4.02	4.33	4.63	4.92	5.23	5.5
MEAN ROOF HEIGHT (FT):	9.12	9.26	9.415	9.565	9.71	9.865	10.01	10.17	10.32	10.46	10.62	10.75

SAMPLE CALCULATION ALGORITHM FOR FABRIC FULLY EXPANDED

L 16.5 ft
 P 30 ft
 V 50 mph
 Multi-Bay Yes
 L' 33 ft

 θ 10.39 deg
 l 30.50 ft
 h 8
 q 4.62 psf

GUIDE BENDING STRENGTH

Sx 5.286 in³

 φMn 249.8 k-in

POST STRONG BENDING

S 113.2 -
 S1 123.2 -
 S2 1685 -
 φF_b 31.5 ksi

POST WEAK BENDING

S 103.5 -
 S1 123.2 -
 S2 1685 -
 φF_b 31.5 ksi

GUIDE COMP STRENGTH

λ 4.982
 D*_c 13.12
 S*₁ 0.333
 S*₂ 1.231
 φ_{cc} 0.95
 φF_c 1.339 ksi

POST COMP STRENGTH

λ 1.092
 D*_c 13.12
 S*₁ 0.333
 S*₂ 1.231
 φ_{cc} 0.771
 φF_c 19.3 ksi

GUTTER WEAK BENDING

S 166.9 -
 S1 123.2 -
 S2 1685 -
 φF_b 30.86 ksi

POST STRONG AXIS WIND

C_p 0.8
 p 3.144 psf
 = 1.032 lb/ft
 R₁ 3.095 lb (top)
 R₂ 5.158 lb (btm)
 M_{max} 8.253 lb-ft (btm)
 = 0.099 kip-in
 f_b 0.031 ksi
 D/C 1E-03 **OK**

POST WEAK AXIS WIND

C_p 0.8
 p 3.144 psf
 = 1.547 lb/ft
 R₁ 4.642 lb (top)
 R₂ 7.737 lb (btm)
 M_{max} 12.38 lb-ft (btm)
 = 0.149 kip-in
 f_b 0.058 ksi
 D/C 0.002 **OK**

GUTTER

C_p 0.8
 p 3.144 psf
 = 1.547 lb/ft
 R₁ 12.77 lb
 R₂ 12.77 lb
 M_{max} 52.66 lb-ft
 = 0.632 kip-in
 f_b 0.152 ksi
 D/C 0.005 **OK**

180° CASE A

(btm) C_{NW,A} 1.05 -
 (top) C_{NL,A} 1.54 -
 (btm) P_{NW,A} 4.14 psf
 (top) P_{NL,A} 6.05 psf

180° CASE B

C_{NW,B} 1.68 -
 C_{NL,B} 1.54 -
 P_{NW,B} 6.591 psf
 P_{NL,B} 6.047 psf

90° CASE A & B

C_{N,A} -0.8 -
 C_{N,B} 0.8 -
 p_A -3.144 psf
 p_B 3.144 psf

COLUMN COMPRESSION

P_u 2513 lb
 = 2.51 kip
 f_c 1.35 ksi
 D/C 0.07 **OK**

(btm) P_{NW,A} 7.84 psf
 (top) P_{NL,A} 9.75 psf

P_{NW,B} 10.29 psf
 P_{NL,B} 9.747 psf

p_A 0.556 psf
 p_B 6.844 psf

FOOTING REACTION (FACTORED)

2.555 kip Compression
 P_y 0.000 kip Uplift

(btm) w₁ 129.41 lb/ft
 (top) w₂ 160.83 lb/ft
 (btm) R₁ 2093.3 lb
 (top) R₂ 2332.8 lb
 M_{max} 16919 lb-ft
 = 203.03 kip-in

w₁ 169.8 lb/ft
 w₂ 160.8 lb/ft
 R₁ 2555 lb
 R₂ 2487 lb
 M_{max} 19227 lb-ft
 = 230.7 kip-in

w 112.9 lb/ft

 R₁ 1722 lb
 R₂ 1722 lb
 M_{max} 13132 lb-ft
 = 157.6 kip-in

WALL REACTION (FACTORED)

R_y 2446 lb
 R_x 925 lb

D/C 0.8129 **OK**

D/C 0.924 **OK**

D/C 0.631 **OK**

SERVICE LOADS FOR FOOTING BEARING CALCULATIONS

(btm) P_{NW,A} 6.6 psf
 (top) P_{NL,A} 7.47 psf

P_{NW,B} 7.7 psf
 P_{NL,B} 7.47 psf

p_A 3.3 psf
 p_B 6.16 psf

FOOTING REACTION (SERVICE)

1.926 kip Compression
 P_y 0.000 kip Uplift

(btm) w₁ 109 lb/ft
 (top) w₂ 123 lb/ft
 (btm) R₁ 1718 lb
 (top) R₂ 1826 lb

w₁ 127 lb/ft
 w₂ 123 lb/ft
 R₁ 1926 lb
 R₂ 1895 lb

w₁ 55 lb/ft
 w₂ 102 lb/ft
 R₁ 1017 lb
 R₂ 1373 lb

WALL REACTION (SERVICE)

R_y 1864 lb
 R_x 705 lb

SAMPLE CALCULATION ALGORITHM FOR FABRIC FULLY RETRACTED

Hood (H) 30 in = 2.5 ft

p_g 30 psf Ground Snow Load
 C_e 1 Exposure Factor (Table 7-2)
 C_t 1.2 Thermal Factor (Table 7-3)
 I_s 1 Importance Factor (Table 1.5-1)
 p_f 25.2 psf Flat Roof Snow Load
 θ 10.39 deg Roof Section Slope
 C_s 1 Slope Factor (Figure 7-2 per 7.4.3)
 p_s 25.2 psf Sloped Roof Snow Load

	180° CASE A	180° CASE B	90° CASE A & B
	$p_{NL,A}$ 6.047 psf	$p_{NL,A}$ 6.047 psf	$p_{NL,A}$ 3.144 psf
LC #3 w/ Lr	12.22 psf	LC #3 w/ Lr 12.22 psf	LC #3 w/ Lr 10.77 psf
LC #3 w/ S	44.54 psf	LC #3 w/ S 44.54 psf	LC #3 w/ S 43.09 psf
LC #4 w/ Lr	9.747 psf	LC #4 w/ Lr 9.747 psf	LC #4 w/ Lr 6.844 psf
LC #4 w/ S	19.85 psf	LC #4 w/ S 19.85 psf	LC #4 w/ S 16.94 psf
MAX	44.54 psf	MAX 44.54 psf	MAX 43.09 psf

COLUMN COMPRESSION

P_u 74.07 lb
 = 0.074 kip
 f_c 0.04 ksi
 D/C 0.002 **OK**

FOOTING REACTION (FACTORED)

P_y 75 lb Compression
 0 lb Uplift

	w_H 735 lb/ft	w_H 735 lb/ft	w_H 711 lb/ft
(top)	R_1 1762 lb	R_1 1762 lb	R_1 1705 lb
(btm)	R_2 75.3 lb	R_2 75.3 lb	R_2 72.85 lb
	M_{max} 2112 lb-ft	M_{max} 2112 lb-ft	M_{max} 2044 lb-ft
	= 25.35 kip-in	= 25.35 kip-in	= 24.52 kip-in
D/C	0.101 OK	D/C 0.101 OK	D/C 0.098 OK

WALL REACTION (FACTORED)

R_y 1762 lb
 R_x 347.2 lb