

PLP
COMPOSITE TECHNOLOGIES INC.
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Computerized Composite FLAGPOLE Engineering and Design
with Load Calculations Based on Standards Established by
The National Association of Architectural Metal Manufacturers (NAAMM)
and

The American Association of State Highway and Transportation Officials (AASHTO)
6th Edition 2013, using Appendix C-Alternate Method for Wind Pressures.

TABLE 1

GIVEN INFORMATION

Flagpole name.....	35 ADM
Nautical yardarm.....	11 feet long, 21 feet above ground
Gaff.....	9 feet long, 21 feet above ground
Height of pole.....	35 feet
Depth of bury in ground.....	4 feet
Base diameter.....	8.688 inches
Tip diameter.....	5.276 inches
Flag size, hoist x fly.....	0 feet x 0 feet (polyester fabric)
Flags, nautical yardarm (2)...	0 feet x 0 feet (polyester fabric)
Flag, gaff.....	0 feet x 0 feet (polyester fabric)
Wind speed.....	150 MPH, gust factor 1.3
Material.....	PLP16, 50 inches wide
Breaking Stress.....	24000 psi
Modulus of Elasticity.....	2000000 psi
Wall Th./Inside Dia. ratio....	.018

TABLE 2

35 ADM
FLAGPOLE
with 11 foot nautical yardarm and 9 foot gaff

BENDING MOMENT, STRESS, & DEFLECTION

POLE HEIGHT feet	OUTSIDE DIAMETER inches	INERTIA MOMENT inch ⁴	SECTION MODULUS inch ³	BENDING MOMENT ft-lbs	STRESS psi	DEFLECTION feet
35.000	5.276	7.356	2.788	0.000	0.000	4.595
34.000	5.526	8.482	3.070	10.844	42.387	4.413
33.000	5.796	9.822	3.389	43.897	155.427	4.231
32.000	6.056	11.238	3.711	100.213	324.012	4.049
31.000	6.280	10.585	3.371	180.811	643.617	3.868
30.000	6.550	12.038	3.676	286.672	935.912	3.687
29.000	6.842	18.865	5.515	417.634	908.798	3.507
28.000	7.022	20.431	5.819	573.470	1182.592	3.327
27.000	7.222	22.270	6.167	754.958	1468.994	3.149
26.000	7.402	24.016	6.489	962.790	1780.470	2.972
25.000	7.592	25.956	6.838	1197.651	2101.868	2.796
24.000	7.676	23.220	6.050	1460.130	2896.168	2.623
23.000	7.796	24.346	6.246	1750.662	3363.554	2.451
22.000	7.896	25.312	6.411	2069.635	3873.694	2.282
21.000	8.118	36.107	8.895	2417.541	3261.259	2.116
20.000	8.218	37.489	9.124	3208.906	4220.589	1.952
19.000	8.248	37.910	9.193	4030.207	5261.031	1.792
18.000	8.268	38.193	9.239	4881.606	6340.631	1.635
17.000	8.368	39.627	9.471	5763.261	7302.072	1.483
16.000	8.388	39.918	9.518	6675.389	8416.123	1.336
15.000	8.408	40.211	9.565	7618.136	9557.564	1.195
14.000	8.418	40.358	9.588	8588.494	10748.528	1.061
13.000	8.428	40.505	9.612	9583.438	11964.320	0.935
12.000	8.530	51.684	12.118	10603.061	10499.658	0.817
11.000	8.560	52.246	12.207	11647.540	11449.974	0.706
10.000	8.652	63.760	14.739	12717.062	10353.883	0.603
9.000	8.682	64.448	14.846	13811.811	11163.890	0.508
8.000	8.794	77.002	17.512	14931.969	10231.829	0.420
7.000	8.804	77.275	17.554	16077.733	10990.542	0.340
6.000	8.804	77.275	17.554	17249.203	11791.344	0.267
5.000	8.916	90.429	20.285	18446.463	10912.593	0.201
4.000	8.936	91.064	20.381	19669.695	11580.959	0.144
3.000	9.002	98.241	21.826	20919.055	11501.106	0.093
2.000	9.114	112.396	24.664	22194.738	10798.396	0.051
1.000	9.124	112.784	24.723	23496.963	11405.099	0.016
0.000	9.216	126.714	27.499	24825.895	10833.629	0.000
-1.000	8.960	86.764	19.367	18619.422	11536.763	0.000
-2.000	8.760	56.099	12.808	12412.947	11629.975	0.000
-3.000	8.678	44.302	10.210	6206.474	7294.517	0.000
-4.000	8.688	44.458	10.234	0.000	0.000	0.000

Maximum stress is 11964.32 PSI, located at 13 FT above ground.