

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.....	SW30
Height of pole.....	30 feet
Depth of bury in ground.....	3 feet
Base diameter.....	7.09 inches
Tip diameter.....	4.124 inches
Flag size, hoist x fly.....	0 feet x 0 feet (polyester fabric)
Wind speed.....	180 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

SW30
FLAGPOLE

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
30.000	4.124	2.369	1.149	0.000	0.000	3.193
29.000	4.304	2.701	1.255	11.224	107.309	3.027
28.000	4.464	3.021	1.353	45.193	400.745	2.861
27.000	4.634	3.387	1.462	102.641	842.679	2.696
26.000	4.758	2.794	1.174	184.388	1883.927	2.531
25.000	5.102	7.635	2.993	291.435	1168.532	2.369
24.000	5.176	6.935	2.680	424.946	1902.999	2.209
23.000	5.326	7.573	2.844	585.764	2471.885	2.050
22.000	5.446	8.110	2.978	774.540	3120.661	1.895
21.000	5.596	8.817	3.151	991.983	3777.591	1.743
20.000	5.696	9.310	3.269	1238.775	4547.268	1.595
19.000	5.796	9.822	3.389	1515.509	5366.005	1.451
18.000	5.896	10.352	3.511	1822.710	6229.053	1.314
17.000	5.976	10.789	3.611	2160.878	7181.536	1.182
16.000	6.118	15.113	4.940	2530.541	6146.605	1.058
15.000	6.188	15.653	5.059	2932.268	6954.994	0.940
14.000	6.248	16.127	5.162	3363.242	7817.978	0.828
13.000	6.318	16.692	5.284	3820.500	8676.618	0.724
12.000	6.506	24.331	7.480	4304.452	6905.991	0.628
11.000	6.530	22.615	6.926	4815.591	8343.056	0.539
10.000	6.718	31.123	9.265	5354.362	6934.632	0.457
9.000	6.738	31.414	9.324	5921.208	7620.259	0.381
8.000	6.778	32.002	9.443	6516.408	8280.968	0.313
7.000	6.910	38.440	11.126	7140.211	7701.201	0.251
6.000	7.078	48.299	13.648	7793.108	6852.252	0.196
5.000	7.200	55.567	15.435	8475.722	6589.367	0.147
4.000	7.220	56.062	15.530	9188.507	7100.161	0.103
3.000	7.240	56.559	15.624	9931.654	7627.971	0.066
2.000	7.260	57.060	15.719	10705.246	8172.523	0.035
1.000	7.280	57.563	15.814	11509.370	8733.554	0.010
0.000	7.310	58.324	15.957	12344.118	9282.910	0.000
-1.000	7.182	48.248	13.436	8229.412	7350.033	0.000
-2.000	7.090	41.683	11.758	4114.706	4199.288	0.000
-3.000	7.090	41.683	11.758	0.000	0.000	0.000

Maximum stress is 9282.91 PSI, located at 0 FT above ground.