

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)  
Year 2001 and Interims, using Appendix C-Alternate Method for Wind Pressures.

TABLE 1

GIVEN INFORMATION

Flagpole name.....	20C
Height of pole.....	20 feet
Depth of bury in ground.....	3 feet
Base diameter.....	5.446 inches
Tip diameter.....	3.076 inches
Flag size, hoist x fly.....	0 feet x 0 feet (polyester fabric)
wind speed.....	125 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

20C  
FLAGPOLE

## BENDING MOMENT, STRESS, &amp; DEFLECTION

POLE HEIGHT feet	OUTSIDE DIAMETER inches	INERTIA MOMENT inch <sup>4</sup>	SECTION MODULUS inch <sup>3</sup>	BENDING MOMENT ft-lbs	STRESS psi	DEFLECTION feet
20.000	3.076	1.377	0.896	0.000	0.000	1.859
19.000	3.126	1.449	0.927	9.533	123.416	1.714
18.000	3.180	1.302	0.819	38.085	558.051	1.569
17.000	3.380	1.574	0.931	85.497	1101.723	1.425
16.000	3.630	1.963	1.082	151.472	1680.318	1.284
15.000	3.814	1.864	0.977	235.662	2893.197	1.145
14.000	3.964	2.098	1.059	336.002	3808.265	1.011
13.000	4.134	2.387	1.155	450.508	4681.258	0.882
12.000	4.304	2.701	1.255	579.008	5535.888	0.761
11.000	4.404	2.898	1.316	721.350	6577.519	0.647
10.000	4.484	3.062	1.366	877.426	7709.057	0.542
9.000	4.604	3.320	1.442	1047.149	8712.818	0.447
8.000	4.724	3.592	1.521	1230.421	9709.325	0.364
7.000	4.972	7.048	2.835	1427.109	6040.329	0.291
6.000	5.042	7.360	2.920	1637.073	6728.786	0.227
5.000	5.220	11.246	4.309	1860.199	5180.470	0.171
4.000	5.280	11.656	4.415	2096.395	5697.646	0.121
3.000	5.320	11.935	4.487	2345.597	6273.189	0.078
2.000	5.390	12.434	4.614	2607.767	6782.798	0.041
1.000	5.460	12.946	4.742	2882.858	7295.150	0.012
0.000	5.444	11.694	4.296	3170.837	8856.992	0.000
-1.000	5.494	12.032	4.380	2113.891	5791.595	0.000
-2.000	5.396	7.883	2.922	1056.946	4340.853	0.000
-3.000	5.446	8.110	2.978	0.000	0.000	0.000

Maximum stress is 9709.325 PSI, located at 8 FT above ground.