

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.....	20R
Height of pole.....	20 feet
Depth of bury in ground.....	2 feet
Base diameter.....	3.992 inches
Tip diameter.....	2.672 inches
Flag size, hoist x fly.....	0 feet x 0 feet (polyester fabric)
wind speed.....	90 MPH, gust factor 1.3
Material.....	PLP16, 25 inches wide
Breaking Stress.....	24000 psi
Modulus of Elasticity.....	2000000 psi
wall Th./Inside Dia. ratio....	.018

TABLE 2

20R
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
20.000	2.672	1.005	0.752	0.000	0.000	2.785
19.000	2.742	1.091	0.796	4.348	65.548	2.591
18.000	2.756	0.975	0.708	17.459	296.073	2.398
17.000	2.926	1.177	0.805	39.549	589.764	2.206
16.000	2.602	0.924	0.710	70.641	1194.102	2.015
15.000	3.140	1.252	0.797	110.784	1667.237	1.827
14.000	3.370	1.559	0.925	159.721	2071.050	1.641
13.000	3.390	1.588	0.937	217.184	2781.318	1.460
12.000	3.480	1.723	0.990	283.403	3434.903	1.283
11.000	3.550	1.832	1.032	358.553	4167.806	1.113
10.000	3.620	1.947	1.076	442.826	4940.861	0.949
9.000	3.680	2.048	1.113	536.395	5782.225	0.794
8.000	3.700	2.083	1.126	639.396	6814.753	0.648
7.000	3.720	2.118	1.139	751.906	7923.941	0.513
6.000	3.740	2.153	1.152	873.975	9107.563	0.392
5.000	3.724	1.732	0.930	1005.632	12972.850	0.285
4.000	3.882	3.263	1.681	1146.972	8186.185	0.196
3.000	3.922	3.370	1.718	1298.212	9065.937	0.123
2.000	3.932	3.397	1.728	1459.512	10137.367	0.063
1.000	3.952	3.451	1.746	1630.923	11206.523	0.018
0.000	3.972	3.506	1.765	1812.490	12321.346	0.000
-1.000	3.982	3.533	1.775	906.245	6127.876	0.000
-2.000	3.992	3.561	1.784	0.000	0.000	0.000

Maximum stress is 12972.85 PSI, located at 5 FT above ground.