PLP
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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 | 35C |
| Height of pole | 35 feet |
| Depth of bury in ground | 4 feet |
| Base diameter | 6.86 inches |
| Tip diameter | 3.156 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

35C
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 |
|---|---|---|---|---|---|---|
| 35.000 | 3.156 | 1.493 | 0.946 | 0.000 | 0.000 | 5.618 |
| 34.000 | 3.126 | 1.449 | 0.927 | 10.446 | 135.236 | 5.360 |
| 33.000 | 3.426 | 3.194 | 1.865 | 41.654 | 268.072 | 5.102 |
| 32.000 | 3.610 | 3.504 | 1.941 | 93.274 | 576.598 | 4.844 |
| 31.000 | 3.810 | 4.161 | 2.184 | 164.928 | 906.033 | 4.588 |
| 30.000 | 3.964 | 4.324 | 2.182 | 256.319 | 1409.919 | 4.332 |
| 29.000 | 4.118 | 4.409 | 2.141 | 366.314 | 2052.866 | 4.080 |
| 28.000 | 4.308 | 5.078 | 2.358 | 493.811 | 2513.559 | 3.830 |
| 27.000 | 4.488 | 5.771 | 2.572 | 638.587 | 2979.449 | 3.583 |
| 26.000 | 4.602 | 5.545 | 2.410 | 800.449 | 3985.950 | 3.341 |
| 25.000 | 4.772 | 6.206 | 2.601 | 979.232 | 4517.895 | 3.103 |
| 24.000 | 4.942 | 6.917 | 2.799 | 1174.771 | 5035.838 | 2.872 |
| 23.000 | 5.102 | 7.635 | 2.993 | 1386.891 | 5560.857 | 2.646 |
| 22.000 | 5.176 | 6.935 | 2.680 | 1615.453 | 7234.352 | 2.428 |
| 21.000 | 5.326 | 7.573 | 2.844 | 1860.348 | 7850.540 | 2.217 |
| 20.000 | 5.446 | 8.110 | 2.978 | 2121.461 | 8547.473 | 2.015 |
| 19.000 | 5.596 | 8.817 | 3.151 | 2398.670 | 9134.426 | 1.823 |
| 18.000 | 5.696 | 9.310 | 3.269 | 2691.862 | 9881.222 | 1.640 |
| 17.000 | 5.796 | 9.822 | 3.389 | 3000.942 | 10625.517 | 1.468 |
| 16.000 | 5.896 | 10.352 | 3.511 | 3325.825 | 11365.897 | 1.307 |
| 15.000 | 6.068 | 14.734 | 4.856 | 3666.419 | 9059.782 | 1.157 |
| 14.000 | 6.118 | 15.113 | 4.940 | 4021.068 | 9767.051 | 1.016 |
| 13.000 | 6.188 | 15.653 | 5.059 | 4388.184 | 10408.254 | 0.885 |
| 12.000 | 6.248 | 16.127 | 5.162 | 4767.844 | 11083.025 | 0.764 |
| 11.000 | 6.456 | 23.752 | 7.358 | 5160.250 | 8415.441 | 0.653 |
| 10.000 | 6.506 | 24.331 | 7.480 | 5565.669 | 8929.468 | 0.551 |
| 9.000 | 6.530 | 22.615 | 6.926 | 5984.270 | 10367.802 | 0.457 |
| 8.000 | 6.580 | 23.157 | 7.039 | 6416.126 | 10938.825 | 0.372 |
| 7.000 | 6.738 | 31.414 | 9.324 | 6861.380 | 8830.208 | 0.296 |
| 6.000 | 6.778 | 32.002 | 9.443 | 7320.239 | 9302.466 | 0.230 |
| 5.000 | 6.910 | 38.440 | 11.126 | 7792.892 | 8405.161 | 0.171 |
| 4.000 | 6.940 | 38.968 | 11.230 | 8279.504 | 8847.157 | 0.119 |
| 3.000 | 6.970 | 39.502 | 11.335 | 8780.194 | 9295.533 | 0.075 |
| 2.000 | 6.990 | 39.860 | 11.405 | 9295.015 | 9780.126 | 0.040 |
| 1.000 | 7.148 | 49.833 | 13.943 | 9824.076 | 8454.900 | 0.012 |
| 0.000 | 7.168 | 50.277 | 14.028 | 10367.566 | 8868.556 | 0.000 |
| -1.000 | 7.188 | 50.724 | 14.114 | 7775.675 | 6611.217 | 0.000 |
| -2.000 | 7.080 | 41.498 | 11.723 | 5183.783 | 5306.406 | 0.000 |
| -3.000 | 6.952 | 32.304 | 9.294 | 2591.892 | 3346.703 | 0.000 |
| -4.000 | 6.860 | 26.354 | 7.683 | 0.000 | 0.000 | 0.000 |

Maximum stress is 11365.9 PSI, located at 16 FT above ground.