

Flag Pole Calculations per NAAMM Standard FP-1-86

Customer name: SALES

Date: 05/10/10

Note: ECXAP50 W/96 SQ FT

Time: 10:17 am

This pole passes for wind speeds up to 90 MPH ie, gusts UP TO 90 MPH.

Pole type.....Tapered
Pole material.....Aluminum
Mount height above grade (ft.).....0
Height from mount to top (ft.).....50
Diameter at mount (in.).....8.000
Wall thickness at mount (in.).....0.188
Length of tapered section (ft.).....37.000
Wall thickness in taper (in.).....0.156
Diameter - pole top (in.).....3.500

Flag material.....Cotton or nylon
Flag length (ft.).....8.000
Flag height (ft.).....12.000
Flag height above grade (ft.).....50.000

Material Density.....0.100
Modulus of Elasticity.....10,000,000
Allowable Bending Stress.....25,000
Allowable Shear Stress.....11,900
Allowable Yield Stress.....25,000
Allowable Axial Stress.....167.413

Seg	Zone	psf	A(seg)	Cd	Wp(lbs)	L(ft)	M(ft-lbs)	STRESS	CALC'D	ALLOW
1	0-15	17	8.67	0.49	70.2	6.5	456	Axial	46	167
2	0-15	17	1.31	0.50	10.8	14.0	152			
3	15-30	21	8.56	0.60	106.0	22.5	2386	Bending	19511	25000
4	30-50	23	7.86	0.97	173.9	40.0	6956			
					360.9		9950	Shear	199	11900

C(amp) =
0.935

Height of Flag Centroid (ft.).....44.000
Wind Load Due to Flag.....99.204
Bending Moment Due to Flag.....4,364.991
Wind Load Due to Pole.....360.939
Bending Moment Due to Pole.....9,949.766
Total Axial Load.....213.072
Pole Base Area.....4.614
Moment of Inertia at Pole Base.....35.217
Calculated Axial Stress.....46.180
Calculated Bending Stress.....19,510.541
Calculated Shear Stress.....199.459
Coefficient of Amplification.....0.935

Combined Stress Ratio (MUST be < 1.0).....0.837