Gin pole design parameters:
The PS27 gin pole, manufactured by Tower Equipment Co., Inc., is designed per the TIA Standard, TIA-1019, Structural Standards for Steel Gin Poles for Installation of Antenna Towers and Antenna Supporting Structures.

The analysis, in this load case, is governed by the following;
- Class D, capable of lifting over 10,000 pounds gross load when rigged thus
  - Cantilever height of 50 percent overall length
  - A 2 degree load line angle, measured from vertical
  - A tag line of 60 degrees, measured from the horizontal
  - Gin pole attached to the tower at the bridle and basket only
  - Effective length factor of K=2.8 taken over the cantilever portion of pole
  - The Impact factor is 1.20
  - An ASD design requires a load combination of 1.0D + 1.0(L x Im) + 1.0W
- Special Load Case - Load lifted off face only - Less than 4 feet space from pole face to sheave

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Section Design Values

Face width of pole	$dx := 27$		inch
Total length	$L := 123$		feet
Length extended	$La := L \cdot 0.5$	$La = 61.5$	feet
Length attached	$Lb := L - La$	$Lb = 61.5$	feet
Weight of gin pole, per foot	$Wtp := \frac{1500}{20}$	$Wtp = 75$	lbs/ft
Leg Material - TS 3 x 3 x 1/4			
Area	$Aleg := 2.44$		$inch^2$
Weight per foot	$wleg := 8.81$		lb/ft
Moment of Inertia	$Ileg := 3.02$		$inch^4$
Total leg area	$Atot := 4 \cdot Aleg$	$Atot = 9.76$	$inch^2$
Leg radius of gyration	$r := 1.11$		inch
Section moment of inertia	$I := Atot \cdot \left(\frac{dx}{2}\right)^2$	$I = 1778.76$	$inch^4$
Section radius of gyration	$rp := \sqrt{\frac{I}{Atot}}$	$rp = 13.5$	inch
Section modulus, x, y	$Sx := \frac{I}{\left(\frac{dx}{2}\right)}$	$Sx = 131.76$	$inch^3$
Distance to extreme fiber	$c := dx \cdot 0.5$	$c = 13.5$	inch
Section modulus, z	$Sz := \frac{I}{c}$	$Sz = 131.76$	$inch^3$