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PARABOLOID DIMENSIONS

Diameter: 60 feet

Height of rim: 12.5 feet

Focal length: 18 feet

Focal ratio: 0.3

$$y = \frac{x^2}{72}$$

$$\text{slope } m = \frac{dy}{dx} = \frac{x}{36}$$

Radius of curvature: in axial plane

in perp. plane

= $x / \cos[\text{slope of normal}]$

$$\frac{[1 + (\frac{dy}{dx})^2]^{3/2}}{\frac{d^2y}{dx^2}} = 36 \left(1 + \frac{x^2}{36^2}\right)^{3/2}$$

$$= \sqrt{36^2 + x^2} \frac{dy}{dx}$$

$$\frac{x \sqrt{1 + (\frac{dy}{dx})^2}}{\frac{dy}{dx}}$$

	x feet	y feet	m = dy/dx	Rad. of c/vtr in axial plane feet	Rad. of c/vtr in perp. plane feet
36	0	0	0	36	36
m		0.195		$\sqrt{1+m^2}$	$1+m^2$
20	7.5	0.781	0.208 (11°45')	38	1.02 1.0433 37.135
32	15	3.125	0.417 (22°32')	46	1.08 1.1739 39.618
53	22.5	7.031	0.625 (32°0')	59	1.18 1.3906 43.691
64	30	12.500	0.833 (39°48')	78	1.30 1.6773 47.713

