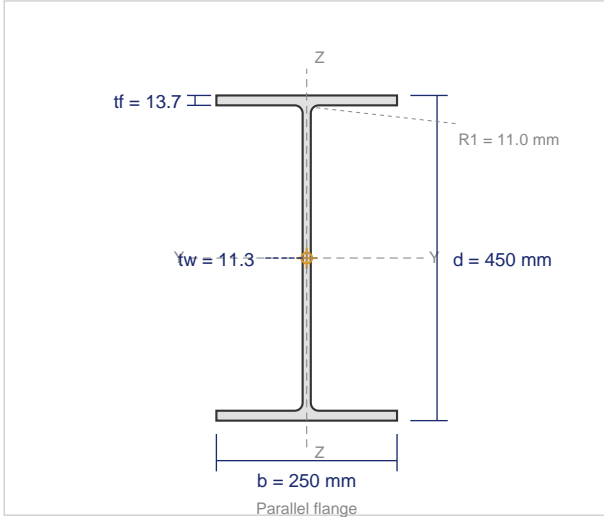


# ISHB 450 H

Indian Standard Heavy Beam -- IS 808 : 1989

## CROSS SECTION (Proportionally Accurate)



## DIMENSIONS

Depth (d)	450 mm
Flange Width (b)	250 mm
Web Thickness (tw)	11.3 mm
Flange Thickness (tf)	13.7 mm
Root Radius (R1)	11.0 mm
Variant	Heavy
Weight per Meter	87.2 kg/m
Cross-sectional Area	11106 mm <sup>2</sup>
Surface Area	1.826 m <sup>2</sup> /m

## SECTIONAL PROPERTIES

Property	About X-X Axis	About Y-Y Axis
Moment of Inertia	<b><math>I_x = 333,054,000 \text{ mm}^4</math></b>	<b><math>I_y = 36,107,000 \text{ mm}^4</math></b>
Elastic Section Modulus	<b><math>Z_x = 1,480,200 \text{ mm}^3</math></b>	<b><math>Z_y = 288,900 \text{ mm}^3</math></b>
Plastic Section Modulus	<b><math>Z_{px} = 1,690,400 \text{ mm}^3</math></b>	<b><math>Z_{py} = 441,100 \text{ mm}^3</math></b>
Radius of Gyration	<b><math>r_x = 173.2 \text{ mm}</math></b>	<b><math>r_y = 57.0 \text{ mm}</math></b>
Distance to Extreme Fibre	<b><math>c_x = 225.0 \text{ mm}</math></b>	<b><math>c_y = 125.0 \text{ mm}</math></b>
Shape Factor ( $Z_p/Z$ )	<b>1.142</b>	<b>1.527</b>
Torsional Constant	<b><math>I_t = 740,400 \text{ mm}^4</math></b>	
Warping Constant	<b><math>I_w = 1,748,500,000,000 \text{ mm}^6</math></b>	
Shear Area	<b><math>A_v = 5,085 \text{ mm}^2</math></b>	

## FACTORED CAPACITY (per IS 800:2007, $\gamma_{m0} = 1.10$ )

Grade	Mp X-X (kN.m)	Mp Y-Y (kN.m)	Axial Pd (kN)
E 250 (Fe 410W)	384.2	100.2	2524
E 350	537.9	140.3	3534
E 410	630.1	164.4	4140
E 450	691.5	180.4	4543

## APPLICABLE STANDARDS

<b>IS 808 : 1989</b>	Dimensions for hot rolled steel beam, column, channel and angle sections
<b>IS 2062 : 2011</b>	Hot rolled medium and high tensile structural steel
<b>IS 800 : 2007</b>	General construction in steel -- Code of practice
<b>IS 1852</b>	Tolerances for hot rolled structural steel sections