W12×26
$I = 204$
$A = 7.65$

Centroid of W12×26

Centroid of Composite

7.74″

1.63″

Centroid of Plate

$y = 0.188″$

$Y = 4.86″$

$y = 6.49″$

Coordinate Axis
(Location Arbitrary)

Plate $\frac{3}{8}″ \times 7″$
$I = 0.0308$
$A = 2.63$

	y	A	yA	I
Plate	0.188	2.63	0.494	0.0308
W12×26	6.49	7.65	49.6	204
		10.3	50.1	204

$$Y = \frac{50.1}{10.3} = 4.86″$$

N.T.S.

Use The Parallel Axis Theorm

I for the W12×26 portion of composite
$$I_x = I + A(\text{Distance Centroid Moves})^2$$
$$I_x = 204 + (7.65)(1.63)^2 = 224$$

I for Plate portion of composite
$$I_x = 0.0308 + (2.63)(4.86 - 0.188)^2 = 57.4$$

$$I_{composite} = 224 + 57.4 = 281 \text{ in}^4$$

$$S_{composite} = \frac{I}{\text{Distance To Extreme Fiber}}$$

$$S_{composite} = \frac{281}{7.74} = 36.3 \text{ in}^3$$