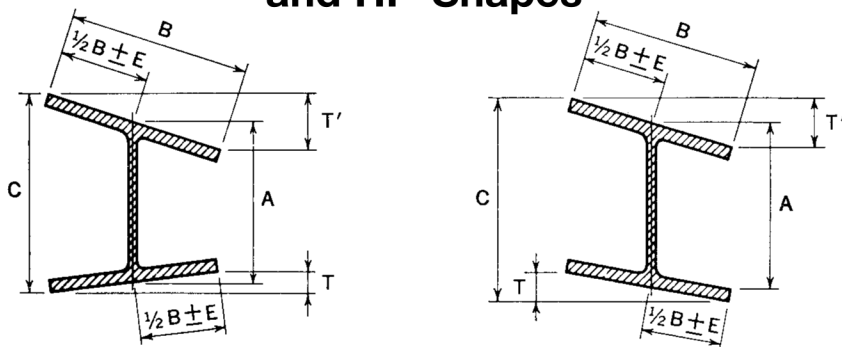


**Table 1-22  
ASTM A6 Tolerances for W-Shapes  
and HP-Shapes**



**Permissible Cross-Sectional Variations**

Nominal Depth, in.	A Depth at Web Centerline, in.		B Flange Width, in.		T + T' Flanges Out of Square, Max. in.	E <sup>a</sup> Web Off Center, in.	C, Max. Depth at any Cross-Section over Theoretical Depth, in.
	Over	Under	Over	Under			
To 12, incl.	1/8	1/8	1/4	3/16	1/4	3/16	1/4
Over 12	1/8	1/8	1/4	3/16	5/16	3/16	1/4

**Permissible Variations in Length**

Nominal Depth <sup>b</sup> , in.	Variations from Specified Length for Lengths Given, in.			
	30 ft and Under		Over 30 ft	
	Over	Under	Over	Under
Beams 24 in. and under	3/8	3/8	3/8 plus 1/16 for each additional 5 ft or fraction thereof	3/8
Beams over 24 in. All columns	1/2	1/2	1/2 plus 1/16 for each additional 5 ft or fraction thereof	1/2

**Mill Straightness Tolerances<sup>c</sup>**

Sizes	Length	Permissible Variation in Straightness, in.	
		Camber	Sweep
Flange width equal to or greater than 6 in.	All	1/8 in. × $\frac{(\text{total length, ft})}{10}$	
Flange width less than 6 in.	All	1/8 in. × $\frac{(\text{total length, ft})}{10}$	1/8 in. × $\frac{(\text{total length, ft})}{5}$
Certain sections with a flange width approx. equal to depth & specified on order as columns <sup>d</sup>	45 ft and under	1/8 in. × $\frac{(\text{total length, ft})}{10}$ with 3/8 in. max.	
	Over 45 ft	3/8 in. + $\left[ \frac{1}{8} \text{ in.} \times \frac{(\text{total length, ft} - 45)}{10} \right]$	

**Other Permissible Rolling Variations**

<b>Area and Weight</b>	-2.5 to +3.0% from the theoretical cross-sectional area or the specified nominal weight <sup>e</sup>
<b>Ends Out of Square</b>	1/64 in., per in. of depth, or of flange width if it is greater than the depth

<sup>a</sup> Variation of 5/16 in. max. for sections over 426 lb/ft.

<sup>b</sup> For shapes specified in the order for use as bearing piles, the permitted variations are plus 5 in. and minus 0 in.

<sup>c</sup> The tolerances herein are taken from ASTM A6 and apply to the straightness of members received from the rolling mill, measured as illustrated in Figure 1-1.

<sup>d</sup> Applies only to W8×31 and heavier, W10×49 and heavier, W12×65 and heavier, W14×90 and heavier, HP8×36, HP10×57, HP12×74 and heavier, and HP14×102 and heavier. If other sections are specified on the order as columns, the tolerance will be subject to negotiation with the manufacturer.

<sup>e</sup> For shapes with a nominal weight ≥ 100 lb/ft, the permitted variation is ±2.5% from the theoretical or specified amount.

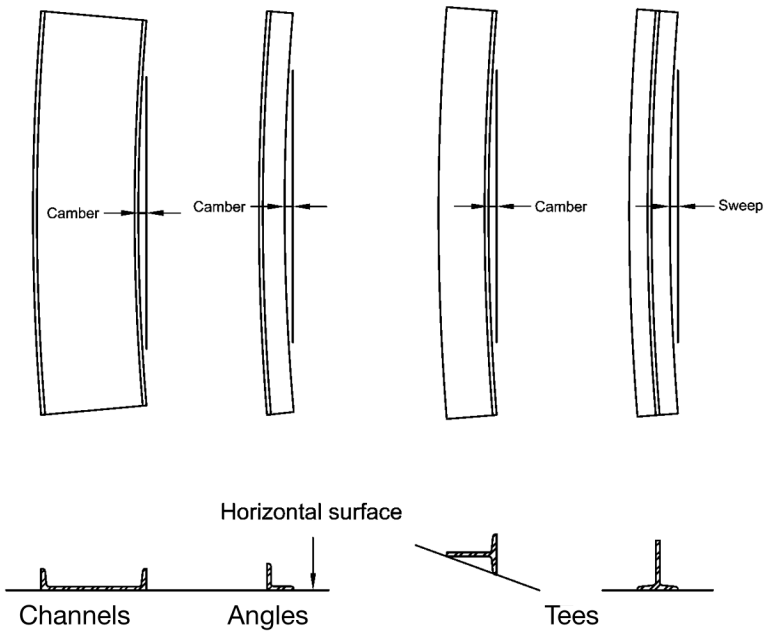
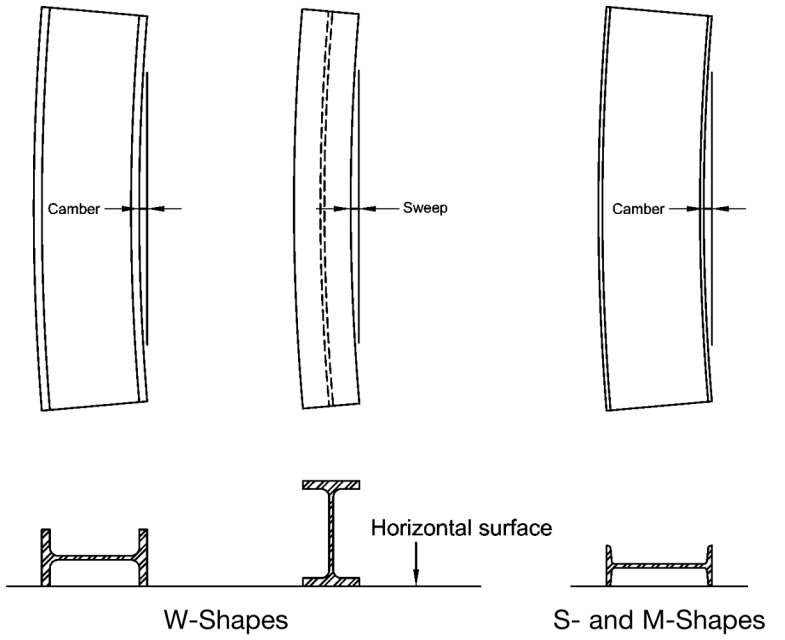


Fig. 1-1. Positions for measuring straightness.