

NOMENCLATURE

A	Cross sectional area (sq. in. ²)	W_n²	The normalized warping function at a point in the web edge (in ²)
A_f	Cross sectional area of flange (in. ²)	Z_x, Z_y	Plastic section modulus (in ³)
C_w	Warping constant for the section (in. ⁶)	b_f	Width of flange (in)
E_y	Modulus of elasticity of steel (29,000 ksi)	d	Depth of section
F'_y	Specified minimum yield stress (ksi)	h	Clear distance between flanges of a section
F''_y	Theoretical yield stress at which the shape becomes non-compact as defined by flange criteria (ksi)	g	Usual gage in flange (in)
H	Flexural constant for channel sections	k	Distance from outer face of flange to intersection if fillet with web (in)
I_x, I_y	Moment of inertia of a section (in ⁴)	k₁	Distance from center line of web to intersection of fillet with flange (in)
J	The torsional constant for the section (in)	r_x, r_y	Radius of gyration (in)
Q_f	Statical moment of flange (in ³)	r_T	Radius of gyration of a section comprising of the compression web area, taken about an axis in the of the web
Q_w	Statical moment of a cross section (in ³)	t_f	Flange thickness for shapes with no flange slope (in)
S_x, S_y	Elastic section modulus. (in ³) (based on the exact theoretical value of I)	t_w	Web thickness (in)
S_{w1}	The warping statical moment at a point in the section (in ⁴)	x, y	Distances from outside face of section to neutral axes Y-Y and X-X respectively (in)
T	Tangent distance on the web between fillets		
W_{no}	The normalized warping function at a point in the cross section (in ²)		

STRUCTURAL GRADES

ASTM A-36

Mild Steel, General Building Grade

ASTM A572-50

High strength, Low-Alloy, General Building Grade

ASTM A572-50 with AISC Tech Bulletin #3

AISC Specification. Same as A572-50, except the maximum yield of 65, F_y/F_u of .85 and carbon equivalent of .50% maximum.

ASTM A992

Same specification as AISC Tech Bulletin #3, but applies to Wide Flange only

ASTM A572-60

High strength, Low-Alloy Specification

ASTM A572-65

High strength, Low-Alloy Specification

ASTM 328

Sheet Pile Specification

ASTM A529-50

High Strength Non-Alloyed. Generally used in metal building industry. Previous plate specification which now includes structural steel shapes.

ASTM A588, A, B & C

High Strength Corrosion-Resistant. General Building Grade.

ASTM A690

High Strength, Low-Alloy Corrosive-Resistant Specification used in H-Piles and Sheet Piles.