

8. *Annealing*.—Excepting minor details, steel which has been partially heated shall be properly annealed.

9. *Burning*.—The use of a burning-torch is permissible if the burned metal is not carrying stress during the burning. Stresses shall not be transmitted into metal through a burned surface.

10. *Cleaning and Painting*.—All iron and steel surfaces, except such as are to be encased in concrete with a hard aggregate (not breeze or pumice) mixed in the proportion of one to two and a half to five (1:2½:5), or a richer mix, shall be painted. All surfaces, before painting or enclosing in concrete, shall be thoroughly scraped and cleaned of rust, scale, and dirt, either with sand-blast, steel scrapers, or stiff wire brushes; finally, surfaces to be painted shall be dusted off with stiff bristle brushes. Oil, paraffin, and grease shall be removed by wiping with benzine or petrol.

All painted work, including rivet-heads, shall receive at least two coats all over.

PART II.—WORKING STRESSES.

1. Subject to the provisions of Sections 2, 3, and 4, the working unit stresses shall not exceed the following per square inch :—

	lb.
(a) Tension on net section	18,000
(b) Compression on net section	18,000
(c) Compression on columns, struts, pillars. (See Section 4.)	
(d) Bending on extreme fibres of—	
Rolled shapes, built-up sections, and girders (net section)	18,000
Compression side of built-up section (gross section)	15,000
Pins	27,000
Steel castings	12,000
Iron castings—tension	3,000
Iron castings—compression	10,000
(e) Shearing on—	
Pins and power-driven shop rivets	13,500
Gun-driven field rivets	12,000
Turned bolts in reamed holes	12,000
Sledge-driven field rivets	10,000
Unfinished bolts	8,000

The strength of rivets and bolts in double shear is to be taken as twice that for single shear.

The shear area for rivets and bolts shall be estimated on the nominal diameter.

(f) Bearing on—	
Pins and power-driven shop rivets	27,000
Gun-driven field rivets	24,000
Turned bolts in reamed holes	24,000
Sledge-driven field rivets	20,000
Unfinished bolts	16,000

The bearing stress in holes for the central thickness of metal where rivets are in double shear may be increased by 25 per cent.

(g) The allowable unit shearing stresses in webs of rolled sections or in plate girder webs for buildings shall not exceed that given by the formula—

$$S_s = \frac{12,000}{1 + \frac{h^2}{3,000t^2}}$$

where S_s is the allowable unit shearing stress in pounds per square inch, t is the thickness of the web, and h is the vertical distance between flanges of beams of rolled section, and for plate girders the horizontal distance between stiffeners or vertical distance between flanges, whichever is the smaller. All dimensions are in inches.

Allowable Unit Shearing Stresses, in Pounds per Square Inch, in Webs of Rolled Section or Plate Girders for Buildings.

$\frac{h}{t}$	S_s	$\frac{h}{t}$	S_s	$\frac{h}{t}$	S_s	$\frac{h}{t}$	S_s	$\frac{h}{t}$	S_s
10	11,610	20	10,590	30	9,230	40	7,830	50	6,550
12	11,450	22	10,330	32	8,950	42	7,560	52	6,310
14	11,260	24	10,070	34	8,660	44	7,290	54	6,090
16	11,060	26	9,790	36	8,380	46	7,040	56	5,870
18	10,830	28	9,510	38	8,100	48	6,790	58	5,660

2. If the unsupported length l of the flange of a beam is greater than twenty times the breadth b of the flange, the maximum fibre compression stress on the net area shall not exceed $\left\{ 25,000 - 350 \frac{l}{b} \right\}$ lb. per square inch.