shown by Fig. 1; or with both edges parallel; or they may be turned to a diameter of 34-inch for a length of at least 9 inches, with enlarged ends.

6. Rivets: Rivet rods shall be tested as rolled.

7. Pins and rollers: Specimens shall be cut from the finished rolled or forged bar, in such manner that the centre of the specimen shall be I inch from the surface of the bar. The specimen for tensile test shall be turned to the form shown by Fig. 2. The specimen for bending test shall be I inch by $\frac{1}{2}$ inch in section.

8. Steel Castings: The number of tests will depend on the character and importance of the castings. Specimens shall be cut cold from coupons molded and cast on some portion of one or more castings from each melt or from the sink heads, if the heads are of sufficient size. The coupon or sink head, so used, shall be annealed with the casting before it is cut off. Test specimens to be of the form prescribed for pins and rollers.



9. Material which is to be used without annealing or further treatment shall be tested in the condition in which it comes from the rolls. When material is to be annealed or otherwise treated before use, the specimen representing such material shall be similarly treated before testing.

10. At least one tensile and one bending test shall be made from each melt of steel as rolled. In case steel differing 3%-inch and more in thickness is rolled from one melt, a test shall be made from the thickest and thinnest material rolled.

II. For material less than 5-I6-inch and more than 34-inch in thickness the following modifications will be allowed in the requirements for elongation:

(a) For each 1-16-inch in thickness below 5-16-inch, a deduction of $2\frac{1}{2}$ per cent. will be allowed from the specified elongation.

(b) For each ¹/₈-inch in thickness above ³/₄-inch, a deduction of 1 per cent. will be allowed from the specified elongation.

(c) For pins and rollers over 3 inches in diameter the elongation in 8 inches may be 5 per cent. less than that specified in paragraph 2.

12. Bending tests may be made by pressure or by blows. Plates, shapes, and bars less than I inch thick shall bend as called for in paragraph 2.

13. Full-sized material for eye-bars and other steel 1inch thick and over shall bend cold 180 degrees around a pin the diameter of which is equal to twice the thickness of the bar, without fracture on the outside of bend.

14. Angles 34-inch and less in thickness shall open flat and angles 1/2-inch and less in thickness shall bend shut, cold, under blows of a hammer, without sign of fracture. This test will be made only when required by the inspector.

15. Rivet steel, when nicked and bent around a bar of the same diameter as the rivet rod, shall give a gradual break and a fine, silky, uniform fracture.

16. Finished material shall be free from injurious seams, flaws, cracks, defective edges, or other defects, and have a smooth, uniform, workmanlike finish.

17. Every finished piece of steel shall have the melt number and the name of the manufacturer stamped or rolled upon it. Steel for pins and rollers shall be stamped on the end. Rivet and lattice steel and other small parts may be bundled with the above marks on an attached metal tag. 18. Material which, subsequent to the above tests at the mills, and its acceptance there, develops weak spots, brittleness, cracks or other imperfections, or is found to have injurious defects, will be rejected at the shop and shall be replaced by the manufacturer at his own cost.

19. A variation in cross-section or weight of each piece of steel of more than $2\frac{1}{2}$ per cent. from that specified will be sufficient cause for rejection, except in case of sheared plates, which will be covered by the following permissible variations, which are to apply to single plates.

20. Plates 121/2 pounds per square foot or heavier:

(a) Up to 100 inches wide, $2\frac{1}{2}$ per cent. above or below the prescribed weight.

(b) One hundred inches wide and **over**, 5 per cent. above or below.

21. Plates under 121/2 pounds per square foot:

(a) Up to 75 inches wide, $2\frac{1}{2}$ per cent. above or below.

(b) Seventy-five inches and up to 100 inches wide, 5 per cent. above or 3 per cent. below.

(c) One hundred inches wide and over, 10 per cent above or 3 per cent. below.

22. Plates will be accepted if they measure not more than .01 inch below the ordered thickness.

23. An excess over the nominal weight, corresponding to the dimensions on the order, will be allowed for each plate, if not more than that shown in the following tables, one cubic inch of rolled steel being assumed to weigh 0.2833 pounds.

24. Plates 1/4-inch and over in thickness.

Thickness Ordered	Nominal Weights Up to 75 inch.			75	WIDTH OF " and up to 100"	PLATE 100" and up to 115"		Over 115"		
1-4 inch	10.20 lbs.	IO P	per cent.	14	per cent.	18	per cent.	100		
5-16 "	12 75 **	8	"	12		16				
3-8 '	15.30 "	7	**	10	**	13	"	17 1	er cent.	
7-16 "	17.85 "	6		8		10		12	"	
I-2 "	20 40 "	5		7		0	**	12	**	
9-16 "	22.95 "	42	**	61	"	81		TT		
5-8 "	25.50 "	4	**	6		8	**	TO		
Over 5-8 "		31	44	5		61	**	0	**	
25. Pl	ates und	er 1/4	-inch i	n tl	nickness	s		9		
Thickness Ordered Nominal Weights Lbs. per square ft. Up				WIDTH OF PLATE 50" and up to 50" to 70"				0	ver 70"	
1-8 " up to 5-32" 5.10 to 6.37 10 T					per cent. 15 per cent.			20 ner cent		

1-8 " up to	5-32" 3-16"	5.10 to	6.37	10 81	per cent.	15	per cent.	20 pe	r cent	
3-16" "	1-4 "	7.65 "	10.20	7	adu else	122	it war	17	2	
	Ins	pectic	n and	Te	sting at	the	Mille			

The surplus of the Mills.

26. The purchaser shall be furnished complete copies of mill orders, and no material shall be rolled, nor work done, before the purchaser has been notified where the orders have been placed, so that he may arrange for the inspection.

27. The manufacturer shall furnish all facilities for inspecting and testing the weight and quality of all material at the mill where it is manufactured. He shall furnish a suitable testing machine for testing the specimens, as well as prepare the pieces for the machine, free of cost.

28. When an inspector is furnished by the purchaser to inspect material at the mills, he shall have full access, at all times, to all parts of mills where material to be inspected by him is being manufactured.

WORKMANSHIP.

29. All parts forming a structure shall be built in accordance with approved drawings. The workmanship and finish shall be equal to the best practice in modern bridge works.

30. Material shall be thoroughly straightened in the shop, by methods that will not injure it, before being laid off or worked in any way.

31. Shearing shall be neatly and accurately done and all portions of the work exposed to view neatly finished.

32. The size of rivets, called for on the plans, shall be understood to mean the actual size of the cold rivet before heating.

33. When general reaming is not required, the diameter of the punch for material not over 5%-inch thick shall be not more than 1-16-inch, nor that of the die more than ½-inch larger than the diameter of the rivet. Material over 5%-inch thick, except minor details, and all material where general reaming is required, shall be sub-punched and reamed as per paragraph 61, or drilled from the solid. Rolled beams and