grade to grade of roads crossing each other) is .... feet. From grade to highest water is .... feet, and the centre line of the bridges makes an angle of .... degrees (to the right or left), with the face of abutment or piers.

**Loads to be Carried.**—The bridge must be proportioned to carry, in addition to its own weight, .... lbs per square foot (see table, page 16) of moving load, starting at one end, and moving over until the whole span is covered, in addition to which the flooring system must be proportioned to carry .... tons (of 2000 pounds) on each pair of wheels for each wagon-way, and due consideration must be given to the effect of this concentrated loading upon the posts and tension-braces of the trusses. The stringer-beams and floor-beams (to be wood or iron, as desired).

**Factor of Safety.**—Under the above loading, the factor of safety referred to ultimate strength, shall be for the chords (4 or 5), for the web system 5, and for all parts of the floor system (5 or 6).

**Material.**—The wrought-iron used shall be of that quality best suited to the purpose, the test for bars being that pieces cut therefrom shall be capable of being bent cold without fracture, until the two sides of the bend shall approach each other within the thickness of the bar. No iron in small bars to be used with an ultimate strength of less than 55,000 pounds per square inch, or an elastic limit of less than 24,000 pounds per square inch. **Castings** must have a clean skin, free from holes or cinder and expose when broken a fine-grained grey