Part II.—Design.

When forwarding plans for approval, the assumptions made in design and the working unit stresses adopted shall be clearly set out and the authority for the use of same quoted.

Notwithstanding the above clause, the following working unit stresses shall not be exceeded:—

(*a*) The tensile stress in mild-steel reinforcing-rods shall not exceed 18,000 lb. per square inch.

(*b*) The tensile stress in cold drawn steel wire shall not exceed 25,000 lb. per square inch.

(*c*) Direct compression in concrete shall not exceed 600 lb. per square inch.

(*d*) The extreme fibre stress of concrete in bending shall not exceed 650 lb. per square inch, except at points of negative moment, where it may be 750 lb. per square inch.

(*e*) The shear stress in concrete beams without web reinforcement shall not exceed 60 lb. per square inch, and in beams with stirrups or bent-up bars, or a combination of the two, the unit shear stress shall not exceed 180 lb. per square inch.

Where it can be shown that the mixing and placing of concrete will be carried out under the continuous control of a properly qualified inspector and that frequent tests of the concrete will be made, the above allowable unit stresses in the concrete may be increased by 25 per cent.

Floor-slabs shall in no case be less than 4 in. thick, except for approved special types of construction.

All walls 8 in. and over in thickness shall be reinforced on each face.

All openings in outer walls shall be adequately reinforced along each edge of the opening.

UNIFORM CODE.—STEELWORK.

Part I.—Workmanship.

1. *General.*—The workmanship and finish shall conform to the best practice in modern bridge-works. Materials shall have clean surfaces before being worked in the shop. The greatest accuracy shall be observed to ensure that all parts will fit properly together on erection.

2. *Straightening.*—When straightening or flattening of rolled material is necessary it shall be done by methods which will not injure the material. Sharp kinks or bends will be cause for rejection.

3. *Compression Joints.*—Compression joints depending upon contact shall have the bearing-surfaces truly faced. In the case of built-up members the facing shall be done after the member has been assembled and riveted up.

Cast bases shall be planed on the surfaces to be in contact with steel or dressed masonry.

All stiffener angles at end bearings and at points of concentrated loading on beams and plate girders shall be a driving fit against the flanges.

In all cases sufficient rivets shall be used to transmit at least two-thirds of the load at the joint. When ends are not truly faced and made to bear evenly all over the finished surfaces the full number of rivets shall be provided.

4. *Drilling.*—All rivet-holes shall be drilled through the solid metal.

When several plates and angles go to form a compound member or girder they shall, where practicable, be firmly connected together by clamps or tacking-bolts and the holes drilled through all the thickness in one operation. After being drilled, the plates and sections shall be separated and all burrs removed before they are put together again.

5. *Rivets and Riveting.*—The size of rivets called for on the drawings shall be understood as their nominal diameter before heating, unless otherwise stated.

Rivet-heads shall be of approved shape and of uniform size for the same diameter of rivet. The diameter and height of head shall be not less than the British standard. Rivet-heads shall be full, neatly made, concentric with the rivet-holes, and in full contact with the surface of the member. All loose rivets, and rivets with cracked, badly formed, or deficient heads, or with heads which are unduly eccentric with the shanks, shall be cut out and replaced by others. Recupping and caulking will not be allowed. Flattened rivet-heads and countersunk rivets may be used in certain places where clearances are required.

Rivets shall be heated uniformly red-hot from head to point when inserted, and upset for their entire length so as to completely fill the hole. Rivets when heated and ready for driving shall be free from slag scale and carbon deposit. Loose, burned, or otherwise defective rivets shall be cut out and replaced. In removing rivets care shall be taken not to injure the adjacent metal, and, if necessary, they shall be drilled out.

Wherever possible, the rivets shall be machine-driven, preferably by means of pressure machines of approved design.

The work shall be kept properly bolted together while it is being riveted, and no drifting shall be allowed, except for the purpose of drawing assembled sections into position. No drift having a diameter larger in any part than the hole in which it is used shall be allowed.

Rivet-shanks shall conform to British standard, and in no case shall rivets be allowed to be used whose mean diameter is less than the size of the hole by more than $\frac{1}{16}$ in.

6. *Turned Bolts.*—Where turned bolts are permitted and used to transmit shear, the holes shall be reamed parallel and the bolts shall make a tight fit with the threads entirely outside of the holes. A thick washer with perfectly flat faces shall be provided under each nut.

7. *Unfinished Bolts.*—Unfinished or black bolts may only be used for connections in light unimportant structures, and then only in such places as shall be decided by the engineer.