

13. *Veneers*.—Where marble or other veneer is used, each unit shall be adequately anchored to the backing.

14. *Brick Panels*.—Brickwork in panels of framed structures shall be as provided for bearing-walls, save that the bond may be one course of headers to three courses of stretchers. The thickness of panel shall not be less than 9 in., except that for panels not exceeding 150 square feet in area $4\frac{1}{2}$ in. brickwork may be used.

Suitable chases or nibs to receive brickwork shall be formed in the framework on all four sides of panels.

15. *Damp-courses*.—Damp-courses in all cases shall be laid of full-joint thickness in waterproof cement mortar, having strong adhesion to the brickwork, followed immediately by the laying of the first course of bricks.

16. *Beams*.—Where steel or reinforced concrete beams are built into or rest upon brick bearing-walls, the seatings for such beams, if not too far away vertically from a reinforced-concrete band, shall be incorporated in the band. Alternatively, the weight shall be distributed in the wall by a template of reinforced concrete, stone, or metal.

17. *Roof-ties*.—All roof-ties shall be adequately anchored directly at the wall-head, or, when parapets are used, to the top plate.

18. *Wooden Plates, Joists, &c.*—No wooden plate or other wooden unit shall be built or sunk into brick walls.

Where wooden plates are used they shall be laid on top of walls or on offsets or corbels of the full width of plates, and shall be firmly bolted or anchored into the concrete bands or brickwork. Wooden floor-joists shall be made continuous across the building, and at least every third joist shall be adequately anchored to the concrete band or through the masonry of the wall. Ceiling-joists shall be continuous across the building and securely attached to the plates.

At all floor and ceiling levels walls shall be tied into the building throughout their full length. Such tying may be effected by through-bolts with nut and washer on outside of masonry. When such through-bolts are not provided, the roof-structure or floor-structure, as the case may be, shall be attached to the walls in such a way as to provide tensile restraint as efficient as that provided by through-bolts. The amount of tensile stress to be provided for varies with the weight of the structure and superincumbent load. The minimum tensile value shall be equivalent to one $\frac{3}{4}$ in. iron bolt in direct tension for every 6 ft. of wall at floors and roofs. Further, the roof and floor construction shall be so designed as to provide adequate restraint against the wall moving inwards relatively to the remainder of the structure.

Where trussed roofs adjoin brick gables, a truss shall be placed directly behind the gable, and the truss rafters and purlins shall be securely anchored to the brickwork. Where ordinary rafter roofs are used, two rafters shall be bolted together and anchored to the brickwork. Where the roof over-sails a brick gable, a wooden plate shall be bolted to the raking top of wall and the roof-framing shall be secured to such plate.

19. *Wooden Partitions*.—Where wooden partitions are used, they shall be strongly framed and rigidly braced and firmly anchored to the walls.

UNIFORM CODE.—REINFORCED CONCRETE.

PART I.—MATERIALS AND WORKMANSHIP.

1. *Cement*.—Portland cement shall be obtained from approved manufacturers, and shall conform in every respect to the British Engineering Standards Association Specification for the time being in force. Quick-setting cement shall not be used without special permission.

Rapid-hardening Portland cement and aluminous cement shall conform to requirements as may be decided upon from time to time.

Notwithstanding the production of certificates of vendors' tests and analyses as provided by the British Standard Specification, it shall be competent to have such further tests made, after the cement has been brought on to the works, as are considered necessary to ensure that the cement complies with the specification. If further investigation is decided upon, the cement shall not be used without permission.

Cement shall be so stored and handled at all times as to be protected from moisture from the air, or from the ground, or from any other source. It shall be so stored as to be readily inspected and so as to remain free from any other material. Any cement which has become caked or has otherwise deteriorated shall be entirely removed from the works.

2. *Aggregate*.—Aggregate shall consist of approved hard inert materials taken from sources that have furnished satisfactory material for previous concrete-work for several years, or, if from a new source, shall be thoroughly tested to ascertain whether or not it is suitable for reinforced-concrete work. It shall be well graded from fine to coarse. It shall be free from organic matter and dirt, and shall be so stored and handled at all times as to remain free from all foreign material. The maximum size of stone in the aggregate shall be 1 in. diameter, or less if specified, except in large foundation-work where stone of a larger diameter may be allowed.

3. *Water*.—Water used for mixing cement grout, mortar, and concrete shall be free from earthy, vegetable, or organic matter, and acids or alkaline or other deleterious substances in solution or suspension.

4. *Proportions*.—The cement and aggregate shall be proportioned so as to give a good workable concrete, the ultimate compressive strength of which shall not be less than 2,400 lb. per square inch at twenty-eight days. Higher ultimate compressive strength shall be provided where design assumptions necessitate same.