

porting members protected for a 4 hour fire resistive period.

Partitions. 8.408 All interior walls, which do not extend through more than 1 story, except fire walls, fire division walls, and party walls shall be considered as partitions and shall conform to the following requirements:

Bearing. (a) Solid masonry bearing partitions shall be not less than 8 inches thick and hollow bearing partitions shall be not less in thickness than 1/18 of the unsupported height, but never less than 8 inches.

Non-bearing. (b) Solid masonry non-bearing partitions shall be not less than 3 3/4 inches in thickness for a height not exceeding 12 feet and for a length not exceeding 20 feet. Non-bearing partitions of hollow units shall be built solidly against the floor and ceiling construction and shall not exceed the following heights:

Table with 4 columns: Thickness Exclusive of Plaster (Inches), Maximum Unsupported Height (Feet), Thickness Exclusive of Plaster (Inches), Maximum Unsupported Height (Feet). Rows show 3, 4, 5 inch thicknesses with corresponding heights of 8, 12, 15 feet.

Miscellaneous Requirements.

8.409 The following miscellaneous requirements shall be complied with in masonry construction:

Wall Heights.

(a) Masonry walls shall not be constructed to heights greater than those in the following table:

ALLOWABLE HEIGHTS IN STORIES ABOVE FOUNDATION WALLS

Table listing allowable heights for various masonry types: Solid masonry walls (unlimited), Solid monolithic concrete walls (unlimited), Hollow masonry walls (4 stories), Hollow masonry walls with veneering (4 stories or 45 feet).

Stone walls. Ashlar (unlimited), Rubble (unlimited), Veneered walls (3 stories).

Masonry walls with veneering of masonry may be constructed to greater heights if the veneering is supported independently at intervals of not to exceed 14 feet in vertical height.

Faced Walls. To height permitted by backing.

Joint Anchors. (b) Anchors for each tier of joists shall be provided where they enter masonry walls and anchors connecting not less than 3 parallel joists shall also be provided where joists are parallel to such walls. Anchors shall be spaced not more than 6 feet on centers.

Lining Existing Walls. (c) In operations utilizing masonry walls and requiring an increase in the thickness thereof, the additional thickness shall be secured by a lining not less than 8 inches thick and laid in portland cement mortar.

All linings shall be thoroughly bonded or tied to the existing wall by toothings of masonry covering not less than 15 per cent of the area of the wall, or by anchored metal tie rods, providing a cross sectional area of not less than 1 sq. inch for each 9 sq. feet of wall area.

Corbeling. (d) No corbeling shall be built, used, or made in any masonry wall less than 12 inches in thickness, except that a four inch corbel may be provided in a dwelling foundation wall for support of porch floor.

Cornices. (e) The center of gravity of stone cornices shall be inside of the outer wall face. Each block shall be tied to the backing near the top.

Panel Walls. (f) Panel and enclosure walls of masonry shall be not less than 8 inches thick, nor less than 1/20 of the distance between either lateral or horizontal supports.

Piers. (g) Masonry piers shall have a free standing height of not more than 12 times their least dimension. The resultant of loads on all piers shall be within the center third, and piers carrying two or more loads shall be provided with a cap stone or metal bearing plate.

Parapet Walls. (h) In commercial or industrial buildings and in other buildings over three stories in height, all fire or party walls shall project above the roof as parapets not less than 32 inches unless such walls are built solidly against a fire resistive roof slab, covered with fire resistive roofing material.

All other buildings shall have such fire and party walls extended through combustible roofs not less than 18 inches. All parapet walls shall be coped. Where not otherwise specified parapet walls shall be at least 32 inches high, but not higher than 4 times their wall thickness unless laterally supported.

Weather. (i) During warm weather all masonry wall units shall be well wet before placing in wall. During freezing weather all masonry shall be protected to prevent freezing before the mortar has attained a final set.

Workmanship. (j) All masonry shall be built straight, true and plumb. Bearing areas of masonry units shall be fully covered with mortar spread in a flat even layer.

All joints shall be filled solidly with mortar, except that in walls of hollow units, not less than 1/2 of the gross area of each vertical and horizontal joint shall be a full mortar joint. Masonry walls and piers shall be erected to the exact height required to support joists, beams, and girders without shims or blocking. Bond timbers shall not be used except at the top of masonry walls in frame buildings.

Masonry Veneer on Frame Walls. (k) Frame buildings may be veneered with not less than 2 1/4 inches of masonry for a height of 12 feet and not less than 4 inches of masonry for a height of 24 feet. Gable ends not more than 5 feet in average height may be veneered in addition to the above allowable heights. Such veneering shall be tied to the wall with rust proof metal ties spaced 1 ft every 2 square feet of wall surface. Ties shall be not thinner than 24 U. S. gauge metal nor less than 3/8 inch in width. Such veneer shall have a full bearing on a masonry foundation wall.

Beam Supports.

(l) Suitable provisions shall be made at each line of floor beams, or where concentrated loads occur, in the hollow walls to fire stop the spaces above from those below and to insure good bearing for beams and a uniform distribution of loads.

Section 8.5 REINFORCED CONCRETE

Design.

8.501 (a) Reinforced concrete structures shall be designed in accordance with the specifications of the Joint Standard Building Code, as adopted by the American Concrete Institute, February 29, 1928.

Data Required.

(b) The plans and specifications required to be filed with the Building Inspector shall be accompanied by a description showing the general arrangement of the entire construction in all important details, including size, length, and points of bending of all reinforcement, the quality of proportions, and method of mixing the materials used in the concrete, and the dead and live loads each floor is designed to carry.

(c) In no case shall the construction deviate from the approved plans and specifications except by written consent of the Building Inspector. All structural reinforced concrete in buildings shall be constructed under the direct supervision of the designing engineer or architect or some person who is familiar with and capable of handling this class of construction.

Section 8.6 IRON and STEEL

Structural Steel.

8.601 Structural steel shall conform to the "Standard Specifications for Structural Steel for Buildings", serial designation A 9-29, of the American Society for Testing Materials.

Design and Construction.

(a) Structural steel used in buildings or structures shall be designed and constructed in accordance with the "Standard Specifications of the American Institute of Steel Construction Incorporated, for the Design, Fabrication and Erection of Structural Steel for Buildings", adopted June 1st, 1923, revised November 1st, 1928.

Cast Iron.

8.602 Cast iron shall conform to the "Standard Specifications for Gray Iron Castings", serial designation A 48-29 of the American Society for Testing Materials.

Allowable Stresses.

(a) Compressive stresses in cast iron columns shall not exceed values determined by the formula:

P/A = 9000 - 40 L/R

In which:

- P - Compression in pounds per square inch.
A - The length of the column in inches.
L - The least radius of gyration of the column in inches.
R - The value of ratio of L over R shall not exceed 70.

Cast iron columns shall not be eccentrically loaded to produce tension in the cast iron.

Tensile stresses in the extreme fiber of cast iron, in other than columns, shall not exceed 3,000 pounds per square inch.

Cast Steel.

8.603 Cast steel shall conform to the "Standard Specifications for Steel Castings", serial designation A 27-24, of the American Society for Testing Materials.

Allowable Stresses.

(a) The allowable unit stresses in cast steel shall not exceed 16,000 pounds per square inch in tension or compression and 10,000 pounds per square inch in shear.

Steel Joists.

8.604 Steel joists shall be designed in accordance with the provisions of this Code.

Spacing.

(a) The spacing of joists shall not be greater than the safe span of the top slab or flooring over the joists, and in no case shall be greater than that determined by their capacity to safely carry the imposed loads.

Erection.

(b) All steel joists shall have a bearing of at least 2 1/2 inches on steel or 4 inches on concrete or masonry. They shall be attached to steel members with a 1/4 inch round hook at each end of each joist and shall be attached to masonry with a 1/4 inch round rod at each end of each joist. In buildings having a height greater than twice the least dimension of the base, each end of each joist shall be welded, riveted, bolted or otherwise securely fastened to the supports.

All joists shall be fastened in place and adequate bridging installed before any construction loads, except the weight of the necessary workmen to install bridging, is placed upon the joists.

Bridging.

(c) All steel joists shall be bridged at intervals of not to exceed

(e) The allowable load capacity of joists shall be determined by computation, but in the event of doubt a test of two or more joists shall be made. Such joists shall be bridged and with the top slab in place shall support 2 times the allowable safe load.

Welding.

8.605 Nothing in this Code shall prohibit the use of electric arc or gas welding in steel construction in lieu of riveting or bolting.

Design and Construction. (a) The design and construction of welded connections shall be in accordance with the "Code for Fusion Welding and Gas Cutting in Building Construction", as adopted by the American Welding Society, edition of 1928.

Section 8.7 TIMBER

Materials.

8.701 Lumber and timbers used for load supporting purposes shall conform to the requirements of Section 7.104.

All wood structural members shall be of sufficient size and strength to safely carry their imposed loads without exceeding the allowable working stresses as specified in Section 8.703.

Design.

8.702 The carrying capacity of all members shall be computed by the accepted principles of mechanics and shall be based on the actual dimensions and not the nominal sizes. Sizes of timbers required by this Code shall be deemed to refer to nominal sizes unless it is stated as the net size.

Allowable Stresses.

8.703 Lumber used for load supporting purposes when equivalent in quality to the provisions of the "American Lumber Standards," of the Bureau of Standards, Department of Commerce, 1929 Edition, shall have its safe carrying capacity fixed by the working stresses as given in the following tables for respective grades. For lumber not conforming to, or of a quality intermediate between the basic grades, proportionate values for the working stresses shall be permitted at the discretion of the Building Inspector.

Working Stresses For Select and Common Grades of Timber Conforming to American Lumber Standards Basic Provisions For Structural Material.

Table with columns: Species of Timber, American Standard Grade, Bending Stress (Fibre in Tension), Compression Stress (Parallel to Grain), Compression Stress (Perpendicular to Grain), Modulus of Elasticity (All Locations). Lists various timber species like Cedar, Douglas Fir, Spruce, etc. with their respective grades and stress values.

NOTE: The Values Are Given For Dry Locations

SAFE LOAD IN POUNDS PER SQUARE INCH OF CROSS-SECTIONAL AREA FOR TIMBER COLUMNS

Table with columns: Species of Lumber, American Standard Grade, Ratio of Length to Least Dimension (l/d) with values 10 and less, 12, 14, 16, 18, 20, 25, 30, 35, 40, 50. Lists various lumber species and their safe load capacities.

Values Are For Dry Locations

7 feet with rigid bridging capable of supporting the top and bottom chord in position and each line of bridging shall be capable of transmitting 600 pounds from each joist and distributing this load between the two adjoining joists. Wood floors attached directly to steel joists may be assumed to act as part of the bridging system.

Deflections.

(d) The deflection due to required design loads shall not exceed 1/360 of the span.

Tests.

The allowable stresses given in the preceding tables may be increased not to exceed 33 1/3 per cent for wind loads in combination with other loads, provided the resulting sections are not less than those required for the required dead and live loads alone.

The allowable stress in compression across the grain as given in the preceding tables may be increased 50 per cent for joists supported on a ribbon board and spiked to the adjoining studs.

Shearing stresses for joint details may be taken as 50 per cent greater than the horizontal shear values specified in the preceding tables.