A BILL

AN ORDINANCE REGULATING THE CONSTRUCTION, REPAIRS AND INSPECTION OF BUILDINGS AND PARTS OF BUILDINGS, AND PROVIDING FOR THEIR CARE, USE AND MAINTENANCE; ALSO ESTABLISHING FIRE DISTRICTS; PROVIDING FOR FIRE PROTECTION; REGULATING AREA-WAYS, FENCES, TENTS, MULCHES AND MACHINES; ALSO STAIRWAYS AND FIRE-ESCAPES, AND OTHER PARTS OF BUILDINGS, AND REPEALING ALL PREVIOUS ORDINANCES AND PARTS OF ORDINANCES IN CONFLICT WITH THIS ORDINANCE.

BE IT ENACTED BY THE COUNCIL OF THE CITY AND COUNTY OF DENVER:

TITLE I.

DEPARTMENT OF BUILDING INSPECTION.

SECTION 1. There shall be a Building Inspector appointed by the Mayor, who shall be an architect or practical builder of not less than five years' experience, whose term of office shall be four (4) years. It shall be his duty to inspect all buildings in process of construction or repair, and he shall have the power to inspect all other buildings to ascertain if the ordinances in regard to buildings are being complied with, and shall keep a record of such inspections. In case the ordinances are not being complied with, he shall make a report thereof to the mayor and attorney. It shall be his duty to make all complaints charging violations of the building ordinances.

SALARY OF BUILDING INSPECTOR.

Section 2. Said Building Inspector shall receive the annual salary, and give official bond, as provided for in the Charter of the City and County of Denver.
Section 3. The inspectors of electric wiring and plumbing shall make reports to the building inspector and such reports shall be entered of record in his office.

**FIRE WARDENS TO REPORT.**

Section 4. It shall be the duty of the fire wardens to make prompt report to the building inspector in every case where they may find any building or structure in an unsafe or defective condition. Such report shall be entered of record in his office.

**ASSISTANTS.**

**SECTION 5.** Said Building Inspector shall have power, with the approval of the Mayor, to appoint two assistant inspectors, and one clerk, who must be qualified for the positions, and who shall hold their office for the same term as that of the Building Inspector, unless removed by the said Building Inspector, with the approval of the Mayor.

**ADDITIONAL ASSISTANTS.**

Section 6. Said Building Inspector shall have power when the needs of his department may require, with the approval of the Mayor, to appoint additional assistant inspectors, who shall have the powers herein conferred upon the head of the Department and the assistants, above named, PROVIDED, HOWEVER, that none of these additional inspectors provided for in this section, shall be appointed unless the council shall previously consent to the appointment of the same, and said council shall have made an appropriation of money for the payment of salaries to said additional inspectors.
ACCOMMODATIONS FURNISHED.

Section 7. The council shall furnish said building department and the officers connected therewith, with a convenient room or rooms in the City and County Buildings and with such furniture, supplies and stationery as may be necessary for the proper transaction of the business of said department.

DISCHARGE AND PERFORMANCE OF DUTIES.

Section 8. Said Building Inspector and his assistants herein provided for shall discharge and perform such duties and powers as may be from time to time imposed and conferred upon them by the ordinances of the City and County of Denver, or by the requirements of the Mayor thereof.

INSPECTION CITY AND COUNTY BUILDINGS.

Section 9. No additions, alterations, changes or repairs will be allowed to be made in any building belonging to or the property of the City and County of Denver, before same have been inspected and reported on by the department of buildings; and all of the work performed on same to be under the direct supervision of the department of buildings.

ASSISTANTS TO ACT IN ABSENCE OF BUILDING INSPECTOR.

Section 10. In the absence of the building inspector one of the assistants may be designated by him to act in his place, and when so designated the assistant shall exercise all the powers and duties of the building inspector.
Section 11. Copies of this building ordinance of the City and County of Denver will be furnished by the department of buildings for the sum of fifty cents (50¢) each.

**ARBITRATION IN CASE OF DISPUTES.**

Section 12. The Building Inspector shall have power to pass upon any question arising under the provision of this ordinance, relative to the manner of construction or materials to be used in the erection, alteration or repair of any building. PROVIDED, HOWEVER, that should any question arise between the building inspector and the owner and architect of any building, or should the owner or architect object to any order or decision of said building inspector, the matter shall be referred to a Committee of three persons, one of whom shall be chosen by the building inspector, one by the owner or other interested party and the third shall be a member of the Board of Public Works, and the decision submitted by this committee shall be final. Each member of this committee shall be entitled to a fee of five dollars ($5.00) for each day they shall act on this committee. Half of these fees to be paid by the City and County of Denver and the other half by the owner or agent.

**SPECIAL INSPECTIONS.**

Section 13. Should any owner or tenant of a building request a special inspection of same, by the Department of Buildings, regarding strength of floors, etc., safe carrying capacity of same, including walls, columns or girders, for additions or alterations or other business purposes, he will be required to pay a fee of not less than ten dollars ($10.00) per diem for each inspection and report made on same by the Department of Buildings.

**SKETCH PLANS FOR REFERENCE.**

Section 14. If the building inspector is required to make rough sketch plans of any proposed building for reference or
to place on file in this department on account of plans or speci-
fications being incomplete, indistinct or impractical, a fee of
one dollar ($1.00) will be required before the building permit
will be issued for such building.

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T I T L E II

PERMITS.

UNLAWFUL TO BUILD OR REPAIR WITHOUT PERMIT.

Section 15. No person, firm or corporation shall begin
or continue the erection, alteration or repair of any building
or structure, within the corporate limits of the City and County
of Denver; without first having applied for and obtained a permit
so to do from the building inspector. This shall also apply to
all Boards or Control or Departments having in charge the con-
struction and repairs of all Public Buildings.

FULL PLANS AND SPECIFICATIONS TO BE FILED WITH BUILDING INSPECTOR.

Section 16. In all cases plans and specifications,
sufficient to enable the building inspector to obtain full and
complete information as to the character of the work proposed
to be done under the permit, shall be filed with the application
for permit, and if the cost of the work is to exceed $1,500.00,
complete plans and specifications, showing and describing all
parts of the construction, shall be submitted, and upon the issue
of a permit a true copy of said drawings and specifications, signed
by the architect or owner, shall be filed in the building inspector's
office and remain on file there until the completion of all build-
ing operations had under said permit, when they shall be returned to the party who filed them; such plans and specifications so filed shall not be open to the inspection of others than those interested in the building or structure, and if not claimed by the proper party within three months after completion they shall be destroyed. All plans and specifications of buildings of a public character shall remain on file permanently in the building inspector's office.

REFUSE PERMIT -- WHEN.

Section 17. If the matters mentioned in the application for a permit or the plans and specifications filed with the same, indicate to the building inspector that the work to be done is not in all respects in accordance with the provisions of the City ordinances, he shall refuse to issue a permit therefor until the same has been made so to comply, when he shall issue the permit.

PERMIT GUARANTEES COMPUTATION.

Section 18. When the building inspector has issued a permit, said permit shall be a guarantee that all loads, strains, and all other computations have been checked over and corrected by the building inspector before said permit was issued.

STRAIN SHEET FILED.

Section 19. With the plans and specifications of all buildings of structures over two stories in height, there shall be filed with the application for a permit, a strain sheet, showing the weights carried by the several supports when the building is fully loaded, and the safe load said supports will sustain; all loads, weights and strains and all strengths shall be computed with the formulae given in this ordinance.
PRELIMINARY PERMITS.

Section 20. Permits for clearing the ground or excavating may be issued pending the completion of the plans and specifications; for such temporary permit a fee of fifty cents (50¢) shall be paid and such permits shall terminate in thirty days from date thereof.

NOTICE AND PERMIT FOR DEVIATION.

Section 21. If during the progress of the work upon any structure it is desired to deviate in any manner affecting the construction or strength of the same, from the plans and specifications upon which the permit was issued, notice of such proposed change must be filed in the building inspector's office and his written permit obtained therefor before such alterations are made.

FEES FOR BUILDING PERMITS.

Section 22. Building permits shall be issued upon payment of fees as follows: viz.: one dollar ($1.00) for work costing one thousand dollars ($1,000.00) or less; for work costing more than one thousand dollars, ($1,000.00), one dollar ($1.00) for each thousand or fraction thereof. Each building must have a separate permit.

FEES FOR MOVING.

Section 23. The fee for permit for moving buildings or other heavy objects through the streets that may obstruct the streets or sidewalks, or requiring the use of machinery of any kind, shall be one dollar ($1.00) for each building or heavy object so moved.
DURATION OF PERMITS.

Section 24. The duration of all permits shall be governed by the cost of the structure; they shall not exceed a period of three months for buildings costing five thousand dollars ($5,000.00) or less; not exceeding four months for buildings costing between five thousand dollars ($5,000.00) and ten thousand dollars ($10,000.00); not exceeding six months for buildings costing between ten thousand dollars ($10,000.00) and fifty thousand dollars ($50,000.00); not exceeding twelve months for buildings costing over fifty thousand dollars ($50,000.00); permits may be once renewed free of cost, without right to use any part of the streets. Every permit shall be considered cancelled if active work is not commenced within six (6) months of the date of the issue.

PERMITS - LICENSE OCCUPANCY OF STREETS AND SIDEWALKS.

Section 25. Building permits imply a license to occupy a part of the public street and sidewalks to be used in connection with actual building operations, and it shall be unlawful to occupy any part of the street or walk before building operations have commenced or after the same have ceased. It shall be unlawful to place upon the street or walk anything not required for immediate use in connection with the structure then being erected, and when the building is under roof all materials shall be placed within the lot line and the streets and walks cleaned and put in the same condition as before building operations commenced.

LIMIT OF USE OF STREET AND SIDEWALK.

Section 26. Building permits shall not permit the use of any street or walk, or any part thereof, other than immediately in front of the lots upon which the building is being erected and
then only to the extent of thirty feet from the lot line; when there are car tracks in the street all obstructions shall be kept back six feet from the nearest rail of said tracks.

USE OF STREET AND SIDEWALK, AND FENCES, ETC.  
(INNER FIRE DISTRICT.)

Section 27. Within the inner fire district that part of the street permitted to be used for building operations shall be enclosed with a tight board fence extending from the lot line on one side around to the lot line on the other side, and it shall be unlawful to obstruct any part of the street or walk before such fence is in place, and where the street is not paved, a temporary plank walk shall be built from the permanent walk on one side around to the permanent walk on other side. The walk shall be built of 2 x 12 plank on 2 x 4 sleepers with six inch space between the plank. During the occupation of the street, said fence and walk shall be kept in good repair. All shavings, straw or loose materials shall ever be placed upon the streets and when materials causing dust are to be handled they shall be kept wetted down. All excavations along the street or walk shall be at all times safely guarded and protected by suitable fence or railing. When walls are being built adjoining the street line the walk shall be closed and persons prevented from passing on said walks, unless the walks are covered as provided in Section 32 of this ordinance.

REGULATIONS OF USE OF STREET OUTSIDE INNER FIRE DISTRICT.

Section 28. The regulations for the use of the streets outside of the inner fire district are the same as the inner fire district; only the fence is not required and when three feet of the sidewalk is left open, free and clean, the temporary walk will not be required.
GUTTER NOT TO BE OBSTRUCTED.

Section 29. The gutter or waterway of any street shall not at any time be obstructed so as to prevent the free passage of water along the same and if the gutter shall be shaded or covered so that ice accumulates therein, the ice will be cut out and the water allowed to pass at all times.

MORTAR BEDS PROTECTED.

Section 30. Mortar beds shall be placed and protected so as to protect the clothing of persons passing and walls of adjoining buildings; in the inner fire district mortar beds for mixing plaster shall not be located upon any street or public way unless within a closed fence.

RED LIGHTS - 6 P. M. TO 6 A. M.

Section 31. Red lights shall be placed and maintained from six p. m. to six a. m. of each day at both ends of every obstruction upon any street, and at intervals of seventy-five feet along the same.

SIDEWALKS TO BE COVERED.

Section 32. All buildings to be hereafter erected or present buildings to be removed or dismantled within the district bounded by Wayne Street and Broadway, Thirteenth Street and Twentieth Street, including both sides of said streets and all cross streets within said boundaries that are set at or near the street line, there shall be built over the adjoining sidewalks, roofs having a frame work and covering composed of supports and stringers of 3 x 12 inch timbers, not more than four feet from centers, covered with two layers of two inch plank. Such roofs shall be maintained as long as material is being used or handled on such street fronts.
and above the levels of such sidewalks. In all cases such temporary sidewalks and their railings and approaches and the roods over the same shall be made as regards ease of approach, passage, strength and safety to the satisfaction of the building inspector.

DETAILED STATEMENTS - BLANKS.

Section 33. Blank forms for the detailed statement as herein required may be obtained at the office of the Department of Buildings, which the applicant shall fill out, and the owner or owners, his or their agent, shall sign the agreement contained in said statement, that he or they will in all respects, construct the work in compliance with the provisions of the ordinances of the City and County of Denver.

REVOCATION AND LIMITATIONS.

Section 34. All new buildings or additions to present buildings to be used for soap factories, stock yards, pig pens, cow stables, livery barns, dairies, corrals, fowl coops, fowl yards, candle or coal oil factories, smelting or refining works, now or hereafter to be built within the fire limits of the City and County of Denver at the time of the adoption of this article, will not be permitted, unless a permit therefore has been issued by the council, upon the advice of the Health Commissioner, within a reasonable time after the passage of this ordinance. Any such permit may be at any time revoked if any of the businesses or places specified are so conducted as to be a nuisance. Further, a permit will not be granted for the erection of any of the above businesses or places unless a majority of the owners of the lots, comprising such block, shall consent in writing to the erection of establishment or occupancy on of the same therein; and no permit will be issued for any establishment for any of the above uses within 500 feet of any school building or church in the City and County of Denver.
Section 35. No building shall be erected within the City and County of Denver to be used for the purposes of a hospital or sanitarium, or any addition thereto, without a permit therefor from the Health Commissioner; provided that no such permit shall be granted except it shall be made to appear to such Health Commissioner that the owners of two-thirds of the lots included in the block where such contemplated building is to be erected, and also the owners of two-thirds of the lots on the opposite side of the street from such proposed building, have consented in writing to the erection of such building for such purpose, and the Building Inspector shall not issue any such permit without a certificate in writing from the Health Commissioner showing that this ordinance has been complied with.

SPECIAL PERMIT BY COUNCIL.

Section 36. Any building specifically mentioned, described or listed in this ordinance may be erected in any Fire District when special ordinance or permit for same has been passed and approved by the council.

BUILDING NOT PERMITTED TO BE ERECTED OR CHANGED TO STABLES — WHEN.

Section 37. No building, or any part of which is to be erected within 10 feet of the dwelling of an adjoining owner, shall be erected for or converted to use as a stable. Stable buildings having more than six (6) stalls, must have front and rear outside doors, each not less than four (4) feet wide.
PLAN AND SPECIFICATIONS
FILED BEFORE ALTERING ANY BUILDING.

Section 38. No building shall be materially altered or any of the conditions changed until full and detailed plans and specifications shall be filed in the Building Inspector's office; and the building so altered shall conform to the requirements of this ordinance.

SPECIAL PERMIT FOR APARTMENT AND SIMILAR BUILDINGS IN RESIDENCE DISTRICTS.

Section 39. In the following described section or portion of the City and County of Denver, that is to say:

Commencing at the intersection of the center line of Grant Street and Seventh Avenue to Fourteenth Avenue to Lafayette Street to Eighteenth Avenue to Gilpin Street to Twenty-eighth Avenue to York Street, to Seventeenth Avenue to Colorado Boulevard, to Seventh Avenue, thence to place of beginning, it shall be unlawful to build or erect or make addition to a terrace (for more than two families) apartment house or flat; (for more than four families) store building or factory of any kind, rooming house with more than forty rooms, hotels either public or private of more than one story, or any building similar to those before mentioned, unless the party desiring a building permit for any such building has first secured the signatures of a majority of the owners or agents of the property in same block on the same side of the street and of the owners or agents of property in the block on the opposite side of the street or avenue facing same, approving of the erection of such a building.

Before issuing a permit for any building as before mentioned, the owner must specifically agree to build said building on a line of the average distance back from the front line of said property of other buildings on the same side of the street in same block, whenever...
such buildings are proposed to be erected on corner lots they shall be set back from the front face of lots to conform to other buildings on same side of the street in same block, but may be built up to the lot line towards street or avenue on long side of lot, PROVIDED, HOWEVER, wherever one or more corners at the intersection of any street or avenue in the before described district have been improved with buildings as before specified in this section each of the remaining corners at same intersection shall be exempt from the foregoing restriction requiring the securing of the signatures of a majority of the owners or agents of the adjoining properties.

SPECIAL PERMIT
FOR PLANING MILLS, HAY YARDS; ETC. IN FIRE DISTRICTS.

Section 40. No building and no lot within the "inner fire district", except those now in actual use for such purposes shall hereafter be occupied or used in whole or in part as or for any of the purposes herein mentioned, to wit: Planing Mills, sash, door and blind factory, wood yard, lumber yard for the storage and sale of lumber, hay yards for the sale or storage of hay or straw, or shall any such business be established in either the middle of outer fire districts without a special license from the council approved by the mayor.

REGULATION OF BUILDING LINES FOR RESIDENTS.

Section 41. Wherever over fifty per cent, of the lots on any streets or avenues in the residence sections of the city and county of Denver have been improved, and the building line of said residences made permanent, it shall be required that all buildings hereafter erected on adjoining lots, that have the front building line established at the average distance back from the front line, as those already built.
Section 42. Should the inspector of buildings become convinced that the work under such permit is not proceeding according to the detailed statement, plans and specifications upon which such permit was issued, but is proceeding in violation of this ordinance, it shall be his duty to notify the owner or owners, or his or their agents in writing, that the work is being constructed in violation of the permit and ordinance, and that the same must be immediately rectified to conform with the building laws. If the owner or owners, or his or their agents, neglect to comply with the said laws or fails to make corrections, it shall be the further duty of the inspector of buildings to revoke said permit, and notice thereof shall be immediately served upon the owner, agent, superintendent or contractor in charge of the work, and posted on the property. After such notice of revocation of permit has been served, any contractor or workman performing any work in or about said structure, building or premises, shall be guilty of a misdemeanor and be liable for all penalties under this ordinance.

T I T L E III.
FIRE DISTRICTS. - EXPLANATORY.

Section 43. All those portions of the City and County of Denver, embraced within the following described limits, shall be known and designated as the "inner fire district," "middle fire district," "outer fire district," and "urban fire district."

Wherever the center line of any street or avenue is designated as the limits of the "inner fire district," same will apply to buildings each side of said street or avenue, the same applying to each of the other fire districts in rotation as above.
"INNER FIRE DISTRICT."

Section 44. All that portion of the City and County of Denver, embraced within the following described limits, shall be known and designated as the "inner fire district," viz.: 

Commencing at the intersection of the center line of Cherry Creek with the center line of alley between Grant and Logan Streets, thence northwesterly along the center line of Cherry Creek to center line of Sixth Avenue, to Cherokee Street, to West Ninth Avenue, to Barnock Street, to West Fourteenth Avenue, to center line of Cherry Creek to center line of West Colfax Avenue, to Sixth Street to Wewatta Street to center line of Fourteenth Street Viaduct, thence northwesterly along center line of Fourteenth Street Viaduct to center line of Denver Street, to Twenty-third Street Viaduct, thence southeasterly along center line of Twenty-third Street Viaduct to center line of Wewatta Street, to 20th Street, to Stout Street, to Thirty-third Street, to Welton Street, to Washington Street, to center line of alley between Grant and Logan Streets, thence along center line of alley between Grant and Logan Streets to the place of beginning.

"MIDDLE FIRE DISTRICT."

Section 45. All that portion of the City and County of Denver embraced between the limits as given in the preceding section, and the following described limits shall be known as the "Middle Fire District," viz.: 

Commencing at the intersection of the center line of Fortieth Avenue with the center line of the alley between High and Race Streets, to Thirty-eighth Avenue to Colorado Boulevard, to Twenty-sixth Avenue to eastern City and County limits, to Sixth Avenue, to York Street, to First Avenue, to Washington Street to Kentucky Avenue, to South Grant Street, to West Florida Avenue,
to Acme Street, to Virginia Street, to Cherokee Street, to Bayaud Street, to Denver & Rio Grande Railroad tracks, to West Fourteenth Avenue, to First Street, to West Colfax Avenue, to Larimer Street, to First Street, to the Platte River, to West Twentieth Avenue, to Decatur Street, to West Seventeenth Avenue, to Dale Street, to West Colfax Avenue to Lowell Boulevard, to West Twentieth Avenue to Perry Street, to West Thirteenth Avenue, to Tennyson Street, to West Thirty-eighth Avenue, to Lipan Street, to West Thirty-third Avenue, to Nanaj Street, to Nineteenth Street, to Delgany Street, to Fourteenth Street Viaduct, to Wewatta Street, to Sixth Street, to West Colfax Avenue, to Cherry Creek, to Fourteenth Avenue, to Hancock Street, to West Ninth Avenue, to Cherokee Street, to West Sixth Avenue, to Cherry Creek to alley between Grant and Logan Streets, to Twentieth Avenue, to Washington Avenue, to Walton Street, to Thirtieth Street, to Stout Street, to Twenty-ninth Street, to southeast of Denver Pacific (U. P.) Railroad right of way to Thirty-fourth to Cheesman Place, to Thirty-ninth Street, to Fortieth Avenue, produced to the place of beginning.
"Outer Fire District."

Section 46. All that portion of the City and County of Denver embroiled between the limits of as given in the preceding section and the following described limits shall be known as the "Outer Fire District," viz:—

Commencing at the center line of Colorado Boulevard, where same intersects 37th Ave., along 37th Ave. to Monaco, to 26th Ave., West to Colorado Boulevard, and back to place of beginning.

Commencing at the intersection of Colorado Boulevard and 6th Ave., to 1st Ave., to York St., North to 6th Ave., and back to place of beginning.

Commencing at the intersection of York St., and 1st Ave., south to R.R. tracts of C.& E.R.R. to Eastern City and County limits, to Warren Ave., to University St., to the southern City and County limits to R.R. tracts of A.T.& S.F.R.R. to W. Alamedal Ave., to Platte River, to W. 8th Ave., to Lowell Blvd., to W. 13th, to Western City and County limits, to W. 36th Ave., to Tennyson St., to W. 44th Ave., to Boul.F, to W. 46th Ave., to Clay St., to W. 43rd Ave., to Pecos St., to W. 44th Ave., to Delaware, to W. 38th Ave., to Fox, and south to Platte River, north east to 48th Ave., to Josephine St., to 46th Ave., to Colorado Blvd., to 38th Ave., to north east corner of "Middle Fire District".

"Urban Fire District."

Section 47. All portions of the City and County of Denver embroiled between the limits as given in the preceding sections and the northern eastern, southern and western limits of the City and County of Denver will be known as the "Urban Fire District."

General Description of the Construction of Buildings to be in the several Fire Districts.

"Buildings in the Inner Fire District."

Section 48. All buildings hereafter to be erected in the "Inner Fire District" must have all enclosed walls and roof materials built of fireproof or combustible materials.

"Buildings in the "Middle Fire District."

Section 49. All buildings hereafter to be erected in the "Middle Fire District" must have all enclosing walls built of
incombustible materials and the roofs, gables and porches only may be constructed of timber framing with wood shingles or plaster covering. Wood frame, mansard, or gambrel roofs, and gables are prohibited in the "Middle Fire District".

"Buildings in the Outer Fire District".

Section 50. All buildings hereafter to be erected in the "Outer Fire District" must have enclosing walls of incombustible materials except the second story where building is located at least 5 feet from the nearest lot line, when same may be of frame construction. Buildings having mansard or gambrel roofs forming a second story will be included as frame on second stories.

Barns or sheds in the "Outer Fire District" may be built throughout of frame construction.

"Buildings in the "Urban Fire District".

Section 51. All buildings hereafter to be erected in the "Urban Fire District" may be constructed of frame and timber work throughout. Buildings specified for each Fire District, may be extended Inner to, Middle, Outer or Urban Fire Districts.

Section 52. The construction of buildings specified for the "Inner Fire District" may be erected in either the "Middle", "Outer" or "Urban" Fire District.

Middle to Outer and Urban Fire Districts.

Section 53. The construction of buildings specified for the "Middle Fire District" may be erected in either the "Outer" or "Urban" Fire District.

"Outer to Urban" Fire District.

Section 54. The construction of buildings specified for the "Outer Fire District" may be erected in the "Urban Fire District".

Maps of Fire Districts.

Section 55. Maps of the City and County of Denver designating each Fire District in distinctive colors, and showing the exact limits of same, may be had from the Department of Buildings for the sum of one dollar ($1.00) each, with paper covers, or one and one-half dollars ($1.50) with cloth covers.
Fire Districts Extended on Petition.
Section 56. Whenever two-thirds (2/3) of the property owners upon any block or number of blocks in connected location shall petition for the same, and the petition is granted by the Council, the Fire District shall be extended to include the blocks or number of blocks mentioned in the petition, provided that all changes thus provided for shall be from the Outer to the Middle, or from the Middle to Inner Fire Districts, and never in the reverse order.

Title IV.
Classification of Buildings according to Construction and Occupancy.

Section 57. For the purpose of this ordinance, buildings erected within the City and County of Denver, buildings will be classified in accordance with their construction as follows:

Class 1: Absolutely Fire Proof Buildings.

Section 58. When built entirely of incombustible fire and water-proof materials with all metal structural parts thoroughly fireproof and finished and trimmed with incombustible materials.

Section 59. When the buildings are timber, brick or stone. 

Class 2: Fire Resisting Buildings.
Class II. Fireproof Buildings, short floor span.

Section 59. When similar in construction to buildings of Class I except that the finished floors, frames, doors and windows, and the usual trim of rooms are of ordinary wood construction with no open spaces behind wood and having incombustible partitions.

Class III. Semi-fireproof, Composite or Mill Constructed Buildings.

Section 60. When the enclosing walls and roof covering are made of incombustible materials, with doors, windows and frames of wood, but with interior walls of incombustible materials, or with columns and girders made of iron or steel fireproofed, and the floor construction of Oregon wooden beams, and all fireproofed at concealed spaces and fire stopped wood columns containing 100 square inches or more, need not be fireproofed. In buildings of this class a single thickness of metal lath or furring, and hard incombustible plaster will be deemed sufficient protection; and the floor and roof systems may be heavy timbers and planks with no concealed air spaces between.

Class IV. Ordinary Buildings.

Section 61. When the enclosing walls and roof coverings are similar to those of Class III, but the interior timber and iron construction is not protected with fire resisting covering.

Class V. Frame Buildings.

Section 62. When the enclosing and interior partition walls above first floor joists are constructed entirely of wood, including all veneered frame buildings.

Occupancy and Uses.

Section 63. And for further classification under this ordinance buildings will be graded in accordance with their occupancy and uses as follows:-

Grade I.

Section 64. All buildings designed to be occupied for the sale, storage or manufacture of merchandise, also all railroad depots, livery, boarding and sale stables.
Grade II.

Section 65. All buildings designed to be used for tenements, apartment houses, flats, hotels, club houses, boarding or lodging houses, occupied by twenty (20) or more people, all hospitals, sanitariums, asylums, schools, and office buildings.

Grade III.

Section 66. All buildings designed to be used for dwellings shall be the home or residence of not more than two (2) separate and distinct families, and in which not more than fifteen (15) rooms shall be used for the accommodation of boarders, and no part of which building is used as a store or for any business purpose.

Two (2) or more such dwellings may be connected on each story used for boarding purposes, provided the halls and stairs of each house shall be left unaltered.

Private stables and barns, having the enclosing walls, built of incombustible materials will also be included in this grade.

Grade IV.

Section 67. All public buildings designed to be occupied by state, county and city administration officers; Court rooms, Libraries, Museums, Art Galleries or Council Chambers, United States Government buildings are regarded as belonging to this division, but are deemed to be without the jurisdiction of this ordinance.

Grade V.

Section 68. All buildings to be used as churches, convention halls, auditoriums, exposition buildings, minor theatres, music halls, etc. or that part of any building containing an assembly room with seating capacity of more than one hundred (100) people, and in which no movable scenery is used upon the stage thereof.

Grade VI.

Section 69. All buildings to be used as theatres, opera houses, play houses, pavilions or any assembly hall designed or used for the entertainment of spectators having a permanent stage, upon which stage, scenery or theatrical apparatus is employed.
Classification of Grades.

Section 70. All buildings hereafter to be erected that are particularly mentioned or similar in grades I to VI will be classified according to their construction by the Building Department. Each building to conform to the restrictions of each of the separate fire districts, and for the purpose for which each are to be used, if not specified in the different sections of this ordinance.

Changing Buildings from one grade to another - Permit.

Section 71. All buildings, the use of which brings them within any of the before mentioned grades are to be applied to the use of any other grade for which a better system or construction is required by this ordinance. The construction and equipment of such buildings must first be made to conform to the requirements of this ordinance as specified for their intended use, and it shall be unlawful to apply any building to a new or different use than that to which its construction and equipment adapts it under this ordinance, unless the requirements of this ordinance for such new or different use shall first have been complied with and a permit for such alteration or use shall have been obtained from the Building Inspector.

Title V.

Restriction and Permission.

Section 72. No frame building, frame shed or other frame structure shall be erected in any of the Fire Districts of the City and County of Denver, except as is herein provided.

Fireproof Construction required - when.

Section 73. Within the "Inner Fire District" all buildings over 6 stories in height, or over 80 feet in height, except churches and grain elevators, shall be wholly of fireproof construction.
Semi-fireproof, composite or Mill Construction—required when.

Section 74. Within the "Inner Fire District" all buildings of Grade VI not fireproof and all buildings over fifty feet or more than three stories in height and less than eighty feet in height, if not fireproof shall be of semi-fireproof, composite or mill construction.

Incombustible Materials for Domes, Gables, etc.

Section 75. Within the "Inner Fire District" all domes, gables, domes, spires, cornices, gutters, bay windows, balconies, porches, bulk heads, tank houses, roof covering and other appendages placed on buildings shall be constructed of incombustible materials, except as herein provided. Look-outs may be of plank when walled in to solid walls.

Slow burning construction in "Middle Fire District".

Section 76. Within the "Middle Fire District" all buildings over four stories in height, if not fireproof shall be semi-fireproof, composite or mill construction.

Sections of Buildings, outside of "Inner Fire District", may be frame.

Section 77. Outside of the "Inner Fire District" buildings used as dwellings or private stables may have the gables, dormers, porches and all that part above the walls of the upper story, constructed of frame work, except as herein provided. Gable or Mansard roof buildings will be classed as frame 2nd story.

Second Story Walls and roof of frame—when.

Section 78. Outside of the "Inner and Middle Fire Districts", buildings embraced in Grade III, when not more than two stories in height, if erected five feet from the lot line, may have the second story walls and the roof constructed of wooden frame work. This includes gamble and Mansard roof 2nd story.

Stables, Coal Houses, etc., of frame—when.

Section 79. Within the "Outer Fire District" buildings used exclusively for stables, coal houses or privies, when not more than 500 feet area (20 ft x 25 ft.) and not over 14' to the highest part, as may be constructed of wooden frame, provided such structures are built on
the rear of the lot. Such buildings erected on corner lots must be built on the inside lot line at rear.

**Livery, Boarding or Sales Stables or Barns.**

Section 80. All livery, boarding or sales stables or barn buildings must each have a special Permit from the Council and Health Commissioner as per Sec. 34, before a building permit will be issued. All Stable or Barn Buildings, providing accommodation for six or more horses or cattle, will have not less than two outside doors each 4 feet wide on each floor connecting directly with yard and alley, and said doors to open out. All livery, boarding or sales stables or barns having accommodations for one or more horses or cattle above the first floor must be provided with fire escapes as per Section 330.

**Porches of Frame - when.**

Section 81. Outside the "Inner Fire District", porches may be built of wooden frame work against the external walls of any building, provided that the width of any such porch shall not exceed ten feet, nor shall any such porch within the "Middle Fire District", if on the rear of any building be built within five feet of any division line, unless the side or end adjoining the division line shall be of incombustible construction.

**Porches 50% open - no Stove or Fire allowed.**

Section 82. Porches must have not less than 50 per cent of the sides and ends open, unless enclosed with incombustible materials. No stove, range or fire of any kind will be permitted in or upon any porch.

**Porches over one story.**

Section 83. All porches over one story in height shall have their floors supported on joists not less than 4 inches thick and open below except with incombustible materials.

**Bay Windows & Balconies.**

Section 84. Bay or oriel windows and balconies, located above the first story, not exceeding 10 feet in width and projecting less than 4 ft. from the wall line, may be built of wood in the "Middle" and "Outer" Fire Districts, provided they are not less than 5 ft. of any division line or other wooden structure of like nature.

**Conservatories.**

Section 85. Outside of the "Inner Fire District" conservatories or green houses may be built with brick or stone walls not less than 2 ft. above the surface with wooden or metal frames, filled with glass; the proportion of glass surface above the walls to be not less than 80 per
cont, of walls and roof.

Tank Houses, Bulk-heads, etc. on roof.

Section 86. Outside of the "Inner Fire District", tank houses, bulk-heads, etc., upon the roof of any building may be built of wood and covered with tin or iron, 4-inch veneering, cement plaster on metal lath or tile, but such structures shall not be over 14 feet in any dimension, nor shall there be more than one such structure upon any one building.

Summer Houses - Play Houses.

Section 87. Outside of the "Inner Fire District," summer houses and children's play houses may be built inside or outside grounds, of wooden frame work, provided that such structures are not nearer than 10 feet of any brick or stone building or within 20 feet of any frame, and it shall be unlawful to use any such building for any other purpose than those mentioned in this section.

Tent or Canvass Structure prohibited without permit.

Section 88. Within the "Inner Fire District" no tent or canvass structure of any kind shall be erected without the written permission of the Mayor or Fire & Police Board, and then only for a term not exceeding five days.

Tents outside of the "Inner Fire District.

Section 89. Outside of the "Inner Fire District", tents may be erected during the months of May, June, July and August upon the written permit of the Building Inspector; which permit shall not be issued until the applicant for such permit shall have signed an agreement to take down and remove such tent at any time when notified so to do by the Building Inspector, Chief of Police, Chief of the Fire Department or Commissioner of Health. All permits for tents shall terminate and they shall be removed on or before the first day of November of each year. Fee for each tent permit shall be one dollar ($1.00).

Extension of Time Limit for Tents.

Section 90. Extension of time for the removal of any Tent, after the last day of November in each year will be granted when the owner or tenant of same has furnished the Building Department with a certif-
cate in writing, signed by a reputable physician and approved by the Health Department, stating that said tent is essential to the welfare and recovery of a patient, requiring outdoor treatment for some particular sickness or disease.

Special Permit for Tents.

Section 91. Any person owning one or more lots in the "Urban Fire District" may with the approval of 50 per cent of the property owners in same block erect a Tent, to be used as a residence for himself and family. A special permit will be issued allowing the use of said tent for a period not exceeding 12 months, with the understanding that a permanent residence built to conform to this ordinance be under construction before the lapsing of said permit; otherwise, the tent must be removed immediately after limit of permit has passed, and said tent will be required to conform to restrictions of Sec. 93.

Temporary Frames for Builder's Use Allowed.

Section 92. Temporary frame structures for the use of builders while engaged in building operations may be erected adjoining the work in any part of the City, said temporary frames to be removed as soon as the permanent building is enclosed.

Temporary Staging for Stands - Permit.

Section 93. Temporary staging for observation, grand stands, platforms and similar structures shall not be erected upon the roof of any building nor in any locality within the City, without a written permit from the Building Inspector; which permit shall only be issued after complete plans & specifications for the proposed structure shall have been filed in the office of the Building Inspector. The manner of construction and all matters touching the strength of the same shall be subject to the approval of the Building Inspector and all such structures shall be finished at least 24 hours before being occupied.

Signs - Wooden & Canvas.

Section 94. No wooden or canvas sign over 24 inches in width shall be placed upon the side or top of any building within the "Inner Fire District", nor shall any such sign have other than the ends
nearer than five feet of any other sign of wood or canvas, nor shall any such sign project over the lot line more than 12 inches upon any street of the City.

**Permanant Signs Incombustible - Fire & Police Board and Board of Public Works - Permits.**

Section 95. All permanent signs, or other appendages projecting from or placed upon the top or sides of buildings within the "Inner Fire District" shall be wholly of incombustible materials, and the hanging, placing and fixing of all such work shall be subject to the approval of the Building Inspector, as per plans and specifications submitted. The placing and securing of all bill-boards and like structures shall be subject to like approval and supervision and they shall not be erected without a written permit from the Fire & Police Board & Board of Public Works. No sign or appendage shall project more than 12 inches over the sidewalk in front of buildings, unless by special permit.

**Use of Streets or Alleys for areaways, etc., prohibited.**

Section 96. The use of any part of the streets or alleys of the city for areas, steps, stairs, vaults, sub-surface excavations or for like purposes, is by this ordinance prohibited, and when material alterations or additions are made to existing buildings, they shall be made to conform to this ordinance.

**Spiked Railings, Barbed Wire, etc., prohibited.**

Section 97. It shall be unlawful to place, fix or stretch any spiked railings, barbed wire or other things of like nature, anywhere within the City limits of the City and County of Denver.

**Height of Fences.**

Section 98. No wood or masonry fence throughout the "Fire Districts" of the City and County of Denver, must exceed the height of 6 feet. Open iron creasting may be placed on the top of walls to increase the height when used as a fence, same to be well bolted to the wall or fence.

**Enclose Steam Boilers, except.**

Section 99. Boilers for the production of steam shall not be permitted outside of an incombustible building, except for temporary hoisting in connection with building operations, and then only in a manner approved by the Building Inspector.
In every factory, mill or other like place, where beltng, gearing, shafting or things of like nature are used, the same shall be guarded in such a manner as will reasonably protect persons employed or passing near the same.

Construction of Ash Pits, etc.

All receptacles for ashes shall be built of brick, stone or other incombustible materials with walls not less than 8 inches thick, with proper iron doors, the doors to be kept in repair and closed when not being used to empty said pits. No receptacle for ashes shall ever be allowed to overflow or be so constructed that the ashes will be blown about by the wind. When ash cans are used they must have double bottoms with a space of at least 2 inches between the covers secured with iron hinges, and the cans at all times be in proper repair; the lid to be closed when not being filled or emptied.

Changing Store Fronts.

Any store front or 1st floor of any building, at present having the level of said first floor above or below the established sidewalk grade, must have same raised or lowered to conform to said grade before a Permit will be issued for any changes, alterations or repairs to be made to said store fronts, and all steps at present projecting over lot lines on sidewalks must be removed after the store front changes or alterations have been made.

Frame Sheds, "Inner Fire and Middle Fire Districts".

All present frame sheds in the "Inner and Middle Fire Districts" enclosed on all sides with wood or corrugated iron that may be worn out or damaged beyond repair, unfit for use or in a dangerous condition, must be taken down and removed, when same have been condemned by the Department of Buildings or Fire & Police Board.

All present frame sheds in the "Inner and Middle Fire District", enclosed on all sides with wood or corrugated iron, and not worn out or damaged more than fifth per cent, must be veneered with 4” brick walls, or lathes with metal lath and plastered on outside with Portland plaster, and all shed roofs, both old and new, must be covered with
incombustible materials.

In the "Inner and Middle Fire Districts" all open sheds must be constructed with uprights not less than 4" x 4" inches, with 4" x 4" inches roof purlins and plates, spaced to suit standard widths of corrugated iron sheets. No wood sheathing or boarding will be permitted on walls or roofs, except where said shed butts against a lot line fence and then not more than six (6) feet high.

Open sheds in the "Inner Fire and Middle Fire Districts" may also be constructed of steel or iron uprights and purlins spaced to suit the width of corrugated iron sheets, not more than 30 inches apart on centers.

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TITLE VI.
CONSTRUCTION OF BUILDINGS.

Excavations & Foundations.

Excavations near adjoining walls - notify adjoining owner - when.

Section 104. Whenever it is proposed to begin any excavation for any building and there shall be walls or structures wholly or partly on adjoining lands, or near the intended excavations, then the party causing such excavations to be made shall notify the owner or owners of such adjoining walls or structures of such intended excavation, and also of the depth to which it is proposed to make said excavation.

The owner or owners of the adjoining walls or structures shall have the right to enter upon the property of the party causing the excavations to be made for the purpose of securing their walls or structures at such times as he or they are notified that such excavations are to be made, and within three days after receiving such notice shall proceed to care for, and make safe, his or their walls or structures to the depth of 10' 6" below the curb line immediately in front of said wall or structure. In all cases where the walls have been extended to this depth (10' 6"), then the party causing the excavation to be made shall, at his own expense, underpin and protect and sustain all
adjoining walls that are down to the depth of 10' 6".

SECTION 105. In case the owner or owners of the adjoining walls
or structures shall neglect, fail to refuse to properly protect their
walls or structures, then the party causing the excavation to be made
shall notify the building inspector in writing, certifying that the
first notice mentioned in the preceding section has been served and
upon whom and how served; then the Building Inspector shall, in writing
notify the person or persons mentioned in the first notice, and any
others he may deem to be in any way interested, that excavations are
to be made adjoining their walls or structures to the depth of 10' 6"
below the established grade of the street at curb, and in case they
still fail or refuse for a period of three days after being so notified
by the building inspector, the building inspector may enter upon the
property, employ such labor, purchase such materials and take such
steps as in his judgment may be necessary to make the adjoining walls
or structures safe and prevent the same from becoming unsafe or dan-
gerous, at the expense and cost of the owners of such adjoining walls
or structures. Any party doing said work or furnishing said materials,
or, any part thereof, under and by direction of the Building Inspector
may bring and maintain an action against said owner or owners in the
same manner as if he had been employed to do said work or furnish said
materials by the owner or owners of said walls or structures.

SECTION 106. The space which may be occupied under a sidewalk
by a property owner on the front or side of his building, for the
purpose of vaults, areaways, or sub-surface excavations for like
purposes, shall be limited to the space between the building line and
a line five feet from and parallel to the exterior line of the curb,
measurement to be taken from the curb line to the outside face of
retaining wall, in no case shall an areaway, vault or sub-surface excavation be built under an alley or entrance to the alley from the street.

Walls of Sidewalk Excavations.

Section 107. All such areaways, vaults and sub-surface excavations under sidewalks shall be enclosed by walls of vitrified brick or of hard stone laid up in cement and sand mortar. The thickness fo such walls shall be determined by the building inspector, according to the size, shape and depth of the areaway, vault or sub-surface excavation, but in no case shall such walls be less than thirteen (13") inches, if of brick, eighteen (18") inches if of stone.

Covering of Sidewalk Excavations.

Section 108. All areaways, vaults and sub-surface excavations shall be covered with a safe and substantial non-combustible cover, capable of sustaining a distributed load of 150 pounds to the square foot of its surface, and such covering shall be flush with the sidewalk. Where area ways, vaults or sub-surface excavations are covered with glass in iron or concrete frames, such glass lights shall not be more than four (4") inches square each, and the top surface of the same shall be rough and surfaced in such a manner as to be entirely safe for pedestrians, and the said glass lights shall be kept in good repair at all times by the property owner.

Apertures over Sidewalk Excavations.

Section 109. The aperture in the sidewalk over any coal hole or vault shall not exceed twenty-four (24") inches in diameter, and shall be covered with a substantial cast iron plate and frame with a scored top surface, flush with the sidewalk. Said covers may have glass lights as above set forth.

All area covers, coal hole covers and doors shall be subject to the approval of the Building Inspector.
Surrender Sidewalk Excavation Spaces - when.

Section 110. All such area ways, vaults and sub-surface excavations shall be made by the property owner subject to the rights of the City and County, to the use of the said ground whenever the same shall be needed by the City and County for the benefit of the public, and the said space occupied by the said area way, vault or sub-surface excavations shall be surrendered to the City and County within ten days after demand for the same in writing is made by the City and County upon the property owner.

Protection.

Section 111. All excavations shall be so protected by the owner so that adjoining soil shall not cave in by reason of its own weight, and shall be properly guarded and protected so as to prevent the same from becoming dangerous to life and limb.

Permanen excavations are to be protected by retaining walls, with guard rails or fences.

Foundations.

Foundations of Brick, Stone or Iron Buildings.

Section 112. Every brick, stone or iron building hereafter erected in the City and County of Denver shall be built upon a foundation the footing or lowest course of which shall not be less than eighteen (18") inches below the natural surface of the earth, and upon firm solid ground for the purpose. In case solid ground is not reached, then the footings must be carried down to a sand or gravel bed, or shall be laid upon driven piles, timbers, riprap or such other work as may be approved by the Building Inspector. Foundations shall not be laid upon made or filled ground or on soil containing admixture of organic matter, and inspected and approved by the building inspector before the footings are put in. The surface ground around all buildings shall be graded so that the water shall drain away from the walls of the buildings.
Test for Earth for Buildings over 4 Stories.

Section 113. In all buildings over 4 stories in height the earth shall be tested at least three feet below the bottom of the trenches and should a stratum of clay or loam less than six feet in thickness be encountered within three feet, the footings shall be carried through it.

Footings of Foundation Walls.

Section 114. The foundation walls of every building and the internal supports shall rest upon footings of stone, hard burned brick, concrete or iron bedded in concrete; and such footings shall not be less than 12" inches wider than the wall or pier immediately above it, and the actual pressure upon the soil beneath the footings shall never exceed 5 tons per square foot on coarse sand and gravel, 3 tons per square foot on sand and gravel, two tons per square foot on clay or abode or 1 ton per square foot on loam.

Footings for Buildings over sixty feet high.

Section 115. Buildings whose external walls are over 60 feet in height shall have dimension stone footings or hard laminated stone or Portland cement concrete, not less than 3" inches thick, and if of stone shall cross the wall in one length and project equally on both sides, except on party lines. Footings for piers or columns shall be one stone up to 5 feet in size; above that size 2 stone properly bonded may be used. When the external walls of any building exceed 60 feet in height the stone footings shall rest on a bed of concrete not less than twelve inches in thickness and 12 inches wider than the stone footing laid upon it. If brick footings are used they shall be "stepped up" and the offsets, if laid in single courses, the set-offs shall not exceed two inches and in all cases there shall be double courses at the bottom. If iron or steel beams are used as part of the footings they must be placed in a bed of concrete extending not less than
8 inches below and on all sides of the rails; the ingredients of the concrete must be such that after proper ramming the interior of the mass will be free from cavities.

**Pile Foundations.**

**Section 116.** Piles intended for a wall pier or post to rest upon shall not be less than six (6") inches in diameter at the smallest end, and 12 inches (12") at the butt end, and shall be of oak or other hard wood, and be spaced not exceeding thirty-six inches (36"), or nearer than two feet (2') on centers, and they shall be driven to a solid bearing.

No pile shall be weighted with a load exceeding twenty-five (25) tons.

Where required, Portland concrete shall be rammed down in the interstices between the heads of the piles to the depth and thickness of at least twelve (12") inches, and for one (1') foot in width outside of the piles.

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**TITLE VII.**

**WALLS, PIGEONS & PARTITIONS -- HEIGHTS AND THICKNESS OF.**

**Thickness of External Walls of Buildings in Grades II and III, and when not more than four stories.**

**Section 117.** The external walls of all buildings embraced in Grades II and III, when not more than 4 stories in height, shall be of a thickness of not less than that indicated in the following table:

<table>
<thead>
<tr>
<th>Stories in</th>
<th>Thickness of Walls in Inches.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>Basement</td>
</tr>
<tr>
<td>1 Story</td>
<td>17 inches</td>
</tr>
<tr>
<td>2 Stories</td>
<td>17 inches</td>
</tr>
<tr>
<td>3 Stories</td>
<td>21 inches</td>
</tr>
<tr>
<td>4 Stories</td>
<td>21 inches</td>
</tr>
</tbody>
</table>

**Thickness of Walls.**

One-story and basement dwellings, stables & stores.

**Section 118.** Dwellings and private stables not exceeding 850 feet (20 x 40) of ground area (not including porches) may have 13" walls in the basement and 9" inch walls on the second story, and provided
further than 9" wall shall have a greater length than 30 feet or
greater height than 10 feet when so used, without cross walls or proper
return angles to stiffen said walls.

Thickness of Walls - One Story Store Buildings.

Section 119. One Story store buildings not exceeding fourteen (14)
feet may be built with nine (9) inch walls when the bearing walls are
not more than eighteen (18) feet apart, and the length of the nine
9" inch bearing walls does not exceed forty (40) feet, but no walls
supporting girders shall be less than thirteen (13) inches.

Thickness of External Walls of Buildings in Grades I, IV, V, and VI, and in building over four (4) stories,-

Section 120 (E). The external walls of all buildings embraced in
Grades I, IV, V, and VI, and all buildings over four stories in height
shall be of a thickness not less than indicated by the following table:-

<table>
<thead>
<tr>
<th>Stories</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
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<tr>
<td>Two</td>
<td>17(13)</td>
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<td>13</td>
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<tr>
<td>Three</td>
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<td>13</td>
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<tr>
<td>Four</td>
<td>26(21)</td>
<td>21</td>
<td>17</td>
<td>17</td>
<td>13</td>
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<td>Five</td>
<td>28(21)</td>
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<td>17</td>
<td>13</td>
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<tr>
<td>Six</td>
<td>30(26)</td>
<td>21</td>
<td>21</td>
<td>17</td>
<td>17</td>
<td>13</td>
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<tr>
<td>Seven</td>
<td>30(26)</td>
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<td>21</td>
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<tr>
<td>Eight</td>
<td>34(30)</td>
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<td>Nine</td>
<td>34(30)</td>
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</tbody>
</table>

LIMITATION OF HEIGHTS OF BUILDINGS.

Sec. 120 (E). No building, part of building or other structure
hereafter or at present erected, except campaniles, spires, domes,
water towers or smoke stacks shall be of a height more than 124' feet
or more than 9 stories high figuring from the grade line at sidewalk
up to top of front parapet wall or roof.

Exception.

Section 121. Buildings of Grade I., when not over forty feet in
length and not over twenty-five feet wide, and not exceeding fourteen
feet in height, may have walls four inches less in thickness than is
given in the above table.
Party Walls - Thickness.

Section 122. Party walls (a) intended for the use of two or more owners, shall not be less than 4 1/2" thicker than is required for external walls in the above table. Party walls (b) between buildings belonging to the same owner and erected at the same time shall not be less in thickness than shown in the above table for external walls for buildings of the same class.

Foundation Walls.

Section 123. Foundation walls shall be built of stone, hard burned brick or concrete; if built of brick they shall not have a less thickness than shown in the tables to a depth of 12' feet below the grade line and for every additional ten feet, or part thereof, deeper they shall be increased 4" in thickness.

Rubble Stone or Dimension Stone Walls.

Section 124. Walls built of rubble stone work shall not have a less thickness than 4" inches thicker than shown in the above table. Walls built of dimension stone equal to St. Vrain or Ft. Collins Stone may be of the same thickness as shown in the above table when that thickness exceeds 17" inches.

Headers in Stone Walls.

Section 125. All stone walls 24" or less in thickness shall have at least one header extending through the wall in every five feet in length of the wall and every three feet in height; all walls over 24" in thickness shall have the same number of headers running into the wall two-thirds of the thickness of the wall, to be lapped with headers from the opposite side of the wall. All headers shall be not less than 12" in width and not less than 6" in thickness, and all stone built in to any wall shall be laid on the natural bed.

Partition and Interior Walls.

Section 126. Partition walls may be 4" less in thickness, than the dimension shown in the above table for external walls, provided that no brick wall shall be less than 8" in thickness and no 8" wall shall exceed 2 stories in height or 60 feet in length; and no 12" wall shall
used, the thickness of stories in height or 125 feet in length, without cross walls or proper buttresses for lateral support. All interior walls supporting joists shall be carried up to the top of said joist and plastered flush with the top of the joist, unless the same are the ceiling joist, when in all flat roofed buildings and in all buildings of Grades I, IV, V, and VI, the walls shall be carried to the top of the roof joist, leaving no openings in the attic unless said openings are covered with iron doors and said doors closed at all times when not in actual use.

**Changes in Thickness of Walls.**

Section 127. All changes in the thickness of walls shall be at the top of the joist and not otherwise, and that portion of the walls above the ceiling joist shall be of the same thickness as given for the upper story; and when the external or party walls pass more than four feet above the last floor timbers it shall be classed as a full story.

**Piers, Buttresses and Hollow Walls.**

Section 128. In all walls the same amount of materials may be used in piers or buttresses or for hollow walls, but when such construction is employed it shall be subject to the approval of the Building Inspector. All hollow walls shall be properly bonded together with brick, stone or terra cotta, or with galvanized iron wire wall ties not over 2 feet apart in any direction.

Hollow walls will be built solid after being corbeled over opening twelve (12) inches below bottom of joists, and all sections supporting beams or girders will be built solid with Portland cement mortar.

**Thickness of Walls increased — when.**

Section 129. Whenever in any building in Grades II, or III, the height of the basement story exceeds 11 feet or any of the other stories exceed 13 feet, or whenever in any building or Grades I, IV, V, and VI, the height of the basement exceeds 12 feet or the 1st story exceeds 14 feet, or any of the upper stories exceed 12 feet, or the top story exceeds 16 feet to the roof timbers where no ceiling joist are
used, the thickness of such stories must be increased 4" and the thickness of the walls below, if not of such increased thickness, they shall be so made.

**Thickness of Walls, over one hundred (100) feet long, or one hundred and twenty-five (125) feet deep.**

Section 130. All buildings that are over 100 feet in width or over 125 feet in depth, without proper cross walls or buttresses, shall have such long walls increased 4" in thickness and a further increase of 4" for every 100 feet or fraction thereof, said walls are longer than the above dimensions.

If any horizontal section through any wall in any building there shall be more than 25 per cent of openings, then such wall shall be increased 4" in thickness and the walls below made the same or greater in thickness.

**External or Party Walls of Flat Roof Buildings.**

Section 131. The external and party walls of all buildings with flat roofs shall be carried at least 18" above the roof and coped with stone, iron or terra cotta, except such walls as are finished with a gutter or cornice, when the walls shall extend to the under side of the roof boards.

All parapet or fire walls extending over three times their thickness above the roof timbers shall be securely braced with iron braces each 12 feet in length of wall.

**Recess for Pipes, etc.**

Section 132. No recess for pipes, ducts or other purposes shall be cut into any wall more than one-third the thickness of the wall and then only in vertical lines, and no recessing or cutting shall be done in any 9" wall, nor nearer than 6 feet of any outer angle; horizontal recessing is unlawful. All recesses or openings in walls shall be filled in solid around pipes or ducts, from 6" below to 16" above the joist, with mortar or cement.

**Walls, Piers, etc., Bonded and Built plumb.**

Section 133. The walls, piers, buttresses and other portions in all buildings shall be properly bonded and solidly put together with close joints filled with mortar; they shall be built to a line
and carried up plumb, straight and true from bottom to the top.

Section 134. No. Soft or Salmon Brick used - when.

No soft or under burned brick and no inferior, soft or shelly stone or stone absorbing more than 3 per cent of moisture, shall be used in any building except for fire stops.

No salmon brick shall be used in any building where exposed to the weather, or in piers, nor in any part of any wall where there is unusual weight, or where there is more than 25 feet of wall above them.

Section 135. Header Courses - How laid.

All brick walls shall be built with header courses at least every seventh course, the headers lapped over each other and going through the wall, except where face bricks are used.

Section 136. Pressed Brick Facings - how laid.

Pressed brick facings must be bonded to the backing at least once in every seven courses by solid headers or galvanized iron wall ties; the clipping of corners is prohibited.

Pressed brick in all cases must be laid with a full bearing of mortar under the whole surface; the laying of pressed brick with a "buttered joint", or with merely a thin ring of mortar at the outer edge shall be unlawful and is prohibited.

Section 138. Pressed Brick Piers - Headers.

Piers faced with pressed brick shall have only solid 8" x 8" headers, and when piers are less than 24" in their least horizontal dimension, the core shall be built of pressed brick of the size and strength as the facing.

Section 139. Bond Stones - Stone or Iron Caps.

All piers, buttresses or pilasters that carry two-thirds of their safe load, and are less than five feet on any side shall have bond stones every four feet in height, and bond stones shall be not less than six inches in thickness and the full size of the pier, buttress or pilaster; and all piers, buttresses and pilasters shall be capped with a stone or iron cap.
Height of Piers:

No piers built in freezing weather - Brick push placed.

Section 139. No pier of masonry which carries 1/2 of its safe load in all exceed in height more than six times its least horizontal dimension, nor shall any such pier, buttress or pilaster be built in freezing weather. All brick laid in such members shall be push placed.

Front & Side Walls

Not built more than ten (10) feet in advance of other walls.

Section 140. In no case shall the front or side walls of a building be carried up more than ten feet in advance of the other walls unless by permission of the building inspector, in which case iron anchors shall be built into all angles and joinings.

Walls faced with Stone, or Terra Cotta, etc.,

Section 141. Walls may be built with a facing of stone, terra cotta or other suitable materials securely tied to a backing not less than 8 inches of hard burned brick laid in proper manner, but the thickness shall not be less than required for brick walls of the same height.

Sand for Mortar.

Section 142. The sand for mortar in all buildings shall be clean, sharp sand, free from loam, soft sand or organic matter.

Walls, etc., braced.

Section 143. The walls and timbering of all buildings shall be securely braced during erection or alteration.

Door & Window Openings, - Arches, - Lintels.

Section 144. All openings for doors, windows and the like, in walls of masonry, shall have good and sufficient arches with sufficient abutments, or shall have lintels of stone or iron of sufficient strength.

All arches not having sufficient piers or abutments to resist the thrust of the arch when loaded shall have proper tie rods, to prevent the arch from spreading the walls; low, first arches shall not be used unless over iron or stone lintels. All wooden lintels used in walls, where the openings will permit, shall have the upper side cambered,
sand will have a two or more row lock arch over them. No wood or combustible materials shall be used in any stone or brick wall except lintels or arch forms.

Ends of Girders, etc., and other supports.

Section 145. The ends of all girders, lintels, beams, trusses, posts, columns or other supports shall rest on a hard, flat stone or iron plate of sufficient size, as will spread the weight over sufficient superficial surface, that the stress upon the masonry or the earth shall not exceed the safe limit hereinafter mentioned and provided.

Supports for Walls.

Section 146. In buildings of fire-proof, mill, composite or slow consuming construction, no wall of brick or stone shall be supported in whole or in part by wooden posts or girders; but in buildings of ordinary construction interior walls not exceeding six feet in height, may be supported by wooden posts and girders properly portioned and of not less than 64 square inches in sectional area, and such wooden girders shall not have a greater span than ten feet.

Hollow Tile partitions.

Section 147. Six and four inch hollow tile partitions of hard burnt clay or porous terra cotta may be built not exceeding 16 and 14 feet respectively, and in their horizontal measurements, 40 feet between cross walls, piers or buttresses, but such partitions shall not abut bearing walls. All such partitions are to be solidly put together with cement mortar and carried upon proper beams or girders; when only one story in height they may rest upon wooden beams or girders.

Partition Walls and Girders.

Section 148. Every brick, stone or iron building hereafter erected more than 25 feet in width (except dwellings not exceeding three stories in height and tenement houses not exceeding two stories in height), shall have brick or stone partition walls or girders supported on columns so located that the distance between said walls and girders and the external walls, shall not exceed 24 feet; and where wooden columns
or girders are used the sectional area of such posts shall not be less than 8\(\times\)8\(\times\), and for girders 8\(\times\)10\(\times\) and the columns shall not be farther than 14 feet apart.

**Wooden Columns, not at rest on Girders,** -

*Section 149.* Wooden columns supporting girders, when erected in tiers one above another, shall have east iron caps and brackets, and columns in the upper stories shall rest on the cap of the column below and never on the girder.

**Dividing Walls in Double or Apartment Houses - Eight Rooms equivalent to one apartment,** -

*Section 150.* In all apartment and double houses the dividing walls or partitions between the apartments provided for one family shall be made entirely of incombustible materials, or of solid three inch plank, plastered each side on metal lath. In the absence of definite subdivisions between each family, eight (8) rooms shall be taken as the equivalent of one apartment.

**No Openings cut in Division Walls above first story - except,** -

*Section 151.* It shall be unlawful to cut or leave any opening in any division or party wall above the first story, except as herein provided; all such openings to be approved by the building inspector and a permit issued therefor. Every opening left in or cut through a division or party wall shall be closed with iron or metal covered doors hung on each side of the wall to iron or metal covered frames, or to iron hinges bolted through the wall; all such doors shall be automatic-closing and held only by a cord that will readily burn and allow the door to close. No such openings shall be more than ten feet in height or width and all such openings shall be closed at the end of each day's business and not opened until the next business day.
Walls of Light and Elevator Shafts.

Section 152. The enclosing walls of light and elevator shafts shall in all cases be built entirely of incombustible materials. The use of hollow tile or terra cotta for the walls of light or elevator shafts is permitted, but such enclosing walls shall be firmly anchored to the timber or iron framing of each floor. Where the walls of light or elevator shafts begin at any point above the foundation of the building their means of support shall consist entirely of fire-proof materials.

Habitable Rooms.

Bath & Toilet Rooms to have one outside window.

Section 153. Every habitable room shall have at least one window communicating directly with the outer air. Water closets and plumbing fixtures shall be placed only in rooms that are ventilated by windows or skylight opening directly to the outer air. No such rooms shall be ventilated by a light shaft which ventilates habitable rooms unless such light shaft is more than 6 feet in its least dimension. No space of less than 40 square feet for three story buildings, or less than 50 square feet for four story buildings, and so on, increasing 10 feet for each story additional, shall be considered as affording communication with outer air, and such opening space or light shaft, if covered with a skylight or roof of any kind, shall not be considered as fulfilling the requirements of this section.

Walls heretofore built may be used.

Section 154. Walls heretofore built for and used as party walls whose thickness at the time of their erection was in accordance with the then existing laws, may be used if in good condition for the ordinary uses of party walls, provided their height is not increased or the load placed thereon comes within the limit or safety.
Increasing Height of Existing Walls.

Section 155.- In case it is desired to increase the height of existing external or party walls which are less in thickness than required by this ordinance for the proposed number of stories in height, the said walls shall be extended only by building the new part in accordance with this ordinance and supporting such extension of the walls entirely upon iron or steel posts and girders, which may be placed in recesses cut in the old walls. The posts supporting said extension shall have proper footings placed below the footings of the old wall, shall be bolted to each other and to the old wall, and then covered with proper fire-proofing; such supporting frame work and the covering shall be subject to the approval of the Building Inspector.

Title VIII.
Concrete Construction.

Proportions & Mixing.

Section 156.- Concrete mortar will be made of cement, sharp sand and clean, broken stone not larger than hen's egg, the whole to be thoroughly mixed when dry and then add only sufficient water to make a stiff mortar, deposited in place and rammed with a beater until the water forms at the top. The maximum proportions of materials shall be two (2) parts sand, four (4) parts broken stone, one (1) part natural cement, or three (3) parts of sand, five (5) parts of stone to one of Portland cement.

Permits & Samples.

Section 157.- When applying for a permit to build any concrete construction, the applicant shall submit samples of all material, and the formula of the concrete mixture to be used, to the Building Inspector, with guaranteed test of same after being cured for 30 days.

Cement, Sand and Inerts.

Section 158.- All concrete walls, floors and fire-proofing within a building shall be made with standard brands of Portland
Cement, and sharp sand, including either of the following inerts: Silica gravel, granite, broken hard stone, railroad cinders or slag all thoroughly screened and free from loam, and no particle shall pass through screen exceeding two and three-quarters (2 3/4") inch mesh.

Materials Prohibited.

Section 159.- The following inerts shall be excluded in floor construction and fire-proofing except for concrete ballasting over floor construction, lime stone, boiler cinders containing more than ten (10) per cent. of unconsume carbon and soluble ashes, plaster of Paris, sulphate of lime, and all similar materials.

Footings and Foundation Walls.

Section 160.- Footings and foundation walls may be built of concrete, provided that the same shall not be of less dimensions than is specified for brick walls and footings, and the application for a permit must give the brand of cement to be used, and the proportions of cement to inerts.

Measure of Thickness.

Section 161.- The required thickness of all concrete walls or fire-proofing, or floor construction, is for the full thickness of the material only, exclusive of the plaster of floor ballasting.

Monolithic Walls & Piers.

Section 162.- Monolithic concrete walls constructed in place shall be of the same thickness as described for brick walls, built up within plank frame work in tamped one (1) foot layers, and the exposed surfaces shall be well wetted before adding the next succeeding layer. All pockets to receive the ends of floor beams or joists, or opening for pipes, etc., and all openings properly proportioned to receive door and window frames without cutting, shall be left in the wall as it is carried up. No isolated supporting monolithic concrete pier shall be used in the exterior or interior of any building above the basement floor level.
Reinforced Concrete Constructions.

Section 163.—All monolithic concrete walls, piers, and floor construction, aside from basement walls and piers, shall be built only of standard brands of Portland cement, clean sharp sand, and clean gravel, or broken stone, mixed in the proportions of not less than one (1) part cement, to seven (7) parts of aggregates, with sufficient water added to give a moderately wet mixture, provided, however, that floor slabs with a clear span not exceeding ten (10) feet, may contain five (5) parts of screened boiler cinders to two (2) parts of sand and one (1) of cement.

All broken stone or gravel must be of such size that it will pass through a screen having a two and three-quarter (2 3/4") inch by two and three quarter (2 3/4") inch mesh, and must be practically free from dirt.

Metal Reinforcements.

Section 164.—All concrete constructions, before mentioned, must be reinforced by steel rods or mesh, in accordance with approved practice. All insulated piers and columns, whose height exceeds four times their least horizontal dimensions, shall be reinforced by vertical rods wound spirally with hoop iron, so that the hoops or spirals shall not be more than four inches apart.

The metal reinforcements for floor slabs, beams or girders, shall be proportioned in accordance with the formulas given on pages 866 and 867 of the "Architects & Builders Pocket-Book," and the shape of the reinforcing material shall be subject to the approval of the Building Inspector, except, however, that plain rods or bars shall not be accepted as a proper reinforcing material, nor shall the various styles of metal or wire lathing be used for the reinforcement of floor slabs.

Test of Strength.

Section 165.—All concrete floor constructions shall be tested in the presence of the Building Inspector or his rep-
resentative, to twice the intended carrying capacity of the floor
without sign of flaw or failure, and if the test is carried to the
point of failure, the breaking load shall equal at least four times
the safe carrying load. Any floors not meeting this requirement,
shall be condemned by the Building Inspector, and must be replaced
by floors of the required strength.

Plans for Reinforced Concrete Building.

Section 166. No permit shall be given for a reinforced
concrete building, except on plans prepared by a competent architect
or engineer, which plans shall show the dimensions of all parts of
the constructions, and the character and quantity of the reinforcement.

Walls & Quantity of Cement or Concrete Blocks.

Section 167. Blocks of Portland cement and sand or of
Portland cement, sand and gravel or crushed stone may be substituted
for brick, for building the walls of buildings under the following
conditions.

Walls built of cement and sand blocks, shall be of the same
thickness as specified for brick walls, except that the block walls
may be 8-12-16-20 and 24 inches thick in place of 9-13-17-22-26 inches
as specified for brick.

Walls built of cement, sand and gravel, or crushed stone,
under what is known as the two-piece system of construction, shall
be of the same thickness as specified for brick walls, except that
an 8 inch block wall may be used in place of a 9 inch brick wall,
a 10 inch block wall in place of a 13 inch brick wall, a 12 inch
block wall in place of a 17 inch brick wall and a 15 inch block wall
in place of a 21 inch brick wall.

COMPOSITION OF BLOCKS.

One-Piece Method.

Section 168. Cement and sand blocks, made on the one-piece
method of construction, shall not have hollow spaces exceeding one
third the area of the block, and the outer walls of the block shall
not be less than 2 inches thick. The composition of the blocks
shall be as follows:—viz:

\[\text{48}\]
One story buildings, one (1) part Portland cement, and not more than five (5) parts coarse sharp sand.

Two story buildings, one (1) part Portland cement and not more than four (4) parts coarse sharp sand.

Three and four story buildings with basement, one (1) part Portland cement and not more than three (3) parts coarse sharp sand.

All blocks must be thoroughly tamped in the moulds, and put under a sufficient hydraulic pressure when required before removing the block from the mould.

**Two-Piece Method.**

Section 168. - Blocks made on the two-piece method of construction, shall have an outer face not less than 1 5/8 inch thick for 8 inch walls, and 2 inches thick for 10, 12 and 17 inch walls, and a center arm not less than three inches thick.

Blocks of this class shall be composed of Portland cement, sand and gravel, in the proportion of one (1) part Portland cement, to not more than six (6) parts of sand and gravel or broken stone, and not less than 7.8% water; each block shall be made under a pressure of at least 30 tons.

**Curing of Blocks.**

Section 170. - No cement blocks shall be used in a building until they have been cured by being kept moist for 20 days from the time they are taken from the mould and said blocks during that time must not be allowed to dry out.

**Certified Tests.**

Section 171. - The Building Inspector may at any time require a certified test of the cement blocks being furnished for a wall or partition, showing a crushing strength of at least 1000 pounds to the square inch, on a section of block, 9 inches high, and any blocks not meeting this test shall be condemned as unfit for use.
Section 172.—Chimneys & Flues, built of cement blocks, shall conform to the requirements for brick flues, as to flue lining, and thickness of walls, except that 6 inches of solid concrete shall be considered as equivalent to eight or nine inches of brick work.

Section 173.—All concrete or cement walls will have at level of floor or roof timbers a plate course, to level each floor, same to be hollow four (4) by four (4) inches, all bonded and set in cement.

All blocks required for joist or beam filling, must be of the required dimensions to fit snug against and level with the top of joint. All concrete block walls and piers will be limited to a safe load of ten (10) tons per square superficial foot, and all piers supporting end of beams, girders, etc., must have the hollow spaces in same filled solid with concrete mixed as before specified, and tamped solid every three feet in height as the pier is being built.

Section 174.—All centering shall be self-supporting and no center in concrete construction shall be struck until seven days after the concrete is laid.

Section 175.—All concrete and cement walls must be set with Portland cement mortar, mixed in the proportion of one (1) part of cement, to not more than three (3) parts of sand, and each bed of cement must not be less than one quarter (1/4) inch. Point the joints on outside of walls with similar cement mortar. All blocks must break bond when laid in the walls.

Section 176.—No materials containing cement, that may have set or partially set, can be used in a new batch, and must be immediately discarded and thrown out.

All blocks that may be damaged or shattered from the effects of cutting or handling, will not be allowed to be used in any building, and must be removed immediately if required by the Building Inspector.
Section 177. - All structural concrete exposed to or worked in the outer air shall not be worked when the temperature is 32 degrees Fahr., or less in the shade, and any concrete liable to be exposed to frost or snow, or ice, before it has attained its permanent set, shall be temporarily protected, until the season has advanced beyond the probability of a frost, or until the building is properly enclosed, and all such work after center is removed shall be given a physical test, that will sustain a load of three (3) times that for which it is designed without sign of flaw or failure.

TITLE IX.

CALCULATION OF STRESSES.

CALCULATIONS OF CONSTRUCTION.

Section 178. - The stresses used in materials hereafter to be used in construction shall be the calculated stresses due to their "dead loads" plus the applied "live load." The allowable factors or units of safety or the dimensions of each piece or combination of materials required in a building or structure, if not given in this Ordinance, shall be ascertained by computation according to the rules prescribed by the standard modern authorities on strength of materials, applied mechanics and engineering practice, provided, that the Inspector may require the owner or architect to submit a certified copy of such computation or strain sheets for examination and approval with the application for the Building Permit.

FRAMING OF STRUCTURES.

Section 179. - All framing of beams, girders, columns, trusses and other structural members shall be proportioned of sufficient strength to sustain the load equal to the end reaction of the member supported when supporting its maximum load. In all cases suitable provision shall be made to take up and properly distribute the stresses due to eccentric loading and also to prevent danger from horizontal or vertical deflection or the buckling or shear of the members. The eccentric load in a column, if provided for and properly taken up, may be regarded as uniformly distributed over its base.

Tests of Frames.

Section 180. - When a test of any frame structure is required to ascertain its physical strength or its resistance to fire, frost or water, such tests shall be made with full finished sizes and similar exposure as their proposed use in a building requires, and when the condition for such tests are not established in this Ordinance, the methods of the authorities as prescribed in the previous sections shall be followed.

Safe Loads on Soils.

Section 181. - Good, sound, natural earth shall not be loaded to more than the following in tons per square foot:
(1) Gravel and coarse sand well-cemented, or rock or hard shale unexposed to the action of the air, frost or water. (6)
(2) Dry hard clay or fine sand, compact and well cemented (4)
(3) Moderately dry clay or clean dry sand. (8)
(4) Soft, wet sand (1)
(5) Quick sand or alluvial soils (1/2)
(6) The usual hard packed loam soil, thoroughly dry and free from moisture of any kind or other disintegration may be loaded.

When doubt arises as to the safe sustaining power of the earth upon which a building is to be erected, the Inspector may order borings to be made or direct the sustaining power of the soil, to be tested by and at the expense of the owner of the proposed building.

**Safe Load on Walls & Piers.**

Section 182. — The load placed upon walls, piers, or other supports of masonry shall never exceed the limit given in the following in tons per square foot:

<table>
<thead>
<tr>
<th>Materials</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brick work, common with coal dust in lime mortar</td>
<td>3</td>
</tr>
<tr>
<td>Brick work, hard burned with coal dust in lime mortar</td>
<td>5</td>
</tr>
<tr>
<td>Brick work, select hard burned in cement mortar</td>
<td>8</td>
</tr>
<tr>
<td>Brick work, pressed, fire, paving, in lime mortar</td>
<td>10</td>
</tr>
<tr>
<td>Brick work, pressed, fire, paving in cement mortar</td>
<td>12</td>
</tr>
<tr>
<td>Terra Cotta solid in cement</td>
<td>9</td>
</tr>
<tr>
<td>Hollow tile in cement mortar</td>
<td>3</td>
</tr>
<tr>
<td>Concrete, best Portland Cement 1 to 5 after 20 days</td>
<td>10</td>
</tr>
<tr>
<td>Concrete, best natural cement 1 to 5 after 20 days</td>
<td>4</td>
</tr>
<tr>
<td>Stone work, lava rubble in lime mortar</td>
<td>4</td>
</tr>
<tr>
<td>Lava dimensions in lime mortar</td>
<td>8</td>
</tr>
<tr>
<td>Lyons or Ft. Collins rubble in lime mortar</td>
<td>12</td>
</tr>
<tr>
<td>Cement mortar</td>
<td>20</td>
</tr>
<tr>
<td>Dimension in lime mortar</td>
<td>30</td>
</tr>
<tr>
<td>Dimension in cement mortar</td>
<td>40</td>
</tr>
<tr>
<td>Granite dimension, dressed beds</td>
<td>12</td>
</tr>
<tr>
<td>Stone work, lava rubble in lime mortar</td>
<td>5</td>
</tr>
<tr>
<td>Concrete, normal cement, with dressed beds</td>
<td>10</td>
</tr>
<tr>
<td>Stone work, lava rubble in lime mortar</td>
<td>15</td>
</tr>
<tr>
<td>Concrete, normal cement, with dressed beds</td>
<td>20</td>
</tr>
</tbody>
</table>

All as given in standard engineering works.

Section 183. — Terra Cotta building blocks built in a wall racing may be loaded five (5) tons per square foot of effective section. When unfilled, and eight (8) tons per square foot, measured on the beds, when filled solid with brick work or concrete.

**Hollow Brick and Tile.**

Section 184. — When hard hollow bricks are used as the inner racing or a hand selected brick wall, the wall shall be estimated as if laid up in Kiln Run Brick. Where hollow tile blocks are used for building partitions or as enclosing walls, the joints shall be well filled with mortar, and the effective bearing parts of the tiles shall not be loaded more than eighty (80) pounds to the square inch for hard fire clay tiles, nor more than sixty (60) pounds per square inch for hard ordinary clay tiles, nor more than forty (40) pounds per square inch for porous tiles. Portland building blocks used for outside walls and partitions shall not be loaded to more than one hundred and fifty (150) pounds per square inch available or effective section.

**Live Loads for Floors.**

Section 185. — The floors of all buildings shall be constructed in such a manner as to be capable of bearing in all parts, in addition to the weight of the partitions and permanent fixtures and mechanism that may be set upon them, and in addition to the weight of the material of which such floors are constructed, a live load for every square foot of floor surface as follows, viz:

- Dwellings, tenements and flats: 40 lbs.
- Hotels, lodging houses, schools with fixed desks: 50 lbs.
- Office buildings: 70 lbs.
- Churches, theatres, halls with fixed seats: 80 lbs.
- Dancing Rooms, corridors and public hotels: 120 lbs.
- Drill rooms: 150 lbs.
Floors of warehouses and store houses shall be proportioned to the load they are intended to carry, provided that all such floors shall be constructed to support not less than 150 pounds for every square foot of floor space or area.

Weight of Materials

Section 186.—For the purpose of computing the weight upon floors, walls, piers, columns and other supports the following shall be taken as the weight of materials, viz:

<table>
<thead>
<tr>
<th>Material</th>
<th>Weight per Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lumber per foot, board measure (dry)</td>
<td>.3 lbs.</td>
</tr>
<tr>
<td>Lumber per foot, board measure (green)</td>
<td>.6 lbs.</td>
</tr>
<tr>
<td>Loam, Clay, Sand, Green Plaster, etc., per cubic foot</td>
<td>.120 lbs.</td>
</tr>
<tr>
<td>Brick Work, common, soft, per cubic foot</td>
<td>.120 lbs.</td>
</tr>
<tr>
<td>Brick Work, common, hard, per cubic foot</td>
<td>.130 lbs.</td>
</tr>
<tr>
<td>Terra Cotta, in mortar, per cubic foot</td>
<td>.100 lbs.</td>
</tr>
<tr>
<td>Lava Stone Work, partly dry, per cubic foot</td>
<td>.150 lbs.</td>
</tr>
<tr>
<td>Sand Stone Work, partly dry, per cubic foot</td>
<td>.160 lbs.</td>
</tr>
<tr>
<td>Granite, marble, per cubic foot</td>
<td>.180 lbs.</td>
</tr>
<tr>
<td>Slating per square foot</td>
<td>.600 lbs.</td>
</tr>
<tr>
<td>Lath and Plaster one side, per square foot</td>
<td>10 lbs.</td>
</tr>
<tr>
<td>4 ply felt and gravel roof</td>
<td>15 lbs.</td>
</tr>
</tbody>
</table>

All other materials as given in best engineering works.

Flooring and Floor Arches

Section 187.—All wooden flooring between two (2) joists or any floor arch of brick, tile or concrete, or any reinforced or armored concrete or iron plate, or floor lintel, or other filling between two (2) supporting joists, beams or girders, shall be proportioned to carry not less than ten (10) per cent more live load than assumed for the joists, beams, or rafters, as provided in the next section.

Loading of Floor Joists and Beams

Section 188.—All beams, joists and rafters or girders carrying the flooring or floor arches directly between them, as provided in the previous section, shall be proportioned to carry all of their "dead load" and the whole of the imposed, uniformly distributed "live load," provided, that no joist, beam or rafter shall exceed twenty (20) times its depth in length. If the roof is pitched at an angle not exceeding forty five (45) degrees, and having determined the maximum distance between centers of supports for a rafter horizontally as a base, the length may be increased to meet the hypothenuse formed by the pitch line, without increasing the other dimensions.

Reduction of Loads on Columns, Piers, Piers and Footings

Section 189.—Every column, post, pier, footing and other vertical support shall be of sufficient strength to bear safely the weight of the portion of each and every floor and roof depending upon it for support, in addition to the weight required above, provided that in determining the stress on posts, columns, piers and footings in buildings of more than three stories in height, that are used for dwellings, lodging houses or offices, the live load may be reduced on the floor next to the top 5%, in the next lower 10%, in the next lower 15%, in the next lower 20% and so on, to and including the second floor, but the full load of the first floor shall be included in computing the weights on supports below said first floor.
Sizes of Columns, Posts and Piers.

Section 190.—When used as principal supports for walls or floor construction, brick or stone piers shall not be less than 12 in. by 12 in.; cast iron columns not less than five (5) inches in their least diameter or width, and no shell shall be less than one-twelfth (1/12) the diameter or side, but never less than three-quarters (3/4) of an inch thick, wrought iron or steel built-up columns not less than six (6) inches in their least diameter or side, with not less than one-quarter (1/4) inch metal in any of their parts.

Wind Pressure — Calculation—

Section 191.—In all buildings or structures whose heights exceed one and one-half (1 1/2) times the average width of their base, irrespective of their location, allowances shall be made for wind pressure, which for all free standing structures shall not be figured at less than thirty (30) pounds per square foot of surface exposed from the grade to the top of same, including roof, in any direction, and for buildings in built-up districts the wind pressure shall not be figured at less than twenty-five (25) pounds per square foot at the tenth story and two and one-half (2 1/2) pounds additional on each succeeding upper story, until a maximum of thirty-five (35) pounds is reached, which pressure shall be maintained to the top. Every panel in a curtain wall shall be proportional to resist a wind pressure of thirty (30) pounds per square foot.

In no case shall the overturning moment due to wind pressure exceed seventy-five (75) per cent of the moment of stability of the structure.

In all structures exposed to wind, if the resisting moments of the "dead load" and connections are not sufficient to resist the moment of distortion due to wind pressure taken in any direction on any part of the structure, additional bracing shall be introduced sufficient to make up the difference in the moments.

Wind Pressure——Precautions against.

Section 192.—The precaution against the effect of wind pressure may take the form of any one or more or all of the following factors of resistance to the wind pressure.

First——By cross walls or buttresses.
Second——Dead weight or structure, especially in its lower parts.
Third——Diagonal braces.
Fourth——Rigidity of connections between vertical and horizontal members by gussets, knees or portals.
Fifth——By constructing iron or steel pillars in such manner as to pass through two (2) stories with joints breaking in alternate stories.

All buildings lacking in initial stability, and for such other structures subjected to the lifting force of the wind, shall be anchored to their foundations, which shall be of sufficient weight to insure the stability of the structure.

TITLE IX.
IRON — STEEL — FIRE-PROOF CONSTRUCTION
and TESTS: also Formulae for Cast Iron and Steel Work.

Cast-Iron, Strains and Formulae.

Section 193.—Cast iron subject to crushing strain only, as in plates, may be loaded to the extent of 15,000 pounds per square inch when not less than one inch in thickness.

Compression strain on cast iron shall not exceed 13,000 pounds per square inch.

Tensile strain on cast iron shall not exceed 2,000 pounds per square inch.
Cast iron used for pillars shall be proportioned in accordance with the following formulae:

For round and rectangular cast iron columns,

\[ S = \frac{A \cdot 8000}{1 + \frac{L \cdot L}{800 \cdot D^2}} \]

- **S** - Safe load in pounds.
- **L** - Length of column in inches.
- **A** - Sectional area of column in square inches.
- **D** - Diameter of column in inches.

**Thickness of Metal.**

**Cast Iron Columns, Turned at ends, - Bolted.**

Section 194. - The minimum thickness of metal in cast iron columns shall not be less than 3/4 inches and no cast iron column shall exceed in height thirty times its least horizontal dimensions.

All cast columns shall have their ends turned true and at right angles with their axis. When such columns are used in tiers one above another their ends shall be bolted together.

**Test and Inspect - Cast Iron Columns.**

Section 195. - Cast-iron columns shall be thoroughly tested and inspected before being placed in position, and if they are to support a wall more than 30 feet in height, or more than three stories, they shall be drilled into, not less than two holes in the length, one of the upper surface and one on the lower surface as cast; such columns if found to be less than 5/8 inches thick in any place shall not be used; the strength shall be computed from the least thickness as found by the test holes.

**Foot Plates.**

Section 196. - Iron or steel shoes or plates shall be set in Portland cement under the bottom tier of columns or posts to properly distribute the load on the foundations. Shoes shall be placed on top.

**Open Back Column.**

Section 197. - Iron or steel posts or columns with one or more open sides and backs shall have solid iron plates on top of each, excepting where pierced for the passage of pipes.
Framing and Connections.

Section 198.- All framing of an iron or steel frame shall have the shop and field connections made by swelling, if possible, and the connections between cast iron and wrought iron or steel members made with straps and bolts as rigid as possible.

Wall Plates.

Section 199.- Bearing stones or metal plates shall be used to reduce the pressure on the wall under the ends of all beams, girders, lintels and trusses. When lintels span openings not over six (6) feet in the clear or the floor beams do not exceed six inches in depth and are spaced not more than thirty (30) inches on centers, templates may be omitted.

Metal Fronts.—Backing.

Section 200.—All cast iron or other metal fronts shall be designed to allow for expansion and contraction, backed up and made weather tight, and protected from corrosion by being filled in solid with masonry, stone or cinder concrete, not less than eight (8) inches thick in front of the skeleton frame.

Painting of Structural Metal Work.

Section 201.—All structural metal work shall be cleaned of all scale, dirt and rust and be thoroughly coated with one (1) coat of iron-oxidizing or red lead paint before leaving the shop, or before erection.

Cast-iron columns shall not be painted until after the same have been inspected. Where surfaces in rivetted work come in contact, they shall be painted before assembling. After erection all spaces left for shop marks, all abrasions, and all rivet heads and bolts are to be gone over with a coat of paint, after which the whole frame shall be painted an additional coat. All iron or steel used below water level shall be enclosed with Portland concrete to exclude the
Iron Caps.

Section 202.—If wooden posts are used in the construction they shall have cast or wrought iron or steel caps, so constructed as to form a base for the next post above. The girders must be securely bolted to cap, and if there is no provision for such bolting with the cap, lug or bracket, additional wrought iron straps shall be used, in extending from one girder to another, and bolted through each girder.

Maximum Fiber Strain, Steel & Wrought Iron.

Section 203.—All steel or wrought-iron work shall be so proportioned that the maximum fiber strain will not exceed 15,000 pounds for steel or 18,000 pounds for wrought iron, per square inch.

Joints & Splice Plates, Steel & Wrought Iron Columns.

Section 204.—The ends of all columns shall be faced to a plane surface at right angles to the axis of the column, and the connection between them shall be made with splice plates near the floor line. The joint may be effected by rivets of sufficient sectional area to take up the horizontal shear for wind or any eccentric stresses of column spliced. When the section of the columns to be spliced is such that splice plates cannot be used, a connection formed of plates and angles may be used designed to properly distribute the stress.

Lengths, Fillers & Shoes, — Steel and Wrought Iron Columns.

Section 205.—Steel and wrought iron columns shall be made in one, two or three story lengths, and the materials shall be rolled in one length wherever practicable to avoid intermediate splices. Where any part of the section of a column projects beyond that of the column below, the difference shall be made up by filling plates secured to column by the proper number of rivets. Shoes of iron or steel as described for cast iron
columns, or built shoes of plates and shapes may be used, complying with same requirements.

**Plate or Box Girders.**

Section 206.—Rivets in iron or steel flanges shall be spaced so that the least value of a rivet for either shear or bearing is equal or greater than the increment of strain due to the distance between adjoining rivets. The length of rivets between heads shall be limited to four (4) times the diameter. The compression flange of beams or plate girders shall be secured against buckling if its length exceeds thirty (30) times its width. If splices are used, they shall fully make good the members spliced in either tension or compression.

Plate girders shall be designed and constructed of a strength at least equal to those developed by the following formulae for plate girders:

\[ \text{Not area of bottom flange} \quad \frac{M}{15,000 D} \]

\( M \) — Maximum bending moment in foot pounds.

\( D \) — Distance between centers of gravity of flanges in feet.

Top flange shall have at least same gross area as bottom flange and shall be braced laterally at intervals not exceeding twenty (20) times the width of flange. In case the top flange is not so braced it shall be proportioned as a column carrying full flange strain \( \frac{M}{D} \) in a length equal to the greatest distance between lateral supports.

\[ \text{Web Area} = \frac{\text{Maximum Shear}}{9000} \]

Web shall be stiffened against buckling by suitable angle stiffeners when the shear or web exceeds:

\[ \frac{12000}{1 + \frac{d^2}{1500 t^2}} \]

\( d \) — Depth of web in inches.

\( t \) — Thickness of web in inches.

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Maximum Strain per square inch of rivet area.

Section 207. - Maximum strain per square inch of rivet area (single shear) shall not exceed:

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<thead>
<tr>
<th></th>
<th>Steel</th>
<th>Iron</th>
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</thead>
<tbody>
<tr>
<td>For shop-driven rivets</td>
<td>10,000</td>
<td>7,500</td>
</tr>
<tr>
<td>For field-driven rivets</td>
<td>7,000</td>
<td>5,000</td>
</tr>
<tr>
<td>Maximum shearing strain in webs</td>
<td>8,000</td>
<td>6,000</td>
</tr>
<tr>
<td>Direct bearing</td>
<td>18,000</td>
<td>15,000</td>
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Rolled Steel & Wrought Iron Beams.

Section 208. - All rolled steel and wrought iron floor and roof beams used in buildings shall be of full weight, straight and free from injurious defects.

When rolled steel or wrought iron beams are used in pairs to form a girder, they shall be connected together by bolts and iron separators at the ends over supports and under concentrated loads or at intervals of not more than five (5) feet from uniformly distributed loads. All beams twelve (12) inches and over in depth shall have at least two (2) bolts to each separator.

Tie Rods.

Section 209. - Tie rods shall be proportioned to resist their respective stresses and have nuts or turn buckles according to the duty to be performed. Holes for tie rods in beams and channels shall be placed as near the thrust of the arch as practicable. Channels and other shapes where used as skew-backs, shall have a sufficient resisting moment to take up the thrust of the arch. Tie rods entering walls shall be thoroughly anchored therein.

Maximum Load upon Riveted Columns.

Section 210. - The maximum load allowed upon riveted columns shall not exceed those determined by the following formulae:

For riveted or other forms of wrought iron columns more than 90 R in length:
\[ S = \frac{10,600 - 30L}{R} \]

\( S \) - Safe load in pounds per square inch.
\( L \) - Length of column in inches.
\( R \) - Least radius of gyration of column in inches.

For riveted forms of wrought iron columns less than 90 \( R \) in length:

\[ S = 3,000 \]

\( S \) - Safe load in pounds per square inch.

**Riveted Steel Columns more than 90 \( R \) in length.**

**Section 211.** - For riveted or other forms of steel columns more than 90 \( R \) in length:

\[ S = \frac{17,100 - 57L}{R} \]

\( S \) - Safe load in pounds per square inch.
\( L \) - Length of column in inches.
\( R \) - Least radius of gyration of column in inches.

For rivetted and other steel columns less than 90 \( R \) in length:

\[ S = 12,000 \]

Safe load in pounds per square inch.

**Bolting.**

**Section 212.** - When beams are joined on the top of girders they shall be tied together with the straps and to the girders with bolts. When rivetting is not possible or mandatory, connections may be effected with bolts. Beveled washers shall be used whenever necessary to fit the pitch lines of members.

**Steel & Wrought Iron Trusses.**

**Section 213.** - Trusses shall be of such design that the stresses in each members can be calculated. All trusses shall be held rigidly in position by efficient systems of lateral and sway bracing. Any member of a truss subjected to transverse stress, in addition to direct tension or compression, shall have the stresses causing such strain added to the direct stresses, coming on the member.
Brackets and Cantilevers.

Section 216.- All brackets and cantilevers for bays, balconies and fire-escapes shall be placed at or as near the floor level as possible, and no such bracket or cantilever shall be attached to a wall one (1) brick thick or any other wall unless the overturning moment with a factor of three (3) is provided for by additional stiffeners, or posts between the floors in the inside of the wall, or anchorage to or through the floor system to the next wall.

Proportioning & Frame.

Section 217.- Each part of an iron or steel "skeleton," or "wall bearing" frame, shall be strong enough to carry the superimposed load without reliance upon the walls below or enclosing them, and all columns shall be continuous from foundations to the top of the building.

Stiffening Beams in Floors.

Section 218.- Each panel of a floor system shall have beams, girders or walls between each corner column or wall bearing, and when a floor system is introduced which does not employ beams to transmit the intermediate loads to the girders, but spans the full width of the panel between two (2) girders, stiffening beams at right angles to the supports shall be introduced of such proportions so as to act as a strut strong enough to resist buckling in the direction of the flanges with the full load of a panel.

Enclosing Walls.

Section 219.- All iron or steel used as a supporting member of the external construction of a building exceeding four (4) stories, or over sixty (60) feet in height, shall be protected against the effects of outside changes of temperature and of fire by a covering of brick, terra cotta or fire-proofing tile, completely enveloping said structural members of iron and steel. If of brick, or hollow tile, it shall not be less than eight (8) inches thick, and there shall be at least two (2) sets of air spaces between the iron or steel members and the outside of the hollow tile covering. In all cases the brick or hollow tile shall be
bedded in mortar close up to the iron or steel members, and all joints and horizontal hollows of terra cotta shall be made full and solid. If the whole column or frame is encased in concrete extending at least two (2) inches beyond the exterior metal members, the thickness of the brick facing may be reduced to four (4) inches and the hollow tile or terra cotta to six (6) inches.

Wherever stone facing is used it shall be an additional thickness to the column covering, which covering shall not be less than four (4) inches thick and may be of either brick, tile, terra cotta or concrete.

**Support of Enveloping Materials.**

Section 220.—Where skeleton construction is used for the whole or part of a building these enveloping materials shall be independently supported on the skeleton frame for each individual story.

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**Fire Proof Floor Arches.**

Section 221.—Fire-proof floor arches may be made as follows:

(a) **Brick Arches.**

If arches are of sufficient skew-back they may be unlimited in span. If the brick arch is segmental, the rise shall not be less than one-twelfth (1/12) of the span, and not less than four (4) inches thick at the crown up to six (6) foot spans, nor less than eight (8) inches for spans up to twelve (12) feet.

Brick arches shall be composed of vitrified hard burned brick, laid up to a line on the centers, properly and solidly bonded, each longitudinal line of brick breaking joints with the adjoining lines in the same ring, and with the ring under it when more than four (4) inch arch is used. The brick shall be well-wet, the joints filled in solid with cement mortar, and the arches well grouted and properly keyed.

(b) **Tile & Terra Cotta Arches.**

If hollow tile or porous terra-cotta arches are used they shall be of uniform density and hardness of burn; the rise shall not be less than one-tenth (1/10) of the span nor less than...
four (4) inches up to five (5) feet, nor less than six (6) inches
at the crown for span up to ten (10) feet.

In tile and terra cotta arches, the joints shall be
solidly filled with cement mortar as required of brick arches,
and the arches so constructed that the key block shall always
fall in the center portion. The shells and web of all and con-
struction blocks, shall abut one against another.

(c) - Concrete Brick Arches.

Concrete brick arches shall be set and laid as specified
for brick arches under division (a) of this section.

The rise shall not be less than one-ninth (1/9) the
span, with four (4) inches thickness at the crown for spans up
to six feet, and eight (8) inches for spans not exceeding ten (10)
feet if voussoir arches are used.

(d) - Monolithic Arches.

Monolithic concrete arches shall in all cases be re-
enforced and protected on the underside with corrugated or sheet
steel, steel ribs or metal in other forms weighing not less than
one pound (1) per square foot. The thickness at crown shall
not be less than one-fifteenth (1/15) of the span, but never
less than four (4) inches, nor shall any span exceed ten (10)
feet.

(e) - Filling of Floor Arches.

All floor arches shall be filled up level with the
top of the crown with Portland concrete, and all tie-rods and
metal structural bearing surfaces shall be covered with covering
not less than two (2) inches thick.

Fire-proof Flat Arches.

Section 222.- Fireproof floor construction made of
terra cotta or tile finishing with a flat ceiling shall have the
tie-rods within the lower third of the height of the supporting
beams, provided the same are no nearer than two (2) inches to
the soffits and the spans are limited as hereinafter prescribed:
(a) - Porous & Semi-Porous Terra Cotta.

If, of side construction the span of a flat arch shall not exceed eight (8) times the effective depth of the arch, measured upward from the lower flange, but not over ten (10) times for end construction or lintels. When the skew back of a side construction is moulded to and is not less than two (2) inches below, and joints on the center of the lower flange, the span may be eight (8) times the total depth of the arch, but not over twelve (12) feet.

(b) - Dense Tile.

The span of side and end or lintel constructed floors, shall not exceed four-fifths (4/5) of the limits given in division (a) of this section.

(c) - Lintel Construction.

The depth or thickness of concrete shall never be less than four (4) inches, nor shall the span exceed twenty (20) times the thickness of the "lintel," or any span exceed fourteen (14) feet in any fireproof building.

(d) - Roof Concrete & Tile.

Hollow book tile in short spans and concrete in fireproof construction shall never be less than three (3) inches thick. If the roof is of lintel concrete construction, the spans shall be limited as in sub-section (c) and not to exceed thirty (30) times the thickness of the plate.

(e) - Re-enforced Concrete Construction. - See Title VIII.

Section 283. - All skew backs shall be of such form and section as to properly receive the thrust of the arches.

Arches and filling of any kind must be protected from frost. Carry the cinder concrete or other fireproof material up to the underside of wood floor boards if wood floor is used. If the finished floor is of concrete or tile, extend the concrete filling one and three quarter (1 3/4) inches above the top flanges of beams.


Section 224. Temporary centering when used for fire-proof floors shall not be removed within four (4) days, or until such time as the mortar or material has set, and the floor is safe for ordinary loads.

EXPANDED FLANKS, TURS AND PLATES.

Section 225. The exposed sides and bottom flanges of all wrought iron or steel beams or girders shall be encased with not less than two (2) inches of incombustible materials, and be properly moulded and secured to beams, and all concrete covering to be armored.

ENCASING INTERIOR COLUMNS.

Section 226. All cast iron, wrought iron, or rolled steel columns, including the lags and brackets on same, used in the interior of any fire-proof building, or used to support any fire-proof floor, shall be protected with not less than two (2) inches of fire-proof material, securely applied. The extreme outer edge of lags and brackets, and similar supporting material may project to within seven-eighths (7/8) of an inch of the surface of the fire-proofing.

METAL LATH AND PLASTERING.

Section 227. Plastering on wire or metal lath may be used as a protection for the soffits and sides of iron or steel floor beams, provided same is suspended or secured by double hooked clips made from one and one quarter (\(1\frac{1}{4}\)) by one-eighth (\(\frac{1}{8}\)) of an inch steel space not over eighteen (18) inches apart, the metal lath surface being not less than one (1) inch below the soffits of the beams. The plastering shall consist of not less than two coats of cement mortar, and aggregating not less than seven-eighths (7/8) of
an inch in thickness.

FLOOR OPENINGS.

Section 228. All floor openings of a greater area than three (3) inches square, shall be provided with metal frames or collars built in as the fire-proof floor is laid.

LOAD TESTS.

Section 229. The Building Inspector may at any time require a "still load" test of any system of fire-proof construction after same is erected, and must show within three (3) days after the centers are struck, that the construction will sustain a load of three (3) times that for which it is designed without a sign of failure, and same provision will apply to re-enforced or trussed concrete twenty-seven (27) days after the starting of the work to be tested.

A "live load" test may also be required at any time by the Building Inspector by letting the heaviest bulk article of any commodity fall from its highest storage location upon the center of a panel. If three (3) repeated tests at the same point, cause cracking, or damage to the arches or plastering underneath, the floor construction must be changed or strengthened.

FIRE TEST.

Section 230. The panel to be tested shall be loaded with the full "live" load, and subjected to a continuous heat of a wood fire grate not less than ten (10) feet below said flooring to be tested. A temperature of seventeen hundred degrees (1700°) Fahrenheit is to be obtained as soon as practicable, and an average temperature of not less than eighteen hundred degrees (1800°) Fahrenheit is to be maintained for a period of at least three (3) hours.
FLAME PROOF.

Section 231. The condition of the panel or platform during this test must be such that no flame has passed through any of its parts, and that no part of the load has fallen through.

WATER TEST.

Section 232. At the end of the heat test, a stream of water shall be directed against the bottom of the panel and discharged through a one and one-eighth (1 1/8) inch nozzle under sixty (60) pounds pressure for five (5) minutes. After the top of the platform or panel shall have been flooded with water under low pressure, then the high pressure stream of water, shall be again applied on the bottom of panel for five (5) minutes.

SYSTEM PROHIBITED.

Section 233. Any system of fire-proof construction failing to meet the requirements of the test of heat, water and weight as herein prescribed, shall not be used in any of this class of buildings hereafter to be erected.

CERTIFIED TESTS.

Section 234. Certified copies of tests made of any fire-proof system may be presented to the Department of Buildings, and if same comply with the requirements to the satisfaction of the Building Inspector, same may be accepted as conclusive.

STRAIN SHEET.

Section 235. A strain sheet for all steel work shall be submitted to the Building Inspector, before a building permit will be issued. Said strain sheet must show in detail the figured distribution of loading, stresses and sections of all members, and maximum bending moment and shear, with all typical details of main connections.
STRUCTURAL IRON WORK
TO CONFORM TO FIRST-CLASS ROLLING MILLS TEST BOOKS.

Section 236. With regard to connections of all structural iron work upon buildings erected in the city and county of Denver, such work shall hereafter be in conformity with the practice of the Carnegie, Cambria, Jones & Laughlin or other first-class rolling mills, as published in their standard text books and sheets, and approved by the Building Inspector.

SECTION XI.
NON-FIREPROOF BUILDINGS.- FORMULAE FOR TIMBERS.

The subject under this title relate principally to the interior construction of all buildings of the III and IV Classes; viz.: all "semi-fireproof", "composite", "mill" and "ordinary" constructed buildings as defined under Title IV.

SEMI-FIREPROOF BUILDINGS.

Section 237. The term "semi-fireproof building" shall apply exclusively to all buildings in which the "mill" constructed floors, or columns, or the structural members which carry the loads and strains which come upon the floors and roofs thereof, are entirely enveloped in incombustible materials.

IRON STEEL PROTECTED AGAINST FIRE.

Section 238. All iron and steel members in "Semi-fireproof", "Composite" or "Mill" constructed buildings shall be protected against fire, but a single thickness of any standard plaster, applied on metallic lath, shall be considered sufficient protection for all wooden posts, girders, beams, joists, and the under side of the heavy floor and roof forming the ceilings, and said plaster shall be applied directly to the ceiling without furring, so that there shall be no air spaces between any wood work and the plastering.
Section 239. All hall partitions and all elevator enclosures in buildings in "Semi-fireproof" buildings shall be made of incombustible materials. The use of wood furring or of stud partitions shall not be allowed in buildings of this class. Subdividing partitions may be the same as prescribed in Section 244.

FLAT CEILINGS.

Section 240. If the wooden joists in "Semi-fireproof" or "Mill construction" buildings are not less than three (3) inches thick, containing not less than thirty (30) square inches of sectional area, and spaced not over sixteen (16) inches on centers, in a panel of the floor construction, and are hung between the wooden girders with iron straps flat with the top of girders, or supported on the flanges of iron or steel girders, with the upper flange not more than one-half (1/2) inch below the top of same, and the first thickness of one and five-sixteenths (1 5/16) inch surface and matched flooring, is laid diagonally over the top, and all intermediate spaces fire stopped, and the furring and filling between the topmost and lower thickness of floors and roof is made deep enough to take all conduits and pipes, then the ceiling may be finished flat if made of terra cotta or of metal lath and incombustible plaster, attached directly to the bottom of the joists.

"MILL CONSTRUCTED" BUILDINGS.

Section 241. The term "Mill Construction" shall apply to all buildings in which all the wooden posts, caps, girders, beams, or joists carrying a floor or roof shall be of solid pieces.

"DIMENSIONS OF TRUSSES IN "MILL CONSTRUCTION."

Section 242. The following are the minimum permissible sectional areas of posts and girders; Posts in the topmost story, sixty-four (64) square inches, and one hundred (100) square inches in
the next story below; for floor joints or beams, forty-eight square inches (48), and sixty (60) square inches if the flooring is carried directly by girders or beams between columns and supports.

All girders and beams containing less than one hundred and sixty (160) square inches shall be in solid pieces and when two (2) or more beams are coupled they shall be framed solidly with bolts spaced not exceeding four (4) times the depth of beams on centers.

Floors in "Semi-Fireproof" and "Mill Construction".

Section 243. If the floors in buildings of "Semi-Fireproof" or "mill construction" have solid timbers, they shall be not less than three and three-quarters (3 3/4) inches, or two and three quarters (2 3/4) inches when covered with seven-eighths (7/8) inch flooring, or two and three-eighths (2 3/8) splined and covered with two (2) thicknesses of felt, both of asbestos, or one of asbestos and one of waterproof felt, covered with seven-eighths (7/8) inch flooring, or one and five-eighths (1 5/8) inch surfaced, matched or splined with two (2) thicknesses of felt, as previously described, furred up with strips not less than one and three quarters (1 3/4) inches in width, and not less than one and three-quarters (1 3/4) inches thick, and the spaces between strips filled in with mineral wool or mortar, concrete or other incombustible filling to the underside of the seventeeneighths (7/8) inch flooring.

When buildings of this class have but one (1) thickness of one and five-eighths (1 5/8) inch dressed plank flooring or wooden cap or bolter: timber supports in every story, such building shall not exceed the area before specified, or be more than four (4) stories high or sixty (60) feet in height.

Sub-dividing partitions in "Semi-Fireproof" & "Mill Construction"

Section 244. Sub-dividing partitions in this class of buildings may have a covering of one (1) inch thick terra cotta, or
a single thickness of incombustible plaster on metal lath for fire
proofing. Three (3) inch splined wood partitions or incombustible
shed partitions may be used in buildings of this class, but the use
of wood furring and wooden lath is prohibited.

CAST IRON OR STEEL COLUMNS IN "MILL CONSTRUCTION."

Section 245. At each line of floor- or roof beams, where
cast iron columns are used in "Mill Construction", lateral connec-
tions between the ends of the beams and girders shall be made by
passing wrought or steel straps across or through the cast iron
columns, in such manner as to rigidly connect the beams and girders
with each other in the direction of their length. The straps shall
be bolted through the wooden beams or girders. Steel or wrought iron
straps shall be similarly secured.

WOODEN POSTS - IRON CAPS.

Section 246. If wooden posts are used in "Mill" construc-
tion they shall have cast or wrought iron or steel caps so constructed
as to form a base for the next post above. The girders shall be
properly bolted to cap and if there is not provision for such bolt-
ing within the cap, additional wrought iron straps shall be used
extending from one girder to another, and bolted through each girder.

"ORDINARY" BUILDINGS.

Section 247. All buildings of "ordinary" construction
shall have all wooden columns and caps framed solid, but no girder
shall be built up of less than one and three quarters (1 3/4) inch
stock when surfaced, and no such built up girder shall have joints
between two (?) supports.

"SUBDIVISION OF FLOORS IN "ORDINARY" CONSTRUCTION.

Section 248. The interior of buildings with "Ordinary"
construction may be subdivided and constructed of wood, (except the
elevator enclosures, which shall be the same as prescribed for "Mill"
constructed buildings. All party and division walls shall be of brick as before described.

MAXIMUM HEIGHT OF "ORDINARY" CONSTRUCTION.

Section 249. Buildings of "ordinary" construction having properly fire-stopped double floors, with all iron work protected and all ceilings, partitions and turning plastered with one (1) thickness of seventh-eighths (7/8) inch metal lath, may be carried up to the height of five (5) stories with basement, but not to exceed seventy (70) feet in height.

PROPORTION OF HORIZONTAL DIMENSIONS TO HEIGHT, WITH REQUIRED PRECAUTIONS.

Section 250. No building shall be erected in the City and County of Denver that is more than four times its least horizontal dimension in height. In case of buildings that are more than one and one-half times their least horizontal dimension in height, allowance shall be made for wind pressure, which shall not be figured at less than thirty pounds per foot of exposed surface. When the dead weight of the structure is not sufficient to insure stability against wind pressure the following precautions shall be taken to insure stability:

1st. Wrought iron or steel columns shall pass through two stories with the joints broken in alternate stories.

2nd. Rigid connections must be made between all members.

3rd. A sufficient quantity of diagonal or portal bracing must be introduced in the construction to insure stability.

In buildings of this character the use of cast-iron columns will not be allowed.

PUBLIC NOTICE OF FLOOR LOADS IN BUILDINGS OF GRADE I.

Section 251. It shall be the duty of the owner of every building of Grade I, already constructed or hereafter to be con-
constructed, or the occupant or agent of the same, to affix and display conspicuously on each floor of such buildings a placard showing the load per square foot of floor surface which may be with safety applied to that particular floor, or the strength of the different parts of the same floor, where such strength varies. It shall be unlawful to load any such floor, or any part thereof, to a greater extent than the load indicated on such placards. It shall be the duty of the occupant of the building to maintain such placards during their occupation of the premises and the owners shall see such placards properly affixed with each change of occupants. These placards shall be verified and approved by the building inspector before they are affixed upon the several floors, and they shall be recalculated, verified and approved every five years. The building inspector may require the owner, agent or occupant of any building to redistribute the load upon any floor or to lighten the same, when he shall deem the same necessary.

MAXIMUM LOAD ON WOODEN PILLARS - FORMULAE.

Section 252. When wooden pillars are used, the maximum load to which they are to be subject shall never exceed those determined by the following formulae, C, representing the maximum load as intended to be fixed by this ordinance.

For wooden pillars where the length is not more than twelve times the least thickness:

\[ S = \frac{AC}{2} \]

- \( S \) = Safe load in pounds
- \( A \) = Sectional area of post in square inches.
- \( C \) = 4,000 for long leaved yellow pine
  3,700 for oak or Norway pine,
  2,500 for white pine, spruce or hemlock (Cedro),
  2,400 for Colorado, Texas or Mexican.

\( \frac{2}{2} \)
Section 263. For wooden pillars where the length is more than twelve times the least side or thickness:

\[ S = \frac{X \cdot Y}{L} \]

- **S** = Safe load in pounds per square inch.
- **L** = Length of post in inches.
- **X** = Breadth or least side, or diameter of round post.
- **Y** = Height of post.

For long leaf yellow pine, and Oregon fir:

\[
\begin{align*}
X &= 1,000 \\
Y &= 10 \\
\end{align*}
\]

For oak or Norway pine:

\[
\begin{align*}
X &= 700 \\
Y &= 7 \\
\end{align*}
\]

For white pine, spruce or Hemlock:

\[
\begin{align*}
X &= 600 \\
Y &= 6 \\
\end{align*}
\]

Colorado or Mexican pine.

**ULTIMATE LOAD FOR WOOD JOISTS, GIRDERS, ETC. — FORMULAE.**

Section 264. The ultimate load for which timber used for girders, joist or beams may be subjected shall not exceed those determined by the following formulae, to wit:

\[ S = \frac{C \cdot B \cdot D}{L} \]

- **S** = Safe load in pounds.
- **B** = Breadth of beam in inches
- **D** = Depth of beam in inches.
- **L** = Length of beam in feet.
- **C** = 140 for long leaf yellow pine or Oregon fir, 135 for oak and Texas, 80 for Colorado and Mexican.

**FORMULAE ALL BASED ON BEST KINDS OF MATERIAL.**

Section 265. The contents given in all the foregoing formulae are based on the use of materials and workmanship of the best of their respective kinds and all timber thoroughly seasoned.

**FORMULAE ALL FOR EQUALLY DISTRIBUTED LOADS.**

Section 266. All formulae herein given for determining the load permitted upon girders of any kind are for girders supported at each end and uniformly loaded over their entire length.
formulæ for column loads are for columns concentrically loaded.

BASIS OF CALCULATION FOR ALLOWANCES.

Section 257. The calculations for the allowance which must be made for other forms of loading shall be based upon the above formulæ and constants, and the rules of the best engineering practice; subject to the approval of the building inspector.

TITLE XII.

WOOD CONSTRUCTION.

All subjects under this title relate to the general framing and use of wood in non-fireproof buildings.

FLOOR AND ROOF BEAMS.

Section 259. Each tier of floor beams or joists shall be anchored to the sides, front, rear and division walls at intervals not to exceed 6 feet, with wrought iron anchors not less in size than one by 1 inch and well secured to the wall and to the timbers; in all walls less than 13 inches in thickness the anchors shall go through the wall and have plates on the outer side. The ends of all joists meeting on a girder shall be anchored together in such a manner as to form a continuous tie across the building. The ends of all girders and partition caps shall be anchored together in such a manner as to form a continuous tie and be well anchored to the walls at each end.

BURY PRACTICS.

Section 260. Ends of wooden floor or roof beams or joists in all buildings shall enter the wall to the depth of four (4) inches, unless the wall is properly corbeled out four (4) inches, and said corbel to extend to top of joists. The ends of all beams or joists must be shaped to fall out from breaking or burning without much injury to the brick work, by employing one quarter (\(\frac{1}{4}\)) inch to one (1) inch shorter at top edge.
Section 260. All wooden floor or roof joist, except in mill-construction, shall be properly bridged and the distance between bridging or between bridging and walls shall not be more than 8 feet.

TRIMMER AND HEADER BEAMS AND STIRRUPS.

Section 261. All wood trimmer and header beams shall not be less than double the thickness of the other joists, they shall be framed not less than two inches from the walls of all flues, and where the header is more than three feet in length they shall be hung in suitable iron stirrups; in all floors carrying a load of over 100 pounds per square foot of floor surface, all joist framed into a header or girder shall be hung in proper iron stirrups.

BEAMS IN DIVISION WALLS.

Section 262. All wooden beams or joist entering a division wall of masonry shall have a proper bearing and have the ends cut on a slope of about three inches in the width or depth, and the ends of all such timbers shall be separated by not less than 4 inches of masonry from the beam or joist entering from the other side.

CUTTING TIMBERS.

Section 263. No piping or conduits of any kind shall be cut into any floor timbers at a greater distance than two feet from the ends of said beams nor to a greater depth than one-fifth of the depth of the beam.

UNDER OR SUB FLOORS.

Section 264. All buildings of ordinary construction when more than two stories in height shall have under floors in each story not less than seven-eighths in thickness, which shall be laid immediately after the joist are set and bridged, and at least one thickness of asbestos or other incombustible material shall be laid
between the under and finished floor.

WOODEN POSTS OR COLUMNS.

Section 265. Wooden posts or columns supporting wooden girders and floor and roof joists in all buildings over two (2) stories high, shall have wooden balusters or cast iron caps and base plates not less than one (1) inch thick, and of proper size and shape or wrought iron or steel post caps of standard shape.

All columns or posts shall extend down to and rest directly on the balusters or caps, with solid bearings.

See Sections 252 and 253 for formulae of maximum load for wooden posts.

WOODEN GIRDERS, JOISTS OR BEAMS.

Section 266. Wooden girders to be of ample dimensions to be loaded intended, as per formulae. Section 254. Wooden girders to be solid timbers of the dimension necessary, or built up and then built same must be bolted together with three-fourths inch bolts, not more than twenty-four (24) inches on centers and staggered.

FURRING OF WALLS.

Section 267. All brick or stone buildings over one story in height having furring on the walls shall have the space between the furring from four inches below the joist to twelve inches above the same filled with masonry, tile, brick or like substance. No wood furring shall be used in buildings required to be slow-burning, mill, or fire-proof construction.

STUD PARTITIONS.

Section 268. Within the "Inner" and "Middle" fire district all stud partitions shall have caps and sills not less than four inches thick by the full width of the stud; no stud shall be less than four inches or shall pass from one story to the next without a solid cap at or near the floor joist. When stud partitions
rest on girders or the cap of the other partitions, the space between the joint to ten inches above the floor shall be filled in with brick, tile, terra cotta or other incombustible material, unless there be no ceiling under the joint. In buildings over two stories in height all partitions that support floors shall have the fill of such partitions resting on a sheet of metal not less than eighteen inches wide by the full length of the partition on each and every story. (In addition to the asbestos hereinbefore mentioned between all double floors.) Walls that support floor joist shall be carried to the top of the floor joist and finished smooth with the underside of the floor boards; upon all girders that carry floor joist there shall be a fire stop built to the top of the joist, and when a partition starts off the girder, the fire stop shall be carried twelve inches above the joint.

CRIB CONSTRUCTION. - COAL AND LIME YARDS.

Section 269. Within established coal yards, outside the "Inner" fire districts, coal and lime bins for the storage of coal and lime may be built of crib construction out of surfaced 2 x 4 timber, provided such bins shall not be over twelve feet in height and covered with a corrugated iron roof, and the cross walls between bins shall not be further apart than twelve feet.

GRAIN AND ICE STORAGE - CRIB CONSTRUCTION.

Section 270. Outside the "Inner Père District" buildings used exclusively for the storage of grain or ice may be constructed with solid wooden walls in the manner known as "crib construction," provided that such walls shall not be less than six inches thick.

RELICING NOT PERMITTED.

Section 271. No wooden post or girder, beam, joist, or stud will be spliced in their length between bearings.
Section 273. All buildings over two stories in height shall have scuttles or bulkheads leading to the roof, with proper ladders or stairs leading thereto from the floor below; the lid of any scuttle or door of any bulkhead shall not be fastened in such a manner that it cannot be readily opened from the inner side without the use of any key, nor shall the approaches thereto be fastened with other than movable bolt on the inner side. In buildings over four stories in height the ladder or stairs shall be of iron and secured permanently in place at all times.

WEIGHT OF ROOF LOADS.

Section 273. All new or renewed flat roofs shall be constructed to bear safely a weight of forty pounds per square foot in addition to the weight of the materials composing such roof and all roof rising at a greater angle than twenty degrees shall be constructed to carry a dead load of twenty pounds in addition to its own weight and to resist a wind pressure of thirty pounds per square foot of surface.

WHEN BUILDINGS VENEERED.

Section 274. Any existing frame building that is in good condition and suitable for the purpose may be veneered with four or eight inches of brick work by the building inspector having examined such structure and given his permit for such veneering.

PERMIT TO ALTER FRAME BUILDING.

Section 275. Permits may be issued to alter any existing frame building in any manner, provided the height or area or fire risk is not increased and outside of the "Inner" fire district improvements may be made to existing frame buildings or to the second story of buildings having the second story of frame, provided the application for such permit shall have the approval of the
Building Inspector and the Denver Board of Underwriters thereon or attached thereto.

REPAIR FRAME STRUCTURE, WHEN

Section 276. Any existing frame structure may be kept in repair with like material, except as hereinafter provided. When any frame structure in the "Middle" or "Inner" fire districts of the city shall be damaged to the extent of fifty per cent of its value, exclusive of the foundation, either by fire or decay, it shall not be repaired but must be taken down and removed. All exterior cornices, gutters or things of like nature in the inner fire district, constructed of wood, damaged to the extent of fifty per cent shall be taken down and replaced with incombustible materials.

NO FRAME STRUCTURE, WHERE

Section 277. No frame or wooden building or structure shall be moved into any locality where it would be unlawful to build such building or structure, provided that outside of the "Inner" fire district, with the approval of the mayor, frame buildings may be moved from the front of the lots toward the rear of the same lots, for the purpose of making room for better improvements in front.

No frame or wooden building shall be moved into that section of the City and County of Denver in the "Urban" fire district, commencing at the intersection of W. 38th Ave. and Tennyson St., extending north on Tennyson St. to W. 44th Ave., east to Lowell Boulevard, north to W. 48th Ave., east to Boulevard P., north to extreme northern city and county limits, south to W. 38th Ave. and east to place of beginning.

DIMENSIONS, PLUMB AND STACKS AND ROOFS FOR HEATING AND POWER PLANTS.

NUMBER.

Section 278. Each dwelling, tenement or apartment, or
any room in which cooking is done, shall have at least one chimney built as hereinabove prescribed.

CONSTRUCTION OF CHIMNEYS -- FLUES.

Section 279. Chimneys in all buildings over one story in height shall have walls at least 8 inches thick, unless lined their entire length with tile flue linings, in which case the walls outside of the linings may be reduced to 4 inches, except as hereinafter provided. Stone flues shall have walls not less than 8 inches thick in addition to the tile linings. The inner side of all flues not lined shall be plastered smooth from bottom to top. All brick laid in any flue shall be push placed. All flues cut or placed in old work shall have flue linings from the bottom to the top with a brick or concrete block wall around the linings.

WEIGHT OF CHIMNEYS -- HOW BRACED.

Section 280. All chimneys shall be built to a height of not less than four feet above the roofs adjoining, if such roof is a flat roof and not less than 18 inches above the ridge, if the roof is a pitch roof and the chimney is within 12 feet of the ridge. All chimneys rising more than five times their least horizontal dimensions shall be securely braced with iron anchors; when the short sides of flues have 8 inch walls they may rise seven times their least side without bracing.

CORBELLED FLUES -- DISTANCE FROM ANGLES OF BUILDING, DRAWN NOT MORE THAN 1/3 OF ITS SIZE.

Section 281. No flue shall be corbelled from a wall more than 1/3 the thickness of the wall, nor shall any chimney rest upon any wood construction. No chimney shall be built nearer than six feet of any outer angle of any building unless the outer walls of such flue is not less than 13 inches in thickness. No chimney shall be drawn to one side more than 1/3 of its size unless supported on metal or incombustible frame work approved by the building inspector.
STACK BETWEEN WOOD WORK AND CHIMNEY.

Section 282. No wood festing shall be placed against any flue or around any chimney, nor shall any wood work be placed within two inches of any chimney, except the base or maincoating outside of the plastering.

SMOKE FLUES OVER 172 AND LESS THAN 500 SQUARE INCHES.

Section 283. Smoke flues of a greater area than 172 square inches and less than 500 square inches shall have the walls not less than 8 inches thick and the top of such flues shall extend at least five feet above the highest opening into any building within 50 feet of such chimney.

SMOKE FLUES GREATER THAN 500 SQUARE INCHES.

Section 284. Smoke flues of a greater area than 500 square inches shall have hollow walls in which there shall not be less than 16 inches of brick work and 4 inches of hollow space between the walls. The top of such flues shall extend to a height of not less than 20 feet above the highest window opening into any such building within 60 feet of such chimney. From a distance of two feet below the smoke inlet to a distance of 20 feet above the same, chimneys having a greater area than 200 square inches shall be lined with fire brick laid in fire clay.

METALLIC SMOKE PIPES, NOT INSIDE OF BUILDINGS.

Section 285. Metallic smoke pipes shall not be used inside of any building in such a manner as to pass through floors, wood partitions, or roofs, unless such metal smoke pipe be enclosed with brick or tile walls or metal jacket, the jacket to be made of two concentric rings of sheet metal at least two inches apart and one inch from the smoke pipe, and so constructed that there shall be free circulation of air between the rings and the pipe and the wood work; such rings and spaces for air shall be proportioned to the size of the smoke pipes.
METALLIC SMOKE PIPES, AWAY FROM WOOD WORK.

Section 286. Metallic smoke pipes shall be kept away from all wood work by at least the diameter of the pipe, unless the wood work is protected by a metal shield fixed at a distance of \( \frac{1}{2} \) the diameter of the pipe, when the pipe may be placed within \( \frac{1}{2} \) the diameter; such shields must extend on each side and be of a width equal to three times the diameter of the smoke pipe. When double shields are used with an inch space between the metal sheets the smoke pipe may be placed \( \frac{1}{2} \) the last mentioned distance from the wood.

SMOKE SMOKE PIPES.

Section 287. No smoke pipe from any stove shall be projected through any roof or external wall of any building without the written approval of the building inspector.

WRITTEN CONSENT REQUIRED FOR SMOKE STACKS, WHEN--

Section 288. No smoke stack or chimney in connection with any laundry, factory, manufactory or other like establishment where power is used exceeding 20 horse power, shall hereafter be erected of less height than 20 feet above all buildings within a radius of 300 feet unless with the written consent of the owners of such buildings, nor shall any steam boiler or boilers be set up or installed in any part of the "Inner" or "Middle" fire district of the city without the written consent of two-thirds of the property owners within a radius of 400 feet, except for running elevators, electric plants, heating or pumps, situated within the building where the boilers are located. No boilers or heating apparatus shall be placed beneath the stair or exits from any public building, nor beneath the auditorium of any church or assembly hall.

FIRE --- PLACES.

Section 289. No fire-place shall be built with less than 8 inches of brick wall at the back. Brick trimmer arches shall be turned for all hearths unless the same are supported on iron frame.
work; all trimmer arches or hearths in floor joist less than 12 inches thick shall be supported on iron frame work with no wood below them; in all joist 12 inches or over in height, the hearths may be supported on wood arch forms, but the arch shall not be less than 3 inches thick and be wholly self-supporting.

Ceilings over Heating Plants.

Section 290. The ceilings over furnaces, boilers and other heating apparatus shall be plastered on metal lath unless the ceilings are incombustible or protected by metal shields, or the top of the same are more than 16 inches below the ceiling.

No Stove, Etc., Within 12 Inches of Wood Work, When—

Section 291. No heating stove, range, oven, furnace or other apparatus in which coal or wood is burned shall have the sides, top or bottom placed within 12 inches of any wood work, unless the wood work is protected by metal shield above and there shall be free circulation of air all around such heating apparatus unless placed on or against incombustible masonry.

Location of Furnace, Range, Boiler, Etc.

Section 292. No furnace, range, boiler or other heating apparatus having a grate surface of more than 100 square inches shall be set in any building, or its location changed, without a permit from the building inspector, and no such apparatus having a grate surface of over 300 square inches shall have the smoke stack therefrom enter any flue having the walls less than 2 inches thick.

Placement of Boilers, Furnaces or Ovens.

Section 293. No boiler used for steam heating, water heating or motor power, and no furnace for melting, and no oven shall be placed on other than the basement floor unless placed on incombustible beams and arches and all wood work removed from near the same, and in no case without a permit from the building inspector.
BOILER ROOMS FIRE-PROOF.

Section 294. Every boiler used for steam heating, or motor power, in buildings over one story in height, shall be placed in rooms made fire-proof, or such rooms shall be surrounded with brick walls going up close to the floor boards, all opening through these walls to be protected with iron or metal covered doors; the ceiling, when supported on wooden joist, shall be protected with two coverings of plaster on metal lath, separated by two inches of metal furring. The space at the foot of all elevator or light shafts shall be protected as above as to the walls and doors.

ISOLATED STACKS, BRICK.

Section 295. All attached or isolated brick stacks shall be designated and constructed making safe computations in the weight of the stack itself, and the possible wind pressure on according to their height and greatest dimension at base.

ISOLATED STACKS. - METAL.

Section 296. Wrought iron or steel stack shall have iron or steel base plates resting on foundations of brick, stone or concrete. Iron rods shall be built into the foundation for the purpose of fastening the stack. If not designed to be entirely safe then free standing they shall be braced at every fifty (50) feet in height from at least three sides by means of steel wire rope or metal rods of sufficient strength.

Rolled iron or steel used in building such stacks shall not be less than three-sixteenths (3/16) of an inch thick, all stacks containing twelve hundred (1200) square inches or over in area shall be lined with fire brick, laid in fire clay to the required height, or nine times the internal diameter.

Cleansing-out doors and ladders.

Section 297. Every chimney will be provided with a cleaning-out door at its base, and an iron ladder either on the inside or outside of the chimney to the top of the same when the
height of chimney is more than twenty (20) feet above the roof.

T I T L E X V.

STAIRS, HALLS AND ENTRANCES.

MEASUREMENT OF STAIRS.

Section 298. The width of any stairs or stairway shall be the distance in the clear between the inner edge of the two (2) handrails, or between the wall and the inner edge of the outer handrail when there is only one (1) outside rail; the height of a riser is the plumb distance from top to top of treads, and the width of a tread is the horizontal distance from nosing to nosing or riser to riser; the width and increase of widths given are for stairs with straight runs or flights; when curved or winding stairs are used, their width shall be no less than one and one-quarter (1 ¼) times that of an equivalent straight run stair, and the given dimensions of the treads and risers shall be laid off on the center line of such run. The width of a tread in any public stairs at the narrowest end shall not be less than the height of one of its risers.

RUNS AND WIDTHS OF STAIRS.

Section 299. No public stairways shall have more than sixteen (16) risers in a run without an intermediate level landing, nor shall there be less than three (3) risers between any two (2) landings for any floor and landing, nor shall there be any change in the dimensions of treads and risers in any flight between two (2) floors; and there shall be at least seven (7) feet in the clear between the bocals of the stairs or ceilings of floors and nosing of treads and landings.

LANDING OR STAIRS.

Section 300. If a stair landing is in the direction of its run, its depth shall not be less than the sum of two (2) of its risers and two (2) of its treads; at angle turns the landing shall have equal landings, and the depth shall never be less than the width
of the stairway measured over all; for stairways turning directly upon themselves the landings shall be the full width of both flights, and have a depth not less than the width of the stairs over-all, and when two (2) side flights connect with one (1) main flight the width of the main flight shall be equal to the aggregate width of the side flights, and the depth of the landing shall not be less than three quarters (3/4) of the width of the main flight over-all.

HAND RAILS.

Section 301. All stairways over three rises high shall have substantial banisters and railings along the outside of all flights and landings and well holes. All stairs having open wells on the left hand side ascending shall have a railing on both sides of the stairway; all other stairs shall have at least one (1) railing on the wall on the right hand side ascending, but shall not be required on level platforms and landings of greater length than the width of the stairs.

CONSTRUCTION OF STAIRS.

Section 302. The construction and dimensions of all stairs shall conform to the requirements of the plate of buildings in which they are placed. Where an incombustible stairway is called for in which the treads and landings of iron stairs, are of slate, marble or other stone, they shall be supported directly underneath for their entire length and width by an iron plate, made solid or having openings not exceeding four (4) square inches, of adequate strength and securely fastened to the stringers. Such supporting plates be made solid the treads may be of not less than one and five-eighths (1 5/8) inches thick.

When cast iron is used the treads and landings shall be of cast iron with upper surfaces corrugated or ribbed, or otherwise provided for non-slippery treads.
LOCATION OF STAIRS.

Section 303. All stairs shall be continuous from the ground floor up to the topmost floor and when two (2) or more stairs are required they shall be located at as great a distance as is practicable from each other. No stairs leading to the basement of a non-fire-proof building shall be located under any stair extending above the second floor unless said stairs is well-constructed, and enclosed with brick fire walls and has fire doors in the basement.

STAIRS IN WORKSHOPS AND SALESROOMS, ETC.

Section 304. In all buildings of grade 1, which are used as workshops, or which are used as salesrooms, where there is an occupation of the same at any one time by one hundred or more persons employed or engaged therein, there shall be at least two staircases, each not less than three feet in width. If the number of persons so employed exceeds three hundred, then the width of the stairs shall not be less than five feet; if the number of persons occupying any such premises exceed eight hundred there shall not be less than three stairways not less than five feet in width. If the number of persons exceed twelve hundred, such building shall be governed as regards number and size of stairways by the regulations laid down for buildings of grade 4.

In all cases the stairways shall be located at as great a distance from each other as practicable and the number of persons above any floor shall be counted as being on the floor as well as being counted on the floors above; provided that in fireproof buildings one less flight of stairs than above called for may be used. All stairs over five feet wide shall have railings on both sides.

STAIRS IN HOTELS, ROOMING HOUSES, ETC.

Section 305. All buildings used as hotels, tenements, lodging or rooming houses, the halls, stairs, passageways and exits shall be arranged to facilitate egress in case of fire or accident.
and all such buildings having more than twenty-five rooms above
the first floor, shall have at least two independent stairways con-
necting with the ground floors, each stairway not less than four
feet wide and at opposite ends or opposite sides of the buildings.
All doors at the foot of said stairways shall open outward and never
be fastened but with a movable bar or bolt readily drawn from
the inner side, without the use of any key, or combination what-
ever. At the top and foot of all such stairs there shall be kept
burning a red light from nine P.M. to six A.M. of each day.

DOORS AT STREET LEVEL SAME WIDTH AS STAIRS.

Section 306. The aggregate width of doors opening at
the street level in buildings of grade I, shall be equal to the
aggregate width of stairs and in no case shall the doors leading
to any means of exit be locked or the exit in any way obstructed
during the occupation of any such building.

STAIRS AND LADDERS TO SCUTTLES:

Section 307. All buildings over one story in height shall
have scuttles in roofs, covered with incombustible materials,
and ladders or iron stairs leading thereto from the floor below.
No scuttle shall be less than twenty-four (24) by thirty (30) inches,
nor shall a scuttle be placed in any place by a hall way if the in-
terior is divided into rooms.

The lid of any scuttle shall not be locked except with
a bolt or hooks which can be withdrawn without the use of a key.

MINIATURE WALLS.

Section 308. No stairways shall be constructed around
an elevator shaft in buildings over four (4) stories in
height unless said stairways are separated from the elevator shaft
by a fire proof wall.

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Changing and Constructing Stairs.

Section 309. It shall be unlawful under any circumstances to close up or obstruct the stairs or fire escapes or the approaches leading thereto in any building and no change in the construction or position of either shall be made unless the permit shall first have been obtained from the inspector.

Halls and Doors.

Section 310. Halls and passageways leading to and from any stairs shall not be less than the width of the stairs over all with which same communicate; provided the hallway into which any door swings or joins is at least six (6) inches wider than the widest door opening. The aggregate width of entrance or exit door openings at the street level of all buildings of a public nature shall be at least equal to the aggregate width of the stairways, and such doors shall not be locked during business hours or business days or when occupied by large numbers of people. Enclosed stair halls shall be fixed and glazed with wire glass.

Entrance Halls.

Section 311. All entrance halls shall lead directly from a street, or alley, or court, or a court yard connected directly with the street, and shall be as short and as direct as possible, between the street lines and stairways, and every flight of stairs required shall have such an entrance hall on the ground floor; and when they pass through a first floor occupied for mercantile or manufacturing purposes with different tenants or grades of occupancy above them, they shall be enclosed entirely with fireproof walls; in non-fireproof buildings such enclosures shall be of brick extending from the foundation up to the top layer of the second tier of joists.

Lighting Public Halls.

Section 312. Every public hall shall be lighted by at least one (1) window in each story, opening directly on a street,
alley, yard or court, or provided with a skylight over. In any such public hall recesses or returns, the length of which do not exceed twice the width of the public hall, will be permitted without an additional window, but otherwise each recess or return shall be regarded for the purpose of this section, as if it were a separate hall. And any part of a public hall which is shut off from any other part by a door or doors, shall be deemed a separate public hall within the meaning of this section.

NATURAL AND ARTIFICIAL LIGHTING OF HALLS.

Section 313. One (1) at least of the windows provided to light each public hall or part thereof, shall have a glass area of at least twelve (12) square feet and have an equivalent of artificial light for night service while the building is occupied.

TITLE XV.

ROOF AFFENDAGES, SKYLIGHTS AND FLOORLIGHTS ROOFS OF BUILDINGS - INNER FIRE DISTRICTS.

Section 314. The roof of all buildings hereafter erected in the "Inner" fire district shall be covered with tin, slate, composition not readily inflammable or some incombustible material.

ROOFS KEPT IN REPAIR - WATER DRAINED.

Section 315. The roof of all buildings shall be kept in good repair and all water drained therefrom so as not to flow upon or against any wall, along or against any foundation of any building or upon the property of other than the owner of the building.

NO RAIN WATER DRAINED UPON SIDEWALK.

Section 316. No water shall be discharged from any conductor pipe upon any sidewalk, but shall be conducted underneath the walk in iron or tile pipes. The water from conductor pipes shall not be discharged into any alley at a point higher than one foot above the surface, not shall such discharge be permitted to
flow against any adjoining wall, into any areaway or upon any private property other than the owner of the building from which the water is conducted.

**SNOW GUARDS - REMOVAL OF SNOW.**

Section 317. All roofs so constructed and located that the snow which lodged upon the same might slide from said roof into any public place shall have suitable snow guards to prevent the snow from sliding. All snow found to be lodged upon any cornice, gutter or other part of a building, which might slide therefrom into any public place shall be at once removed by the owner or occupant of any such building.

**SHINGLE ROOF. "INNER FIRE DISTRICT."**

Section 318. The use of shingle roofs or other forms of combustible covering upon building erected or altered within the "Inner Fire District" is prohibited.

**FELT AND GRAVEL ROOFS.**

Section 319. A roof whose slope is not more than three (3) inches per foot horizontal, and the covering of which is made with a composition of felt and gravel shall be considered incombustible, but no roof to have less than four (4) ply.

**ELATERITE ROOF.**

Section 320. No Elaterite roof of less grade than No. 4 X Elaterite roofing material will be considered incombustible.

**TOWERS.**

Section 321. All towers or spires more than one hundred (100) feet in height from the sidewalk shall be built entirely of incombustible materials.

**DORMERS AND PENT HOUSES.**

Section 322. According to the class of construction to which they are attached, all dormer windows and pent houses, bulkheads or burlings, used as enclosures for tanks, elevators, coverings for the machinery of elevators, or any other purpose whatever,
hereafter erected on or above the roof of buildings over three (3) stories high shall be built of fire-proof materials, or with wood covered with not less than two (2) inches of fire-proof material, or filled in the thickness of the studding with such material, and covered on all outside surfaces with metal, including both surfaces and edges of doors. All ceilings shall be metal clad.

Where party or division walls form one (1) or more sides of pent houses, such walls shall be carried up as firewalls above the roof of pent houses.

No pent house or bulkhead used or occupied for manufacturing, business or storage purposes, shall be placed upon any roof above the cornice line, except for photographic and scientific observation purposes.

TANKS.

Section 323. Tanks containing more than five hundred (500) gallons of water or other fluid hereafter placed in any story, or on the roof, or above the roof of any building now or hereafter erected, shall be supported on iron or steel beams of sufficient strength to safely carry the same; and the beams shall rest at both their ends on brick walls or iron or steel girders, or iron or steel columns or piers of masonry. Provide four (4) inch outlet from all tanks, so that same can be discharged at any time in case of necessity.

VENTILATORS AND SKYLIGHTS.

Section 324. All skylights in the inner fire district shall be constructed wholly of incombustible materials and glazed with glass not less than double strength (DS). Skylights located at the foot of light courts or light walls shall be made either of prismatic lights in iron frames, or wire glass not less than ¼ inch thick set in metallic frames, and where the latter are used the glass shall be protected from falling bodies by a wire netting placed not less than six inches above the glass and rigidly supported on iron stanchions, such netting to be made of wire not less
in size; than No. 8 and mesh: not coarser than \( \frac{1}{2} \times \frac{1}{2} \) inches. Skylights over the floors to which the public have free access shall have a wire netting as above, securely fastened in a horizontal position underneath, or such skylight may be glazed with wire glass.

Otherwise

All attics not provided with ventilating windows and apparatus shall be provided with one (1) or more short metal ventilators and all skylights must have metal ventilators approved by Building Inspector.

T I T L E X VI.

FIRE-PROTECTION.

GENERAL PROVISION.

Section 325. All matters pertaining to Fire-protection and preservation of life as in this ordinance specified throughout the various sections, shall be under the supervision and control of the Fire and Police Board and the Building Inspector.

(a) Such matter shall embrace:

The installing of all kerosine or gasoline engines, also the location and installing of high-pressure steam boilers, and other power and heating plants in buildings where public safety may be imperiled.

(b) The construction and placing of all tanks, vaults, and other storage places for explosives, gasoline and other combus-tibles and inflammable oils, also poisonous liquids, acids and gases belonging to the Nitric, or other acid compounds.

(c) The enforcing of provisions for public safety in theatres and assembly halls, churches, schools, hospitals, hotels, and all other buildings particularly specified in this ordinance, including the guarding of dangerous machinery, the construction and location of all structures which may be termed extra-hazardous when put to their intended used.

§d) The construction, placing, repair, control and inspection of all fire escapes, stand-pipes, pressure-tanks, fire-
doors, fire shutters, fire lines, fire lines, sprinkling systems, exit lights, exit signs and the installing and testing of fire equipment in all buildings and places requiring the same, and the providing of means for escape or protection against loss of life and property from fire in same.

PERMITS AND SUPERVISION.

Section 326. The granting of permits for and the construction of fire escapes, fire doors and stand-pipes shall be under the supervision of the inspector of buildings with the concurrence of the Fire and Police Board as to their location and prospective use.

NOTICE TO OWNERS.

Section 327. The inspector of buildings or the Fire and Police Board shall serve upon the owner or agent in charge of any building which does not conform to the requirements of this ordinance regarding fire escapes, fire doors, stand-pipes, or other appliances required to be placed in or upon buildings, a written order or notice, requiring that such building be made to conform to the provisions hereof, within thirty (30) days after the services thereof.

Any owner or agent failing to comply with such notice shall be guilty of a misdemeanor, and for every period of thirty (30) days such failure shall continue, shall be guilty of a separate offence and be subject to the penalty imposed by this ordinance for each offence.

FIRE ESCAPES.

Section 328. Every building now built or hereafter to be built, occupied by two or more families above the second floor and every building more than two stories in height, except such as are occupied solely by one family, shall be provided with one or more safe external means of escape in case of fire or accident, in addition to the stairways hereinbefore provided. Said fire escape shall consist of iron balconies at or near the level of each floor, with iron stairs connecting each balcony from the roof down within.
12 feet of the ground; said stairs shall not be steeper than 70° and shall be provided with outer railings of iron, the balconies to have iron railing all around not less than three feet in height. Fire escapes shall be located as far from the stairs as practicable and may project over the public streets at any point above the first story. The brackets for the support of fire escapes shall in all cases be bolted through the walls and be of sufficient strength to sustain a weight of 200 pounds per square foot of surface of balcony. The floors of all such balconies shall be slats of iron on edge. The balconies and stairs shall at all times be kept in good repair and well painted. The connection from the building to the platforms of fire-escapes shall be from the building to the platforms of fire-escapes shall be from the walls and corridors and never through any private room; when necessary to be through a room, the room shall be directly connected to the corridor and the door connecting said room to the corridor removed. The balconies, stairs and all approaches thereto shall never be incumbered; doors connecting onto the platforms and balconies of fire escapes shall never be locked save with a movable bolt readily drawn from the inner side. The number and size of fire escapes to be regulated by the number of persons liable to use them, not more than fifty persons shall be required to use any one fire escape; the number, size and location of all fire escapes to be determined by the building inspector.

STANDARD FIRE ESCAPES.

Section 379. Unless otherwise provided for in this ordinance, all fire escapes hereafter erected in the city and county of Denver shall be known and designated as "standard" fire escapes. Every standard fire escape shall be provided with an iron balcony extending at least forty-two (42) inches outward from the walls of the building at each floor above the ground and take in at least one window or other opening and have metal stairs connecting each balcony. Such fire escapes to be constructed according to the speci-
fications, and detail drawings in the building department.

STAIRWAYS.

(a) The stairs must incline not steeper than seventy (70) degrees. The stringers to be constructed of 4" x 5/16th" rolled steel or wrought iron. The treads to be of cast iron 12" long and not less than 5½" wide at center and be perforated so snow or water will pass through freely, or the treads may be formed of 1" x 3/16" angle iron, three pieces to each tread. In all cases the stairs must not be less than 13" in width inside of the stringers. The stairs shall be provided with a handrail on each side made of 1½" x 1½" x 3/16" angle iron or 1½" "T" rail securely fastened at each end to the stringers by 3/8" bolts and supported by two braces spaced equal distance from end. Said hand rail shall never be less than 12" distance from and parallel to the stair stringers.
In determining the vertical rise or distance between steps on fire escape stairs, the following rule shall govern, "Twice the rise plus the effective tread shall not exceed 27 inches".

BRACKETS.

(b) The top cord of the supporting bracket shall be made from three (3) Inch - 4 lb. steel channel. This piece to form the end member of the platform frame. The diagonal member shall be of 2 3/4" x 1 3/4" x 1/4" angle iron, to be bent so as to extend in one continuous piece three (3) feet above the platform and from the outer post for the balcony-railing. The vertical member shall be made of 2" x 2" x 1/4" angle iron and shall also extend three (3) feet above the platform and form the wall post for the balcony-railing. Gusset plates 1" thick to be riveted with two 1/2" rivets to each member at the bottom angle of the brackets. The bracket shall be secured to the wall by means of a 3/4" machine bolt extending through the wall and have a 4" washer 3/3" thick on the inside. The nut and washer to be let into the wall so as to form a smooth surface when plastered over. A 1/2" lag screw 4" in length set in the wall by means of cement, shall be used at the bottom
of the bracket to secure same firmly to the wall. The brackets shall not be placed more than six (6) feet apart.

-platforms.

(c) The outside stringer, the inside or wall stringer and marginal frame for the scuttle hole in the platform shall be of 2" channel iron 4 lbs. per foot, or equivalent in bowling strength. The flooring must be of wrought iron 1 1/8" x 1/4" slats laid flat, and lengthwise of the platform not over 1 1/4" apart, to be securely riveted to and supported across on the under side by 1 1/8" x 1 1/2" x 3/16" angle iron spaced not over 15" center to center.

The lower web of the angle iron to be cut away at the ends so the upper flange may bolt to the channel iron stringers. This slat floor to be secured to the frame by 3/8" bolts or clips at ends.

Concrete slabs on 3/4" perforated boiler iron. Reinforced with steel angles may be used for floors of balconies, provided the ultimate strength of 500 lbs. per square foot is obtained in such flooring.

Balcony railing.

(d) There must be a top or hand rail for each balcony made of 1 1/8" x 1 1/2" x 3/16" angle iron placed three (3) feet above the balcony floor, and securely riveted or bolted to the corner standards, middle standards of the same material and size as the corners shall be placed so there will be a supporting post for the balcony rail at least every five (5) feet.

The middle rail shall be of 1 1/8" wrought iron placed parallel to and midway between the top rail and the floor. Filling in bars may be used in lieu of the middle rail, providing they are equal in strength to 1/2" square wrought iron placed not to exceed six (6) inches from centers and shall riveted to the top rail and floor stringers.

Roof ladder.

(e) A roof ladder shall extend from the upper balcony
floor to three feet above the roof and turn down in goose neck form and fastened to the roof in a secure manner. The side strings shall be of 1 3/4" x 5/16" wrought iron pipes 18" long with the rungs of three-quarter inch of wrought iron spaced not over 14" on centers. The ladder shall be braced and tied securely to the wall at least every seven feet with 1 3/4" x 5/16" wrought iron bars for each side rail.

The bottom of all ladders or stairs which rest upon the floors of the balcony shall be secured to and bear directly upon the balcony frame, or be supported at their bottom by additional cross supports of 1 1/4" x 1 1/2" by 3/16" angle iron or its equivalent in strength.

LADDER ESCAPES.

(f) Ladder escapes may be employed on the street fronts of any fireproof building or any existing non-fireproof building if upon examination and the building inspector and the Chief of the Fire department find that structural features of such fronts prevent the erection of a standard fire escape, but no ladder purporting to be placed as a fire escape shall be without balconies with their scuttle holes staggered in each alternate story, and all ladders and scuttles shall be made opposite solid piers or portions of the walls and shall be made in all parts sufficiently strong to withstand any possible strains that may be placed upon them.

(g) Nothing embodied in these sections for standard fire escapes shall prohibit the erection of a different stair pattern or any other and different device, design or instrument, which upon tests made under the rules and regulations of the fire department and the building department, shall prove equally as efficient, permanent and as safe as an external means of escape from fire and smoke in any building.

STAIR ESCAPES.
Section 320. All livery, boarding and sales stables, or barns having accommodations for one or more horses or cattle above the first floor must be provided with outside fire escapes from each floor level of similar construction as Section 320. Platforms at landings or floor levels must be not less than 4 x 6 feet, and attached to each balcony at second floor levels will be drop gradients or runaways with an incline of not more than thirty degrees extending from to grade, said gradients or incline to be raised up and placed in alleys or streets by counterbalance weights, easily dropped in position as required, where said gradients or inclines are in inside yards, same may be built stationary.

Where livery boarding or sale stables or barns have stalls in front above the second floor landings and gradients same as before specified must extend down from each floor level and connected to the gradients from the second floor to grade.

Drawings of said horse and cattle fire escapes must be furnished the building department for approval before permit for same will be issued.

LIGHTS FOR EXIT.

Section 321. All buildings used for hotels, lodging houses and tenements, including theatres, hospitals, asylums or similar buildings will have red shades with the word "Exit" lettered on same in black or notice on "To the fire escape", and said lights shall be kept burning at all hours during the night at all external and internal stairways or fire-escapes.

FIRE ESCAPES STAIRS FOR THEATRES, HOSPITALS AND SCHOOLS.

Section 322. All fire escapes and external stairs from theatres, hospitals, schools and similar buildings will be the dimensions and construction as specified in Titles XIX, XX and XXI.

INCUMBRANCES ON ESCAPES.

Section 323. All exits, fire escapes or stairs shall be kept free from incumbrances or obstructions at all times, and it
shall be unlawful to place incumbrances or obstructions, or permit or cause such incumbrances or obstructions to be placed before or upon any fire escape or stairs or in front of any exit at any time.

METAL SHUTTERS.

Section 334. Whenever the doors and windows of build-
ings of Grades I, II, IV, V and VI, more than one story in height, are within thirty feet of other buildings more than one story in height, or when openings are cut through the walls of buildings above the roof of other buildings, all such doors, windows and openings shall be provided with metal or metal covered shutters approved by the building inspector.

METAL FRAMES AND WIRED GLASS.

Section 335. In lieu of standard fire-doors and shutters whenever mentioned in this ordinance, shutters with metal frames of adequate strength with wired glass panels in same or windows glazed with wired glass set in metal sash and frames may be used.

SHUTTERS TO BE OPENED FROM OUTSIDE.

Section 336. All shutters opening on fire escapes, and at least one (1) row vertically in every three rows on any front with protected window openings, above the first story of any build-
ing, shall be so arranged that they can be readily opened from the outside by firemen. This section also applies to all iron grated windows.

INSIDE FIRE DOORS.

Section 337. Where openings in interior brick walls are fitted with fire-doors to prevent the spread of fire between build-
ings or parts of any buildings, the said fire doors shall be made of wood covered with tin or galvanized iron, or boiler iron braced, same to be hinged or slide, or with standard rolling metal doors or shutters, said doors or shutters to be approved by the building inspector. All buildings hereafter erected or altered, having
openings on interior walls, shall be provided with fireproof doors where deemed necessary by the Fire and Police Board or Building Inspector.

DOORS AND SHUTTERS TO BE CLOSED AT NIGHT.

Section 338. Occupants of all buildings provided with fire-doors and shutters (except hospitals, asylums or hotels, etc.) shall close said fire doors and shutters at the close of business each day.

TRAP DOORS TO BASEMENT.

Section 339. All buildings of grade I, not having direct entrance to the basement from the outside shall have in the first floor, within six feet of the front and rear doors, trap-doors not less than 24 x 18 inches in size, and so constructed that they may be readily opened by the firemen in case of fire in the basement.

EXTERNAL STANDPIPES.

Section 340. Every building over three stories in height except those occupied solely by one family, shall have one or more external metallic standpipes for each distinct and separate division of the building, extending from above the roof to within five and one half (5½) feet of the grade line of the abutting alley or street. Said standpipes shall not be less than two and one-half (2½) inches internal diameter standard wrought iron pipe, with a two and one-half (2½) inch hose valve attached to every outlet on each floor level, including one on the roof, the pipe to be goose-necked over and above the roof. There shall be an automatic siamese inlet at the bottom and all valves fittings and couplings shall conform to the size and pattern used by the Denver Fire Department. The standpipes shall be secured to the fire escape, if there be one conveniently located, if not, then it shall be so located that each valve opening will be close to and point direct toward a window or other opening.
Section 341. It shall be the duty of the owner, agent or person having charge of such building to see that the external standpipes are kept in proper condition, and for this purpose they shall make or cause to be made at least once each month a thorough investigation of the same, to see that all valves above the first floor level are closed off tight, and that all couplings are in proper condition for immediate use by the Denver Fire Department. Wherever necessary or as directed each siamese coupling of external standpipe shall be protected by heavy iron hoops projecting one (1) inch beyond standpipe all securely fastened to wall.

INTERNAL STANDPIPES.

Section 342. All buildings more than three stories in height and all two story buildings used as a school, office building, factory, manufactory, printing establishment, hotel, lodging house, hospital, asylum, institution for the care or treatment of individuals, lodge room, dance hall, or any assembly room for more than fifty persons shall be provided with one or more internal standpipes, connected directly with the city water mains, and carried to the upper floors of the building located in the most accessible location and at all times in good repair, ready for instant use and be provided with improved hose reel and not less than fifty feet of hose with proper nozzle on each floor including the basement.

DIMENSIONS OF INTERNAL STANDPIPES.

Section 343. All internal standpipes shall never be less than two (2) inches internal diameter of wrought iron or standard galvanized iron pipe, and they shall have the city pressure upon them at all times when the building is occupied. The number size and location to be determined by the Fire and Police Board and the Building Inspector.
DIMENSIONS OF HOSE.

Section 344. No hose shall be less than one and one-half (1\(\frac{1}{2}\)) inches internal diameter and shall be of such quality as will stand the maximum city pressure. All hose shall be tested at least once each year under the direction of the Fire Department. For the purpose of making such test he may allow it tested from a valve at or near the grade line of the building in which it is used, or he may order the owner, agent or person in charge of the building to have the hose taken to any fire house that he may designate and there tested by the Fire Department. Any hose which may be found to be defective or that will not stand the full city pressure, shall be immediately replaced by the owner or agent with new hose.

STANDARD.

Section 345. All valves, fittings and couplings used in connection with standard pipes shall be of the standard size and the thread used to be same as that of the Fire Department of the City and County of Denver.

AUXILIARY PUMPS.

Section 346. All buildings now erected or to be erected shall if required or found necessary be provided with an auxiliary fire apparatus and appliances, consisting of water tank on roof or in cellar pumps, standpipes, hose, nozzles, wrenches, fire extinguishers, hooks, axes and other fire appliances, to be located and accessibly placed under the direction of the Chief of the Fire Department.

INSPECTION OF FIRE APPLIANCES.

Section 347. All valves, hose, tools and other appliances provided for fire protection, shall be kept in perfect working order, and once a month the person or persons in charge of said building shall make a thorough investigation of the same to see that all valves, hose, reels, and other appliances are in perfect working order and ready for immediate use by the Fire Department.
SEWER CONSTRUCTION.

Section 348. In all buildings at present or hereafter to be erected, and used or intended to be used for mercantile or manufacturing purposes, and located where a sewer connection can be made there shall be in the cellar or basement, a sewer connection which can be opened immediately for the purpose of drainage in case the building or any of the floors or basement or cellar thereof should be flooded from any cause, and the location of said sewer connection shall be as near the main stairs as possible and shall be indicated by a permanent and conspicuous sign near the ceiling or on the wall near same.

PROTECT STEAM AND HOT WATER PIPES.

Section 349. All steam and hot water pipes passing through any floor, ceiling, partitions or other wood work shall be protected with a proper metal shield and the pipes shall not be placed within one inch of any wood work. In no case shall branches be placed between floors and ceilings except in fire-proof buildings. All recesses for steam and hot water pipes not in masonry shall be lined with tin or other incombustible metal and the covering to all recesses shall be so lined.

TIN OR METAL FLUES.

Section 350. No tin or metal flue, pipe or box, of a single thickness metal, used or intended to be used to carry heated air, shall hereafter be placed in any other than masonry wall unless the pipe leading to such flue shall be more than ten feet in length and such pipe, flue or box be kept at least one inch from any wood. The studs at the sides of all hot air pipes shall be lined with metal and the space at the front and back of all such flues shall be lathed with metal lath, unless such hot air pipes are made double.

CLEAR SPACE AT REGISTER BOXES.

Section 351. Within 20 feet of the furnace all register boxes hereafter placed in any wood work shall have a clear space of not less than 1½ inch between the box and any wood work, unless
the wood work is protected with a metal covering, in which case they may be placed within one inch.

REGISTER WITHIN TWENTY FEET OF SURFACE.

Section 362. All registers within 20 feet of the furnace shall have incombustible borders not less than two inches wide, when such register boxes are set in or near wood work.

CHUTES, DUCTS AND CONVEYORS.

Section 363. All chutes, ducts, conveyors or other openings from one part of a building to another part, used for any purpose, shall be constructed of brick, tile, metal or other incombustible materials and shall have self-closing doors at every opening to prevent draft along the same.

STORAGE OF RUSTIC, LOOSE EXCELSIOR, PAPER.

Section 364. In the Inner Fire District, there shall be no rubbish, excelsior, paper, shavings or other inflammable materials left in any part of any building, or in any yard in connection with same, but same shall be stored within a fire proof room in said building or in fireproof boxes placed in the yard with lock on cover, wooden boxes in the "Middle" and "Outer" fire districts may be used for the storage of said inflammable materials, all to be approved by the building inspector and the Fire and Police Board. All inflammable materials of the before mentioned character shall at the close of each day be placed in said fireproof room or boxes.

T I T L E XVII.

GASOLINE OR OTHER INFLAMMABLES.

OF SIMILAR NATURE.

PERMIT TO STORE GASOLINE.

Section 365. Every dealer or consumer keeping more than three gallons of gasoline on his premises at one time, shall so as to comply with this ordinance secure a special permit so to do from the Fire and Police Board, and as a basis of such a permit must comply with the following rules and regulations:

GASOLINE STORAGE - "INNER FIRE DISTRICT."
Section 356. Within the "Inner Fire District" all gasoline kept in quantities over three gallons shall be stored in metal tanks and buried at least three feet under ground.

The quantity stored upon any one lot under ground, shall be limited to 310 gallons for Automobile, Garages and 60 gallons for ordinary retail stores.

**GASOLINE STORAGE - MIDDLE, OUTER AND URBAN FIRE DISTRICTS.**

Section 357. Within the Middle, outer and urban fire districts, all gasoline shall be stored in fire-proof structures outside of any building in which any person works or sleeps, and in no case within a building over one story in height; or tanks can be buried as provided for in the Inner Fire Districts.

**QUANTITY OF GASOLINE STORED ABOVE GROUND.**

Section 358. No quantity of gasoline greater than 30 gallons shall be stored above the ground in any of the Fire Districts except it be kept in isolated buildings or tanks far enough removed from any habitable building to be safe against any possible injury to its occupants.

**SPECIAL PERMIT FOR STORAGE OF GASOLINE.**

Section 359. A special permit from the Fire and Police Board will only be issued upon the presentation by the applicant of a certificate of inspection, signed by the Chief of the Fire Department, or one of the Fire Wardens, and counter-signed by the Building Inspector.

Such certificate shall state that safe provision has been made for the storage and safe keeping of gasoline in compliance with the regulations herein provided.

**LOCATION OF GASOLINE STORAGE TANKS.**

Section 360. No gasoline storage tank shall be located under any public street, sidewalk or any alley without a concurrence in writing of the Board of Public Works, Fire and Police Board and Building Inspector.
NO FLAME, FLINT NEAR GASOLINE TANKS.

Section 361. No open flame lights or any kind shall be used in or near any gasoline vault while the tank is being filled or gasoline being drawn from it. An incandescent electric light however may be used.

FIRE DOORS FOR GASOLINE VAULTS OR ROOMS.

Section 362. All vaults or rooms, used for the storage of gasoline or any other inflammable or combustible oils, which may have their entrances from the basement or cellar shall be provided with standard self-closing automatic fire doors.

APPLICATION AND DIAGRAM OF LOCATION FOR GASOLINE ENGINES AND TANKS.

Section 363. Application to introduce gasoline engines into buildings in any of the fire districts shall be made to the Fire and Police Board. Also the dimensions of all gasoline tanks and their intended location must be accurately diagramed, showing the distance from all adjoining buildings and lot lines, the position and location of the cut-off valve and all other important parts. This diagram shall be presented by the applicant to the Fire and Police Board, and kept by them as a permanent record for the use of the Fire Department.

Upon the receipt of such application and the filing of such diagrams, the Fire and Police Board will make or cause to be made, an inspection of the proposed location and if the conditions are favorable for the installing of such gasoline engines or storage tanks the applicant will be so notified.

CERTIFICATE OF APPROVAL.

Section 364. When the engines have been placed or the storage tanks installed in accordance with the rules of the Fire and Police Board and a certificate to that effect signed by the Chief of the Fire Department or one of the fire wardens, countersigned by the Building Inspector, is presented to the Fire and Police Board, it will issue a certificate of approval to such applicant.
VIOLATION OF PERMITS.

Section 365. Should any person violate any of the regulations for the safe keeping of gasoline after the installing of such engines or storage tanks the Fire and Police Board reserves the right to cancel or recall the permit or certificate of approval at any time, and take such other action as public safety may require.

METHODS OF STORAGE OF GASOLINE.

Section 366. Within the "Inner Fire District", all gasoline storage tanks shall be buried under the ground not less than three feet in depth, and be outside of any building. All tanks to be used within the Inner fire district, are to be made of heavy galvanized steel, double riveted and soldered, of sufficient thickness and strength to withstand a hydraulic pressure of 90 lbs. to the square inch. No. 16-galvanized sheet steel will be considered heavy enough for any tank, when the diameter does not exceed thirty inches. Steel casings. A lighter tank may be used provided it be placed in underground water-tight standard oil barrel, brick or masonry pits. But in no instance shall a tank be used that will not withstand a hydraulic pressure of 50 lbs. per square inch. No. 20 galvanized sheet steel will be considered heavy enough when placed inside of such a pit.

GASOLINE TANKS; AIR AND GASOLINE TIGHT.

Section 367. All underground storage tanks are to be proven absolutely air and gasoline tight, and after such proof, they shall be coated on the outside with a heavy coat of tar put on hot. All castings and joints to be on top, above the liquid.

LOCATION OF GASOLINE TANKS.

Section 368. All tanks for the storage of gasoline for power engines or automobiles feeds in garages or factories shall not contain more than 210 gallons and be located underground, at a safe distance from any building within which any person works or

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lies. Not nearer than six feet if such building is of brick, and
sixteen feet if of frame construction.

Except the tanks may be located nearer than six feet to
the garage building in which it is to be used, if there are no
occupants above the ground floor of this same building. Sixty
gallon tanks may be placed nearer than six feet to another building
if the inspectors consider it safe.

The top of such tank shall be below the level of the base
of the engine or pump, and not less than three feet under ground
and be solidly enclosed with earth.

TANKS TO BE REMOVED -- WHEN --

Section 369. In case a gasoline tank be placed nearer
than six feet to any adjoining lot and a new building is constructed
on said adjoining lot after the placing of the tank, so that its
walls will be nearer than six feet to the tank, the owner of the
tank shall remove the same and make it to comply in respect to
distance, at his own expense.

GASOLINE PUMPS.

Section 370. Gasoline shall be drawn from the buried
tanks by approved pumps provided with cut-off valves, over-flow,
and by-pass, so arranged that all gasoline shall drain back to
the storage tank so as to leave the building entirely free from
gasoline when the pump or engine is not in operation. All cut-off
valves for this purpose shall be outside of the building.

GASOLINE FILL PIPES AND PUMP PIPES AND CAPS.

Section 371. If the gasoline is to be drawn from the
buried tank, from some point outside of the building, there shall
be provided a fill pipe and vented cap, a fill pipe sleeve and
cap; a pump pipe and cap; together with a pump of approved pattern,
and sufficient hose.
CUT-OFF PIPES TO GASOLINE TANKS.

Section 372. All pipes leading from said storage tanks into the buildings, shall be laid on an incline toward the tank and be coupled together at every joint with air-tight couplings, metal to metal. There shall be a cut-off valve outside of the building and marked "cut-off" to Gasoline tank.

This valve shall be closed when the tank is being filled, also when the engine or pump is closed for the night? The tank must be provided with a vent pipe, having a screw cap, to be open while in process of being filled.

STORAGE, MIDDLE, OUTER AND URBAN FIRE DISTRICTS.

Section 373. Within the Middle, Outer and Urban fire-districts the dealer or consumer may have the option of providing the same kind of storage tanks and equipment as required for the Inner Fire districts, or he can use an ordinary commercial tank, by installing it within a masonry or fire-proof vault in accordance with the following Rules and specifications.

STANDARD GASOLINE VAULT.

Section 374. If the gasoline is to be drawn from a point inside of the store room, by faucet, the dealer shall provide a "Standard Gasoline Vault" in which he shall encase the commercial tank.

DESCRIPTION OF STANDARD GASOLINE VAULT.

Section 375. The enclosing walls to be vitrified sewer pipe, 2½" thick, 24" diameter and composed of two sections each 30 inches in length. One section to be mounted upon the other, capped and well secured in position by means of a lipped joint, cemented in place. The encasement to have a concrete bottom, and made gasoline and water-tight and have a heavy metal cover made to fit snug, with device for locking it securely.
LOCATION OF STANDARD GASOLINE VAULT, WITH PIPING TO SAME.

Section 376. This vault may be set close to the outside wall of the store building, and have a pipe not to exceed one inch in diameter inside measure, leading from the metal tank through the encasement and the wall of the building, to the end of which will be placed a faucet sixteen inches above the floor level. A second tube of the same or a less size, may be placed through the walls parallel with the faucet pipe, for the purpose of operating a cut-off valve. The cut-off valve shall be placed on the inside of the encasement vault, and must always be closed when not drawing gasoline. On the outside of the encasement vault shall be painted in large red letters the word "GASOLINE."

GENERAL CONSTRUCTION.

Section 377. Nothing in these rules shall forbid a different kind of construction from that above designated, if equally fire-proof, and possessed of equal security, and be such a structure to be approved by the Building inspector and Fire and Police Board and so that any member of the Fire Department can readily distinguish it as being a vault for storage of gasoline, petroleum, benzine, clophene, spirit gum, buring fluid, or spirits of turpentine.

TITLE XVIII.

ACIDS.

PERMIT.

Section 378. The granting of permits for the storage or use of Nitric, sulphuric, hydro-chloric, muriatic, nitrate of soda or other acids or compounds made from same, by manufacturers, printers, engravers, newspapers or journals, or similar institutions, shall be under the control and supervision of the Fire and Police Board, and if the application for said permit complies with the following regulations, same may be granted when approved by the Chief of the
NOTICE ON OUTSIDE AND INSIDE OF DOORS TO ROOMS CONTAINING ANY ACIDS.

Section 379. All manufacturers, printers, engravers, newspapers, journals, or similar institutions in any way using nitric, sulphuric, hydro-chloric, muriatic, nitrate of soda or other acids or compounds made from same, must have signs painted on the outside and inside of all doors to rooms where said acids are used or stored, stating in large "Red" letters, the kind of acid therein and their dangers from leak, fire, or any other conditions; and how to avoid or overcome the danger.

HANDLING CARBOYS OF NITRIC ACID, ETC.

Section 380. The necks of carboys must not be gared in opening them, saw through the plaster of paris around the stopper, allowing same to come out easily, and the stopper must never be attempted to be removed with a hammer, chisel or similar instruments.

STORAGE OF CARBOYS.

Section 381. All carboys containing nitric, sulphuric, hydro-chloric, muriatic acids, nitrate of soda, or their compounds must be stored and opened in rooms with abundance of outside or direct ventilation with one or more outside windows. Said rooms to be cool, and not subject to the sun's rays, or other kinds of heat. Each room for storage of acid must have sink and water connection to same.

RECEPTACLE FOR CARBOYS.

Section 382. All carboys containing nitric, sulphuric, hydro-chloric, muriatic acids, nitrate of soda or their compounds must rest in throughs or receptacles made of glass or enameled or glazed vitrified materials, same to be of sufficient capacity to hold the entire contents of all of the carboys placed in same without overflowing. No organic matter such as wood will be permitted in
these receptacles or within reach of the acid should same escape or leak from the carboy or receptacle.

TITLE XIX.
THEATRES.

BUILDINGS USED FOR THEATRES OR PUBLIC ENTERTAINMENTS.

Section 383. Every public building hereafter erected, and every building intended for theatrical or operatic purposes or public entertainments of any kind where stage scenery and apparatus are employed, hereafter erected, shall be made to comply with the requirements of this ordinance. No building which at the time of the passage of this ordinance is not in actual use for theatrical or operatic purposes, and no building hereafter erected not in conformity with the requirements of this ordinance, shall be used for theatrical purposes or for public entertainments of any kind where stage scenery or apparatus are employed, until the same shall have been made so to comply, and no building hereinbefore described shall be opened to the public for such purposes until the building inspector shall have approved the same in writing as conforming to the requirements of this ordinance.

CONSTRUCTION OF THEATRES.

Section 384. All theatres containing a seating capacity of seven hundred and fifty (750) or more people shall be of fire-proof construction, except that in theatres containing a seating capacity of more than seven hundred and fifty (750) but less than one one thousand (1000) people, the stage and dressing rooms, and all other rooms connected therewith only need be fire-proofed, provided such theatre contains but one balcony or gallery.
Structures of any kind and for any purpose whatever erected above the ceiling of any auditorium which has a seating capacity of five hundred (500) or more people shall be entirely of fire-proof construction.

THEATRES TO HAVE ONE FRONT TO STREET - EXITS.

Section 385. Every building of Grade VI, shall have at least one front on a public highway or street, and in such front or fronts there shall be means of entrance and exit. In addition to the aforesaid entrances and exits on the public street there shall be preserved for service in case of emergency an open court or space, open to the sky, on the side not bordering on the street, where such building is located on a corner lot, and on both sides of said building, where there is but one frontage on the street. The width of such open court or courts shall begin on a line with or near the proscenium wall and shall extend the length of the auditorium proper, to or near the wall separating the same from the lobby, foyer or vestibule. A separate and distinct corridor shall be built to the street from each open court, with continuous walls, floors and ceilings, of brick or other fire-proof materials the entire length of said corridor or corridors.

FIRE EXTINGUISHING APPARATUS PROVIDED.

Section 386. It shall be the duty of the owners, agents, lessees and occupants of buildings of Grade VI to provide such fire extinguishing apparatus at such points about the building as the building inspector shall direct and all stand pipes, gas pipes, electric wires, hose, foot lights, and all apparatus for guarding against fires or for extinguishing the same, shall at all times be kept in condition satisfactory to, and under control of the building inspector.
CORRIDORS, COURTS AND GATES.

Section 387. The corridor or corridors shall not be reduced in width more than three feet less than the width of the open court or courts, and there shall be no projection into the same; the outer openings to be provided with doors or gates opening towards the street. During the time such buildings are occupied by the public the doors or gates in corridors and all approaches thereto shall be kept open by proper fastenings, such as may be readily drawn from the inner side; at other times they may be closed and locked. The said open court or courts shall not be used for storage purposes or for any other purposes whatsoever, except for exit and entrance from and to the auditorium and stage, and must be kept free and clear during performances. The level of said corridors at the front of the building shall not be greater than one step of eight inches above the level of the sidewalk where they begin at the street entrance and they shall not be more than one step of eight inches from the floor of the open court to the ground floor of the auditorium.
Section 386--To overcome any difference of level existing between exits from the ground floor of auditorium into courts, and the level of the street, gradients may be used in the corridors and courts of not over one foot in ten feet with no perpendicular rises. From the auditorium opening into said open courts, or on the side street where the buildings placed on corner lot, there shall not be less than two exits on each side from the ground floor auditorium, balcony, and each and every balcony and gallery. Each exit shall be at least five feet wide in the clear and provided with doors of iron or wood; if of wood doors shall be constructed according to underwriters' rules. All of said doors shall open outwardly and fasten only with movable bolts, the bolts to be kept drawn during performances.

LIMITATIONS OF FLOOR LEVELS

Section 389--The following limitations of floor levels in buildings of Grade VI., shall be observed in all cases of new construction, alteration or improvement of existing buildings. The ground floor of auditorium in buildings of Grade VI., where it connects with the lobby or foyer shall not be at a greater height above or depth below the street level than a gradient from the street vestibule of one foot in ten; said street vestibule to be not more than one stop above or below the grade of sidewalk at the central entrance point. The only exception to the foregoing shall be the case of rooms Grade VI., containing less than 500 seats, which, in fire-proof buildings, may be located in any floor thereof, but in such cases there shall be at least two flights of stairs from the floor in which such auditorium is located, to the ground, and the width of such shall not be less than four feet in the clear for each.

FIRE ESCAPES OR EMERGENCY STAIRS

Section 390--That every theatre not constructed or hereafter erected shall have and be provided with a separate and distinct external fire escape consisting of an iron stairway and railing extending from the level of each floor, balcony and gallery in such theatre down to the level of the alley. Such stairway shall not be steeper
than forty-five degrees and at every sixteen feet at least of perpendicular
descent there shall be a platform or landing place. The risers of said
stairway shall not be higher than nine inches, nor shall the treads of
said stairways be narrower than nine inches. Said stairways and plat-
forms shall not exceed three feet in width over all. The fire escapes
and stairways herein provided for shall be erected and used under such
rules and regulations as may be prescribed by the building inspector or
by ordinance.

STORES IN FRONT OF AUDITORIUM

Section 391—Nothing herein contained shall prevent the
use of the front portion of any assembly hall or theater building for
the purpose of offices or stores, provided that said offices or stores
are not over thirty (30) feet in depth from the front of the building
line and that said offices or stores are separated from the auditorium
galleries and exits by fire-step doors.

WORKSHOP STORAGE AND PROPERTY ROOMS

Section 392—No workshop, storage or general property room
shall be allowed above the auditorium or stage, or under the same or
in any of the fly galleries.

All of said rooms or shops may be located in the rear or at the
side of the stage, but in such cases they shall be separated from the
stage by a fire-proof wall, and the opening leading into said portions
shall have fire-proof doors on each side of the wall.

INTERIOR WALLS FIREPROOFED

Section 393—Interior walls of fire-proof materials shall
separate the auditorium from the entrance vestibules, and from any room
or rooms over the same, also from the lobbies, corridors, refreshment
or other room.

ENCLOSURE OF STAIRS

Section 394—All stairways for the use of the audience,
other than those leading from the first gallery, shall be enclosed
with walls of brick or fire-proof materials, in the stories through
which they pass, and the openings from said stairways to each tier shall
be the full width of said stairway.
No door shall open immediately upon a flight of stairs, but a landing at least two (2) feet wider than the width of the door opening shall be provided between such stairs and such door.

**PROSCENIUM WALL AND CURTAIN**

Section 395--In all buildings of Grade VI., there shall be a solid brick wall not less than 20 inches thick between auditorium and stage and shall extend to a height of six feet above the roof. The main curtain opening shall have an iron or asbestos curtain and all other openings in this wall shall have fire-proof doors.

**IRON GIRDER OVER PROSCENIUM, ORCHESTRA, FIRE-PROOF CURTAIN AND DOORS**

Section 396--In all buildings of Grade VI., there shall be an iron girder above the proscenium opening, the iron girder to be protected from heat by proper fire-proof coverings; above the girder there shall be a relieving arch the full width of the wall and the intervening space filled in with brick work. Should there be constructed an orchestra over the stage, above the proscenium opening, the said orchestra shall be placed outside of the proscenium wall. The moulded frame around the proscenium opening shall be formed entirely of fire-proof materials; if metal be used, the metal shall be filled in solid with non-combustible materials and the whole securely anchored to the wall with iron. The proscenium opening shall be provided with a fire-proof curtain, sliding at each end in iron grooves securely fastened to the wall, and extending into such grooves not less than six inches on each side. Said fire-proof curtain shall be raised at the commencement of each performance, and lowered at the close of said performance, and to be operated by approved machinery. The proscenium curtain shall be placed at least three feet from the foot-lights at the nearest point. There shall be no openings in the proscenium wall above the level of the auditorium ceiling, and not to exceed two on any level below and all such openings shall be closed with fire-proof doors, said last mentioned doors not to exceed three feet in width.

**VENTILATORS**

Section 397--There shall be over the stage of every building of Grade VI., flues or ducts extending at least 10 feet above
the highest point of the roof, which flues or ducts shall have an area of at least one-thirtieth of the total area of the stage. The dampers for opening or closing these ducts shall be controlled from a point near the proscenium; these dampers shall be made of sheet metal on iron frames and be not nearer than eight inches of any wood work or other combustible material, and having an arrangement of combustible cords or fusible connections to open ventilating valves automatically by the action of fire on the stage.

FRAMING OF STAGE FLOOR, FLY GALLERIES AND RIGGING LOFTS

SECTION ALL FIRE-PROOFED.

Section 398-- The framing of the floor of the stage in buildings in Gärde VI., containing seats for more than 500 people shall be of iron or steel; the stage floor may be of wood, but shall not be less than one and one-quarter inches thick. The entire floor construction and floors of fly galleries and rigging lofts, and all railings and supports, and all sheaves and pulleys and their supports, shall be made of iron or steel. All wood work including both sides of the floor boards, and all scenery used on or about the stage, shall be coated with fire-proof paint, the fire resisting qualities of which shall be tested and approved by the building inspector.

DRESSING ROOM EXITS

Section 399-- All employees in dressing rooms shall have two (2) independent exits to fire escapes in the open courts or leading directly to the streets. If windows are provided the same shall not have fixed sash, iron grills or bars. All dressing rooms shall be well ventilated. No dressing room shall be more than one story below the street line, and if so located shall have windows and exits in the external walls, opening into areas or courts leading direct to the street and alley lines.

DISTANCE BETWEEN SEATS

Section 400-- All seats in the auditorium excepting those contained in boxes, shall be not less than thirty-two (32) inches from back to back and twenty-two (22) inches in width on the main floor or twenty (20) inches by thirty (30) inches in every balcony or gallery, measured in a horizontal direction, and shall be firmly secured to the
floor.

**PLANNERS FOR SEATS IN GALLERIES**

Section 401—All platforms in galleries formed to receive the seats shall not be more than twenty-one (21) inches in height of riser, nor less than thirty (30) inches in width of platform.

**AISLES**

Section 402—Aisles in buildings of Grades V and VI shall be equal to 18 inches for every 100 seats or fractional part thereof, the occupants of which will be required to use said aisles, but no aisle is to be less than two feet three inches wide in the narrowest part and increasing in width toward the exit. Stairs are permitted in aisles only as extending from back to back of seats, and where the rise from back to back of seats is less than six inches; the floor of the aisle shall be made an inclined plane, and where steps occur in outside aisles or corridors, they shall be grouped together and there shall be a lamp at or near every place where there are steps in enclosed aisles or corridors. All aisles and passageways in said buildings shall be kept free from camp stools, sofas, chairs and other obstructions, and no person shall be allowed to stand in or occupy any of said aisles or passageways during any performance, service, exhibition, lecture, concert, ball or any public assembly, nor shall there be any camp stool, chairs, sofas or any such things in any such aisles or corridors at such times. The Building Inspector or any of his assistants shall have the right to enter any such buildings at any time during any performance, service, exhibition, lecture, concert, ball or any public assemblage, to enforce this ordinance.

**AISLES OR LOBBIES NOT OBSTRUCTED**

Section 403—No theater now built or hereafter to be built shall build any superstructure which will in any way obstruct the aisles, passageways, platforms or lobbies, or that will in any manner cause congestion of an audience in getting out of said theater in case of a panic.

**CAPACITY OF THE FOYER**

Section 404—The aggregate capacity of the Foyers, lobbies, corridors, passages, and rooms for the use of the audience
not including aisle space between seats, shall, on each floor or
gallery, be sufficient to contain the entire number to be accommodated
on said floor or gallery, in the ratio of one hundred and fifty (150)
superficial feet of floor room for every one hundred (100) persons
or part thereof, but no public main hall corridor or lobby shall be
less than six feet wide in any of its parts. No foyer shall open to
the auditorium except through the exits.

EXITS—SEATS SECURED.

Section 405—Distance and separate places of exit and
entrance shall be provided for each gallery above the first floor. A
common place of exit and entrance may serve for the main floor of the
auditorium and first balcony, provided its capacity be equal to the
aggregate capacity of the outlets from the main floor and the said
gallery required by Section 406.

All rooms accommodating more than 500 persons shall have all
seats, not in private boxes, firmly secured to the floor.

SHALL INSPECT AND MEASURE EXITS—AND NUMBER OF PERSONS

ADMITTED

Section 406—It shall be the duty of the Building
Inspector to inspect and measure the exits of all buildings in
Grades V and VI, including all theatres, concert halls, assembly rooms,
lecture halls, schools, churches, dance halls, and lodge rooms, and to
compute the number of persons said rooms, halls or buildings will safely
seat or accommodate, not to exceed one hundred persons—fractional parts
of one hundred being counted as a full one hundred—for each eighteen
(18) inches in width for each stairway door or exit; and when said
number had been determined by said Building Inspector, he may cause a
notice or notices, stating the maximum number to be admitted in said
room, hall or building, to be posted in a conspicuous place near the
entrance of said room, hall or building; and it shall be unlawful for
the owner, agent, manager or trustees or persons in charge or having
control of any such room, halls or buildings, to admit a larger
number of persons to such room, halls or buildings.

SPACE FOR STAIRWAYS

Section 407—All theatres hereafter to be built shall be so
constructed as to leave a space of not less than six feet on the sides
other than those fronting on alleys or streets, for the construction of stairways from the different galleries, balconies and auditoriums to the ground line, as provided by ordinance and such space shall always be free from obstruction.

WIDTH OF STAIRWAYS

Section 408--Stairs in buildings of Grades V and VI. shall be in width equivalent to eighteen (18) inches for every 100 seats of fraction thereof but no stairway in such building shall be less than four feet in width in the clear. All stairways shall have railings on each side thereof. No stairway shall ascend to a greater height than 11 feet without a level landing, which, if its width is in the direction of the run of the stairs shall not be less than three feet, or which, of at a turn of the stairs, shall not be less in width than the width of the stairs.

CROSS AISLES

Section 409--All theatres now built or hereafter to be built shall have cross aisles as required by the Building Inspector.

HEATING

Section 410--No floor register for heating will be permitted in aisles or passageways. No coil or radiator shall be placed in any aisle or passageway used as exits; but said coils and radiators shall be placed in recesses formed in the wall or partition to receive same.

MOVING PICTURES

Section 411--All rooms used for the operating of moving pictures in any theater or other play-house, or any entertainment given in any hall, store, etc., where said machine is used, shall be of fire-proof construction and no person who is not skilled in manipulating the same shall be allowed to run it.

STAND PIPES

Section 412--Stand pipes not less than two and a half (2-1/2) inches internal diameter at top, shall be provided with hose attachments, on every floor and gallery as follows, namely: One (1) on each side of the auditorium in each tier, also on each side of the stage.
in each tier and at least one (1) in the property room, and one (1) in the carpenter shop if the same be contiguous to the building. All stand pipes shall be kept clear from obstruction. Said stand pipes shall be separate and distinct, receiving their supply of water direct from the street main, and shall be fitted with regulation couplings of the fire department attached to hose.

**FIRE HOSE AND REELS**

Section 413-- A proper and sufficient quantity of two and a half (2-1/2) inch hose, with the regulation couplings of the Fire Department, with nozzles attached thereto shall be provided.

All hose will be hung on the most approved reels, placed on the walls at the stand pipe connections; said reels to have quick action and easily handled.

**WATER CURTAIN**

Section 414-- There shall be placed over the curtain or proscenium opening, the full width of same a two (2) inch perforated pipe, supplied at each end by one and a half (1-1/2) inch rising main, interconnected at the bottom to a two and a half (2-1/2) inch fire line leading directly to the street, with valves controlled from stage each side of proscenium, to form when in service a water curtain or automatic sprinkler.

**AUTOMATIC SPRINKLERS**

Section 415-- In lieu of the water curtain, automatic sprinklers shall be placed in the ceiling or below the roof of the stage at such intervals as will protect every square foot of stage surface, when sprinklers are in operation.

In all non-fire-proof theatres, or in fire-proof theatres when the rules of the Fire Department direct, automatic sprinklers shall also be placed under the stage when practicable, and in the dressing rooms, carpenter shop and paint, store and property rooms.

**PORTABLE EXTINGUISHERS**

Section 416-- There shall be provided hand pumps, or other portable fire extinguishing apparatus through the building placed where directed by the Fire Department.

**EXIT LIGHTS**

Section 417-- All theaters now built or hereafter to be
built shall have exit lights burning during each and every performance
and said lights shall be connected to an independent circuit from all
other lights in said theater. There shall be a red incandescent bulb
with a clear glass globe around the same, and the word "Exit" shall be
printed in plain black letters on said globe. Said lights shall be
placed directly over each and every exit opening. All arc and calcium
lights employed on my stage shall have a competent person to look after
the same, and such person shall not perform any other duties while
said lights are in operation.

DIRECT FIRE ALARM BOXES

Section 418-- All theaters shall put in fire direct alarm
boxes under the supervision of the city electrician and fire chief of
the City and County of Denver.

PROGRAMMES

Section 419-- It shall be the duty of the owner, lessee,
or manager of every theater or assembly hall, during the performance at
which programmes are used, to have in same a diagram or plan of each tier
gallery or floor, showing the exits printed in black lines on such
programmes, together with the capacity of each theater or hall. Also
mention conspicuously in such programmes that the Red Lights indicate
exits.

GAS MAINS

Section 420-- The gas mains supplying the building shall
have independent connections for the auditorium and the stage and provi-
sions shall be made for shutting off the gas outside of the building.

METHOD OF LIGHTING GAS

Section 421-- All interior gas lights must be lighted by
electricity, and any other appliance to be used must be approved by
the Fire and Police Board before being installed.

PROTECTING LIGHTS

Section 422-- All suspended or bracket lights surrounded
by glass will be provided with wire netting underneath

No gas or electric light shall be inserted in the walls,
wood work, ceilings or any part of the building unless protected by fire-
proof materials and have proper wire net protection.
one-half (10 1/2) inches.

In addition to the above described stairways, assembly
halls, etc., shall be provided with fire-escapes, as provided
in Section 390 and no emergency exit door or stairway shall be
less than three (3) feet in width.

Minor Theaters.

Section 434.—When the assembly hall or room of any
academy, school, college or other educational institution, or
any concert hall in any club house, hotel or other building, or
the lodge rooms of a temple or place of general assemblage of
fraternal or other organizations, either for the exclusive use
of members or for the public at large, contains a stage fitted
with a curtain and a limited amount of scenery, such halls, rooms
or places of assemblage shall be deemed Minor Theaters, and such
minor theaters shall comply with all the prescribed conditions
for assembly halls and theaters in Title XIX, except as modified
for the stage in that Title, provided that no such assembly hall,
room or place of general assemblage which has more than one (1)
balcony or in which the area of such single balcony exceeds one
third (1/3) the area of the main floor, shall be used as or con­
verted into a Minor Theater.

Aisles, Passageways, Etc.

Section 435.—The width of aisles, passages, lobbies,
stairways, and doors in assembly halls, etc., shall be proportioned
and constructed in the same manner as prescribed for theaters.

Stage Areas.

Section 436.—The area of the stage back of the pro­
scenium wall shall never exceed twenty (20) per cent of the main­
floor of the auditorium, and there shall be no trap door or movable
floor in same.

Proscenium Walls.

Section 437.—When the seating capacity is greater
than five hundred (500) persons, allowing a space of twenty (20)
by thirty (30) inches for each person, said wall shall be of brick
Protect Light and Heat Ducts.—Gas to have Wire Guards.

Section 431. In buildings of Grade V., no gas or electric light shall be inserted in the walls, wood work, ceiling or in any part of the building, unless protected by fireproof materials. All lights in passages and corridors of said buildings and wherever deemed necessary by the Building Inspector, shall be protected by proper wire net work. The footlights, in addition to the wire net work shall be protected by strong wire guard, not less than two feet distant from footlights, and the trough containing such footlights shall be fireproof. All ducts used for conducting heated air from the main chandelier or from any other light or lights shall be constructed of metal and made double with an air space between and shall not come in contact with any wood work. All stage lights, if of gas, shall have strong wire guards or screens, not less than ten inches in diameter, so constructed that any material contact therewith, shall be out of the reach of the flame and must in all cases be soldered to the fixture.

Frontage.

Section 432. Assembly halls, etc., with seating capacity for three hundred (300) to seven hundred and fifty (750) shall have a frontage upon two (2) open spaces, of which at least one (1) shall be a street, and the other, if not a street, shall be a public or private alley not less than eight (8) feet wide.

Assembly halls, etc., with a greater seating capacity than seven hundred and fifty (750) shall face not less than three (3) open spaces.

Stairs and Stairways.

Section 433. Every hall seating five hundred (500) persons and not more than seven and fifty (750) persons shall have at least two (2) separate and distinct stairways for ingress and egress, the same to be placed as far apart as possible.

Every hall seating more than seven hundred and fifty (750) persons and not more than one thousand (1000) persons shall have at least three (3) separate and distinct stairways. All stairs for ingress and egress to any assembly hall or halls, shall be at least five feet wide and provided with hand rails on each side. The rise of the stairs shall not be more than seven and one-half (7 1/2) inches to each step, and the tread not less than ten and
Elevation of Main Floors.

Section 427. In buildings of Grade V., no auditorium containing more than 1,000 seats shall have the highest part of its main floor more than eight feet above the adjacent sidewalk grade. No room of Grade V., containing more than 500 seats shall be at a greater distance than thirty (30) feet above the sidewalk. No room of Grade V., containing more than 200 seats shall be at a higher level above the sidewalk than 45 feet. Exceptions to the foregoing are to be made in the case of rooms containing less than 500 seats, which may be located in any part of a fireproof building; provided, however, that there shall be the stairs required in Section 433.

Computation of Widths of Corridors, etc.

Section 428. In buildings of Grade V., the width of corridors, passages, hallways and doors shall be computed in the same manner as the herein provided for stairways and aisles in Grade VI., excepting that no corridor shall be anywhere less than five feet in width, and no door less than three feet in width, and all doors shall open outward.

Structures above Ceiling to be Fireproof.

Section 429. Structures of any kind and for any purpose whatever, erected above the ceiling of any auditorium containing 500 or more seats shall be entirely of fireproof construction.

Buildings Lighted During Performances.

Section 430. Every portion of any building of Grade V., devoted to the use or accommodation of the public, also all outlets leading to the street, open courts and corridors, shall be properly lighted during every performance and the same shall remain lighted until the entire audience has left the premises. Buildings of Grade VI., shall be at night illuminated entirely by electric light and shall at each exit and at the head and foot of each stairway a metal bracket and a candle or sperm oil lamp kept burning during the entire duration of any performance. Similar provisions shall apply to buildings of Grade V., seating more than 1,000 persons.
(4) Is the fire-vent and valve above stage in good working order?------------------------------------
(5) Will calcium or arc lights be used in this performance?-------
(6) If so is there a competent electrician in charge of same?-------
(7) Will the stage electrician remain within 10 ft. of the switchboard during the entire performance?-------------
(8) Is the asbestos sheet in good working order?-----------------
(9) Are the sprinkling systems over stage and proscenium arch all in good order?-----------------------------
(10) Is the fire alarm box in good order------------------------
(11) Is the telephone from stage to box office in good order?-----

In charge of fire protection.

Notice: This report must be remitted to the secretary of the Fire and Police Board each week, before 5 p.m., when performances are to be given.
FIRE DRILLS

Section 423-- The Manager of each theater and assembly hall, shall instruct the employees in Fire Drill, and same shall be subject to inspection by the Fire and Police Board, the Fire Chief or someone named or appointed by them.

STATIONARY FIREMAN

Section 424-- The manager of each theater and assembly hall will be required to have one fireman on the stage at all times during performances. This Fireman's salary will be paid by the City and County of Denver, but the money to be refunded by the Theater or Assembly Hall owners or managers.

FIRE PROTECTION WEEKLY REPORTS

Section 425-- Should the Fire and Police Board decide that it is not necessary to furnish a Fireman in any Theater during performances, they will require that the Owner, Lessee or Manager of any Theater or assembly hall must fill out each week, the following weekly report of the condition and utility of the Fire Protection and forward same to the Fire and Police Board's office, signed by the employee in charge.

The blank book for said report will be furnished to the Theatre or assembly hall by the Fire and Police Board, and failure to make said weekly report will be cause for the theater or assembly hall to be closed by the Fire and Police Board until a proper examination of the Fire portection has been made and found satisfactory.

WEEKLY REPORTS WILL BE AS FOLLOWS:

Section 426.

Weekly Report Card.

Fire and Police Board, City and County of Denver.

-----------------------------------------------Theater

Date of Inspection-----------------------------

(1) Are approached to exits clear?------------------

(2) Are door fastenings to exits and rod lights in good order--

(3) Have standpipe all hose in place, and City pressure turned on?-----------------------------
proportioned in thickness according to its height, and shall ex­
tend upward at least four (4) feet above the roof. When the
seating capacity is less than five hundred (500) persons, fire­
proof or solid incombustible partitions not less than four (4)
inches thick may be used.

Depth of Stage.

Section 438.—The depth of the stage shall not exceed
twenty (20) per cent of the longest dimension of the main floor,
nor shall such stage contain more than three (3) entrances be­
tween the proscenium wall and the back wall curtain.

Curtain.

Section 439.—When the seating capacity is greater
than seven hundred and fifty (750) persons, the curtain shall be
of asbestos and be hung, constructed and operated as prescribed
for theaters, Section 396.

Scenery.

Section 440.—All scenery, borders and wings shall be
permanent and no transient scenery will be permitted. The wings
or set pieces shall be flippered or pivoted wings not exceeding
twelve (12) feet in height or seven (7) feet in width, and all
such scenery, borders, wings and curtains shall be painted as
prescribed in Section 396.

Ventilators.

Section 441.—The area of the stage ventilators pre­
sented in Section 397 may be reduced to one-twentieth (1/20) of
the area of the stage, or in lieu thereof a flue pipe or flue
pipes of metal construction or of other non-combustible material,
extending not less than twelve (12) feet above the highest part
of the roof over the stage of said building shall be over the stage,
and said flue or flues shall have an area of at least one-twentieth
(1/20) of the total area of the stage. All such flues or vents
shall be provided with dampers, which shall be made of metal,
having two (2) per cent of its area perforated and shall be opened
and controlled as prescribed for skylight ventilators.
Stand Pipe.

Section 442.- All Minor Theaters having a seating capacity greater than two hundred and fifty (250) but less than seven hundred and fifty (750) persons, shall have at least one line of stand pipe on the stage and one in the auditorium, but all such theaters which have a seating capacity greater than seven hundred and fifty (750) persons, shall have two lines of stand pipes, and said stand pipes must be two and one-half (2 1/2) inches, internal diameter.

Fire Hose and Reels.

Section 443.- The standpipes shall be equipped with Standard valves, outlets and reducers fitted with one and a half (1 1/2) inch hose, and most approved reels.

Summer Theaters.

Section 444.- Summer theaters, if built in the "Outer or Urban Fire Districts," and located thirty (30) feet distant from any other building or structure, or adjoining lot lines, and of no greater seating capacity than seven hundred and fifty (750) persons, and not more than one (1) story high, without balconies or galleries, may be constructed as follows:--

The Auditorium, without a cellar or basement, with open sides or double the number of exits as hereinbefore provided, opening directly into the surrounding courts, or gardens at the grade level, and the adjoining dressing rooms may be of frame construction, but the stage shall be enclosed in brick walls not less than thirteen (13) inches thick, on all sides and be built of ordinary construction, or better provided that the openings leading to the dressing rooms shall be provided with fire doors.

Otherwise all protective features and arrangements shall comply with all previous sections in this Title, except that in all summer theaters without balconies or galleries, the curtain need not be asbestos, but all scenery and the curtain shall be painted with fire-proof paint.
Section 445. Every building hereafter erected or altered to be used as a hospital, asylum or institution of any kind for the care or treatment of persons, including school houses or structures to be used for educational or detention purposes shall be of fireproof construction, if each building is to be three (3) stories or more in height.

Floor Space Areas.

Section 446. In proportioning the number of occupants of any room, the following minimum number of square feet of floor area per occupant shall be allowed in the apportionment.

For hospital rooms for children, fifty (50), and for adults seventy five (75); for school rooms for children, fifteen (15) and for adults, twenty (20).

Cubic Feet Areas.

Section 447. In the proportioning of the occupancy of a room, the amount of cubic space shall not be constructed so as to admit a reduction of the floor space as given in the previous section and the minimum number of cubic feet to be allowed for each occupant shall be as follows:

For hospitals, six hundred (600) for children, and one thousand (1000) for adults; for schools, for children two hundred (200) and for adults three hundred and fifty (350).

System of Ventilation.

Section 448 (a) Every building used as a hospital, asylum, school house, or institution of any kind for the care, treatment or congregating of persons, shall have in continuous operation when occupied a system of ventilation so contrived as to provide twenty-five (25) cubic feet per minute of outer air for each occupant, and for each light other than electric light.

Or when any room or space is so proportioned as not to allow each occupant, if children six hundred (600) cubic feet, and if adults one thousand (1000) cubic feet of fresh air per hour, or less than three
(3) times such amounts in sick rooms or hospitals, by natural means with out exposure to improper air currents; then such shall be venti­lated by artificial means.

Ventilation independent of Atmospheric changes.

Section 448 (b). School rooms in every school building shall be ventilated in such manner that the quantity of foul or vitiated air exhausted or removed, and the quantity of fresh air admitted shall be positive and independent of atmospheric changes and shall not be less than 30 cubic feet per minute for each person that said school room can accommodate.

Hospital and Asylum, outside stairways.--

Section 449. All buildings used as hospitals or institutions for the care of sick persons more than one story in height, must have ex­ternal stairways, which shall be constructed of iron and be not less than four feet in width, and not steeper than 33 degrees. No riser in said stairs shall be less than eleven inches in width. Said stairs shall have an iron railing not less than three feet in height, and said railing shall have proper balusters extending from the top rail down to the treads of said stairs. No such stairs shall have a perpen­dicular height of more than sixteen feet without a platform. In case a turn is made at said platform, then said platform shall be not less than eight feet long and double the width of said stair. No platform shall be allowed to be built less than six feet or narrower than the width of the stair. No more than one hundred persons shall be compell­ed to use one pair of stairs. The location of said stairs shall be removed as far as possible from the elevator shaft and internal stairs, but in all cases must be constructed at the ends of halls and courts, or in a manner easy of access in case of fire. All doors to said stair­ways shall run to the level of the floor and swing out, and shall be fastened on the inside with a simple fastening, and at no time shall be locked. All said stairways shall extend down to the ground and shall be built and located under the direction of the building inspector.
Section 450. All hospitals now built or hereafter to be built shall have not less than two (2) internal stairs. Said stairs shall not be less than five feet in width and shall be built at opposite sides or ends of said hospital building. They shall be provided with proper railings, balusters, etc., and no riser in said stair shall be greater than seven inches and no tread less than eleven inches, and the pitch of said stair in no case shall be greater than thirty-three degrees.

Red "Exit" Lights.

Section 451. Red lights with the word "Exit" shall be kept burning at all hours during the night at all external and internal stairways herein provided for.

Direct Fire Alarm Boxes.

Section 452. Direct fire alarm boxes to the nearest fire station shall be installed in every hospital in the City and County of Denver, under the supervision of the Fire Chief of the City and County of Denver.

Heating Plant Outside of Hospital Buildings.

Section 453. No hospital within the City and County of Denver, where a high pressure heating plant is used, shall maintain said plant within the walls of said institution, but must remove the same to a point not less than twenty feet from said hospital. The buildings containing said heating plants shall be built entirely of fireproof construction.

Elevator Fire Escapes for Hospital, etc.

Section 454. Fireproof external elevator fire escapes, may be substituted for the outside stairways specified in section 449. Said elevators to be automatic, placed outside in connection with the fireproof balconies, of ample capacity and speed, having car platform not less than four (4) by seven (7) feet, and the guides and framing through out of iron or steel construction. The mechanism to be hand power with rope and brake air cushion at grade, iron gates and railings, and car to lock at each level when stopped. Drawings of said elevators must be furnished the Building Department for approval before same are (131)
Section 455. Every building to be used for Hospital or School purposes must have a sufficient number of fire and smoke stops in halls and corridors, to shut off sections of the buildings during a conflagration. Said stops shall be constructed of incombustible materials, closing automatically, and may be either sliding or rolling doors, fire and smoke proof and same to be placed where directed by the Chief of the Fire Department and the Building Inspector.

School Buildings. -- Iron external stairways.

Section 456. All public and private schools now built or hereafter to be built within the City and County of Denver, where more than one hundred pupils may be in attendance, which are more than one story in height, shall build not less than two iron external stairways. Said stairways shall extend from each floor of said school building to the ground and shall not be less than four (4) feet wide; the risers of said stairs shall not be greater than seven (7) inches, and the treads not less than eleven inches wide. No stair shall be steeper than thirty-three (33) degrees, and shall not be longer than 16½ feet on the perpendicular line without a platform. Said platforms shall not be less than four (4) feet long, and in all cases the full width of the stairs. All such stairs shall have proper railings on each side, and the outside railings shall have balusters, and the space between the same shall not be greater than six (6) inches.

School Buildings. -- Spiral Escapes.

Section 457. It will be permissible to substitute external fire-proof spiral gradient or slide fire escapes in connection with School Buildings, in place of the four (4) feet external iron stairways specified in Section 456. Said fire escapes must be easy of access from halls or corridors, having latch at grade door, opening same from inside and outside.

School Buildings. -- Internal Stairways.

Section 458. All public and private schools for the education of children, now built or hereafter to be built, within the City and County of Denver, more than one story in height, shall have not less than two internal stairways, and said stairs shall be not less than five (5) feet in width, and shall not be steeper than thirty-three (33) degrees. No riser on said stairs shall be greater than seven (7) inches and no tread less than eleven (11) inches wide. Said stairs shall be provided with proper hand railings, balusters, and all proper safeguards.
No High Pressure Steam Heating Plant in School Buildings.

Sec. 459 (a). No public or private school hereafter to be built within the City and County of Denver, where a high pressure heating plant is operated, shall be allowed to install the same within the School building, but must build a separate building, not less than twenty (20) feet from said School building at the nearest point, and said plant shall be installed in a fireproof building.

Steam Boilers for Low Pressure Engines and Pumps.

Sec. 459 (b). Steam boilers for operating low pressure engines and pumps will be permitted within the walls of any school building, only when boilers are not of more than 100 H. P. per unit, and located in a properly arranged and fireproof boiler room. All such boilers must be constructed of materials and workmanship that will meet the requirements of high pressure boilers, and before being walled in must be tested at a hydrostatic pressure of 190 lbs. They must be equipped with an approved pattern "look-up" safety valve set to pop at 35 lbs. gauge pressure, a high and low water alarm, automatic boiler feed connected to city water supply and an automatic damper regulator. All of the above to be approved by the Boiler Inspector and Building Inspector before being put in place.

Fire Drills.

Section 460. Fire drills shall be held at least once a month under the supervision of some competent person, said person to be appointed by the Superintendent of Schools, and to be an attaché of said School where said fire drill shall be held, and the Chief of the Fire Department may at any time visit any School Building and test the efficiency of said fire drill.

Direct Fire Alarm Boxes in School Buildings.

Section 461. Direct fire alarm boxes shall be installed in every school, and said installation shall be separate and direct from each and every school to the nearest fire engine house.
Heights of Class-Rooms.

Section 461 (b). The heights of all class-rooms so as to comply with the conditions of this ordinance shall never be less than twelve (12) feet, except when making additions to School Buildings at present erected.

Unit of Measure of Rooms.

Section 461 (c). The unit of measure for the depth of properly lighted rooms shall be the height of the window head above the floor, provided, that the height of such window head is not over 17 1/2 per cent of the minimum height of a room, below the ceiling line; and provided further, that no girder or other obstruction extends more than 10 per cent of the height of the room below the ceiling line or covers more than 10 per cent of the ceiling area of such room.

Window proportions.

Section 461 (d). The unit of measure for the necessary window area of a room, measured for openings in the clear, between sill lines and stops, and for the glazed surface of a door or a window, measured between putty stops, shall be in fractional parts of the floor space to be lighted, and no rooms shall have a total window area opening to the outer air of less than one-tenth (1/10) of the floor space.

Normal Depth.

Section 461 (e). The normal depth of a room shall be two and one-half (2 1/2) times the window head height above the floor and all class rooms must have the windows placed so that the light will be diffused on the left side of the scholars or pupils.

Window Areas.

Section 461 (f). The window areas for properly lighted rooms shall never be less than one-sixth (1/6) the fraction of floor space to be lighted.

Limit of Depth and Artificial Light and Ventilation.

Section 461 (g). In no instance shall a room or space wherein fixed desks, tables, work benches or machines are to be placed be so constructed as to bring the center of the extreme individual desk,
table, work bench or machine at a greater distance from the windows than herein prescribed, i.e., where windows face streets or open unobstructed air spaces 2 1/2 times and in court 1 1/2 times the height of the window head above the top of the desk, tables, work bench or working table of machines.

Doors and Transoms.

Section 461 (h). The doors and transoms shall, if possible, be so located as to insure a proper circulation of air between the interior halls and their adjoining rooms unless otherwise prescribed. Doors leading from public to private halls, not separately lighted at their ends, shall have the upper panels glazed and transoms adjustable.

Adjustable Windows, Doors & Transoms.

Section 461 (i). All transoms over doors, and the upper part of at least one-fourth of the window area in any room, shall be so designed as to be easily opened and adjusted in any position and all windows must also be arranged so as to be easily cleaned without jeopardizing life or limb. All doors in school buildings shall be so arranged as to swing outward.

Class Rooms above Grade Line.

Section 461 (i). All primary and grammar grade class rooms must be placed or located above the ground or grade at building line in yard, alley or streets.

TITLE XXII.

ELEVATORS EXPLANATORY.

Subjects included.

Section 462. The subjects shall include all elevators, hoists, lifts, derricks, dumb-waiters, or any mechanical devices which employ ropes, cables, pulleys, platforms or swinging ladders or scaffolding, whether permanently or temporarily fixed in position, for the purpose of conveying people, animals, vehicles, merchandise, building materials or any other load to any point on or in a structure, above or below grade line.

Lifting Tackle of Derrick, Hoist or Swinging Scaffold.
Section 463. All lifting tackle of and derrick, hoist or swinging scaffold shall be subject to the rules and regulations governing freight elevators, and all other supporting parts of such derrick, hoist and swinging scaffold shall be proportioned to meet the conditions of stability of the frame structures.

PERMITS, INSPECTION AND FEES.

Permits for Erection of Elevators.

Section 464. It shall be unlawful for any person or persons, company or corporation to construct, erect or place, or cause to be constructed, erected, or placed, in any building or structure, erected or in course of erection, any elevator to be used for carrying passengers or freight from one floor to another without first having obtained from the Elevator Inspector or the Building Inspector a permit therefor. Before the Building Inspector shall issue such permit for the erection construction, or use of such elevators, there shall be filed in his office as a matter of record, plans and specifications showing the type and make of machine, the motive power to be used, and the size of all ropes, sheaves, drums and supporting beams also speed, travel, and capacity of car, type of safeties, dimensions of pressure tank, and pressure carried thereon, or the number of volts and amperes of electric current or motor used.

The Elevator Inspector or the Building Inspector shall not issue a permit for the erection, construction or use of any elevator, that may have less than two (2) ropes of approved diameter carrying the weight of the car and its load, or each counterbalance weight thereof.

Existing Elevators to be equipped.

Section 465. Any person or persons, company or corporation having charge of any building in which any elevator is or may be in use shall equip such elevator with the devices or appliances required or specified, and keep the same in good working order and repair; and it shall be unlawful for any person or persons, company or corporation to erect, use or operate, or cause or permit to be erected, used, or operated, in any building any freight or passenger elevator unless the same be equipped with the devices and appliances as provided in this Title.
Section 466. When an elevator is placed in a building, the owner or his agent shall immediately so notify the Elevator Inspector or the Building Inspector in writing, and such elevator shall not be used until it shall have been duly inspected. A like notice of any repairs or alterations intended to be made shall be given by the person employed to make such repairs or alterations.

Nothing in this section shall prevent an owner from making the ordinary repairs for maintenance, or prevent him from making repairs at once when needed, pending the service of the above notice when a certificate of inspection is needed.

Examination and Certificate.

Section 467. Every owner shall require the person in charge of the running of his elevator to carefully examine the same and its appliances once in every twenty-four (24) hours, and upon the discovery of any defects or impairments tending to endanger life, the elevator shall be shut down at once and the Elevator Inspector or the Building Inspector notified. The use of such defective elevator shall be prohibited until the necessary repairs to make it safe have been made, inspected by the Elevator Inspector or the Building Inspector, and a certificate in writing is issued by him that said elevator has been put in safe working order and is fit to use.

The said certificate shall be placed under glass and framed and hung in a conspicuous place in the elevator for which the certificate was issued.

Metal Plate showing carrying capacity.

Section 468. The owner, lessee, manager or other person having charge or control of any elevator shall cause to be fastened in a conspicuous place in said elevators, or on said derricks, lifts or swinging ladders or scaffolding metal plates having suitable raised letters on same, which shall prescribe the number of pounds weight which said elevators, after proper test, have capacity to carry.

All elevators before being put into use shall be tested with a load
equivalent to twenty-five (25) per cent more than the lifting capacity stamped on the plate. This test shall show no weakness when the elevator is worked either upward or downward as in ordinary use.

Prohibiting use if unsafe.

Section 469. Should any defect be found in any part, or parts of any elevator which would tend to impair its safety or endanger life by the continued use of such elevator, the Elevator Inspector or the Building Inspector shall immediately inform the person in charge, of the danger of continuing the use thereof; and the Elevator Inspector or the Building Inspector shall immediately cause a notice in writing to be served upon the owner or lessee, manager, or other person or persons having use, control or management of said elevator which notice may contain a statement of the necessary repairs; and said elevators shall not again be used until a certificate in writing shall be issued by the Elevator Inspector that it has been put in safe running order and is fit for use. The notice herein provided for may be served upon any person having charge of the running of said elevator.

Inspectors Fees.

Section 470. The owners, agents, lessees or managers of all buildings in which elevators are used, or which employ derricks, swinging ladders or scaffolds, or other mechanical lifting devices, shall have the Elevator Inspector approve of same before a certificate of inspection is issued. A fee of one ($1.00) dollar will be required for each inspection of each elevator made in pursuance of this Ordinance. Each elevator in the City and County of Denver must be officially inspected every six months by the Elevator Inspector.

TITLE XXIII.

CONSTRUCTION OF ELEVATORS.

Passage under adjoining Elevators.

Section 471. There shall be no kind of passage in any story of a building below a platform of an elevator and wherever such passage-way is in existence it shall be forthwith after the passage of this
Ordinance, abolished. Public halls or passage-ways in front of elevators hereafter to be erected, shall be at least one foot wider than the widths established in this ordinance.

Ropes, Cables and Platforms.

Section 472. Ropes and cables whose diameter shall be approved for use in any elevator, shall have a factor of safety of at least five (5) for all diameters over five-eighths of an inch; six under five-eights, but more than one-half an inch; and eight for all diameters below one-half an inch. All elevator platforms shall have a factor of at least four. If elevators are exposed to the action of the elements, the factor shall be increased twenty-five percent of the above; and where any rope or cable shows twenty-five per cent deterioration, it shall be considered unsafe.

Number of Cables.

Section 473. All freight elevators shall have not less than two hoisting cables, with suitable adjustments or equalizers to equalize the bearings. No passenger elevator shall have less than four hoisting cables, provided that those passenger elevators, the cables of which wind around a drum may have two hoist cables, if the car is counterweighted separate from the drum, the counterweight to have two (2) cables, and cables to be provided with suitable equalizers to equalize the bearings. All ropes and cables shall be independently fastened at their terminals.

Elevator Sheaves.

Section 474. All elevator sheaves or drums for rope transmission shall not be less in diameter than twelve times the circumference of the cable used on such elevator.

Elevator Governor.

Section 475. All freight and passenger elevators (except hand power) shall be provided with an automatic down speed governor or regulator, except worm-gear elevators, the speed of which is less than
sixty (60) feet per minute.

Shut Off.

Section 476. Every power elevator shall be provided with an automatic shut off which shall stop it at its foot and its highest landing. Such elevators shall also have slack cable devices.

Cable Stops.

Section 477. All freight and passenger elevators, except hand-power, in any building, the cables of which wind around a drum, must be provided and equipped with an automatic trip or slack cable stop and automatic brake of sufficient strength to hold the car at any point.

Safety Floor Stops.

Section 478. All freight and fire escape elevators shall be provided with a safety device by which persons using the elevator at one floor can lock the operating table to prevent the moving of the elevator by persons on another floor, during loading or unloading.

Automatic Trap Doors.

Section 479. All freight elevators, whose speed is less than fifty (50) feet per minute, not enclosed in shafts as provided in Section shall have automatic trap doors, tin lined on the under side at each floor so constructed as to form a substantial floor surface when closed, and so arranged as to open and close by the action of the elevator ascending and descending.

Supports and Guides.

Section 480. In all buildings hereafter to be erected over three stories high, the beams for supporting overhead work shall be of iron or steel, and such beams shall be supported on brick walls or continuous iron columns resting on concrete or masonry foundation, and all guide posts or run rails for elevator car and counterweights shall be of iron or steel in all buildings over five (5) stories high, when operating in open or grill enclosed hatchways, and in all buildings over nine stories high, in all hatchways.

The counterweight guides shall be provided with limit stops so constructed as to prevent the running of the weights above the guide strips.
into the elevator shafts under any circumstances, either by accident to
or loss of control of the elevator. All weights shall be securely
bolted together with rods passing through all weights.

**Automatic Oiler for Guides.**

Section 481. All passenger elevators shall be provided with suit-
able oiling device for lubricating the guides automatically, to obviate
the necessity of a person riding on top of cage for that purpose.

**Screens under Sheaves and Beams.**

Section 482. Every power elevator shall be provided with a proper
screen under its sheaves and beams to prevent tools or other things
from dropping on the hoistway.

**Elevator Pits.**

Section 483. All freight or passenger elevators shall have a pit
extending at least thirty-six (36) inches below the lowermost floor
level and elevators not extending down to the basement shall have
fireproof pits at the lowermost floor level above which they serve.
Such pits shall have no openings except holes for cables.

**Brick Enclosure.**

Section 484. Whenever an elevator shaft extends down into a base-
ment, that portion thereof, inclusive of the space occupied by the
machinery, shall be constructed of brick, and be fitted with automatic
fire doors as provided in Section 337.

All freight elevators in any building shall be enclosed with brick
walls or with fireproof partitions which do not depend on wooden floor
beams for support. And where they are not placed on an outside wall
with window openings therein and serve more than one floor their
enclosures shall be carried six feet or more above the roof of the build-
ing, and be covered with a skylight of wire glass and is protected by
a screen made of number one (1) or heavier wire with one and one-half
inch or closer meshes. All elevator skylights shall have an opening
device controlled from each and every floor.
Elevator Fire Doors and Safety Gates.

Section 485. All elevators enclosed with brick walls or in fireproof shafts, shall be provided with fireproof frames and doors. Said doors shall be provided with an approved device or system which will automatically close the openings in the event of fire. And in addition to said automatic fire doors, the elevators shall be provided with automatic openings and closing hatch gates, to protect the approach to the elevator when doors are open.

Freight Elevators - Well Hole Railings.

Section 486. All freight elevator shafts and hoistways in any building not enclosed, shall be protected and enclosed on each and all floors of any such building with suitable frame work or railings not less than five (5) feet high, and approaches and entrances to any such elevator shaft and hoistway shall be provided with automatic or self closing gates; and no person shall use, permit, or cause to be used, any such freight elevator, shaft or hoistways, in any building unless the same is protected or enclosed as above required.

Hoists and Elevators - Well Holes to be Guarded.

Section 487. All buildings in course of construction and in all buildings having elevators intended for freight lifts only, and not constructed, it shall be unlawful to use hoists and elevators for hoisting materials, etc., in any such building or buildings unless the well holes or openings for such elevators or hoists on each and every floor of the building shall be closed with guard rails composed of boards placed six (6) inches apart to a height of five (5) feet, with a gate or door swinging outward from the elevator and such other safety or equivalent appliances as shall be necessary for the protection of life and limb.

Dumb Waiters.

Section 488. Dumb waiters extending to the basement and serving three or more floors in a building shall be deemed freight elevators and shall be enclosed accordingly, except that they need not extend to the roof provided that they are thoroughly fire stopped at the bottom, and the uppermost story served. In non-fireproof buildings where dumb waiters are enclosed in shafts the walls of such shafts shall be plastered on metal lath.

Passenger Elevators Shafts.

Section 489. Elevators used exclusively for passenger service in all wholesale stores, factories or warehouses, or passenger elevators, with a freight attachment underneath located in any other building,
shall be treated and provided as above prescribed for freight elevators with the distinction that the enclosing partitions may be of plastering on metal lath or any other fireproof having wooden doors with wired glass if any glass at all.

No Elevator in Well Hole.

Section 490. No elevator shall hereafter be constructed in the well hole of any stairway unless there be a fireproof wall between each elevator and said stairway, extending from the basement to a point three (3) feet above the level of the roof, elevator shafts in fireproof buildings alone excepted.

Stairs adjoining Elevators.

Section 491. In either of the cases cited under Sections 489 & 490 the stairs accompanying such elevators shall be enclosed with partitions equal to those employed for enclosing the respective elevator and there shall also be such partition between the elevator and this adjoining stairway.

Elevators in Staircases.

Section 492. Open grill work enclosures for passenger elevators not extending below the level of the first floor, may be erected in staircase enclosures in buildings where the entire space is occupied by the stairs, and the elevator is enclosed in brick or stone walls and the stairs are of fireproof construction as before specified.

All elevators, if used exclusively for private service in all dwellings or within a suite of office or business apartments, for not more than three stories or two stories and a basement in height, if entirely detached from the public halls, or stair halls or passageways leading thereto, need not have their shafts extended to the roof, provided that such shafts are properly enclosed in conformity with this Ordinance.

Passenger Elevator Enclosures.

Section 493. All passenger elevator shafts, except as prescribed in Section 489 shall be enclosed from the floor to the ceiling on all entrance sides and to a height not less than seven (7)
six (6) inches on other sides, and when iron wire or grill work is used no greater space than two inches square, or one and three fourths clear way if vertical rod is used, shall be permitted; and no obstruction of any kind shall extend into any elevator shaft or be placed on the enclosure thereof in front of the entrance side.

Doors.

Section 494.—All doors approaching elevator shafts shall have safety locks of approved make, so that said doors will be closed when the elevator car is not at the floor where said doors are located.

Doorways to Cars.

Section 495.—It shall be unlawful to maintain or operate any passenger elevator which has more than one entrance or doorway to the car, unless each of said entrances or doorways is provided with a door on the inside of said car, said door to be closed by the operator before said car is put in motion. All doors to cars shall be not less than seven (7) feet high.

Cage of the Car.

Section 496.—The cage of all passenger elevator cars shall be constructed of metal or other incombustible material, except floor coverings, but there shall be no glass or porcelain used in the structural or ornamental parts of the canopy or any cage. The use of glass or porcelain in all elevator cars for general public use, shall be confined to coverings of certificates of inspection, enunciators and the lighting lamps. In every passenger elevator there shall be placed a metal hand rail, one inch in diameter, and forty-two inches above the floor, on all sides not having door openings. The canopy, if any, of every passenger elevator, shall be so constructed that the whole of semi-circular part sixteen (16) inches in depth by the width of the door in width above the entrance door can be easily removed from the top.

Sidewalk Elevator Doors.

Section 497.—All doors covering sidewalk elevator doors when open, shall open only sufficiently for proper service, and
also from a guard to the aperture while open, and when the covering
doors are attached to the frame of the lift to open automatically;
the sides of the lift at right angles to the curb shall be safe
guarded with metal lattice work.

Protection of Well Hole Elevator Shafts and Open
Courts. In Existing Buildings.

Section 498.-- Owners of all buildings erected prior
to the passage of this ordinance, containing elevators, hatches
or well holes, elevator shafts or open courts, shall upon written
notice from the Building Inspector so to do, properly and suf-
ciently guard and protect such elevator hatches, well holes
or elevators, with gates or guards so as to avoid danger to human
life, and said gates or guards shall be closed on all floors
except when cars are in actual use.

Elevators In Existing Hotels.

Section 499.-- In every non-fireproof building, used
or occupied as a hotel, after the passage of this ordinance, in
which there is an elevator not enclosed in a fire-proof shaft,
such elevator shall be enclosed in partitions of incombustible
material constructed and arranged as prescribed in Section 489
for passenger elevator shafts.

Elevator Escapes for Hospitals, Etc.

Section 500.-- See Title XXI, Section 454.

TITLE XXIV.

DEFINITIONS.

In this Ordinance the following terms shall have the
meaning herein respectively assigned to them, viz:--

Alley.

Section 501.-- Any public thoroughfare less than thirty
(30) feet wide shall be deemed an alley, and if such thoroughfare
is less than sixteen (16) feet in width it shall be deemed a
court way, and be a passageway if the entrance to any alley or
court, or courtway is made through a building.
ALTERATION.
Section 502.- Means any change in, to or upon any structure or things connected therewith, and to 'alter' means to make any such change or alteration.

AREAS.
Section 503.- Sub-surface excavations adjacent to the building for the purpose of lighting and ventilating cellars or basements; the same are prohibited from projecting into any street or alley.

ATTIC STORY.
Section 504.-- A story situated wholly or partly in the roof.

ACCESSORIES.
Section 505.- Dormer windows, cornices, mouldings, bay or oriel windows, balconies, cupolas, domes, towers, spires, ventilators, or any other accessory projecting from a building.

Basement.
Section 506.-- A story suitable for business or habitation partially below the level of the adjoining street or ground, and below the first tier of the floor beams or joists. When a basement ceiling is more than eight (8) feet above the grade at the building line it will be rated as the first story or ground floor.

Bay Windows.
Section 507.- a rectangular, curved or polygonal window supported on a foundation or brackets, etc., which projects from the balance of the enclosing wall.

Bay and Panel.
Section 508.- One of the intervals or spaces into which a building front is divided by columns or division walls. The floor space included between the intersection of parallel rows of columns or walls of two bays at right angles to each other and the face of a wall between two (2) adjoining pilasters or piers is called a panel.
Base Course or Base of Building.

Section 509.- The course or courses of masonry next to the grade line.

Bearing Walls.

Section 510.- These walls upon which the joists, beams, trusses or girders rest.

Brick Pressed.

Section 511.- Brick manufactured by high pressure in separate moulds and burned to the highest point of consolidation without vitrification.

Brick Hand Burned.

Section 512.- Brick manufactured by the "continuous stiff mud" or other process (not pressed) and burned almost to the point of vitrification and giving out a clear ringing sound when struck with metal.

Brick - Soft.

Section 513.- Sometimes called salmon brick; light colored, soft, crumbly brick: will not ring when struck, absorbs large per cent of moisture and of low crushing resistance.

Brick Push-Placed.

Section 514.- Brick laid in a bed of mortar and shoved or pushed to place in such a manner that all open space between the brick and the adjoining brick at the ends, sides and bottom are filled completely with mortar.

Building.

Section 515.- Any structure erected by art and fixed upon or in the soil, composed of several pieces and designed for use in the position in which so fixed.

Building Line.

Section 516.- The line between public and private space the lines given by the city engineer in the survey of the lots.
Cellar.
Section 517.- The lower story of any structure or building.

Columns.
Section 518.- Isolated supports of wood, stone, iron steel, etc., carrying the ends of beams, girders, lintels, or trusses. Stone, iron or steel columns may also carry arches.

Courts.
Section 519.- A court is the unoccupied space between building lines and lot lines other than a yard, free and open and unobstructed by appendages from the ground or roof of one story section to the sky.

Depth of Foundations.
Section 520.- The depths of foundations of any building shall be measured in such case from the level of the top of the curbing directly opposite said foundations.

Dwellings.
Section 521.- Buildings either detached or in blocks, used solely as a resistance and occupied by not more than two families.

External Walls.
Section 522.- Every outer or vertical enclosure of a building other than a party wall.

Factor of Safety.
Section 523.- The quotient obtained by dividing the breaking load of the safe load.

Factory.
Section 524.- Any premises where steam or other mechanical power is used in the aid of any manufacturing process there carried on.

First Story or Ground Floor.
Section 525.- The story, the floor of which is not more than eighteen inches below the sidewalk grade and the nearest
to the sidewalk; other stories to be numbered in regular succession counting upwards.

**Footing.**
Section 526.—Projecting course under base of foundation walls or piers, etc.

**Foundations.**
Section 527.—That part of the walls or supports, of a building that is below the grade line and next above the footings.

**Frame Buildings.**
Section 528.—Any building or structure having outer walls constructed in whole or in part of lumber or wooden frame work. All structures so constructed, whether covered with metal, veneered with less than eight inches of brick or terra cotta or not, shall be classed as frame buildings and subject to the prohibitions of this ordinance.

**Girder.**
Section 529.—The horizontal structural piece or pieces which support the ends of floor beams or joists or carry walls over openings.

**Grade.**
Section 530.—The surface of the ground, court, lawn yard, or sidewalks adjoining the building. The established grade is the grade of the street curb lines, fixed by the City and County of Denver, and the natural grade is the undisturbed natural surface of the ground. (The established sidewalk grade of the City and County of Denver is one quarter (1/4) of an inch rise per each foot of width, starting at and from the top of curb.)

**Height of Stories.**
Section 531.—The perpendicular distance from the top of the floor joist to the corresponding point in the next story.

**Height of Structure.**
Section 532.—Height of structure: The perpendicular distance of the highest point of the roof above the determined grade at building line.
Inspector.

Section 533.- The Building Inspector of the City and County of Denver, - See Title 1.

Incombustible Roofing.

Section 534.- Covered with not less than three (3) thicknesses roofing felt, and a coat of pitch and gravel not less than 100 pounds of pitch to the square of roofing, or with tin, corrugated or galvanized iron, or other fire resisting material with standing seam or lap joint.

Incombustible Stud Partition.

Section 535.- A stud partition plastered on both sides upon metal lath for the full height and fire-stopped between the studs with incombustible material eight (8) inches high from the floor and down from ceiling.

Incombustible Material.

Section 536.- When referred to as a structural material means brick, stone, terra cotta, concrete, iron steel, or sheet metal when used alone or in combination with one another.

Lawn.

Section 537.- The sided space in residence districts between the lot line and the building line, or between the lot line and the sidewalk or the sidewalk and the curb.

Length of Building.

Section 538.- Its greatest lineal dimension; usually measured in the direction of the bearing walls or girders.

Lintel.

Section 539.- The small beam or girder placed over a door or window opening, with the ends resting directly on the masonry.

Loads on Buildings.

Section 540.- (a) Dead Load.- Shall consist of the actual weight of walls, floors, roofs, partitions and all permanent construction.

(b) Live Load.- Shall consist of all imposed, fixed or
transient loads, other than dead, due to the occupancy of the building, and its exposure to the wind pressure.

**Lot Line.**

Section 541.- The line of demarcation between either public or private properties; a party line is the lot line between adjoining properties. The building line and lot line may be synonymous along public properties.

**Mortar - Cement.**

Section 542.- A mortar composed of one part of fresh cement to not more than three parts of clean sharp sand; (bank or pit) which is to be used immediately after mixing.

**Mortar - Cement & Lime.**

Section 543.- A mortar made of one part of cement, one part of thoroughly slacked lime and not more than six parts of clean, sharp sand.

**Mortar - Lime.**

Section 544.- A mortar composed of one part fresh burned lime to not more than four parts of clean, sharp sand, which shall not be used before being thoroughly slacked.

**Ordinary Construction.**

Section 545.- As used in this ordinance is meant the ordinary system of construction in which timbers or small size are used with no protection against fire.

**Owner.**

Section 546.- Any person or persons, company or corporation owning the building or the property under consideration or being built upon, for the purposes of this ordinance, guardians or trustees will be regarded as the owner.

**Offset.**

Section 547.- The offset or change in thickness of a wall shall be regarded as being made at the top of the floor beams or joints.

**Party Wall.**

Section 548.- (a) A wall built upon a dividing line for the joint use of two owners; (b) Every wall built or used as
a separation of two or more buildings.

**Partition Wall.**

Section 549.- Any interior wall other than a party wall.

**Piers.**

Section 550.- Isolated masses of brick work or masonry forming supports for arches, columns, lintels, trusses and similar structural parts.

**Post.**

Section 551.- A term which when used, means a wooden support, or column.

**Repairs.**

Section 552.- The reconstruction or renewal of any part of a structure or things therewith connected by which the structure shall be maintained in good order and repair without change in its fire risk, strength of sanitation, and not made for the purpose of converting the structure in whole or in part into a new one.

**Shed.**

Section 553.- A structure not exceeding one story in height, one or more of whose sides are open.

**Show Window.**

Section 554.- A store window in which goods are displayed.

**Skeleton Construction.**

Section 555.- As used in this ordinance shall apply only to such buildings wherein all loads and strains are transmitted all the way to the foundations by skeleton or frame work or rolled iron or steel. In such frame work the beams and girders shall be rivetted or bolted together at all junction points. All pillars shall be made of rolled iron or steel and their parts shall be rivetted or bolted connections. No cast iron lintels or columns shall be used in this construction. In all buildings of this construction where the walls are carried by the metal frame work the thickness of outside masonry shall not be less than 12 inches.
Street.
Section 556. - Shall include all public ways, alleys, lanes, courts, sidewalks and those parts of public places which form traveled ways for the public.

Tenement House.
Section 557. - A building which, or any part of which, is occupied or intended to be occupied, as a dwelling for three (3) or more families living independently and doing their own cooking on the premises; or by two (2) or more families above the first floor so living and cooking.

Veneer.
Section 558. - The outer facing of brick, stone, concrete, tile or metal of an enclosing wall used for the protection of the backing, but not estimated to add anything to its strength.

Width of a Building.
Section 559. - Its shortest lineal dimension, usually measured in the direction of the floor beams or joists.

TITLE XXV.
UNCLASSIFIED SECTIONS.
KEEP BUILDINGS IN REPAIR.

Section 560. - The owner, agent or occupants, having the care of buildings shall keep them in repair and when so notified by the Building Inspector shall make needed repairs and shall point up and fill with mortar or cement all cracks, splits, fissures or loose materials and other defects in the walls or supports, to enable the Building Inspector and others to judge of changing conditions should they occur in any part of any such building.

Moving Buildings or Heavyweights on streets,
Alleys or Sidewalks - License.

Section 561. - It shall be unlawful for any firm or person not licensed so to do to move any building along any of the streets or alleys of the city, or to move anything weighing
over 2,000 pounds or requiring the use of rollers, capstan or machinery of any kind upon any of the streets, or to hoist any heavy weight to the upper portions of buildings over any street, sidewalk or alley or places to which the public have access.

Moving Permit.

Section 562.—Before any building or heavy article as above shall be moved along any street or hoisted to or from any building as above the party engaging so to do shall first apply to the Building Inspector and obtain a permit therefor; said permit shall designate the streets and walks and to what extent they may be used for the purpose and the hours of the day during which such work shall be done; the fee for permits as above shall be one dollar for each permit.

Building May be Declared a Nuisance, When and How.—

Section 563.—Whenever in the opinion of the Building Inspector any building or part thereof, or any structure of like nature, is in a condition dangerous to the occupants or those passing, by reason of bad condition of walls, overloaded floors, defective heating apparatus, vibrations from machinery, defective flues, confined or cramped stairways, insufficient exits, narrow or dark passageways or from other like causes; said building or part thereof shall be deemed to be a public nuisance, and the Building Inspector may at any time require the owner, agent or occupant of any such building to make such repairs or take such steps as, in his opinion, may be necessary for the public safety.

Water Service Pipes.

Section 564.—All service pipes for the conveyance of water to any building or premises laid in any street, court, alley, avenue, or place where laid and in all instances at least five (5) feet below the surface of the ground. All service pipes from sizes one-half (1/2) inch to three-quarters (3/4) inch must be made of lead not less in weight than that called "extra strong."
The one-half \((1/2)\) inch pipe shall not weigh less than two and one-half \((2 1/2)\) pounds per foot, the five-eighths \((5/8)\) inch pipe shall not weigh less than three \((3)\) pounds per foot, the three-fourths \((3/4)\) inch pipe shall not weigh less than three and one-half \((3 1/2)\) pounds per foot. All service pipes from one \((1)\) inch to two and one-half \((2 1/2)\) inches must be made of lead not less in weight than that called "double extra strong."

The one \((1)\) inch pipe shall not weigh less than five and one-half \((5 1/2)\) pounds per foot, the one and one-fourth \((1 1/4)\) inch pipe shall not weigh less than six and three-fourth \((6 3/4)\) pounds per foot, the one and one-half \((1 1/2)\) inch pipe shall not weigh less than ten and one half \((10 1/2)\) pounds per foot, the two \((2)\) inch pipe shall not weigh less than eighteen \((18)\) pounds per foot, the two and one-half \((2 1/2)\) inch pipe shall not weigh less than twenty-six \((26)\) pounds per foot.

**Smoke Abatement.**

Section 565.—The emission of dense black or gray smoke from any smokestack or chimney used in connection with any stationery steam boiler, locomotive or furnace of any description within the City and County of Denver, in any Public building, apartment house, office building, hotel, theatre, place of public amusement, school building, institution, locomotive or any other structure in the City and County of Denver, or in any building used as a factory, or for any purpose of trade, or for any other purpose whatever except as a private residence shall be deemed and is hereby declared to be a public nuisance.

Before a Building Permit will be issued, the owner, architect or agent of any proposed building, before mentioned, must furnish the Boiler Inspector and the Building Department with a complete set of plans and specifications of the boilers, including setting of same, or smoke consumer proposed to be used in connection with boilers, and any other information desired by the Boiler Inspector and the Building Department, to assist in abating the smoke nuisance. The Boiler Inspector and the Building
Department must approve of said plans and specifications before said Building Permit will be granted.

If Owner Fails or Refuses to Make Repairs after Receiving Notice from Building Inspector.

Section 566.—In case the owner, agent or occupant of any dangerous building or structure shall fail or refuse to make such repairs within three days after the service of any notice so as to do by the Building Inspector, he with the approval of the Mayor, may enter upon the premises and employ such labor and purchase such materials as in his judgment may be necessary to make any such building or structure safe or prevent the same from becoming unsafe or dangerous; or he may with the approval of the Mayor demolish any such building or structure. Any party doing the work or any part thereof, or furnishing any materials thereof, under and by direction of the Building Inspector, may bring and maintain an action against the said owner in the same manner as if he or they had been employed to do the said work or furnish said materials by the owner or agent of the said building or structure. And the building inspector by and with the approval of the Mayor, may remove all occupants of any dangerous building and prevent the same from being occupied until the same has been made safe and secure.

Penalty.

Section 567.—Any person, firm or corporation who violates, disobeys, omits, neglects or refuses to comply with, or who resists or opposes the execution of, this ordinance, or any provision thereof, shall upon conviction thereof be fined in a sum not less than five dollars nor more than three hundred dollars, or imprisoned for not more than thirty days, or both fined and imprisoned. And each day that any person, firm or corporation shall violate, disobey, omit, neglect or refuse to comply with, or resists or opposes the execution of this ordinance, or any provision thereof, shall be deemed a separate offense. 
Ordinance Repealed.

Section 568.—All ordinances, and parts or ordinances, in conflict herewith are hereby repealed.

Publication in Pamphlet Form.

Section 569.—This ordinance shall take effect from and after its passage and approval and the publication thereof in pamphlet form, which said publication shall be in lieu of newspaper publication. A copy of such pamphlet publication shall be filed with the City and County Clerk and kept on record in his office.

Signed and approved by me this 31st day of April, A.D., 1905.

Attested by the undersigned with the corporate seal of the City and County of Denver.

[Signatures]

S. S. Hallman
President Board of Supervisors.

John Conlon
President Board of Aldermen.

Mayor.

Clerk.

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