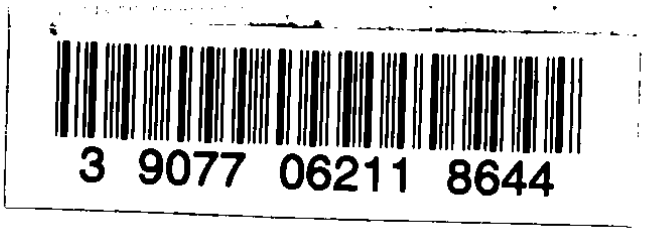
BUILDING CODE

OF THE

CITY OF ROCHESTER



COMPLIMENTS OF
Herbert N. Pierce
FIRE MARSHAL.

BUILDING CODE

OF THE

CITY OF ROCHESTER

Prepared by a Commission appointed by HON. HIRAM H. EDGERTON, Mayor, consisting of J. FOSTER WARNER, B. B. CUNNINGHAM, WILLIAM C. BARRY, FREDERICK GLEASON and HORACE F. ATWOOD, assisted by HERBERT W. PIERCE, Fire Marshal

Drafted by

B. B. CUNNINGHAM, Assistant Corporation Counsel

Adopted by the Common Council September 27th, October 25th, December 13th, 1910, and January 10th, 1911

CODE

TABLE OF CONTENTS

ARTICLE I.

GENERAL PROVISIONS.

Section 1. **Application of Code**—The following provisions constitute the Building Code of the city of Rochester, and provide for all matters which affect and relate to the construction, alteration and removal of buildings or structures erected or to be erected, in said city; provided, however, that in case a permit has been issued for the construction, alteration or removal of a building previous to the time this ordinance takes effect, and the construction, alteration or removal is commenced before the expiration of such permit, such building may be erected, altered or moved pursuant to the provisions of law and ordinance in effect when such permit was granted.

Sec. 2. **Alteration of Buildings.**

1. No provision of this ordinance shall be construed to require any change in, alteration of or addition to an existing building or structure, or the premises connected therewith, unless specifically stated to so apply.

2. A building now or hereafter constructed, or any portion thereof, shall not be altered or the use or occupation thereof changed so as to be in violation of any provision of this ordinance.

Sec. 3. **Construction**—This ordinance is hereby declared to be remedial, and to be construed liberally to bring about the greatest pub-

lic good and the least individual hardship. When special provisions are made for any kind or class of building, the other provisions of this ordinance not inconsistent shall, so far as applicable, apply to such kind or class of building for which special provisions are made.

Sec. 4. **Definitions**—Terms used in this ordinance have the following meanings:

1. BUREAU. The Bureau of Buildings.

2. COMMISSIONER. The Commissioner of Public Safety.

3. OWNER. Any person, firm or corporation owning or controlling property.

4. PUBLIC BUILDING. One containing an assembly room with fifteen hundred square feet or more of floor area, which has been or is to be used as a church, school, convention hall, dance hall or lodge room.

5. OFFICE BUILDING. One divided into rooms above the first story, and designed or used for business purposes, and no part of which is used for living purposes, excepting for the janitor and his family.

6. THEATER. A building, or portion thereof, generally used, or designed to be generally used, for the presentation of dramatic, operatic, theatrical or other representations, plays or performances, including representations of moving pictures.

7. HOTEL. A building, or portion thereof, designed or used for supplying food and lodging

to transient guests, and having a general dining room, and containing more than ten sleeping rooms above the first story.

8. LODGING HOUSE. A building, or portion thereof, designed or used for supplying shelter to lodgers, but in connection with which no public cafe or dining room is maintained.

9. TENEMENT HOUSE. A house, building, or portion thereof which is rented, leased, let or hired out to be used, or is designed or used as the home or residence of three families or more, living independently of one another, and doing their cooking upon the premises, or as the home or residence of three or more families living independently of one another, and having a general dining room, and in either case having a common right in the halls, stairways, yards, or any of them; but does not include a building not more than two stories in height, exclusive of attic, designed or used exclusively for residential purposes for not more than four separate and distinct families.

10. APARTMENT HOUSE. Same as tenement house.

11. DWELLING. A building designed or used exclusively for residential purposes for not more than four separate and distinct families; excepting a building more than two stories in height, exclusive of attic, if designed or used exclusively for residential purposes for three or more separate and distinct families, and

otherwise so constructed or used as to come within the definition of a tenement house.

12. FACTORY. A building, or portion thereof, designed or used to manufacture or assemble goods, wares and merchandise.

13. WAREHOUSE. A building, or portion thereof, designed or used for the storage of goods, wares and merchandise.

14. PUBLIC AND PRIVATE GARAGES. A public garage is a building or portion thereof, in which motor vehicles are repaired and stored, or kept for sale, for rental, for exhibition or demonstrating purposes. Any other garage is a private one.

15. ORDINARY CONSTRUCTION. Wood joists, with wood or iron posts and beams.

16. ALTERATION. Any change or addition in or upon any building affecting an external party or partition wall, chimney, floor, stairway or any structural portion.

17. ORDINARY REPAIRS. The reconstruction or renewal of any existing part of a building or of its fixtures or apparatus by which its fire risk, strength or sanitation is not affected or modified.

18. MEASUREMENT OF BUILDINGS. The height is the perpendicular distance measured in a straight line from the curb level to the highest point of the roof beams; the length is the greatest linear dimension and the width is the linear dimension next to the greatest.

19. STORY. The perpendicular distance from the top of beams or joists in one floor to the corresponding point in floor or roof next above, and in case of a basement from the floor to the top of beams or joists in floor next above.

20. CELLAR. A space of which one-half or more of the height from the floor to the ceiling is below the highest level of the street or earth level adjoining.

21. BASEMENT. A space of which the height from floor to ceiling is partly but not less than one-half below the highest level of the street or earth adjoining.

22. NUMBERING OF STORIES. The first story is one the floor of which is first above the basement or cellar. Other stories are numbered in regular succession counting upwards.

23. FOUNDATION WALLS. All those below the floors or joists which are on or next above the grade line.

24. FOOTING COURSE. Projecting course or courses under base of foundation wall.

25. RETAINING WALL. One used for the support and maintenance of a body of earth.

26. BEARING WALL. One on which joists, beams, trusses or girders rest.

27. PARTY WALL. One used, or built in order to be used, as a separation of two or more buildings. A wall built upon dividing line between adjoining premises for their common use.

28. EXTERNAL WALL. Every outer wall or vertical enclosure of a building other than a party wall.

29. DIVISION WALL. Any interior wall in a building.

30. CURTAIN WALL. Any non-bearing wall between columns or piers.

31. THICKNESS OF WALL. The minimum of thickness of any wall.

32. REINFORCED CONCRETE. Approved Portland concrete which has been reinforced by metal in some form so as to develop the compressive strength of the concrete.

33. PRESSED FRONT BRICK. Manufactured by high pressure in separate moulds and burned to the highest point of consolidation without vitrification.

34. COMMON HARD BRICK. Manufactured by pressure in separate moulds and burned almost to a point of vitrification, and giving out a clear ringing sound when struck with metal.

35. COMMON SOFT BRICK. Called "Salmon brick," will not ring when struck with metal.

36. COURT. An open unoccupied space enclosed on less than four sides by the walls of the building in which constructed extending from the roof down through one or more stories, whether covered by a skylight or not; also such a space otherwise constructed as above and enclosed on four sides by the walls of the build-

ing in which constructed when the least horizontal dimension thereof is more than ten feet.

37. LIGHT OR AIR SHAFT. An open unoccupied space, whether covered by a skylight or not, enclosed on all sides by the walls of the building in which constructed, extending from the roof down through one or more stories, the least horizontal dimension of which is ten feet or less.

38. VENT SHAFT. An open unoccupied space, whether covered by a skylight or not, enclosed on more than one side by the walls of the building in which constructed, extending from the roof down through one or more stories, the least horizontal dimension of which is ten feet or less, and which is used solely to ventilate or light a water closet compartment or bathroom.

39. PERSON. Shall, in all proper cases, be held to include and be coextensive with the words, persons, company, joint stock association and corporation.

40. APPROVED. Approved by the bureau.

ARTICLE II.

GENERAL DUTIES AND POWERS OF BUREAU.

Section 15. **Duties and Powers of the Bureau**—The bureau is charged with the enforcement of the laws of the state and ordinances of the Common Council relating to the erection and inspection of buildings.

The Commissioner, Fire Marshal and all employees of the bureau have the power to enter into and examine buildings and structures of every description, and all lots and enclosures to see that the laws of the state and ordinances of the Common Council are complied with, and to prevent the erection and maintenance of buildings and structures which do not conform to law. They have full power to pass upon any question arising under the provisions of this ordinance relative to the plans, manner of construction, or materials to be used in the erection, alteration, repair or moving of buildings. They may order and compel the suspension of any work, and prohibit the use of any material or machinery in violation of the provisions of this ordinance, and they may make such tests as they deem necessary to determine the safety of any building, material or machinery which it becomes their duty to inspect. No person shall continue the erection, occupation or use of any building, or use of any machinery in or about any building, after it has been forbidden in writing by the Commissioner, Fire Marshal or an employee of the bureau.

Sec. 16. **Application for Permit**—Before any owner, agent, contractor, builder or other person shall erect, alter or move any building or structure, or commence the work therefor, or commence the excavation therefor, he shall make application at the office of the bureau for a permit, furnishing a written statement of the proposed location of the building,

its location on the premises, its street number as nearly as the same can be ascertained, which shall be conspicuously displayed on the premises during building operations, its character and use, the full number and address of the owner, and whether any existing building is to be demolished; accompanied by a survey or plan showing the lines of the lot and the exact location of the proposed building thereon, and of any other buildings thereon, and accompanied also by a copy of the general drawings, plans and specifications of such proposed erections or alterations, showing sufficiently the character and extent thereof. Said plans shall be left with the bureau a sufficient length of time for their proper examination and approval, and the plans of all buildings over ten thousand dollars in value shall be filed permanently with the bureau, but such plans when filed shall be kept exclusively for the use of the bureau and shall not be for public inspection. Plans and specifications of any building erected or altered hereunder shall be open to the inspection of the Fire Marshal, or any authorized employee of the bureau, at all reasonable times, and shall at all times during working hours be kept within the building under alteration or construction, subject to such examination, and no person shall make any change in such plans or in the structural parts of such building or alteration, without the consent of the bureau.

The provisions of this section do not apply to ordinary repairs as defined herein, for which

no permit is necessary, though notice to the bureau is advisable in all cases.

Ordinary repairs defined, Sec. 4, *S.* 17.
Bureau to be notified of test of soil, Sec. 65, *S.* 3.
Bureau to be notified when test piles driven, Sec. 70, *S.* 7.
Bureau to be notified of erection or alteration of chimneys, Sec. 164, *S.* 14.
Bureau to be notified of erection or alteration of fireplaces, Sec. 166, *S.* 5.
Bureau to be notified of installation of hot water, etc., Sec. 167, *S.* 12.

Sec. 17. **Permits and Revocation**—If it shall appear from said application and plans that the laws of the state and ordinances of the city are, and will be complied with, a permit may be granted by the bureau authorizing such erection, alteration or moving. Such permit shall contain the name and address of the owner or owners of the building, the date of granting the permission, and the time when the same shall expire, together with the estimated cost of said building, its character and use, dimensions and location on the premises. No such permit shall be in force after the expiration of six months from the date when granted, unless within that time the person to whom the permit was issued shall have commenced the erection or alteration authorized by said permit. A correct record shall be kept of all permits issued. The bureau has full power to revoke or cancel

any permit or certificate of approval granted, in case the person to whom the same is issued fails to comply with the laws of the state or the provisions of this ordinance.

Sec. 18. **Demolishing Buildings**—Before any person, owner, agent or contractor shall commence to demolish any building, structure, wall, platform, staging or flooring, he shall give not less than twenty-four hours' notice to the bureau of such intended demolition. In demolishing any building, story after story shall be completely removed, and the brick, timbers and other structural parts of each story lowered to the ground immediately upon displacement. Every contractor or other person in repairing or tearing down or removing debris from any building, shall keep all such debris thoroughly dampened with water so as to prevent the dust occasioned thereby from becoming a nuisance in the neighborhood where such building is located.

Sec. 19. **Dangerous Structures**—Every building or part thereof which shall appear to the bureau to be especially dangerous by reason of bad condition of walls, over-loaded floors, defective construction and lack of guards against fire, or other causes, shall be held to be unsafe; and the Commissioner, Fire Marshal, or any employee of the bureau shall immediately notify the owner or lessee to cause the same to be repaired, and shall also affix a notice of the dangerous character of the structure in a con-

spicuous place on the exterior wall of such building, and no person shall remove or deface such notice so affixed. The bureau may order that no person shall be permitted to enter, occupy or use such building until the same shall have been made safe, and may post such order in a conspicuous place on the exterior wall of such building, and thereafter until such building shall have been made safe, no person shall enter, occupy or use the same, except for the purpose of repairing and making the same safe. The owner or party having an interest in such unsafe building or structure, upon being notified thereof in writing by the bureau, shall immediately cause the same to be made safe and secure; and if such building or part thereof shall be used for any purpose requiring a license therefor, the Mayor may revoke said license in case of failure to comply with the notice served, as herein provided. When the public safety requires immediate action, the Commissioner, Fire Marshal, or an employee of the bureau, may enter upon the premises with such assistance as may be necessary, and cause the said structure to be made secure or taken down without delay at the expense of such owner or party interested.

Sec. 20. **Buildings in Violation of Law**—Every building, structure or part thereof, erected, maintained or placed contrary to the provisions of the laws of the State of New York, or the provisions of this ordinance, shall be deemed to be a common nuisance, and the bur-

eau may order the same removed; and in case the owner thereof shall neglect or refuse to remove such building, structure, or part thereof, within five days after notice so to do given personally or by mail, or if name of owner or his residence cannot be ascertained by leaving with occupant, or if unoccupied by posting on premises, the bureau may remove such building, structure, or part thereof, at the expense of the owner.

ARTICLE III.

CLASSIFICATION AND STYLE OF CONSTRUCTION OF BUILDINGS.

Section 31. **Classification of Buildings**—Buildings are classified as follows:

CLASS I. Buildings used for the sale, storage, manufacture or assembling of goods, wares and merchandise, and public livery, boarding or sales stables and public garages.

CLASS II. Office buildings and public buildings as defined in this ordinance.

CLASS III. Brick buildings used as dwellings, tenement houses, apartment houses, hotels, asylums, hospitals, or for other residence purposes.

CLASS IV. Dwellings of frame construction, private stables and private garages.

CLASS V. Theaters.

Sec. 32. **Style of Construction.**

1. Fireproof construction is required in

(a) Every building over six stories in height.

(b) Every building intended to be used in whole or in part as a theater, and every building intended to be used to give access to a theater, excepting in both instances a theater which has accommodations for less than three hundred persons.

(c) Every building over four stories in height intended to be used in whole or in part as a tenement house.

(d) Every building over three stories in height intended to be used in whole or in part as a hotel.

(e) Every building over two stories in height intended to be used in whole or in part as a school, hospital or public building.

(f) Engine rooms in buildings of classes I, II and V, and in tenement houses, hotels, asylums and hospitals.

(g) Boiler rooms containing boilers carrying fifteen pounds or more pressure.

Fireproof construction, Sec. 261.

2. Mill construction is permitted only in buildings not required to be constructed fireproof.

Mill construction, Sec. 188.

3. Ordinary construction is permitted only in buildings not required to be constructed fireproof, and not exceeding five stories in height or seventy feet in height.

Ordinary construction, Sec. 4, *S.* 15.

4. Frame construction is permitted only in buildings not required to be constructed fire-

proof, and not exceeding two stories in height, exclusive of basement and attic.

Frame construction, Secs. 307-317.
Not permitted within fire limits, Sec. 309.

ARTICLE IV

QUALITY AND STRENGTH OF MATERIALS.

Section 43. **Quality of Materials**—The quality of materials used in all buildings shall be as follows:

1. *Steel.* All structural steel shall have an ultimate tensile strength of from fifty-four thousand to sixty-four thousand pounds per square inch. Its elastic limit shall not be less than thirty-two thousand pounds per square inch and a minimum elongation of not less than twenty per centum in eight inches. Rivet steel shall have an ultimate strength of from fifty thousand to fifty-eight thousand pounds per square inch.

2. *Cast Steel.* Shall be made of open earth steel, containing one-quarter to one-half per centum of carbon, not over eight one-hundredths of one per centum of phosphorous, and shall be practically free from blow holes.

3. *Wrought Iron.* All wrought iron shall be uniform in character, fibrous, tough and ductile. It shall have an ultimate tensile resistance of not less than forty-eight thousand pounds per square inch, an elastic limit of not less than twenty-four thousand pounds per

square inch, and an elongation of twenty per centum in eight inches, when tested in small specimens.

4. *Cast Iron.* Shall be of good foundry mixture, producing a clean, tough, gray iron. Sample bars, five feet long, one inch square, cast in sand moulds, placed on supports four feet six inches apart, shall bear a central load of four hundred and fifty pounds before breaking. Castings shall be free from serious blow holes, cinder spots and cold shuts. Ultimate tensile strength shall not be less than sixteen thousand pounds per square inch when tested in small specimens.

5. *Timbers.* All timbers and wood beams shall be of good sound material, free from rot, large and loose knots, shakes or any imperfection whereby the strength may be impaired, and be of such size and dimensions as the purposes for which the building is intended required.

6. *Brick.* The brick shall be good, hard, well burnt brick. When old bricks are used in any wall they shall be thoroughly cleaned.

7. *Concrete.* Concrete for foundations shall be made of at least one part of cement, two parts of sand and five parts of clean, broken stone free from dirt and dust, of such size as to pass in any way through a two-inch ring, or good clean gravel may be used in the same proportion as broken stone. The cement, sand and stone or gravel shall be measured and

mixed as is prescribed for mortar. All concrete when in place shall be properly rammed and allowed to set without being disturbed.

8. *Cement Mortar.* Cement mortar shall be made of cement and sand in the proportion of one part of cement and not more than three parts of sand, and shall be used immediately after being mixed. The cement and sand are to be measured and thoroughly mixed before adding water. Cements must be very finely ground and free from lumps. Cements classed as Portland cement shall be considered to mean such cement as when tested neat, after one day set in air, will be capable of sustaining without rupture a tensile strain of at least one hundred and twenty pounds per square inch, and after one day in air and six days in water be capable of sustaining without rupture a tensile strain of at least three hundred pounds per square inch. Cements other than Portland cement shall be considered to mean such cement as when tested neat, after one day set in air, will be capable of sustaining without rupture a tensile strain of at least sixty pounds per square inch, and after one day set in air and six days in water be capable of sustaining without rupture a tensile strain of at least one hundred and twenty pounds per square inch. Said tests shall be made under the supervision of the bureau at such times as it may determine, and a record of all cements answering the above requirements shall be kept for public information.

9. *Cement and Lime Mortar.* Cement and lime mortar mixed shall be made of one part of lime, one part of cement, and not more than three parts of sand to each.

10. *Lime Mortar.* Lime mortar shall be made of one part of lime and not more than four parts of sand. All lime used for mortar shall be thoroughly burnt, of good quality, and properly hydrated before it is mixed with the sand.

11. *Sand.* The sand used for mortar shall be clean, sharp grit sand, free from loam or dirt, and shall not be finer than standard samples kept in the office of the bureau.

12. *Plaster.* Plaster which has lime as an ingredient will not be classed as a fire or water resisting plaster. When plaster is used in connection with fireproof or semi-fireproof construction, gypsum or asbestos plaster shall be used except that the finishing coat, if white, may be an ordinary putty coat.

Sec. 44. **Tests of New Materials**—New structural material of whatever nature shall be subjected to such tests to determine its character and quality, as the bureau shall direct; the tests shall be made under the supervision of the bureau, or it may order the architect or owner to file a certified copy of the results of such tests as it may direct.

Sec. 45. **Computations for Strength of Materials.**

1. *Dimensions.* The dimensions of each piece or combination of materials required shall be ascertained by computations according to the rules prescribed by this ordinance.

2. *Weights.* In computing the weight of walls, brick work shall be deemed to weigh one hundred and fifteen pounds per cubic foot; sand, stone, white marble, granite and other kinds of building stone shall be deemed to weigh one hundred and seventy pounds per cubic foot.

3. *Factors of Safety.* When the unit stress for any material is not prescribed in this ordinance the relation of allowable unit stress to ultimate strength shall be as one to four for metals, subjected to tension or transverse stress, as one to six for timber, and as one to ten for natural or artificial stones and brick or stone masonry. But whenever working stresses are prescribed in this ordinance varying the factors of safety hereinabove given, the said working stresses shall be used.

Sec. 46. **Working Stresses**—The safe carrying capacity of the various materials of construction, except in the case of columns, shall be determined by the following working stresses in pounds per square inch of sectional area.

COMPRESSION (DIRECT).

	Pounds
Rolled steel	16,000
Cast steel	16,000
Wrought iron	12,000
Cast iron (in short blocks)	16,000
Steel pins and rivets (bearing)	20,000
Wrought iron pins and rivets (bearing)	15,000

	With Grain Pounds	Across Grain Pounds
Oak	900	800
Yellow pine	1,000	600
White pine	800	400
Spruce	800	400
Locust	1,200	1,000
Hemlock	500	500
Chestnut	500	1,000
Concrete (Portland) cement 1; sand 2; stone 5		208
Concrete (Portland) cement 1; sand 2; stone 4		230
Concrete, Buffalo or Akron, or equal, cement 1; sand 2; stone 4		125
Concrete, Buffalo or Akron, or equal, cement 1; sand 2; stone 5		111
Rubble—stone work in Portland cement mortar		140
Rubble—stone work in Buffalo or Akron, or equal, cement mortar		111
Rubble—Stone work in lime and cement mortar		97

	Pounds
Rubble—stone work in lime mortar	70
Brick work in Portland cement mortar; cement 1; sand 3	250
Brick work in Buffalo or Akron, or equal, cement mortar; cement 1; sand 3	208
Brick work in lime and cement mortar; cement 1; lime 1; sand 6	160
Brick work in lime mortar; lime 1; sand 4	111
Granite (according to test)	1,000 to 2,400
Greenwich stone	1,200
Local limestone	1,300
Limestones (according to test)	700 to 2,300
Marbles (according to test)	600 to 1,200
Sandstones (according to test)	400 to 1,600
Medina	2,000
Brick, common hard	300
Slate	1,000

TENSION (DIRECT).

	Pounds
Rolled steel	16,000
Cast steel	16,000
Wrought iron	12,000
Cast iron	3,000
Yellow pine	1,200
White pine	800
Spruce	800
Oak	1,000
Hemlock	600

SHEAR.

	Pounds
Steel web plates	9,000
Steel shop rivets and pins	10,000
Steel field rivets	8,000
Steel field bolts	7,000
Wrought iron web plates	6,000
Wrought iron shop rivets and pins	7,500
Wrought iron field rivets	6,000
Wrought iron field bolts	5,500
Cast iron	3,000

	With Fiber Pounds	Across Fiber Pounds
Yellow pine	70	500
White pine	40	250
Spruce	50	320
Oak	100	600
Locust	100	720
Hemlock	40	275
Chestnut	...	150

SAFE EXTREME FIBER STRESS.

(Bending.)

	Pounds
Rolled steel beams	16,000
Rolled steel pins, rivets and bolts	20,000
Riveted steel beams (net flange section)	14,000
Rolled wrought iron beams	12,000
Rolled wrought iron pins, rivets and bolts	15,000
Riveted wrought iron beams (net flange section)	12,000
Cast iron, compression side	16,000

	Pounds
Cast iron, tension side	3,000
Yellow pine	1,200
White pine	800
Spruce	800
Oak	1,000
Locust	1,200
Hemlock	600
Chestnut	800
Granite	180
Local limestone	150
Slate	400
Marble	120
Medina	100
Bluestone, North River	300
Concrete (Portland) cement 1; sand 2; stone 4	30
Concrete (Portland) cement 1; sand 2; stone 5	20
Concrete (Buffalo or Akron, or equal) cement 1; sand 2; stone 5	10
Concrete (Buffalo or Akron, or equal) cement 1; sand 2; stone 4	16
Brick (common)	50
Brick work (in cement)	30

Working stresses of reinforced concrete, Sec. 239.

Sec. 47. **Working Stresses for Columns**—The working stresses per square inch of sectional area for all steel, cast iron, wrought iron or wood columns having flat ends, shall not exceed those given in the following table:

When the Length Divided by Least Radius of Gyration Equals	WORKING STRESSES PER SQUARE INCH OF SECTION		
	Cast Iron, Pounds	Steel, Pounds	Wrought Iron Pounds
120		8,240	4,400
110		8,820	5,200
100		9,400	6,000
90		9,980	6,800
80		10,560	7,600
70	9,200	11,140	8,400
60	9,500	11,720	9,200
50	9,800	12,300	10,000
40	10,100	12,880	10,800
30	10,400	13,460	11,600
20	10,700	14,040	12,400
10	11,000	14,620	13,200

And in like proportion for intermediate ratios.

When the Length Divided by the Least Diameter Equals	WORKING STRESSES PER SQUARE INCH OF SECTION		
	Long Leaf Yellow Pine, Pounds	White Pine, Norway Pine, Spruce, Pounds	Oak, Pounds
30	460	350	390
25	550	425	475
20	640	500	560
15	730	575	645
12	784	620	696
10	820	650	730

And in like proportion for intermediate ratios.

Five-eighths the value given for white pine shall also apply to chestnut and hemlock posts.

For locust posts use one and one-half the value given for white pine.

Columns and compression members should not be used having an unsupported length of greater ratios than given in the tables.

Sec. 48. **Hollow Blocks**—Hollow hard burned clay blocks and poured cement hollow tile blocks for use for foundation, external or bearing walls, when permitted to be so used under this Code, shall have a crushing strength of at least three hundred pounds per square inch of total area, including hollow spaces, shall have at least one intermediate web not less than three-fourths of an inch in thickness, and every other web at least seven-eighths of an inch in thickness. The aforesaid blocks and tile if used for non-bearing walls shall be of a strength, dimensions and construction approved by the bureau.

Strength of concrete blocks, Sec. 246.
Foundation walls, Sec. 67, *S.* 2.
Dwellings of hollow blocks, Sec. 315.

Sec. 49. **Columns Eccentrically Loaded**—The stresses of every column which is eccentrically loaded shall be computed. The sum of stresses due to the eccentricity added to all other stresses shall in no case exceed the working stresses stated in this ordinance. Every eccentric load of a column shall be considered to be distributed equally over the entire area

of that column at the next point below at which the column is securely braced laterally in the direction of the eccentricity.

Sec. 50. **Strength of Temporary Supports**—Every temporary support placed under any wall, girder or beam, during the erection, alteration or repairing of any building or structure, or any part thereof, shall be built of sufficient strength to safely carry the load to be placed thereon.

Sec. 51. **Reasonable Modifications Allowed**—Outside of the fire limits, when any brick, stone or concrete building is to be erected of a class that could under this code be of frame construction, the bureau is authorized to allow reasonable modifications of this code in consideration of incombustible material being used for walls.

Frame construction, Secs. 307-317.

ARTICLE V.

EXCAVATIONS AND FOUNDATIONS.

Section 62. **Excavations for Buildings.**

1. The person causing any excavation for a building to be made shall have the same properly guarded and protected so as to prevent it from becoming dangerous to life and limb; and wherever necessary to prevent the adjoining earth from caving in, he shall properly sheath pile it and at his own expense erect a retaining wall to support the adjoining earth. Such

retaining wall shall be carried to the level of the adjoining earth and properly protected by coping, and the thickness thereof at its base shall in no case be less than one-fourth of its height.

2. Whenever an excavation of either earth or rock for building or other purposes shall be carried to the depth of more than ten feet below the top of curb on the nearest street, the person causing such excavation to be made, shall at his own expense preserve any contiguous wall or structure from injury, and support the same by proper foundations so that the said wall or structure shall remain practically as safe as before such excavation was commenced. If the necessary license is not accorded to the person making such excavation by the adjoining owner, then it shall be the duty of such adjoining owner to make the contiguous wall or structure safe, and support the same by proper foundations, so that adjoining excavations may be made, and he shall be permitted to enter upon the premises where such excavation is being made for that purpose, when necessary.

3. If such excavation shall not be carried to a depth of more than ten feet below the curb, the owner of such contiguous wall or structure, shall at his own expense protect and preserve the same from injury as above described.

4. In case an adjoining wall is intended to be used by the person causing the excavation to be made, he shall at his own expense preserve

such wall from injury, and support the same by proper foundations, so that it shall remain practically as safe as before the excavation was commenced.

Sec. 63. **Excavations Under Street.**

1. Permission must be obtained pursuant to the charter to use space under the street.

2. A sufficient stone or brick wall or brick arches between steel beams shall be built to retain the roadway of the street; side, end or party walls of sufficient thickness shall extend under the sidewalk to such walls.

3. The covering of excavations under the street and all supports shall be made entirely of incombustible material.

4. Circular openings not to exceed twenty-four inches in diameter may be placed in the outer edges of the sidewalk to receive coal. The outer edges of all openings shall be not more than eighteen inches from the inside edge of the curb, and they must have proper incombustible covering.

5. Iron covers shall have a rough surface.

6. All covers and covering must be rabbeted flush with the sidewalk.

Sec. 64. **Connection With Sewers**—A connection with the street sewer, when the same exists, shall be established before beginning the work of laying foundations. Before the walls of buildings are carried up above the foundation walls, the cellars shall be connected

through drain tiles and catch basins with the street sewer. Should there be no sewer in the street, or if the cellars are below the sewer or ground water level, then provision shall be made to prevent water accumulating in the cellars to the injury of the foundations or the occupancy of the basement cellar.

Sec. 65. **Bearing Capacity of Soil.**

1. When no test of the sustaining power of the soil is made, different soils, excluding mud, at the bottom of the footings shall be deemed safely to sustain the following loads to the superficial foot, namely: Soft clay, one ton per square foot; ordinary clay and sand together, in layers wet and springy, two tons per square foot; loam, clay or fine sand, firm and dry, three tons per square foot; very firm coarse sand, stiff gravel or hard clay, six tons per square foot; hardpan, ten tons per square foot.

2. When a doubt arises as to the safe sustaining power of the earth upon which a building is to be erected, the bureau 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.

3. When a test is made of the sustaining power of the soil, the bureau shall be notified and a record of the test shall be filed.

Sec. 66. **Foundations.**

1. The foundations of every building shall be laid on solid earth or level rock, except that when solid earth or rock are not obtainable,

such foundations may be laid upon piles or ranging timbers.

2. Every building excepting those erected upon solid rock shall have foundations of brick, stone, iron, steel or Portland cement concrete laid not less than four feet below the surface of the earth or the solid ground or level surface of rock, or upon piles or ranging timbers where solid earth or rock is not found.

3. When metal is incorporated in or forms part of a foundation it shall be thoroughly protected from rust by paint, asphaltum, concrete, or by such other materials and in such manner as may be approved by the bureau. When footings of iron or steel for columns are placed below water level, they shall be similarly coated or enclosed in concrete for preservation against rust.

4. When foundations are built in wet soil, the trenches in which the work is being executed must be kept free from water until the masonry has set.

Sec. 67. **Foundation Walls.**

1. Except as hereinafter permitted, foundation walls shall be built of stone or brick with cement mortar, Portland cement concrete, iron or steel, provided that foundations for buildings of class IV, and for buildings not more than two stories in height, may be built of stone or brick with lime mortar. If built of Portland cement concrete they shall be at least six inches thicker than the wall next above

them to a depth of ten feet below the curb level; and for every additional ten feet or part thereof deeper, they shall be increased four inches in thickness.

Definitions, Sec. 4, *S.* 23.
Concrete for foundation walls, Sec. 43, *S.* 7.
Cement mortar, Sec. 43, *S.* 8.
Lime mortar, Sec. 43, *S.* 9.
Thickness of foundation walls, Sec. 85.

2. Foundation walls of buildings of frame construction may be built of stone not less than eighteen inches in thickness, or of brick, concrete or concrete block, hollow hard burned clay block filled solid with Portland cement concrete, or poured cement hollow tile block filled solid with Portland cement concrete, in each case not less than twelve inches in thickness to the grade, and not less than eight inches in thickness to the under side of the sill. Such foundation walls above grade may be constructed of eight inch hollow hard burned clay blocks or poured cement hollow tile block laid in Portland cement mortar, if faced with four inches of brick and properly bonded.

Strength of hollow blocks, Sec. 48.
Strength of concrete blocks, Sec. 246.
Frame construction, Secs. 307-317.

3. External retaining walls shall be constructed of sufficient thickness to safely support the outside pressure when earth embankments are adjacent to any foundation or curb wall.

4. All stone walls twenty-four inches or less in thickness shall have at least one header extending through the wall in every three feet in height from the bottom of the wall, and in every three feet in length; and if over twenty-four inches in thickness, shall have one header for every six superficial feet on both sides of the wall, laid on the top of each other to bond together, and running into the wall at least two feet. All headers shall be at least twelve inches in width, and eight inches in thickness, and consist of good flat stones. No stone shall be laid in such walls in any other position than on its natural bed. No stone shall be used that does not bond or extend into the wall at least six inches. Stones shall be firmly bedded in cement mortar, and all spaces and joints thoroughly filled.

5. A foundation wall built of concrete, except a trench wall, shall have a form placed on each side thereof.

Concrete construction, Secs. 223-241.

Sec. 68. **Footings.**

1. The footing or base course shall be of stone or concrete, or both, or of concrete and stepped up brick work of sufficient thickness and area to safely bear the weight to be imposed thereon.

Definitions, Sec. 4, *S.* 24.

2. If the footings or base course be of concrete, the concrete shall be not less than nine inches thick; if of stone, the stone shall be not less than eighteen by twenty-four inches, and

at least four inches in thickness for walls, and not less than six inches in thickness if under piers, columns or posts.

3. The footing or base course whether formed of concrete or stone shall be at least eight inches wider than the bottom width of walls, and at least six inches wider on all sides than the bottom width of the said piers, columns or posts. If the super-imposed load is such as to cause undue transverse strain on a footing projecting six inches, the thickness of such footing is to be increased so as to carry the load with safety to the satisfaction of the bureau, by adding extra course or courses of above dimensions.

4. Foundation walls of buildings of frame construction built of brick, concrete, concrete block, hollow hard burned clay block, or poured cement hollow tile block shall rest on footings of stone or concrete not less than eight inches in thickness and extending four inches wider than the wall.

Frame construction, Secs. 307-317.

5. If stepped up footings of brick are used in place of stone above the concrete, the offsets if laid in single courses shall each not exceed one and one-half inches, or if laid in double courses then each shall not exceed three inches, off-setting the first course of brick work, back one-half the thickness of the concrete base, so as to properly distribute the load to be imposed thereon.

6. All base stones shall be well bedded and laid crosswise edge to edge.

7. Grillage beams of wrought iron or steel resting on a proper concrete bed, may be used. Such beams must be provided with separators and bolts, enclosed and filled solid between with concrete and of such size and so arranged as to transmit with safety the superimposed loads.

8. For small structures and for small piers sustaining light loads, the bureau may in its discretion allow a reduction in the thickness and projection for footings or base courses.

Sec. 69. **Piers for Foundations.**

1. When foundations are carried down through earth by piers or stone, brick or concrete in caissons, the load of the same shall not be more than fifteen tons to the square foot when carried down to rock; ten tons to the square foot when carried down to firm gravel or hard clay; eight tons to the square foot in open caissons or sheet pile trenches when carried down to rock.

2. If the nature of the ground and the character of the building is such as to make it necessary or advisable, the bureau may require the use of isolated piers instead of a continuous wall as a support for the building; in such case inverted arches resting on a proper bed of concrete shall be turned between the piers, and the thrust of the outer piers shall be taken up by suitable wrought iron or steel rods and plates.

Such piers and arches shall be designed to transmit with safety the superimposed loads.

Sec. 70. **Piles for Foundations.**

1. Piles intended to sustain a wall, pier or post shall be spaced not more than thirty-six nor less than twenty inches on centers, and they shall be driven to a solid bearing, if practicable, and the number of such piles shall be sufficient to support the superstructure proposed.

2. No pile shall be used of less dimension than five inches at the small end and ten inches at the butt for piles of twenty feet or less in length, and twelve inches at the butt for piles more than twenty feet in length.

3. When a pile is not driven to refusal, its safe sustaining power shall be determined by the following formula: Twice the weight of the hammer in tons multiplied by the height of the fall in feet, divided by least penetration of pile under the last blow in inches, plus one.

4. No pile shall be weighed with a load exceeding forty thousand pounds.

5. Piles shall be cut off so that the tops are always below the level of mean low water. When required, concrete shall be rammed down in the interspaces between the heads of piles to a depth and thickness of not less than twelve inches and for one foot in width outside of the piles.

6. When ranging and capping timbers are laid on piles for foundations, they shall be of hard wood not less than six inches thick, and

properly joined together, and their tops laid below the level of mean low water.

7. The bureau shall be notified of the time when test piles will be driven.

ARTICLE VI.

WALLS AND PIERS.

Section 81. **Walls.**

1. Buildings shall be enclosed on all sides with independent or party walls of brick, stone, concrete or, when specifically permitted herein, of concrete blocks or hollow hard burned clay blocks.

2. No wall shall be carried up at any time more than one story in advance of any other portion of the walls of a building being erected of masonry construction.

3. Walls and skeleton framework must be kept securely braced and otherwise protected against the effects of the weather during all building operations.

4. Walls must have proper protection against the effects of frost, and frozen cement mortar shall not be used in any mason work.

5. No soft brick shall be used in any part of a building exposed to the weather, or in any internal or external piers, or in any part of a wall where there is greater height than forty feet of wall above said brick. The bond of brick work shall be formed by laying one course of headers for at least every seven courses of stretchers.

Quality of bricks, Sec. 43, *S.* 6;
Stresses of, Sec. 46.

6. When face brick is used of a different thickness from the brick used for the backing, the courses of the exterior and interior brick work shall be brought to a level bed at intervals of not more than ten courses in height of the face brick, and the face brick shall be properly tied to the backing by a heading course of the face brick.

7. Except in freezing weather, bricks shall be thoroughly wet before laying.

Walls defined, Sec. 4, *S.* 25-30;
Weight of walls, Sec. 45, *S.* 2;
Foundation walls, Secs. 67, 68;
Use of concrete blocks, Sec. 241;
Use of hollow blocks, Sec. 315.

Sec. 82. **Hollow Walls.**

1. In walls that are built hollow, the same quantity of stone, brick or concrete shall be used in their construction as if they were built solid.

2. No hollow wall shall be built unless the parts of the same are connected by proper ties either of brick, stone or iron placed not over twenty-four inches apart.

3. No hollow wall shall be more than forty feet in length without cross walls, angles, piers or buttresses.

4. No hollow wall shall be more than two stories in height, nor more than thirty feet in height from the foundation walls.

See concrete blocks, Sec. 241.

Sec. 83. **Hollow Lining for Walls.**

1. The inside four inches of any wall may be built of hard burned hollow brick properly tied and bonded by means of full solid header courses every sixth course into the wall, and of the dimensions of the ordinary bricks.

2. When hollow tile blocks or porous terra cotta blocks are used as lining or furring for walls, they shall not be included in the measurement of the thickness of such walls.

Sec. 84. **Wall Supports.**

1. It shall be unlawful to erect, construct or build any rear, front, party, division or partition masonry wall upon wooden girders, rafters or lintels, or to support any such wall by any wooden support whatever, but all such supports shall be of iron, brick or stone, and shall rest on sufficient stone or metal bearing blocks.

2. Lintels supporting stone or brick work must bear on stone, brick or iron of sufficient strength.

Sec. 85. **Thickness of Walls.**

1. In the use of the tables in this section, a story is to be considered as fifteen feet for basement, or cellar when there is no basement; sixteen feet for first story; fourteen feet for second story, and thirteen feet for all stories above the second story, except the top story which may have an additional height of five feet.

2. In buildings of classes I, II, and III, except as otherwise provided herein, external

walls shall be built of the thickness in inches indicated in the following table:

Stories	Basement or Cellar		Stories											
	Stone	Brick	1	2	3	4	5	6	7	8	9	10	11	12
1	18	12	12											
2	18	16	12	12										
3	20	16	12	12	12									
4	22	20	16	12	12	12								
5	24	20	16	16	12	12	12							
6	28	24	20	16	16	12	12	12						
7	28	24	20	20	16	16	12	12	12					
8	28	24	20	20	20	16	16	12	12	12				
9	30	28	24	20	20	20	16	16	12	12	12			
10	30	28	24	24	20	20	20	16	16	12	12	12		
11	32	28	24	24	24	20	20	20	16	16	12	12	12	
12	32	28	24	24	24	24	20	20	20	16	16	12	12	12

Walls higher than twelve stories are to be increased in thickness proportionately.

Walls extending more than fifteen feet below the first story shall be increased as the bureau may direct.

3. In walls of the thickness provided in subdivision two of this section, the width of openings shall not exceed fifty-five per centum of the length of the wall, and shall be evenly distributed; but this percentage shall not apply to front and rear non-bearing walls, which shall be proportioned to their loads.

4. External walls containing openings not exceeding ten per centum of the length of the wall may be built of the thickness provided in the table set forth in subdivision eight of this section, and no greater percentage of openings shall ever be allowed in walls so constructed.

5. One story buildings in class I may be built of eight inch walls above foundation, if not more than fourteen feet in height and not more than fifty-five feet in length without an angle or cross wall, provided that no span or joist or roof shall exceed twenty feet.

Buildings classified, Sec. 31.

6. Dwellings, private stables and private garages may be built of eight inch walls above foundation, if not more than two stories in height with or without gables, provided that no span of joists in such buildings shall exceed twenty feet.

Definitions, Sec. 4, *S.* 11, 14.

7. Dwellings may be built of brick walls twelve inches thick in first story, and of eight inch walls above the first story, if not more than three stories in height, with or without gables, provided that no span of joists in such building shall exceed twenty feet.

8. Solid division or party walls shall be built of the thicknesses in inches indicated in the following table:

Stories	Basement or Cellar		Stories											
	Stone	Brick	1	2	3	4	5	6	7	8	9	10	11	12
1	18	12	12											
2	18	16	12	12										
3	18	16	12	12	12									
4	18	16	12	12	12	12								
5	20	20	16	12	12	12	12							
6	22	20	16	16	12	12	12	12						
7	22	20	16	16	16	12	12	12	12					
8	24	20	16 20	16	16	16	12	12	12	12				
9	24	20	16 20	16 20	16	16	16	12	12	12	12			
10	26	24	16 20	16 20	16 20	16	16	16	12	12	12	12		
11	26	24	20	16 20	16 20	16 20	16	16	16	12	12	12	12	
12	26	24	20	20	16 20	16 20	16 20	16	16	16	12	12	12	12

Walls higher than twelve stories are to be increased in thickness proportionately.

Walls extending more than fifteen feet below the first story shall be increased as the bureau may direct.

When the number is double, the larger number is to be taken when fireproof floors are used.

Concrete blocks not to be used, Sec. 241.

9. In buildings of class II, corridor walls that support joists on one side only, not exceeding a span of twelve feet, and walls of the top story where the joist spans do not exceed twenty-four feet, provided that in both cases the height of the walls does not exceed fourteen feet and the length not more than thirty-five feet without a cross wall or other proper reinforcement, may be eight inches in thickness.

10. When brick walls surround stairways or shaving pits, they shall be not less than eight inches thick, but no such eight inch wall shall be built more than eighteen feet high without lateral support or anchorage, and the total height of any eight inch wall shall not exceed fifty feet.

Stairways, Sec. 119.
Shaving pits, Sec. 171.
Reduction in thickness for walls of concrete, Sec. 223.

Sec. 86. **Parapet Walls.**

1. External and division or party walls over fifteen feet high, excepting where such walls

are to be finished with cornices, gutters or crown mouldings, shall have parapet walls not less than eight inches in thickness carried two feet above the roof.

2. In warehouses, factories, stores and other buildings used for commercial or manufacturing purposes, the parapet walls shall be not less than twelve inches in thickness carried three feet above the roof.

3. Parapet walls shall be coped with stone, terra cotta, cast iron or other approved material.

Sec. 87. **Curtain Walls**—Curtain walls shall be not less than twelve inches thick for sixty-five feet of the uppermost height thereof or nearest tier of beams to that height, and increased four inches for every additional section of sixty feet or nearest tier of beams to that height.

Thickness of concrete curtain walls, Sec. 223, S. 2.

Sec. 88. **Lining Existing Walls**—In case it is desired to increase the height of existing party or independent walls, which are less in thickness than required under this ordinance, the same shall be done by a lining of brick work to form a combined thickness with the old wall of not less than four inches more than the thickness required for a new wall corresponding with the total height of the wall when so increased. The said linings shall be supported on proper foundations and carried up to such height as the bureau may require. No

lining shall be less than eight inches in thickness, and all lining shall be laid up in cement mortar and thoroughly anchored to the old brick walls with suitable wrought iron anchors placed two feet apart, and properly fastened or driven into the old walls in rows alternating vertically and horiontally with each other the old walls being first cleaned of plaster or other coatings where any lining is to be built against the same. No rubble wall shall be lined except after inspection and approval by the bureau.

Sec. 89. **Fireproof Partitions in Certain Buildings.** In buildings of class II not of fireproof construction, there shall be for every eight rooms in any one story, dividing walls or partitions of incombustible material separating these rooms from the contiguous spaces.

Buildings classified, Sec. 31.
Partitions near boilers, etc., Sec. 167
Partitions for dry rooms, Sec. 169.
Partitions near stoves, etc., Sec. 172.
Partitions in frame buildings, Sec. 312, *S.* 2.
Partitions in tenements, Sec. 393.

Sec. 90. **Fire Stops.**

1. In walls furred with wood the brick work between the ends of wood beams shall project the thickness of the furring beyond the inner face of the wall for the full depth of the beams.

2. Whenever floor beams run parallel to a wall and wooden furring is used, such beams shall be kept at least two and one-half inches away from the inside line of the wall, and the

space between the beams and the wall shall be built up solidly with brick work from the under side of the floor beams to the top of the same.

Other fire stops, Sec. 187.

Sec. 91. **Recesses in Walls**—No continuous vertical recess, chase or flue shall be made to a greater depth than four inches in a twelve inch wall, and such recess, chase or flue may increase four inches in depth with each increase of four inches in the wall, and no recess of any kind, shall be made in any eight inch wall except by a special permit from the bureau. No horiontal chase shall be allowed in any wall.

Sec. 92. **Ashlar.** In walls built of brick faced with ashlar if used as bearing walls, the bricks must be laid in cement mortar, and the ashlar facing shall be not less than four inches thick, nor more than six times its thickness in height. Each stone must be backed off to a reasonably uniform thickness, but all the stones not necessarily to the same thickness. In such bearing walls each stone must be anchored to backing with metallic anchors, one to each two feet lineal of each course. When stone faced walls are used as bearing walls, they shall be four inches thicker than required for solid brick walls under the same conditions. The backing of stone ashlar in fireproof construction shall be not less than twelve inches thick.

Sec. 93. **Walls for Courts and Light, Air and Vent Shafts.**

1. The walls of courts shall be constructed

to comply with the provisions of this ordinance applicable to the external walls of the kind or class of building in which the courts are located.

Definitions, Sec. 4, *S.* 36.
In tenement houses, Sec. 377.

2. Walls or partitions forming light, air or vent shafts shall be built of brick or other incombustible material approved by the bureau, or in case the area of the shaft does not exceed twenty-five square feet, may be built of four-by-four wood studs covered both sides with metal lath and plaster, and with metal fire stops at each floor.

Definitions, Sec. 4, *S.* 37-38.
In tenement houses, Sec. 391.

3. Walls of light, air or vent shafts shall be carried up not less than three feet above the level of the roof; and if of brick shall be coped as other parapet walls.

4. When a shaft is covered by a ventilating skylight of metal and glass, the wall need not be carried more than two feet above the roof.

5. If the walls of light, air or vent shafts required to be constructed of brick or other incombustible material, begin at any point above the foundation of the building, their means of support shall consist entirely of incombustible material.

6. The windows in light, air or vent shafts required to be built of brick or other approved

incombustible material, shall have metal frames and sash and wire glass.

7. When the weight of floors abutting upon light, air or vent shafts is carried on a framing independent of the enclosing walls of such shafts, the thickness of such enclosing walls may be eight inches, but no part thereof shall be so reduced in area that the load upon the same will be more than the maximum load herein prescribed for the materials of which such walls are built.

Sec. 94. **Piers.**

1. No isolated brick pier shall be built whose height exceeds ten times its least dimension, and such piers shall be bonded every alternate course, and where receiving concentrated loads shall have suitable bearing blocks of stone or iron so proportioned as properly to distribute the load to come upon it.

2. In isolated piers or divisions forming portions of walls, the least dimension shall be taken as the thickness in determining the load which such piers may carry.

3. If outside walls are of pier construction, the piers shall be graded in size according to weights to be carried, but not less than sixteen inches for the upper story, and shall increase four inches for each story below. They shall also be graded as to width of space according to span of bays.

Such piers shall have a width of twenty-four inches for an eight foot bay measuring from

center to center of pier, and shall increase four inches in face width for each two feet of thickness thereof that the width of bay is increased, as follows: For a ten foot bay, the pier must be twenty-eight inches in width; for a twelve foot bay, thirty-two inches, and so on for each proportionate increase.

Such piers must be full size, and must not be reduced by encroachment of any window frame or other wood construction.

4. Fifteen tons per square foot for piers laid in lime mortar, or eighteen tons per square foot if laid in cement mortar, shall be the limit of compression allowed on any pier in this kind of construction. Within this limit the weight allowed on the various thicknesses of piers may be the same as that given for walls.

ARTICLE VII.

FLOOR LOADS AND WIND PRESSURE.

Section 107. **Floor Loads.**

1. The dead loads in all buildings shall consist of the actual weight of walls, framing, floors, roofs, and all permanent construction except partitions not over six inches in thickness.

2. The live loads shall include all forms of loading other than the weight of the material entering into the construction of the building.

3. Every floor in buildings hereafter altered or constructed to be used for the following purposes, shall be designed and constructed so as

to be of sufficient strength to bear safely upon each and every square foot of its surface a minimum of not less than the following live loads:

Class of Building	Pounds per Square Foot
Warehouses and buildings used for printing or lithographing	200
Factories, buildings used for mercantile purposes, public livery and sales stables, and public garages	100
Theaters	80
Office buildings and public buildings	70
Tenement houses, hotels, asylums and hospitals	60
Dwellings, private stables and private garages	50

The minimum floor load of any building not specified above shall be determined by the bureau.

Buildings defined, Sec. 4.

4. In buildings now or hereafter constructed, the strength of floors intended to carry machinery shall be increased above the minimum given in this section in proportion to the degree of vibratory motion liable to be transmitted to the floor.

5. The weight placed on the floors of any building, now or hereafter constructed, shall be safely distributed thereon. The bureau may require the owner or occupant of any building or portion thereof to redistribute the load on any floor, or to lighten such load when deemed

necessary, even if not greater than the minimum in this section prescribed.

6. To prevent over-loading in all warehouses, store houses, factories, work shops and stores, now or hereafter constructed, where heavy materials are kept or stored, or machinery introduced, the weight that each floor will safely sustain upon each square foot thereof, or upon each varying part of such floor, shall be estimated by a competent person employed by the owner or occupant, or the bureau may make such estimate, and said estimate shall be placed permanently on a stone or metal tablet in a conspicuous place in the hallway of each story or varying parts of each story of the building to which it relates.

7. No person shall place or permit to be placed on the floor of any building, now or hereafter constructed, any greater load than the safe load thereof as correctly estimated and ascertained as herein provided.

Loads for roofs, Sec. 151. *Loads for reinforced concrete, Sec.* 237.

Sec. 108. **Wind Pressure.**

1. The height of a building shall not be more than four times the average of its horizontal dimensions.

Height of tenement houses, Sec. 373.

2. All structures exposed to wind shall be designed to resist a horizontal wind pressure in any direction of thirty pounds for every square

foot of surface thus exposed from the ground to the top of the same including the roof.

3. In no case shall the over-turning moment due to wind pressure exceed seventy-five per centum of the moment of stability of the structure.

4. In all structures exposed to wind, if the resisting moments of the ordinary materials of construction, such as masonry, partitions, floors 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 to make up the difference in the moments.

5. In calculations for wind bracing, the working stresses set forth in this ordinance may be increased by fifty per centum.

ARTICLE VIII.

STAIRWAYS.

Section 119. **Interior Stairs.**

1. In every building over two stories in height intended to be used as an office building, factory, mill, hotel, lodging house, school, hospital, asylum, public building, or for mercantile purposes, there shall be provided at least one continuous flight of stairs extending from the entrance floor to the top story.

2. When any such building covers a lot area of more than twenty-five hundred feet, there shall be two such flights of stairs placed as far apart as possible.

3. When any such building covers a lot area of more than five thousand feet, the number of flights of stairs shall be increased proportionately for each twenty-five hundred feet or portion thereof, unless otherwise permitted by the bureau.

4. When two or more flights of stairs are required, one outside fire escape erected in accordance with the provisions of this ordinance shall be considered equivalent to one inside flight of stairs.

Walls surrounding stairways, Sec. 85, *S.* 10.
Theater stairs, Secs. 334-338.
Tenement house stairs, Sec. 381.
In mill construction, Sec. 188-8.

Sec. 120. **Other Interior Stairs**—In every other building, except as specially provided for theaters and tenement houses, connection shall be provided between each story thereof by at least one flight of stairs.

Sec. 121. **Treads**—Stairs shall have treads of uniform width, and risers of uniform height throughout in each flight, and the risers shall not be more than eight inches in height, and the treads, exclusive of nosing, not less than ten inches.

Sec. 122. **Landings**—Each flight of stairs shall have a proper landing introduced in every story which exceeds a height of eleven feet, and such landing shall be placed at the central portion thereof if the stairs have a straight run.

Sec. 123. **Banisters**—Stairs shall be provided with proper banisters or railings and hand rails and the stairs, banisters, railings and hand rails, shall be kept in good repair.

Sec. 124. **Entrances**—The aggregate width of the door openings at the street level in buildings of class I shall be equal to the aggregate width of stairways hereinbefore specified, and such doors shall not be locked during business hours or while such buildings are occupied.

Sec. 125. **Obstructions**—It shall be unlawful under any circumstances to close or obstruct the stairs or the approaches thereto in any building.

Sec. 126. **Change in Position Prohibited**—No change in the position or construction of stairs shall be made without permission of the bureau.

ARTICLE IX.

ELEVATORS.

Section 137. **Guards and Gates for Elevators and Dumb-waiters not Enclosed**—In any building if there shall be constructed a hoistway, freight elevator or well-hole not enclosed in walls constructed of brick or fireproof material, and provided with fireproof doors, the openings thereof through and upon each floor of said building shall be provided with and protected by a substantial guard or gate, and with good and sufficient automatic trap doors properly counterweighted and covered with tin on

the under side and edges, and so constructed as to form a substantial floor surface when closed. The guards or gates and covering shall be of such materials and form of construction as may be approved by the bureau.

In mill construction, Secs. 188-8.

Sec. 138. **Elevator Enclosures.**

1. Elevators hereafter placed in any building over three stories in height, now or hereafter constructed, shall be enclosed in suitable walls of brick, reinforced concrete, or with a suitable framework of iron and burnt clay filling.

2. Enclosed walls of brick shall be laid in cement mortar and not used as bearing walls. They shall not be less than eight inches in thickness for fifty feet of their uppermost height, and increasing in thickness four inches for each lower fifty feet portion or part thereof.

3. Enclosure walls or construction shall extend from the cellar through and at least three feet above the roof.

4. All door openings in said enclosures shall be provided with standard fire doors made solid for their full height and hung to rabbeted wrought iron or steel frames, or to wrought iron eyes built into the wall, and shall have iron, stone or cement concrete door sills of the full width and length of the openings. In buildings other than warehouses and factories, lights of wired glass in standard metal frames may be placed in such enclosures, but no one pane shall exceed seven hundred and twenty square inches in size.

5. The roofs over all enclosed elevators shall be made of fireproof material with skylights at least three-fourths the area of the shaft made of thin glass set in iron frames with a wire netting underneath.

6. Enclosures for elevator machinery on the roofs of buildings shall be constructed of incombustible material.

7. When an elevator shaft does not extend to the ground, the lower end shall be enclosed in fireproof materials.

8. If the bureau shall so direct, the basement story of all elevator shafts, now or hereafter constructed, shall be enclosed in walls of brick or fireproof materials, and openings therein for the cable drum shall be properly protected with an iron covering. This shall not be necessary if the elevator machinery in the basement is located in a room with fireproof walls and ceiling.

9. Immediately under the sheaves at the top of every elevator shaft, there shall be provided and placed a substantial grating or screen of iron or steel of such construction as shall be approved by the bureau.

Sec. 139. **Capacity of Elevators**—The owner, lessee or other person having control of any elevator in a building now or hereafter constructed, shall cause to be fastened in a conspicuous place therein a metal plate bearing suitable raised letters which shall set forth the number of pounds weight which said elevator,

after proper test, has capacity to carry, but not more than eighty per centum of the load as so stated shall be carried thereon.

Sec. 140. **Dumb-waiter Shafts.**

1. Dumb-waiter shafts hereafter placed in a building now or hereafter constructed, except such as do not extend more than three stories above the cellar or basement in dwelling houses, shall be enclosed in suitable walls of brick, reinforced concrete or burnt clay blocks set in iron frames of proper strength, or fireproof blocks strengthened with metal dowels or four-by-four studs covered both sides with metal lath and paster.

2. Such walls or construction shall extend at least three feet above the roof, and be covered with a skylight at least three-fourths the area of the shaft made of thin glass set in iron frames with a wire netting underneath.

ARTICLE X.

ROOFS, CORNICES AND TANKS.

Section 151. **Roofs.**

1. The roofs of buildings shall be designed and constructed in such manner that they will bear a load in addition to their structure and covers of at least forty pounds for each square foot of horizontal surface.

Loads for concrete roofs, Sec. 237.
Loads for floors, Sec. 107.

2. When an incombustible roof is required, it shall be covered with not less than four ply tarred or asphalted felt, each single ply weighing not less than fifteen pounds per one hundred square feet, the whole to be well nailed and swabbed with pitch or asphalt composition, and covered with gravel or slag; or a covering of slate, copper, tin, burnt clay or asbestos shingles.

3. Roofs, now or hereafter constructed, shall be provided with proper metallic leaders for conducting water from the roof to the ground or sewer in such manner as shall protect the walls and foundations from damage, and in no case shall water from any roof be allowed to fall upon the sidewalk.

Construction of smoke pipes through roofs, Sec. 168.

Sec. 152. **Roofs of Buildings Within the Fire Limits.**

1. An incombustible roof shall be constructed on all buildings erected within the fire limits.

Fire limits defined, Sec. 308.

2. When it becomes necessary to recover or renew the roof on any now existing building in the fire limits, an incombustible roof shall be constructed thereon.

Sec. 153. **Sky Signs on Roofs**—Signs shall not be placed or erected on the roof of any building now or hereafter constructed, without

written permission of the bureau and unless placed or erected as follows:

1. Signs and all supports and braces shall be constructed entirely of incombustible material.

2. Signs shall be placed at a distance from any public street at least equal to one-half the greatest height of the sign.

3. No sign shall be placed on any roof unless such roof is so constructed that in addition to the weight of the sign, it will have the bearing capacity herein prescribed for roofs.

4. No sign shall be constructed solid so as to present a solid surface to the wind, or be constructed so that the wind pressure of the building, including the sign, shall be greater than specified in this ordinance.

5. Signs shall be securely braced, fastened and erected so that they will not endanger the roof or other parts of the building, to the satisfaction of the bureau.

Sec. 154. **Cornices and Gutters.**

1. On buildings now or hereafter constructed within the fire limits, or over three stories in height, the exterior cornices, inclusive of those on show windows, and gutters hereafter constructed shall be of fireproof material.

2. Fireproof cornices shall be well secured to the walls with iron anchors independent of any woodwork.

3. Exterior wooden cornices or gutters, that

are now or may hereafter become unsafe or rotten, shall be taken down, and if replaced and if within the fire limits or on a building over three stories in height, shall be constructed of fireproof material.

4. Exterior wooden cornices or gutters on buildings now or hereafter constructed within the fire limits or over three stories in height, that may be damaged by fire to the extent of one-half, shall be taken down, and if replaced shall be constructed of fireproof material.

Fire limits defined, Sec. 308.

Sec. 155. **Tanks.**

1. Tanks containing more than five hundred gallons of water or other fluid, placed on or above the roof, or in any story of a building now or hereafter constructed, shall be supported on beams of sufficient strength to safely carry the same, and the beams shall rest at both ends on brick walls, iron or steel girders, iron or steel columns or piers of masonry. Underneath any such tank or on the side nearest the bottom, there shall be a short pipe not less than four inches in diameter, with a suitable valve having a lever or wheel handle, so that firemen or others can readily discharge the weight of the fluid contents from the tank in case of necessity.

2. Such tanks shall be placed, when practicable, at one corner of a building and shall not be placed over or near a line of stairs unless the stairs are enclosed in brick walls, and the cov-

ers thereof, if of wood, shall be covered with tin.

3. Such tanks shall be inspected by the bureau at least once annually.

ARTICLE XI.

CHIMNEYS, FLUES, FIREPLACES AND HEATING PIPES.

Section 164. **Chimneys and Flues.**

1. Chimneys shall be built of brick, stone or approved fireproof material.

2. A chimney not forming part of a wall shall rest upon a footing on the ground or other fireproof foundation.

3. A chimney shall not rest upon a flooring of wood or any timber whatever.

4. Chimneys shall extend at least three feet above a flat roof and at least two feet above the highest point of a peaked roof, and from the roof up must be laid in pure cement and mortar, and carefully bonded and anchored together.

5. The brick work of flues must be laid solid, thoroughly filled with mortar or grouted, and the joints struck flush on the inside.

6. Flues shall be lined continuously on the inside with well burnt clay or terra cotta pipe made smooth on the inside from the bottom of the flue or the throat of the fireplace, if the flue starts from the latter, and carried up continuously to the extreme height of the flue. The ends of lining pipes shall be made to fit close

together, and the pipe shall be built in as the flue or flues are carried up.

7. The walls of flues, excepting those specified in subdivisions eight, nine and ten, shall be not less than four inches thick and properly bonded together, excepting that the walls between the lined flues on the inside of the chimney may be two inches in thickness.

8. The walls of flues inside the fire limits shall be at least eight inches in thickness, and lined continuously on the inside with well burnt clay or terra cotta pipe, and shall be capped with terra cotta, stone, cast iron or concrete.

Fire limits defined, Sec. 308.

9. Flues of steam boilers, smelting furnaces and other apparatus that heat flues to a high temperature shall be not less than eight inches in thickness, and for twenty-five feet above the inlet shall be formed of double walls with an air space between. The inner or flue wall shall be not less than eight inches in thickness, and in all cases the thickness of walls shall be sufficient to bring the stresses within the limits provided in this ordinance.

10. When it becomes necessary to provide a smoke flue of larger size than any flue within an existing building, such flue may be placed on the outside of the building within the lot lines, and be made round in shape of galvanized sheet metal not less than one-tenth of an inch in thickness, properly riveted together at all joints, and carried up to a height of not less

than ten feet above the roof, and properly braced at intervals for its entire length with flat iron bands secured with expansion bolts to the wall, leaving a clear air space of not less than four inches between the outside of the metal flue and the brick wall of the building, resting on a suitable cast iron plate at the bottom supported on a suitable foundation of masonry, and having a clean-out door at the bottom.

11. When a chimney is to be cut off below, in whole or in part, it shall be wholly supported by stone, brick, iron or steel.

12. Flues in every building shall be properly cleaned and all rubbish removed therefrom.

13. Chimneys which shall be dangerous in any manner whatever, shall be repaired and made safe or taken down.

14. Before chimneys or flues are erected or altered in any building now or hereafter constructed, notice thereof shall be given the bureau..

Sec. 165. **Chimneys of Cupolas.**

1. Iron cupola chimneys of foundries shall extend at least ten feet above the highest point of any roof within a radius of fifty feet of such cupola, and be covered on top with a heavy wire netting and capped with a suitable spark arrester.

2. No woodwork shall be placed within two feet of the cupola.

Sec. 166. **Fireplaces.**

1. Fireplaces shall have flues constructed to comply with this ordinance, and shall have trimmer arches to support hearths.

2. Said arches shall be at least twenty inches in width measured from the face of the chimney breast, and shall be constructed of brick, stone, burnt clay or concrete. The length of the trimmer arch shall not be less than the width of the chimney breast. Wood centers under trimmer arches shall be removed before plastering the ceiling underneath.

3. Gas log grates and gas grates not exceeding six inches in depth may be installed, each with at least four inches of brick on the back, sides and top thereof, and concrete on the bottom thereof, and with a three-inch standard wrought iron pipe extending through the roof or connecting with a brick chimney. No other gas log or gas grate shall be installed except in a fireplace constructed in accordance with the provisions of this section.

4. No fireplace shall be constructed with less than eight inches of solid wall at its back, unless said fireplace has a cast iron lining with a one inch air space between it and the wall, when four inch walls may be used.

5. Before any fireplace is erected or altered in a building now or hereafter constructed, notice thereof shall be given to the bureau.

Sec. 167. **Heating Furnaces, Boilers and Bake Ovens.**

1. No brick set boiler, furnace or bake oven shall rest upon woodwork.

2. A portable boiler or furnace supported by combustible floors or beams shall rest on a foundation of brick laid in mortar extending at least twenty-four inches outside of the foundation at the front and both sides. The brick foundation of a portable boiler shall extend at least two feet in front of and one foot on each side of the boiler, and shall have three courses of brick high, the middle course being laid crosswise with ventilating space within or between the bricks of said middle course. The brick foundation of a portable furnace shall be two courses high, and otherwise constructed as above set forth.

3. A cast iron ash pan of suitable thickness shall be placed under all portable boilers, and shall have a flange turned up in front and on the side four inches high. Said pan shall be in width not less than the base of the boiler, and shall extend at least two feet in front of it. If the boiler is supported on a cast iron base, and is provided with a cast iron bottom, then an ash pan shall be placed in front of the said base, and shall not be required to extend under it.

4. Lath and plaster and wood ceilings and beams, over and to a distance of not less than four feet in front of boilers, shall be shielded with metal. When smooth ceilings are to be protected, there shall be an air space of not less

than one-quarter of an inch between the ceiling and the metal. When beams are exposed, the metal shall follow the contour of the beams. The distance from the top of the boiler to the shield shall be not less than twelve inches, and smoke pipes leading therefrom shall be not less than twenty-four inches from the ceiling or beams.

5. No combustible partition shall be within four feet of the sides or back, or six feet of the front of any boiler, unless said partition shall be covered with metal to the height of at least three feet above the floor, and shall extend from the end or back of the boiler to at least five feet in front. When the partitions are so covered, they shall not be less than two feet from the sides or back, or five feet from the front of the boiler.

6. Portable furnaces shall be placed at least two feet from any combustible partition or ceiling, unless the partitions and ceilings are properly protected by a suspended metal shield, when the distance shall not be less than one foot.

7. The cold air boxes of furnaces shall be made of metal, brick or other incombustible material.

8. No vertical hot air pipe shall be placed in a stud partition, or in a wood enclosure, unless said pipe is placed inside another pipe one inch larger in diameter, and unless all fittings, register boxes and heads are double.

9. Vertical flues surrounded by four inches

of brick work may be used to convey heat in connection with hot water or steam heating apparatus.

10. When only one register is connected with a furnace, such register shall have no valve or slats, and where two or more registers are connected with a furnace, at least one of them shall have no valve or slat.

11. Brick hot air furnaces shall have two covers with an air space of at least four inches between. The inner cover of the hot air chamber shall be either a brick arch or two courses of brick laid on galvanized iron or tin supported on iron bars; the outside cover or top of the furnace shall be of brick or metal supported on iron bars, and so constructed as to be perfectly tight. It shall be not less than twelve inches below any combustible ceiling or floor beams. Walls of furnaces shall be built in the following manner: One inner and one outer wall of brick, each four inches in thickness properly bonded together, with an air space of not less than three inches.

12. Before hot water, steam, hot air or other heating apparatus is installed in any building now or hereafter constructed, notice thereof shall be given the bureau.

Sec. 168. **Smoke Pipes.**

1. No smoke pipe shall pass through the roof of any building unless a special permit therefor be obtained from the bureau.

2. If a permit be granted, then the roof

through which the smoke pipe passes shall be protected by a galvanized iron ventilated thimble of the following dimensions: For a stove pipe, the diameter of the outside guard and of the inner guard shall be respectively not less than twelve inches, and eight inches larger than the smoke pipe; and for furnaces and similar apparatus where large hot fires are used, shall be respectively not less than eighteen inches and twelve inches larger than the smoke pipe. The thimbles shall extend from the under side of the ceiling or roof beams to at least nine inches above the roof, and shall have openings for ventilation at the lower end where the smoke pipes enter, and also at the top of the guards above the roof.

3. When the smoke pipe of a boiler passes through a roof, it shall be guarded by a ventilated thimble thirty-six inches larger than the diameter of the smoke pipe of the boiler, and otherwise constructed as specified in the foregoing subdivision.

Sec. 169. **Dry Rooms**—Dry rooms, dry boxes and enclosures used for drying by artificial heat shall be enclosed in fireproof or incombustible stud partitions, with a floor and ceiling of like construction, and be provided with a fireproof door, or may be lined throughout with tin and asbestos paper one-eighth of an inch thick, and such dry rooms, dry boxes or enclosures shall have wire netting of not more than one inch mesh so placed as to prevent any contact

between inflammable materials and the steam or heating pipes, stoves or other heaters.

Sec. 170. **Smoke House.**

1. Smoke houses shall be constructed throughout of incombustible material, and shall be provided with ventilators at or near the top and with guards not less than four feet above the fire bed sufficient to prevent the meats from falling into the fire.

2. If such smoke houses open into other buildings, such openings shall be protected by iron doors or shutters properly and thoroughly constructed.

Sec. 171. **Shaving Pits.**

1. Shaving pits in factories where woodworking machinery is used, shall be constructed of brick, stone or other incombustible material, and shall be separated from the boiler room by standard fire doors.

2. Such factories shall have a metal chute leading from each woodworking machine to a shaving pit.

Walls for shaving pits, Sec. 85, *S.* 10.

Sec. 172. **Stoves and Ranges.**

1. In hotels, restaurants and other public places when a kitchen coal range is placed from six to twelve inches from the wood stud partitions, the partitions shall be covered with metal from the floor to a height of not less than three feet higher than the range. If the range is within six inches of the partition, the studs

shall be cut away, and framed three feet higher and one foot wider than the range, and the space in the partition shall be filled with bricks of fireproof blocks and plastered over.

2. Coal ranges without legs which are supported by combustible floors and beams, shall be set on foundations of not less than two courses of brick, well laid in cement mortar on galvanized sheet iron or concrete five inches thick, or other fireproof material.

3. A gas range may at the discretion of the owner, and a gas water heater must, have attached thereto a smoke or vent pipe, which shall be connected with a proper ventilating flue in a manner approved by the bureau.

4. No range shall be placed against a wall furred with wood.

5. Lath and plaster or wood ceilings over hotel, restaurant or other large ranges shall be guarded by metal hoods placed at least nine inches below the ceiling.

6. A ventilating pipe connected with a hood over a range shall have no connection with any other pipe and shall be covered with one inch of asbestos on wire mesh, and shall be not less than nine inches from wood or lath and plaster work which shall be shielded with metal. The pipe shall run either outside of the building and discharge at least four feet above the roof, or shall be connected with a suitable brick flue lined with burnt clay or heavy iron pipe used

exclusively for the ventilating pipe of the range.

7. Stoves for heating purposes shall be properly supported on iron legs and be at least three feet from all wood lath and plaster or woodwork. If the wood lath and plaster or woodwork is properly protected by metal shields, then the distance shall be not less than eighteen inches.

8. A metal shield shall be placed under and twelve inches in front of the ash pan of all stoves that are placed on combustible floors.

9. Low gas stoves shall be placed on iron or other incombustible stands and the burners shall be at least six inches above the base of the stove, and metal guard plates placed four inches below the burners. Woodwork underneath shall be covered with metal.

10. Gas connections to stoves shall be made by metal pipes, unless there is no valve on the stove.

Sec. 173. **Ash Pits and Receptacles.**

1. When an ash pit is located in a basement or cellar, it shall have brick walls at least four inches in thickness, and if the floor over the same is wood, such pit shall be covered over with brick arching, stone or concrete not less than four inches thick with four inches of air space between the covering of the pit and the ceiling, except that such covering may be omitted for pits built directly under the trimmer arches of hearths.

2. Stationary receptacles for ashes shall be of galvanized iron, brick or other incombustible material.

3. Within the fire limits all movable receptacles for ashes shall be of galvanized iron or other incombustible material.

Fire limits defined, Sec. 308.

4. No wooden receptacle used for ashes shall be kept within any building, or within ten feet of the outside of any building.

5. No person shall store ashes on a wooden floor or in close proximity to any woodwork.

ARTICLE XII.

WOOD BEAMS, JOISTS AND POSTS.

Section 184. **Wood Joists and Beams.**

1. Wood joists and other timbers in party walls of every building built of stone, brick or concrete shall be separated from the beam or timber entering the opposite side of the wall by at least three inches of solid masonry.

2. No wood floor or roof joists used in any building shall be less than two inches in thickness.

3. Wood trimmer and header joists shall be proportioned to carry with safety the loads they are intended to sustain, and shall be properly framed. If over six feet in length they shall be hung in suitable metal stirrups.

4. Every wood joist, except header and tail joists, shall rest at each end four inches in a wall, or on a corbel, a beam, girder or column.

5. The ends of wood floor and roof joists, which rest on walls, shall be cut to a bevel of three inches in their depth.

6. Neither end of a floor or roof beam shall be supported on stud partitions except in frame buildings.

7. Wood floor and roof joists shall be properly bridged with cross bridging. The distance between bridging and bearing shall not exceed eight feet.

8. Wood joists shall be trimmed away from the flues and chimneys. The trimmer joists shall be not less than six inches from the inside face of a flue, and one inch from the outside of a chimney breast, and the header joist not less than one inch from the outside face of the brick or stone work of the same.

9. The header joist carrying the tail joist of a floor and supporting the trimmer arch in front of a fireplace shall be not less than twenty inches from the face of the chimney breast.

10. The safe carrying capacity of wood joists shall be determined by their resistance to bending and shear in accordance with the stresses fixed in this ordinance.

Quality of timber, Sec. 43, *S.* 5.
Stresses of timber, Sec. 46.

Sec. 185. **Anchors and Straps for Wood Joists and Beams.**

1. Each tier of beams shall be anchored to the walls at intervals of not more than six feet with steel or wrought iron anchors not less than one and one-fourth inches by three-sixteenths of an inch in size, fastened to the beams by two or more nails made of steel or wrought iron.

2. When the joists are supported by beams, the beams shall be anchored to the walls and fastened to one another by suitable iron straps.

3. The ends of wood joists resting upon beams shall be abutted together, end to end, and strapped by steel or wrought iron straps of the same size and distance apart, and in the same joists as the wall anchors; or they may lap one another at least twelve inches and be well spiked or bolted together where lapped.

4. Each tier of joists running parallel to enclosing walls shall have suitable iron anchors at each row of bridging attached to at least three joists.

5. Every pier and wall front and rear shall be well anchored to the joists of each story with the same size anchors as are required for walls, and attached to at least three joists.

6. No anchor strips shall be let in within four feet of the center lines of the joists, but wood strips may be nailed on the top of the joists and kept in place until the floors are laid.

Sec. 186. **Wood Posts and Timbers for Trusses.**

1. Timber posts shall be squared at the ends perpendicular to their axis, and timber iron or steel cap plates or pintels and base plates shall be provided in all buildings over three stories in height.

2. The safe carrying capacity of timber posts shall be determined by the working stresses fixed by this ordinance. When wood caps and beams are subject to shear, the stresses in this code provided shall not be exceeded.

3. When the cap plate of a wood post supports a wood beam and directly on top of the beam is an iron or steel base plate of the wood post above, the cap and base plates shall be connected by pintels of metal passing through the beams. These pintels may be of round bars of steel of proper size, and not less than four in number, or a cast iron pintel of proper thickness may be used in all cases adequate to transmit the load. Additional iron or steel cheek plates shall be placed between the cap and base plates and bolted to the beams when required to transmit the loads with safety.

4. When timber members of trusses are in compression or tension, they shall be stressed in the direction of the fiber only.

5. Working stresses in timber struts of pin connected trusses shall not exceed seventy-five

per centum of the working stresses established in this ordinance.

6. Bolts used in connection with timbers and wood joists shall be provided with washers of such proportions as will reduce the compression on the wood at the face of the washer to that allowed in this ordinance, supposing the bolt to be stressed to its limit.

Sec. 187. **Stud Partitions and Fire Stops**—When stud partitions rest directly over each other and are not parallel with wood floor beams, they shall run down between the floor joists and rest on the top plate of the partition below; and in all buildings over two stories in height, such studding shall be filled in solid between the uprights to the depth of the floor beams with masonry, concrete or mineral wool.

Other fire stops, Sec. 90.

Sec. 188. **Mill Construction**—A building permitted or required to be of mill construction shall be constructed as follows:

1. Without hollow or concealed spaces.

2. With wooden girders and joists supporting floors and roofs, having a sectional area not less than sixty square inches, and above the joists a solid timber floor not less than two and five-eighths inches thick, for spaces less than three feet six inches between joists; three and one-eighth inches thick for spaces up to four feet six inches between joists, and three and five-eighths inches thick for spaces up to five feet six inches between joists. All such floors

to be tongued and grooved. These thicknesses may be seven-eighths of an inch less where the said tongued and grooved floor is covered by a floor not less than seven-eighths of an inch thick.

3. Wooden posts shall not be of smaller sectional area than one hundred square inches except the posts on top stories which shall not be of smaller sectional area than sixty-four square inches.

4. The use of wood furring or wood laths is not permitted.

5. If iron pillars, girders or beams are used, they shall be erected and protected as provided for fireproof buildings.

6. If wooden posts are used, they shall have metal caps of approved pattern, so constructed as to form the base for the next post above. The girders must be properly bolted to the cap, and must have wrought iron straps on the outside in addition from one girder to the other, and bolted through each girder.

7. At each line of floor or roof beams, where cast iron columns are used, lateral connections between the ends of the beams and girders shall be made by passing wrought iron or steel straps across or through the cast iron columns in such manner as rigidly to connect the beams and girders with each other in the direction of their length; these straps shall be bolted through the wooden beams or girders.

8. Elevator wells and stairways shall be entirely enclosed with incombustible materials,

and all openings into the same provided with standard fire doors.

When mill construction permitted, Sec. 32, S. 2.

9. Curtain walls between piers shall be supported on I beams, except when the distance from center to center of piers is less than twelve feet, they may be supported by brick arches.

Curtain walls, Sec. 87.
Pier construction, Secs. 94-3.

ARTICLE XIII.

STRUCTURAL STEEL AND IRON

Section 199. **Steel and Wrought Iron Columns.**

1. No part of a steel or wrought iron column shall be less than one-quarter of an inch thick.

2. No wrought iron or rolled steel column shall have an unsupported length of more than forty times its least lateral dimension without consent of the bureau.

3. The ends of columns shall be faced to a plane surface at right angles to the axis of the columns, and the connections between them shall be made with splice plates. The joint may be effected by rivets of sufficient size and number to transmit the entire stress, and then the splice plates shall be equal in sectional area to the area of the column spliced. When the section of the column to be spliced is such that

spliced plates cannot be used, a connection formed of plates and angles may be used designed properly to distribute the stress.

4. No wrought iron or steel column shall contain material, whether in the body of the column or used as lattice bar or stay-plate of less thickness than one-thirty-second of its supported width measured between centers of rivets transversely, or one-sixteenth the distance between centers of rivets in the direction of the stress.

5. Stay-plates must have not less than four rivets and be spaced so that the ratio of length by the least radius of gyration of the parts connected, does not exceed forty; the distance between nearest rivets of two stay-plates shall in this case be considered as length.

6. Steel and wrought iron columns shall be made in one, two and three story lengths, and the materials shall be rolled in one length wherever practicable to avoid intermediate splices.

7. When 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 the column by the proper number of rivets.

8. Shoes of iron or steel as described for cast iron columns or built shoes of plates and shapes may be used, complying with the same requirements.

9. Steel or wrought iron posts and columns with one or more open sides or backs, shall have

solid iron plates on top of each excepting where pierced for the passage of pipes.

Quality of steel and iron, Sec. 43.
Stresses, Sec. 46.

Sec. 200. **Cast Iron Columns.**

1. Cast iron columns shall be of good workmanship and material. The thickness of metal shall not be less than one-twelfth of the greatest lateral dimension of cross section, nor less than three-quarters of an inch.

2. Cast iron columns shall not have less diameter than five inches, nor less thickness than three-quarters of an inch.

3. Cast iron columns shall not have an unsupported length of more than twenty times their least lateral dimensions or diameter, unless they form part of an elevator enclosure or staircase, or unless the bureau so permits.

4. The top and bottom flanges, seats and lugs shall be of ample strength reinforced by fillets and brackets; they shall be not less than one inch in thickness when finished.

5. Every column must be faced at the ends to a true surface at right angles to the axis of the column.

6. The core of a column below a joint shall not be larger than the core of the column above, and the metal shall be tapered down to a distance of not less than six inches, or a joint plate may be inserted of sufficient strength to distribute the load.

7. Whenever the core of a cast iron column

has shifted more than one-fourth the thickness of the shell, the strength shall be computed, assuming the thickness of metal all around equal to the thinnest part, and the column shall be condemned if this computation shows the strength to be less than required by this ordinance.

8. Whenever blowholes or imperfections reduce the area of the cross section of a cast iron column at that point more than ten per centum, such column shall be condemned.

9. Cast iron posts or columns not cast with one open side or back, before being set up in place, shall have a three-eighths of an inch hole drilled in the shell of each column by the manufacturer or contractor furnishing the same to exhibit the thickness of the castings; and any other similar sized hole or holes which the bureau may require shall be drilled in such posts or columns by the said manufacturer or contractor at his own expense.

10. Iron or steel shoes or plates planed true on top shall be used under the bottom tier of columns to properly distribute the load on the foundation.

11. Cast iron columns placed practically over each other shall be bolted together with not less than four bolts, each not less than three-quarters of an inch in diameter. The holes for these bolts shall be drilled to a template.

12. Cast iron posts and columns with one or more open sides or backs, shall have solid iron

plates on top of each, excepting where pierced for the passage of pipes.

Sec. 201. **Cast Iron Lintels.**

1. Cast iron lintels shall not be used for spans exceeding sixteen feet.

2. Cast iron lintels shall not be less than three-fourths of an inch in thickness in any of their parts.

Sec. 202. **Steel and Iron Girders.**

1. Rivets in flanges shall be placed so that the least value of a rivet for either a shear or bearing is equal to or greater than the increment of strain due to the distance between adjoining rivets. All other rules given under riveting shall be followed. The length of rivets between heads shall be limited to four times the diameter.

2. The compression flange of plate girders shall be secured against buckling if its length exceeds thirty times its width.

3. If splices are used they shall fully make good the members spliced in either tension or compression.

4. Stiffeners shall be provided over supports and under concentrated loads. They shall be of sufficient strength as a column to carry the loads, and shall be connected with a sufficient number of rivets to transmit the stresses into the web plate. Stiffeners shall fit so as to support the flanges of the girders. If the unsupported depth of the web plate exceeds sixty

times its thickness, stiffeners shall be used at intervals not exceeding one hundred and twenty times the thickness of the web.

5. 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 intervals of not more than five feet.

6. Beams twelve inches and over in depth shall have at least two bolts to each separator.

Sec. 203. **Plates Under Ends of Lintels and Girders**—When lintels or girders are supported at the ends by brick walls or piers they shall rest on cut medina stone blocks at least ten inches thick, or upon cast iron or steel plates of equal strength by the full size of the bearings. In case the opening is less than twelve feet, the stone blocks may be five inches in thickness, or cast iron or steel plates of equal strength by the full size of the bearings may be used, provided that in all cases the safe loads do not exceed those fixed by this ordinance.

Sec. 204. **Steel and Iron Floor and Roof Beams.**

1. Rolled steel and wrought iron floor and roof beams used in buildings shall be of full weight, straight and free from injurious defects.

2. The distance between tie rods in floors shall not exceed eight feet, and shall not exceed eight times the depth of floor beams twelve inches and under.

3. Holes for tie rods shall be placed as near the thrust of the arch as practicable.

4. Channels or other shapes where used as skew-backs, shall have a sufficient resisting moment to take up the thrust of the arch.

5. Bearing plates of stone or metal shall be used to reduce the pressure on the wall to the working stress.

6. Beams joined on a girder shall have tie straps of one-half inch net sectional area, with rivets or bolts to correspond. Anchors shall be provided at the end of all such beams bearing on walls.

7. Under the ends of all iron or steel beams where they rest on walls, stone or cast iron plates shall be built into the walls which plates shall be of such dimensions as to bring no greater pressure upon the brick work than that allowed by this ordinance. When rolled iron or steel floor beams, not exceeding six inches in depth, are placed not more than thirty inches on centers, no plates shall be required.

Sec. 205. **Skeleton Construction.**

1. A building of skeleton construction is one in which all external and internal loads and strains are transmitted from the top of the building to the foundation by a skeleton or frame-work of rolled or cast metal.

2. When columns are used to support iron or steel girders carrying inclosure walls, the said column shall be of cast iron, wrought iron or rolled steel, and on their exposed outer and inner surfaces be constructed to resist fire by having a casing of brick work not less than four

inches in thickness on the outer surfaces nor less than four inches in thickness on the inner surfaces and all bonded into the brick work of the inclosure walls.

3. The exposed sides of the iron or steel girders shall be similarly covered in with brick work not less than four inches in thickness or concrete not less than two inches in thickness on the outer surfaces, tied and bonded, but the extreme outer edge of the flanges of beams, or plates or angles connected to the beams, may project to within two inches of the outside surface of the brick casing.

4. The inside surfaces of girders may be similarly covered with brick work, or if projecting inside of the wall they shall be protected by terra cotta, concrete or other fireproof material.

5. Girders for the support of the inclosure walls shall be placed at the floor line of each story.

Sec. 206. **Framing and Connecting Structural Steel and Iron.**

1. Iron or steel trimmer beams, headers and tail beams, shall be suitably framed and connected together, and the iron or steel girders, columns, beams, trusses and all other iron work of all floors and roofs shall be strapped, bolted, anchored and connected together and to the walls.

2. Beams framed into and supported by other beams or girders shall be connected thereto by angles or knees of a proper size and

thickness, and have sufficient bolts or rivets in both legs of each connecting angle to transmit the entire weight or load coming on the beam to the supporting beam or girder.

3. In no case shall the shearing value of the bolts or rivets, or the bearing value of the connection angles, provided for in this ordinance be exceeded.

Sec. 207. **Riveted Structural Steel and Iron.**

1. The distance from center of a rivet hole to the edge of the material shall not be less than the following:

5-8 of an inch for 1-2 inch rivets.
7-8 of an inch for 5-8 inch rivets.
1 1-8 of an inch for 3-4 inch rivets.
1 3-8 of an inch for 7-8 inch rivets.
1 1-2 of an inch for 1 inch rivets.

Whenever possible, however, the distance shall be equal to two diameters.

2. Rivets, whenever practicable, shall be machine driven. The rivets in connection shall be proportioned and placed to suit the stresses. The pitch of rivets shall never be less than three diameters of the rivet, nor more than six inches. In the direction of the stress it shall not exceed sixteen times the least thickness of the outside member. At right angles to the stress it shall not exceed thirty-two times the least thickness of the outside member.

3. Holes shall be punched accurately, so that upon assembling a cold rivet will enter the hole without straining the material by drifting.

Occasional slight errors shall be corrected by reaming.

4. The rivets shall fill the holes completely; the heads shall be hemispherical and concentric with the axis of the rivets.

5. Gussets shall be provided wherever required, of sufficient thickness and size to accommodate the number of rivets necessary to make a connection.

Sec. 208. **Bolting Structural Steel and Iron.**

1. When riveting is not made mandatory, connections may be effected by bolts. These bolts shall be of wrought iron or mild steel, and they shall have U. S. standard threads. The threads shall be full and clean, the nut shall be truly concentric with the bolt, and the thread shall be of sufficient length to allow the nut to be screwed up tightly.

2. When bolts go through bevel flanges, bevel washers to match shall be used so that the head and nut of bolt are parallel.

3. When bolts are used for suspenders, the working stresses shall be reduced for wrought iron to ten thousand pounds and for steel to fourteen thousand pounds per square inch of net area, and the load shall be transmitted into the head or nut by strong washers distributing the pressure evenly over the entire surface of the same.

4. Turned bolts in reamed holes shall be deemed a substitute for field rivets.

Sec. 209. **Steel and Iron Trusses.**

1. Trusses shall be of such design that the stresses in each member can be calculated.

2. Trusses shall be held rigidly in position by efficient systems of lateral and sway bracing, struts being spaced so that the maximum limit of length to least radius of gyration, established in this ordinance is not exceeded.

3. 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, and the total stresses thus formed shall in no case exceed the working stresses, stated in this ordinance.

Sec. 210. **Riveted Steel and Iron Trusses.**

1. For tension members, the actual net area only after deducting rivet holes, one-eighth inch larger than the rivets, shall be considered as resisting the stress.

2. If tension members are made of angle irons riveted through one flange only, that flange shall be considered in proportioning areas.

3. If the axis of two adjoining web members do not intersect within the line of the cords, sufficient area shall be added to the cord to take up the bending strains.

4. No bolts shall be used in the connection of riveted trusses, excepting when riveting is impracticable, and then the holes shall be drilled or reamed.

Sec. 211. **Pin-connected Steel and Iron Trusses.**

1. The bending stresses on pins shall be limited to twenty thousand pounds for steel and fifteen thousand pounds for iron.

2. Compression members in pin-connected trusses shall be proportioned, using seventy-five per centum of the permissible working stress for columns. The heads of all eye-bars shall be made by upsetting or forging. No weld will be allowed in the body of the bar. Steel eye-bars shall be annealed. Bars shall be straight before boring.

3. Pin-holes shall be bored true and at right angles to the axis of the members and must fit the pin within one-thirty-second of an inch.

4. The distance of pin holes from center to center for corresponding members shall be alike, so that when piled upon one another pins will pass through both ends without forcing.

5. Eyes and screw ends shall be so proportioned that upon test to destruction, fracture will take place in the body of the member.

6. Pin-plates shall be provided wherever necessary to reduce the stresses on pins to the working stresses prescribed in this ordinance. These pin-plates shall be connected to the members by rivets of sufficient size and number to transmit the stresses without exceeding working stresses.

7. Pins shall be accurately turned.

8. Rivets in members of pin-connected trusses shall be machine driven. Rivets in pin-

plates which are necessary to transmit stress shall be also machine driven.

9. The main connections of members shall be made by pins. Other connections may be made by bolts.

10. If there is a combination of riveted and pin-connected members in one truss, these members shall comply with the requirements for pin-connected trusses; but the riveting shall comply with the requirements of this ordinance.

Sec. 212. **Painting Structural Steel and Iron** —All structural metal work shall be cleansed of scale, dirt and rust, and be thoroughly coated with one coat of paint.

ARTICLE XIV.

REINFORCED CONCRETE AND CONCRETE BLOCKS.

Section 223. **General Provisions for Reinforced Concrete.**

1. An exact record of the progress of each operation shall be kept where the same can be inspected by the bureau. These records shall show the date of placing of all the concrete and date of removal of the forms, and must be turned over to the bureau when the building is completed.

Not to be altered in violation of ordinances, Sec. 2.
Definitions, Sec. 4, S. 32.
Other provisions of ordinance not inconsistent to apply, Sec. 3.

2. Reinforced concrete walls may be used in place of brick or stone walls with reduced thickness. Curtain walls shall not be less than four inches thick.

Thickness of walls, Sec. 85.
Thickness of curtain walls, Sec. 87.
Concrete foundation walls, Sec. 67, S. 5.

3. Concrete walls must be reinforced in both directions. The maximum spacing of reinforcing bars shall be eighteen inches centers, reinforcement in either or both faces of the wall being considered. Reinforcement shall be not less than one-fourth of one per centum.

4. Whenever floor constructions are built with a combination of tile or other fillers between joists, the following rules regarding the dimensions and methods of calculations of construction shall be observed:

(a) Ratio of minimum depth to clear span of joists shall not be greater than one to eighteen.

(b) Whenever a portion of the slab above the tile joist shall be considered as acting as a Tee-beam section, the slab portion must be cast monolithic with the joist, and must have a minimum thickness of at least two inches on all spans. Otherwise, all regulations applying to Tee-beams shall apply to tile and joist construction.

(c) When the joists are figured as rectangular beams, in accordance with the standard regulations for this type of beams, the slab shall

be considered as independent of the structural part of the building.

(d) Whenever porous tiles, or other materials which by their nature will absorb water from the concrete, are used between the joists, care must be taken to thoroughly saturate the tiles, or other materials with water immediately before the concrete is placed.

(e) Reinforcement for slabs over joist construction below thirty inches centers need not be closer than twenty-four inches in each direction.

Sec. 224. **Cement.**

1. Portland cement used in reinforced concrete structures shall meet the requirements of the standard specifications for cement of the American Society for Testing Materials.

2. Tests of cement used in building operations shall be made from time to time under the supervision of the bureau, in accordance with the preceding specifications. No brand of cement which does not meet these requirements shall be used.

Sec. 225. **Aggregates.**

1. Extreme care shall be exercised in selecting the aggregate for mortar and concrete, and careful tests must be made, where any doubt exists, of the materials for the purpose of determining their qualities and the grading necessary to secure maximum density or a minimum percentage of voids.

2. Fine aggregate shall consist of sand, crushed stone or gravel screenings, passing when dry a screen having one-quarter inch diameter holes, and not more than six per centum passing a sieve having one hundred meshes per lineal inch. It shall be of clean, silicious material free from vegetable loam or other deleterious matter.

3. Mortars composed of one part Portland cement and three parts fine aggregate by weight when made into briquets should show a tensile strength of at least seventy per centum of the strength of 1:3 mortar of the same consistency made with the same cement and standard Ottawa sand.

4. Coarse aggregate shall consist of enert material, such as crushed stone, or gravel, which is retained on a screen having one-quarter inch diameter holes, the particles shall be clean, hard, durable and free from deleterious material. The maximum size of the coarse aggregate shall be such that it will not separate from the mortar in laying and will not prevent the concrete fully surrounding the reinforcement or filling all parts of the forms.

5. The maximum size for reinforced concrete shall be such that all the aggregate shall pass a one and one-quarter inch diameter ring.

Sec. 226. **Cinder Concrete.**

1. Cinder concrete shall not be used for reinforced concrete structures.

2. It may be used for floor slabs on steel beams, or for fireproofing.

3. When cinders are used as the coarse aggregate, they shall be composed of hard, clean, vitreous clinker, free from sulphides, unburned coal or ashes.

Sec. 227. **Reinforcement.**

1. Medium steel for reinforcement for concrete shall be made from billets and shall conform to the requirements of the specifications for structural steel adopted by the American Railway Engineering and Maintenance of Way Association.

2. High carbon steel shall be made entirely from new billets, having (1) a desired ultimate strength of eighty-eight thousand pounds per square inch with an allowable range of eight thousand pounds from the desired ultimate strength; (2) an elongation in per cent in eight inches of 1,200,000 divided by ultimate strength, and (3) capable of cold bending one hundred eighty degrees around four diameters without fracture.

3. When wire or rods up to one-quarter inch diameter are used for reinforcement of slabs or for the prevention of shrinkage cracks, either material manufactured from the Bessemer billet (not re-rolled rails) or drawn from basic open hearth steel may be used.

Sec. 228. **Mixing.**

1. The ingredients of concrete shall be thoroughly mixed to the desired consistency, and

the mixing shall continue until the cement is uniformly distributed and the mass is uniform in color and homogeneous.

2. Methods of measurement of the proportions of the various ingredients, including water, shall be used, which will secure separate uniform measurements at all times.

3. When the conditions will permit, a machine mixer of a type which insures the proper mixing of the materials throughout the mass shall be used.

4. When it is necessary to mix by hand, the mixing shall be on a water-tight platform, and especial precautions must be taken to turn the materials until they are homogeneous in appearance and color.

5. The materials must be mixed wet enough to produce a concrete of such a consistency as will flow into the forms and about the metal reinforcement, and which, on the other hand, can be conveyed from the mixer to the forms without separation of the coarse aggregate from the mortar.

6. Retempering mortar or concrete, i. e., remixing with water after it has partially set, shall not be permitted.

Sec. 229. **Placing of Concrete.**

1. Concrete shall be placed in the work immediately after mixing and deposited and rammed or agitated by suitable tools in such a manner as to produce thoroughly compact

concrete of maximum density. No concrete should be placed until the reinforcement has been placed and firmly secured by wiring or other methods to prevent displacement.

2. The faces of concrete exposed to premature drying shall be kept damp for a period of at least seven days.

3. Before placing the concrete care shall be taken to see that the forms are substantial and thoroughly wetted and the space to be occupied by the concrete free from debris. When the placing of the concrete is suspended, all necessary grooves for joining future work shall be made before the concrete has had time to set.

4. When work is resumed, concrete previously placed shall be roughened, thoroughly cleansed of foreign material and laitance, drenched and slushed with a mortar consisting of one part Portland cement and not more than two parts fine aggregate.

5. Concrete shall not be placed in water, unless unavoidable. When concrete must be placed under water, unusual care must be taken to prevent the cement from being floated away.

6. Concrete shall not be mixed or deposited at a freezing temperature unless special precautions are taken to avoid the use of materials containing frost or covered with ice crystals, and to provide means to prevent the concrete from freezing after being placed in position and until it has thoroughly hardened.

Sec. 230. **Placing of Reinforcements**—The reinforcement shall be accurately located in the forms and secured against displacement.

Sec. 231. **Reinforcement of Joints.**

1. Whenever it is necessary to splice reinforcement by means of lapping, the length of the lap shall be determined upon the basis of the safe bond stress, and the stress in the bar at the point of splices; or a connection shall be made between the bars of sufficient strength to carry the stress. Splices at the point of maximum stress must be avoided.

2. In columns large bars shall be properly butted and spliced. Small bars may be treated as indicated in subdivision one.

Sec. 232. **Concrete Joints.**

1. Reinforced concrete work shall be stopped at such points that the joints will have the least possible effect on the strength of the structure. Footings shall be cast to their full depth at one operation.

2. Work in columns shall be stopped at the underside of the lowest beam or girder bearing on the column.

3. Construction joints in beams and girders shall be vertical and within the middle third of the span. Any concrete which may run past the bulkheads must be cleaned up before the concreting of the next section is started. Where brackets are used, the bracket shall be considered as a part of the beam or girder.

4. Construction joints in slabs shall be near the center of the span. No joint will be allowed between slab and beam or girder.

Sec. 233. **Removal of Forms.**

1. Under no consideration shall forms be removed until the concrete has hardened sufficiently to permit their removal with safety.

2. Forms shall not be removed from floor slabs in less than seven days. Sides of beams may be removed at the same time as the floor slabs provided original supports under beams and girders are left in place.

3. When original supports remain under beams and girders coming to the columns, the forms shall not be removed from the columns in less than four days.

4. The original supports for beams and girders must remain in place at least fifteen days, but beams and girders having more than thirty feet span from center to center of support shall be considered as special cases and shall be subject to inspection by the bureau before removal of supports.

Sec. 234. **Internal Stresses.** As a basis for calculations for the strength of reinforced concrete construction, the following assumptions shall be made:

1. A plane section before bending remains plane after bending.

2. The modulus of elasticity of concrete in compression within the usual limit of working stresses is constant.

3. In calculating the moment of resistance of beams the tensile stresses in the concrete shall be neglected.

4. Perfect adhesion is assumed between concrete and reinforcement. Under compressive stresses the two materials are therefore stressed in proportion to their moduli of elasticity and their distance from the neutral axis.

5. The ratio of the modulus of elasticity of steel to the modulus of elasticity of concrete shall be assumed to be fifteen.

6. No allowance shall be made for tension in concrete.

7. Initial stress in the reinforcement due to contraction or expansion in the concrete may be neglected.

8. In columns the ratio of least diameter to height shall be taken as one fifteenth. Greater ratios shall be deduced by satisfactory column formulae.

Sec. 235. **Length of Beams and Slabs.**

1. The span length for beams and slabs shall be taken as the distance from center to center of supports where figured W L 2 divided by twelve, but shall not be taken to exceed the clear span plus the depth of beam or slab. Brackets shall not be considered as reducing the clear span.

2. When slabs and beams are figured as simple beams the length shall be considered as the

clear distance between supports excluding brackets.

3. Beams shall be figured $\frac{W\ L^2}{12}$

girders shall be figured $\frac{W\ L^2}{8}$

Sec. 236. **Length of Columns.** Length of columns shall be taken as the maximum unsupported length.

Sec. 237. **Loads.**

1. The minimum live load for floors and roofs shall be as provided by this ordinance subject to the following reductions:

Loads for floors, Sec. 107; *loads for roofs, Sec.* 151.

2. The weight of the reinforced concrete shall be taken as one hundred and fifty pounds per cubic foot.

3. A reduction of live load coming to the column supporting the floor below the roof of five per centum to be allowed and a further reduction of five per centum of the live load of each story below, until the total reduction shall amount to fifty per centum of the live load of any floor, after which all loads shall be figured net to the foundations. These reductions shall not apply to storage warehouses.

4. No reduction of loads shall be allowed for figuring floor slabs.

5. No reduction of loads shall be allowed for figuring beams.

6. A reduction of fifteen per centum live load may be allowed in figuring the girders, except in buildings used for storage purposes.

7. In assuming the load coming to the column all beams and girders shall be considered as carrying a net load consisting of one hundred per centum each of live and dead load, subject to the above reductions.

Sec. 238. **Bending Moments.**

1. The bending moment of slabs uniformly loaded and supported at two sides only shall be taken as one-eighth wl 2, where w=unit load and 1=span.

2. Slabs that are reinforced in both directions and supported on four sides and fully reinforced over the supports (the reinforcement passing into the adjoining slabs) may be figured on the basis of bending moments equivalent to

$$\frac{W\ L^2}{F}$$

for load in each direction. When span under consideration is not continuous, F=8; when continuous over one support, F=10; when continuous over both supports, F=12; the distribution of the loads to be determined by the formula:

$$r = \frac{L^4}{L^4 - b^4}$$

in which r equals proportion of load carried by the transverse reinforcement, L equals length of span, and b equals breadth of slab.

3. The slab area may be reduced by one-

half, as above figured, when the reinforcement is parallel to and not farther from the supports than one-quarter of the shortest side.

The reinforcement spanning the shortest direction shall be below the reinforcement spanning the longer direction, and shall not be further apart than two and one-half times the thickness of the floor including the finish.

4. The bending moment of beams supported at the ends only shall be figured as of simple beams.

5. Beams supported at one end and continuous at the other to be figured partially restrained with a bending moment of eight-tenths that of a single beam.

When the overall vertical distance of the tension members is greater than one-sixth of the total depth of the beam, the stresses in each member shall be computed in proportion to the distance from the neutral axis.

6. Beams supporting rectangular slabs reinforced in both directions, shall be assumed to take the following load: The beams on which the shortest sides of the slab rest shall take the load of that portion of the slab formed by the isosceles triangle having this side as its base and half this side as its height. The load from the remaining portion of the slab shall go to the beams on which the long side of the slab rests.

7. When beams are continuous over two or more supports, the interior beams may be considered as partially restrained, and the bending

moments at the center and support figured as two-eighths that of a simple beam, unless the concrete at the bottom of the beam at the support shall by this consideration receive excess compression.

8. In beam and slab construction, an effective metallic bond should be provided at the junction of the beam and slab. When the principal slab reinforcement is parallel to the girder, transverse reinforcement shall be used extending over the girder and well into the slab.

9. When adequate bond between slab and web of beam is provided, the slab may be considered as an integral part of the beam, but its effective width shall not exceed one-eighth of the span length of the beam on either side of the beam.

10. In the design of Tee-beams acting as continuous beams, due consideration should be given to the compressive stresses at the support at the bottom of the beam.

Sec. 239. **Working Stresses.**

1. Concrete composed of materials meeting the requirements of these regulations, mixed in proportion to one part of cement and six parts of aggregate (fine and coarse), shall develop a compressive strength of two thousand pounds per square inch in twenty-eight days when tested as eight inch diameter cylinders sixteen inches long under laboratory conditions of manufacture and storage, using the same consistency as is used in the field. When the pro-

portion of cement is increased, using the best quality of aggregates, an increase may be made in all working stresses proportional to the increase in compressive strength at twenty-eight days, as determined by actual tests.

2. On the above basis, the following working stresses shall be allowed in construction:

(a) Bearing compression, six hundred and fifty pounds per square inch.

(b) Compression in extreme fiber, six hundred and fifty pounds per square inch. With increase of fifteen per centum near supports in continuous beams.

(c) Axial compression in columns without hoops, four hundred and fifty pounds per square inch, and six thousand seven hundred and fifty pounds per square inch on vertical reinforcement.

(d) Axial compression in columns with one to four per centum of vertical reinforcement, six hundred and fifty pounds per square inch on the concrete, and nine thousand seven hundred and fifty on the vertical reinforcement.

(e) Compression on columns reinforced with structural steel units which thoroughly encase the concrete core, five hundred and forty pounds per square inch on the concrete, and eight thousand one hundred pounds per square inch on the structural steel.

(f) Bond between plain bars and concrete, eighty pounds per square inch of surface of bar; where adequate mechanical bond is provided

the stress shall not exceed one hundred and fifty pounds per square inch of surface of bar.

(g) In calculating web reinforcement the concrete shall be considered to carry sixty pounds per square inch, the remainder to be provided for by means of reinforcement intension.

Members of web reinforcement shall be embedded in the compression portion of the beam so that adequate bond strength is provided to fully develop the assumed strength of all shear reinforcement. They shall not be spaced to exceed three-fourths of the depth of the beam in that portion where the shearing stresses exceed the allowable shearing value of the concrete. Web reinforcement, unless rigidly attached, shall be placed at right angles to the axis of the beam and looped around the extreme tension member.

3. Bars composing longitudinal reinforcement shall be straight and shall have sufficient lateral support to be securely held in place until the concrete is set.

4. The clear spacing of bands or hoops shall be not greater than one-fourth the diameter of the inclosed column, and in no case more than twelve inches; if eight bars are used six inches O. C. Adequate means must be provided to hold bands or hoops in place so as to form a column, the core of which shall be straight and well centered.

5. Bending stresses due to eccentric loads must be provided for by increasing the section

until the maximum stress does not exceed the values above specified.

6. The ratio of modulus of elasticity of concrete to steel shall be considered as one to fifteen.

7. The allowable tensile stress in reinforcement to be sixteen thousand pounds per square inch for medium steel, and twenty thousand pounds per square inch for high carbon steel with adequate mechanical bond, or cold twisted steel bars.

8. The compressive stress in the steel reinforcement shall be fifteen times the allowed compression in concrete in which the steel is embedded.

Sec. 240. **Fireproofing**—The main reinforcement in columns shall be protected by a minimum of one and one-half inches of concrete, reinforcement in girders and beams by one inch and floor slabs by one-half inch.

Sec. 241. **Use of Concrete Blocks**—Concrete building blocks with hollow spaces not exceeding one-third the width of the block and having an annulus of uniform thickness and not more than nine inches high, nor less than eight inches on the beds, may be substituted for brick in all buildings of ordinary construction not more than three stories in height, nor more than forty-three feet in height from the foundation walls, and in which the walls are of the dimensions and otherwise constructed as prescribed

in this ordinance; but shall not be used for party walls.

Ordinary construction, Sec. 4, *S.* 15.
When permitted, Sec. 32, *S.* 3.
Foundation walls, Sec. 67, *S.* 2.
Footings, Sec. 68, *S.* 4.
See walls, Sec. 82.

Sec. 242. **Cement for Concrete Blocks**—The cement shall meet the requirements of the standard specifications for Portland cement of the American Society for Testing Materials.

Sec. 243. **Backing of Concrete Blocks**—The backing of all concrete blocks shall be made of one part Portland cement, two parts fine aggregate and four parts coarse aggregate, as such aggregates are specified for reinforced concrete.

Aggregates, Sec. 225.

Sec. 244. **Facing of Concrete Blocks**—The facing of concrete blocks shall consist of one part Portland cement, two parts fine aggregate, and shall be one inch in thickness. It shall be thoroughly tamped into place in the mould, and the backing immediately deposited. In order to prevent checks and hair cracks troweling will not be permitted.

Sec. 245. **Curing of Concrete Blocks.**

1. For the purpose of securing proper curing, the blocks shall be protected from the sun

and strong currents of air, shall be sprinkled at such regular intervals as necessary to prevent drying, and such other precautions taken as to enable the final set to take place under the most favorable conditions.

2. At least fifteen days shall be allowed for curing, except that when cured by steam at least five days shall be allowed.

Sec. 246. **Strength of Concrete Blocks**—Every concrete block used or manufactured for use in the city of Rochester, when cured, shall have a crushing strength of not less than four hundred and fifty pounds per square inch of total area including hollow spaces.

Sec. 247. **Stamping of Concrete Blocks**—Every person, firm or corporation making or manufacturing concrete blocks in the city of Rochester shall stamp on each block a trade mark or design adopted by it, a certificate of which has theretofore been filed with the bureau, or the name of the person, firm or corporation by whom made or manufactured.

Sec. 248. **Sale or Use of Unstamped Blocks Prohibited**—No cement block made in the city of Rochester and not stamped as above provided shall be sold or offered for sale in the city of Rochester, or used in the construction of any building or structure in said city.

Sec. 249. **Use of Blocks Made Outside of City Regulated**—No concrete block made out-

side of the city of Rochester shall be used in the construction of any building or structure in said city, unless a permit in writing therefor is issued by the bureau. The bureau may require such tests of the block or certificates in regard thereto to be made or furnished by the owner as it deems proper, or may make such tests as it deems proper before issuing such permit.

Sec. 250. **Use of Other Concrete Blocks Prohibited**—A concrete block which does not conform to the provisions of this ordinance shall not be used in the construction of any building or structure in the City of Rochester.

ARTICLE XV

FIREPROOF CONSTRUCTION AND FIREPROOFING.

Section 261. **Fireproof Construction** — A building required to be constructed fireproof shall have all the parts carrying weights or resisting strains constructed wholly of stone, burnt clay, iron, steel or Portland cement concrete, and all stairs and elevators enclosed, and all partitions and stairs and elevator enclosures made entirely of incombustible material; and all metallic structural members protected against the effect of fire by coverings of a material which must be incombustible and a slow heat conductor; and shall have an incombustible roof. The interior trim of such buildings

including stairs and door and window casings may be of wood.

Incombustible roofs, Secs. 151-152.
Not to be altered in violation of ordinance, Sec. 2.
Buildings required to be fire proof, Sec. 32, *S.* 1.
Other provisions of ordinance not inconsistent to apply, Sec. 3.

Sec. 262. **Fireproof Filling Between Beams**—In buildings required to be constructed fireproof between the wrought iron or steel floor beams shall be placed brick arches, hollow tile arches, Portland cement concrete arches or other fillings as the same are hereinafter in this article respectively defined, and constructed as required by this article.

Sec. 263. **Brick Arches.**

1. Between the wrought iron or steel floor beams shall be placed brick arches springing from the lower flanges of the steel beams.

2. Said brick arches shall be designed with a rise to safely carry the imposed load but never less than one and one-quarter inches for each foot of span between the beams, and they shall have a thickness of not less than four inches for spans of six feet or less, and eight inches for spans over six feet or such additional thickness as may be required by the bureau.

3. Said brick arches shall be composed of good, hard brick or hollow brick of ordinary

dimensions laid to a line of 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 a four-inch arch is used.

4. The said arches shall spring from protecting skew-backs of burnt clay resting on and covering the lower flanges of the beams, so as to afford a minimum protection of two inches of solid burnt clay material underneath the flanges, or otherwise entirely incasing the said flanges as provided for in this ordinance.

5. The brick shall be well wet and the joints filled in solid with cement mortar. The arches shall be well grouted and properly keyed.

Sec. 264. **Hollow Tile Arches.**

1. The space between the wrought iron or steel floor beams shall be filled in with hollow tile arches of hard burnt clay, semi-porous or porous terra cotta of uniform density and hardness of burn.

2. The shells and webs of hollow tile arch blocks shall be not less than three-fourths of one inch in thickness.

3. Skew-backs shall be used with all forms of hollow tile arches and be of such form and section to properly receive the thrust of the arches. The shells and webs of the skew-backs shall be not less than one and one-half inches in thickness, except that the portion extending under the lower flanges of the beams shall be

not less than two inches of solid material not interrupted by any interior cavities or spaces.

4. The said arches shall be of a depth and sectional area to carry the load to be imposed thereon, without straining the material beyond its safe working load, but the thickness of the shells and webs shall in no case be less than herein required, and the depths shall not be less than one and three-quarters inches for each foot of span, not including any portion of the depth of the tile projecting below the underside of the beams, a variable distance being allowed of not over six inches in the span between the beams, if the soffits of the tile are horizontal; but if said arches are segmental, having a rise of not less than one and one-quarter inches for each foot of span, the depth of the tile shall be not less than six inches.

5. The joints shall be solidly filled with cement mortar as required for common brick arches, and the arch so constructed that the key parts shall always fall in the central portion.

6. The shells and webs of all end construction blocks shall abut, one against another.

Sec. 265. **Portland Cement Concrete Arches.**

1. The space between the wrought iron or steel floor beams shall be filled with arches of Portland cement concrete, segmental in form, and which shall have a rise of not less than one and one-quarter inches for each foot of span between the beams.

2. The concrete shall be not less than four inches in thickness at the crown of the arch and shall be mixed in the proportions required by this ordinance.

3. The segmental arches, if reinforced, shall in all cases be reinforced or protected with steel rods or bars, reticulated or meshed steel, or similar metal weighing not less than one pound per square foot, and having openings not larger than three inches square.

4. Such reinforcing metal, if essential to secure the required strength of the arches, shall be so imbedded that the metal is covered by not less than one inch of the concrete; but if used partly or wholly as a centering for and if not essential to secure the required strength of the arches, the metal centering need not be wholly imbedded in the concrete.

Sec. 266. **Other Fillings.**

1. In the space between the wrought iron or steel floor beams shall be placed solid or hollow burnt clay, brick or concrete slabs in flat or curved shapes, concrete or other fireproof composition, and any of said materials may be used plain or in combination with wire cloth, expanded metal, wire strands, or wrought iron or steel bars; said metal if used to be in all cases so imbedded in the fireproof composition or combination that the metal shall be covered by not less than one inch of the fireproof material; but in any such construction and as a precedent condition to the same being used,

tests shall be made as herein provided by the manufacturer thereof under the direction and to the satisfaction of the bureau, and evidence of the same shall be kept on file in the bureau, showing the nature and result of the test.

2. Such tests shall be made by constructing within enclosure walls a platform consisting of four rolled steel beams, ten inches deep, weighing each twenty-five pounds per lineal foot, and placed four feet between the centers, and connected by transverse tie rods, and with a clear span of fourteen feet for the two interior beams and with the two outer beams supported on the side walls throughout their length, and with both a filling between the said beams, and a fireproof protection of the exposed parts of the beams of the system to be tested, constructed as in actual practice, with the quality of material ordinarily used in that system, and the ceiling plastered below, as in a finished job; such filling between the two interior beams being loaded with a distributed load of one hundred and fifty pounds per square foot of its area and all carried by such filling; and subjecting the platform so constructed to the continuous heat of a wood fire below, averaging not less than seventeen hundred degrees Fahrenheit for not less than four hours, during which time the platform shall have remained in such condition that no flame will have passed through the platform or any part of the same, and that no part of the load shall have fallen through, and that the beams shall have been protected from the

heat to the extent that after applying to the underside of the platform at the end of the heat test a stream of water directed against the bottom of the platform and discharged through a one and one-eighth inch nozzle under sixty pounds pressure for five minutes, and after flooding the top of the platform with water under low pressure, and then again applying the stream of water through the nozzle under the sixty pounds pressure to the bottom of the platform for five minutes, and after a total load of six hundred pounds per square foot uniformly distributed over the middle bay shall have been applied and removed, after the platform shall have cooled, the maximum deflection of the interior beams shall not exceed two and one-half inches.

3. The bureau may from time to time prescribe additional or different tests than the foregoing for systems of filling between iron or steel floor beams, and the protection of the exposed parts of the beams.

4. Any system failing to meet the requirements of the test of heat, water and weight as herein prescribed, shall be prohibited from use in any building hereafter erected.

5. Duly authenticated records of the test heretofore made of any system of fireproof floor filling and protection of the exposed parts of the beams may be presented to the bureau, and if the same be satisfactory to said bureau it shall be accepted as conclusive.

Sec. 267. **Protection Against Injury by Freezing**—No filling of any kind which may be injured by frost shall be placed between said floor beams during freezing weather, and if the filling is placed during any winter month, it shall be temporarily covered with suitable material for protection from being frozen.

Sec. 268. **Cinder Concrete Filling on Top.**

1. On the top of any arch, lintel or other device which does not extend to the plane of the underside of the floor finish, cinder concrete or other suitable fireproof material shall be placed to solidly fill up the space to a level with the top of said floor beams, and shall be carried to the underside of the wood floor boards in case such be used.

2. Cinder concrete shall be made with not less than one part of Portland cement by volume, to ten parts of other material, and the top flanges of all beams shall be entirely imbedded in same to a depth of not less than two inches.

Sec. 269. **Centering**—Centering when used in placing fireproof systems between steel floor beams shall not be removed until such time as the mortar or materials have thoroughly set; the time at which such centering may safely be removed will vary from twenty-four hours to sixty days, depending upon temperature and other atmospheric conditions of the weather; the time for such removal to be determined by the bureau.

Sec. 270. **Strength for Fireproof Floor Filling**—All fireproof floor systems shall be of sufficient strength to safely carry the load to be imposed thereon without straining the material in any case beyond its safe working load.

Sec. 271. **Pipe Openings Through Fireproof Floors.**

1. Openings through fireproof floors for pipes, conduits and similar purposes shall be shown on plans filed with the bureau.

2. After the floors are constructed no opening greater than eight inches square shall be cut through said floors, unless properly boxed or framed around with iron.

3. Such openings shall be filled in with fireproof material after the pipes or conduits are in place.

Sec. 272. **Incasing Interior Columns**—In buildings required to be constructed fireproof.

1. All cast iron, wrought iron or rolled steel columns, including the lugs and brackets on same, used for vertical supports in the interior of the building, or used to support any fireproof floor, shall be entirely protected with not less than four inches of hard burned brick work, terra cotta, concrete, or other fireproof material, without any air space next to the metal, securely applied; but no lime mortar shall be used for this purpose, nor shall any plastering, whether or not on metal lathing, be considered a part of the covering required.

2. No single block or unit of insulating material used for column covering shall have a greater vertical dimension than twelve inches when placed in position, nor shall the shells and webs of hollow tile or terra cotta blocks be less than one inch in thickness, and these blocks shall be laid up with Portland cement mortar; provided, however, that plaster blocks may be set in gypsum plaster, and the said blocks shall be suitably tied or anchored together.

3. The extreme outer edges of lugs brackets and similar supporting metal may project to within seven-eighths of an inch of the surface of the fireproofing.

4. The fireproof covering shall start upon the fireproof floors, and continuously extend to the fireproof ceilings or underside of girders above, and be entirely independent of any ornamental base or capital.

5. No pipes, wires or conduit of any kind shall be incased in the fireproofing surrounding any column, girder or beam of steel or iron, but shall be placed outside of such fireproofing.

6. Where the fireproof protection of columns is exposed to damage from the trucking or handling of merchandise, such fireproof protection shall be jacketed on the outside for a height of not less than four feet from the floor with sheet metal, or with vertical strips of oak; and if the oak be used for such purpose the vertical strips shall be sufficiently separated from each other always to show that the woodwork of the guard has been placed entirely on

the outside of the fireproof material which incases the metal column.

Sec. 273. **Incasing Exposed Sides and Bottom and Top Plates and Flanges of Girders and Beams**—In buildings required to be constructed fireproof.

1. The exposed sides of wrought iron or rolled steel girders supporting walls, iron or steel floor beams, or supporting floor arches or floors, shall be entirely incased with hard burned clay, porous terra cotta, concrete or other fireproof material, not less than four inches in thickness, and the bottom and top plates and flanges of such girders shall have not less than two inches in thickness of such insulating material.

2. The bottom and top plates and flanges of all wrought iron or rolled steel floor and roof beams, and all exposed portions of such beams below the abutments of floor arches or filling between the floor beams shall be entirely incased with hard burned clay, porous terra cotta, concrete or other fireproof material, such incasing material to be not less than two inches in thickness.

3. All incasing material shall be securely attached to the girders and beams.

4. The shells and webs of hollow tile blocks shall not be less than one inch in thickness, and shall be laid up with Portland cement mortar, provided, however, that plaster blocks may be set in gypsum plaster, and the said blocks shall be suitably tied or anchored together.

Sec. 274. **Incasing Interior Columns and Girders in Non-Fireproof Buildings**—In all non-fireproof buildings where iron or steel structural members are incorporated in the construction of the building, excepting buildings of frame construction, said iron or steel columns, girders, beams and other structural metal members shall be incased as before described in this article, except that the thickness of such insulating material may be not less than two inches.

ARTICLE XVI.

FIRE APPLIANCES AND FIRE ESCAPES.

Section 285. **Stand Pipes.**

1. Every building more than four stories in height and intended to be used as a factory, warehouse, office building, hotel, tenement house or for mercantile purposes and all buildings exceeding eighty feet in height, shall have either inside or outside a metallic stand pipe not less than four inches in diameter.

2. In every such building more than one hundred and fifty feet deep fronting on two or more streets, there shall be a stand pipe at each end of the building.

3. Stand pipes shall extend from the cellar to and through the roof, with a hose connection so arranged that hose can be attached to the same from the street, and one hose provided at each floor above the first and on the roof.

4. Stand pipes shall be provided with a Siamese steamer connection located on the out-

side of the building not more than five feet above street grade.

5. Hose couplings on stand pipes shall conform to the size and pattern adopted by the Fire Department of Rochester.

6. When a tank with sprinkler system extending throughout the building is installed, no stand pipe shall be required.

Definition of buildings, Sec. 4.
Stand pipes for theaters, Sec. 353.

Sec. 286. **Sprinkler Pipes in Basement and Cellar.**

1. In every building within the fire limits intended to be used for mercantile, manufacturing or storage purposes, there shall be provided a system of automatic sprinklers placed at the ceiling of each story below the first, and extending to the full depth and breadth of the building.

Fire limits defined, Sec. 308.

2. Said sprinkler pipes shall be connected with a pipe leading to the outside of the building, and there provided with a Siamese steamer connection uniform with that used by the Fire Department of the city.

Sec. 287. **Fire Shutters and Doors.**

1. Every building more than two stories in height intended to be used as a factory, warehouse or for mercantile purposes, shall have standard fire doors, blinds or shutters on exterior windows and openings above the first floor,

except those facing a street, yard, court or open space more than thirty feet in width. The bureau may require such doors, blinds or shutters on other exterior windows and openings of said buildings or other buildings where it deems it necessary.

2. If an approved metal window frame and approved metal sash with approved wire glass are built in a window opening, fire shutters may be omitted.

3. All shutters opening on fire escapes and at least one row vertically in every three vertical rows on the front window openings shall be so arranged that they can be readily opened from the outside. Rolling iron or steel shutters shall be carefully counterbalanced and so arranged that they can be readily opened from the outside.

4. Buildings specified in this section having openings in interior walls shall when required by the bureau be provided with suitable fire doors, equipped with approved self-closing devices.

5. Occupants of buildings shall close all exterior and interior fire shutters, blinds and doors at the close of the business of each day.

Sec. 288. **Gas Shut-Offs**—Every building more than two stories in height intended to be used as a hotel, tenement house, factory, warehouse, lodging house, or for mercantile purposes, in which gas is used for lighting, shall have the supply pipes leading from the street

mains each provided with a stop cock placed outside the building at a point and in a manner directed by the bureau, and so arranged as to allow the gas to be shut off from the building.

Gas shut-offs for theaters, Sec. 352, *S.* 2.

Sec. 289. **Fire Escapes Required.**

1. Every building more than two stories in height, used or intended to be used as a hotel, lodging house, factory, mill, office building, hospital, asylum, school, public building, or for mercantile purposes, and not having more than one means of egress, shall have constructed therein or thereon outside iron stair fire escape, or inside fire stairways.

2. The number and location of such fire escapes and fire stairways shall be determined by the bureau according to the location of the building, its style of construction, size, constructed means of egress, number of inmates and the purposes for which used.

3. This section applies to buildings now or hereafter constructed.

Fire escapes for tenements, Sec. 378.

Sec. 290. **Inside Fire Stairways.**

1. Inside fire stairways shall be constructed entirely of fireproof material inclosed with walls, and shall connect with a passageway leading directly to the street without any connection whatever with the basement.

2. They shall have standard fire doors self-

closing at every landing, which doors must never be locked or fastened.

Sec. 291. **Outside Fire Escapes.**

1. Outside fire escapes shall consist of open iron stairways of not more than forty-five degrees slant, with steps not less than six inches in width and twenty-four inches in length, and protected by a well secured handrail on both sides.

2. They shall be connected with each floor above the first, well fastened and of sufficient strength, and shall have landings or balconies not less than six feet in length, and three feet in width guarded by iron railings not less than three feet in height and embracing two windows at each story, connected with the interior by easily accessible and unobstructed openings.

3. The windows or doors to each fire escape shall be located as far as possible consistent with accessibility from the stairways and elevator hatchways or openings and the ladders thereof shall extend to the roof.

4. Drop stairs shall reach from the lowest platform to the ground, and shall be hinged and hung with a counter-weight suspended to a chain or cable with the said weight entirely inclosed in an iron pocket in which it shall move freely up and down.

5. The weights of all fire escapes now existing shall be enclosed in such iron pockets.

6. Any other plan of outside iron stair

fire escapes substantially as above required, shall be sufficient if approved by the bureau.

7. Fire escapes shall be kept painted and in good repair.

Sec. 292. **Scuttles**—In every building more than two stories in height, intended to be used as a hotel, lodging house, factory, mill, office building, hospital, asylum, school, public building or for mercantile purposes, there shall be constructed on the roof a scuttle with stationary iron stairs or ladders leading thereto.

Bulkheads for tenements, Sec. 382.

Sec. 293. **Incumbrances Prohibited.**

1. No person shall at any time place any incumbrance or obstruction of any kind whatsoever before or upon any outside fire escape or balcony thereof, or before any window, or upon the sill thereof leading to such fire escape or balcony.

2. No person shall at any time place any incumbrance of any kind whatsoever before or upon any inside fire stairway or ladder, or stairway leading to bulkhead or scuttle on roof, or in, or before any passageway leading to or from the same.

Sec. 294. **Fire Doors**—All fire doors required by this ordinance shall be constructed in accordance with the regulations and specifications of the Underwriters Association of New York State, unless otherwise permitted by the bureau.

295. **Basement Exits.** In buildings now or hereafter constructed used for mercantile or other purposes in which people assemble in the basement, there shall be provided safe means of egress from the basement leading directly to the street, the location and number of such places of egress to be determined by the bureau.

Sec. 296. **General Protection Against Fire and Accident.**

1. In all hotels, churches, theaters, restaurants, railroad depots, public buildings, department stores and other business and manufacturing buildings now or hereafter constructed, where large numbers of people are congregated, the halls, doors, stairways, seats, passageways and aisles, and all lighting and heating appliances and apparatus shall be arranged as the bureau shall direct to facilitate egress in cases of fire or accident, and to afford the requisite and proper accommodations for the public protection in such cases.

2. All aisles and passageways in said buildings shall be kept free from chairs and other obstructions and no person shall be allowed to stand in or occupy any aisles or passageways of any theater, church or public building during any performance or public assemblage.

3. The Commissioner, Fire Marshal or any employee of the bureau may at any time serve a written notice upon the owner, lessee or manager of any of said buildings, directing any act or thing to be done, in or about said buildings,

and the several appliances therewith connected, such as halls, doors, stairs, windows, seats, aisles, firewalls, fire apparatus and fire escapes, as he may deem necessary to protect the public and to compel obedience to law.

ARTICLE XVII.

FRAME CONSTRUCTION.

Section 307. **Definition**—A building of frame construction is one with the exterior walls or portions thereof constructed of wood, or wood veneered with brick or stone, or wood covered with plaster, corrugated iron or sheet metal.

Frame construction permitted, Sec. 32, S. 4.
Not to be altered in violation of ordinance, Sec. 2.
Other provisions of ordinance not inconsistent to apply, Sec. 3.
Modifications allowed if built of brick, stone or concrete, Sec. 51.

Sec. 308. **Fire Limits**—The fire limits are:

All that portion of the city included within the following lines or boundaries: Beginning at the intersection of Allen Street with the Erie Canal; thence northerly along the easterly line of said canal to the center line of Brown Street; thence easterly along the center line of Brown Street to the center line of Frankfort Street; thence northerly along the center line of Frank-

fort Street to the center line of Smith Street; thence easterly along the center line of Smith Street to the center line of St. Paul Street; thence southerly along the center line of St. Paul Street to the center line of Hand Street; thence easterly along the center line of Hand Street, to the center line of Emmett Street; thence southerly along the center line of Emmett Street to the center line of Ward Street; thence easterly along the center line of Ward Street to the center line of Clinton Avenue North; thence southerly along the center line of Clinton Avenue North to the northerly line of the New York Central & Hudson River Railroad; thence easterly along the northerly line of said railroad to the center line of Joseph Avenue; thence southerly along the center line of Joseph Avenue and Hyde Park to the center line of Cumberland Street; thence easterly along the center line of Cumberland Street to the center line of North Avenue; thence southerly along the center line of North Avenue to the center line of University Avenue; thence easterly along the center line of University Avenue to the center line of Scio Street; thence southerly along the center line of Scio Street to the center line of East Avenue; thence easterly along the center line of East Avenue to the center line of Williams Street; thence southerly along the center line of Williams Street and Broadway to the center line of Denning Street; thence westerly along the center line of Denning Street to the Erie Canal; thence westerly

along the northerly line of the Erie Canal to the intersection of the centers of Griffith Street and South Avenue; thence westerly along a line in direct continuation of Griffith Street to the easterly bank of the Genesee River; thence southwesterly in a diagonal line across said Genesee River to the center line of Adams Street; thence westerly along the center line of Adams Street to the center line of South Fitzhugh Street; thence northerly along the center line of South Fitzhugh Street to the center line of School Alley; thence westerly and northerly along the center line of School Alley to the center line of Troup Street; thence westerly along the center line of Troup Street to the center line of Caledonia Avenue; thence northerly along the center line of Caledonia Avenue to the southerly line of the Erie Canal; thence westerly on a line parallel with West Avenue and one hundred fifty feet distant therefrom to the center line of Gleason Place; thence northerly along the center line of Gleason Place to the center line of West Avenue; thence westerly along the center line of West Avenue to the center line of Litchfield Street; thence northerly along the center line of Litchfield Street to the center line of Maple Street; thence easterly along the center line of Maple Street to the center line of Canal Street; thence northerly along the center line of Canal Street to the center line of Allen Street; thence easterly along the center line of Allen Street to the point of beginning.

Sec. 309. **Frame Buildings Prohibited Within the Fire Limits**—No building of frame construction shall be erected within the fire limits, except that the bureau may permit the erection of temporary one story frame sheds adjacent to buildings in course of erection for the use of builders, which sheds shall be demolished upon the completion of said building.

Roofs of buildings in fire limits, Sec. 152, *S.* 1.

Cornices and gutters in fire limits, Sec. 154.

Chimneys in fire limits, Sec. 164, *S.* 8.

Incombustible ash receptacles in fire limits, Sec. 173, *S.* 3.

Sec. 310. **Alteration of Frame Buildings Within the Fire Limits.**

1. No building of frame construction within the fire limits shall be altered so as to increase the height or dimensions thereof.

2. Nothing in this section shall be construed to prohibit the repairing of any shingled roof within the fire limits, provided the building is not altered in height, but this section shall not be construed to permit the renewal of a shingled roof.

Not to be altered in violation of ordinance, Sec. 2.

Alteration of frame tenements, Sec. 375.

Sec. 311. **Area of Frame Building**—A building of frame construction erected or altered for

any use other than as a grain elevator, coal elevator and pockets, ice house, or exhibition building shall not cover a ground area of more than seventy-five hundred square feet for a one-story building, or more than five thousand square feet for a two story building.

Sec. 312. **Capacity of Frame Buildings.**

1. No single building of frame construction shall contain accommodations for more than four families.

2. Connected buildings of frame construction may be erected containing accommodations for more than four families, but each part thereof containing accommodations for four families shall be separated from the part on either side by a wall built of brick, tile or concrete block, extending from the basement up to the roof boards. All such partitions must be supported on a twelve inch brick, tile or concrete block wall, or an eighteen inch stone wall, in the basement, which must be built from the cellar floor to the top of the ground floor joist.

Sec. 313. **Location on Lot of Frame Building.**

1. No enclosed portion of a building of frame construction shall be erected within three feet of any side or rear lot line not adjoining a public street, unless two or more lots are used for the construction of one building, when such restriction shall apply considering all of such lots as one.

2. A building of frame construction now or hereafter erected shall not be enlarged or altered to such an extent as to violate the prohibition contained in this section.

3. No lot upon which a building of frame construction is or shall be erected shall be diminished to such an extent as to violate the prohibition contained in this section.

Sec. 314. **Frame Construction.**

1. A building of frame construction exceeding fifteen feet in height, shall be built with walls, posts, girts, plates and rafters of suitable size, and properly framed and braced with suitable studs set at proper distances apart.

2. The floor beams and rafters of buildings of frame construction shall be not less than two inches in thickness.

3. The walls of dwellings of frame construction, except where the first story is used for store or business purposes, shall be not less than two feet above the ground to the under side of the same.

Foundation walls and footings, Sec. 67; S. 2; Sec. 68, S. 4.

Sec. 315. **Dwellings of Hollow block.**

1. Dwellings, private stables and private garages with external walls of hollow hard burned clay block or poured cement hollow tile block not less than eight inches in thickness and laid in Portland cement mortar only, may be

erected not more than two stories in height, exclusive of basement and attic.

Portland cement mortar, Sec. 43, *S.* 8.

2. When the walls are exposed to the weather, the blocks shall be covered on the exposed side with at least one-half inch cement plaster.

Strength of blocks, Sec. 48.

3. All piers and buttresses that support loads in excess of five tons shall be filled solid with cement concrete.

4. Lintels spanning over four feet six inches in the clear shall rest on blocks filled solid with concrete.

5. Such dwellings shall be constructed or altered to comply with the limitations, regulations and provisions of this ordinance relative to the erection or alteration of buildings of frame construction, so far as applicable, except that they may be erected within the fire limits, and otherwise they shall be constructed to comply with the other provisions of this ordinance applicable thereto.

Foundation walls and footings, Sec. 67, *S.* 2; *Sec.* 68, *S.* 4.

Sec. 316. **Lunch Wagons, etc.**

1. No vehicle enclosed and roofed constructed with a combustible roof, or with sides of wood or wood covered with plaster, corrugated iron or sheet metal, and used for the sale

of food, goods, wares or merchandise, shall be placed on any lot within the fire limits.

2. Such vehicles shall not be placed on any lot outside the fire limits without the written permission of the bureau, which has the power to make such requirements and regulations in respect thereto as it deems necessary for safety and health.

3. The provisions of this ordinance relating to the location on lots of buildings of frame construction, apply to such vehicles.

Sec. 317. **Wood Fences.**

1. No wood fence upon the line of any public street shall be constructed of greater height than seven feet above the sidewalk grade, or seven feet above the surface of the ground where no grade is established. This subdivision shall not be deemed to prevent the bureau granting permits for the erection of billboards as provided by the ordinance relating to Licensed Occupations.

2. No wood fence more than five feet in height and not fronting on a public street shall be constructed within ten feet of a building.

ARTICLE XVIII.

THEATERS.

Section 329. **Application of Article**—The provisions of this article except section 358 apply to every building intended to be used as a theater, which has accommodations for three

hundred or more persons, and they shall be built to comply therewith.

Definition, Sec. 4, *S.* 6.
Not to be altered in violation of ordinance, Sec. 2.
Other provisions of ordinance not inconsistent to apply, Sec. 3.
Fireproof construction required, Sec. 32, *S.* 1 (*b*).
Floor loads of, Sec. 107, *S.* 3.
Regulations relating to, Sec, 296.

Sec. 330. **Street Entrances and Exits.**

1. A theater shall have at least one front on the street, and in such front there shall be suitable means of entrance and exit.

2. The level of the main entrance to the theater shall not be more than thirty-six inches higher than the level of the sidewalk.

Sec. 331. **Courts.**

1. A theater shall have an open court or space on both sides thereof, unless situate on a corner lot when such open court or space shall be on the side not bordering on the street.

2. Every such court shall be not less than seven feet in width when the seating capacity is not more than one thousand people; not less than eight feet in width when the seating capacity is more than one thousand and not more than eighteen hundred people, and not less than ten feet in width when the seating capacity is more than eighteen hundred people.

3. Every such court 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 entrance vestibule.

4. A separate and distinct corridor shall continue to the street from each open court through such superstructure as may be built on the street side of the auditorium, with continuous walls of brick or fireproof materials on each side of the entire length of said corridor or corridors, and the ceiling and floors shall be fireproof.

5. Every such corridor shall be not more than three feet less in width than the width of the court with which it is connected, and shall in no case be less than five feet.

6. There shall be no projection in any such corridor.

7. The doors or gates in the corridor shall open towards the street, and during performances shall be kept open by proper fastenings; at other times they may be closed and fastened by movable bolts or locks.

8. Such open courts and corridors shall not be used for storage purposes, or for any purpose whatsoever, except for exit and entrance from and to the auditorium and stage, and must be kept free and clear at all times.

9. The level of such corridors shall not be greater than one step above the level of the sidewalk, when they begin at the street entrance.

Sec. 332. **Gradients.**

1. To overcome any difference of level in and between entrances, exits, and the streets or courts on which they open, courts and corridors, lobbies, passages and aisles on the ground floor, gradients shall be employed of not over one foot in twelve feet with no perpendicular rises.

2. Above the ground floor, gradients shall be employed instead of steps, when possible, to overcome slight differences of level in or between aisles, corridors and passages.

Sec. 333. **Exits.**

1. From the auditorium opening into the open courts or side street, there shall be not less than two exits on each side in each tier from and including the parquet and each and every gallery.

2. In addition to the above exits, every theater accommodating three hundred persons or more shall have at least two exits, and when accommodating five hundred persons or more at least three exits.

3. Doorways of exit or entrance for the use of the public shall be not less than five feet in width, and for every additional one hundred persons or portions thereof to be accommodated in excess of five hundred, an aggregate of twenty inches additional exit width must be allowed.

4. All doors of exit and entrance shall open outwardly and be hung to swing in such a manner as not to become an obstruction in a pas-

sage or corridor; and no such door shall be locked during any performance or when the building is open to the public.

5. The doors of exits which are usually closed during performances shall be provided with automatic fasteners which may be readily opened from the inside, and they shall have no other lock or fastening.

6. A distinct and separate place of exit and entrance shall be provided for each gallery above the first.

7. A common place of exit and entrance may serve for the main floor of the auditorium and the first gallery, provided their capacity be equal to the aggregate capacity of the outlets from the main floor and such gallery.

Sec. 334. **Balconies for Exits.**

1. There shall be balconies not less than four feet in width on each side of the auditorium at each level or tier above the parquet of sufficient length to embrace the two exits required to be on each side.

2. From such balconies there shall be staircases extending to the ground level with a rise of not over eight and one-half inches to a step, and not less than nine inches tread exclusive of the nosing.

3. The staircase from the upper balcony to the next below shall be not less than thirty inches in width in the clear.

4. The staircase from the first balcony to the ground shall be not less than three feet in

width in the clear when the seating capacity of the auditorium is one thousand people or less, not less than three feet six inches in the clear when the seating capacity is more than one thousand and not more than eighteen hundred people; not less than four feet in the clear when the seating capacity is more than eighteen hundred and not more than twenty-five hundred people, and four feet six inches in the clear when the seating capacity is more than twenty-five hundred people.

5. All the aforesaid balconies and staircases shall be constructed of iron throughout, including the floors, and of ample strength to sustain the load to be carried by them, and they shall be covered by a metal hood or awning to be constructed in such a manner as shall be approved by the bureau.

6. When one side of the building borders on the street, the staircases leading to the ground shall be constructed within the lot line.

Sec. 335. **Use of Buildings for Other Purposes**—That portion of a building not required for the use of the theater proper may be used for offices or stores, provided the walls separating such portion from the theater proper are carried up solidly to and through the roof, and that a fireproof exit is provided for the theater on each tier equal to the combined width of exits opening on opposite sides in each tier communicating with balconies and staircases leading from the street in a manner provided else-

where in this article. Said exit passages shall be entirely cut off by brick walls from said offices or stores, and the floors and ceilings in each tier shall be fireproof.

Sec. 336. **Prohibited Uses.**

1. No portion of a building in which a theater is located shall be occupied or used as a hotel, boarding or lodging house, factory, workshop, or for lodging any person or persons, or except as otherwise provided by this ordinance for storage purposes.

2. No storeroom or office in any portion of the building shall be let or used for manufacturing purposes or for carrying on any business dealing in articles now or hereafter designated as specially hazardous in the classification of the Underwriters' Association of the State of New York.

3. The restrictions in this section apply not only to that portion of the building which contains the auditorium and the stage, but to the entire structure in which the theater is located.

Sec. 337. **Workshop and General Property Room.**

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

2. Such rooms or shops may be located in the rear or at the side of the stage, but in such case they shall be separated from the stage by a brick wall, and the openings leading into said

portions shall have standard self-closing fire doors on each face of the wall.

Sec. 338. **Stairways.**

1. All stairways for the use of the audience shall be enclosed with walls of brick or fireproof materials approved by the bureau, in the stories through which they pass and the openings to said stairways from each tier shall be the full width of each stairway.

2. All stairs within the building shall be constructed of fireproof material throughout.

3. Stairs from the balconies and galleries shall not communicate with the basement or cellar.

4. All stairs shall have treads of uniform width and rises of uniform heighth throughout in each flight.

5. No circular or winding stairs for the use of the public shall be permitted.

6. No door shall open immediately upon a flight of stairs, but a landing at least the width of the door shall be provided between such stairs and such doors.

7. When there is seating capacity for more than one thousand people, at least two independent staircases with direct exterior outlets shall be provided for each gallery in the auditorium; when there are not more than two galleries, the stairs shall be located on opposite sides of said galleries; when there are more than two galleries, one or more additional staircases shall be provided, the outlets from which

shall communicate directly with the principal exit or other exterior outlets.

8. When the seating capacity is one thousand or less, two direct lines of staircases only shall be required located on opposite sides of the galleries, and in both cases extending from the sidewalk level to the upper gallery, with outlets from each gallery to each of said staircases.

9. At least two independent staircases with direct exterior outlets shall be provided for service of the people, and shall be located on opposite sides of the same.

10. The width of all stairs shall be measured in the clear between hand rails, and shall be proportioned to the seating capacity of the portion of the building for which they serve as exits as follows: At least four feet in width for a seating capacity of not more than fifty, and six inches in addition for each additional fifty.

11. Inside stairways leading to the upper galleries of the auditorium shall be enclosed on both sides with walls of fireproof material, except that stairs leading to the first or lower gallery may be left open on one side, in which case they shall be constructed as provided for similar stairs leading from the entrance hall to the main floor of the auditorium.

12. When straight stairs return directly on themselves, a landing of the full width of both flights without any steps shall be provided.

13. The outer line of landings shall be curved to a radius of not less than two feet to avoid square angles.

14. Stairs turning at an angle shall have a proper landing without winders introduced at said turn.

15. When two side flights of stairs connect with one main flight, no winders shall be introduced, and the width of the main flight shall be at least equal to the aggregate width of the side flights.

16. All stairs shall have proper landings introduced at convenient distances.

17. All enclosed staircases shall have on both sides strong hand rails firmly secured to the wall about three inches distant therefrom, and about three feet above the stairs; but such hand rails shall not run on level platforms and landings which are more in length than the width of the stairs.

18. All staircases eight feet and over in width shall be provided with a center hand rail of metal not less than two inches in diameter placed at a height of about three feet above the center of the treads, and supported on wrought metal or brass standards of sufficient strength, placed not nearer than four feet nor more than six feet apart, and securely bolted to the treads of risers of stairs, or both, and at the head of each flight of stairs on each landing, the post or standard shall be at least six feet in height to which the rails shall be secured.

Sec. 339. **Proscenium.**

1. The moulded frame around the proscenium opening shall be formed entirely of approved fireproof materials.

2. Above the proscenium opening there shall be an iron girder of sufficient strength to safely support the load above, and the same shall be covered with fireproof materials, to protect it from the heat.

3. Should there be constructed an orchestra platform over the stage above the proscenium, the said platform shall be placed on the auditorium side of the proscenium fire wall, and shall be entered only from the auditorium side of said wall.

4. No doorway or opening through the proscenium wall from the auditorium shall be allowed above the level of the first floor, and such first floor opening shall have standard fire doors on each face of the wall, and the doors shall be hung so as to be opened from either side at all times.

Sec. 340. **Fire Walls.**

1. A fire wall built of brick shall separate the auditorium from the stage, and the same shall extend four feet above the stage roof or the auditorium roof, if the latter be the higher, and shall be coped.

2. Interior walls built of fireproof materials shall separate the auditorium from the entrance vestibule and from any room over the same,

also from the lobbies, corridors, refreshment and other rooms.

Sec. 341. **Aisles.**

1. Aisles having seats on both sides shall be not less than three feet wide at their beginning, and shall be increased in width towards the exits in the ratio of one and one-half inches to five running feet.

2. Aisles having seats on one side only shall be not less than two feet wide at their beginning, and increased in width the same as aisles having seats on both sides.

Sec. 342. **Floor Capacity**—The aggregate capacity of the foyers, lobbies, corridors, passages and rooms for the use of the audience, excluding aisles or space between seats, shall on each floor including galleries be sufficient to contain the entire number to be seated on said floor in the ratio of one hundred fifty superficial feet of floor room for every one hundred persons.

Sec. 343. **Curtain.**

1. The proscenium opening shall be provided with a fireproof metal curtain or one of asbestos, interwoven or reinforced with wire netting or otherwise strengthened, or other fireproof material approved by the bureau, sliding at each end within iron grooves securely fastened to the brick wall, and extending into such grooves to a depth of not less than six inches on each side of the opening.

2. Such fireproof curtain shall be raised at the commencement and lowered at the close of each performance, and shall be operated by such machinery and provided with such appliances to force the same down in case of emergency, as the bureau may approve.

3. The proscenium curtains shall be placed at least three feet distant from footlights at the nearest point.

Sec. 344. **Skylights Over Stage**—There shall be provided over the stage metal skylights of an area or combined area of at least one-eighth the area of the stage, constructed with sliding or hinged sash fitted with thin glass with wire netting underneath, each pane measuring not less than three hundred square inches, the whole of said skylight to be so constructed as to open instantly on the cutting or burning of a hempen cord by which said skylight is held closed, or some other device approved by the bureau.

Sec. 345. **Stage**—All that portion of the stage not used in the working of scenery, traps and other mechanical apparatus for the presentation of a scene, usually equal to the width of the proscenium opening, shall be built of iron or steel beams filled in between with fireproof material, and all girders for the support of said beams shall be of wrought iron or rolled steel.

Sec. 346. **Fly Galleries and Rigging Loft.**

1. The fly galleries entire, including pin rails, shall be constructed of iron or steel, and

the floors thereof shall be composed of iron or steel beams, filled with fireproof material, and no wood board or sleepers shall be used as covering over beams, but the said floors shall be entirely fireproof.

2. The rigging loft shall be fireproof.

Sec. 347. **Dressing Rooms.**

1. The walls separating the actors' dressing rooms from the stage, and the partitions dividing such dressing rooms together with the partitions of every passageway from the same to the stage, and all other partitions on or about the stage, shall be constructed of fireproof material approved by the bureau.

2. All doors in any of such partitions shall be fireproof.

3. Dressing rooms may be placed in the fly galleries provided that proper exits are secured therefrom to the fire escapes in the open courts, and that the partitions and other matters pertaining to dressing rooms shall conform to the requirements of this ordinance, and the stairs leading to the same shall be fireproof.

4. All dressing rooms shall have an independent exit leading directly into a court or street, and shall be ventilated by windows in the external wall, or by other approved system, and no dressing room shall be more than one story below street level.

Sec. 348. **Shelving and Cupboards**—All shelving and cupboards in each and every dressing room, property room or other storage

room shall be constructed of metal, slate or other fireproof material.

Sec. 349. **Windows**—All windows shall be arranged to open, and none of the windows in outside walls shall have fixed sashes, iron grills or bars.

Sec. 350. **Seats.**

1. All seats in the auditorium excepting those contained in boxes, shall be not less than thirty-two inches from back to back measured in a horizontal direction, and firmly secured to the floor.

2. No seat in the auditorium shall have more than six seats intervening between it and an aisle on either side.

3. All platforms in galleries formed to receive the seats shall not be more than twenty-one inches in height of risers, nor less than thirty-one inches in width of platform.

Sec. 351. **Fireproof Paint**—All stage scenery, curtains and decorations made of combustible material and all woodwork on or about the stage, shall be painted or saturated with some non-combustible material or otherwise rendered safe against fire, and the finishing coats of paint applied to all woodwork throughout the entire building shall be of such a kind as will resist fire to the satisfaction of the bureau.

Sec. 352. **Lights.**

1. Every portion of a theater devoted to

the uses or accommodation of the public, also all outlets leading to the streets including the open courts and corridors, shall be well and properly lighted during every performance, and the same shall remain lighted until the entire audience has left the premises.

2. All gas or electric lights in the halls, corridors, lobbies or any other part of the theater used by the audience, except the auditorium, must be controlled by a separate shut-off located in the lobby, and controlled only in that particular place.

3. Gas mains supplying the building shall have independent connections for the auditorium and the stage.

4. Provision shall be made for shutting off all the gas from the outside of the building.

5. When interior gas lights are not lighted by electric spark, other suitable appliances to be approved by the bureau shall be provided.

6. All suspended or bracket lights surrounded by glass in the auditorium, or any part of the theater devoted to the public, shall be provided with proper wire netting underneath.

7. No gas or electric light shall be inserted in the walls, woodwork, ceilings or in any part of the theater, unless protected by fireproof material.

8. All lights in passages and corridors and wherever else deemed necessary by the bureau shall be protected with proper wire net-work.

9. The foot-lights, in addition to the wire net-work, shall be protected with a strong wire

guard and chain placed not less than two feet distant from said footlights, and the trough containing the foot-lights shall be formed of and surrounded by fireproof materials.

10. All border lights shall be constructed according to the best known methods subject to the approval of the bureau, and shall be suspended for ten feet by wire rope.

11. All ducts or shafts 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.

12. All stage lights shall have strong metal wire guards or screens not less than ten inches in diameter, so constructed that any material in contact therewith shall be out of reach of the flames of such stage lights, and must be soldered to the fixtures in all cases.

Sec. 353. **Stand Pipes and Sprinklers.**

1. Stand pipes four inches in diameter shall be provided with hose attachments on every floor and gallery, as follows: One on each side of the auditorium in each tier; one on each side of the stage in each tier, and at least one in the property room and one in the carpenter shop, the latter to be continguous to the building.

2. Such stand pipes shall be separate and distinct, receiving their supply of water directly from the city water mains, and shall be fitted with the regulation appliances of the Fire De-

partment, and shall be kept clear of obstructions and ready for immediate use at all times during the performance in said building.

3. A separate and distinct system of automatic sprinklers approved by the bureau shall be placed on each side of the proscenium opening, and on the ceiling or roof over the stage, at such intervals as will protect every square foot of stage surface when said sprinklers are in operation. Automatic sprinklers shall also be placed wherever practicable in the dressing rooms under the stage, and in the carpenter shops, paint rooms, store rooms and property rooms.

4. A sufficient quantity to be determined by the bureau of two and one-half inch hose, the quality thereof to be approved by the bureau, not less than one hundred feet in length, fitted with the regulation couplings of the Fire Department, and with nozzles attached thereto, and with hose spanners at each outlet, shall always be kept attached to each hose attachment in such manner as the bureau may direct.

5. There shall also be kept in immediate readiness for use on the stage at least four casks full of water and two buckets to each cask. Such casks and buckets shall be painted red.

6. There shall also be provided hand pumps or other portable fire extinguishing apparatus, and at least four axes, and two twenty-five feet hooks, two fifteen feet hooks, and two ten feet hooks on each tier or floor of the stage.

Sec. 354. **Heating Apparatus.**

1. Every steam boiler which may be required for heating or other purposes shall be located outside of the building, and the space allotted to the same shall be enclosed by walls of masonry on all sides, and the ceiling of such space shall be constructed of fireproof materials.

2. All doorways in said walls shall have fireproof doors.

3. No floor register for heating shall be permitted.

4. No coil or radiator shall be placed in any aisle or passage-way used as an exit, but all coils and radiators shall be placed in recesses formed in the wall or partition to receive the same.

5. All supply, return or exhaust pipes shall be properly incased and protected where passing through floors or near woodwork.

Sec. 355. **Pilot Lights**—Over all exits there must be provided a red light which shall be kept burning during each performance, and shall be controlled by a circuit separate from the other lights of the house.

Sec. 356. **Exit to be Marked**—Over every exit there shall be on the inside of the building the word "Exit" in legible letters not less than six inches high.

Sec. 357. **Firemen on Duty at Performance**—The Commissioner shall assign to every theater one or more firemen for duty at each public

performance. They shall report to the Commissioner a violation of law or ordinance relating to the construction or management of theaters, the existence of which involves danger to the public.

Sec. 358. **Small Theaters**—Every building altered or erected for use as a theater, which has accommodations for less than three hundred persons, shall be built to comply with the following requirements:

1. Shall not be located in a building of frame construction or one used for human habitation.
2. Shall have a frontage upon at least two open spaces of which one shall be a public street and the other, if not a public street, shall be a court not less than eight feet wide connecting with a public street.
3. Shall have at least two exits not less than five feet wide in each of the two sides opening on a street or court.
4. The level of the main entrance shall not be more than thirty-six inches higher than the level of the sidewalk.
5. To overcome any difference of level in and between entrances, exits and the streets or courts on which they open, courts and corridors, lobbies, passages and aisles, gradients shall be employed when over one step.
6. All doors of exit or entrance shall open outwardly and be hung and trimmed with approved automatic fastenings, and to swing

in such a manner as not to become an obstruction in a passage or corridor, and no such door shall be locked during any performance or when the building is open to the public.

7. Over every exit there shall be on the inside of the building the word "Exit" in legible letters not less than six inches high, and also a red light which shall be kept burning during each performance.

8. Any cinematograph, stereopticon, magic lantern, or other similar apparatus shall be enclosed in a fireproof compartment with ample provision for safety or escape of the person operating the machine in case of fire or explosion.

9. All woodwork, draperies, curtains, decorations and upholstery shall be thoroughly saturated with approved fire-resisting material or paint.

Sec. 359. **Permission to Open Theater**—No building shall be opened to the public as a theater until the bureau has approved the same in writing, unless in actual use as such at the time of the passage of this ordinance.

ARTICLE XIX.

TENEMENT HOUSES.

Section 370. **Definitions Applicable to Tenement Houses.**

1. Yard when referred to is the yard required by this article to be placed in the rear

of a tenement house, or in the center of the lot thereof.

2. A court not extending to the street or yard is an inner court. A court extending to the street or yard is an outer court. If it extends to the street it is a street court. If it extends to the yard it is a yard court.

Court defined, Sec. 4, *S.* 36.

3. A public hall is a hall, corridor or passageway not within an apartment.

4. A stair hall includes the stairs, stair landings and those portions of the public halls through which it is necessary to pass in going between the entrance floor and the roof.

Not to be altered in violation of ordinance, Sec. 2.
Other provisions of ordinance not inconsistent to apply, Sec. 3.
Definitions, Sec. 4, *S.* 9.
Tenements over four stories to be fireproof, Sec. 32, *S.* 1 (*c*).
Floor loads of, Sec. 107, *S.* 3.
Elevators, Secs. 137, 138.
Dumbwaiters, Sec. 140.
Stand pipes on tenements over four stories, Sec. 285.
Gas shut-offs, Sec. 288.

Sec. 371. **Percentage of Lot Occupied.**

1. No tenement house shall occupy more than ninety per centum of a corner lot, or more than seventy per centum of any other lot, pro-

vided that the space occupied by fire escapes shall not be deemed a part of the lot occupied.

2. For the purposes of this section, the measurements shall be taken at the ground level, except that when the first story is or is intended to be occupied for business purposes only, the measurements may be taken at the level of the second story floor beams.

3. The provisions of this section shall not apply to a tenement house running through from one street to another street, provided that the lot on which it is situated does not exceed one hundred feet in depth.

Location on lot of frame building, Sec. 313.

Sec. 372. **Lot not to be Diminished**—No tenement house, now or hereafter constructed, shall thereafter be enlarged or its lot be diminished so that a greater percentage thereof shall be occupied by buildings or structures than provided in this article.

Sec. 373. **Height.**

1. The height of a tenement house shall not exceed by more than one-fourth the width of the widest street upon which it stands, nor exceed four times the average of its horizontal dimensions.

2. Such height shall be the perpendicular distance measured in a straight line from the curb level to the highest point of the roof beams; provided that where there are bulk-

heads exceeding ten feet in height, or exceeding in area ten per centum of the area of the roof, the measurements shall be taken to the top of the bulkhead, but this does not apply to elevator enclosures not exceeding fifteen feet in height.

3. The measurements in all cases shall be taken through the center of the facade of the house.

Height of buildings, Sec. 108.

Sec. 374. **Buildings on Same Lot.**

1. If any building is hereafter placed on the same lot with a tenement house now or hereafter constructed, there shall always be maintained between said buildings an open or unoccupied space extending upwards from the ground and extending across the entire width of the lot. Where either building is sixty feet in height, such open space shall be twenty-four feet from wall to wall, and for every twelve feet of increase or fraction thereof in the height of the higher of such buildings, such open space shall be increased one foot in depth throughout its entire width; and for every twelve feet of decrease in the height of the higher of such buildings below sixty feet, the depth of such open space may be decreased one foot; and no building of any kind shall be placed upon the same lot with a tenement house so as to decrease the minimum size of courts or yards as herein prescribed.

2. If any tenement house is erected upon a

lot upon which there is another building, the space between said building and said tenement house shall be of such size and arranged in such manner as is prescribed in this section—the height of the highest building on the lot to regulate the dimensions.

3. No separate tenement house shall hereafter be erected upon the rear of a lot fifty feet or less in width where there is a tenement house on the front of the said lot, nor upon the front of any such lot upon the rear of which there is a tenement house.

Sec. 375. **Alteration of Frame Tenements Within the Fire Limits**—No building of frame construction within the fire limits not now used as a tenement house, shall hereafter be altered or converted to such use; and within the fire limits no tenement house of frame construction shall hereafter be enlarged, extended or raised, except that a wooden extension may be added thereto not exceeding seventy square feet in total area, provided such extension is used solely for bathrooms or water closets.

Frame construction, Sec. 307.
Fire limits defined, Sec. 308.
Prohibited within fire limits, Sec. 309.
Alteration of within fire limits, Sec. 310.

Sec. 376. **Yards.**

1. Between the extreme rear line of every tenement house and the rear line of the lot, except when the yard is hereinafter required

to be in the center of the lot, there must be a yard extending across the entire width of the lot, at every point open from the ground to the sky unobstructed, except that fire escapes or unenclosed outside stairs may project not over four feet from the rear line of the house, the measurements in all cases to be taken from the extreme rear wall of the building to the rear lot line and across the full width of the lot.

2. On interior lots, provided the tenement house does not exceed sixty feet in height, the yard must not be less than twelve feet in depth in every part, and shall be increased in depth one foot for every additional twelve feet in height of the building or fraction thereof.

3. On corner lots the yard must be not less than ten feet in depth, unless the lot is less than one hundred feet deep, in which case the yard may be ten per centum of the depth of the lot, but never less than five feet; but where a corner lot is over fifty feet wide, the yard for that portion in excess of fifty feet must conform to the requirements for yards on interior lots.

4. On lots more than seventy feet in depth running through from street to street, there must be a yard through the center of the lot midway between the two streets extending across the entire width of the lot, at every point open from the ground to the sky unobstructed; provided that when the first story is or is intended to be used for business purposes only, the yard may start at the level of the second

story floor beams. In case the lot is not more than one hundred feet in depth, the yard shall not be less than twelve feet in depth in any part from wall to wall; and in case the lot is more than one hundred feet in depth, the yard shall not be less than twenty-four feet in depth in any part from wall to wall, and such yards shall be increased in depth as prescribed for yards on interior lots.

5. When a single tenement house is situated on a lot formed by the intersection of two streets at an acute angle, the yard need not extend across the entire width of the lot, provided that it extends to a point in line with the middle line of the block.

Sec. 377. **Courts.**

1. No court of a tenement house shall be covered by a roof or skylight, but every such court shall be at every point open from the ground to the sky unobstructed, except when the first story is or is intended to be occupied for business purposes only, the courts may start at the level of the second story floor beams.

2. When one side of an outer court is situated on the lot line, the width of the said court measured from the lot line to the opposite wall of the building, for tenement houses sixty feet in height, shall not be less than six feet in any part, and for every twelve feet of increase, or fraction thereof, in height of the building, such width shall be increased six inches throughout the entire height of said court; and for every

twelve feet of decrease in the height of the building below sixty feet, such width may be decreased six inches, provided that the width of an outer court shall never be less than four feet.

When an outer court is situated between wings or parts of the same building, or between different buildings on the same lot, the width of said court measured from wall to wall, for tenement houses sixty feet in height, shall not be less than twelve feet in any part, and for every twelve feet of increase or fraction thereof in the height of the said building, such width shall be increased one foot throughout the entire height of said court; and for every twelve feet of decrease in the height of the said building below sixty feet, such width of the said court may be decreased one foot, provided that the width thereof shall not in any case be less than eight feet.

Whenever an outer court changes its initial horizontal direction, or whenever any part of such court extends in a direction so as not to receive the direct light from the street or yard, the length of such portion of said court shall never exceed the width of said portion, such length to be measured from the point at which the change of direction commences.

Whenever an outer court is less in depth than the minimum width prescribed, then its width may be equal to but not less than its depth, provided that such width is never less than four feet in the clear.

3. When one side of an inner court is situated on the lot line, the width of the said court measured from the lot line to the opposite wall of the building, for tenement houses sixty feet in height, shall not be less than twelve feet in any part, and its other horizontal dimensions shall not be less than twenty-four feet in any part, and for every twelve feet of increase or fraction thereof in the height of said building, such width shall be increased six inches throughout the entire height of said court, and the other horizontal dimensions shall be increased one foot throughout the entire height of said court; and for every twelve feet of decrease in the height of said building below sixty feet, such width may be decreased six inches, and the other horizontal dimension may be decreased one foot. When the building is of frame construction, the width of lot required to be on each side thereof, may be included in figuring the width of an inner court one side of which is situated on the lot line.

When an inner court is not situated upon the lot line, but is enclosed on four sides, the least horizontal dimension of the court, for tenement houses sixty feet in height, shall not be less than twenty-four feet; and for every twelve feet of increase or fraction thereof in the height of said building, the said court shall be increased one foot for each horizontal dimension throughout the entire height of said court; and for every twelve feet of decrease in the height of the building below sixty feet, the

horizontal dimensions of said court may be decreased one foot in each direction.

Courts defined, Sec. 4, *S.* 36.
Walls of courts, Sec. 93, *S.* 1.
Location on lot of frame building, Sec. 313.

Sec. 378. **Fire Escapes**—Every tenement house over two stories in height, now or hereafter constructed, shall have fire escapes opening directly from at least one room or private hall in each apartment at each story above the ground floor, and otherwise constructed as provided in this ordinance.

Fire escapes, Sec. 291.
Incumbrance of, Sec. 293.

Sec. 379. **Basements and Cellars**—No room in the cellar or in the basement of a tenement house shall be occupied for living purposes, except that an apartment of not more than five rooms in the basement may be occupied by the janitor and his family; provided that each room thereof is at least nine feet high in every part from the floor to the ceiling, and the ceiling of each room is in every part at least four feet, six inches above the curb level of the street in front of every part of such room, and each room has a window opening directly to the street or yard, and the total area of window in each room is at least one-eighth of the superficial area of the room, and the upper half of the window is made to open the full width, and the under side of the top stop bead of each window is within twelve inches of the ceiling, and each

window is not less than twelve square feet in area between the stop beads, and all walls surrounding each room are damp-proof and the floors of each room are damp-proof and waterproof, and there is appurtenant to each room or apartment a separate water closet arranged as provided in this ordinance.

Basement and cellar defined, Sec. 4, S. 20, 21.

Sec. 380. **Fireproof Ceiling and Floor Above**—When a non-fireproof tenement is over two stories in height and the first story is or is intended to be occupied for business purposes, the ceiling of the first story and the floor construction above such ceiling, shall be constructed fireproof, and there shall be no opening in the ceiling thereof, except that openings for the transmission of light may be made entirely covered with wire glass set in metal frames and sashes and constructed so as not to open.

Sec. 381. **Stairs.**

1. Every tenement house shall have at least one flight of stairs extending from the entrance floor to the roof, and otherwise constructed as provided in this ordinance; and every non-fireproof tenement house containing over twenty-six apartments or suites of rooms above the entrance story, shall also have an additional flight of stairs for every additional twenty-six apartments or fraction thereof.

2. Every fireproof tenement house containing over thirty-six apartments or suites of rooms above the entrance story, shall have an additional flight of stairs for every additional thirty-six apartments or fraction thereof.

3. Each flight of stairs shall have an entrance on the entrance floor from the street or street court, or from an inner court which connects directly with the street.

4. In non-fireproof tenement houses, there shall be no inside stairs communicating between the cellar and the floor next above, but such stairs shall be located outside the building, and if enclosed shall be constructed entirely fireproof, and be enclosed in a fireproof enclosure with the fireproof self-closing doors at all openings.

5. In fireproof tenement houses, stairs between the cellar and the story next above may be located inside, provided they are not placed underneath the stairs leading to the upper stories, and provided that the portion of the cellar into which said stairs lead is entirely shut off by fireproof walls from those portions thereof which are used for the storage of fuel, or in which heating appliances, boilers or machinery are located. All openings in such walls shall be provided with self-closing fireproof doors.

6. In non-fireproof tenement houses no closet of any kind shall be constructed under any stair case leading from the ground floor thereof to the upper stories, but such space shall

be left entirely open and kept clear and free from incumbrances.

7. There shall be in the roof directly over each stair well, a ventilating skylight provided with ridge ventilators having a minimum opening of forty square inches, or such skylights shall be provided with fixed or movable louvres. The glazed roof of such skylight shall be not less than twenty square feet in area.

Tenement over four stories to be fireproof, Sec. 32, S. I. (c).
Construction of stairs, Sec. 121-126.

Sec. 382. **Bulkheads**—Every tenement house over two stories in height, shall have in the roof at the head of the stairs leading thereto a bulkhead, which in fireproof buildings shall be constructed fireproof with a fireproof door to the same, and in a non-fireproof building such bulkhead and door may be of wood covered on both sides with incombustible material approved by the bureau.

Incumbrances prohibited, Sec. 293.

Sec. 383. **Halls.**

1. Every entrance hall in a tenement house shall be at least three feet, six inches wide in the clear from the entrance up to and including the stair enclosures, and beyond that point, at least three feet wide in the clear.

2. Every public hall shall be at least three feet wide in the clear in all parts.

Sec. 384. **Size of Rooms**—The rooms in every

tenement house, except water closet compartments and bathrooms, shall be of the following minimum size: In each apartment there shall be at least one room containing not less than one hundred and twenty square feet of floor area, and each other room shall contain at least seventy square feet of floor area. Each room shall be in every part not less than nine feet high from the finished floor to the finished ceiling, provided that an attic room need not be nine feet high in but one-half its area.

Sec. 385. **Alcove Rooms**—Alcove rooms must conform to all the requirements made by this article in respect to other rooms.

Sec. 386. **Access to Rooms**—In every apartment of three or more rooms, access to every living room and bedroom, and to at least one water closet compartment, shall be had without passing through any bedroom.

Sec. 387. **Overcrowding.**

1. No apartment in a tenement house now or hereafter constructed, shall be so overcrowded that there shall be less than six hundred cubic feet of air, outside of closets, water closet compartments and bathrooms, for each person occupying apartment as a home or residence.

2. No room used for sleeping purposes in any tenement house, now or hereafter constructed, shall be so overcrowded that there shall be less than six hundred cubic feet of air

to each person over twelve years of age, and three hundred cubic feet of air to each person under twelve years of age sleeping in such room..

3. Any person occupying an apartment or room overcrowded within the foregoing limits, shall be guilty of a violation of this ordinance.

4. No person shall rent or lease any apartment or room to be occupied by a greater number of persons than can be accommodated therein within the foregoing limits, or permit or suffer a greater number to occupy any apartment or room.

5. It shall be the duty of both the bureau and the Health Bureau to enforce this section.

Sec. 388. **Windows.**

1. In every tenement house every room, except water closet compartments and bathrooms, shall have at least one window opening directly upon the street, or upon a yard or court, and such windows shall be so located as to properly light all portions of such room.

2. In every tenement house the total window area in each room, except water closet compartments and bathrooms, shall be at least one-tenth of the superficial area of the room, and the top of at least one window shall not be less than seven feet six inches above the floor and the upper half of it shall be made so as to open the full width. No such window shall be less than twelve square feet in area between the stop beads.

3. In every tenement house which is occupied or arranged to be occupied by more than two families on any floor, or which exceeds four stories in height, every public hall shall have at least one window opening directly upon the street, or upon a yard or court. Either such window shall be at the end of the hall with the plane of the window at right angles to the axis of said hall, or there shall be at least one window opening directly upon the street, or upon a yard or court in every twenty feet in length or fraction thereof of said hall; but this provision for one window in every twenty feet of hallway, shall not apply to that portion of the entrance hall between the entrance and the first flight of stairs, provided that the entrance door contains not less than five square feet of glazed surface. At least one of such windows shall be at least two feet six inches wide and five feet high measured between stop beads.

The aggregate area of window to light every such stair hall, specified above, shall be at least eighteen square feet for each floor. There shall be provided for each story at least one of said windows which shall be at least two and one-half feet wide and five feet high measured between the stop beads.

Any part of a hall which is shut off from any other part of said hall by a door or doors, shall be deemed a separate hall within the meaning of this section.

4. No window, except windows in water closet compartments, bathrooms or halls, shall

open upon any offset or recess in a court less than six feet in width.

Sec. 389. **Water Closets.**

1. In every tenement house there shall be a separate water closet in a separate compartment within each apartment, provided that where there are apartments consisting of but one or two rooms, there shall be at least one water closet for every three rooms.

2. Every water closet and bath placed in any tenement house shall be placed in a compartment completely separated from every other water closet and bath; such compartment shall be not less than two feet four inches wide, and shall have a window opening directly upon the street or yard or upon a court or vent shaft. Every such window shall be at least one foot by three feet between stop beads, and the entire window shall be made so as to readily open. When, however, such water closet compartment is located on the top floor and is lighted and ventilated by a skylight over it, no window shall be necessary, provided the roof of such skylight contains at least three square feet of glazed surface, and is arranged so as to readily open.

3. Every water closet compartment shall be provided with proper means of lighting the same at night.

4. The floor of every water closet compartment shall be made waterproof with asphalt, tile, stone or some other waterproof material,

and such waterproofing shall extend at least six inches above the floor so that the said floor can be washed or flushed out without leaking.

Sec. 390. **Water Supply**—In each apartment in a tenement house there shall be a proper sink with running water.

Sec. 391. **Vent Shafts.**

1. Every vent shaft constructed in a tenement house shall be at least twenty square feet in area, and the least dimension of such shaft shall not be less than four feet; and if a building be above sixty feet in height, such shaft shall throughout its entire height be increased in area three square feet for each additional twelve feet of height or fraction thereof, and for each twelve feet of height less than sixty feet, such shaft may be decreased in area three square feet.

2. Vent shafts may be enclosed on all four sides, but shall not be roofed or covered over in any way.

3. Every such shaft shall be provided with a horizontal intake or duct at the bottom communicating with the street or yard or with a court, such duct or intake to be not less than four square feet in total area, and to be so arranged as to be easily cleaned out.

Definitions, Sec. 4, *S.* 38.
Wall of vent shafts, Sec. 93.

Sec. 392. **Access to Courts and Shafts**—There shall be at the bottom of every outer

court starting at the level of the second story floor beams, and at the bottom of every shaft and inner court, a door giving sufficient access to such court or shaft to enable it to be properly cleaned out. Such door shall be fireproof and self-closing.

Courts and shafts defined, Sec. 4, *S.* 36, 37, 38; *Sec.* 370, *S.* 2.

Sec. 393. **Partitions**—In tenement houses the dividing walls or partitions between the apartments provided for each family, where not separated by a hall or staircase, shall be made entirely of incombustible material. In the absence of definite subdivisions between the apartments of different families, eight rooms shall be counted as the equivalent of one apartment.

Fire stops, Secs. 90, 187.
Partitions near boilers, Sec. 167.
Partitions near stoves, etc., Sec. 172.

Sec. 394. **Wainscoting**—When wainscoting is placed in any tenement house, the surface of the wall or partition behind such wainscoting shall be plastered down to the floor line, and any intervening space between said plastering and said wainscoting shall be filled in solid with incombustible material.

Sec. 395. **Bakeries and Fat Boiling.**

1. No bakery and no place of business in which fat is boiled, shall be maintained in any tenement house which is not fireproof through-

out, unless the ceiling, sidewalks and all exposed iron or wooden girders or columns within the said bakery or within said place where fat boiling is done, are made safe by fireproof materials around the same.

2. There shall be no openings either by door or window, dumb-waiter shafts or otherwise between said bakery or said place where fat is boiled in any tenement house, and the other parts of the said building, except that in bakeries in which no fat is boiled, and in which no apparatus for fat boiling is present or on the premises, a dumb-waiter communicating between the place where the baking is done and the store above, may be maintained if entirely enclosed in a brick shaft with walls not less than eight inches thick, without any openings whatever except one door opening into the bake-shop, and one door opening into the bakery store; such openings shall each be provided with a fireproof door so arranged that when one door is open or partly open, the other door shall be entirely closed.

3. This section applies to buildings hereafter constructed, and to existing buildings in which no bakery or fat boiling business is now maintained.

Sec. 396. **Other Dangerous Businesses.**

1. All transoms and windows opening into halls from any portion of a tenement house, now or hereafter constructed, where paint, oil, spirituous liquors or drugs are stored for the

purpose of sale, or otherwise, shall be glazed with wire glass, or they shall be removed and closed up as solidly as the rest of the wall; and all doors leading into any such hall from such portion of said house shall be made fireproof.

Sec. 397. **Combustible Materials**—No tenement house, now or hereafter constructed, nor any part thereof, nor of the lot upon which it is situated, shall be used as a place of storage, keeping or handling of any combustible material, except under such conditions as may be prescribed by the bureau under the authority of a written permit issued by it; nor as a place of storage, keeping or handling of any article dangerous or detrimental to life or health, nor for the storage, keeping or handling of feed, hay, straw, excelsior, cotton, paper stock, feathers or rags.

Sec. 398. **Prohibited Uses**—No horse, cow, calf, swine, sheep, goat or chicken shall be kept in a tenement house, now or hereafter constructed, or on the same lot or premises thereof, and no tenement house, now or hereafter constructed, or the lot or premises thereof shall be used for a lodging house or stable, except that outside of the fire limits not more than two horses may be kept on such lot or premises, provided they are stabled at least twenty feet distant from any building used for living purposes, and that such stabling is not detrimental to health.

Fire limits defined, Sec. 308.

Sec. 399. **Artificial Light**—In every tenement house, now or hereafter constructed, a proper light shall be kept burning by the owner thereof in the public hallways near the stairs upon the entrance floor and upon the second floor above the entrance floor of said house, every night from sunset to sunrise throughout the year, and upon all other floors of said house from sunset until ten o'clock in the evening.

Sec. 400. **Receptacles for Ashes and Garbage**—The owner of a tenement house, now or hereafter constructed, shall provide for said building proper and suitable conveniences or receptacles for ashes, rubbish, garbage, refuse and other matter.

Ash pits and receptacles, Sec. 173.

Sec. 401. **Janitor or Housekeeper**—Whenever there shall be more than eight families living in any tenement house, now or hereafter constructed, in which the owner thereof does not reside, there shall be a janitor, housekeeper or some other responsible person who shall reside in said house and have charge of the same, if the bureau shall so require.

Sec. 402. **Repairs**—Every tenement house, now or hereafter constructed, and all the parts thereof, shall be kept in good repair, and the roof shall be kept so as not to leak, and all rain water shall be so drained and conveyed therefrom as to prevent its dripping on to the

ground or causing dampness in the walls, ceilings, yards or areas.

Sec. 403. **Cleanliness of Buildings.**

1. Every tenement house and every part thereof shall be kept clean and free from any accumulation of dirt, filth or garbage or other matter in or on the same, or in the yards, courts, shafts, passages, areas or alleys connected with or belonging to the same.

2. The owner of every tenement house or part thereof shall thoroughly cleanse all the rooms, passages, stairs, floors, windows, doors, walls, ceilings, water closets, courts, shaft, drains, halls, cellars, roofs and all other parts of the said tenement house, or part of the house of which he is the owner, and shall keep the said parts of the said tenement house in a cleanly condition at all times.

3. No person shall keep filth, urine or fecal matter in any place in a tenement house other than that provided for the same, or keep filth, urine or fecal matter in his apartment or upon his premises such length of time as to create a nuisance.

4. This section applies to buildings now or hereafter constructed, and it shall be the duty of both the bureau and Health bureau to enforce it.

Sec. 404. **Occupation of Tenement House**—No building constructed as or altered into a tenement house shall be occupied in whole or

in part for human habitation until the issuance of a certificate by the bureau that said building conforms in all respects to the requirements of this ordinance.

ARTICLE XX.

PENALTIES AND REPEALS.

Section 415. **Penalties.**

1. A violation of this ordinance shall be punishable by a fine not exceeding one hundred and fifty dollars, or by imprisonment not exceeding one hundred and fifty days, or by a penalty of five hundred dollars to be recovered by the city of Rochester in a civil action.

Sec. 416. **Repeals.**

1. All ordinances and parts of ordinances inconsistent herewith are hereby repealed.

2. The following ordinances and all amendments thereto are hereby specifically repealed:

An ordinance known as the Building Ordinance of the city of Rochester, passed August 23, 1904, excepting article three thereof relating to combustibles and explosives and excepting section sixty-nine thereof relating to penalties as amended June 13, 1905, which section shall remain in force as providing a penalty for a violation of said article three relating to combustibles and explosives, and shall be deemed repealed as applicable to violations of the other provisions of said Building Code.

An ordinance amending the Building Ordinance adopted September 11, 1906.

3. Subdivision (a) of section six of the Health Ordinance shall remain in force, except that it shall not apply to tenement houses.

Sec. 417. This ordinance shall take effect immediately.

INDEX

INDEX