

## ORDINANCE NO. 1554

(Passed and Adopted August 4, 1936)

AN ORDINANCE REGULATING THE ERECTION, CONSTRUCTION, REMOVAL, ENLARGEMENT, ALTERATION, REPAIRING, MOVING, DEMOLITION, CONVERSION, OCCUPANCY, EQUIPMENT, USE, HEIGHT, AREA AND MAINTENANCE OF BUILDING AND/OR STRUCTURES, INCLUDING SIGNS, BILLBOARDS, POSTER BOARDS, AWNINGS, AWNING-SHUTTERS, STATIONARY AWNINGS, AND CANOPIES IN THE CITY OF MIAMI, FLORIDA: PROVIDING FOR THE ISSUANCE OF PERMITS AND COLLECTION OF FEES THEREFOR; DECLARING AND ESTABLISHING FIRE ZONES OR DISTRICTS; PROVIDING FOR THE REMOVAL OR MAKING SAFE OF CONDEMNED BUILDINGS OR STRUCTURES AND FOR THE ABATEMENT OR REMOVAL OF NUISANCES AND FURTHER PROVIDING FOR LIENS FOR EXPENSES INCURRED AND FOR THE RECOVERY OF SUCH EXPENDITURES; PROVIDING FOR THE TEMPORARY AND PERMANENT OCCUPANCY OF PUBLIC PROPERTY FOR CERTAIN USES UNDER SPECIFIED CONDITIONS AND REGULATIONS; CREATING A BOARD OF REVIEW AND APPEAL AND PROVIDING FOR ITS APPOINTMENT, QUALIFICATION, DUTIES AND POWERS; ADOPTING AND APPROVING CERTAIN SPECIFICATIONS, REGULATIONS AND STANDARDS OF TESTS AND INSPECTIONS BY SPECIFIC REFERENCE; PROVIDING FOR THE ENFORCEMENT OF CERTAIN OTHER ORDINANCES OR PARTS OF ORDINANCES OF THE CITY OF MIAMI BY SPECIFIC REFERENCE; REPEALING SPECIFICALLY ORDINANCES NUMBERS 299, 313, 327 AND 342, CITY COUNCIL SERIES OF THE CITY OF MIAMI, FLORIDA; AND REPEALING SPECIFICALLY ORDINANCES NUMBERS 121, 187, 271, 421, 617, 618, 685, 690, 879, 940, 984, 986, 1003, 1011, 1144, 1159, 1175, 1333 and 1342, CITY COMMISSION SERIES OF THE CITY OF MIAMI, FLORIDA; AND REPEALING ALL OTHER ORDINANCES OR PARTS OF ORDINANCES IN CONFLICT HEREWITH; PROVIDING FOR PENALTIES FOR THE VIOLATION THEREOF; PROVIDING THAT IN THE EVENT ANY SECTION, SUB-SECTION SENTENCE, CLAUSE OR PHRASE OF THIS ORDINANCE SHALL BE DECLARED OR ADJUDGED INVALID OR UNCONSTITUTIONAL, SUCH ADJUDICATION OR INVALIDITY SHALL IN NO MANNER AFFECT THE OTHER SECTIONS, SUB-SECTIONS, SENTENCES, CLAUSES OR PHRASES OF THIS ORDINANCE; DECLARING THIS ORDINANCE TO BE AN EMERGENCY MEASURE, AND DISPENSING WITH THE READING OF SAME ON TWO SEPARATE DAYS BY A FOUR-FIFTHS VOTE OF THE CITY COMMISSION.

BE IT ORDAINED BY THE COMMISSION OF THE CITY OF MIAMI, FLORIDA:

**PART I**  
**ADMINISTRATIVE**

**CHAPTER 1**

**TITLE AND SCOPE**

Sec. 101. **TITLE.** This Ordinance shall be known as the "Building Code" may be cited as such and will be referred to in this Ordinance as "this Code."

Sec. 102. **PURPOSES.** The purpose of this Code is to provide certain minimum standards, provisions and requirements for safe and stable design, methods of construction and uses of materials in buildings and/or structures hereafter erected, constructed, enlarged, altered, repaired, moved, converted to other uses or demolished and to regulate the equipment, maintenance, use and occupancy of all buildings and/or structures.

The provisions of this Code shall be deemed to supplement any and all Ordinances, of the City of Miami, Florida, related to buildings.

Sec. 103. **SCOPE.** New buildings and/or structures hereafter erected in the City of Miami, Florida, shall conform to all requirements of this Code; and all requirements in this Code, unless specifically provided, shall apply to new buildings.

Additions, alterations, repairs and changes to the use or occupancy in all buildings shall comply with the requirements for new buildings except as otherwise provided in Section 104 of this Code.

Sec. 104. **APPLICATION TO EXISTING BUILDINGS.** The following specified requirements shall apply to existing buildings which for any reason whatsoever do not conform to the requirements of this Code for new buildings:

(a) **MAJOR ALTERATIONS AND REPAIRS.** If alterations and/or repairs in excess of fifty (50) per cent of the value of an existing building are made to such existing building within any period of twelve months, the entire building shall be made to conform with the requirements given herein for new buildings; provided, however, that any existing building which for any reason whatsoever, requires repairs, at any one time, in excess of fifty (50) per cent of the value thereof, not deducting from such value any loss caused by fire or any other reason, shall be made to conform to the requirements of this Code or shall be entirely demolished. (See Section 1602 (c) for buildings located in Fire Zone No. 1.) (See Section 2511 for Termite Control Requirements.)

(b) **CHANGED USE.** If the existing use or occupancy of an existing building is changed to a use or occupancy which would not be permitted in a similar building hereafter erected, the entire building shall be made to conform with the requirements given herein for new buildings; provided, however, that if the use or occupancy of only a portion or portions of an existing building is changed and such portion or portions are segregated as specified in Section 503 of this Code then

only such portion or portions of the building need be made to comply with said requirements; and provided further, that the Building Inspector is hereby given authority to approve any change in the use or occupancy of any existing building within any one Group of Occupancy as specified in Part III, even though such building is not made to fully conform to the requirements of this Code, when it is obvious that such a change in the use or occupancy of the existing building will not extend or increase any existing non-conformity or hazard of the building.

(c) ADDITIONS. Any existing building not covered by the preceding paragraphs (a) and (b) which has its floor area or its number of stories increased or its use or occupancy changed in any way from its former or existing use or occupancy shall be provided with stairways, emergency exits and fire protection facilities as specified in this Code for buildings hereafter erected for similar uses or occupancies.

(d) MINOR ALTERATIONS AND REPAIRS. Every alteration or repair to any structural part or portion of an existing building shall when deemed necessary in the opinion of the Building Inspector be made to conform to the requirements of this Code for new buildings. Minor alterations, repairs and changes not covered by the preceding paragraphs (a), (b) and (c) may be made with the same materials of which the building is constructed; provided, that not more than twenty-five (25) per cent of the roof covering of any building shall be replaced in any period of twelve (12) months unless the entire roof covering is made to conform with the requirements of this Code for new buildings; provided, however, that no roofing shall be applied over an existing wood shingle roof.

(e) New roofing meeting the requirements of this Code may be placed over existing roofings when the existing roofings and roof framing is such as to permit the new roofing to be properly supported and securely fastened, provided, however, that no roofing shall be applied over an existing wood shingle roof.

Sec. 105. MAINTENANCE. The requirements contained in this Code, covering the maintenance of buildings, shall apply to all buildings and/or structures now existing or hereafter erected. All buildings and/or structures and all parts thereof shall be maintained in a safe condition, and all devices or safeguards which are required by this Code at the erection, alteration or repair of any building shall be maintained in good working order.

This section shall not be construed as permitting the removal or non-maintenance of any existing devices or safeguards unless authorized in writing by the Building Inspector.

**CHAPTER 2**  
**GENERAL PROVISIONS**

~~Sec. 201. APPLICATION FOR PERMIT. No person shall erect or construct or proceed with the erection or construction of any building or structure, nor add to, enlarge, move, improve, alter, convert, extend or demolish any building or structure, or any group of buildings and/or structures under one or joint ownership whether on one or more lots or tract of land, or cause the same to be done, "where the cost of the work exceeds Twenty-five (\$25.00) Dollars," without first obtaining a building permit therefor from the Building Inspector.~~

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Any person desiring a building permit as required by this Code shall file with the Building Inspector an application therefor in writing on a blank form to be furnished for that purpose.

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Every such application for a permit shall describe the land upon which the proposed building or work is to be done, either by lot, block and/or tract, or similar general description that will readily identify and definitely locate the proposed building or work.

Every such application shall show the use or occupancy of all parts of the building and such other reasonable information as may be required by the Building Inspector.

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Copies of plans and specifications and a lot plan showing the location of the proposed building and of every existing building thereon, shall accompany every application for a permit, and shall be filed in duplicate with the Building Inspector; provided, however, that the Building Inspector may authorize the issuance of a permit without plans or specifications for small or unimportant work.

Plans shall be drawn to scale upon substantial paper or cloth and the essential parts shall be drawn to a scale of not less than one-eighth ( $\frac{1}{8}$ ) inch to one foot.

Plans and specifications shall be of sufficient clarity to indicate the nature and character of the work proposed and to show that this Code and the Building Laws of the City of Miami, will be complied with and shall comply with Sections 2309 and 2503 of this Code.

(a) Computations, strain sheets, stress diagrams and other data necessary to show the correctness of the plans, shall accompany the plans and specifications when required by the Building Inspector.

(b) A plan and specification, as required by the Plumbing Code covering all plumbing work, including water supply, depth and grade and all connections to the sanitary or storm sewers or septic tank, shall be submitted to the Division of Plumbing Inspection and such plans shall be approved and stamped by that Division.

(c) Plans shall show the total floor area, the square feet of the building under consideration, the point at which service connection is required, the size of service and sub-feeder wires, the

location of service switches and center of distribution, the arrangement of circuits and the number of outlets connected thereto as required by the Electrical Ordinance of the City of Miami and such plans shall be approved and stamped by that Division.

(d) Plans shall be submitted to the Zoning Department for approval as to conformity with the Zoning Ordinance of the City of Miami and such plans shall be approved and stamped by that Division.

(e) Where food or drinks are manufactured, prepared, sold or handled, plans will be submitted to the Health Department of the City of Miami for approval as to conformity with the Health Ordinances of the City of Miami and such plans shall be approved and stamped by that Department.

(f) In addition to the above requirements, the Building Inspector may require approval by the Fire Department for fire regulations and approval by the Department of Public Service for street lines and grade wherever necessary and such approval shall be stamped on the plans by those Departments.

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Any specifications in which general expressions are used to the effect that "work shall be done in accordance with the Building Code" or "to the satisfaction of the Building Inspector" shall be deemed imperfect and incomplete and every reference to this Code shall be to the Section or sub-section applicable to the material to be used or to the method of construction proposed.

**For buildings and/or structures, alterations, repairs, improvements, replacements and additions costing Five Thousand (\$5,000) Dollars or over the plans and specifications shall be prepared and approved and bear the seal of an Architect or Structural Engineer, either of whom must be duly registered in the State of Florida, together with the name and address of such Architect or Structural Engineer, and accompanied by a written certificate of the Architect or Structural Engineer, certifying that such plans and specifications conform in every respect with the provisions of this Code. (See requirements Section 2505 for working stresses for lumber.)** Each sheet of every plan filed with the Building Inspector shall bear the seal of the Architect or Structural Engineer as required in this Section. Nothing in this Chapter shall be construed to allow or permit the successive use of plans and specifications prepared for one location, in other location or locations unless they be revised by the Architect or Structural Engineer to comply with the provisions of this Code.

**MOVING OF BUILDINGS.** It shall be unlawful for any person, firm or corporation to move any building or buildings within the City of Miami, Florida, or to move any building or buildings outside the City limits of Miami into the City limits of Miami without having first obtained a written permit from the City Manager of the City of Miami so to do, which permit shall be granted by the City Manager upon the recommendations of the Building Inspector and Director of Public Serv-

ice upon application therefor, upon said applicant showing to the satisfaction of the Building Inspector and Director of Public Service that the moving of said building or buildings would not be a nuisance or impair the value of the property in the vicinity where same is to be moved, or against the public safety, convenience and welfare, and further that the applicant shall provide and submit to the Building Inspector detailed plans and specifications of the improvements, cost, estimate; and a performance bond, said bond in an amount sufficient to guarantee completion and making of the proposed improvements in accordance with the plans and specifications submitted, and within the time limit agreed upon between the applicant and the Building Inspector.

In no case shall any building or buildings be moved within the City limits of the City of Miami or from out of the limits of the City of Miami into the limits of the City in any restricted area wherein and whereby the same would violate any restrictions of the Zoning Ordinance of the City of Miami or violate any subdivision restrictions.

No building shall be removed from one lot to another or from part of a lot to another of the same within the corporate limits of the City of Miami, or into or out of the City limits of said City until the contractor or owner shall have made provision for a City Inspector to accompany same at all times when said structure or house is being moved and is in the public streets, of the City of Miami, and it shall be the duty of the owner or contractor moving such building to have the City Inspector to accompany same at all times and the cost for such Inspector shall be paid by the owner or contractor at the rate of Five (\$5.00) Dollars for each eight hours or fraction thereof.

No building shall be removed from one lot to another or from part of a lot to another of the same within the corporate limits of the City, or into or out of the City, until the owner or contractor shall file with the Building Inspector of the City of Miami a written statement setting forth the lot from which the same is to be removed and the lot upon which it is to be located, together with a detailed statement of the streets, alleys, passage-ways on and over which the building is to be moved, together with a cash bond in the amount of Three Hundred (\$300.00) Dollars to be posted with the Director of Finance of the City of Miami, to make good any damage to streets, alleys or passage-ways, as well as to any private property whatsoever during the progress of the building while in the process of removal. When such statement and cash bond are filed and the other requirements of this section are complied with and met by the owner or contractor, then, in that event, the City Manager, upon the recommendation of the Building Inspector and Director of Public Service, may grant a permit to the owner or contractor to remove such building in accordance with the conditions of the statement, and no building shall be moved into, out of or through the corporate limits of the City of Miami, until the conditions of this ordinance have been complied with, and permit granted by the said City Manager.

The owner or contractor for removal of any building hereunder shall furnish indemnity or security as herein provided and required.

Any house or structure left in the streets of the City of Miami after dark shall have displayed thereon a red light at each corner and one in the middle, on both ends.

Fees for moving buildings are stipulated in Section 203 of this Code.

Moving of buildings in Fire Zone No. 1 shall also comply with the requirements of Section 1602 of this Code; and the moving of buildings in Fire Zone No. 2 shall comply with the requirements of Section 1603 of this Code.

Sec. 202. BUILDING. The application, plans and specifications filed by an applicant for a permit shall be checked by the Building Inspector and, if found to be in conformity with the requirements of this Code and all other laws or ordinances applicable thereto, the Building Inspector shall, upon receipt of the required fee, issue a permit therefor.

The Building Inspector shall have sufficient and reasonable time in which to properly check plans and specifications submitted, which plans shall be checked by him in the order in which they are filed.

When the Building Inspector issues the permit he shall endorse in writing or stamp both sets of plans and specifications "Approved." One such approved set of plans and specifications shall be retained by the Building Inspector as a public record, and one such approved set of plans and specifications shall be returned to the applicant, which set shall be kept on such building or work at all times during which the work authorized thereby is in progress and shall be open to inspection by public officials. Such approved plans and specifications shall not be changed, modified or altered without authorization from the Building Inspector, and all work shall be done in accordance with the approved plans.

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Sec. 203. FEES. Any person desiring a building permit shall, in addition to filing an application therefor, pay to the City of Miami, Florida, before such permit is issued, a fee as required in this section as follows:

For each new building and/or addition up to and including Two Hundred (\$200.00) Dollars of estimated cost of construction, a fee of Two Dollars and Fifty (\$2.50) Cents shall be charged.

For new buildings and/or additions above Two Hundred (\$200.00) Dollars of estimated cost, a fee of Five (\$5.00) Dollars is charged for the first One Thousand (\$1,000.00) Dollars, plus One (\$1.00) Dollar per One Thousand (\$1,000.00) Dollars or fraction thereof up to and including Seventy-five Thousand (\$75,000.00) Dollars plus Seventy-five (\$.75) Cents per thousand (\$1,000.00) Dollars for all over Seventy-five Thousand (\$75,000.00) Dollars up to and including Two Hundred Thousand (\$200,000.00) Dollars plus Fifty (\$.50) Cents per Thousand (\$1,000.00) Dollars for all over Two Hundred Thousand (\$200,000.00) Dollars.

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For alterations and/or remodeling up to and including One Thousand (\$1,000.00) Dollars of estimated cost a fee of Two Dollars and Fifty (\$2.50) Cents is charged plus One (\$1.00) Dollar for each additional One Thousand (\$1,000.00) Dollars or fraction thereof.

For general repairs exceeding Twenty-five (\$25.00) Dollars of estimated cost of construction or improvements in any manner, a fee of One (\$1.00) Dollar per Thousand (\$1,000.00) Dollars or fraction thereof is charged.

For the erection of elevators in any building or buildings within the City of Miami the fee is hereby fixed as follows:

To erect an elevator in a building three (3) stories in height, or less, a fee of One (\$1.00) Dollar shall be charged. To erect an elevator in a building not less than four (4) stories, nor more than eight (8) stories in height, a fee of One Dollar and Fifty (\$1.50) Cents shall be charged. To erect an elevator in a building nine (9) stories high, or over, a fee of Two (\$2.00) Dollars shall be charged. For the enclosure, gate hatchway, interlocks, etc., for each elevator a fee of One (\$1.00) Dollar shall be charged.

For each sign, bill-board or poster-board up to and including Five Hundred (\$500.00) Dollars in value, a fee of One (\$1.00) Dollar shall be charged, plus Fifty (\$.50) Cents for each additional Five Hundred (\$500.00) Dollars or fraction thereof, in value.

For each awning, roller curtain or canopy over public property a fee of One (\$1.00) Dollar is charged.

For circus or carnival tents a fee of Two Dollars and Fifty (\$2.50) Cents is charged for each tent.

For moving buildings a fee of Five (\$5.00) Dollars is charged for each building of five (5) rooms or less, and Ten (\$10.00) Dollars for each building over five (5) rooms. Any building of more than One Thousand (1,000) square feet of first floor area shall take the higher classification.

The City of Miami, the County of Dade, the State of Florida, and the United States of America, shall be exempt from the paying of any fee for any building permit. Permit for any such work shall be issued by the Building Inspector, on the approved form, and marked "no charge." However, nothing in this section shall exempt the above from procuring permit from the Building Department on the blanks provided therefor.

Application for building permits shall furnish an estimate of the cubic contents of the building as a basis for determining the proper fee to be charged. The cubic contents shall be taken as the area of the building in square feet multiplied by the height in feet, taking the height from the grade level or cellar or basement floor to the average height of the roof.

The estimated cost of any building shall be determined by the cost per cubic feet as given in the following table:



Group	Type	Cost per cu. ft.	Group	Type	Cost per cu. ft.
A	I	35	F	I	40
	I	35		II	30
B	II	27		III	27
	III	25		IV	10
C	I	40		V	20
	II	30	G	I	25
	III	27		II	17
	IV	10		III	15
	V	20		IV	10
		V		10	
D	I	50	H	I	55
	II	40		II	40
	III	37		III	40
	IV	20		IV	30
	V	30		V	25
E	I	25	I	I	60
	II	17		II	50
	III	15		III	30
	IV	10		IV	25
	V	10		V	20
			J	I	25
				II	20
				III	10
				IV	5
				V	5

Where work for which a permit is required by this Code is started or proceeded with prior to obtaining said permit, the fees above specified shall be doubled, but the payment of such double fee shall not relieve any persons from fully complying with the requirements of this Code in the execution of the work nor from any other penalties prescribed herein.

The Building Inspector shall keep a permanent, accurate account of all fees collected and received under this Code and give the name of the persons upon whose account the same were paid, the date and the amount thereof, together with the location of the building or premises to which they relate.

(See Sections 4602 and 4604, in appendix for Line and Grade Permit and Fees.)

(See Chapter 46 in appendix for Street, Sidewalk, Curb and Gutter Permits and Fees.)

Sec. 204. INSPECTION AND REGISTERED INSPECTORS. The Building Inspector shall inspect or cause to be inspected at various intervals during erection, construction, enlarging, alteration, repairing, moving, demolition, conversion, occupancy and underpinning all buildings and/or structures referred to in this Code and located in the City

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of Miami, Florida, and a final inspection shall be made of every building and/or structure hereafter erected prior to the issuance of the Certificate of Occupancy as specified in Sec. 206.

No building construction, alteration, repair or demolition requiring a building permit shall be commenced until the permit holder or his agent shall have posted the building permit card in a conspicuous place on the front of the premises and in such position as to permit the Building Inspector to conveniently make the required entries thereon respecting inspection of the work. This permit card shall be maintained in such position by the permit holder until the Certificate of Occupancy has been issued by the Building Inspector.

The Building Inspector upon notification from the permit holder or his agent shall make the following inspections of buildings and shall either approve that portion of the construction as completed or shall notify the permit holder or his agent wherein the same fails to comply with the law.

**FOUNDATION INSPECTION:** To be made after the trenches are excavated and the necessary forms erected and when all materials for the foundations are delivered on the job.

**FRAME INSPECTION:** To be made after the roof, all framing fireblocking and bracing is in place and all pipes, chimney and vents are complete.

**STUCCO INSPECTION:** To be made after all lathing and backing is in place and all plastering and stucco materials are delivered on the job, but before any stucco is applied.

**FINAL INSPECTION:** To be made after building is completed and is ready for occupancy.

No work shall be done on any part of the building and/or structure beyond the point indicated in each successive inspection without first obtaining the written approval of the Building Inspector. Such written approval shall be given only after an inspection shall have been made of each successive step in the construction as indicated by each of the above for inspection. (See Appendix.)

No reinforcing or structural framework of any part of any building or structure shall be covered or concealed in any manner whatsoever without first obtaining the approval of the Building Inspector.

In all buildings where plaster is used for fire protection purposes the permit holder or his agent shall notify the Building Inspector after all lathing and backing is in place and all plastering materials are delivered on the job and no plaster shall be applied until the approval of the Building Inspector has been received.

**SPECIAL ENGINEERING SUPERVISION.** Any person engaged in the erection or causing the erection of a building and/or structure of Type I buildings, shall employ a "Registered Inspector" properly qualified as specified in this section or shall cause his employment by the Architect, Structural Engineer or Designer of such structure; provided,

that the Building Inspector may authorize the proposed construction without requiring a "Registered Inspector" when in his estimation such special supervision is not necessary. The Building Inspector may designate any building and/or structure as requiring a "Registered Inspector" when deemed necessary or where there is a complicated design or where new material or methods of construction are intended to be used.

The "Registered Inspector" shall be approved by, registered with, deputized by and assigned to a particular building or structure by the Building Inspector. Such "Registered Inspector" shall be thoroughly qualified by knowledge and experience in the design and construction of the structure to which he is assigned by the Building Inspector and he shall be thoroughly familiar with the requirements of this Code applying to that building or structure and of their practical application. The Building Inspector may authorize one such "Registered Inspector" to supervise the construction of a limited number of buildings and/or structures provided that his service extend over all the important details of framing, erection and assembly and that he is able to render full engineering inspection service on each building and/or structure under his supervision and control.

Before commencing his duties the "Registered Inspector" shall obtain a Certificate of Registration from the Building Inspector for which he shall pay the sum of one dollar (\$1.00), and he shall deposit with the Building Inspector a surety bond in the sum of five thousand dollars (\$5,000.00) conditioned upon the faithful and efficient performance of his duties, said bond to be made payable to the City of Miami, Florida, and to be furnished for the term of one year. The "Registered Inspector" shall remain constantly upon the work during the process of construction and his duties shall terminate only when a Certificate of Compliance is issued by the Building Inspector in approval and acceptance of the work on which he may be engaged as specified in Section 205.

Each such "Registered Inspector" shall carefully inspect all materials entering into the construction of the structure and be responsible for obtaining full information regarding the strength of materials and where new untried materials are intended for any use involving structural safety. He shall report in writing, upon the special form furnished by the Building Department, the true details regarding the progress of the work, the conditions of same, deviation, defects, delays, general character of materials, working situations, weather conditions and all and any influencing factors that affect in any manner the structural safety and strength of the building. He shall be held directly responsible for the enforcement of this Code wherever same is applicable to the structure upon which he is engaged. He shall notify the Building Inspector of any attempt to cover, conceal, patch or repair any defect in materials or workmanship before such materials have been examined by the Building Inspector or his duly authorized representative. He shall be held directly responsible for the infraction of any ruling of

the Building Inspector and shall have the authority to compel the removal of defective materials or to suspend or stop work pending the rulings of the Building Inspector. He shall not be engaged in any other labor on the project upon which he is employed.

Sec. 205. **CERTIFICATE OF COMPLIANCE.** The duties of the "Registered Inspector" shall terminate only when a Certificate of Compliance has been issued by the Building Inspector. Such Certificate of Compliance shall bear a statement signed by the "Registered Inspector" stating that the work upon the building or structure to which he had been assigned has been completed in a satisfactory manner and that the regulations of this Code affecting the structural features of such building or structure have been fully complied with. If there have been any infractions of this Ordinance they shall be noted in this statement. The Building Inspector shall approve such Certificate of Compliance filed by the "Registered Inspector" if after the inspection, the structural features of such building or structure are found to be in accordance with the provisions of this Code. Each Certificate of Compliance shall bear the legal description of the property upon which such building or structure is located and an identifying description of the building. A duplicate of each Certificate of Compliance shall be kept on file permanently in the office of the Building Inspector.

Sec. 206. **CERTIFICATE OF OCCUPANCY.** No building shall be occupied in any part thereof unless or until a Certificate of Occupancy has been issued by the Building Inspector. The Building Inspector shall, after an application therefor has been filed by the owner or his agent, issue a Certificate of Occupancy for such building, if after inspection it is found that such building complied with the provisions of this Code and all other requirements of law or ordinance applicable thereto. Such Certificate of Occupancy shall show the use to which the structure may be put and the maximum allowable floor loads for each floor thereof. A temporary Certificate of Occupancy may be issued by the Building Inspector for the temporary use of a portion of a building prior to the completion and occupancy of the entire building.

Sec. 207. **CHANGE OF OCCUPANCY.** The use or occupancy of any building shall not be changed until a Certificate of Occupancy permitting the new use or occupancy is issued by the Building Inspector when the new occupancy is such as to require alterations or repairs of the building, as specified in this Code. No such Certificate of Occupancy shall be issued unless the building shall comply with the requirements of this Code as specified in Section 104.

**CHAPTER 3**  
**ENFORCEMENT**

Sec. 301. POWERS AND DUTIES OF BUILDING INSPECTOR. The Building Inspector is hereby authorized and directed to enforce all of the provisions of this Code and for such purpose he shall have the power of a Police Officer; provided, however, that where inspection, approval or tests are specifically mentioned to be made by other Departments or Inspectors of the City of Miami, that such Department Chief or duly authorized Inspector shall have the power to enforce such specific duty and for such purpose the duly authorized Inspector shall have the power of a Police Officer.

The Building Inspector or his authorized representative and other duly authorized Inspectors, as specified above, may enter any building or premises, for the purpose of inspection or to prevent violation of this Code, upon presentation of the proper credentials.

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Whenever any building work is being done contrary to the provisions of this Code, or is being done in an unsafe or dangerous manner the Building Inspector shall order the work stopped by notice in writing served on any persons engaged in the doing or causing such work to be done, and any such person shall forthwith stop such work until authorized by the Building Inspector to recommence and proceed with the work.

Whenever any building or portion thereof is being used or occupied contrary to the provisions of this Code, the Building Inspector shall order such use or occupancy to be discontinued and such person shall vacate such building or portion thereof within ten (10) days after receipt of such notice, or make the building or portion thereof comply with the requirement of this Code; provided, however, that in the event of an emergency and for the removal or making safe of condemned Buildings and/or Structures and for the abatement or removal of nuisances, the following shall apply:

Any building and/or structure or portion thereof, including buildings and/or structures in process of erection, if found to be dangerous to persons or property, or unsafe for the purpose for which it is being used, or if damaged by fire, windstorm or from other causes, or in danger from fire, windstorm or other hazards, due to defects in construction, or dangerous for the use, because of insufficient means of egress in case of fire, or which violates the provisions of this Code, due to removal, decay, deterioration or the falling off of anything, appliance, device or requirement originally required by this Code, or which has become damaged by the elements or fire to an extent of fifty (50) per cent of its value, may be condemned by the Building Inspector. The Building Inspector may order portions of the structural frame of a building or structure to be exposed for inspection when in his opinion they are in an unsafe condition. In any of the aforesaid cases the Building Inspector shall serve notice in writing on the owner or person in charge of such building or premises, or tenant, setting forth what must be done

to make such buildings safe, and the time specified for the completion of the work required to be done by the terms of such notice. The person receiving such notice shall commence within forty-eight (48) hours thereafter to make the changes, repairs or alterations set out in such notice and diligently proceed with such work or demolish the building. No such building shall be occupied or used for any purpose after the Building Inspector serves notice of its unsafe or dangerous condition until the instructions of the Building Inspector have been complied with.

If, at the expiration of the time as set forth in the first notice, the instructions, as stated have not been complied with, a second notice shall be served personally upon the owner, his agent, or the person in possession, charge or control of such building or structure or part thereof, stating therein such precautionary measures as may be necessary or advisable to place such building and/or structure or part thereof in a safe condition. Proper service of either such notices shall be personal service upon the owner of record, if he shall be within the City of Miami; if he is not in the City of Miami, such service may be had upon any person accustomed to collect rents, on the property in question who may be in the City of Miami, and in the absence of such person, upon the tenant of the premises; in the event such premises are vacant, and the owner is not in the City of Miami, such services will be completed when the notice is sent by registered mail to the last known address of the said owner; whenever the owner, agent or tenant is a corporation, service may be upon the President, Vice-President, Secretary or Treasurer, or in the absence of any of these, the local representative of such corporation.

If, at the expiration of the time specified in such notice, the owner, agent or tenant has failed, neglected or refused to comply with said notice the Building Inspector shall cause to be made by two disinterested Master Builders an appraisal of the buildings and conditions. Should they fail to agree a third Master Builder shall be appointed and if the final decision agrees with that of the Building Inspector, the Building Inspector shall have the authority, and it shall be his duty to forthwith make safe or tear down, or cause to be torn down such buildings, structures or parts thereof as the City may elect, and the expense of removing such building or of making it safe, or abating, or removing, such nuisance, shall be paid by the owner of such property.

It shall be unlawful for any person, persons, firm or corporation to remove any notice of an unsafe or unsanitary condition posted by the Building Inspector upon any building, structure or part thereof, or to move into or continue to occupy any such condemned building, structure or part thereof; and it shall be the duty of any person, persons, tenant or occupant of any building or structure or part thereof which has been so posted by the Building Inspector as being unsafe or unsanitary, to immediately vacate same in accordance with the time given in posted notice, unless extension of time is given in writing by the Building Inspector.

When any building or other structure has been removed or has been made safe by the City of Miami, or a nuisance has been abated or removed by the City as provided in this Section, the expense thereby incurred shall be a charge against the owner or the lot or lots of land upon which said building or other structure was located, in case a nuisance has been abated or removed by the City of Miami, as provided in this Section, the expense thereby incurred shall be a charge against the owner of the property which has been abated or removed as a nuisance, and shall be and become a lien thereon. The cost of removing any such building or other structure or the abatement or removal of any nuisance may be recovered by an appropriate action at law, or by enforcing the said lien in the same manner as improvement liens or assessments in favor of the City are enforced, or in any other manner provided by law. (BOARD OF APPEALS—Page 299)

**TERMITE PROVISIONS.** Whenever the Building Inspector has knowledge of the existence of termite in any building or structure, he shall have the power, and it is his duty to notify, the tenant, the agent, or owner of such building or structure in writing to take the necessary measures for the extermination of termites from any such building or structure within a reasonable length of time, not to exceed sixty (60) days. Any tenant, or agent, or owner failing to comply with such notice shall be deemed guilty of violating the provisions of this ordinance and shall be subject to all the penalties provided herein. (See Section 2511.)

**Sec. 301. ALTERNATE MATERIALS AND TYPES OF CONSTRUCTION.** The provisions of this Code are not intended to prevent the use of types of construction or materials offered as an alternate for the types of construction or materials required by this Code, but such alternate types of construction or materials to be given consideration shall be offered for approval as specified in this Chapter.

Corresponding materials or types of construction referred to in the Code, the use of which is the same as is intended for the new material or construction, and approved, shall be considered as standards of quality and strength if no specifications are provided.

Any person desiring to use types of construction or materials not specifically mentioned in this Code shall file with the Building Inspector authentic proof in support of claims that may be made regarding the sufficiency of such types of construction and materials and request approval and permission for their use.

The provisions of this Code relative to engineering design covered in Chapters 23 to 27 inclusive shall not prevent a Structural Engineer, registered in the State of Florida, from using design methods recognized as good practice by the engineering profession, provided such engineer secures the approval of the Building Inspector for his procedure and further provided that unit stresses used are within the unit stresses specified in Chapters 23 to 27 inclusive.

The Building Inspector may approve such alternate types of construction or materials and/or may recommend as amendment or methods of design to this Code in order to make permissible the use of same.

If the evidence and proof are not sufficient, in the opinion of the Building Inspector to justify the approval or recommendation for an amendment, the applicant may refer the entire matter to the Board of Examiners and Appeals, as specified in Section 303.

Sec. 303. APPEALS. Any person whose application for a building permit for the use of an alternate material or type of construction or method of design has been refused by the Building Inspector, or who may consider that the provisions of this Code do not cover the point raised or that any particular provision would cause a manifest injury to be done may appeal to the Board of Examiners and Appeals by serving the written notice on the Building Inspector in which it shall be stated that the applicant desiring to use the alternate materials or types of construction, shall guarantee payment of all expenses for necessary tests made or ordered by the Board of Examiners and Appeals. Such notice shall be at once transmitted to the Board, which Board shall arrange for a hearing on the particular point raised.

Such written notices shall be accompanied with the sum of Ten (\$10.00) Dollars, payable to the City of Miami, Florida. If the appeal be denied such fee shall be retained by the City of Miami, otherwise the fee shall be returned to the applicant.

Sec. 304. BOARD OF EXAMINERS AND APPEALS. In order to determine the suitability of alternate materials and construction and to provide for reasonable interpretations of the provisions of this Code, there shall be and is hereby created a Board of Examiners and Appeals, consisting of three (3) members, who are qualified by experience and training to pass on matters pertaining to building construction. One member shall be a licensed and practicing Architect, one a competent Builder of Structures on land and one a licensed and practicing Structural Engineer, each of whom shall have had at least ten (10) years' experience as an Architect, Builder or Structural Engineer. The Building Inspector shall be an ex-officio member and shall act as Secretary to the Board, but shall not vote upon any question before the Board. In the absence of the Building Inspector, he shall deputize one of his assistant Building Inspectors to act in his stead. The Board of Examiners and Appeals shall be appointed by the City Manager and shall hold office for one year. The Board shall adopt reasonable rules and regulations for conducting its investigations, and shall render all decisions and findings in writing to the Building Inspector, with a duplicate copy to the appellant and MAY RECOMMEND to the City Commission such new legislation as is consistent therewith.

The Board of Examiners and Appeals may interpret the provisions of the Code to cover a special case, if it appears that the provisions of the Code do not definitely cover the point raised or that a manifest injustice might be done, provided that every such decision shall be by unanimous vote of the Board of Examiners and Appeals. Decisions as to the use of alternate materials and/or types of construction shall be by majority vote, and if not permitted by this Code, shall become



effective only when authorized by an amendment to this Code by the City Commission.

Sec. 305. VIOLATIONS AND PENALTIES. It shall be unlawful for any person, firm, partnership, corporation, association or other organization, or any combination of any thereof to erect, construct, enlarge, alter, repair, move, remove, demolish, convert, equip, use or occupy or maintain any building and/or structure or any portion of any building and/or structure in the City of Miami, Florida, contrary to or in violation of any provisions of this Code, or to cause, permit or suffer the same to be done.

When not in conflict with the provisions of this Ordinance, nothing contained in this section shall prohibit the enforcement of Ordinance No. 873 of the City of Miami, Florida, and its subsequent amendments, "Being an ordinance regulating and governing dry cleaning and dry dyeing plants, in the City of Miami, Florida, requiring permits before engaging in said business, prescribing certain general requirements and regulations, such as locations, construction of buildings, ventilation, lighting, heating, power pumps, pipe manifold for handling solvents, washers, drying tumblers, extractors and separators and separator tanks, purifiers, and operating requirements and qualifications of persons in charge of dry cleaning and dry dyeing plants; and providing for penalty for violation of said ordinance."

Nothing contained in this section shall prohibit the enforcement of Ordinance No. 750 of the City of Miami, Florida, and its subsequent amendments, "Being an ordinance governing and regulating the construction, installation, repairs and alterations of awnings, canopies and other canvas protection in the City of Miami, Florida; providing for a license, together with a deposit of One Thousand (\$1,000.00) Dollars under certain conditions and bonds thereof, and providing for a penalty for the violation of said ordinance."

Nothing contained in this section shall prohibit the enforcement of Ordinance No. 1156, of the City of Miami, Florida, and its subsequent amendments, "Being an ordinance to regulate and restrict the erection, reconstruction, alteration, location and use of buildings, structures, land and water, for trade industry, residence or other purposes; to regulate and restrict the size of buildings and other structures hereafter erected or altered, the size and dimensions of yards, courts and other open spaces surrounding buildings; to regulate and restrict building lines and the percentage of lot that may be occupied, and the density of population, and, for said purposes, to divide the City of Miami, Florida, as shown on the official zoning map into districts of such number, shape and area as may be best suited to carry out these regulations and for each such district to impose regulations and restrictions designating the kinds or classes of trades, industries, residences or other purposes for which buildings or other structures or premises may be permitted to be erected, altered or used; to provide for preservation of subdivisions; restrictions of included sub-

divisions; to provide for the regulation of uses; repealing all laws in conflict; and to prescribe penalties for the violation of the provisions of this ordinance."

Nothing contained in this section shall prohibit the enforcement of Ordinance No. 952, of the City of Miami, Florida, and its subsequent amendments, "Being an ordinance defining, regulating and governing contractors, of construction, including all branches, not included in other ordinances, within the City Limits of Miami, Florida; requiring examination of all such contractors; prescribing the time when such examinations shall be conducted; specifying and fixing the fee for examination; specifying and fixing the amount of the occupational license fees for such contractors; creating a Board of Examiners for contractors; defining the duties and powers of the Board; and providing penalties for the violation of this ordinance."

Nothing contained in this section shall prohibit the enforcement of Ordinance No. 1305, of the City of Miami, Florida, and its subsequent amendments, "Being an ordinance regulating and governing electrical construction and the sale, installation and maintenance of electrical wiring and apparatus within the Limits of the City of Miami, Florida, specifying fees for permits, examinations, inspection and licenses, creating and designating a Board of Examiners for Master Electricians, journeymen, electricians and maintenance electricians, defining the duties and powers of this Board and the Chief of the electrical inspectors and his authorized assistants and providing penalties for the violation of this ordinance."

Nothing contained in this section shall prohibit the enforcement of Ordinance No. 795, of the City of Miami, Florida, and its subsequent amendments, "Being an ordinance to protect the health and welfare of the people of the City of Miami, Florida, by establishing rules and regulations for plumbing and sanitation, providing for the enforcement and administration thereof, and providing for the issuance of plumbing permits and the collection of fees for same, and the regulating of those persons engaged in or at the plumbing business, and to repeal sections No. 1 to No. 154 inclusive, of Ordinance No. 98 and sections No. 1 to No. 22 inclusive, of Ordinance No. 741."

Nothing contained in this section shall prohibit the enforcement of Ordinance No. 1402, of the City of Miami, Florida, and its subsequent amendments, "Being an ordinance regulating the construction, installation, operation, maintenance, repair, testing and inspection of house piping, appliances and other equipment in connection with the use of manufactured gas in the City of Miami; creating and investing certain duties in a Board of Examiners of gas fitters; providing for the examination, registration and regulation of gas fitters; providing for the issuance of permits and the collection of fees; providing a penalty for the violation of this ordinance; and repealing all laws and parts of laws in conflict herewith; declaring this ordinance to be an emergency

ordinance; providing that if any section be declared unconstitutional it shall not affect the remaining sections; providing that this ordinance shall become effective in thirty days."

The issuance or granting of a permit or approval of plans and/or specifications shall not be deemed or construed to be a permit for, or an approval of any violation of any of the provisions of this Code. No permit presuming to give the authority to violate or cancel the provisions of this Code shall be valid, except insofar as the work or use which it authorizes is lawful.

The issuance of a permit upon plans and specifications shall not prevent the Building Inspector from thereafter requiring the correction of errors in said plans and specifications, or from preventing building operations being carried on thereunder when in violation of this Code or any other ordinances of the City of Miami, Florida.

Every permit issued by the Building Inspector under the provisions of this Code shall expire by limitation and become null and void, if the building or work authorized by such permit is not commenced within six (6) months from the day of such permit, or if the building or work authorized by such permit is suspended or abandoned at any time after the work is commenced for a period of six (6) months. Before such work can be recommenced a new permit shall be first obtained so to do, and the fee therefor shall be one-half the amount required for a new permit.

## PART II

### CHAPTER 4

### DEFINITIONS

Sec. 401. DEFINITIONS. For the purpose of this Code, certain terms, phrases and words and their derivatives shall be construed as set out in this section. Words used in the singular include the plural and the plural the singular. Words used in the masculine gender include the feminine, and the feminine the masculine. Wherever a section, chapter or part is referred to in this Code by number it shall be understood to refer to a section, chapter or part of this Code.

"ALLEY." Is any public space, public park or thoroughfare less than sixteen (16) feet but not less than ten (10) feet in width which has been deeded to the public for public use.

"ALTERATION." Alter or alteration means any change, addition or modification in construction or occupancy.

"APARTMENT HOUSE." Is any building, or portion thereof, which is designed, built, rented, leased, let or hired out to be occupied, or which is occupied as the home or residence of three or more families living independently of each other and doing their own cooking in the said building, and shall include flats and apartments.

"APARTMENT." Is a room or suite of rooms which is occupied or which is intended or designed to be occupied by one family for living and sleeping purposes.

**"APPROVED."** As to materials and types of constructions, refers to approval by the Building Inspector as the result of investigation and tests conducted by him, or by reason of accepted principles or tests by national authorities, technical or scientific organizations.

**"AREA."** (See *"Floor Area"*).

**"ATTIC."** or **"ATTIC STORY."** Is any story situated wholly or partly in the roof, so designated, arranged or built as to be used for business, storage or habitation.

**"BALCONY."** Is that portion of the seating space of an assembly room which is raised four (4) feet or more above the level of the main floor.

**"BASEMENT."** Is that portion of a building between floor and ceiling, which is partly below and partly above grade (as defined in this Section), but so located that the vertical distance from grade to the floor below is less than the vertical distance from grade to ceiling. (See *"Story."*)

**"BAY WINDOW."** Is a rectangular, curved or polygonal window, supported on a foundation extending beyond the main wall of the building.

**"BUILDING."** Is any structure built for the support, shelter and enclosure of persons, animals, chattels or movable property of any kind; and when separated by an "Absolute Fire Separation" each portion of such building so separated shall be deemed a separate building.

**"BUILDING INSPECTOR."** The chief Building Inspector or any regularly authorized deputy.

**"CAST STONE."** Shall be understood to mean a building stone manufactured from cement concrete, pre-cast and used as trim, veneer and/or facing on or in buildings and other structures.

**"CELLAR."** Is that portion of a building between floor and ceiling which is wholly or partly below grade (as defined in this Section) and so located that the vertical distance from grade to the floor below is equal to or greater than the vertical distance from grade to ceiling. (See *"Story."*)

**"COURT."** Is an open, unoccupied space, bounded on two or more sides by the walls of the building. An inner court is a court entirely within the exterior walls of a building. All other courts are outer courts.

**"DEAD LOAD."** In a building includes the weight of the walls, permanent partitions, framing, floors, roofs and all other permanent, stationary construction forming a part of the building.

**"DWELLING."** Is any building or any portion thereof, which is not an "Apartment House" or a "Hotel" as defined in this Code, which contains one or more "Apartments" or "Guest Rooms," used, intended or designed to be used, built, rented, leased, let or hired out to be occupied or which are occupied for living purposes by not more than two (2) separate families.

**"EXISTING BUILDING."** Is a building already erected or one for which a legal permit has been issued prior to the adoption of this Code.

**"FACED WALL."** Is a wall in which the masonry facing and backing are so bonded as to exert a common action under load.

**"FAMILY."** Is one person living alone, or a group of two or more persons living together, whether related to each other by birth or not.

**"FLOOR AREA."** Is the area included within exterior walls or within exterior walls and fire walls of a building exclusive of vent shafts and courts.

**"FRONT OF LOT."** Means the front boundary line of lot bordering on the street, and in the case of a corner lot may be either frontage.

**"FOOTING" or "FOUNDATION."** Is the spreading course at the base or bottom of a foundation wall, column or pier.

**"GALLERY."** Is that portion of the seating space of an assembly room having a seating capacity of more than ten (10) and located above a balcony.

**"GARAGE."** Is a building or portion thereof in which a motor vehicle containing gasoline, distillate or other volatile, inflammable liquid in its tank, is stored, repaired or kept.

**"GARAGE APARTMENT."** Is a dwelling with living quarters on the second floor above a "Private Garage."

**"GARAGE PRIVATE."** Is a building or a portion of a building in which motor vehicles used by the tenants of the building or buildings on the premises are stored or kept. (See Section 1509.)

**"GRADE."** When used in connection with lumber, means the divisions of sawn lumber into quality classes with respect to its physical and mechanical properties as defined in published lumber manufacturers' standard grading rules.

**"GRADE."** (1) For buildings adjoining one street only, the elevation of the sidewalk at the center of that wall adjoining the street.

(2) For buildings adjoining more than one street, the average of the elevations of the sidewalk at centers of all walls adjoining streets.

(3) For buildings having no walls adjoining the street, the average level of the ground (finished surface) adjacent to the exterior walls of the building. All walls approximately parallel to and not more than five (5) feet from a street line are to be considered as adjoining a street.

**"GUEST"** means any person hiring and occupying a room for living and sleeping purposes.

**"GUEST ROOM"** means a room in a building occupied, or intended and designed to be occupied, let or hired out to a "Guest".

**"HEIGHT OF BUILDING"** is the vertical distance from the "Grade" to the highest point of the coping of a flat roof or to the deck line of a mansard roof or to the average height of the highest gable of a pitch or hip roof.

**"HOTEL."** Every building or other structure kept, used, maintained, advertised as or held out to the public to be a place where sleeping accommodations are supplied for pay to transients or permanent guests or tenants, in which ten or more rooms are furnished for the accommodation of such guests, and having one or more dining rooms or cafes where meals or lunches are served to such transient or permanent guests, such sleeping accommodations and dining rooms or cafes being conducted in the same buildings or buildings in connection therewith.

**"LINTEL"** is the beam or girder placed over an opening in a wall, and which supports the wall construction above.

**"LIVE LOADS"** are all imposed, fixed or transient loads other than "Dead Loads".

**"MASONRY"** is that form of construction composed of stone, brick, concrete, gypsum, hollow clay tile, concrete blocks or tile, or other similar building units, or materials or combination of these materials, laid up unit by unit and set in mortar. For the purpose of this Code plain monolithic concrete shall be considered as masonry. (See Section 2405.)

**"SOLID MASONRY"** means masonry built without hollow spaces.

**"MEZZANINE or MEZZANINE FLOOR"** is an intermediate floor placed in any story or room. When the total area of any such "Mezzanine Floor" exceeds thirty-three and one-third (33 1-3) per cent of the total floor area in that room or story in which said "Mezzanine Floor" occurs, it shall be considered as constituting an additional "Story." The clear height above or below a "Mezzanine Floor" construction shall be not less than seven (7) feet.

**"OCCUPANCY"** as used in this Code pertains to and is the purpose for which a building is used or intended to be used. Change of occupancy is not intended to include change of tenants or proprietors.

**"ORIEL WINDOW"** is a window that projects from the main line of an enclosing wall of a building, and is carried on brackets or corbels.

**"PERSON"** means a natural person, his heirs, executors, administrators or assigns and also includes a firm, partnership or corporation, its or their successors or assigns, or the agent of any of the aforesaid.

**"REPAIR"** means the reconstruction or renewal of any part of an existing building for the purpose of its maintenance. The word "Repair" or "Repairs" shall not apply to any change of construction.

**"ROOMS."** Every compartment in a hotel, apartment house, or rooming house, including parlors, dining rooms, sleeping porches, kitchens, offices, sample rooms, living rooms, sleeping rooms, but not including halls, bath rooms, toilet rooms, closets, pantries, or store rooms.

And in an apartment having no designated dining room, any dining space wherever located shall be classed as a dining room.

**"ROOMING HOUSE."** Every house, boat, vehicle, or other structure, or any place or location kept, used, maintained, advertised or held out to the public to be a place where living quarters, sleeping or house-keeping accommodations are supplied for pay to transient or permanent guests or tenants, whether in one or adjoining buildings.

**"SEATING CAPACITY."** The seating capacity of a theatre, auditorium, or any room or place of public assembly in which seats are not fixed shall be determined on a basis of seven (7) square feet of floor, balcony and/or gallery area per person, and in the case of fixed seats such as pews or benches the seating capacity shall be based on one person to each eighteen (18) inches of pew or bench length.

**"EXCEPTIONS":** (1) The capacity of dance floor or the playing areas of gymnasiums when such areas or floors are not to be used for general assembly purposes shall be determined on the basis of fifteen (15) square feet of floor area per person.

(2) The capacity of school class rooms, individual rooms in public libraries and museums, when two thousand (2,000) square feet or less in floor area, shall be determined on the basis of twenty (20) square feet of floor area per person.

**"SHAFT"** means a vertical opening through a building for elevators, dumb waiters, light, ventilation or similar purposes.

**"SHALL,"** as used in this Code, is mandatory.

**"STAGE"** is a raised platform in an assembly room which is cut off from the audience section by a proscenium wall and where the wing space is over three (3) feet beyond the proscenium opening on one or both sides and/or where there is more than three (3) feet of open space above the proscenium opening.

**"STORY"** means that portion of a building included between the upper surface of any floor and the under surface of the floor next above, except that the topmost story shall be that portion of a building included between the upper surface of the topmost floor and the ceiling or roof above. If the finished floor level directly above a basement or cellar is more than six (6) feet above grade such basement or cellar shall be considered a story.

**"STREET"** is any thoroughfare or public park not less than sixteen (16) feet in width which has been dedicated or deeded to the public for public use.

**"STRUCTURE"** is that which is built or constructed, an edifice or building of any kind, or any piece of work artificially built up or composed of parts joined together in some definite manner.

**"THEATRE"** is a building or part thereof which contains an assembly hall, having a stage which may be equipped with curtain and/or permanent stage scenery or mechanical equipment adaptable to the showing of plays, operas, moving pictures, performances, spectacles and similar forms of entertainment.

**"TOURIST CAMP."** Three or more Cabin Rooming House units located or set up within a distance of fifty (50) feet of each other and maintained by any person, firm or corporation, for use most generally by transients.

**"VALUE"** of a building shall be the estimated cost to replace the building in kind.

**"VENEER"** is the outer facing of brick, stone, concrete or tile attached to an enclosing wall for the purpose of providing ornamentation, protection or insulation but not counted as adding strength to the wall.

**"WALLS."**

**"BEARING WALL"** is a wall which supports any load other than its own weight.

**"CURTAIN WALL"** is a non-bearing wall between columns or piers which is not supported by girders or beams.

**"ENCLOSURE WALL"** is an exterior, non-bearing wall in skeleton construction, anchored to columns, piers, or floors, but not necessarily built between columns or piers.

**"FIRE DIVISION WALL"** is a wall of masonry or reinforced concrete which sub-divides a building to restrict the spread of fire, but is not necessarily continuous through all stories nor extended through the roof. (*See Chapter 29.*)

**"FIRE WALL"** is a wall of masonry or reinforced concrete which sub-divides a building to prevent the spread of fire by starting at the foundation and extending continuously through all stories to and above the roof. (*See Chapter 29.*)

**"INTERIOR WALL"** is a wall entirely surrounded by the exterior walls of the building.

**"NON-BEARING WALL"** is a wall which supports no load other than its own weight.

**"PANEL WALL"** is a non-bearing wall in skeleton construction built between columns or piers and wholly supported at each story.

**"PARAPET WALL"** is that part of any wall entirely above the roof line.

**"PARTY WALL"** is a wall used or adapted for joint service between two buildings.

**"RETAINING WALL"** is any wall used to resist the lateral displacement of any material.

**"YARD"** is an open, unoccupied space, other than a court, unobstructed from the ground to the sky, except where specifically provided by this Code, and the lot on which a building is situated.



PART III  
REQUIREMENTS BASED ON OCCUPANCY

CHAPTER 5

**Classification of All Buildings By Use or Occupancy  
and General Requirements for All Occupancies**

Sec. 501. OCCUPANCY CLASSIFIED. Every building, whether existing or hereafter erected, shall, for the purpose of this Code be classified by the Building Inspector according to its use or the character of its occupancy, as a building of Group A, B, C, D, E, F, G, H, I or J, as defined in Chapters 6, 7, 8, 9, 10, 11, 12, 13, 14 and 15, respectively. (See Chart in Section 503.)

Any occupancy not mentioned specifically or about which there is any question shall be classified by the Building Inspector and included in the Group which its use most nearly resembles, based on the existing or proposed life and fire hazard.

The Types of Construction referred to in Chapters 6 to 15 inclusive are:

- Type I—Fire-Resistive Construction.
- Type II—Heavy Timber Construction.
- Type III—Ordinary Masonry Construction.
- Type IV—Metal Frame Construction.
- Type V—Wood Frame Construction,

and are defined in Chapters 18, 19, 20, 21 and 22, respectively.

Sec. 502. CHANGE IN USE. No change shall be made in the character of occupancy or use of any building which would place the building in a different Group of occupancy, unless such building is made to comply with the requirements of this Code for that Group.

**EXCEPTIONS:**

The character of the occupancy of existing buildings may, subject to the approval of the Building Inspector, be changed and occupied for purposes in other Groups without conforming to all requirements of the Code for those Groups, provided the new or proposed use is less hazardous, based on life, windstorm or fire risk, than the existing use.

No change in the character of occupancy of a building shall be made without a Certificate of Occupancy, as required in Section 207 of this Code.

Buildings in existence at the time of the passage of this Code may have their existing use or occupancy continued, if such use or occupancy was legal at the time of the passage of this Code, provided such continued use is not dangerous to life.

Sec. 503. MIXED OCCUPANCY. (a) When the occupancy of a building is such that different portions of the building are placed in different occupancy Groups, a "Fire Separation" as specified in this Section shall be provided so that each Group is entirely segregated.

Such "Fire Separation" shall provide either a complete vertical or horizontal separation, or a combination of both. Each portion of a building so segregated shall be considered, for the purpose of this Code, to be a separate building and as such shall conform to the specific requirements applying to that use or occupancy; provided, however, that "Fire Separations" shall not affect or alter the requirement for fire walls when and where required because of area as specified in Part 3, except when such "Fire Separation" provides the necessary complete vertical separation as specified in Section 2932.

(b) "Fire Separations" may be vertical and/or horizontal, depending upon the locations of the portions of the building to be segregated and shall consist of a system of walls, partitions and/or floors of materials and construction so arranged as to provide, during the period specified, a complete, secure and continuous fire-break between the buildings or portions thereof as required. "Fire Separations" are, for the purpose of this Code, classified as "Absolute," "Special" and "Ordinary" and shall be not less than as specified in the following paragraphs.

(1) An "Absolute Fire Separation" shall provide an effective resistance to the passage of fire for not less than four hours as specified in Chapters 42 and 43. No openings shall be allowed through an "Absolute Fire Separation."

(2) A "Special Fire Separation" shall provide an effective resistance to the passage of fire for not less than three hours as specified in Chapters 42 and 43, except that all openings in walls forming such separation shall be protected on each side thereof by self-closing, one-hour fire-resistive doors as specified in Section 4304 (a). Such doors shall be kept normally closed. The total width of all openings in any vertical "Special Fire Separation" shall not exceed in any one story twenty-five (25) per cent of the length of the wall in that story and no single opening shall have an area greater than one hundred twenty (120) square feet.

Enclosure walls of vertical or horizontal enclosures passing through a "Special Fire Separation" shall be of not less than two hour fire-resistive construction as specified in Section 4302.

(3) An "Ordinary Fire Separation" shall provide an effective resistance to the passage of fire for not less than one hour as specified in Chapters 42 and 43. Openings in "Ordinary Fire Separations" shall be protected by self-closing metal-clad doors, as provided in Section 4304 and such doors shall be kept normally closed.

(c) "Fire Separations" shall be provided between the various Groups and Divisions of occupancies as specified in the tabulation which follows, except that in no case need the separation be more fire-resistive than the exterior walls of the building in which the separation occurs; provided, however, that where any fire separation is required the minimum shall be a one-hour "Fire Separation."

Sec. 504. LOCATION ON PROPERTY. The location of all buildings and the protection of certain openings shall conform to the requirements of the Occupancy Group in which such building is classified in this Code according to the use or character of the occupancy; provided, that exterior walls which form an angle of seventy-five (75) degrees or more with the adjacent property line may have openings therein which are protected by not less than one-hour fire-resistive construction as specified in Section 4304.

The specific requirements given in Sections 603, 703, 803, 903, 1003, 1103, 1203, 1303, 1403 and 1503, regulating the construction of exterior walls and the protection of openings therein with respect to adjacent property lines, shall apply to buildings erected on the same property, but with reference to an imaginary property line located between such buildings and parallel to the face of either buildings.

Sec. 505. METER ROOM. All buildings of multiple occupancy connected by electrical service from the public service line or generating plant shall have an independent central room of not less than three feet by five feet (3'x5') and seven-foot (7') ceiling height with a ventilating door accessible to all occupancies of the building; for the housing of the main switch, disconnecting equipment and its controlled devices and meters for serving the occupants. The construction of this room shall conform to the same types of material and construction as the main building.

**"FIRE SEPARATION" REQUIRED FOR MIXED OCCUPANCY**

Chapter Reference Group	OCCUPANCY DIVISION*	GROUPS AND DIVISIONS OF OCCUPANCY																				
		A		B		C		D		E		F		G		H		I		J		
		1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	
6 A	1—Major theatres (stage depth back of proscenium all more than 5 feet)...	N	N	N	N	N	S	S	A	A	A	S	A	A	S	S	O	S	O	A	N	N
	2—Moving Picture theatres (seating 1000 or more).....	N	N	N	N	N	S	S	A	A	A	S	A	A	S	S	O	S	O	A	N	N
	3—Places of public assemblage (other than theatres or moving picture theatres) having a seating capacity of 3,500 or more in any one room.....	N	N	N	N	S	S	A	A	A	S	A	A	S	S	O	O	O	O	A	N	N
7 B	1—Theatres and moving picture theatres (stage depth back of proscenium wall 5 feet or less).....	N	N	N	S	S	A	A	A	S	A	A	S	S	O	S	O	A	N	N	N	
	2—Same as Group A, Division 3, but having a seating capacity of 500 to 3500 in any one room.....	N	N	S	S	A	A	A	S	A	A	S	O	N	N	O	N	O	A	N	N	
8 C	1—Same as Group A, Division 3, but having a seating capacity in any one room of less than 500.....	N	O	O	A	S	A	O	O	O	O	N	N	N	N	A	N	N	A	N	N	
9 D	1—Jails, prisons, reformatories, asylums, similar buildings.....	N	O	A	S	A	S	O	O	A	O	O	O	O	O	S	N	N	A	N	N	
	2—Hospitals, sanitariums, orphanages, nurseries and similar buildings (accommodating more than 6 patients)....	N	A	S	A	O	S	S	A	O	O	O	O	O	O	S	N	N	A	N	N	
10 E	1—Public garages, paint or petroleum products storage, dry cleaning.....	S	†	S	A	S	S	S	S	S	S	S	S	S	S	S	S	O	O	S	O	S
	2—Planing mills, box factories, wood-working and mattress factories.....	N	O	S	N	N	S	N	N	A	A	O	O	S	O	N	S	O	A	N	S	S
	3—Storage of hay and highly inflammable or explosive materials.....	N	S	S	S	S	S	O	A	A	S	S	S	S	S	S	S	S	S	S	S	S
11 F	1—Wholesale and retail stores, office buildings, restaurants, undertaking parlors, printing plants, municipal police and fire stations.....	N	N	N	O	N	N	O	†	O	N	O	N	O	N	O	N	O	N	O	N	O
	2—Factories and workshops using materials not highly inflammable or explosive..	N	N	O	N	N	O	O	O	O	O	N	O	N	O	N	O	N	O	N	O	N
	3—Storage and sales rooms for combustible goods.....	N	O	N	N	O	N	O	N	O	N	O	N	O	N	O	N	O	N	O	N	O
12 G	1—Ice plants, power plants, pumping plants, cold storage, creameries.....	N	N	O	S	S	O	N	N	N	O	N	O	N	O	N	O	N	O	N	O	N
	2—Factories and workshops using incombustible or non-explosive materials..	N	N	O	N	O	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	3—Storage and sales rooms of incombustible or non-explosive goods.....	N	O	N	O	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
3 H	1—Hotels, apartment houses, dormitories, rooming houses and restaurants....	N	N	N	O	N	O	N	O	N	O	N	O	N	O	N	O	N	O	N	O	N
	2—Convents, monasteries, old people's homes (accommodating 10 or more)....	N	N	O	N	O	N	O	N	O	N	O	N	O	N	O	N	O	N	O	N	O
4 I	1—Dwellings, garage apartments, etc....	N	O	N	O	N	O	N	O	N	O	N	O	N	O	N	O	N	O	N	O	N
J	1—Private garages.....	N	N	N	O	N	O	N	O	N	O	N	O	N	O	N	O	N	O	N	O	N
	2—Accessory building and structures such as sheds, fences over 6 feet high, water tanks, towers.....	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	3—Stadiums, reviewing stands, amusement park structures.....	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Legend: A—Absolute Separation. S—Special Separation. O—Ordinary Separation...  
N—No Separation Required.

Note: \*Refers to Chapters 6 to 15, inclusive, for complete listing of occupancies and definitions.

†Provided that any two garages, two paint or petroleum products storage spaces, two dry cleaning plants, may occur in the same building without any separation being required.

‡Provided that an "Ordinary Separation" shall be permitted between public garages and dwellings.

‡Provided that in Type I buildings no separation shall be required.

‡Provided that three-fourths (¾) of an inch metal lath and plaster on the garage side and a self-closing, tight-fitting one and three-eighths (1-3/8) inch solid slab wood door shall be permitted where the private garage space will accommodate not more than four (4) automobiles.

## CHAPTER 6

### REQUIREMENTS FOR GROUP A BUILDINGS

Sec. 601. **GROUP A OCCUPANCIES DEFINED.** Each Group A occupancy shall be considered as a separate building and the Group shall include:

Division 1: All theatres, motion picture theatres, auditoriums, schools, churches, lodges, clubs, museums, dance halls, armories, libraries, gymnasiums, passenger stations, administration buildings of city, county or state and similar buildings having a permanent stage and seating capacity of one thousand (1,000) or more.

Division 2: The same as Division 1 except, not having a permanent stage and having a seating capacity of thirty-five hundred (3,500) or more.

Sec. 602. **CONSTRUCTION, HEIGHT AND AREA ALLOWABLE.** (a) **General.** Buildings or parts of buildings classed in Group A because of use or occupancy shall be of Type 1 Construction and shall not be limited as to location in Fire Zone, seating capacity, height or floor area.

(b) **Special Construction.** Stages and platforms as defined in Section 401 shall be of Type 1 construction, except as specified in Section 3904.

The slope of the main floor of the auditorium shall not exceed one (1) in five (5). Ramps steeper than one (1) in eight (8) shall have non-slip floor surfaces.

Sec. 603. **LOCATION ON PROPERTY.** All Group A buildings shall front directly upon at least one public street not less than twenty (20) feet in width in which front shall be located the main entrance and exit of such building. The main floor of every Group A occupancy shall be located at or near the ground floor level.

All exterior walls or parts of walls, except on street fronts, of Group A buildings which are less than five (5) feet from adjacent property lines shall have no openings therein. All openings in exterior walls, except on street fronts, which are less than ten (10) feet from adjacent property lines shall be protected by doors or windows of one-hour fire-resistive construction as specified in Section 4304. See Section 504 for regulating adjacent buildings on the same property.

Sec. 604. **STAIRS AND EXITS.** (a) **Main Entrance and Exits.** In every Group A building there shall be no less than one (1)

exit on each of three sides of the auditorium. Each of these exits shall be not less than five feet (5'-0") in width and shall open directly upon a street or into an open exit court which shall be directly connected to a street as specified in paragraph (b) of this Section.

One such exit on a street front which shall serve as the main entrance shall be proportioned on the basis of two (2) feet of width for each one hundred (100) persons or major fraction thereof to and including one thousand (1,000) persons, with an additional one (1) foot per hundred persons for each additional one hundred (100) persons or major fraction thereof to and including two thousand (2,000) persons and an additional six (6) inches for each additional one hundred (100) persons or major fraction thereof, all based upon the total seating capacity of the building served by such entrance and/or exit.

At the main entrance of each Group A building there shall be a foyer having an area of one (1) square foot to each seat in such building having access to such foyer. The required width of the foyer at any point shall be the combined width of the aisles, passageways and stairways at that point but need not exceed the required width of the entrance. The foyer shall be at the same level as the back of the auditorium and all changes in elevation between the foyer and the public street adjacent thereto shall be by ramps with a slope of not more than one (1) in ten (10).

The foyer if not abutting directly upon a public street shall communicate thereto by a straight and unobstructed corridor or passageway equal in width to that required for the main entrance which shall be used only as an exit or entrance; provided, however, that not to exceed ten (10) per cent of such required width may be used for the placing of a ticket booth.

(b) Exit Courts. Along each side and long enough to accommodate all side exits of the auditorium not fronting directly upon a street (not including that side bounded by the stage) shall be an open court, or a passageway of Type I construction, not less than five (5) feet in width when the total seating capacity is one thousand (1,000) or less, and such width shall be increased by one (1) foot for each additional five hundred (500) persons or major fraction thereof. These are required widths and shall not be reduced in any way.

The courts shall extend full width to a street or shall be connected to the street by a passageway of the same required width, with a height of not less than seven (7) feet and such passageway shall not exceed a length of fifty (50) feet. The court or passageway shall meet the street level and all changes in elevation shall be by ramps with a slope of not more than one (1) in eight (8).

All doors opening into such open courts or passageways of Type I construction shall be arranged so as not to decrease the clear width of the court when open.

(c) Main Floor Auditorium Exits. There shall be provided at the rear of the Auditorium leading into the foyer, exits which shall not be

less in width than the full width of the aisle or aisles leading thereto. Additional exits, located on each side of and not less than one-half the length of the auditorium from the foyer, shall be provided on the main floor of each Group A building. These exits shall be proportioned on the basis of not less than twenty-two (22) inches of combined width to each one hundred fifty (150) seats or major fraction thereof on the main floor of the auditorium, and this exit width shall be equally divided to each side of the auditorium. All such exits shall open directly upon a street or exit court or may be connected thereto by corridors having a width not less than the exit opening into same. There shall be no openings in such corridors other than the exit openings, and the exit doors shall be hung so as not to decrease the required width. Egress from the main floor of the auditorium to the street shall be by means of ramps having a slope of not more than one (1) in eight (8), except as specified in part (a) of this Section.

Where fixed seats are not provided the exits shall be proportioned on the seating capacity as defined in Section 401 and shall be evenly distributed and so arranged that the distance between adjacent exits shall not exceed one hundred (100) feet measured along the wall.

(d) Balcony and Gallery Exits. For balconies or galleries having a seating capacity of over fifty (50), exits shall be provided from each side of each balcony or gallery, leading directly to a street or exit court. These exits shall have a combined width of not less than twenty-two (22) inches for every seventy-five (75) seats or major fraction thereof in such balcony or gallery and such exits shall be equally divided to each side. No exit shall be less than three feet and six inches (3'-6") in width and shall be served by stairs or ramps completely enclosed and constructed as specified in Chapter 33. Balconies or galleries having a seating capacity of fifty (50) or less shall be provided with not less than two means of egress, at least one of which shall lead directly to a street or court. These exits shall be not less than three feet six inches (3'-6") in width. All such exits shall be located as far apart as is practicable and all combined exits shall continue the full combined width to the street. No stair exit shall be continued to or communicate with a basement.

Exits leading to the foyer shall have a combined width of not less than twenty-two (22) inches for each one hundred fifty (150) seats or major fraction thereof in such balcony or gallery. No such exit shall be less than three feet six inches (3'-6") in width.

Where fixed seats are not provided the exits shall be proportioned on the seating capacity as defined in Section 401.

Hand rails shall be provided for stairs as specified in Section 3305.

Stairs emptying into exit courts shall meet the court floor at not less than the stair width from the near side of any main floor exit opening into such exit court.

(e) Stage Exits. For size and location of stage exits see Section 3910.

(f) Aisles. Aisles on the main floor shall be located so that there are not more than six (6) seats between any seat and an aisle. Every aisle shall be not less than three (3) feet wide if having seats on only one side and not less than three feet six inches (3'-6") wide if having seats on both sides. Such minimum width shall be measured at the end farthest from the foyer and shall be increased by one and one-half (1½) inches for each five (5) feet in length toward the foyer. There shall be no steps or obstructions of any kind in any aisles, and aisles may have a slope of not more than one (1) in five (5). Ramps steeper than one (1) in eight (8) shall have non-slip floor surfaces.

Aisles in balconies or galleries shall be located so that there are not more than six (6) seats between any seat and an aisle. Aisles in balconies and galleries shall have the same minimum width as for aisles on the first floor and shall have the same ratio of increase in width with the exception that the increase shall be in the direction of exit travel. There shall be provided in all balconies or galleries having more than twenty (20) rows of seats across aisle not less than four (4) feet wide from the back of one chair to the edge of the seat when down in the next row. Such cross aisle shall lead directly to an entrance or to an emergency exit.

Risers shall be not more than seven and one-half (7½) inches and shall be the full width of the aisle and no tread shall be less than ten (10) inches. When the slope of the aisle is not more than one (1) in five (5) it shall be ramped. All aisles shall lead directly to exits.

The floor between rows of seats shall be on the same level as the aisles where they intersect.

(g) Seats. Seats shall be spaced not less than thirty-three (33) inches back to back.

All seats in buildings of Divisions 1 of Group A on the main floor and in balconies and galleries shall be fastened securely to the floor and shall be not less than eighteen (18) inches in minimum width.

(h) Boxes. Boxes may be served by stairs not less than three (3) feet in width with a rise and a tread as required for main stair exits. Boxes accommodating more than twenty-five (25) persons shall be considered as balconies. Seats in boxes need not be fastened to the floor.

(i) Doors and Gates. All exit and entrance doors or gates shall swing in the direction of exit travel and if provided with latches such latches shall be of self-releasing type, such as panic bolts or similar devices, which will permit the door to open when pressed against. All doors shall be installed so as not to decrease the required width of any opening, passageway or corridor in any manner whatsoever. No single door shall be more than three feet and six inches (3'-6") in width and every exit door on the exterior of such building shall be of not less than one-hour fire resistance as specified in Section 4304 except at the main entrance and exit. Doors opening from within the build-



ing into a stair or ramp enclosure may be metal-clad doors as specified in Section 4304.

(j) Exit Lights. All exits shall be marked with illuminated signs bearing the word "EXIT" in letters at least five (5) inches high. Each sign shall be provided with two (2) separate electric light globes each on separate circuits, one circuit being separate from any other circuit in the building. All exit signs shall be illuminated during any time the building is occupied.

(k) Smokeproof Tower. Where there is more than one balcony or gallery, all balconies or galleries above the first shall be served by not less than one smokeproof tower located on each side of such balcony or gallery and constructed as specified in Chapter 33.

(l) General. No persons or obstructions of any kind, either permanent or movable shall be placed in any aisle, exit, foyer, passageway, foyer or corridor, and all dimensions given shall refer to the clear width. This shall be construed as prohibiting radiators, chairs, stools, stands, slot machines, easels and similar objects from being placed in any exit, foyer, aisle, passageway or corridor. No furniture or fixtures of any kind shall be placed in the foyer in such a manner as to diminish its required width.

No bars shall be placed upon any window or any other opening in any Group A building except on the windows of a private office.

All doors shall have a clear height of not less than six feet and eight inches (6'-8").

Sec. 605. LIGHT, VENTILATION AND SANITATION. All portions of Group A buildings customarily used by human beings, and all dressing rooms, shall be provided with light and ventilation by means of windows and/or skylights with an area not less than one-eighth ( $\frac{1}{8}$ ) of the total floor area, or shall be provided with artificial light and a mechanically operated ventilating system. The mechanically operated ventilating system shall supply at least thirty (30) cubic feet of pure air per minute for each occupant thereof in all portions of the building, and such system shall be kept continuously in operation during such time as the building is occupied. If the velocity of the air at the register exceeds ten (10) feet per second the register must be placed more than eight (8) feet above the floor directly beneath.

Lights in all parts of the building customarily used by human beings shall be on a separate circuit from that of the stage and shall be controlled from the box office. Lights in corridors, exit courts and exit passageways shall be protected by a wire cage.

All registers or vents supplying air back stage shall be equipped with automatic closing devices with fusible links.

TOILETS AND FLOORS. All buildings occupied and/or where more than four (4) persons are employed shall be provided with at least one toilet. All buildings and such subdivision thereof occupied

and/or where both sexes are employed shall be provided with access to at least two toilets, either located in such building or conveniently located in a building adjacent thereto. The above minimum requirements for uses by persons of the Caucasian race, and where persons other than this race are employed, separate toilets shall be provided.

"For Floor Construction See Chapter 31."

Sec. 606. ENCLOSURE OF VERTICAL OPENINGS. Main stair ramp exits from the first or lower balcony or gallery need not be enclosed but all other stair exits shall be enclosed as specified in Chapter 30. There shall be no openings into stair or ramp enclosures except necessary entrance and exit doors. All emergency stair or ramp enclosures shall lead directly to a public street or alley or exit court.

All elevator shafts, vent shafts and other vertical openings shall be enclosed as specified under Types of Construction.

Openings through stage floors shall be equipped with tight fitting trap doors of wood not less than two (2) inches thick.

Sec. 607. FIRE EXTINGUISHING APPARATUS. Group A buildings shall be equipped with automatic sprinklers as provided in Chapter 38.

Standpipes shall be provided as specified in Chapter 38.

Stages shall be equipped with automatic ventilators as provided in Section 3901.

Sec. 608. SPECIAL HAZARDS. Chimneys and heating apparatus shall conform to the requirements of Chapter 37.

Motion picture machine booths shall conform to the requirements of Chapter 40.

No inflammable liquids shall be placed, stored or used in Group A buildings.

Any gas service to the stage portion of the building shall be separated from any other service to the building and each gas service shall be provided with a shut-off valve at a convenient and conspicuous place outside the building and adequately marked.

Every boiler room or room containing a heating plant which burns liquid or solid fuel shall be separated from the rest of the building with a "Special Fire Separation" as specified in Section 503.

Every boiler room or room containing a heating plant which burns gas as fuel shall be separated from the rest of the building with not less than an "Ordinary Fire Separation" as specified in Section 503.

Sec. 609. EXCEPTIONS AND DEVIATIONS. Gymnasiums and similar buildings may have running tracks constructed of wood or unprotected steel or iron.

Note: Existing buildings not complying with the requirements of this chapter may be classed as Group A buildings and so used if the requirements of Sections 602, 604, 607, 608 and 609 are fully complied with and not less than a "Special Fire Separation" as specified in Sec.

tion 503 is provided as a separation between the Group A occupancy and all other adjacent occupancies.

Sec. 610. MIXED OCCUPANCIES. Separation of Group A occupancies from all other occupancies shall be provided as specified in Section 503.

Sec. 611. METER ROOM. All buildings of multiple occupancy connected by electrical service from the public service line or generating plant, shall have an independent central room of not less than three feet by five feet (3'x5') and seven (7) foot ceiling height with a ventilated door accessible to all occupancies of the building; for the housing of the main switch, disconnecting equipments and its controlled devices and meters for serving the occupants. The construction of this room shall conform to the same type of material and construction as the main building.

## CHAPTER 7

### REQUIREMENTS FOR GROUP B BUILDINGS

Sec. 701. GROUP B OCCUPANCIES DEFINED. Each Group B occupancy shall be considered as a separate building and the Group shall include:

Division 1: All theatres, motion picture theatres, auditoriums, schools, churches, lodges, clubs, museums, dance halls, armories, libraries, gymnasiums, passenger stations, administration buildings of city, county or state and similar buildings having a permanent stage and a seating capacity of three hundred (300) or more but less than one thousand (1,000).

Division 2: The same as Division 1, except, not having a permanent stage and having a seating capacity of seven hundred and fifty (750) or more but less than thirty-five hundred (3,500).

Sec. 702. CONSTRUCTION, HEIGHT AND AREA ALLOWABLE. (a) General. Buildings or parts of buildings classed in Group B because of use or the character of the occupancy shall conform to the following specific requirements:

Type of Construction Permissible	Height Limit (ft.)	Maximum Total Seating Capacity in Any One Room	Floor Area Permissible (Sq. Ft.)
Type I	No limit	3500	No limit
Type II	75	1000*	No limit
Type III	55	750*	15,000

\*Seating capacity may be increased, except for Division I Group B occupancies, not to exceed fifty (50) per cent when no balconies or

galleries are constructed as a part of such building and when the auditorium floor is located at or near the ground floor level, in which case all exits shall be at street level or shall meet street level by means of ramps.

NOTE: Allowable heights in this section shall not exceed the height restrictions in Section 2307.

(b) Special construction. Stages and platforms as defined in Section 401, shall be constructed as provided in Chapter 39.

Platforms which are used in lieu of stages shall be included in the floor area of the assembly room when determining the seating capacity, as defined in Section 401

**Sec. 703. LOCATION ON PROPERTY.** All Group B buildings shall front directly upon at least one public street not less than twenty (20) feet in width, in which front shall be located the main entrance and exit of such building, or such building may be connected to the street by an entrance passageway as specified in Section 704. The main floor of each Group B occupancy shall be located at or near the ground floor level, provided that occupancies in Division 2 of Group B buildings having a total seating capacity of not more than fifteen hundred (1500) may be located above the ground floor or in the first basement, and stairs may be used as a means of ingress and egress.

All exterior walls or parts of walls, except on street fronts, of Group B buildings which are less than five (5) feet from adjacent property lines shall have no openings therein. All openings in exterior walls, except on street fronts, which are less than ten (10) feet from adjacent property lines shall be protected by doors or windows of one-hour fire-resistant construction as specified in Section 4304. See Section 504 for regulating adjacent buildings on the same property.

**Sec. 704. STAIRS AND EXITS.** Requirements for stairs and exits shall be the same as for Group A buildings, as specified in Section 604, with the following exceptions:

- (1) A foyer shall not be required.
- (2) No balcony or gallery shall be allowed except in buildings of Type I construction.

**Sec. 705. LIGHT, VENTILATION AND SANITATION.** All portions of Group B buildings customarily used by human beings, and all dressing rooms, shall be provided with light and ventilation, either natural or artificial, as specified in Section 605.

**TOILETS AND FLOORS.** "All buildings occupied and/or where more than four (4) persons are employed shall be provided with at

least one toilet. All buildings and each subdivision thereof occupied and/or where both sexes are employed shall be provided with access to at least two toilets, either located in such building or conveniently located in a building adjacent thereto. The above minimum requirements for uses by persons of the Caucasian race, and where persons other than this race are employed, separate toilets shall be provided."

"For Floor Construction see Chapter 31."

Sec. 706. ENCLOSURE OF VERTICAL OPENINGS. All vertical openings such as elevator shafts, stairs, ramps and vent shafts shall be enclosed as specified in Chapter 30, provided, however, that stair or ramp exits serving only a Group B occupancy on the second floor of a building need not be enclosed. There shall be no openings into stair or ramp enclosures except necessary entrance and exit doors.

Sec. 707. FIRE EXTINGUISHING APPARATUS. Automatic sprinklers, standpipes and basement pipe inlets shall be installed as and when specified in Chapter 38.

Sec. 708. SPECIAL HAZARDS. Chimneys and heating apparatus shall conform to the requirements of Chapter 37.

Motion picture machine booths shall conform to the requirements of Chapter 40.

No inflammable liquids shall be placed, stored or used in a Group B Building.

Any gas service to a Group B building shall be provided with an outside shut-off conspicuously marked.

Exterior openings in a boiler room or room containing central heating equipment, if located below openings in another story or if less than ten (10) feet from other doors or windows of the same building, shall be provided with one-hour fire-resistive protection as specified in Section 4304.

Every boiler room or room containing a heating plant which burns liquid or solid fuel shall be separated from the rest of the building with a "Special Fire Separation" as specified in Section 503.

Every boiler room or room containing a heating plant which burns gas as fuel shall be separated from the rest of the building with not less than an "Ordinary Fire Separation" as specified in Section 503.

Sec. 709. EXCEPTIONS AND DEVIATIONS. Gymnasiums and similar buildings may have running tracks constructed of wood or unprotected steel or iron.

All partitions and floors in Group B buildings and all bearing partitions and floors below a Group B occupancy, when such occupancy is placed or is to be placed above the first floor of a building or structure, shall be of not less than one-hour fire-resistive construction as specified in Chapter 43.

Type IV and V Construction shall not be permitted for use of Group B occupancies.

Sec. 710. MIXED OCCUPANCIES. Separation of Group B occu-

pancies from any other occupancies shall be provided as specified in Section 503.

Sec. 711. METER ROOM. All buildings of multiple occupancy connected by electrical service from the public service line or generating plant, shall have an independent central room of not less than three by five feet (3'x5') and seven (7) foot ceiling height with a ventilating door accessible to all occupancies of the building; for the housing of the main switch, disconnecting equipment and its controlled devices and meters for serving the occupants. The construction of this room shall conform to the same types of material and construction as the main building.

## CHAPTER 8

### REQUIREMENTS FOR GROUP C BUILDINGS

Sec. 801. GROUP C OCCUPANCIES DEFINED. Each Group C occupancy shall be considered as a separate building and the Group shall include:

Division 1: All theatres, motion picture theatres, auditoriums, schools, churches, lodges, clubs, museums, dance halls, armories, libraries, gymnasiums, passenger stations, administration buildings of city, county or state and similar buildings having a permanent stage and each having a seating capacity of less than three hundred (300).

Division 2: The same as Division 1, except, not having a permanent stage but having a seating capacity of fifty (50) or more but less than seven hundred and fifty (750).

Division 3: The same as Division 1, except, not having permanent stage but having a seating capacity of less than fifty (50).

Sec. 802. CONSTRUCTION, HEIGHT AND AREA ALLOWABLE. (a) General. Buildings or parts of buildings classed in Group C because of use or the character of the occupancy shall be of Types, I, II, III, IV or V Construction and the maximum height and floor areas shall not exceed those specified in the following table:

MAXIMUM ALLOWABLE FLOOR AREAS AS DETERMINED BY  
HEIGHT OF BUILDINGS, STREET FRONTAGE AND  
TYPE OF CONSTRUCTION

Types of Construction	Maximum Height† for Corresponding Areas		Maximum Floor Areas (sq. ft.)				Increase for Complete Sprinkling*
	Feet	Stories	Building Fronting on				
			1 Street	2 Streets	3 or more Streets		
Type I	NO RESTRICTIONS						
Type II	75 ft.	7 stories	12,000	15,000	18,000	100%	
	55 ft.	5 stories	15,000	18,000	20,000		
	65 ft.	1 story	20,000	25,000	30,000		
Type III	55 ft.	5 stories	12,000	15,000	18,000	100%	
	35 ft.	1 story	18,000	22,000	26,000		
Type IV‡	No restriction	1 story	15,000	18,000	21,000	100%	
Type V‡	35 ft.	2 stories	6,000	7,000	8,000	100%	
	30 ft.	1 story	8,500	9,500	10,500		

NOTE: Allowable heights in this section shall not exceed the height restrictions in Sec. 2307.

\*NOTE: Increase shall not be permitted unless the area is entirely protected by an automatic sprinkler installation as specified in Chapter 38.

(Notes †See Sections 1602 and 1603 for restrictions in Fire Zones.)

A side or a rear yard which is forty (40) feet or more in width to the adjacent property line or to another building, and which is a clear access to a street, may be considered a street for the purpose of determining the allowable area of a school building.

In buildings having rooms with floor areas of over thirty thousand (30,000) square feet, tight draft stops shall be installed to prevent a free current of air under the roof. These draft stops in trussed roofs shall extend from the roof down to the bottom chord of the truss, and shall divide the under roof or attic area into sections not to exceed twenty thousand (20,000) square feet in area.

(b) Special Construction. All public and private school buildings more than two stories in height shall be of Type I construction.

Stages and platforms as defined in Section 401 shall be constructed as provided in Chapter 39.

(c) Buildings of Type IV construction one or two stories in height, having areas not exceeding 50% over those shown in the table for one-story buildings may be allowed for Group C occupancy provided the following restrictions are adhered to in addition to those set up in Chapter 21.

1. Exterior walls and court walls shall be not less than two-hour fire-restrictive construction.

2. The structural framework shall be protected with one-hour fire-proofing.

All ducts, pipe sleeves and vents shall be fireproof between ceiling and floor or roof where they cut through the ceiling space.

3. The floors shall be of incombustible material and shall be of not less than one-hour fire-resistive construction, or may be of a steel deck type or other incombustible materials protected from below with the equivalent of metal lath and three-fourths ( $\frac{3}{4}$ ) inches of Gypsum or Portland cement plaster. Wood, linoleum or other approved wearing surfaces may be used provided they are laid on the floors with no concealed air spaces, and provided further, where wood sleepers are used for laying approved wearing surfaces, the space between the floor and the underside of the wearing surfaces shall be filled with incombustible material in such a manner that there will be no open spaces under the wearing surfaces, which will exceed 100 sq. ft. in area and such space shall be filled solidly under all partitions so that there is no communication under the wearing surface between the adjoining rooms.

4. Mezzanine floors shall be as required for other floors in the building.

Division 1, occupancy shall not be located above the second floor except in buildings of Type I or II construction.

(d) The allowable floor area for one-story Type V buildings may be increased 50% provided one-hour fire-resistive construction is used throughout. The allowable floor area for two-story Type V buildings may be increased 50%, provided the construction up to and including the first floor is of Type I construction.

Division 2, shall not be located above the first floor except in buildings of not less than one-hour fire-resistive construction throughout.

(e) No balcony shall be allowed in a Type V building.

(f) Stairs and corridors in Group C occupancies shall be of not less than one-hour fire-resistive construction.

Sec. 803. LOCATION ON PROPERTY. All Group C buildings shall front directly upon at least one public street not less than twenty (20) feet in width, in which front shall be located the main entrance and exit of such building, or such building may be connected to such street by an entrance passageway as specified in Section 804.

All exterior walls or parts of walls, except on street fronts of Group C buildings which are less than three (3) feet from adjacent property lines shall be of masonry or reinforced concrete. Walls which are three (3) feet or more, but less than ten (10) feet from adjacent property lines except street fronts, shall be of not less than two-hour fire-resistive construction. All openings in exterior walls, except on street fronts, which are less than ten (10) feet to adjacent property lines, shall be protected by doors or windows of one-hour fire-resistive construction as specified in Section 4304. When openings are placed



closer than three (3) feet to property lines other than street fronts, the sum of the widths of such openings shall constitute not more than twenty-five (25) per cent of the total length of the walls affected. "See Section 504 for regulating adjacent buildings on the same property."

Sec. 804. STAIRS AND EXITS. Requirements for stairs and exits shall be the same as for Group A buildings as specified in Section 604 with the following exceptions:

- (1) A foyer shall not be required.
- (2) Seats shall not be required to be fixed.
- (3) Divisions 2 and 3 when located above the first floor may be served by stairs in place of ramps.
- (4) No balcony or gallery shall be allowed unless the balcony or gallery and all exits therefrom are of incombustible construction.
- (5) In Division 3 all required exits may be located on one side of the room, provided that in no case shall any part of a room be more than thirty-five (35) feet from an exit.
- (6) Except as required in Section 803, the provisions requiring fire-protected doors given in Section 604 (i) shall not apply.
- (7) For classroom portion of school buildings and similar small assembly rooms the aggregate width of exit stairs in any story shall be on the basis of whole units of twenty-two (22) inches each. The required number of units shall be determined by dividing the greatest number of people on any one floor above the stairs in question by one hundred (100) and no stairs shall be decreased in width toward the building exit. Each floor shall have not less than two exit stairs. For other requirements see Chapter 33.

The clear width of hallways in school buildings shall be measured in whole twenty-two (22) inch units and shall have a width of one more than the number of units obtained by dividing the total number of people in all rooms opening into such hallway by one hundred (100), provided that such hallway shall have a minimum clear width of four feet six inches (4'-6") and the required clear width shall not be diminished by any furniture, fixtures or locker or room doors when such doors are fully opened. There shall be no dead end in exit hallways more than ten (10) feet beyond the stairway or exit. Where an auditorium exits into a hallway that serves as an egress from other rooms of a school, the hallway between the auditorium and the exit to the exterior need only provide for the occupants of either the auditorium or the classrooms, whichever requires the greater width. The minimum width of exit doors at either end of a hallway to a yard

or passage shall be eighteen (18) inches less than the required width of the hallway.

Single class rooms and other similar small assembly rooms shall have not less than two (2) exit doors three (3) feet wide or one (1) door five (5) feet wide and there shall be not less than two (2) means of exit available from each door.

(8) Any room in a school basement used by students shall have at least one (1) exit leading directly to the outside of the building and this exit shall be not less in width than one-half ( $\frac{1}{2}$ ) the total required width of all room exits for the basement.

(9) Exit lights need not be installed over classroom exits.

(10) All stairs and ramps serving as entrances or exits for any Group C occupancy shall not be less than the width required for the doors serving such stairs and shall be designed and constructed as specified in Chapter 33; provided, that when such Group C occupancy is located on the second floor of a two-story building or when leading to and serving such occupancy only, such stairs or ramps need not be enclosed when stairs lead directly to the outer air or are connected thereto by direct passages with unpierced walls and ceilings.

All emergency stairs and ramps shall lead directly to a public street or alley or to a court or space not less than five (5) feet in clear width connected directly to a street or alley.

Sec. 805. LIGHT, VENTILATION AND SANITATION. All portions of Group C buildings customarily used by human beings shall be provided with light and ventilation, either natural or artificial, as specified in Section 605.

TOILETS AND FLOORS. All buildings occupied and/or where more than four (4) persons are employed shall be provided with at least one toilet. All buildings and each subdivision thereof occupied and/or where both sexes are employed shall be provided with access to at least two toilets, either located in such building or conveniently located in a building adjacent thereto. The above minimum requirements for uses by persons of the Caucasian race, and where persons other than this race are employed, separate toilets shall be provided.

"For Floor construction see Chapter 31."

Sec. 806. ENCLOSURE OF VERTICAL OPENINGS. All vertical openings such as elevator shafts, stair wells and vent shafts which permit the passage of fire or smoke through more than one floor shall be enclosed as specified in Chapter 30.

Sec. 807. FIRE EXTINGUISHING APPARATUS. Automatic sprinklers, standpipes and basement pipe inlets shall be installed as and when specified in Chapter 38.

Sec. 808. SPECIAL HAZARDS. Chimneys and heating apparatus shall conform to the requirements of Chapter 37.

Motion picture machine booths shall conform to the requirements of Chapter 40.

Where the basement and first floor of a Type V building is required to be of Type I construction, the first floor shall be unpierced for human access. No usable space or basement shall be allowed in a two-story Type V building unless such space or basement is surrounded by four-hour fire-resistive construction.

Exterior openings in a boiler room or room containing central heating equipment, if located below the openings in another story or if less than ten (10) feet from other doors or windows of the same building, shall be provided with one-hour fire-resistive protection as specified in Section 4304.

Every boiler room or rooms containing a heating plant which burns liquid or solid fuel shall be separated from the rest of the building with a "Special Fire Separation" as specified in Section 503. Every boiler room or room containing a heating plant which burns gas as fuel shall be separated from the rest of the building with not less than an "Ordinary Fire Separation" as specified in Section 503.

No inflammable liquids shall be placed, stored or used in any Group C buildings except in small quantities as necessary in laboratories, and such liquids shall be kept in tight or sealed containers when not in actual use.

Sec. 809. EXCEPTIONS AND DEVIATIONS. Gymnasiums and similar buildings may have running tracks constructed of wood or unprotected steel or iron.

All walls, partitions and floors of Group C buildings when more than one story in height and all walls, bearing partitions and floors below a Group C occupancy when such occupancy is placed or is to be placed above the first floor of a building or structure shall be of not less than one-hour fire-resistive construction as specified in Chapter 43.

Roof trusses, roof girders and beams twenty-five (25) feet or more above the nearest floor or balcony need not be fireproofed.

Rooms in school buildings having a seating capacity of more than three hundred (300) shall not be located above the first story above grade except in buildings of Type I construction.

No school class room used for kindergarten, first or second grade pupils shall be located above the first story above grade in any building of less than Type I construction.

An arcade connecting buildings and used exclusively as a passage way need not be considered as an adjacent building for the provisions of this Chapter, provided the walls of the building adjoining the arcade are finished with the same construction as required for the exterior walls of the building and with no communicating openings between the arcade and the building, except a door, and provided the arcade is of not less than one-hour fire-resistive construction or entirely of incombustible materials.

Sec. 810. MIXED OCCUPANCIES. Separation of Group C occupancies from any other occupancies shall be provided as specified in Section 503.

Sec. 811. METER AND APPLIANCE ROOM. All buildings of multiple occupancy connected by electrical service from the public service line or generating plant shall have an independent central room of not less than three feet by five feet (3'x5') and seven (7) foot ceiling height with a ventilated door accessible to all occupancies of the building; for the housing of the main switch, disconnecting equipment and its controlled devices and meters for serving the occupants. The construction of this room shall conform to the same types of materials and construction as the main building.

### CHAPTER 9. REQUIREMENTS FOR GROUP D BUILDINGS.

Sec. 901. GROUP D OCCUPANCIES DEFINED. Each Group D occupancy shall be considered as a separate building and the Group shall include:

Division 1: Jails, prisons, reformatories, houses of correction, asylums for the insane or feeble-minded and similar buildings.

Division 2: Hospitals, Sanitariums, orphanages, nurseries and similar buildings (accommodating more than six).

Sec. 902. CONSTRUCTION HEIGHT AND AREA ALLOWABLE.

(a) Buildings or parts of buildings classified in Group D because of use or the character of the occupancy shall be of Type I, II, III, IV or V construction, and the maximum height and floor areas shall not exceed those specified in the following table.

#### MAXIMUM ALLOWABLE FLOOR AREAS AS DETERMINED BY HEIGHT OF BUILDING, STREET FRONTAGE AND TYPE OF CONSTRUCTION

Types of Construction	Maximum Height for Corresponding Areas		Maximum Floor Areas (sq. ft.)				Increase for Complete Sprinkling*
			Building Fronting on				
	Feet	Stories	1 Street	2 Streets	3 or more Streets		
Type I	NO RESTRICTIONS						
Type II	55 ft.	5 stories	15,000	18,000	20,000	100%	
	65 ft.	1 story	20,000	25,000	30,000		
Type III	35 ft.	3 stories	10,000	12,500	15,000	100%	
	35 ft.	1 story	15,000	20,000	25,000		
Type IV†	35 ft.	1 story	15,000	20,000	25,000	100%	
Type V‡	20 ft.	1 story	5,000	6,000	7,000	100%	

Allowable heights in this section shall not exceed the height restrictions in Section 2307. "See notes on following page."

Note.—\*Increase shall not be permitted unless the Area is entirely protected by an automatic sprinkler installation as specified in Chapter 38.

(Note.—†See Sections 1602 and 1603 for restriction in Fire Zones.)

In buildings having rooms with floor areas of over thirty thousand (30,000) square feet, tight draft stops shall be installed to prevent a free current of air under the roof. These draft stops in trussed roofs shall extend from the roof down to the bottom chord of the truss and shall divide the under-roof or attic area into sections not to exceed twenty thousand (20,000) square feet in area.

(b) Special Construction. All Division 1 buildings of Group D shall be of Type I construction throughout; and all Division 2 buildings more than one story in height shall have all floors and partitions of not less than one-hour fire-resistive construction as specified in Chapter 43.

Sec. 903. LOCATION ON PROPERTY. All exterior walls or parts of walls, except on street fronts, of Group D buildings which are less than five (5) feet from adjacent property lines shall have no openings therein and shall be of masonry or reinforced concrete. All openings in exterior walls, except on street fronts, which are less than ten (10) feet from adjacent property lines shall be protected by doors or windows of one-hour fire-resistive construction as specified in Section 4304. See Section 504 for regulating adjacent buildings on the same property. All Group D buildings shall be located so that at least one exterior wall, either faces upon or is open to a public street, by means of an unobstructed passageway on the ground floor level, of not less than ten (10) feet in clear width and eight (8) feet in clear height.

Sec. 904. STAIRS AND EXITS. Not less than two exits shall be provided from each floor in every Group D building regardless of the height or area of the building, and additional exits shall be provided as specified in Chapter 33.

In hospitals or sanitariums, ramps with a slope of not more than one (1) in six (6) shall be installed instead of stairways or in addition thereto to serve all portions of the building where bed-ridden patients are or may be placed. These ramps shall land at the first or ground floor level at points giving the most direct access practicable to the outer air.

Except in places of detention, exit doors shall not be fastened against exit by any device except self-releasing latches, panic bolts or

similar devices which can readily be opened from the inside at all times without the use of keys or any special knowledge or effort.

"Smokeproof towers shall be provided as specified in Chapter 33."

Sec. 905. LIGHT, VENTILATION AND SANITATION. All portions of Group D buildings customarily used by human beings shall be provided with light and ventilation by means of windows and/or skylights with an area equal to one-eighth ( $\frac{1}{8}$ ) of the total floor area, or shall be provided with artificial light and mechanically operated ventilating system. The mechanically driven ventilating system shall supply at least thirty (30) cubic feet of pure air per minute for each occupant thereof in all portions of the building and such system shall be kept continuously in operation during such time as the building is occupied.

TOILETS AND FLOORS. All buildings occupied and/or where more than four (4) persons are employed shall be provided with at least one toilet. All buildings and each subdivision thereof occupied and/or where both sexes are employed shall be provided with access to at least two toilets, either located in such building or conveniently located in a building adjacent thereto. The above minimum requirements for uses by persons of the Caucasian race, and where persons other than this race are employed, separate toilets shall be provided.

"For Floor Construction See Chapter 31."

Sec. 906. ENCLOSURES OF VERTICAL OPENINGS. All elevator shafts, vent shafts and other vertical openings shall be enclosed as specified under Types of Construction.

Sec. 907. FIRE EXTINGUISHING APPARATUS. Automatic sprinklers, standpipes and basement pipe inlets shall be installed as and when specified in Chapter 38.

Sec. 908. SPECIAL HAZARDS. Chimneys and heating apparatus shall conform to the requirements of Chapter 37.

Motion picture machine booths shall conform to the requirements of Chapter 40.

No storage of volatile inflammable liquids shall be allowed in Group D buildings and the handling of such liquids shall not be permitted in any Group D buildings in quantities of more than one gallon unless such handling complies with the suggested ordinance Regulating the Use, Handling, Storage and Sale of Inflammable Liquids and the Products Thereof, adopted by the National Fire Protection Association, May, 1926, and its subsequent amendments.

Sec. 908. Any gas service to a Group D building shall be provided with an outside shut-off conspicuously marked.

Every boiler room or room containing a heating plant which burns liquid or solid fuel shall be separated from the rest of the building with a "Special Fire Separation" as specified in Section 503. Every boiler room or room containing a heating plant which burns gas as

fuel shall be separated from the rest of the building by not less than "Ordinary Fire Separation" as specified in Section 503.

Sec. 909. EXCEPTIONS AND DEVIATIONS. No requirements of this Chapter shall be so construed as to prohibit the construction of cell blocks in jails or prevent the use of any locks or safety devices in buildings where it is necessary to forcibly restrain the inmates.

Sec. 910. MIXED OCCUPANCIES. Separation of Group D occupancies from any other occupancies shall be provided as specified in Section 503.

Sec. 911. METER ROOM. All buildings of multiple occupancy connected by electrical service from the public service line or generating plant, shall have an independent central room of not less than three feet by five (3'x5') and seven (7) foot ceiling height with a ventilated door accessible to all occupancies of the building; for the housing of the main switch, disconnecting equipment and its controlled devices and meters for serving the occupants. The construction of this room shall conform to the same types of material and construction as the main building.

## CHAPTER 10

### REQUIREMENTS FOR GROUP E BUILDINGS

Sec. 1001. GROUP E OCCUPANCIES DEFINED. Each Group E occupancy shall be considered as a separate building and the Group shall include all industrial or commercial buildings in which the nature of the occupancy creates a serious fire or life hazard, such as:

Division 1: Public garages, paint or petroleum storage, dry cleaning plants, gasoline service stations, paint shops, bus stations, and aircraft hangars.

Division 2: Planing mills, box factories, woodworking and mattress factories.

Division 3: Storage of hazardous and highly inflammable or explosive materials and/or liquids.

NOTE: Inflammable liquids shall be deemed to be those with a flash point below 190 degrees Fahrenheit as determined by the closed cup tester.

Sec. 1002. CONSTRUCTION, HEIGHT AND AREA ALLOWABLE.

GENERAL. Buildings or parts of buildings classed in Group E, because of use or the character of the occupancy, shall be of Type I, II, III, IV, or V construction and the maximum height and floor areas shall not exceed those specified in the following table.

**MAXIMUM ALLOWABLE FLOOR AREAS AS DETERMINED BY  
HEIGHT OF BUILDING, STREET FRONTAGE AND  
TYPE OF CONSTRUCTION**

Types of Construction	Maximum Height for Corresponding Areas		Maximum Floor Areas (sq. ft.)				Increase for Complete Sprinkling*
			Building Fronting on				
	Feet	Stories	1 Street	2 Streets	3 or more Streets		
Type I	<b>NO RESTRICTIONS</b>						
	75 ft.	7 Stories	8,000	10,000	12,000		
Type II	55 ft.	5 Stories	10,000	12,000	15,000	100%	
	65 ft.	1 Story	18,000	22,000	26,000		
Type III	55 ft.	5 Stories	8,000	10,000	12,000	100%	
	40 ft.	1 Story	12,000	15,000	18,000		
Type IV†	45 ft.	1 Story	10,000	12,000	15,000	100%	
Type V†	30 ft.	1 Story	8,000	9,000	10,000	100%	

Allowable heights in this section shall not exceed the height restrictions in Section 2307.

(Notes: †See Sections 1602 and 1603 for restrictions in Fire Zones.)

NOTE: AIRCRAFT HANGARS. \*Increase shall not be permitted unless the area is entirely protected by an automatic sprinkler installation as specified in Chapter 38.

All aircraft hangars to be allowed gross maximum area of thirty thousand (30,000) square feet for Type No. I construction and fifteen thousand (15,000) feet for Type No. II construction; this area shall be increased 100% if equipped with sprinkling and/or deluge systems.

All aircraft hangars are restricted to Types No. I and Types No. II construction. (*Construction of Airplane Hangars—See "Recommended Requirements National Board Fire Underwriters for the Construction and Protection of Airplane Hangars," edition effective September 1, 1930, as amended November 15, 1931, and its subsequent amendments.*)

**CONSTRUCTION, HEIGHT AND AREA ALLOWABLE.** In buildings having rooms with floor areas of over thirty thousand (30,000) square feet, tight draft stops shall be installed to prevent a free current of air under the roof. These draft stops in trussed roofs shall extend from the roof down to the bottom chord of the truss, and shall divide the under-roof or attic space into sections not to exceed twenty thousand (20,000) square feet in area.

**Sec. 1003. LOCATION ON PROPERTY.** All exterior walls or parts of walls, except on street fronts, of Group E buildings which are less than five (5) feet from adjacent property lines shall have no openings therein and shall be of masonry or reinforced concrete. All openings in exterior walls, except on street fronts, which are less than ten



feet (10') from adjacent property lines shall be protected by doors or windows of one-hour fire-resistive construction as specified in Section 4304. See Section 504 for regulating adjacent buildings on the same property.

**Sec. 1004. STAIRS AND EXITS.** All Group E buildings shall have not less than two means of egress from each story including basements or cellars unless such basements or cellars are used for heating apparatus only, in which latter case only one exit shall be required.

All stairs and exits shall comply with the requirements specified in Chapter 33.

Smokeproof towers shall be installed as and when specified in Chapter 33.

Where ramps are used for the transfer of automobiles from one floor to another such ramps shall meet the ground floor level at a point not less than twenty (20) feet from the exit from such building.

**Sec. 1005. LIGHT, VENTILATION AND SANITATION.** All portions of Group E buildings customarily used by human beings shall be provided with light and ventilation by means of windows and/or skylights with an area equal to one-eighth ( $\frac{1}{8}$ ) of the total floor area or shall be provided with artificial light and mechanically operated ventilating system. The mechanically driven ventilating system shall supply at least thirty (30) cubic feet of pure air per minute for each occupant thereof in all portions of the building and such system shall be kept continuously in operation during such time as the building is occupied.

In all buildings used for the storage or handling of automobiles operated under their own power and in all buildings where inflammable liquids are used exhaust ventilation shall be provided sufficient to produce one complete change of air every fifteen minutes. Such exhaust ventilation shall be taken from a point at or near the floor level.

**TOILETS AND FLOORS.** All buildings occupied and/or where more than four (4) persons are employed shall be provided with at least one toilet. All buildings and each subdivision thereof occupied and/or where both sexes are employed shall be provided with access to at least two toilets, either located in such building or conveniently located in a building adjacent thereto. The above minimum requirements for uses by persons of the Caucasian race, and where persons other than this race are employed, separate toilets shall be provided.

"For Floor Construction. See Chapter 31."

**Sec. 1006. ENCLOSURE OF VERTICAL OPENINGS.** All eleva-

tor shafts, vent shafts and other vertical openings shall be enclosed as specified under Types of Construction.

Doors which are part of an automobile ramp enclosure may be kept normally open but shall be equipped with fusible links and so arranged as to be self-closing when released.

Sec. 1007. FIRE EXTINGUISHING APPARATUS. Automatic sprinklers, standpipes and basement pipe inlets shall be installed as and when specified in Chapter 38.

Sec. 1008. SPECIAL HAZARDS. Chimneys and heating apparatus shall conform to the requirements of Chapter 37. In any room in which volatile inflammable liquids are used or stored no device generating a glow of flame capable of igniting gasoline vapor shall be installed or used within twenty-four (24) inches of the floor.

The use, handling, storage and sale of gasoline, fuel oil and other inflammable liquids shall not be permitted in any Group E building unless such use, handling, storage and sale complies with the "Suggested Fire Prevention Ordinance, Edition of 1930, recommended by the National Board of Fire Underwriters," and its subsequent amendments.

Dry cleaning plants in which combustible solvents are used or stored shall be of Type I construction and shall not exceed one (1) story in height. All partitions shall be of four-hour fire-resistive construction, except for the necessary openings for the vent ducts, piping and shafting. All openings in exterior walls, except wall vents, shall be protected with one-hour fire-resistive doors or windows. Wall vents having an area of not less than sixteen (16) square inches each shall be placed in the exterior walls near the floor line, not less than six (6) feet apart horizontally. Each building shall be provided with a power-driven fan exhaust system of ventilation which shall be arranged and operated so as to produce a complete change of air in each room every three (3) minutes; and shall comply with the requirements of Ordinances No. 873, No. 1109 and No. 1156, and their subsequent amendments, of the City of Miami, Fla.

Each machine in dry cleaning establishments which uses a volatile inflammable liquid shall have an adequate steam line directly connected to it, so arranged as to have the steam automatically released to the inside of such machine should an explosion occur in the machine.

Sec. 1009. EXCEPTIONS AND DEVIATIONS. Public garages shall not be of Type V construction, shall not be of Type III construction when more than two (2) stories in height, and shall be not over six hundred (600) square feet in area or twenty-five (25) feet in height when of Type IV construction.

All public garage floors shall be of incombustible materials and if not placed directly on the ground shall conform to the requirements for floors of Type I construction, or the floors may be of Type II construction properly protected with incombustible materials against saturation by oil and grease.

Gasoline filling stations of Type V construction shall have incombustible exterior wall covering.

Division 3 buildings of Group E more than five (5) stories in height shall have all floors of not less than three-hour fire-resistive construction as specified in Section 4303.

**PUBLIC GARAGES AND SERVICE STATION GREASE DRAINS.** Public Garages, Service Stations, Automobile Laundries and all other places for the washing, polishing and greasing of automobiles, shall have that portion of floor space provided with approved grease drains or traps as required by the Plumbing Department of the City of Miami, Fla.

Sec. 1010. **MIXED OCCUPANCIES.** Separation of Group E occupancies from all other occupancies shall be provided as specified in Section 503.

Sec. 1011. **METER ROOM.** All buildings of multiple occupancy connected by electrical service from the public service line or generating plant, shall have an independent central room of not less than three feet by five feet (3'x5') and seven (7) foot ceiling height with a ventilated door accessible to all occupancies of the building; for the housing of the main switch, disconnecting equipment and its controlled devices and meters for serving the occupants. The construction of this room shall conform to the same types of material and construction as the main building.

## CHAPTER 11

### REQUIREMENTS FOR GROUP F BUILDINGS

Sec. 1101. **GROUP F OCCUPANCIES DEFINED.** Each Group F occupancy shall be considered as a separate building and the Group shall include all moderately hazardous industrial and commercial occupancies, such as:

Division 1: Wholesale and retail stores, office buildings, restaurants, undertaking parlors, printing plants, municipal police and fire stations. (*Restaurants—See Chapter 13 for State Hotel Requirements.*)

Division 2: Factories and workshops using materials not highly inflammable or combustible.

Division 3: Storage and sales rooms for combustible goods.

Sec. 1102. **CONSTRUCTION HEIGHT AND AREA ALLOWABLE.** Buildings or parts of buildings classed in Group F because of use or the character of the occupancy shall be of Types I, II, III, IV or V Construction and the maximum height and floor areas shall not exceed those specified in the following table:

**MAXIMUM ALLOWABLE FLOOR AREAS AS DETERMINED BY  
HEIGHT OF BUILDING, STREET FRONTAGE AND  
TYPE OF CONSTRUCTION**

Types of Construction	Maximum Height for Corresponding Areas		Maximum Floor Areas (sq. ft.)			Increase for Complete Sprinkling*
	Feet	Stories	Building Fronting on			
			1 Street	2 Streets	3 or more Streets	
Type I	NO RESTRICTIONS					
Type II	75 ft.	7 Stories	12,000	15,000	18,000	100%
	55 ft.	5 Stories	15,000	18,000	20,000	
Type III	65 ft.	1 Story	20,000	25,000	30,000	100%
	55 ft.	5 Stories	12,000	15,000	18,000	
Type IV†	40 ft.	1 Story	18,000	22,500	25,000	100%
	No Restrictions	1 Story	20,000	25,000	30,000	
Type V†	38 ft.	3 Stories	5,000	6,000	7,000	100%
	20 ft.	1 Story	10,000	12,000	14,000	

Allowable heights in this section shall not exceed the heights restrictions in section 2307.

Note: \*Increase shall not be permitted unless the area is entirely protected by an automatic sprinkler installation as specified in Chapter 38. (Note †See Sections 1602 and 1603 for restrictions in Fire Zones.)

In buildings having rooms with floor areas over thirty thousand (30,000) square feet, tight draft stops shall be installed to prevent a free current of air under the roof. These draft stops in trussed roofs shall extend from the roof down to the bottom chord of the truss and divide the under-roof or attic space into sections not to exceed twenty thousand (20,000) square feet in area.

**Sec. 1103. LOCATION ON PROPERTY.** All exterior walls or parts of walls, except on street fronts, of Group F buildings which are less than four (4) feet from adjacent property lines shall be of masonry or reinforced concrete. All openings in exterior walls, except on street fronts, which are less than eight (8) feet from adjacent property lines shall be protected by doors or windows of one-hour fire-resistive construction as specified in Section 4304. When openings are placed closer than three (3) feet to property lines other than street fronts, the sum of the widths of such openings shall constitute not more than twenty-five (25) per cent of the total length of the walls affected. See Section 504 for regulating adjacent buildings on the same property.

Sec. 1104. STAIRS AND EXITS. Stairs and exits shall be provided as specified in Chapter 33.

Smokeproof towers shall be provided as and when specified in Chapter 33.

Passageways and corridors shall be constructed as specified in Chapter 33.

Sec. 1105. LIGHT, VENTILATION AND SANITATION. All portions of Group F buildings customarily used by human beings shall be provided with light and ventilation by means of windows and/or skylights with an area not less than one-eighth ( $\frac{1}{8}$ ) of the total floor area or shall be provided with artificial light and a mechanically operated ventilating system. In no case shall less than four changes of air per hour be provided.

TOILETS AND FLOORS. All buildings occupied and/or where more than four (4) persons are employed shall be provided with at least one toilet. All buildings and each sub-division thereof occupied and/or where both sexes are employed shall be provided with access to at least two toilets, either located in such building or conveniently located in a building adjacent thereto. The above minimum requirements for uses by persons of the Caucasian race, and where persons other than this race are employed, separate toilets shall be provided.

"For Floor Construction see Chapter 31."

Sec. 1106. ENCLOSURE OF VERTICAL OPENINGS. All elevator shafts, vent shafts and other vertical openings shall be enclosed as specified under Types of Construction.

Sec. 1107. FIRE EXTINGUISHING APPARATUS. In any room in which volatile inflammable liquids are used or stored no device generating a glow or flame capable of igniting gasoline vapor shall be installed or used within twenty-four (24) inches of the floor.

Sec. 1108. SPECIAL HAZARDS. Chimneys and heating apparatus shall conform to the requirements of Chapter 37.

No storage of volatile inflammable liquids shall be allowed in Group F buildings and the handling and use of gasoline, fuel oil and other inflammable liquids shall not be permitted in any Group F building unless such use and handling complies with the Suggested Fire Prevention Ordinance, Edition of 1930, recommended by the National Board of Fire Underwriters and its subsequent amendments.

Sec. 1109. EXCEPTIONS AND DEVIATIONS. Roof covering on Type V buildings may be of galvanized iron or sheet metal, applied as specified in Section 4305, sub-paragraph (a), Item 8.

Division 3 buildings of Group F more than six (6) stories in

height shall have all floors of not less than three-hour fire-resistive construction as specified in Section 4303.

Sec. 1110. MIXED OCCUPANCIES. Separation of Group F occupancies from all other occupancies shall be provided as specified in Sec. 503.

Sec. 1111. METER ROOM. All buildings of multiple occupancy connected by electrical service from the public service line or generating plant, shall have an independent central room of not less than three feet by five feet (3'x5') and seven (7) foot ceiling height with ventilated door accessible to all occupancies of the building; for the housing of the main switch, disconnecting equipment and its controlled devices and meters for serving the occupants. The construction of this room shall conform to the same types of material and construction as the main building.

## CHAPTER 12 REQUIREMENTS FOR GROUP G BUILDINGS

Sec. 1201. GROUP G OCCUPANCIES DEFINED. Each Group G occupancy shall be considered as a separate building and the Group shall include non-hazardous industrial and commercial occupancies which create a low fire and life hazard, such as:

Division 1: Ice plants, power plants, pumping plants, cold storage, creameries.

Division 2: Factories and workshops using incombustible and/or non-explosive materials.

Division 3: Storage and sales rooms of incombustible and/or non-explosive materials.

Sec. 1202. CONSTRUCTION, HEIGHT AND AREA ALLOWABLE. Buildings or parts of buildings classed in Group G because of use or the character of the occupancy shall be of Types I, II, III, IV or V Construction and the maximum height and floor areas shall not exceed those specified in the following table.

**MAXMUM ALLOWABLE FLOOR AREA AS DETERMINED BY  
HEIGHT OF BUILDING, STREET FRONTAGE AND  
TYPE OF CONSTRUCTION**

Types of Construc- tion	Maximum Height for Corresponding Areas		Maximum Floor Areas (sq. ft.)				Increase for Complete Sprink- ling*
			Building Fronting On				
	Feet	Stories	1 Street	2 Street	3 or more Streets		
Type I	NO RESTRICTONS						
Type II	75 ft.	7 Stories	15,000	18,000	20,000	100%	
	55 ft.	5 Stories	20,000	25,000	30,000		
Type III	65 ft.	1 Story	UNRESTRICTED			100%	
	55 ft.	5 Stories	12,000	15,000	18,000		
Type IV	40 ft.	1 Story	20,000	25,000	30,000	100%	
	No Restric- tions	1 Story	25,000	30,000	35,000		
Type V†	38 ft.	3 Stories	10,000	12,500	15,000	100%	
	20 ft.	1 Story	12,000	15,000	18,000		

Allowable heights in this section shall not exceed the height restrictions in Sec. 2307.

NOTE: \*Increase shall not be permitted unless the area is entirely protected by an automatic sprinkler installation as specified in Chapter 33. (Note: †See Sections 1602 and 1603 for restrictions in Fire Zones.)

In buildings having rooms with floor areas of over thirty thousand (30,000) square feet, tight draft stops shall be installed to prevent a free current of air under the roof. These draft stops in trussed roofs shall extend from the roof down to the bottom chord of the truss and shall divide the under-roof or attic area into sections not to exceed twenty thousand (20,000) square feet in area.

Sec. 1203. LOCATION ON PROPERTY. All exterior walls or parts of walls, except on street fronts, of Group G buildings which are less than three (3) feet from adjacent property lines shall be of not less than one-hour fire-resistive construction as specified in Section 4302. When openings are placed closer than three (3) feet to property lines other than street fronts, the sum of the widths of such openings shall constitute not more than twenty-five (25) per cent of the total length of the walls affected. See Section 504 for regulating adjacent buildings on the same property.

**Sec. 1204. STAIRS AND EXITS.** Stairs and exits shall be provided as specified in Chapter 33.

Smokeproof towers shall be provided, as and when required, in Chapter 33.

Passageways and Corridors shall be provided as required in Chapter 33.

**Sec. 1205. LIGHT, VENTILATION AND SANITATION.** All portions of Group G buildings customarily used by human beings shall be provided with light and ventilation.

**TOILETS AND FLOORS.** All buildings occupied and/or where more than four (4) persons are employed shall be provided with at least one toilet. All buildings and each subdivision thereof occupied and/or where both sexes are employed shall be provided with access to at least two toilets, either located in such building or conveniently located in a building adjacent thereto. The above minimum requirements for uses by persons of the Caucasian race, and where persons other than this race are employed, separate toilets shall be provided.

"For Floor Construction see Chapter 31."

**Sec. 1206. ENCLOSURE OF VERTICAL OPENINGS.** Except as specified in Chapter 33, vertical openings are not required to be enclosed.

**Sec. 1207. FIRE EXTINGUISHING APPARATUS.** Automatic sprinklers, standpipes and basement pipe inlets shall be installed as and when specified in Chapter 38.

**Sec. 1208. SPECIAL HAZARDS.** Chimneys and heating apparatus shall conform to the requirements of Chapter 37. In any room in which volatile inflammable liquids are used or stored, no device generating a glow or flame capable of igniting gasoline vapor shall be installed or used within twenty-four (24) inches of the floor.

The storage, use and handling of gasoline, fuel oil and other inflammable liquids shall not be permitted in any Group G building unless such storage and handling complies with the Suggested Fire Prevention Ordinance, Edition of 1930, recommended by the National Board of Fire Underwriters, and its subsequent amendments.

**Sec. 1209. EXCEPTIONS AND DEVIATIONS.** Roof covering on Type V buildings may be of galvanized iron or sheet metal applied as specified in Section 4305 Sub-paragraph (A) item 8. Fireproofing of the under side of all roof framing of Group G buildings may be omitted in all types of Construction.

**Sec. 1210. MIXED OCCUPANCIES.** Separation of Group G occupancies from all other occupancies shall be provided as specified in Section 503.

**Sec. 1211. METER ROOM.** All buildings of multiple occupancy



connected by electrical service from the public service line or generating plant shall have an independent central room of not less than three by five feet (3'x5') and seven (7') foot ceiling height with a ventilated door accessible to all occupancies of the building; for the housing of the main switch, disconnecting equipment and its controlled devices and meters for serving the occupants. The construction of this room shall conform to the same types of material and construction as the main building.

### CHAPTER 13

## REQUIREMENTS FOR GROUP H BUILDINGS

Sec. 1301. GROUP H OCCUPANCIES DEFINED. Each Group H occupancy shall be considered as a separate building and the Group shall include:

Division 1: Hotels, apartment houses, dormitories, restaurants, rooming houses.

Division 2: Convents, monasteries, old people's homes (accommodating ten or more persons).

Sec. 1302. CONSTRUCTION HEIGHT AND AREA ALLOWABLE. Buildings or parts of buildings classed in Group H because of use or the character of the occupancy shall be of Types I, II, III, IV or V construction and the maximum height and floor areas shall not exceed those specified in the following table.

All buildings coming under the jurisdiction of the Florida Hotel State Commission shall conform to the current Rules Governing Construction of Hotels, Apartment Houses, Rooming Houses and Restaurants, as adopted and promulgated by the Hotel Commission, in accordance with the laws of the State of Florida, with the exception that in any instance wherein such regulations are less restrictive than this Code, this Code shall apply.

**MAXIMUM ALLOWABLE FLOOR AREAS AS DETERMINED BY  
HEIGHT OF BUILDING, STREET FRONTAGE AND  
TYPES OF CONSTRUCTION**

Types of Construc- tion	Maximum Height for Corresponding Areas		Maximum Floor Areas (Sq. Ft.)				Increase for Complete Sprink- ling*
			Building Fronting on				
	Feet	Stories	1 Street	2 Streets	3 or more Streets		
Type I	NO RESTRICTIONS						
Type II	55 ft.	3 Stories	15,000	18,000	20,000	100%	
	65 ft.	1 Story	20,000	25,000	30,000		
Type III	55 ft.	3 Stories	12,000	15,000	18,000	100%	
	40 ft.	1 story	18,000	20,000	22,500		
Type IV†	45 ft.	1 Story	15,000	18,000	22,500	100%	
Type V‡††	38 ft.	2 Stories and Attic	6,000	7,000	8,000	100%	
	20 ft.	1 Story	8,000	9,000	10,000		

Allowable heights in this section shall not exceed the height restrictions in Section 2307.

NOTE—\*Increases shall not be permitted unless the area is entirely protected by an automatic sprinkler installation as specified in Chapter 38.

†Prohibited for one (1) exit type apartments and residential apartments. (See State Hotel Code.)

(§See Sections 1602-1603 for restrictions in Fire Zones.)

Sec. 1303. LOCATION ON PROPERTY. All exterior walls or parts of walls, except on street fronts, of Group H buildings which are less than three (3) feet from adjacent property line shall be of not less than one-hour fire-resistive construction as specified in Section 4302. All openings in exterior walls except on street fronts, which are less than five (5) feet from adjacent property lines shall be protected by doors or windows of one-hour fire-resistive construction as specified in Section 4304. When openings are placed closer than three (3) feet to property lines other than street fronts, the sum of the width of such openings shall constitute not more than twenty-five (25) per cent of the total length of the walls affected. See Section 504 for regulating adjacent buildings on the same property.

Sec. 1304. STAIRS AND EXITS. Stairs and exits shall be provided as specified in Chapter 33.

Smokeproof towers shall be provided as and when specified in Chapter 33.

All stairs and exits in Group H buildings shall open directly upon a street or alley or upon a yard or court not less than four (4) feet in width directly connected to a street or alley by means of a passageway not less in width than the stairway opening into such passageway and not less than seven (7) feet in height.

Passageways and corridors shall be provided as required in Chapter 33.

Sec. 1305. LIGHT, VENTILATION AND SANITATION. All rooms of Group H buildings used for eating, living and/or sleeping purposes shall be provided with light and ventilation by means of windows with an area of not less than fifteen (15) per cent of the total floor area of such room or rooms.

TOILETS AND FLOORS. Every building of Division 1 occupancies in this Group shall be provided with toilet and toilet rooms as required by the "Current Rules Governing Construction of Hotels, Apartment Houses, Rooming Houses and Restaurants" as promulgated by the Department of Hotel Commission of the State of Florida. Every building of Division 2 occupancies in this Group shall be occupied and/or where more than four or more persons are employed shall be provided with at least one (1) toilet. All buildings and each subdivision thereof occupied and/or where both sexes are employed shall be provided with access to at least two (2) toilets, either located in such building or conveniently located in a building adjacent thereto. The above minimum requirements for uses by persons of the Caucasian race and where persons other than this race are employed, separate toilets shall be provided.

Toilets shall not open directly into a Restaurant, Kitchen or public place where food is served, except through a vestibule.

"For Floor Construction see Chapter 31"

Sec. 1306. ENCLOSURE OF VERTICAL OPENINGS. All elevator shafts, vent shafts, stairways and other vertical openings shall be enclosed as specified under **Types of Construction**.

Sec. 1307. FIRE EXTINGUISHING APPARATUS. Automatic sprinklers, standpipes and basement pipe inlets shall be installed as and when specified in Chapter 38.

Sec. 1308. SPECIAL HAZARDS. Chimneys and heating apparatus shall conform to the requirements of Chapter 37.

Every boiler room or room containing a central heating plant using solid or liquid fuel shall be separated from the rest of the building by a "Special Fire Separation" as specified in Section 503.

The storage and handling of gasoline, fuel oil and other inflam-

mable liquids shall not be permitted in any Group H building, unless such storage and handling complies with the suggested ordinance regulating the Use, Handling, Storage and Sale of Inflammable Liquids and the Products Thereof, adopted by the National Fire Protection Association May, 1926, and its subsequent amendments. All doors leading into rooms in which volatile inflammable liquids are used or kept shall be of one-hour fire-resistive construction as specified in Section 4304 and shall be kept normally closed.

Sec. 1309 Reserved.

Sec. 1310. MIXED OCCUPANCIES. Separations between Group H occupancies and all other occupancies shall be provided as specified in Section 503.

Sec. 1311. METER ROOM. All buildings of multiple occupancy connected by electrical service from the public service line or generating plant shall have an independent central room of not less than three feet by five feet (3'x5') and seven (7) foot ceiling height with a ventilated door accessible to all occupancies of the building; for the housing of the main switch, disconnecting equipment and its controlled devices and meters for serving the occupants. The construction of this room shall conform to the same types of material and construction as the main building.

## CHAPTER 14

### REQUIREMENTS FOR GROUP I BUILDINGS

Sec. 1401. GROUP I OCCUPANCY DEFINED. Each Group I occupancy shall be considered as a separate building and the Group shall include dwellings and garage apartments accommodating not more than two (2) families, or hospitals and sanitariums accommodating not more than six (6) patients.

Sec. 1402. CONSTRUCTION, HEIGHT AND AREA ALLOWABLE. Buildings or parts of buildings classed in Group I because of use or the character of the occupancy shall be of Types I, II, III, IV\* or V\* construction. The floor areas of Types I and II shall be unlimited, the floor area of Types III and IV shall be limited to ten thousand (10,000) square feet, and the floor area of Type V shall be limited to seventy-five hundred (7500) square feet.

(\*See Sections 1602 and 1603 for restrictions in Fire Zones.)

Sec. 1403. LOCATION ON PROPERTY. All exterior walls or parts of walls (including windows or doors), except on street fronts, of Group I buildings which are less than three (3) feet from adjacent property lines shall be of not less than one-hour fire-resistive construction as specified in Section 4302. When openings are placed closer than three (3) feet to property lines other than street fronts, the sum of the widths of such openings shall constitute not more than twenty-five

(25) per cent of the total length of the walls affected. (See Section 504 for regulating adjacent buildings on the same property.)

**Sec. 1404. STAIRS AND EXITS.** Stairs and exits shall be provided as and when specified in Chapter 33.

**Sec. 1405. LIGHT, VENTILATION AND SANITATION.** All rooms of Group I buildings used for eating, living and/or sleeping purposes shall be provided with light and ventilation by means of windows with an area not less than one-eighth ( $\frac{1}{8}$ ) of the total floor area of such room or rooms.

Every bath and toilet room shall have at least one window of not less than three and one-half ( $3\frac{1}{2}$ ) square feet in area, opening through the outer wall of the building, or shall be ventilated by a wall or ceiling vent of not less than two (2) square feet net area.

**Sec. 1406. ENCLOSURE OF VERTICAL OPENINGS.** Stairs in Group I buildings need not be enclosed. Dumb-waiter shafts, clothes chutes and other similar vertical openings shall be protected as specified in Section 3003.

**Sec. 1407. FIRE EXTINGUISHING APPARATUS.** Fire-extinguishing apparatus when installed shall conform to the requirements of Chapter 38.

**Sec. 1408. SPECIAL HAZARDS.** Chimneys and heating apparatus shall conform to the requirements of Chapter 37.

Inflammable liquids shall not be stored or used in Group I buildings in quantities in excess of one (1) gallon and all such inflammable liquids shall be kept in tight or sealed containers when not in actual use.

**Sec. 1409. EXCEPTIONS AND DEVIATIONS.** Dwellings constructed on the roof of multiple storied buildings shall be considered as an additional story in so far as the construction, location, exposure, stairs, exits and fire extinguishing apparatus is concerned.

**Sec. 1410. MIXED OCCUPANCIES.** Separation of Group I occupancies from all other occupancies shall be provided as specified in Section 503.

**Sec. 1411. ATTACHED GARAGES.** When a private garage is located underneath or attached to or included in Group I occupancy, the following regulations as to its construction shall be rigidly observed:

The ceiling construction above the garage, when it is located beneath a Group I occupancy, or the roof when the garage is attached to a Group I occupancy, shall be unpierced and shall have a fire-resistance of at least one (1) hour, as specified in Chapter 43. The floor of the garage may be of earth fill or any incombustible material.

The floor of any Group I building shall be not less than seven (7) inches above the garage level. Walls, partitions and the under side of any stairway of the garage portion shall be of at least one (1) hour fire-resistive construction, as specified in Chapter 43.

Openings into the garage shall be restricted to a single doorway; such openings shall be protected by a solid slab wood door, not less than one and three-eighths ( $1\frac{3}{8}$ " ) inch thick at all points, or a metal-covered door, or other closure of equivalent or greater fire-resistance, mounted so as to be gravity closing, or with spring hinges or door closers. No glass shall be permitted in such wood slab doors.

VENTILATION. "See Section 1505."

Sec. 1412. CEILING HEIGHTS. All ceilings except bathroom shall have a clear height of eight feet four inches (8'-4") minimum.

Sec. 1413. METER ROOM. All buildings of multiple occupancy connected by electrical service from a public service line or generating plant shall have an independent central room of not less than three feet by five feet (3'x5') and seven (7) foot ceiling height with a ventilated door accessible to all occupancies of the building; for the housing of the main switch, disconnecting equipment and its controlled devices and meters for serving the occupants. The construction of this room shall conform to the same type of material and construction as the main building.

## CHAPTER 15

### REQUIREMENTS FOR GROUP J BUILDINGS

Sec. 1501. GROUP J BUILDINGS DEFINED. Each Group J building or occupancy shall be considered as a separate building and the Group shall include:

Division 1: Private Garages.

Division 2: Accessory buildings and structures such as sheds, fences over five (5) feet high, water tanks and towers.

Division 3: Stadiums, reviewing stands and amusement park structures.

Sec. 1502. CONSTRUCTION, HEIGHT AND AREA ALLOWABLE. Buildings or parts of buildings classed in Group J because of the use or the character of the occupancy shall be of Types I, II, III, IV\* or V\* construction as regulated by the requirements of Chapter 16. The floor area of Types I and II construction shall not be limited, the floor area of Types III and IV shall be limited to ten thousand (10,000) square feet and buildings of Type V construction shall not exceed one thousand (1,000) square feet in area and/or two (2) stories in height, except that such restriction of Type V\* construction shall not apply to stadiums, reviewing stands or amusement park structures of the open skeleton-framed type. (\*See Sections 1602 (F) and 1603 (F) for restrictions and special permit required in Fire Zones.)

Reviewing stands and amusement park structures shall be designed and constructed in a substantial manner so as to fully withstand all impact loads in addition to the static loads specified in Chapter 23. (See Appendix, Section 1502, for recommendations as to temporary stands.)

Events under canvas shall be termed as temporary structures and may have seating accommodations constructed of wood or iron or a combination of these two materials, provided the construction as contemplated and as erected is in accordance with the provisions of this Code. Permit for these structures shall be issued to cover a period of not exceeding six (6) months and may then be renewed for another six (6) months upon the payment of the proper fee if the structure is found safe and substantial by the Building Inspector.

**Sec. 1503. LOCATION ON PROPERTY.** All exterior walls or parts of walls (including windows or doors), except on street fronts, of Group J buildings which are less than three (3) feet from adjacent property lines shall be of not less than one-hour fire-resistive construction as specified in Section 4302. (See Section 504 for regulating adjacent buildings on same property.)

**Sec. 1504. RAMPS, STAIRS, EXITS, AISLES AND SEATS.** (a) Stairs and exits for amusement park devices shall be provided as specified in Chapter 33, except that stairs and ramps in buildings not exceeding two stories in height need not be enclosed. (See Section 3310 for Ramps.)

(b) Stairs, exits aisles and seating for stadiums and reviewing stands shall be as follows:

1. Stairs. All stairs shall have a rise of not more than seven and one-half ( $7\frac{1}{2}$ ) inches and a tread of not less than ten (10) inches not including the nosing. (See Section 3310 for Ramps.)

2. Exits. There shall be provided one exit not less than seven (7) feet wide for each two thousand (2000) persons or major fraction thereof which the stadium or reviewing stand is designed to seat. Such exits shall be spaced not more than seventy-five (75) feet apart. Passageways serving such exits shall be not less than seven (7) feet in clear height nor less than seven (7) feet in clear width.

3. Aisles. Aisles not less than three feet six inches ( $3' 6''$ ) in width shall be provided so that there are not more than twenty (20) seats between any seat and aisle.

4. Seats. Where seats are not spaced or marked off in any stadium or reviewing stand, a distance of eighteen (18) inches along any bench or platform shall constitute one seat in computing the

required aisles, stairs and exits. Seats shall be spaced not less than twenty-six (26) inches back to back and where backs are provided for the seats they shall be spaced thirty (30) inches back to back.

Where the space under the stadium or reviewing stand is used for any purpose whatsoever, exits passing through this space shall be separated therefrom by walls, floors and ceilings of not less than one-hour fire-resistive construction.

Sec. 1505. LIGHT, VENTILATION AND SANITATION. Private garages which are constructed in conjunction with any Group H or I buildings and which have openings into such buildings shall be equipped with fixed louvered or screened openings or exhaust ventilation with exhaust openings located at least six (6) feet above the floor. The clear area of the louvered openings or the openings into the exhaust ducts shall be not less than sixty (60) square inches per car stored in such private garage. Under no circumstances shall a private garage have any opening into the living or sleeping room.

Amusement park structures which have enclosed spaces open to and used by the public shall be provided with light and ventilation, either natural or artificial, sufficient for safe and healthful conditions.

TOILETS AND FLOORS. All buildings occupied and/or where more than four (4) persons are employed shall be provided with at least one toilet. All buildings and each subdivision thereof occupied and/or where both sexes are employed shall be provided with access to at least two toilets, either located in such building or conveniently located in a building adjacent thereto. The above minimum requirements for uses by persons of the Caucasian race, and where persons other than this race are employed, separate toilets shall be provided.

"For Floor construction see Chapter 31."

Sec. 1506. ENCLOSURE OF VERTICAL OPENINGS. Elevator shafts, vent shafts, stair-wells and similar vertical openings shall be enclosed as specified in Chapter 30 when extending through three (3) or more stories.

Sec. 1507. FIRE EXTINGUISHING APPARATUS. Fire extinguishing apparatus shall be installed as and when specified in Chapter 38 and as required by the Fire Department of the City of Miami.

Where more than three automobiles are stored in any private garage there shall be installed not less than one chemical extinguisher to each five cars or major fraction thereof.

Sec. 1508. SPECIAL HAZARDS. Chimneys and heating apparatus shall conform to the requirements of Chapter 37.

Inflammable liquids shall not be stored, handled or used in Group J buildings unless such storage or handling shall comply with the Suggested Fire Prevention Ordinance, Edition of 1930, recommended by the National Board of Fire Underwriters, and its subsequent amendments.



Sec. 1509. EXCEPTIONS AND DEVIATIONS. When storage space, termed by this Code a private garage, is designed, used or provides for the storage of more than ten (10) automobiles, such storage space shall be deemed a public garage.

Amusement park structures into which the public is admitted, other than those of the open frame type of construction, when more than one story or two hundred (200) square feet in area shall have the exterior walls, bearing partitions and floors of not less than one-hour fire-resistive construction as specified in Chapter 43.

Sec. 1510. MIXED OCCUPANCIES. Separation of Group J occupancies from any other occupancies shall be provided as specified in Section 503 and in Section 1509.

PART IV  
CHAPTER 16  
RESTRICTIONS IN FIRE ZONES

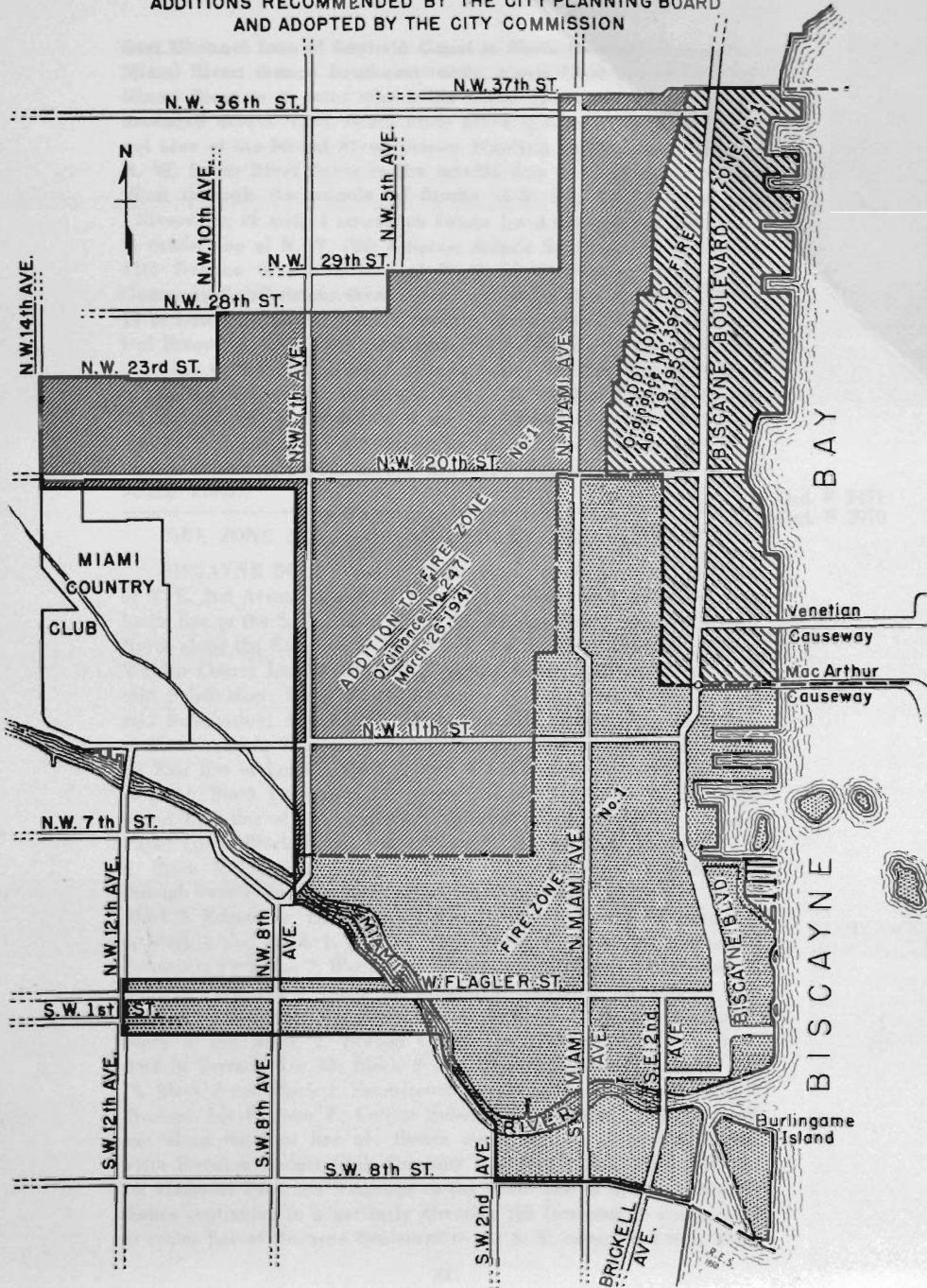
Sec. 1601. FIRE ZONES DEFINED. The entire city of Miami, Florida, is hereby declared to be and is hereby established a Fire District and said Fire District shall be known and designated as Fire Zones One, Two and Three. Fire Zone No. 1 (or "Fire District") shall include such territory or portions of the City as outlined in this Section. Fire Zone No. 2 (or "Secondary Fire District") shall include such territory or portions of the City as outlined in this Section. Fire Zone No. 3 shall include all other territory or portions of the City not otherwise included in Fire Zones No. 1 and No. 2. Wherever reference is made to any Fire Zone, it shall be construed to mean one of the three Fire Zones designated and referred to in this Section.

Moving of all buildings in Fire Zones One, Two and Three shall be subject to the requirements of Section 201 of this Code (*and Sections 1602, 1603*).

**FIRE ZONE NO. 1 (OR "FIRE DISTRICT").** Starting at the mouth of the Miami River and extending North along harbor line of Biscayne Bay to center line of N. E. 13th Street; thence West on N. E. 13th Street to center line of N. E. 2nd Avenue; thence North on N. E. 2nd Avenue to center line of N. E. 20th Street; thence West on N. E. 20th Street to center line of Block 20 of Johnson & Waddell Addition; thence South on center line of Blocks 20, 21, 30, 40 and 41 of Johnson & Waddell Addition to center line of N. W. 14th Street; thence West on center line of N. W. 14th Street to center line of Block Japes or Sosts' Addition; thence South on center line of Blocks 2, 8 and 11 of Japes or Sosts' Addition, 7-N, 14-N, 27-N, 34-N, 47-N and 54-N to center line of Block 67-North; thence West on center line of Blocks 67-N, 68-N, 69-N, 70-N and 14, Spring Garden Subdivision, to East Channel line of Seybold Canal. South on

# FIRE ZONE No.1

ADDITIONS RECOMMENDED BY THE CITY PLANNING BOARD  
AND ADOPTED BY THE CITY COMMISSION



FIRE ZONE No.1 BOUNDARY PLAT  
City of MIAMI, Florida. Dept. of Engineering  
Division of Building

East Channel Line of Seybold Canal to North Channel Line of the Miami River; thence Southeastwardly along Channel Line of the Miami River to a point where the North line of N. W. 1st Street extended across N. W. North River Drive intersects the East Channel Line of the Miami River; thence Westerly across the River and N. W. South River Drive to the middle line of Block 10-S; thence West through the middle of Blocks 10-S, 9-S, 8-S, 3 Riverside, I Riverview, 13 and 14 Lawrence Estate Land Company Subdivision to center line of N. W. 12th Avenue; thence South on center line of 12th Avenue to center line of Block 18, Lawrence Estate Land Company Subdivision; thence east on center line of Block 18 and 17 of Lawrence Estate Land Company Subdivision, K of Riverview, I of Riverside, 15-S, 16-S, 17-S and 18-S to the North side of Channel Line of the Miami River; thence along the East Channel Line of the Miami River to the center line of S. W. 2nd Avenue; thence South on S. W. 2nd Avenue to the center line of S. W. 8th Street; thence East on S. W. 8th Street to harbor line of Biscayne Bay; thence North on harbor line of Biscayne Bay to the mouth of the Miami River.

Refer to Page 315

Ord. # 2471  
Ord. # 3970

FIRE ZONE NO. 2 (OR "SECONDARY FIRE DISTRICT")

BISCAYNE BOULEVARD. Commencing at the present fire limits at N. E. 2nd Avenue and N. E. 13th Street; thence east along said Fire limits line to the S. E. corner of Lot 18, Walden Court Addition; thence North along the East line of Lots 18-17, Walden Court Addition; Lot 5, Walden Court; Lot 13, Block 3, Pershing Court; Lots 13, Block 1 of said Subdivision; Lot 8, Block 2, Garden of Eden; Lot 8, Block 1, of said Subdivision; Lots 60, 25, 14, Nelson Villa Subdivision; East lines of Lot 31 and 4, Biscayne Park Subdivision; East line of Lot 10, Block C; East line of Lot 12, Block 3, Rice & Sullivan Subdivision; East line of Lot 6, Block 14 through the center line of alley, Block 9, and Block 6 and East line of Lot 6, Block 1, Miramar; Lot 10 and 9-A of Coral Park; Lot 9, Block 4, and Lot 9, Block 1, Bayside Park Amended; Lot 6, Block 3, Lot 5 of Block 1, Bayonne Subdivision, Lot 4, Block 8 through center line of Block 7 and Block 6 along East line of Lot 4, Block 5, Edgewater, Lot 13, Block 4 and Block 1, Bird Subdivision, Lot 6, Block 4 and Block 1, Banyan Place, Lot 2, Block 4, Lot 2, Block 3, Escotonia Park, Lot 2, Block 4 and Block 3, Cold Court, Lots 39 and 12, Bankers Park, Lot 9, Block 14, Broadmoor Amended, through the center line of Block 10 and Block 5, Lot 9, Block 1, Broadmoor, Lot 3, Block 3 and Block 2, Elwood Court, Lot 2, Block 3 and Block 2, Beverly Terrace, Lot 13, Block 2 and Block 1, Beverly Amended, Lot 13, Block 2 and Block 1, Sandricourt, Lot 9, Jeffreys and Robbins Subdivision, Lot 6, John F. Collins Subdivision, through unplatted lands and along the East line of; thence north of Lots 26 and 25, Buena Vista Biscayne Badger Club Company Plat No. 1, Lots 30, 42, 53 and 14, Magnolia Park 2nd Amended to the North line of said Subdivision; thence continuing in a northerly direction 150 feet east of and parallel to center line of Biscayne Boulevard to the S. E. corner of Lot 1, Block

24, Bayshore; thence northerly along East side of Lots 1, 2, 3 and 4, Block 24, Bayshore, Lots 1, 2, 3 and 4, Block 23, Lots 1, 2, 3 and 4, Block 16, Lots 1, 2, 3 and 4, Block 12, Lots 2, 5, 6, 7 and 8, Block 5, Lots 9, 10, 11 and 12, Block 6, Bayshore; thence North along East line of White's Lemon City Corrected, Lots 3, Block 1 and Block 2, Knight's Addition, Lots 5 and 6, Fallesen Park 2nd Amended; thence North to East line of Lot 6, Arlington, continuing North on the East line of Lots 6 and 4, Arlington Subdivision, continuing North to East line of Lot 3, Block 3, South Elmira; thence North along East line of Lot 3, Block 3 and Block 2, South Elmira, Lots 6 and 5, Elmira, Lots 3, 2 and 1, Block 2 and Block 1, Baywood 1st Addition, Lots 68 and 2, Arcadia, Lots 2 and 1, Block 1, Baywood on East Line of Lots 101, 1 and 2, Washington Place, through center line of alley, Blocks 1, 7 and 8 and 21, Belle Meade, Blocks 7 and 2, Aqua Marine, and along west line of Lot 9, Block 1, Aqua Marine, continuing North along the West line of Lot 10, Block D and Lots 18 and 27, Block C, through center line of alley in Block B of Commercial Shore Crest, Blocks 18, 10, 9, 3 and 2 of Shore Crest; thence North through Lots 62, 29, 30, 32 and 33, Biscayne Heights 2nd Amended parallel to and 100 feet East of the East line of N. E. 6th Avenue through center line of alley in Blocks 2, 3 and 5, North Shore Crest; thence through Lots 19, 18, 17, 16, 20, 11, 10, 9, 8 and 7, Ashbury Park, parallel with and 100 feet distant from the East line of Federal Highway along East line of Lots 1 to 11, inclusive, Block 2, Federal Plaza, Lots 6 to 1, inclusive, Block 64, Miami Shores Section No. 3; thence through Block 66 of said subdivision and a tract of land parallel with and 100 feet distant from the East line of Federal Highway, continuing parallel with said Highway along the Easterly lines of Lots 16 to 10, inclusive, Blocks 76, Lots 9 to 5, inclusive, Block 77 and through Lots 4 to 1, inclusive, Block 79, parallel with and 100 feet distant from East line of Federal Highway, continuing along the Easterly line of Lots 22 to 19, inclusive, Block 179, Lots 21 to 17, inclusive, Block 178, Lots 14 to 10, inclusive, Block 177, Lots 21 to 17, inclusive, Block 176, Lots 13 to 8, inclusive, Block 175, of said subdivision; thence Easterly through Block 3, Julia D. Tuttle, parallel with and 100 feet distant from the East line of Federal Highway to the South line of Block 10, Biscayne Shores unit No. 3; thence East to the S. E. corner of Lot 2; thence North along the East line of Lots 2 and 1, Block 10, Lots 13, 12, 2 and 1, Block 11, through the center line of Block 12, Biscayne Shores Unit No. 3 and center line of Block 11, Biscayne Shores Unit No. 2 and the East line of Block 3, Biscayne Shores Unit No. 2; thence along the Dixie Highway to the South line of Block 4, Bay Ridge amended; thence East along said South line of the S. E. corner of Lot 5, Block 4, Bay Ridge Amended, along the West line of Lot 6, Block 4 and Block 3, Bay Ridge Amended, Lot 16, Block 8, Lot 17, Block 5, Biscayne Shores Amended; Lot 23, Block 2, Lot 22, Block 1, Vista Biscayne; Lot 4, Block 1 and 2, Water View Park; thence through a tract of land parallel to and 100 feet distant from the East line of Federal Highway; thence through center line of alley in Blocks 301, 304, 306, 309, 312 and 330 to City Limits; thence

**West along City Limits to the Northwest corner of Lot 16, Block 331, Miami Shores; thence in a Southwesterly direction along center line of alley in Block 331, Block 311, Block 310, and along West line of Block 305, Miami Shores to the North line of Biscayne Shores Unit No. 4; thence West along the North line of said subdivision to the Northwest corner of Lot 1, Block 1, of said Subdivision; thence South along the East line of Lot 5, Block 1 and Lots 5 and 46, Block 2, Biscayne Shores Unit No. 4; thence Southerly parallel with and 100 feet west of the East line of Federal Highway to the North line of Block 3, Water View Park; thence along the East line of Lot 6 and West line of Lots 1 and 2 of said subdivision and along the East line of Lot 6, Block 1, Lots 6 and 38, Block 4, Lot 6, Block 9, Biscayne Shores Amended, Lots 12, Block 1, 10, Block 2, Bay Ridge Amended, Lot 5, Block 2, Biscayne Shores Unit No. 2, and along the West line of Lot 2, Block 12 of said Subdivision to the S. W. corner of Lot 14, Block 14, Biscayne Shores Unit No. 3; thence South along the West line of said Lot 14, Block 14, Lot 11 and 14, Block 15 and Lot 6, Block 16 of said subdivision; thence Southwesterly parallel with and 100 feet distant from the West line of Federal Highway through Block 3, Julia D. Tuttle, to center line of Alley in Block 171, Miami Shores; thence along East line of Lots 6 and 36, Block 171, Miami Shores Section No. 8, Lots 6 and 26, Block 172, Lots 6 and 15, Block 173; thence along the West and North boundary of Block 174 to the center line of alley in Block 80; thence on East line to Lot 5 and 19, Block 80; thence South Lots 5 and 9, Block 78, Lots 5 and 25, Block 74, Lots 5 and 9, Block 75; thence parallel with and 100 feet distant from the West line of Federal Highway Southwesterly through a tract of land to and including Lot 28, Block 67, to its S. W. corner; thence Southwesterly along the East line of Lots 6 and 30, Block 65, Lots 5 and 23, Block 63, Miami Shores Section 3: Lots 9 and 21 in Block 1, Plaza Federal; thence parallel with and 100 feet distant from the West line of Federal Highway in a Southwesterly direction through Asbury Park; thence along center line of Block 23, El Portal Section 4; thence South parallel to and 100 feet distant from West line of N. E. 6th Avenue through a tract of land to N. E. corner Lot 9, Block 1, West Shore Crest; thence South along the East line of Lots 9 and 16, Block 1 and 2, and Lot 6, Block 3 of said subdivision, Lot 4, Block 3, Brandt Commercial Corners, Lots 9 and 16, Block 2 and Lots 11 and 21, Block 1, of said subdivision; Lots 3 and 10, Block 1, Federal Way, Lots 3, Block 4, 5, Block 5, Lots 23 and 22, Block 10, Lot 4, Block 11, through a tract of land to and through Lot 18, Block 14 and along East line of Lot 17, Lots 4 and 23, Block 18, Block 19, Block 20, said subdivision; Lots 3 and 24, Block 2, Baywood, and Block 6 of said subdivision; Lots 9 and 28, Block 2 and 4 and 6; Lot 5, Block 8, Morningstde Amended, Lot 11, Block 7, North Gate Subdivision; Lots 11 and 16, Block 8, Lots 10 and 16, Block 9, Lots 11 and 16, Block 10, Lot 11, Block 11 of said of said Subdivision; Lots 64 and 20, Whites Lemon City Corrected, Lot F and 6, Block E, Bay Shore Subdivision, through the center line of Block 4 to the N. E. corner of Lot 14, Block 3; thence West along the North Line of Lot 14, Block 3**

to the center line of said Block; thence along center line of Block 3, along East line Lots 5 and 9, Block 13, Bay Shore Unit 4, through Block 15 to the N. E. corner of Lot 35, Block 14; thence West to the N. W. corner of said Lot; thence South along the West lines of Lots 35 to 40, inclusive, of said Block and Subdivision; continuing South along the East right of way line of the Florida East Coast Railway to Lot 1, Block 1, West Broadmoor; thence along West line of said Block 1, South along East lines of Lot 16 of said Block along East line of NE 1st Court, Lots 3 and 42, Western Boulevard Tract, Lots 11 and 12 Flagler Park, Lots 5 and 44, Halcyon Heights, Lots 21 and 3, Pomelo Park Amended, Lot 4, Block 1, Lot 4, Block 2, Lot 26, Block 3, Lot 4, Block 4, Park Place; Lot 4, Blocks 1 and 2, West Edgewater; Lots 3, Ridgeview; 3, Rural Home; Lot 4 of Blocks 1 and 2, Bay View Addition; Lot 4, Blocks 2 and 1, West Bay Side (to the present fire limits at NE 20th Street; thence East along Fire Limits line to NE 2nd Avenue, South along Fire Limit Line of NE 2nd Avenue to Fire Limit Line at NE 13th Street, East along said Fire Limit Line to place of beginning.

N. E. 2ND AVENUE. Commencing at a point 100 feet east of East line of NE 2nd Avenue (Dixie Highway), said point being on the center line of NW 41st Street, produced; thence North through a tract of land continuing north along East line of Lot 2, Elwood Place; and along West line of Lot 4, of Zumwalt's subdivision; Lot 21 of Rosedale Subdivision and along west line of NE 2nd Court; Lots 12 and 17, Block 12, Lots 6 and 48, Block 11 of said subdivision; North through Duping Tract, Block 10 and along East line of said Block, through Lot B and Lot A, Block 9, through a tract of land and along West line of Lots 12, Block 8, Lots 12 and 17, Block 7, Block 6, 5, 4, 3 and 2½, Lots 14 and 21, Block 2 and Block 1 of North Bayshore Land Company Plat "A" through a tract of land and parallel with and 100 feet East of the East line of NE 2nd Avenue to the SE corner of Lot 7, Block 4, Dixie Highway Park; thence North along center line of Block 4 and 3 of said subdivision through center line of alley, Block 2, Little River Gardens, and Little River Gardens Hunters Addition North through a tract of land to NE 79th Street, North on the East lines of Rogers Subdivision and along West line of Lots 4 and 21, Franklin Park, Lot 23 and through Lot 19, Virginia Park; and along East line of Del Rio Subdivision and along West lines of Lot 20, Block 8, Sherwood Forest and Lots 9 and 15, Block 1, of said subdivision, through unsubdivided land to the SE corner of Lot 14, Block 4, El Portal; thence North through center line of alley, Block 4 and Block 3 of said subdivision; Block 25 and along East line of Block A and along center line of alley through Block 27 to 36, inclusive, and Blocks 119 and 120, Miami Shores Section 1 Amended; through center line of Block 15, Pasadena Park 1st Addition and Blocks 5 and 6, Pasadena Park along West line of Lot 5, Blocks 1 and 2, Dixie Manor and Dixie View, Lots 11, Block 2 and 1, Miami Highland Section B, Lot 11, Blocks 1 and 2, Castilian Court, continuing North through Lot 3, Julia D. Tuttle and Summerland. The East line of Lot 2 and through Lot 1 of said subdivision along West line of lots

13 and 20, Block 3, Dixie Highlands Section A, Lot 4 of Blocks 2 and 1, Lot 6, Block 1 and Lot 19, Block 2, Bellevue Biscayne; thence North parallel with East line of NE 2nd Avenue and 100 feet East of through Blocks 15 and 10 of Bellevue Biscayne 1st Addition and along center line of alley through Blocks 11 and 13 of Bellevue Biscayne 1st Addition to the City Limits; thence West along City Limits to a point 125 feet West of the West line of NE 2nd Avenue; thence South through an unsubdivided tract of land along the West lines of Lots 20 and 29, Gragny Square, Lots 3 and 2, Block 1, La Paloma, Lots 5 to 1, inclusive, Blocks 7, 8 and 13 of said subdivision through an unsubdivided tract of land and along center line of alley through Blocks 121 and 122 and Blocks 13 to 24, inclusive, of Miami Shores; Blocks 7 and 8, El Portal Section 2, Blocks 7 and 6, El Jardin Section 2 and Block 4, El Jardin and along West line of Lot 14, Block 5 of said subdivision through center line of Blocks 1 and 4, Royal Palm Gardens and along East line of Lots 3 and 17, Block 5, Lots 4 and 23, Block 6, Lot 4, Block 7 of said subdivision through a strip of land continuing South along the West lines of Lots 1 to 8, inclusive, Block 6, Little River Gardens through center line of alley, Woodsons subdivision; Block 4, Little River Gardens, Block 5 of said subdivision; Blocks 1 and 3, Roselawn Park; along the center line of Blocks 1 and 2, Little River Extension, along the West lines of Blocks 1 and 6, Dupont Subdivision, and along East line of Blocks 4 and 3 of Fairway, Lots 3 and 72, Prammar Subdivision, Lots 3, 18, 23 and 38, Knightsville, through a strip of land and along the East line of NE 1st Place No. 2 through a tract of land along the East lines of Lots 3 and 14, Dixie Wayside Tract to and through a strip of land along the East lines of Lots 3, Rockmoor Central Tract, Lots 7 and 14, Blocks 11, 12, 13, Dixie Highway Tract and Lots 12 and 19, inclusive, Block 21 of said subdivision, Lots 14 and 7, Blocks 1 and 4, Tranquilla, Lots 3, 22, 27, Orchard Villa Tract; through a tract of unsubdivided land to and along East line of Lots 3 and 10, Blocks 1 and 6, Lot 3, Block 7, Alta Vista Plat Corrected, Lot 3, Block 1, Lots 3 and 24, Block 3 and Lot 3, Block 4 of Belleaire and along West line of Lots 6 to 1, inclusive, Block 2, Shadowlawn, Lots 4 to 1, inclusive, Block 8, Lots 5 to 1, inclusive, Block 9, of said subdivision; Lots 4 to 1, inclusive, Blocks 2, 3 and 6 through Block 7 to the center line of NE 41st Street; thence East to the point of beginning.

**NORTH MIAMI AVENUE:** Beginning at North line of NE 20th Street; thence North along West right of way line of F. E. C. Railroad to North line of Block 3, Flemming & Pearson Subdivision; thence West along the East line of Lot 4, Blocks 1 and 2, of said Subdivision and along West line of Lots F, G and H, Warren and Ramsey's Subdivision and along West line of NE Miami Court and Lot 4, Block 3, Lots 4 and 14, Block 2 and Lot 4, Block 1, Rosewin Park, Lots 9 and 14, Evon Subdivision, Lots 23 and 26, Halcyon Heights, Lots 85 and 86, Flagler Park and Lots 20 and 25, Western Boulevard Tract to SW corner of Lot 5, Block 1, Central Addition Buena Vista, North along said line Block 5 through the center of Blocks 2 and 3 of said subdivision

along West line of Lot 10, Blocks 1 and 2, Biltmore Court and Lot 20, Blocks 2 and 3, Commercial Biltmore Amended and Lot 10, Block 8, and Lots 10 and 15, of Blocks 8, 5, 4 and 1, Biltmore, Lots 10 and 16, Blocks 7 and 10, Shadowlawn to center lines of Block 6 of said subdivision along West line of Lot 23, Block 1 of said subdivision, Lot 23, Block 4, Lots 10 and 15, Block 2, Lot 23, Block 1, Belleaire, Lot 7 Block 9, Lots 8 and 11, Blocks 4 and 3, Alta Vista Corrected, Lots 8 and 13, Blocks 1 and 2, Orchard Villa, Lots 10 and 15, Orchard Villa Tract Addition; thence through center Blocks 1, 2 and 3, Commercial Center, Blocks 2 and 5, Commercial Rockmoor, Block 1, Biscayne Avenue Tract, along East line of Lots 11 and 16, Blocks 5 and 6, and through the center of Block 4, Rockmoor Villa and through the center Blocks 2, 3 and 4, Rockmoor Plaza along East line of Lots 4 to 10, inclusive, Block 4, Lots 9 to 14, inclusive, Block 3, Inglewood Gardens, along West line of NE Miami Court and Lots 95 and 111, 84-57 and 18 Pramir Subdivision and along West line of Lot 23, Blocks 3 and 4, Fairway, Lot 18, Block 5, Lots 18 and 27, Block 2, Dupont Addition and Lot 15, through Lot 11, Belmont Park and through the center of a resubdivision of Lots 7, 8, 9 and 10, Block 3, Belmont Park along East line of Lots 3 and 8, Blocks 1 and 2, Belmont Park resubdivision and along center line of NE Miami Court to SE corner of Lot 7, Block 17, El Portal Section 6; thence on center line of alley through Blocks 17, 16, 14, 11, 10 and 9, El Portal Subdivisions and Blocks 1 to 12, inclusive, and Block 123, Miami Shores; thence North 150' East of and parallel to center line of North Miami Avenue produced North to SE corner of Lot 14, Block 12, La Paloma, North along East line of Lots 11 and 14, Blocks 12, 9, 6, 3, La Paloma to the NE corner of Lot 11, Block 3 of said subdivision; thence North 150' East of and parallel to center line of North Miami Avenue produced North to North City Limits of the City of Miami; thence West along North City Limits to a point 150' West of center line of North Miami Avenue produced North; thence South to NW corner of Lot 2, Block 4, La Paloma and along West line of Lots 2 and 23, Blocks 4, 5, 10 and 11 of said subdivision; thence South 150' West of and parallel to center line of North Miami Avenue produced North to the center line of alley in Block 125, Miami Shores; thence South along center line of alley in Block 125 and 124 of Miami Shores along West line of Blocks 1 and 2, Hamilton Terrace, and along West line of Lots 3 and 24, Block 5, Navarro, through center line of alley in Block 128 to 131, inclusive, Block 167-168, Miami Shores to center line of Block 1, Everglades Commercial Addition; thence South along Center line of Blocks 1, 2 and 3, Everglades Commercial Addition to South line of NW 79th Street; thence West along South line of NW 79th Street to NW corner of Lot 5, Block 1, Phoenix Park; thence South along East line of Lot 4, Block 1, Phoenix Park, along East line of Massee Manor and Lots 2 and 31, Block 2 of said subdivision; along West line of Block 2, Hillside Terrace to SW corner of said Block 2; thence East along North line of NW 71st Street to East line of NW Miami Court, South along center line of alley through Blocks 3 and 4, Dupont Addition, along West line of Lot 2, Blocks 1



and 2, Fairway, Lots 22, 53, 87 and 92, Prammar to center line of NW Miami Court, South along center line of NW Miami Court and along West line of Block 1, Maywood and along West line of Lots 2 and 13, Blocks 1 and 2, Lot 2, Block 3, North Rockmoor Tract and Lot 6, Block 3, Rockmoor Park Tract and along East line of Lots 3 and 16, Block 1 and Lots 3 and 14, Block 6, High School Park Tract, Lots 3 and 46, Block 3, Lot 3, Block 4, Biscayne Avenue Tract, along West line of Miami Avenue Subdivision to NW corner of Lot 11, Block 2, Railway Shops Addition; thence South along East line of Lots 10 and 22, Blocks 2, 4, 6 and 8 of Railway Shops Addition, South along East line of Lot 3 and 22, Block 1, Lot 3, Block 2, Pullman Park, Lot 4, Block 2, Lots 3 and 22, Block 5, Block 6, Block 9 and Block 10, Shadowlawn Extension, Lots 23 and 22, Blocks 7, 6 and 5, Buena Vista Heights Amended, Lots 3 and 22, Blocks 2, 3, 6, 7, 10, Princess Park and center line of alley through Blocks 1, 6, 7, 12 and 13 Wynwood Park, Block A, Price's Addition, East line of Lots 4 and 25, Blocks 1, 4 and 5, St. James Court Amended, Lots 25 and 26, Block 4, Lots 3 and 22, Block 1, Lots 5 and 24, Block 6, Donmoor Villa, Lot 3, Pierce Subdivision, Lot 4, Block 1 and 2, Lot 2, Block 3, Mark's Subdivision, through center line of Blocks 1, 10 and 11, Johnson & Waddell, to North line of NW 20th Street; East to place of beginning.

N. W. 2ND AVENUE: Beginning on North line of NW 20th Street at SE corner of Lot 7, Block 15; thence North along East boundary of Blocks 15, 6 and 5, Johnson & Waddell; along West line of Lot 21, Block 3, Lot 23, Blocks 2 and 1, Marks Subdivision; through Lots 24 and 21, Pierce Subdivision; along West line of Lots 10 and 15, Blocks 5, and 2 and 3, Donmoore Villa Amended; Lots 10 and 15, Blocks 6, 2 and 3, St. James Park Amended; Lots 10 and 15, Block B, Price Addition; Lots 10 and 15, Blocks 14, 11, 8, 5 and 2, Wynwood Park; Blocks 9, 8, 5 and 4 and 1, Princess Park; and Blocks 1 to 4, inclusive, Buena Vista Heights Addition Amended; Blocks 8 and 7, Lots 10 and 16, Blocks 3 and 4, Shadowlawn Extension; through Block 1, Shadowlawn Extension, and along West line of Lots 3 and 15, Blocks 7, 5, 3 and 1, Railroad Shops Addition; along East line of Railroad Shops First Addition and Lot 2, Block 4, and Block 1, Gayville; Lot 23, Block 4, Lots 23 and 26, Block 3, Biscayne Avenue Tract; Lots 5 and 8, Block 4, Lots 9 and 4, Block 3, High School Park Tract; to North line of NW 60th Street; thence East to the West line of NW 1st Place; thence North to the SE corner of Lot 3, Cottage Villa Tract; thence West to center line of Cottage Villa Tract and along East line of Belmont Subdivision Amended: Lots 12 and 22, Block 1, Carlsmar; lots 9 and 4, Block 2, Lot 4, Block 1, Peters Addition; along West line of Lot 23, Blocks 1 and 2, Fairway; Lots 9, 18, 21, Dupont Square; Center of Blocks 3 and 2, Hillsdale; along West line of alley through Blocks 2 and 3, Sturgeon Heights Acres; Lots 19 and 20, Block 2, Phoenix Park; along West line of Lot 2, Blocks 1 and 2, Early Court; Lot 2, Swansons Resubdivision; and Lots 21, 22 and 23, Block 1, Phoenix Park; along West line of Lot 3, Blocks 1 and 2, West Terrace. Lot 16, Block 1, Phoenix Park; and the East line of Lot 1, to present

fire limits at NW 79th Street; West along fire limits line, 150'; thence South along center line of Blocks 2 and 3, Grosell Heights; along West line of Lots 3 and 10, Block A, Lots 1 and 3, Block B, along West line of Lot 1, Block D, Le Bocage; Lot 6, Emerson Court, Lots 1 to 6, inclusive, Dupont Square; North through Blocks 1 and 8, Groveland Park; along east line of Lots 3 and 10, Blocks 1 and 2, North College Tract; to South line of NW 62nd Street; thence West to East line of NW 2nd Court; South to North line of NW 60th Street; thence East to West line Lot 2, Block 3, College Park Addition; thence North; South along West line of Lot 2, Block 3, Lots 2 and 11, Blocks 2 and 1, College Park Addition; along East line of Lots 3 and 22, Blocks 1 and 2, Lot 3, Block 3, Railroad Shops Inter-school Tract; Lot 12, Santrys Resubdivision; Lots 3 and 22, Block 4, Railroad Shops Inter-school Tract; Lots 10 and 20, Blocks 12, 16, 20 and 24, Railroad Shops Addition; Lots 3 and 22, Blocks 26, 27, 30 and 31, Buena Vista Heights Extension; Lots 3 and 22, Blocks 2, 3, 6, 7 and 8, Columbia Park Corrected; East line of Lots 3 and 22, Blocks 31, 38, 39, 45 and 46, Bay Vista Park; East line of Lots 3 and 12, Block 3, Lots 3 and 19, Block 9, Lots 2 and 24, Block 10, and Block 15, Wyndwood Park; Lots 3 and 4, Blocks 20 and 19, and Lots 3 and 22, Blocks 11 and 18, Northern Boulevard Tract; Lots 3 and 24, Marion Place; along East line of alley through Block 1, High Ridge; Block 1, NW 2nd Avenue Commercial Subdivision; along East line of Lot 48, Woodlawn Tract; Lots 3, 44, 49 and 93, Spauldings Subdivision Corrected; Lot 3, Blocks 1 and 4, Weaver's First Addition (unrecorded); Lot 3, Blocks 1 and 4, Weaver's Subdivision; Lot 3, Blocks A and H, Danna 2nd Addition; Lot 3, Block 2, Lots 3 and 16, Block 3, Lot 3, Block 4, Security Addition; along North line of NW. 20th Street to place of beginning.

N. W. 7TH AVENUE: Beginning at the present City Fire Limits in Lot 10, Block 14, and the East line of Seybold Canal; thence North along the East side of the Seybold Canal to the N. W. corner of Lot 25, Block 11, Spring Garden Subdivision; thence East along the North line of Lot 25, Block 11 of said subdivision to South side of NW 8th Street Road; thence across NW 8th Street Road to SE corner of Lot 3, Block 5 of said subdivision; thence North along the East line of Lot 3, Block 5 to the center line of Block 4 of said subdivision; thence along the center line of Blocks 4 and 1 of said subdivision to the center line of Block 10, Highland Park; thence North along the center lines of Blocks 10-9-6-5-1 of Highland Park, crossing NW 17th Street to SW corner Lot 23, Block 4, North Highland; thence North along West line Lots 23-2, Block 4, Lots 23-2, Block 2, Lot 2, Block 1, North Highland; thence North along a line 150' West and parallel to West side NW 7th Avenue; thence along the East side of Lots 7-38, NW 7th Avenue Heights; thence North along East line Lots 8-34, Block 3, Jefferson Park Amended; thence North along East line Lots 12-3, Block 1, Jefferson Park; thence North along East line of Lot 6, Block 1; thence North parallel to and distant easterly 150' from West line of NW 7th Avenue; thence along center line of Block 1, Sunnyside; thence North along center line of Block 6, Sunshine Park; thence North parallel to

and distant Westerly from West line of NW 7th Avenue; thence North to SW corner Lot 16, Block 3, Bonaire Boulevard; thence North along East alley line Blocks 3-2 of said subdivision; thence North along West line Lot 3, Block 2 and Lot 3, Block 5, Warman Place; North along West line Lot 3, Block 1, Suwannee Park; thence West to SW corner Lot 12, Block 5; thence North along East line Lots 10 and 12, Blocks 5 and 4, Suwannee Park; thence North parallel to and distant 150' West-erly from West line NW 7th Avenue to SW corner Lot 19, Block 1, Suwannee Park; thence North on West line Lots 20 and 13, Block 1 of said subdivision; thence North on West line Lots 29 and 4, Eden Park; thence North parallel to and distant westerly 150' from West line NW 7th Avenue to SW corner Lot 1, Block 5, Inverness; thence North along the back line of Lots facing NW 7th Avenue in Blocks 5-4-1, Inverness, Blocks 2 and 1, Braeborn, Blocks 7-6-3-2, Ardsley, Blocks 19-14-11-6-3, Bay Vista Park, Blocks 4-3-2-1, Bowling Green, Blocks 4 and 1, Indiana Park, Blocks 4 and 1, Wesdale Amended; thence North parallel to and distant westerly from West line NW 7th Avenue 150'; thence to SW corner Lot 6, Block 2, Bayami Park; thence North along back line of Lots facing on NW 7th Avenue in Blocks 1 and 2, Bayami Park, Blocks 1-6-7-12-13, Seventh Avenue Park; thence North parallel to and distant westerly from West line NW 7th Avenue; thence North along the back line of Lots facing on NW 7th Avenue in Blocks 3 and 2, Henry Ford Subdivision; Blocks 35-34-27-26-19-18-11-10-3-2-1, Stephens Manor; Blocks 2 and 1, Home Crest Amended; thence East along the South line of NW 81st Street to center Block 1, Little River Highlands Resubdivision; thence South along the center line of said Block 1, and the East line Lots 90 and 92 to 101, inclusive, of Marden Heights Section No. 2; and along East line Lots 1-5, inclusive, Morton Heights; along center line Blocks 1 and 2, and East line Lot 2, Block 3, 7th Avenue Heights; and center line Block 2, Dupont Heights; and Blocks 7 and 8, 7th Avenue Highlands; and along East line Lots 8 and 11, Blocks 5-6-7-8, Forest Park 1st Addition; and the East line Block 4, and Lots 6-13, inclusive, and Lot 15, Blocks 4 and 5, Buena Vista Gardens Extension; along East line Blocks 1 and 2, Eastmoreland; and East line Lots 2-14, Blocks 9-13-17-21; Railroad Shops Addition; along West line Lots 10 and 15, Block 2; Lots 8-13, Block 7, Lots 10-15, Blocks 10-15, Lots 8-13, Block 18, Lots 10-15, Blocks 21-24; Lots 8-13, Block 25; Lots 10-15, Blocks 28 and 29; Lots 8-13, Block 34; Lots 10-15, Blocks 35-42-43-48; all in Bay Vista Park Amended; along West line Lots 4-10-17-24, M. C. Meagher; to sub-division along West property line Blocks 2 and 3, Suwannee Park Amended; to NW corner Lot 12, Block 7, Rock Terrace; thence South along West line Lots 12 and 19, Block 7, Rock Terrace; and Lots 10 and 15, Blocks 8-14-15, Northern Tract; and Lots 10 and 19, Blocks 1 and 2, and Lot 9, Block 3, Edgewood; Lots 12 and 20, Block 2, Morris Park; to the East line Block 1, NW 7th Avenue Addition; South along East line Blocks 1-2-3, NW 7th Avenue Addition; to the SE corner Lot 12, Block 3, NW 7th Avenue Addition; and continuing South 150' East of and parallel to center line of NW 7th Avenue to

NE corner Lot 11, Block 5, Sosts' Subdivision; along East line Lots 11 and 14, Block 5, of said subdivision; thence South 150' East of and parallel to center line NW 7th Avenue to West line Lot 5, Block 10, and South along East line Lots 11 and 14, Blocks 11 North, 30 North and 31 North; 50 North, 51 North and Lot 11, Block 70 North, to present fire limits of City of Miami, to the center line of Block 70, North; thence West along said fire limits line to the place of beginning.

S. W. 17TH AVENUE: Beginning at a point on North line of South Bay Shore Drive 110' East of East line SW 17th Avenue; thence North parallel to and distant from East line SW 17th Avenue through a triangular Lot and Carter Hinson Tract to SE corner Lot 5, Block 3, Natoma Manors; thence North along West line Lots 6 and 28, Block 3, through the center of Blocks 1 and 2, Natoma Park; Blocks 1 and 2, Woodside; along West line Lots 5 and 46, Ocoola Highlands; Lot 5, Block 5, Lots 7 and 44, Block 4, Lots 5 and 40, Block 1, Ocoola Groves; Lots 3 and 22, Block 1, Adele Heights Amended; Lots 3 and 22, Block 9, Blocks 8-5-4-1, Seville; and Blocks 15-14-11-10-5-4-1, Shenandoah; Lots 15 and 4, Block 1, Manleys Resubdivision; Lots 4 and 9, Blocks 2 and 3, Ocoola Park; Lots 4 and 11, Hahn Resubdivision; Lots 7 and 12, Blocks 86-85-76; Lot 7, Blocks 76 and 66; and Lots 7 and 12, Blocks 65-56-55-46-45-36-35, Lawrence Estate; to NW corner Lot 7, Block 35, Lawrence Estate; thence East along South line NW 7th Street to NW corner Lot 4, Block 35, of said subdivision, North along West line Lots 12 and 17, Blocks 4-5-6-7-8, Grove Park; and Lot 3, Block 2, of said subdivision and Lots 3 and 17, St. Johns Park; along center line of alley through Blocks 2-3-6, Allapattah Manors; Lots 22-27-38-9 and East line Lots 1-3-4-5-6, Blanton Park; Lots 26 and 35, Blocks 6-7-8, Braddock Subdivision No. 4; along center line alley Blocks 2 and 3, Evergreen Gardens; and the West line Lots 24 and 37, Blocks 4 and 5, Braddock Subdivision No. 3; Lot 9, Block 2, Bay Hardy Subdivision and Evergreen Gardens Addition No. 2; through center line alley Blocks 1 and 4, Evergreen Garden; Blocks 2 and 3, Ramico, along West line Lot 5, Blocks 1 and 2, Glendale; Lot 3, Blocks 1 and 4, Allapattah Park; Lot 6, Blocks 1 and 4, Allapattah Manors; Lot 4, Blocks 1 and 4, Richmond Park; Lot 12, Block 2, Lefler & Jones Properties; through center alley Blocks 1 and 2, Beverly Heights; through Lot 1, Block 2, and along West line Lot 2, Block 1, Allapattah Center; and Lots 6, Blocks 1 and 2, Allapattah View; Lots 57-40, 33-16 and 9, Cedarhurst; through the center Blocks 40-25-24-9-8, North Miami Estates; along West line Lot 3, Block 2, North Miami Estates Resubdivision; through center Blocks 1-2-3, North Miami Estates No. 3; along West line Lots 12 and 18, Blocks 2 and 4; Lot 16, Block 6, Fairhaven Gardens; Lot 11, Block 6, Lots 11 and 16, Block 3, and Lot 16, Block 2, Floral Park 1st Amended; to Fire Limit Line of NW 54th Street; thence West along said Fire Limit Line to NW corner Lot 23, Block 17, Floral Park 1st Amended; South along East line Lot 22, Block 17, Lots 3 and 33, Blocks 20 and 21-24 and 25, Floral Park 1st Amended; Lots 1 and 20, Allapattah Square; Lots 8 and 15, Block 2, Lot 11, Block 1, 17th Avenue Manors First Addition; Lot 11, Block 3, Lots

11 and 20, Blocks 1 and 2, 17th Avenue Manors; Lots 6 and 27, Blocks 2 and 3, Lot 5, Block 1, 17th Avenue Manor 2nd Addition; Lot 161, Block 5, Lots 151 and 150, Blocks 4, Lots 59 and 58, Block 3, Lots 39 and 38, Block 2, and Lot 19, Block 1, of Allapattah School Subdivision; Lot 4, Blocks 1 and 2, Goodkinds Home Builders Addition; Lot 6, Blocks 1 and 2, Ace-Alla Heights; through Santa Vista School Property and along East line of Lots 10 and 17, Colonnas Subdivision; Lot 18, Block 1, Lots 3 and 22, Block 2, Lavonia Park; through center line alley Blocks 1-2-3, Ernest Schaaf Subdivision; Taunton Subdivision; Allapattah Commercial Center; Helen Lea; through unsubdivided lands and along East line Lots 7 and 26, Blocks 1 and 3, Pinehurst; Blocks 1 and 2, Braddock Subdivision No. 1; through center line alley Uneeda Park and Mulberry Park; along East line Lots 4 and 47, Belle View; and Lots 3 and 22, Block 6, Ocoee Park; Lot 4, Blocks 1 and 4, Kenwood First Addition; Lot 3, Block 1, Lots 3 and 24, Block 4, Lot 3, Block 5, Kenwood; Lot 2 through Lot 15, Pirates Cove; along East line Lot E, Lawrence Park; along East line NW 17th Court; Lots 3 and 20, Blocks 1-6-7-12, Rogers Addition; and NW 17th Court; and SW 17th Court, to East line Lot 4, Block 37, Idlewild Park; Lots 10 and 17, Crooks Subdivision; Lots 6 and 44, Block 1; Lots 7 and 46, Block 2, Long View; Lots 10 and 15, Blocks 17-18-19 and 20; and Lot 10, Block 16, Shenandoah; Lot 3, Block 1; Lots 3 and 22, Blocks 4 and 5, South Shenandoah; Lot 10, Block 2, through center line alley Blocks 3 and 6, Marlborough; along East line Lots 5 and 24, Blocks 1 and 2; Lot 3, Block 3, Durniers Subdivision; through Lot 1, Block 1, Dearborns Subdivision; East line Lots 4 and 25, Block 1, Venice Heights Amended; Lot 3, Block 1; Lots 5 and 12, Block 2; Lot 2, Lots 9 and 20, Block 3, Pleasant Grove; Lots 5 and 34, Block 27, Lots 5 and 24, Blocks 34 and 35, Lot 5, Block 42, New Shenandoah; through center line alley Blocks 1-2 and 3, Kensington Park; along East line Lots 13 and 14, Block 2, through Lot 7, Block 3, along West line 24-27, inclusive, Block 5, Natoma Park; Lot 24, Blocks 1 and 3, Espanola Heights; on a line 150' West of and parallel to center line SW 17th Avenue to West line South Bayshore Drive; thence East along said North line to place of beginning.

N. W. AND S. W. 27TH AVENUE: Beginning on North line South Bayshore Drive at SE corner Lot 54, Block 41, New Biscayne Amended; along West line Lots 7 and 8, Block F, Lots 10 and 11, Block 27, Lots 14-26 and 3, Block 12, New Biscayne Amended; through Triangle Company's Subdivision along East line Lots 7 to 15, inclusive, Block 2, King Park; through Block 3, Silver Bluff Business Center; center line alley Blocks 52-42-38-37 and 37-A, Silver Bluff Estates; West line Lot 10, Blocks 2 and 3, Stuart Terrace; center line alley Blocks 25-24-17-6-9-8 and 1, East line Lot 5, Block 1, Silver Bluff Estates; Lot 7, Block 6, center line alley Blocks 6-7 and 8, Silver Crest; West line Lot 10, Block 3, Lots 10 and 9, Blocks 1 and 2, Grapeland Park; Lots 10 and 17, Blocks 16-15-13 and 8, Grapeland Revised, and center line alley Blocks 7 and 8, 2 and 3, New Silver Crest; Lot

12, Rosemont; West line Lot 3, Block 3, Lots 5 and 24, Block 2, Lots 18 and 1, Block 1, Hazel Park; East line School property Beacom Manor; West line Lots C and 65-47-42-25-20 and 3, Beacom Manor; Lot 9, Block 13, Lots 9 and 16, Blocks 8 and 6 and 1, Central Park; through center line West Blocks Glen Royal Amended; along East line Lot 300, of said subdivision through center of High Point and Blocks 1 and 2 of the Hub; Blocks 5-3 and 2, Cecelia Park; East boundary Grapeland Villa; Paradise Park Section No. 2; Lots 10-13-20-22, River Park; West line Lots 25 and 38, Block 3, Winter Garden; and center line Block 11, of said subdivision, the center line alley Blocks 1 and 2, Clayton Heights: West Line Lots 10 and 17, Blocks 2 and 3, Melrose Park; Lots 40 and 11, Block 15, Lots 11 and 30, Blocks 16, 17 and 18, Melrose Heights 2nd Section; Lots 7 and 26, Block 2, Melrose Heights; to Fire Limit Line of N. W. 36th Street; thence West along said fire limit line to N. E. corner Lot 26, Block 3, Melrose Heights; South along East line said Lot 26, Block 3, Lots 7 and 26, Block 4, Melrose Heights; Blocks 19-20-21 and 22, Melrose Heights 3rd Section; Lots 7 and 28, Blocks 1 and 2, Radio Park; Lots 10 and 17, Blocks 1 and 2, Fair Acres Homesites; Lots 1 and 20, Blocks 1 and 4, Lots 1 and 22, Block 4, Lots 1 and 9, Block 6, Watson Manor; center line alley in River Dale Park along East line Lots 42-61-21, Paradise Park Section No. 2; West line Lots 1-41, inclusive, Paradise Park Amended; through Lot K, Block 5, Maysland; East line Lot 4, Block 1, Oakhurst; Lots 6 and 14, Block 8, Lots 9 and 15, Block 10, Lot 7, Block 12, Kew Gardens; West line Lots 17-65, inclusive, Grapeland Center; through unsubdivided land along East line Block 1, Royal Home Place; Lots 4 and 23, Blocks 2-5 and 9, Lot 4, Block 12, Central Park; Lot 3, Block 1, Lots 3 and 21, Blocks 2 and 3, Carolina Heights; Lots 10 and 16, Blocks 1 and 2, Harding Heights; along West line Lot 1, through Lot 5, Maywood; along East line Lot 3, Blocks A and B, Warner Subdivision; Lot 4, Blocks 1 and 2, Conifer Court; Lot 4, Block 3, and center line alley Block 4, Webster Terrace; through Block 2, and center line alley Blocks 3 and 10, through Block 11, McAllister Terrace Amended; East line Lots 7 and 26, Blocks 9 and 12, Grapeland Revised; Lots 12 and 13, Blocks 1 and 2, Lots 9 and 28, Blocks 3 and 8, Lot 5, Block 9, Parkdale; Lot 4, Block 1, Lots 4 and 41, Block 2, Lot 4, Block 3, Millerdale; thence along West line Lots 1 and 16, Block 1, Lot 1, Block 2, Miami Suburban Acres; Lots 31 and 60, Block 12, Miami Suburban Acres Amended; thence East line Lot 4, Block 1, Lots 7 and 32, Blocks 6-7 and 12, Lot 4, Block 13, The Pines; center line Blocks 1 and 24, South Bay Estates; East line Lot 5, Block 3, Lot 6, Block 1, Commercial Silver Bluff; Lot 4, Blocks 1 and 5, Pine Terrace; Lot 4, Blocks 1 and 2, Palm Terrace; Lots 7-12, inclusive, Charles M. Mundy's subdivision; Lots 35 and 4, of Charles M. Mundy's Subdivision; Lots 7 to 12, inclusive, Malcolm Peacock Subdivision and Hardie's Addition; through Lots 1 and 2, Block 8, Pent Homestead; along East line Lots 8 and 14, inclusive, and Lot 49, Cornelia M. Day Subdivision; thence South 150' West and parallel to the center line SW 27th Avenue through Day Grove Terrace and Minford Place to the North line of

Bayshore Drive; thence along said North line to the place of beginning.

**S. W. 37TH AVENUE:** Beginning on South Fire Limit line West Flagler Street at NE corner Lot 24, Block 3, Stadler Grove No. 1; thence South along East line Lot 24, Block 3, Lot 5, Block 4, of said subdivision to City Limits of Miami; thence beginning at a point 150' West of the center line of SW 37th Avenue on City Limit Line of Coral Gables in Block 43, of Coral Gables Craft's Section; thence South parallel to said center line of SW 37th Avenue and along East line Lots 3 and 22, Blocks 1 and 3, Lot 3, Block 3, Douglas Manor; through the center of Blocks 1-8-9-16, Coconut Grove, and the East line Lots 3-20-26-43, Percival Sanford Plat Revised; Lot 3, Block 4, Lots 25 and 26, Blocks 1-2-3, MacFarland Homestead; to North line of Grand Avenue; thence along said North line to SE corner Lot B, Block 25, Frow Homestead; thence West along East line Lots A and D, Blocks 25-16-15-6 and 5, Frow Homestead; through the center line Stirrup Subdivision; Blocks 12 and 13, Overbrook Park; and along West line of Lots 11 and 16, W. D. Sanford's Subdivision; Lot 7, Block 13, Lots 1 and 32, Blocks 12-7-6 and 1, Silver Bluff Homesites; Lots 52-45-20 and 13, Blocks 7 and 6, Miami Suburban Acres Amended; through unsubdivided lands and along West line Lots 59-29-2, David Citrus Farms; Lots 3 and 22, Blocks 8-5 and 4, Lot 3, Block 1, Englewood; Lot 10, Block 2, Lots 9 and 17, Block 1, Eugenia Grove Park; through the center of Englewood North; and along West line Lot 6, Block 2, through center line alley Blocks 1 and 2, Coral Point; and along West line Lot 3, Blocks 2 and 1, Minerova Place; Lots 34-15 and 10, Inwood; Blocks 26 and 23, Kirkland Heights Amended; to the City Limits; thence West along City Limit line, to City Limit Line in SW 37th Avenue; thence South along said City Limit Line to City Limit Line along Block 43, Coral Gables Craft's Section; thence West to a point 150' West of center line of SW 37th Avenue.

**S. W. 2ND AVENUE FROM S. W. 8TH STREET TO S. W. 15TH ROAD:** Beginning at the center line of SW 8th Street; thence South along the East lines of Lots 8-13, Blocks 57-70 South; Lots 7-13, Block 75 South; Lots 8-13, Block 85 South; and Block 90 South; Block 94 South; to North Line of SW 14th Street and 15th Road; thence West along to SE corner Lot 5, Block 93 South; thence North along East lines Lot 5, Block 93, South; Lots 18-3, Block 91, South; Lots 19-4, Block 84, South; Lots 18-4, Block 76, South; Lots 17-4, Block 69 South; and Block 58 South; to center line SW 8th Street; thence East to point of beginning.

**SOUTH MIAMI AVENUE FROM S. W. 8TH ST. TO S. W. 15TH ROAD:** Beginning NE corner Lot 6, Block 55 South; thence south along East line Lots 6 and 9, Block 55 South; Lot 4, Block 72 South; to North line Lot 9, East along said North line Lot 9, Block 72 South; to NE corner of said Lot; thence South along West line of SE Miami Road to North line of SW 11th Street; thence East along South line Lot 21, Block 100 South; to center line of said Block; thence South

along center line of Block 100 South and 99 South to North line of SW 15th Road; thence Northwesterly along said North line of SW 15th Road to West line Lot 5, Block 98 South; North along East line Lot 2, Block 98 South; Lots 14 and 4, Block 96 South; Lots 18 and 5, Block 95 South; Lots 21 and 4, Blocks 89 and 86 South; 74-71 and 56 South; to the South line of SW 8th Street; thence East along said South line to place of beginning.

S. W. 22ND STREET: Beginning on SW 8th Street on the Old Fire Limit Line; thence South along West line Lots 3 and 18, Block 58, South; Block 69 South; Lots 3 and 19, Block 76 South; thence South along Lots 3 and 20, Block 84 South; and West Lots 1 and 2, Block 91 South Miami Heights; thence West along center line Block 91 South; of said subdivision; to NW corner Lot 7, Block 92 South; thence West along said line; thence West to center of Block 15, Southwest along center of Block 15 to S. E. corner Lot 7, Block 14, Holleman Park; thence West along North line of Lots facing on SW 3rd Avenue in Blocks 14-13-12-11-10-9-8-48-47-46-45-44, Brickell Hammock; Blocks 26-21-15-10 Brickell Estates; 65-67 East Shenandoah; to center line Block 68, West along center line Block 68 of said subdivision Block 2, Kentucky Corners; West to center line Block 3, Pleasant Grove; thence West along center line of said subdivision; thence West across Lots 2-3-4-5 and 6, Dearborne Block 2; to center of Block 7, Shenandoah Park; West along said center line Block 7, of said subdivision Blocks 6 and 1, South Vedado; Blocks 5 and 6, Silver Crest; thence West along South line of SW 21st Terrace to NW corner Lot 25, Block 3, Millerdale; thence West along South line of alley Blocks 6-5-4, Auburn Heights and Madison Square; thence West 150' North of and parallel to center line of SW 22nd Street to the City Limits of Miami; thence South along the City Limits line to a point opposite the center line of the North half of Block 6, Suburban Acres Amended; thence East along this line through Blocks 6-5-4-3-2 and 1, to center line of Block 1, Silver Bluff; thence East along center line of Blocks 1-2-3 and 4 of said subdivision Blocks 30-29-28-27 of New Shenandoah; and East along the South line Lots 14 and 19, Block 2, and Block 3, Woodside; and along the center line of Blocks 59-60 and 61, East Shenandoah; to NE corner of Lot 16, Block 51, of said subdivision; thence Southeast along the East line of said lot to South line of Lots 16 to 9, inclusive, following East along this line to SW corner Lot 12, Block 63; thence East along the South line of Lots facing SW 3rd Avenue Blocks 63 and 64 East Shenandoah; Blocks 14-22-25, Brickell Estate; Block 35, Brickell Hammock Unit No. 1, 1st Addition; Blocks 34-38-32-31, Brickell Hammock Unit No. 1; Blocks 22-21-20-19-18, Holleman Park; Blocks 17 and 16, South Miami; thence to NW corner Lot 3, Block 93, South Miami Heights; and along South line to center line of Block 94 South of said subdivision; thence East along center line of said Block to SE corner Lot 8, Block 94 South; thence North along East line Lot 8, Block 94 South; Lots 8-13, Block 90 South; Block 85 South; Lots 7-13, Block 75 South; Lots 8-13, Block 70 South; Block 57 South, to Old Fire Limits Line; thence West along this line to the place of beginning.



**S. W. 15TH ROAD FROM SO. MIAMI AVENUE TO S. W. 3RD AVENUE:** Beginning at a point 150' South of center line SW 15th Road on West line of South Miami Avenue; thence West parallel to center line of SW 15th Road through Flagler Park along West line Lots 2 and 16, Block 29, South Miami; Lots 12 and 3, Block 32; Lot 6, Block 16, Holleman Park; to East Fire Limit Line of SW 3rd Avenue; thence North and East along Fire Limit Line of SW 2nd Avenue to NE corner Lot 13, Block 94 South; thence S. E. through Blocks 94-97-98 to SE corner Lot 6, Block 98 South; thence South along West line South Miami Avenue to the place of beginning.

**WEST FLAGLER STREET:** Beginning at the NE corner of Lot 20, Block 61, Lawrence Estate; thence West through the center of Blocks 61-62-63-64-65, Lawrence Estate; to the NE corner of Lot 6, Block 3, Orange Park; thence West along the North line of said Lot 6 to the NW corner of said Lot 6; thence South parallel to the East line of NW 17th Court along the West lot line of Lots 6-5-4 of Block 3 of Orange Park to the NW corner of Lot 1, Block 3, Orange Park; thence West along the North line of Lots 24-23-22-1-2-3, Block 2, Lots 1-2-3, Block 1, Orange Park; thence West along South line of alley through Blocks 6-5, and Block 4 of Evanston Heights; thence to NE corner of Lot 72, Glenroyal Amended; thence Northwesterly along the North line of said Lot 72 to NW corner of said Lot 72; thence Southwesterly to SW corner of said Lot 72; thence West along the North line of Lots 90 to 97, inclusive, and Lots 189-190 and 192 to NW corner of Lot 191; thence along the North line of Lots 1 to 8, inclusive, of Hibiscus Terrace and Lots 1 and 2, Blocks 1 and 2 of Royal Home Place, to NE corner of Lot 4, Block 15, Eldorado Heights, and along the North line of Lots 23 to 30, inclusive, of Blocks 7 and 8 and Lots 23 to 26, inclusive, Block 6 of 12th Street Manors Addition and Lots 24-25-26 of Blocks 1 and 2 of 12th Street Heights and Lots 51 to 54, inclusive, of Block 41 and through center of Blocks 31-20 and 16 of 12th Street Manors to NW corner Lot 20, Block 10, 12th Street Manors; thence West 100' North and parallel to North line and W. Flagler Street to NE corner of Lot 10, Block 6, 12th Street Manors Section No. 3; thence West along North line of Lot 10, Block 6, and Lots 19 to 22, inclusive, of Blocks 4 and 2, 12th Street Manors Section No. 3 and through center of Block 2, Kinlock Park and Block 6, Flagler Pines No. 1 and along South line of alley through Blocks 4-5 and 6, Henry Ford Subdivision No. 1 and along North line of W. Flagler Street Building Lots and Wurths Resubdivision, center Block 1, Parkers Flagler Heights and through center of Blocks 1 and 2 Parkers Flagler Heights and along South line of Lots 7 and 30, Pinehurst Villa 3rd Addition, and Lots 7 and 30, Pinehurst Villa 2nd Addition, and Lots 296-290-266 and 260, Flagler Grove Estates Extension, and along North line, Lots 1-2-3, 12th Street Acres Plan No. 3 and along the North line Whitner Addition and Colskys Resubdivision and through center Block 2, Flagler Pines No. 2 and along South line Lot 9, Block 1, Flagler Pines No. 2 and along South line of alley through Blocks 3 and 4, Flagler Manor and Blocks 1-2-3 West Gate and along the North line

of Lots 13 to 18, inclusive, Blocks 20-12-3 and Lots 13 to 15, inclusive, Block 4, West Flagler Park and Lots 13 to 15, inclusive, Block 24, and Lots 13 to 18, inclusive, of Blocks 25-32-33 and 41 of West Flagler Park Section "B" and along South Line of Alley through Blocks 19 to 26, inclusive, of Winona Park and continuing West 150' North of and parallel to the center line of West Flagler Street to City Limits; thence along City Limits to North side of West Flagler Street; thence South to SW corner Lot 133, Block 1-D Flagami; thence East to NW corner of Lot 29, Block 1, Flagami 1st Addition; thence South to center of said Block 1; thence Northeasterly along center of said Block 1 to SW corner of Lot 18, Block 1; thence Easterly along South line Lot 18 said Block 1 and along North line of Lot 5, Block 6, Flagami, to North line of alley through Blocks 1 to 10, inclusive, of Fairlawn and 1 to 4, inclusive, of East Fair Lawn and along North line of Lot 6, Block 3 and Lots 23 and 11, Block 2, and Lot 7, Block 1, Naranja Nook, and along North line of alley through Blocks 1 to 4, inclusive, of Flagler Lawn and Blocks 3 and 2 of Flagler Terrace to SW corner Lot 2, Block 1, Flagler Terrace; thence East 100' South of and parallel to the South line of West Flagler Street through Lots 1 and 2, Block 3, 12th Street Acres Plan No. 2, and along the North line of Lots 6-7-8, Lewins Resubdivision and through Lots 1 and 2, Block 2, 12th Street Acres Plan No. 2, and along North line of Lot 4 of Holmes Resubdivision and through Lot 1, Block 1, 12th Street Acres Plan No. 2 and along the North line of Lots 91 and 2 of Flagler Court Heights and Lots 7 and 30, Pinehurst Villa 1st Addition and along North line of alley through Blocks 7 and 1 of Terra Alta and through center Block 1, Flagler Center and along North line of alley through Block 1 of Flagler Grove Heights Amended and Block 1 of Hyde Park and through center of Block 1, Stadler Grove Addition No. 2, and along North line of Lots 14 and 7 of Blocks 1-2-3-4 of Stadler Grove and of Lot 6, Block 1, Stadler Grove Addition No. 1, and through center of Blocks 2 and 3 of Stadler Grove Addition No. 1 and along South line of Lots 7 and 1, Block 1, Stadler Grove Addition No. 1 to City Limits of Coral Gables; thence along the City Limits of Coral Gables and along South line of Blocks 8-9-16 Kirkland Heights Amended and of Lots 164 to 150, inclusive, of Auburndale to Southeast corner of Lot 150, Auburndale; thence Northeasterly to SW corner of Lot 148; thence Southeasterly to SE corner of Lot 148; thence North to NW corner of said Lot 126; thence along North line of Lots 126-122-123 and 3 of Auburndale and Lot 4 of Blocks 1 and 2 of Ardmore Heights and Lots 4 and 47 of Saginaw Park through center of Blocks 1 and 4 of Collingwood and along the North line of Lots 4 and 47 of Houston Heights and through center Blocks 1-2-3 of Central Park and Blocks 1 and 2 of Boscombe and along the North line of Lots 19 and 11, inclusive, of Kenilworth to NW corner of Lot 10 of Kenilworth; thence Southeasterly along South line of Lots 10 and 37 to SE corner of Lot 37; thence Northeasterly to North line of alley in Block 53, Idlewild Park; thence East along North line of alley through Blocks 53 to 56, inclusive, and 6 to 2, inclusive, of Idlewild Park and

along North line of SW 1st Street to SE corner of Lot 8, Block 75, Lawrence Estates; thence North to the North line of Block 75, Lawrence Estates; thence East along North line of Blocks 75 to 72, inclusive, and through the center of Block 71, Lawrence Estates, to the East property line of SW 12th Avenue.

**S. W. 1ST STREET FROM S. W. 12TH AVENUE TO KENILWORTH BOULEVARD:** Beginning on center line SW 12th Avenue; thence West through center line Blocks 76 to 80, inclusive, Lawrence Estate; along West line Lot 2, Block 13, Lot 3, Blocks 14 and 15, Lot 4, Blocks 16 and 17, Lot 1, Block 19, through center line Blocks 50-51-52; along West line Lot 10, Block 46, Idlewild Park, Lot 42, Kenilworth, and through center Block 15, Rand Properties Resubdivision; to East line SW 22nd Avenue Road; thence West along said East center line, Block 14, Rand Properties Resubdivision; and along South Fire Limit Line of West Flagler Street to center line SW 12th Avenue; thence South to place of beginning.

**S. W. 8TH STREET:** Beginning at NE corner of Lot 20, Block 52 South, the center line of Block 52 South; thence West along the center line of Blocks 52 South, 51 South, 50 South, 49 South, 48 South, 47 South and 46 South Homer and Block R and Q Riverview and East Addition Block 29, Lawrence Estate, Emory J. Carter Resubdivision, Blocks 106-105-104-103 Lawrence Estate Block 1, Manleys Resubdivision Block 2 Lawn View West 150' North of center line SW 8th Street parallel to and distant therefrom to center line Block 4, Westwood, along center line Block 7, West Shenandoah, Block 8 and 1, Bryandale, along North line Seaver and Haskell Subdivision to center line Block 2, Rex Park; West along center line of said Block 2 and continuing West to NE corner of Lot 100, Beacon Manor; West along North line of Lots 82 to 100, inclusive, of said subdivision, crossing Lots 79-80-81 of said subdivision, continuing across school block to center line of Block 2, Harding Heights; West along center line of Block 2 of said Subdivision, Block 8, Carolina Heights, Section No. 2, Block 2, Coral Vista, Blocks 6 and 7, Coral Nook, to NE corner of Lot 452; thence East along South side of alley Auburndale Tamiami Trail Addition; thence East to center line of Block 1, Mildred Park, and East along center line of said Block 1 to center line of Block 2, Loquat Farm, East along center line of Block 2 of said subdivision to NE corner of Lot 1, Block 2, Coral Park; thence along South side of alley to City Limit line of Miami; thence South along said City Limit line to SW corner of Lot 1, Englewood North East along South line of lots 1 to 5, inclusive, of said subdivision; thence easterly to center line of Block 21, Tamiami Pines, East along center line of Blocks 21-12-11 and 2 of said subdivision to SW corner of Lot 26, Block 1 of Tamiami Pines, East across Lots 10-11 and 12, Woodlawn Park Cemetery, Lots 12 and 11, Hickson, to SW corner of Lot 5, Block 1, Hilah Park Amended, East along South line of Lots 5 and 1, Block 1; thence East along South line of Lots 4-1, inclusive, Block 2, and Block 1, Hilah Park, East to SW corner of Lot 1 Block 1, Crescent Park; thence East on

North line Alley Block 1 of said Subdivision through Lots 5-6-7, Hicksons Subdivision, and West line of Lots 5 and 11, Block 1; Lot 4, Block 3, Citrus Park; Lot 4, Maywood, and center line of Commercial Orange Glade, Lot 1, Maywood, East to North line alley, Hazel Park, East on North line of alley, Block 1 of said subdivision, Lot 3, Block 1, Orange Glade center line Camden Heights addition through center line, Block 1 and 2, Bryan Park, and North line of Lot 10, Block 4, Tamiami Heights, along South line F. P. Ziys Resubdivision and South line of Lot 2, Royal Park, center line Block 3, Tamiami Heights, and Blocks 21 and 20—1 and 2, Shenandoah Subdivision and North line Avocado Park Amended and Lots 17 and 4, Block 4, Harrison's Subdivision; Lots 14 and 3, Blocks 3, 2 and 1, Westmoreland First Addition, center line Blocks 3B-2B-1B, Lawrence Estates, Block 1 of Renno and West line of Lot 6, Block 1, Stuarts Addition, Lots 5 and 10, Block 1; Lots 6 and 11, Block 2, Andres Subdivision, through Blocks 63 South to 57 South, inclusive, to East line of SW 1st Avenue; thence North along East line of SW 1st Avenue to the place of beginning.

ALSO: Beginning at City Limit line 150' West of center line of SW 8th Street, West parallel to center line of SW 8th Street through North Coral Gables and Block 1, Brevoort Place, through center line of Block 3, Trajune Park, and Block 11, Wyndermere Park, center line of Block 2 along South line of Lot 14, Block 4, Tamiami Trail Park, and alley through Blocks 1, 2 and 3, Tamiami Park Amended, and Block 1, Bowman Heights, and Blocks 1, 2 and 3, Trail Granada Addition, Block 1, Hills Trail Grove, Blocks 5 and 6, Dorward Heights, Block 5, Corbett's 8th Street Addition, Block 5, El Camino Park, Blocks 9 and 10, Tamami Highlands, Lot 1, T. R. Glass Subdivision, along South line Alley Block 2, Tamami Center, through Lot 3 of T. R. Glass Subdivision, and along South line of alley through Block 4, Granada Grove No. 3, Blocks 3 and 4, Gray Park, through Lot 6, T. R. Glass Subdivision, along South line of alley, Lots 34 and 35, along South line of lots 8 and 14, Block 33, and Lots 6 and 11, Block 32, and of alley Block 31 and 30, Fairlawn, Blocks 1 and 2, Fairlawn Section "A," Block 14, Tamami Plaza, on South line of Lot 20, Block 11, on center line Blocks 17 and 18, along South line of Lot 20, Block 16, Tamiami Trail Business Section, along center line of Block 10, Flagami, to SE corner of Lot 15, Block 10, West to center line of Block 9, along center line of Block 9 to NE corner of Lot 28, Block 8; thence on North line of said Lot 28, to center line of Block 8; thence along South line of Lot 20, Block 8, to SE corner of Lot 29, Block 2; thence along South line of said Lot 29 and South line of Lot 20, Block 2, to SE corner of Lot 11, Block 1 "A"; thence along South line of said Lot 11 to City Limits, along the Tamiami Canal; thence along City Limits line to West City Limit Boundary of SW 8th Street; thence East along City Limit line of Miami to West City Limit line of Coral Gables, South along Coral Gables City line to North line of alley of Block 1, Tamiami Grove, East along North line of said alley through Block 1, Tamiami Grove No. 3, Second Section, Granada Groves No. 2, Tamiami Grove Amended, Tamiami Grove No. 2 and through center

line of Block 1, Virginia Park, and North line of alley through Blocks 1, Whiteside Park, Trail Terrace, to City Limits, along East boundary Block 2, Trail Terrace; thence along City Limit line to place of beginning.

**GRAND AVENUE:** Beginning on center line of alley Block 1, William A. Rice Subdivision, through Blocks 1 and 2, William A. Rice Subdivision, through Block 14, Pent Homestead, and through center line of Block 2, Charles H. Frow Subdivision, Blocks 21-22-23-24 and 25, Frow Homestead Amended; Block 1, McFarland Homestead Plat to the City Limits; thence South and West along City Limits line to East line of Block 4, Golden Gate South, along said East line, which is also the City Limit line, to a point 150' South of Grand Avenue; thence East through the center of Blocks 1 and 2, St. Albans Park Subdivision, and through the center of Blocks 26 and 27, Frow Homestead Amended, and along the South line of Lot 28, Block 28, and along the South line of Lots 24 to 4, inclusive, Block 28, of said subdivision; thence South along the West line of Lots 3-42 and 47 of De Hedouville Subdivision, through Block 29 and the West line of Lot 24, Block 30, Frow Homestead Amended; Lot 3, Block 1, The Royal Gardens, to and South along the West line of Lot 3, Roberts Subdivision, across Main Highway to a point in Lot 13 of Monroe's Plat, said point being 150' South of the South line of Main Highway; thence North-easterly parallel with Main Highway to and along the South lines of Lots 59 to 54, inclusive, Blocks 11 and 6 to 1, inclusive, Block 10, Treasure Beach, continuing parallel with Main Highway through Lots 9-8-7 and 6, Monroe's Plat, through Lots 8 to 14, inclusive, C. & I. Peacocks Amended, along the North line of Lot 4, Charles John Peacock Corrected Subdivision, to its Northeast corner; thence South along the West and South lines of said Lot and the West and South lines of Lot 7 of said subdivision; thence West parallel with and 150' from the South line of Grand Avenue, to and along the South line of Lot 10, McDonalds Plat, along South line of Lot 10, Lamoreaus Subdivision, to Del Monte Road; thence Northwesterly along said road to and along the East lines of Lots 7-6 and 5 of said subdivision; thence West along North line of said Lot 5 to point of beginning.

**NORTH 36TH STREET:** Beginning on center line of Block 10, Princess Road; thence West along the center lines of Blocks 10 and 9 of said subdivision, Blocks 46 and 47, Bay Vista Park, Block 50, Bay Vista Park Amended; thence West to center line of Block 48 of said Subdivision; thence to center line of Block 1, Le Roi Subdivision; thence to center line of Block 1 of said Subdivision; thence West to Blocks 1 and 5 of said 36th Street Manors, Block 5, Covington Manor, Blocks 60-59-58-57 North Miami Estate; Blocks 1, Cordova Park, Block 2, Allapattah Center and Santa Vista Block; thence West parallel to and distant Northerly 150' from North line of NW 36th Street; thence to NE corner of Lot 1, Collins Park; thence West along North line of Lots 1 to 6, inclusive, of said subdivision; thence Westerly to NE corner of Lot 11, Wolverine Park; thence Westerly along North line of Lots 11 and 12 of

said subdivision to center line of Block 2, Becker Subdivision; thence West on center line of Block 2, Becker Subdivision; thence to NE corner of Lot 14, Block 3, Gordon City; thence West on North line Lots 14-17, Block 3, Lots 14-17, Block 4, Lots 14-17, Block 7, Lots 14-17, Block 8, Lots 14-17, Block 1, Gordon City Subdivision; thence to NE corner Lot 42, Block 3, 36th Street at Grapeland; thence West along center line of Block 4, Lot 18, of said subdivision; thence West along the center of Block 2, Garden of Allah; thence Westerly to NE corner of Lot 4, Block 3, Evergreen Lawn No. 3; thence West along alley in Block 3 of said subdivision, Blocks 2 and 3, Druid Heights; thence Westerly to NE corner Lot 1, Block 1, Lauraville; thence Westerly along center line of Block 1 of said subdivision, Block 5, 36th Street Highlands; thence West to NE corner of Lot 16, Block 4, Melrose Gardens Amended; thence West along West line of Lots 16 and 11, Block 4 facing lots 16 and 11, Block 3, Melrose Gardens Amended to City Limits of Miami; thence South along the City Limits line to a point opposite center line of Block 72; thence East along the center lines of Blocks 72-71-61-60-45-44, Melrose Heights 5th Section, Block 1, 36th Street Gardens; thence East to center line Block 3, Melrose Heights; thence East along the center line Block 3 of said subdivision, Blocks 2 and 1, Melrose Heights, Block 1, New Haven, Blocks 1 and 4, Holleman Manor, Easterly across West Haven to the center line Block 5, Holleman Manor, through the center of Blocks 5 and 7 of said subdivision; thence East to center line of Block of Colonna's Subdivision; thence East along the center line of Blocks 1 and 4, Beverly Heights, Blocks 15 and 1, West End Park, to NW corner Lot 4, Block 1, Georgian Terrace; thence East along North line of Lot 4, Block 1, and Lot 4, Block 2 of said subdivision; thence East on South line of Lot 2, Block 8, Lot 2, Block 7, Buena Vista Park Amended; thence East on South line Lot 2, Block 1, Bruce Terrace; thence East to SE corner of Lot 1, Block 1, Jewell Heights; thence East on South line Lot 9, Block 3, Lots 12 and 9, Block 2, Lot 9, Block 1, Buena Vista Amended; thence East on center line of Block of M. C. Meagher & Company Subdivision, and Block 3, Devonshire Park Amended Subdivision; also Block 1 of said subdivision, Block 1, Buena Vista Estates, Block 1, Northern Boulevard Tract, Block 1, Chefneux Subdivision, Blocks 3-2-1, Wyndwood Park to SW corner of Lot 9, Block 1, of said subdivision; thence North to center line of Block 10, Princess Park Subdivision, the place of beginning.

Beginning at NE corner of Lot 3, Block 4, West Point Subdivision, intersects the U. S. Harbor Line of Biscayne Bay; thence East along center line of Blocks 4-3-2-1 of said subdivision; thence North along West line of Lots 3 and 4, Block 1, to South line of alley; thence West along South line of alley to East line of F. E. C. Railroad right of way to North line of NE 35th Terrace; thence East to and intersecting with U. S. Harbor Line; thence along said Harbor Line to the place of beginning.

N. E. AND N. W. 54TH STREET: Beginning on East Side of Federal Highway; thence moving West along the center line of South Blocks, Bonna Bella Place to North line Zumwalt Subdivision; thence West along center lines Blocks 4 and 3, Tranquilla; thence West along South line Lot 6, Block 6, and Lot 6, Block 5, 54th Street Business Center; thence West along South line Lot 4, Block 4, Lots 14 and 7, Block 3, Commercial Center; thence West along South line Lot 1, Miami Avenue Subdivision; thence West to alley 54th Street Business Plaza; thence West along alley across Mercantile Plaza; thence West across property of Thomas Curry to SE corner of Lot 3, Railway Shops Addition; thence West along South line Lot 3 of said addition; thence West along the center line Block 4, Railroad Shops Inter School Tract; thence West along South line Lots 10-16, Block 12, Lots 10-16, Block 11, Lots 10 and 16, Block 10, Lots 10 and 16, Block 9, Lots 10 and 16, Block 8, Lot 10, Block 7, of Buena Vista Gardens, Lot 5, Block 4, and Lot 4, Block 1, Eastmoreland; thence along center line of Blocks 4 and 3, Indiana Park; thence Westerly to center of Block 1, Bowling Green Extension; thence West to center line of McDuffie Plat, Block; thence West to center of Block 5, Orchard Villa Tract; thence West along center of Blocks 5 and 6 of said tract; thence West along center Block 1, McCall Park, Block 1, Orange Heights, Blocks 36-16-15, Floral Park 1st Amended, to City Limits of Miami; thence South along City Limits line to a point opposite center line of Block 18, Floral Park 1st Amended; thence East along the center of Blocks 18 and 17, of said addition, Blocks 2 and 1, Floral Park, Blocks 2 and 1, Palm Park; thence East to center line of Block 1, Miami Home Addition, and East along center line Block 1 of said addition and Block 7, Bowling Green; thence East to SW corner Lot 8 and East along South lines of Lots 8 and 1, Block 1, Estelle Park East, along North line Lots 8 and 15, block 1, Sylvan Square, and center line Block 1, Bowling Green, Blocks 9-10-11-12-1 and 2 Railroad Shops Second Amended and Blocks of Orchard Villa Tract; thence to SW corner Lot 1, Elwood Place and East along South line Elwood Place Subdivision to West line of Federal Highway to the place of beginning.

LITTLE RIVER: N. E. 76TH STREET—N. E. 82ND STREET—F. E. COAST RAILROAD—NORTH MIAMI AVENUE: Beginning at a point in the West Right of Way line of the F. E. C. Railroad which is the Southeast corner of Lot 5, Commercial Little River; thence West along North lines of Blocks 4-29-40-52 of said subdivision along North lines of Lot 4, Block 6, Lots 3 and 10, Blocks 5 and 4, Dixie Highway Park South line of Lots 1 to 4, inclusive, Block 4, Lot 6, Block 5, Roselawn Park; Lot 6, Block 30; Lots 13 and 6, Block 31, Little River Gardens to N. E. Miami Court; thence North along center line of said court; through said subdivision to the S. W. corner of Lot 18, Blocks 20 and 15; Lot 4, Block 14; the north line of lot 8 to 18, inclusive, Block 5, Royal Palm Gardens; the north line of lots 20 and 23, Del Rio Subdivision; the north line of lot 16, block 1; lots 19 and 14, block 2; and through Block 3, Oakland Grove Amended to the West Right of Way line of the F. E. C. Railroad; thence south along said Right of Way to the point of beginning.

**BUENA VISTA: N. 36TH STREET—N. 41ST STREET—N. E. 2ND AVENUE—NORTH MIAMI AVENUE:** Beginning at a point in the West line of the F. E. C. Railroad Company to Right of Way 150' South of the South line of NE 36th Street; thence West parallel with said street to and along the South line of Lot 6, Block 1, Wyndwood Park Subdivision to the center line of alley; thence North through Block 1 of said subdivision; the East line of Lots 22 and 3 of Blocks 10-7-6-3 and 2 of Princess Park Subdivision; the West line of Lot 2, Block 5, Buena Vista Heights Addition Amended to its Northwest corner; thence East along the North lines of Lots 2 and 1, Block 5 of said subdivision; through the center of Blocks 8 and 7, Biltmore Subdivision continuing East to the West line of the F. E. C. Railroad Company Right of Way; thence Southwesterly along said Right of Way to point of beginning.

**SOUTH BAYSHORE DRIVE: (S. W. 17TH AVENUE TO S. W. 27TH AVENUE AND E. INGRAHAM HIGHWAY):** Beginning at the SE corner of a lot not numbered on plat to said corner being in the West line of the West Fair View Court, and, also; in the North line of Pelican Canal; thence along the North line of said Canal to the South line of Lots 1 and 2, Blocks 7-6-5-4, Crystal Bluff Addition; South line of Lots 2, Blocks 1 and 2, Crystal View; continuing in a Westerly direction parallel with and 150' from the south line of South Bayshore Drive through Biscayne Park Terrace, Block A; John T. Peacock Estate, Lots 1 to 24, inclusive, Block 43, New Biscayne Amended; West through Dinner Key; Southwesterly along South lines of Lots 40 to 51, inclusive, McDonald Plat; Lots 14 and 15, Lamoreaux Subdivision; South line of Lot A, McDonalds Plat; to the Southwest corner of said Lot A; thence in a Northwesterly direction along the West line of McDonald Plat to the Northwest corner of Lot 12 of said subdivision; thence East along North line of Lot 12, McDonalds Plat; South line of Lot 6, Blocks 2 and 1, Minford Place, through Lots 36 and 37, Bay Grove Terrace; and the North line of Lot 38 of said subdivision to the Southwest corner of Lot 46, Block 41, New Biscayne Amended Subdivision; thence East along the South line of said Lot to its Southeast corner; thence in a Northeasterly direction parallel with and 150' from the North line of South Bayshore Drive, through Blocks 41 to 36, inclusive, New Biscayne Amended, through the John T. Peacock Estate, through Lots 11 to 4, inclusive, Block A, Biscayne Park Terrace; Lots 1 to 3, inclusive, Block 3, Crystal Bluff Addition; North line of Lots 12 and 13, Blocks 2 and 1, Crystal Bluff Subdivision; Lots 43-42-35-34-27 to the Fire Limit Line of S. W. 17th Avenue; thence South and East along said Fire Limit Line to a point 110' East of the East Line of SW 17th Avenue; thence South to the point of beginning. See Page 300 for addition.

Sec. 1602. RESTRICTIONS IN FIRE ZONE NO. 1. (a) No building or structure of Type V Construction shall be erected, or constructed in or moved into, or removed from one lot to another, or moved from one part of a lot to another part of same lot, or raised, or altered, or added to in Fire Zone No. 1.

(b) No building or structure of Type IV construction having an



area greater than four hundred (400) square feet shall be erected, or constructed in, or moved into Fire Zone No. 1.

(c) Any building or structure in Fire Zone No. 1 which is enlarged, altered, raised or built upon to an extent exceeding an expenditure of twenty (20) per cent of the value of such building, shall be made to completely comply with the requirements of a new building in such Fire Zone. However, when a building requires repairs to existing wood shingle roofing in Fire Zone No. 1 such repairs shall be limited to ten (10) per cent of the roofing area and when more than ten (10) per cent shall comply with the requirements of new roof coverings in Fire Zone No. 1. New roof covering shall not be placed over existing wood shingles (See Section 104 (e).)

(d) Any building or structure moved into Fire Zone No. 1 shall comply with all the requirements for new buildings in Fire Zone No. 1.

(e) No buildings of Type IV Construction in excess of four hundred (400) square feet in area, nor any building of Type V Construction already erected in Fire Zone No. 1 shall hereafter be altered, raised, enlarged, added to or moved, except as follows:

(1) Such building may be entirely demolished.

(2) Such buildings may be moved entirely outside the limit of Fire Zone No. 1.

(3) Changes, alterations and repairs to the interior of such building or to the front facing a public street may be made, providing that such changes shall not increase in the opinion of the Building Inspector, the fire hazard of such building. Any new building erected on the same lot with an existing frame structure which does not have one wall facing on a public street or alley, shall not be placed within five (5) feet of the existing frame building and an unobstructed passageway of not less than five (5) feet in width and ten (10) feet in height on the street level shall be provided for access from the existing frame building to a public street or alley.

(4) Roofs of such buildings may be covered only with a "Fire Retardant" roof as specified in Section 4305.

(f) Temporary buildings such as reviewing stands and other miscellaneous structures, conforming to the requirements of this Code, and sheds, canopies or fences used for the protection of the public, around and in conjunction with construction work, may be erected in Fire Zone No. 1 by special permit from the Building Inspector for a limited period of time and such structures shall be completely removed upon the expiration of the time limit in such permits.

(g) All doors, windows and other openings in exterior walls of all buildings erected in Fire Zone No. 1 shall be protected by doors or windows of one-hour fire-resistive construction as specified in Section 4304.

EXCEPTIONS: The provisions of paragraph (g) shall not apply to doors, windows or other openings which face directly upon and are not within fifty (50) feet of the opposite side of a public

street or other public place, this distance to be measured at right angles to the plane of the wall in which such openings occur.

The provisions of paragraph (g) shall not apply to openings twenty (20) feet or more from buildings on the same property, or twenty (20) feet or more from adjacent property lines other than street fronts, as regulated by first exception; nor shall such provisions apply to openings in courts which are at least twenty (20) feet in their least dimension. For the purpose of this paragraph the adjacent property line may be considered as the opposite of adjoining alleys, streets or other public places if such exist.

(h) All buildings of Type III construction erected in Fire Zone No. 1 shall have all partitions and floors of not less than one-hour fire-resistive construction as specified in Chapter 43.

(i) No Group E buildings except public garages or gasoline filling stations shall be constructed or erected in Fire Zone No. 1 and no existing buildings shall be used or occupied in any manner whatsoever by Group E occupancies, except as public garages or gasoline filling stations, except where permitted by the Zoning Ordinance No. 1156 of the City of Miami and its subsequent amendments.

(j) A building or structure, which is or may be located partly in one Fire Zone and partly in another, shall be considered to be in the more highly restricted Fire Zone when more than one-third of its total floor area is located in such zone.

(k) All buildings in Fire Zone No. 1, irrespective of type of construction or occupancy, shall be covered with a "fire retardant" roof as specified in Section 4305.

**Sec. 1603. RESTRICTIONS IN FIRE ZONE NO. 2.** (a) Buildings of Type V construction erected or constructed in Fire Zone No. 2 shall have all exterior walls of not less than one-hour fire-resistive construction as specified in Section 4302; provided, that when such exterior walls are less than three (3) feet from adjacent property lines or less than six (6) feet from buildings on the same property, the exterior walls shall be of masonry or reinforced concrete and in both cases the roofs of such buildings shall be covered as specified in paragraph (a) of this Section.

(b) No building of Type IV construction having an area greater than one thousand (1,000) square feet shall be erected or constructed in Fire Zone No. 2.

(c) Any building in Fire Zone No. 2 which is enlarged, altered, raised or built upon to an extent exceeding an expenditure of fifty (50) per cent of the value of such building, shall be made to comply with the requirements of a new building in such fire zone.

(d) Any building or structure moved into Fire Zone No. 2 shall comply with all the requirements for new buildings in Fire Zone No. 2.

(e) No building of Type IV construction in excess of one thousand (1,000) square feet in area, nor any building of Type V construc-

tion, except as noted in paragraph (a) of this Section, already erected in Fire Zone No. 2 shall hereafter be altered, raised, enlarged, added to or moved except as follows:

(1) Such buildings may be entirely demolished.

(2) Such building may be moved entirely outside of the limit of Fire Zone No. 2.

(3) Such building may be made to conform to the provisions of paragraph (a) of this Section.

(4) Changes, alterations and repairs to the interior of such building or to the front facing a public street may be made, provided, such changes do not increase the fire hazard of such buildings.

(5) Roofs of such buildings may be covered only with a "Fire Retardant" roof as specified in Section 4305.

(f) Temporary buildings such as reviewing stands and other miscellaneous structures, conforming to the requirements of this Code, and sheds, canopies or fences used for the protection of the public, around and in conjunction with construction work, may be erected in Fire Zone No. 2 by special permit from the Building Inspector for a limited period of time and such structure shall be completely removed upon expiration of the time limit in such permit.

(g) No Group E buildings except public garages or gasoline filling stations shall be constructed or erected in Fire Zone No. 2 and no existing buildings shall be used or occupied in any manner whatsoever by Group E occupancies, except as public garages or gasoline filling stations, except where permitted by the Zoning Ordinance No. 1156 of the City of Miami, and its subsequent amendments.

(h) A building which is partly in Fire Zone No. 2 and partly in Fire Zone No. 3 shall conform to all the restrictions of Fire Zone No. 2 if more than one-third (1/3) of the area of the building is in Fire Zone No. 2.

(i) "Roof covering in all buildings in Fire Zone No. 2 may be of any roofing specified in Section 4305, except as prohibited in paragraph (e-5) above, and except hospitals, schools, theatres or other buildings of like character used for public assembly, shall have a "Fire Retardant" roof as specified in Section 4305."

Sec. 1604. RESTRICTIONS IN FIRE ZONE NO. 3. Any building complying with the requirements specified in this Code may be erected or moved into or within Fire Zone No. 3.

PART V  
**REQUIREMENTS BASED ON TYPES OF CONSTRUCTION**

CHAPTER 17  
**CLASSIFICATION OF ALL BUILDINGS BY TYPES OF  
CONSTRUCTION**

SEC. 1701. GENERAL. The requirements of Part V are the minimum requirements for the various Types of Construction. In order that a building may be classed in any specific Type of Construction, it is necessary that all of the requirements for that Type of Construction be complied with.

No building or portion thereof shall be required to conform to the details of a Type of Construction higher than that type which meets the minimum requirements based on Occupancy (Part III) or Location in Fire Zone (Part IV) even though certain features of such building actually conform to a higher Type of Construction.

The various Types of Construction herein specified represent varying degrees of public safety and resistance to fire and windstorm. Where specific materials, Types of Construction or fire-resistive protection are required, such requirements shall be the minimum requirements and any materials, Types of Construction or fire-resistive protection which will afford equal or greater public safety or resistance to fire and windstorm as specified in this Code, may be used.

Any system or method of construction to be used shall admit of a rational analysis in accordance with well established principles of mechanics.

Sec. 1702. CLASSIFICATION BY TYPES OF CONSTRUCTION. All buildings for the purpose of this Code shall be divided into the following Types of Construction based upon their resistance to fire, and for the purpose of this Code "Type I" shall be deemed to be the most fire resistive and "Type V" the least fire-resistive Type of Construction.

- TYPE I —Fire-Resistive Construction.
- TYPE II—Heavy Timber Construction.
- TYPE III—Ordinary Masonry Construction.
- TYPE IV—Metal Frame Construction.
- TYPE V —Wood Frame Construction.

When two or more Types of Construction occur in the same building and are not separated by an "Absolute Fire Separation" as specified in Section 503, the entire building shall be classed in the least fire-resistive Type of Construction and such building shall be subject to the restrictions of such type. Any building erected prior to the passage of this Code, which by its construction cannot be definitely classified as Type I, II, III, IV or V as defined herein, shall for the purpose of this Code be deemed to belong to the least fire-resistive class of the two types to which it most nearly conforms.

PART V  
CHAPTER 18  
TYPE I BUILDINGS  
(Fire-Resistive)

Sec. 1801. DEFINITIONS. "Type I" or "Type I Buildings." The structural frame of Type I Buildings shall be of structural steel or iron which shall be fireproofed, or shall be of reinforced concrete. The foundation, exterior walls, inner court walls and walls enclosing vertical openings shall be of masonry or reinforced concrete. The roof construction and floors shall be of fire-resistive materials. Exterior doors and windows, except as specified in Section 1813 shall be of fire-resistive construction.

*(Note: Fire-resistive materials and fire-resistive construction have a specific meaning in this Code, as specified in Chapters 42 and 43.)*

Sec. 1802. HEIGHT ALLOWABLE. The height of Type I buildings shall not be limited.

Sec. 1803. AREA ALLOWABLE. The floor area of Type I buildings shall not be limited.

Sec. 1804. FOUNDATIONS. Foundation walls and footings shall be of solid masonry as specified in Chapter 29 or of reinforced concrete as specified in Chapters 26 and 29, and shall be designed as specified in Section 2306 and 2802, or steel grillages as specified in Chapter 27. Page 309—Addition

Sec. 1805. EXTERIOR AND INNER COURT WALL. All exterior walls, fire walls and fire division walls shall be of masonry or reinforced concrete as specified in Chapter 29 and shall be of not less than four-hour fire-resistive construction as specified in Section 4302.

Inner court walls shall be of masonry or reinforced concrete of not less than three-hour fire-resistive construction as specified in Section 4302.

Walls fronting on streets having a width of at least fifty (50) feet in Fire Zone No. 1, or thirty (30) feet in Fire Zones No. 2 and 3, may be of incombustible construction with all structural members fireproofed as required in Section 1809.

Sec. 1806. PARTITIONS. Interior partitions shall be constructed of incombustible materials and shall be of not less than one-hour fire-resistive construction as specified in Section 4302.

Exceptions: Partitions dividing portions of stores, offices or similar places occupied by one tenant only, may be constructed of wood panels or similar light construction up to three-fourths ( $\frac{3}{4}$ ) the height of the room in which placed; when more than three-fourths ( $\frac{3}{4}$ ) the height of the room, such partitions shall have not less than the upper one-fourth ( $\frac{1}{4}$ ) of the partition constructed of glass set in sash.

Sec. 1807. ENCLOSURE OF VERTICAL OPENINGS. En-

closures for elevator shafts, vent shafts, stair wells and other vertical openings, when required because of Occupancy in Part III shall be of two-hour fire-resistive construction and all openings therein shall be protected by fire-resistive doors or windows as specified in Chapters 30 and 43.

A parapet wall or hand rail at least thirty (30) inches in height above the roof shall be provided around all open shaft enclosures extending through the roof.

Sec. 1808. STRUCTURAL FRAMEWORK. Structural framework shall be of structural steel or iron as specified in Chapter 27 or shall be of reinforced concrete as specified in Chapter 26.

The structural frame shall be considered as the columns, and all girders, beams, trusses or spandrels having rigid connections to the columns.

The members of floor or roof panels which have no connections to the columns shall be considered secondary members. The structural frame and secondary members shall be designed and constructed to carry all dead, live and other loads to which they may be subjected both during erection and after completion of the structure. Unless otherwise provided for in the structural frame the floor and roof panel construction shall be designed and constructed to carry the horizontal forces to such parts of the structural frame as are designed to carry the horizontal forces to the foundations.

The entire structural frame and each member which is a part of such frame shall be so designed and constructed that the stresses may be satisfactorily determined by a rational analysis in accordance with well established principles of mechanics and sound engineering practice.

Sec. 1809. FIREPROOFING OF STRUCTURAL MEMBERS.

(a) All structural steel or iron members, not including forms or structural members for elevators and elevator enclosures, shall be thoroughly fireproofed with not less than four-hour fire-resistive protection for columns, beams and girders and three-hour fire-resistive protection for floors, for all buildings more than eight (8) stories or eighty-five (85') feet in height; and with three-hour fire-resistive protection for columns, beams and girders and two-hour fire-resistive protection for floors for all buildings which are eight (8) stories or eighty-five (85) feet or less in height; and all such fire-resistive protection shall be as specified in Chapter 43.

EXCEPTIONS:

(1) The thickness of the fireproofing on the outer edge of lugs or brackets on columns may be reduced to not less than one (1) inch.

(2) The masonry over window openings may be supported by a steel plate, angle or similar member which is not fireproofed on the under side, provided the member is supported at proper intervals from a structural beam or girder which is fireproofed on

all sides. For openings in masonry bearing walls not exceeding four (4) feet in width, an angle or similar member supported by masonry and not fireproofed on the under side may be used.

(3) Wherever part of the structural steel framework of the roof of a Group A, B or C building is not less than twenty-five (25) feet above any floor or balcony, fireproofing of all members of the roof construction may be omitted.

(4) Where every part of the structural steel framework of the roof of a Group A, B or C building is more than eighteen (18) feet and less than twenty-five (25) feet above any floor or balcony the roof construction shall be protected by a suspended ceiling of not less than one-hour fire-resistive construction as specified in Chapter 43, and such ceiling shall be not less than six (6) inches distant from any part of such roof construction .

(b) All reinforced concrete columns, beams and girders shall be thoroughly fireproofed with four-hour fire-resistive protection and all floors, joists and slabs shall be thoroughly fireproofed with not less than three-hour fire-resistive protection for all buildings more than eight (8) stories or eighty-five (85') feet in height; and all reinforced concrete columns, beams and girders shall be thoroughly fireproofed with not less than three-hour fire-resistive protection and all floors, joists and slabs shall be thoroughly fireproofed with not less than two-hour fire-resistive protection for all buildings which are eight stories (8) or eighty-five (85') feet or less in height; and all such fire-resistive protection shall be as specified in Chapter 43.

**Sec. 1810. FLOOR CONSTRUCTION.** Floors shall be constructed of reinforced concrete, brick or hollow tile arches, reinforced gypsum or may be composite floors of those materials in combination with structural steel or iron or reinforced concrete; or such floor and panel construction shall consist of any floor system providing not less than two-hour fire-resistive construction as specified in Section 4303 for buildings which are eight (8) stories or eighty-five (85) feet or less in height and providing not less than three-hour fire-resistive construction as specified in Section 4303 for all buildings more than eight (8) stories or eighty-five (85) feet in height.

The type of floor construction used shall provide means to keep the beams and girders from spreading, either by installing ties or bridging, with no laterally unsupported length of joists being permitted to exceed eight (8) feet except as otherwise provided in Section 3102 and 3103. The floor and roof panel construction shall be so designed and constructed as to transfer horizontal forces to such parts of the structural frame as are designed to carry the horizontal forces to the foundations.

Where wood sleepers are used for laying wood floors the space between the floor slab and the underside of the wood flooring shall be

filled with incombustible material in such a manner that there will be no open spaces under the flooring which will exceed one hundred (100) square feet in area and such space shall be filled solidly under all partitions so that there is no communication under the flooring between adjoining rooms.

Sec. 1811. ROOF CONSTRUCTION. Roofs shall be constructed of any materials or combination of materials as allowed for floors in Section 1810. Roof covering shall be a "Fire-Retardant" roofing as specified in Section 4305.

Any drainage fill placed on a roof deck of any building shall be of an incombustible material and such fill shall be considered as a part of the dead load in designing the roof framing.

Sec. 1812. STAIRS. Stairs and stair platforms shall be constructed of reinforced concrete, iron or steel with treads and risers of concrete, iron or steel. Brick, marble, tile or other incombustible materials may be used for the finish of such treads and risers.

All stairs shall be designed and constructed as specified in Chapter 33 and as specified under Occupancy in Part III.

Sec. 1813. DOORS AND WINDOWS. (a) Doors, windows and other openings in the exterior walls shall be protected by one-hour fire-resistive construction as specified in Chapter 4304.

EXCEPTIONS: (1) The provisions of this Section shall not apply to doors, windows and other openings which face directly upon, and are not within fifty (50) feet in Fire Zones No. 1 or not within thirty (30) feet in Fire Zones No. 2 and 3, of the opposite side of a public street or other public place; this distance to be measured at right angles to the plane of the wall in which such openings occur.

(2) The provisions of paragraph (a) of this Section shall not apply to openings in an outer court twenty (20) feet or more in width parallel to and facing upon a street or public place, provided such openings are not within twenty (20) feet of an adjacent property line.

GUARDS. Except in dwellings, all windows above the third floor line, where window stools are less than three (3) feet above finished floor, shall be provided with approved metal guards up to the three- (3) foot height.

Approved guards shall also be provided for all other openings which do not open on balconies, porches or platforms in accordance with Section 3501.

Sec. 1814. PROJECTIONS FROM THE BUILDING. Bays, oriels and similar projections shall be constructed of incombustible materials with walls, floors and roofs as specified in this Chapter and as specified in Chapter 35.

Porches and exterior balconies shall be constructed of incombustible



materials but structural steel or iron members need not be fireproofed; provided, that loading platforms for warehouses, freight depots and similar buildings may be of heavy timber construction with wood floors not less than one and five-eighths ( $1\frac{5}{8}$ ) inches thick. Such wood construction shall not be carried through the exterior walls of any Type I building.

Cornices, marquises and similar appendages which are a part of a Type I building shall be constructed of substantial incombustible materials and as specified in Chapter 45.

Sec. 1815. PENTHOUSES AND SKYLIGHTS. Penthouses and other roof structures shall be constructed of masonry or reinforced concrete, and all doors, windows and other openings therein shall be protected by one-hour fire-resistive construction or shall have one-hour fire-resistive windows as specified in Chapters 36 and 43.

Skylights shall be constructed of one-hour fire-resistive materials as specified in Chapter 43 and in Section 3402.

Sec. 1816. COMBUSTIBLE MATERIALS REGULATED. Wood or unprotected steel or iron shall be permitted in the following places:

(1) Mezzanine floors may be of wood or unprotected steel provided that there shall be not more than two such mezzanines in any room of any building and provided, further, that no such mezzanine floor or floors shall cover more than thirty-three and one-third ( $33\frac{1}{3}$ ) per cent of the area in the room where located. Such mezzanine floors constructed in Fire Zone No. 1 shall be of heavy timber construction as specified for floor construction in Type II buildings.

(2) Show window frames and aprons, also show cases and other appurtenances on the first floors of stores or other similar buildings shall be constructed as specified in Chapter 34.

(3) Wood may be used if designed for decorative purposes only; also for trim, picture molds, chair-rails, wainscoting, baseboards, hand rails, show window backing, temporary partitions; floors, and sleepers may be of wood. Wood doors may be used except in stair, elevator or other shaft enclosures or where specifically prohibited under Occupancy in Part III.

(4) Roofs may be sheathed by wood planks of two and one-half ( $2\frac{1}{2}$ ) inch nominal thickness when such sheathing is more than thirty (30) feet distant from any floor, balcony or gallery and when such plank sheathing is protected on the underside by a ceiling of not less than one-hour fire-resistive construction as specified in Section 4301.

PART V  
CHAPTER 19  
TYPE II BUILDINGS

(Heavy Timber Construction)

Sec. 1901. DEFINITION. "Type II" or Type II Buildings." The structural frame shall be of structural steel or iron which shall be fireproofed, of reinforced concrete, of masonry or of heavy timbers, provided, that in buildings not exceeding one story or sixty-five (65) feet in height, the structural steel or iron may have the fireproofing omitted. Foundations and exterior walls shall be of masonry or reinforced concrete. Inner court walls shall be of masonry or reinforced concrete of not less than one-hour fire-resistive construction or of protected solid wood. Roof construction shall be of wood, or incombustible materials. Floors and non-bearing partitions shall be of wood or incombustible materials.

Sec. 1902. HEIGHT ALLOWABLE. Type II buildings shall not exceed a height of seventy-five (75) feet in which height there shall not be more than seven (7) stories; provided that the height of a building erected on sloping ground may not exceed seventy-five (75) feet plus a vertical distance equal to the vertical change in slope along the length of any side of such building, but in no case shall such height exceed eighty-five (85) feet above the adjacent finished ground level; provided, further, that no one-story building shall exceed a height of sixty-five (65) feet.

Towers, spires and steeples erected as a part of the building and not used for habitation or storage may extend not to exceed twenty (20) feet above such height level.

The above allowable heights may be used only when the provisions of Chapter 23 have been complied with.

Sec. 1903. AREA ALLOWABLE. The floor area of a Type II building shall be limited according to Occupancy as specified in Part III of this Code.

Sec. 1904. FOUNDATIONS. Foundation walls and footings shall be of solid masonry as specified in Chapter 29 or of reinforced concrete as specified in Chapters 26 and 29, or steel grillages as specified in Chapter 27, and shall be designed as specified in Sections 2306 and 2802. (See Section 1905 for vents required in solid foundation walls.)  
See page 309

Sec. 1905. EXTERIOR AND INNER COURT WALLS. All exterior walls, fire walls and fire division walls shall be of masonry or reinforced concrete as specified in Chapter 29 and shall be of not less than four-hour fire-resistive construction as specified in Section 4302.

All walls within five (5) feet of adjacent property lines (excepting property lines abutting a street or alley) and all walls within (10) feet of other buildings on the same property shall be provided with a para-

pet wall at least eighteen (18) inches high above the roof at all points, provided that parapet walls need not be constructed on buildings (20) feet or less in height or where the roof slopes more than twenty (20) degrees from the horizontal back from the exterior wall of such building. (See Section 2935.)

Walls fronting on streets having a width of at least fifty (50) feet in Fire Zone No. 1, or at least thirty (30) feet in Fire Zones No. 2 and 3, may be of incombustible construction with all structural members fireproofed as required in Section 1909.

Inner court walls shall be constructed the same as exterior walls or shall be of not less than four-inch solid wood laminated construction protected on the weather side thereof by incombustible fire-resistive materials as provided in Section 4202.

See Section 2901 for reinforced concrete tie-beam and coping requirements.

Solid foundation walls under the first-floor joist of all Type II buildings (except such space as is occupied by a basement or cellar) shall be provided with ventilated openings to insure ample ventilation, and such openings shall be covered with non-corrosive wire mesh of not less than sixteen (16) mesh per lineal inch. Such ventilated openings shall be proportioned on the basis of not less than two (2) square feet for each fifteen (15) lineal feet or major fraction thereof of all exterior foundation walls distributed on not less than three (3) sides to produce adequate cross-ventilation in at least one direction.

Sec. 1906. PARTITIONS. Interior partitions shall be of one-hour fire-resistive construction as specified in Section 4302 or may be of solid wood construction formed of two layers of one-inch nominal matched boards or of two-inch nominal tongued and grooved wood planking or of solid wood laminated construction not less than three and five-eighths ( $3\frac{5}{8}$ ) inches thick.

Where wood partitions abut or adjoin masonry walls they shall be tied as specified in Section 2507.

Temporary partitions as specified in Section 1806 may be used.

Sec. 1907. ENCLOSURE OF VERTICAL OPENINGS. Enclosures for elevator shafts, vent shafts, stair wells and other vertical openings shall be of two-hour fire-resistive construction as specified in Chapters 30 and 43; provided, that in buildings not more than three (3) stories in height which are completely sprinkled as specified in Chapter 38 such enclosure walls may be of any construction permitted for interior partitions.

A parapet wall or hand rail at least thirty (30) inches in height above the roof shall be provided around all open shaft enclosures extending through the roof.

Sec. 1908. STRUCTURAL FRAMEWORK. The structural frame shall be of reinforced concrete, as provided in Chapter 26, structural

steel as provided in Chapter 27, or of solid wood construction as specified in Chapter 25.

All wood columns in such structural frame shall be directly superimposed, one above the other (no girders or bolsters between columns) and shall be provided with steel or cast iron caps or pintles which shall be self-releasing wherever any horizontal members are framed into such columns. No wood column shall be less than eight (8) inches nominal in its least dimension and no beam, girder or joist shall be less than six (6) inches nominal in its least dimension, nor less than forty-eight (48) square inches nominal in cross-sectional area. In no case shall masonry or reinforced concrete be supported on wood construction, except tile or concrete floor finishes not more than three (3) inches in thickness.

Sec. 1909. FIREPROOFING OF STRUCTURAL MEMBERS. (a) All structural steel or iron members (not including frames and structural members for elevators and elevator enclosures) shall be thoroughly fireproofed. Such fireproofing shall be of three-hour fire-resistive protection for columns, and two-hour fire-resistive protection for beams, girders and floor systems, and all fireproofing shall be determined as specified in Chapter 43; provided, that such fireproofing may be omitted when the building does not exceed a height of one story or sixty-five (65) feet.

Exceptions: (1) The thickness of the fireproofing on an outer edge of lugs or brackets on columns may be reduced to not less than one (1) inch.

(2) The masonry over window openings may be supported by a steel plate, angle or similar member which is not fireproofed on the under side, provided the member is supported at proper intervals from a structural beam or girder which is fireproofed on all sides. For openings in masonry bearing walls not exceeding four (4) feet in width, an angle or similar member supported by masonry and not fireproofed on the underside may be used.

(3) Where the structural steel framework of the roof of a Group A, B or C building is not less than twenty-five (25) feet above any floor or balcony, fireproofing of all members of the roof construction may be omitted.

(4) Where the structural steel framework of the roof of a Group A, B or C building is more than eighteen (18) feet and less than twenty-five (25) feet above any floor or balcony the roof construction shall be protected by a suspended ceiling of not less than two-hour fire-resistive construction as specified in Chapter 43, and such ceiling shall be not less than six (6) inches distant from any part of such roof construction.

(b) Wood structural members shall not be required to be fireproofed.

(c) All reinforced concrete columns shall be thoroughly fireproofed

with not less than three-hour fire-resistive protection and all joists, beams, girders and slabs shall be thoroughly fireproofed with not less than two-hour fire-resistive protection outside of all steel reinforcing as specified in Section 4301.

Section 1910. FLOOR CONSTRUCTION. Floor construction shall be as specified for Type I buildings or shall be of one of the types noted below:

(1) Floor construction shall be of tongued and grooved or splined lumber not less than three (3) inches nominal in thickness with a top layer of flooring of one (1) inch thickness laid thereon.

(2) Construction of solid lumber placed on edge and securely spiked together to make a floor not less than four (4) inches nominal in thickness.

If such floor is six (6) inches nominal or more in thickness the lumber shall be air seasoned or kiln dried.

A space of one-half ( $\frac{1}{2}$ ) inch shall be required between all floor construction and the wall which it adjoins, to allow for swelling in case the floor becomes wet. This space shall be properly covered by a molding so arranged that it will not interfere with the swelling and shrinking movements of the flooring.

Wood joists, beams and girders supported by masonry walls shall be anchored thereto as specified in Section 2506.

The timbers and planking shall be self-releasing at end support on walls and no planking or timber shall extend through or across any fire, party or division walls.

Sec. 1911. ROOF CONSTRUCTION. Roof construction shall be as specified for floor construction in Section 1910 except that the minimum allowable thickness shall be two and one-half ( $2\frac{1}{2}$ ) inches nominal, the timbers and planking shall be self-releasing at end support on walls and no planking or timber shall extend across or through fire, party or division walls. Wood joists, beams, girders and rafters supported by masonry walls shall be anchored thereto as provided in Section 2508.

Roof covering shall be a "Fire-Retardant" roofing as specified in Section 4305 and shall be required over all combustible roof construction.

Sec. 1912. STAIR CONSTRUCTION. Stair construction may be of wood in buildings not exceeding three (3) stories in height.

In buildings four (4) or more stories in height all stairs and stair construction shall be as required for Type I buildings.

All stairs and exits shall be designed and constructed as specified in Chapter 33 and as specified under Occupancy in Part III.

Sec. 1913. DOORS AND WINDOWS. (a) Doors, windows and

other openings in exterior walls shall be protected by one-hour fire-resistive construction as specified in Section 4304.

Exceptions: (1) The provisions of this Section shall not apply to doors, windows and other openings which face directly upon, and are not within fifty (50) feet in Fire Zone No. 1 or are not within thirty (30) feet in Fire Zones No. 2 and 3, of the opposite side of a public street or other public place, this distance to be measured at right angles to the plane of the wall in which such openings occur.

(2) The provisions of paragraph (a) shall not apply to openings in an outer court twenty (20) feet or more in width parallel to and facing upon a street or public place, provided such openings are not within twenty (20) feet of an adjacent property line.

**GUARDS.** Except in dwellings, all windows above the third floor line, where window stools are less than three (3) feet above finished floor, shall be provided with approved metal guards up to the three-foot height.

Approved guards shall also be provided for all other openings which do not open on balconies, porches or platforms, in accordance with Section 3501.

**Sec. 1914. PROJECTIONS FROM THE BUILDING.** Bays, oriels and similar projections shall be constructed of incombustible materials with walls, floors and roof as specified in this Chapter and in Chapter 35.

Porches and exterior balconies shall be constructed of incombustible materials, but structural steel or iron members need not be fire-proofed; provided, that loading platforms for warehouses, freight depots and other similar buildings may be of heavy timber construction with wood floors not less than one and five-eighths ( $1\frac{5}{8}$ ) inches thick. Such wood construction shall not be carried through the exterior walls of any Type II building.

Cornices and similar appendages which are a part of a Type II building shall be constructed of substantial incombustible materials and as specified in Chapter 45.

**Sec. 1915. PENTHOUSES AND SKYLIGHTS.** Penthouses shall be as required for Type I construction or shall be constructed with two-hour fire-resistive construction as specified in Chapters 36 and 43.

Skylights shall be of one-hour fire-resistive construction as specified in Chapters 34 and 43.

**Sec. 1916. COMBUSTIBLE MATERIALS REGULATED.** Unprotected steel or iron or wood will be allowed in the following places:

(1) Mezzanine floors may be of wood or unprotected steel, provided that there shall be not more than two such mezzanines in any room of any building, and provided, further, that no such mezzanine

floor or floors shall cover more than thirty-three and one-third (33 1/3) per cent of the area in the room where located.

(2) Show window frames and aprons, also show cases and other appurtenances on the first floors of stores and other similar buildings shall be constructed as specified in Chapter 34.

(3) Trim, hand rails, show window backing and temporary partitions as specified in Section 1906, picture molds, chair rails and wainscoting or baseboards may be of wood. Wood doors may be used, except in stair, elevator and other shaft enclosures or where specifically prohibited under Occupancy in Part III.

## CHAPTER 20

### TYPE III BUILDINGS

#### (Ordinary Masonry)

*(See Section 1602 for Restrictions in Fire Zone No. 1)*

Sec. 2001. DEFINITION. "Type III" or "Type III Buildings." The interior load bearing construction may be masonry or reinforced concrete walls or a structural frame of steel, reinforced concrete or wood. Foundation and exterior walls shall be of masonry or reinforced concrete. Partitions, floors and roof framing may be of wood.

An air space of not less than eighteen (18) inches measured from the top of the ceiling joists to the bottom of the roof rafter shall be required on the "flat-deck" type roof construction, to provide ventilation.

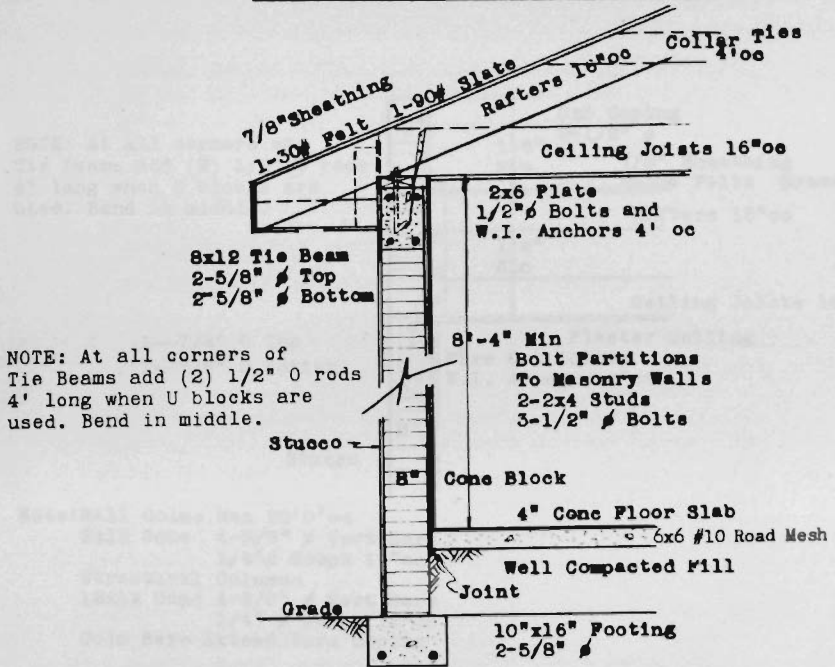
Sec. 2002. HEIGHT ALLOWABLE. Type III Buildings shall not exceed a height of fifty-five (55) feet in which height there shall be not more than five (5) stories; provided, that the height of a building erected on sloping ground may be fifty-five (55) feet plus the vertical distance equal to the vertical change in slope along and in the length of any side of such building, but in no case shall such height exceed sixty-five (65) feet above the adjacent finished ground level; and provided, further, that towers, spires and steeples erected as a part of such building and not used for habitation or storage may extend not to exceed fifteen (15) feet above such height limit.

The above allowable heights may be used only when the provisions of Chapter 23 have been complied with.

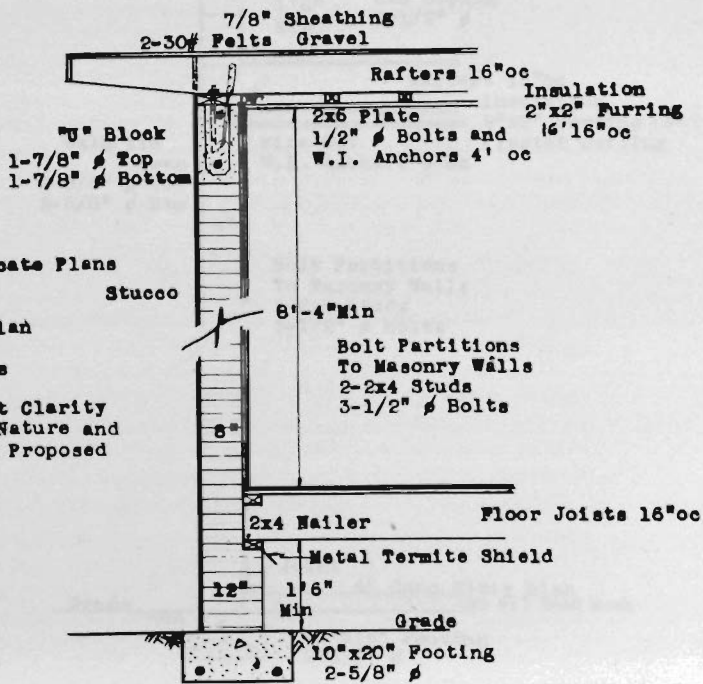
Sec. 2003. AREA ALLOWABLE. The floor area of Type III Buildings shall be limited according to Occupancy as specified in Part III.

Sec. 2004. FOUNDATIONS. Foundation walls and footings shall be of solid masonry as specified in Chapter 29 or of reinforced concrete as specified in Chapters 26 and 29, or steel grillages as specified in Chapter 27, and shall be designed as specified in Sections 2306 and 2802.

**BUILDING DIVISION, CITY OF MIAMI, FLR.**



NOTE: At all corners of Tie Beams add (2) 1/2"  $\phi$  rods 4' long when U blocks are used. Bend in middle.



Submit Duplicate Plans of  
Floor Plan  
Foundation Plan  
Elevations  
Wall Sections  
Plot Plan  
of Sufficient Clarity  
To Indicate Nature and  
Character of Proposed  
Work

**TYPICAL CBS WALL SECTIONS  
RESIDENTIAL  
Scale 1" = 1'**

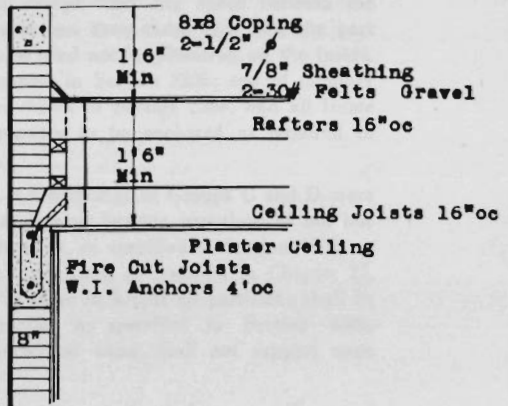


BUILDING DIVISION, CITY OF MIAMI, FLA.

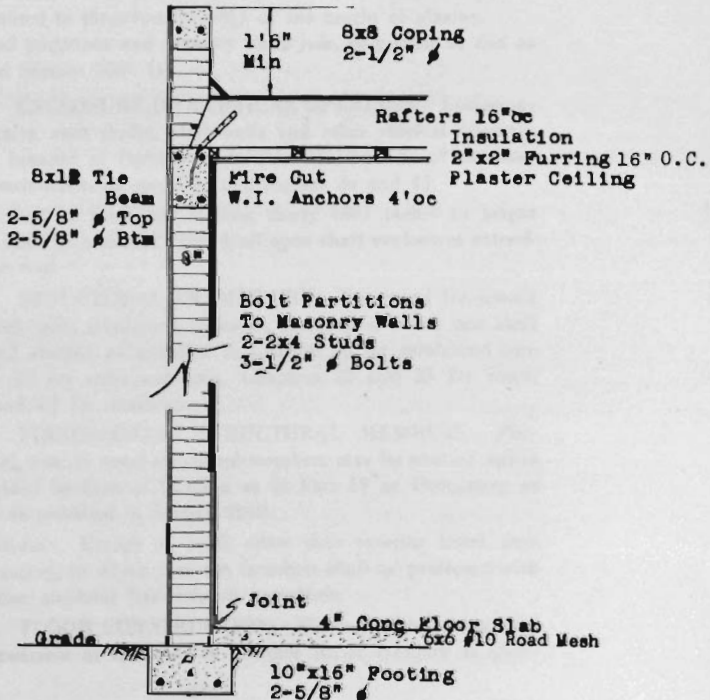
NOTE: At all corners of Tie Beams add (2) 1/2" Ø rods 4' long when U blocks are used. Bend in middle.

1-7/8" Ø Top  
1-7/8" Ø Bottom

Stucco



Note: Wall Colms Max 20'0" oc  
8x12 Conc 4-5/8" Ø Vert Bars  
1/4" Ø Hoops 12" oc  
Structural Columns  
12x12 Conc 4-5/8" Ø Vert Bars  
1/4" Ø Hoops 12" oc  
Colm Bars Extend Thru Copping



TYPICAL CBS WALL SECTIONS  
COMMERCIAL  
Scale  $\frac{1}{4}'' = 1'$

**MINIMUM ALLOWABLE DIMENSIONS**  
**Foundation Walls and Footings**  
**Private Residence Construction Group I Occupancies**

**CONTINUOUS WALLS**

**FOOTINGS**

Top Width	Footing Width	Minimum Thickness
8" Non Joist Bearing Wall	16"	10"
12" Joist Bearing Wall	20"	10"

NOTE: All footings to have not less than two (2) five-eighths ( $\frac{5}{8}$ " ) inch bars. The above dimensions are minimum requirements and shall be increased in accordance with Chapter 24 whenever conditions of loading or character of soil necessitate an increase.

Sec. 2005. EXTERIOR AND INNER COURT WALLS. All exterior walls, fire walls and fire division walls shall be of masonry or reinforced concrete, as specified in Chapter 29. All fire walls and fire division walls and exterior walls in Fire Zone No. 1 shall be of not less than four-hour fire-resistive construction as specified in Section 4302.

Inner Court walls and all other walls not forming the exterior walls of the building may be constructed as required for Type I or Type II buildings or shall be of not less than one-hour fire-resistive construction as specified in Chapter 43.

All walls within five (5) feet adjacent to property lines (except property lines abutting a street or alley) and all walls within ten (10) feet of other buildings on the same property shall be provided with parapet walls at least eighteen (18) inches above the roof at all points; provided, that parapet walls where the roof slopes more than twenty (20) degrees from the horizontal back from the exterior wall of such building, may be omitted.

Solid foundation walls under the first floor joist of all Type III buildings (except such space as is occupied by a basement or cellar) shall be provided with ventilated openings to insure ample ventilation, and such openings shall be covered with non-corrosive wire mesh of not less than sixteen (16) mesh per lineal inch. Such ventilated openings shall be proportioned on the basis of not less than two (2) square feet for each fifteen (15) lineal feet or major fraction thereof of all exterior foundation walls, distributed on not less than three (3) sides to produce adequate cross ventilation in at least one direction.

See Section 2901 for reinforced concrete tie-beam and coping requirements.

Exceptions: Walls fronting on streets having a width of at least fifty (50) feet in Fire Zone No. 1 or thirty (30) feet in Fire Zones No. 2 and 3, may be of incombustible construction with all structural members fire-proofed with not less than one-hour fire-

resistive protection. Such wall assemblies shall have at least a one-hour fire-resistive rating except when the space between the roof and a plastered ceiling is less than three (3) feet, the part of the wall covering this space need not be plastered on the inside. Wood sills to be of grade shown in Section 2205; top of masonry walls to be waterproofed, as shown in Section 2205, and all frame exterior walls resting on masonry to be anchored as required in Sections 2505, 2506 or 2507.

Sec. 2006. PARTITIONS. All buildings in Groups C and D more than two (2) stories in height shall have bearing partitions of not less than one-hour fire-resistive construction, as specified in Section 4302.

Partitions of wood shall be constructed as required in Chapter 25. In buildings of four (4) stories or more in height all partitions shall be of one-hour fire-resistive construction as specified in Section 4302. Bearing partitions, when constructed of wood, shall not support more than two (2) stories and a roof.

Exceptions: Partitions dividing portions of stores, offices and similar places occupied by one tenant only may be constructed of wood panels or similar light construction up to three-fourths ( $\frac{3}{4}$ ) of the height of the room in which placed; when more than three-fourths ( $\frac{3}{4}$ ) the height of the room, such partitions shall have not less than the upper one-fourth ( $\frac{1}{4}$ ) of the partition constructed of glass set in sash. Such partitions may be of wood lath and plaster and not limited to three-fourths ( $\frac{3}{4}$ ) of the height of glazing.

Where wood partitions and masonry walls join, they shall be tied as provided in Section 2507 (i).

Sec. 2007. ENCLOSURE OF VERTICAL OPENINGS. Enclosures for elevator shafts, vent shafts, stair wells and other vertical openings when required because of Occupancy in Part III shall be of one-hour fire-resistive construction as specified in Chapters 30 and 43.

A parapet wall or hand rail at least thirty (30) inches in height above the roof shall be provided around all open shaft enclosures extending through the roof.

Sec. 2008. STRUCTURAL FRAMEWORK. Structural framework shall be of steel, iron, reinforced concrete, masonry or wood and shall be designed and erected as specified in Chapter 26 for reinforced concrete, Chapter 27 for steel and iron, Chapters 22 and 25 for wood, Chapters 24 and 29 for masonry.

Sec. 2009. FIREPROOFING STRUCTURAL MEMBERS. Fireproofing of steel, iron or wood structural members may be omitted unless otherwise provided because of location as in Part IV or Occupancy as in Part III, or as specified in Section 2010.

Exceptions: Except on steel, other than exterior lintel, supporting masonry, in which case the members shall be protected with not less than one-hour fire-resistive protection.

Sec. 2010. FLOOR CONSTRUCTION. Floors may be constructed of reinforced concrete as specified in Chapter 26, of masonry as speci-

fied in Chapter 24, of wood as specified in Chapter 25, or of steel or iron as specified in Chapter 27.

In all buildings of Group C and D Occupancy, wherever located, the underside of all combustible floor construction shall be protected with one-hour fire-resistive construction, as specified in Chapter 43.

In buildings of four (4) stories or more in height the lower side of all metal or wood floor or roof construction shall be entirely protected by a ceiling of one-hour fire-resistive construction, as specified in Chapter 43.

In all buildings having a cellar or basement, except Group I buildings, the underside of the first floor construction when of metal or wood shall be protected by a ceiling of one-hour fire-resistive construction, as specified in Chapter 43.

Wood joists, beams and/or girders supported by masonry walls shall be anchored thereto, as specified in Section 2506.

**Sec. 2011. ROOF CONSTRUCTION.** Roof construction shall be of any Type of Construction permitted for floors except in buildings four (4) stories or more in height as specified in Section 2010 and except where otherwise required because of Occupancy in Part III.

Wood rafters, joists, purlins, beams and girders supported by masonry walls shall be anchored thereto, as specified in Section 2508.

Attic or roof spaces shall be divided into areas not exceeding twenty-five hundred (2500) square feet, as specified in Section 2510.

Roof coverings shall be as specified in Section 4305 and as required in fire zones. (See Chapter 16.)

**Sec. 2012. STAIR CONSTRUCTION.** Stairs may be of steel, iron, reinforced concrete, masonry or wood and shall be designed and constructed as specified in Chapter 33, and as specified under Occupancy in Part III.

**Sec. 2013. DOORS AND WINDOWS.** Doors, windows and other openings in exterior walls may be of wood or of plain glass and wood sash unless otherwise specified under Occupancy in Part III or Location in Part IV.

Except in dwellings, all windows above the third floor line, where window stools are less than three (3) feet above finished floor, shall be provided with approved metal guards up to the three-foot height.

Approved guards shall also be provided for all other openings which do not open on balconies, porches or platforms in accordance with Section 3501.

**Sec. 2014. PROJECTIONS FROM THE BUILDING.** Bays, oriels and similar projections shall be constructed of same materials and be of same type of construction as walls, floors and roof, as specified in this Chapter and in Chapter 35.

Except in Group I Occupancies, the supporting members and floor construction of porches and exterior balconies above the first story shall be constructed of incombustible materials but structural steel or iron

members need not be fireproofed; provided that loading platforms for warehouses, freight depots and similar buildings may be of heavy timber construction with wood floors not less than one and five-eighths ( $1\frac{5}{8}$ " ) inches thick. Such wood construction shall not be carried through the exterior walls of any Type III buildings.

Except on Group I Occupancies, and except where they do not overhang public property, cornices, marqueses and similar appendages which are a part of Type III buildings shall be constructed of substantial incombustible materials and as specified in Chapter 45.

Sec. 2015. PENTHOUSES AND SKYLIGHTS. Penthouses and other roof structures shall be of not less than one-hour fire-resistive construction as specified in Chapters 36 and 43.

Skylights shall be of no less than one-hour fire-resistive construction, as specified in Chapters 34 and 43.

Sec. 2016. COMBUSTIBLE MATERIALS REGULATED. Wood shall be permitted in a building of Type III construction except where specifically prohibited as specified under Occupancy in Part III or Location in Part IV.

No enclosed air space in any vertical wood framing shall have a dimension greater than seven (7) feet.

Combustible insulating materials may be placed in the partition, floor or roof framing but shall in no way interfere with the fire blocking or fire separations required by this Code.

## CHAPTER 21

### TYPE IV BUILDINGS (Metal Frame)

*(See Section 1602 and 1603 for Restrictions in Fire Zones)*

Sec. 2101. DEFINITION. "Type IV" or "Type IV Buildings." The structural framework shall be of steel, iron, masonry or reinforced concrete and the exterior walls and roof shall be of metal or other incombustible materials. Foundations shall be of masonry or reinforced concrete. Partitions and floor construction shall be as specified in this Chapter.

Sec. 2102. HEIGHT ALLOWABLE. Type IV Buildings shall not exceed a height of forty-five (45) feet, except as provided in sections 802, 1102 and 1202. There shall be not more than one (1) story and a mezzanine floor in the height of a Type IV building, except as provided in Section 802. The height of a Type IV building erected on sloping ground, if limited to forty-five (45) feet, may be forty-five (45) feet plus a vertical distance equal to the vertical change of slope along and in the length of any side of such building; but at no point shall such

height exceed fifty-five (55) feet above the adjacent finished ground level. Towers, spires and steeples erected as part of the building and not used for habitation or storage may extend not to exceed ten (10) feet above such height limit.

The above allowable heights may be used only when the provisions of Chapter 23 have been complied with.

Sec. 2103. AREA ALLOWABLE. The floor area of a Type IV building shall be limited, as specified under Occupancy in Part III and Location in Part IV.

Sec. 2104. FOUNDATION. Foundation walls and footings shall be of masonry as specified in Chapter 29 or of reinforced concrete as specified in Chapters 26 and 29 or steel grillages as specified in Chapter 27 and shall be designed as specified in Sections 2306 and 2802.

Solid foundation walls under the first floor joist of all Type IV buildings (except such space as is occupied by a basement or cellar) shall be provided with ventilated openings to insure ample ventilation, and such openings shall be covered with non-corrosive wire mesh of not less than sixteen (16) mesh per lineal inch. Such ventilated openings shall be proportioned on the basis of not less than two (2) square feet for each fifteen (15) lineal feet or major fraction thereof of all exterior foundation walls, distributed on not less than three (3) sides to produce adequate cross ventilation in at least one direction.

See Section 2901 for reinforced concrete tie-beams and coping requirements.

Sec. 2105. EXTERIOR WALLS. Exterior walls shall be of galvanized iron of not less than twenty-two (22) gauge, or of other approved non-corrosive metal or material, or other incombustible approved materials. Such exterior wall covering shall be attached to horizontal incombustible supports, spaced not over three (3) feet apart. Such wall covering shall be either bolted or riveted to this framework on a maximum of not less than nine (9) inches on centers, and lead washers shall be used between the bolt or rivet head and metal.

Sec. 2106. PARTITIONS. Interior partitions shall be of metal or other incombustible materials.

Sec. 2107. ENCLOSURE OF VERTICAL OPENINGS. No restrictions.

Sec. 2108. STRUCTURAL FRAMEWORK. The structural framework shall be of steel or iron as specified in Chapter 27, or masonry as specified in Chapters 24 and 29, or of reinforced concrete as specified in Chapter 26.

Sec. 2109. FIREPROOFING STRUCTURAL MEMBERS. Fireproofing of structural members shall not be required.

Sec. 2110. FLOOR CONSTRUCTION. The floors shall be of any type of construction permitted in Type III buildings or may be of wood blocks or of any incombustible material.

Sec. 2111. ROOF CONSTRUCTION. Roof construction shall be

entirely of metal or other incombustible materials, provided that wood purlins not less than four (4) inches nominal in least dimension may be used to support metal roof covering, constructed, applied and anchored as specified in Section 4305 (Par. 9).

Roof covering shall be a non-corrosive metal or may be a "Fire-Retardant" roofing as specified in Section 4305.

Sec. 2112. STAIR CONSTRUCTION. Stairs shall be of steel, iron, reinforced concrete, masonry or wood and shall comply with the requirements of Chapter 33.

Sec. 2113. DOORS AND WINDOWS. Openings in exterior walls shall be protected by doors, windows or shutters of metal or of metal frame, metal sash and wire glass; provided that such protection may be omitted when such openings are sixteen (16) feet or more from the opposite side of any street, alley or public place, from an adjoining building or from adjacent property lines.

Sec. 2114. PROJECTIONS FROM THE BUILDING. Porches, cornices, marquises, canopies and all other similar projections from the building shall be of metal or incombustible materials, except that a load-bearing platform may be constructed of wood.

Sec. 2115. PENTHOUSES AND SKYLIGHTS. Penthouses and other roof structures shall be constructed entirely of incombustible materials except that roofs of such structures may be constructed as specified in Section 2111.

S skylights shall be of one-hour fire-resistive construction, as specified in Chapters 34 and 43.

Sec. 2116. COMBUSTIBLE MATERIALS REGULATED. The inner side of walls and under side of roof shall not be ceiled with wood or wood lath and plaster but may be ceiled with any incombustible material.

## CHAPTER 22

### TYPE V BUILDINGS

#### (Wood Frame)

*(See Sections 1602 and 1603 for Restrictions in Fire Zones)  
(See Section 2511 for Termite and Fungus Control)*

Sec. 2201. DEFINITION. "Type V" or "Type V Buildings." Enclosing walls, interior walls, partitions, floors and roofs shall be of wood or of wood combination with other materials except where prohibited as specified under Occupancy in Part III, or by Fire Zones as specified in Chapter 16. Any building which cannot be classed as a Type I, II, III or IV building shall be considered as Type V.

Sec. 2202. HEIGHT ALLOWABLE. Type V Buildings shall not exceed a height of thirty-eight (38) feet in which height there shall be not more than two (2) stories and attic; provided, that the height of a building erected on sloping ground may be thirty-five (35) feet plus

a vertical distance equal to the vertical change in slope along and in the length of any side of such building but in no case shall such height exceed forty-five (45) feet above the adjacent finished ground level; provided, further, that spires, towers or steeples erected as a part of such building and not used for habitation or storage may extend not to exceed ten (10) feet above such height limit.

Sec. 2203. AREA ALLOWABLE. The maximum floor area allowable for a Type V building shall in no case exceed that specified under Occupancy in Part III, or Location in Part IV.

Sec. 2204. FOUNDATIONS. All exterior walls of Type V. buildings shall be supported on continuous approved masonry or reinforced concrete walls, or reinforced piers and shall be of sufficient size to safely support the loads imposed as determined from the character of the soil and the loading. For Group I Occupancies of not more than two (2) stories in height, reinforced concrete piers shall be not less than twelve by twelve (12"x12") inches, and such reinforced concrete piers shall be required at all corners, and when twenty-four (24) inches or higher above footing shall be reinforced with not less than four (4) three-eighths ( $\frac{3}{8}$ ) inch bars of sufficient length to penetrate into footings not less than six (6) inches and hooked. If piers are constructed of special hollow concrete masonry units (as specified in Section 2606) they shall be of a size not less than twelve by sixteen (12"x16") inches and grouted with cement mortar or concrete and shall be reinforced as specified above for reinforced concrete piers. Solid masonry piers shall be not less than twelve by twelve (12"x12") inches and the core shall be grouted as required above for hollow masonry units, and shall require the same reinforcing as specified above for reinforced concrete piers. Piers shall be not less than seven (7) feet on centers for one (1) story buildings and five (5) feet on centers for two (2) story buildings, with a wall supporting sill of not less than four by six (4"x6") inches which shall be bolted as follows: To solid masonry walls with not less than one-half ( $\frac{1}{2}$ ) inch bolts embedded at least seven (7) inches into the masonry and spread not more than six (6) feet apart; to piers with not less than two (2) one-half ( $\frac{1}{2}$ ) inch bolts embedded at least seven (7) inches into each pier. Wood sills to be of quality and protected as specified in Sections 2505, 2506 and 2511.

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#### MINIMUM ALLOWABLE DIMENSIONS

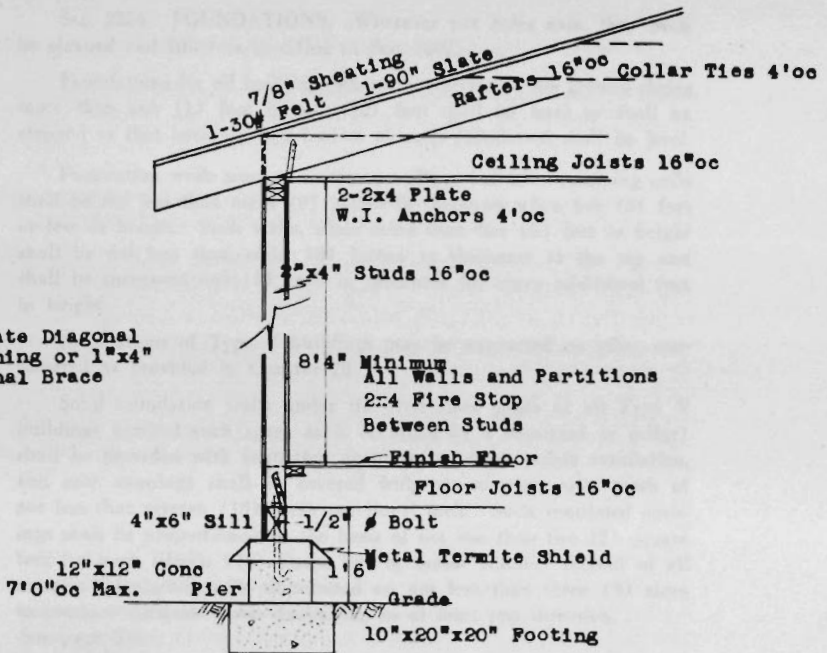
##### Foundation Walls and Footings—Private Residence Construction

Continuous Walls		Footings
Top Width	Footing Width	Minimum Thickness
6" Reinforced Concrete	14"	10"
8" Masonry Units	16"	10"

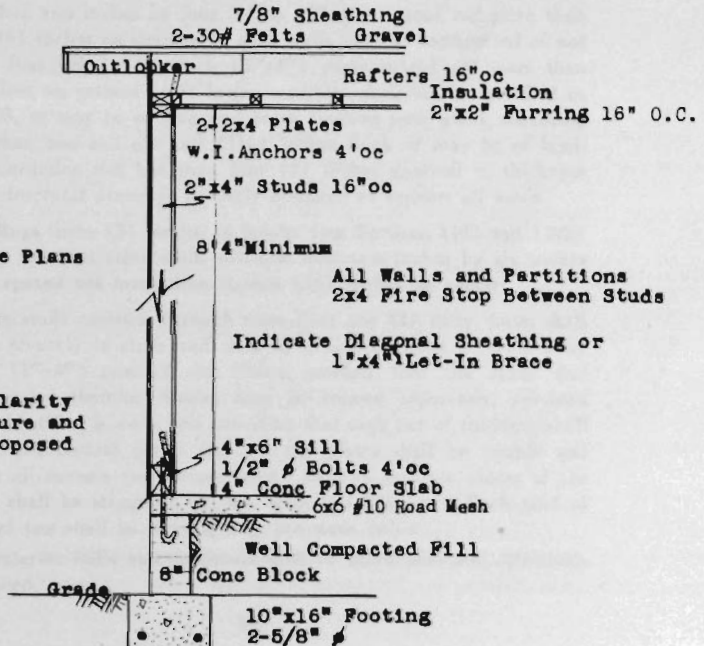
Note: All footings to have not less than two (2) five-eighths ( $\frac{5}{8}$ ) inch bars. The above dimensions are minimum requirements and shall be increased in accordance with Section 2802 whenever conditions of loading or character of soil necessitate an increase.



BUILDING DIVISION, CITY OF MIAMI, FLA.



Note:  
Indicate Diagonal  
Sheathing or 1"x4"  
Diagonal Brace



Submit Duplicate Plans  
of  
Floor Plan  
Foundation Plan  
Elevations  
Wall Sections  
Plot Plan  
Of Sufficient Clarity  
To Indicate Nature and  
Character of Proposed  
Work

TYPICAL FRAME WALL SECTIONS. RESIDENTIAL  
Scale: 1" = 1'

Sec. 2204. FOUNDATIONS. Wherever pot holes exist they shall be cleaned and filled as specified in Sec. 2802.

Foundations for all buildings where the surface of the ground slopes more than one (1) foot in ten (10) feet shall be level or shall be stepped so that both top and bottom of such foundation shall be level.

Foundation walls used as retaining walls and all other retaining walls shall be not less than eight (8) inches in thickness when five (5) feet or less in height. Such walls, when more than five (5) feet in height shall be not less than eight (8) inches in thickness at the top and shall be increased one (1) inch in thickness for every additional foot in height.

Foundations of Type V buildings may be supported on piles, constructed as provided in Chapter 28.

Solid foundation walls under the first floor joists of all Type V buildings (except such space as is occupied by a basement or cellar) shall be provided with ventilated openings to insure ample ventilation, and such openings shall be covered with non-corrosive wire mesh of not less than sixteen (16) mesh per lineal inch. Such ventilated openings shall be proportioned on the basis of not less than two (2) square feet for each fifteen (15) lineal feet or major fraction thereof of all exterior foundation walls distributed on not less than three (3) sides to produce adequate cross-ventilation, in at least one direction.

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Sec. 2205. EXTERIOR WALLS AND WALL COVERINGS. Exterior walls of all Type V buildings shall be constructed with studding not less than two inches by four inches (2"x4") spaced not more than sixteen (16) inches on centers, or such walls may be constructed of not less than four-inch by four-inch (4"x4") posts spaced not more than five (5) feet on centers or of larger members designed as specified in Chapter 25, or may be of post and beam framing with plank sheathing not less than one and one-half (1½) inches thick or may be of laminated construction not less than four (4) inches nominal in thickness with the structural assembly properly designed to support all loads.

Buildings three (3) stories in height (see Sections 1102 and 1202) shall have the first story studs not less than two inches by six inches (2"x6") spaced not more than sixteen (16) inches on centers.

Where studs continue through more than one (1) story, joists shall be nailed securely to studs and shall be supported upon a one-inch by four-inch (1"x4") nominal size ribbon notched into the studs and securely nailed thereto. Stories may be framed separately, provided diagonal sheathing is used, and providing that each tier of studding shall have top and bottom plates and the top plates shall be double and lapped at all corners and intersections. Laps in separate pieces of the top plate shall be staggered not less than two (2) feet. Each stud of the second tier shall be directly over the studs below.

All exterior walls and partitions shall be thoroughly and effectively angle braced.

Maximum allowable story height of two by four-inch (2"x4") stud framing shall be twelve (12) feet and of two-inch by six-inch (2"x6") stud framing shall be sixteen (16) feet unless the wall is supported laterally by adequate framing in a horizontal direction, perpendicular to the direction of the stud walls and shall be braced with not less than one inch by four inch (1"x4") nominal size ribbon notched into the outside face of the studs extending from sill or plate to corner posts and spiked on each stud or post with not less than two (2) 8d nails.

All walls shall be effectively fire stopped at the floor and ceiling and at the spring of cove in a coved ceiling. Fire stops shall also be placed between the floor and the ceiling in such a manner that there shall be no concealed air space with a dimension greater than seven (7) feet. Fire stopping shall consist of not less than two (2) inch nominal size material and shall be the full thickness of the stud wall. Where stories are not framed separately, fire stopping shall be placed behind the ribbon at the ceiling line and at the top of joists at the floor line. Such fire stopping shall be two (2) inches nominal size in thickness and the full width of the stud. Stud framing on exterior masonry or concrete walls above the first floor shall be anchored as required in Section 2506.

All openings four (4) feet wide or less shall be provided with double-headers not less than two (2) inches nominal size in thickness placed on edge, and such headers shall have two (2) inches nominal size solid bearing to the floor or bottom plate. All openings more than four (4) feet wide shall be trussed or provided with lintels which shall have not less than two (2) inch nominal size solid bearing to the floor or bottom plate. (See Section 2507, paragraph (g).)

Underpinning shall be not less in size than the studding of the story above; provided, that all underpinning exceeding four (4) feet in height shall be not less in size than the studding required for an additional story. All such underpinning shall be effectively braced.

**FOUNDATION VENTS.** Solid foundation walls under the first floor joists of all Type V buildings (except such space as is occupied by a basement or cellar) shall be provided with ventilated openings to insure ample ventilation, and such openings shall be covered with non-corrosive wire mesh of not less than sixteen (16) mesh per lineal inch. Such ventilated openings shall be proportioned on the basis of not less than two (2) square feet for each fifteen (15) lineal feet or major fraction thereof of all exterior foundation walls distributed on not less than three (3) sides to produce adequate cross-ventilation in at least one direction.

**SILLS.** An approved solid wood sill of quality hereinafter specified in this Section of not less than four (4) inches nominal thickness and not less than six (6) inches nominal width and in no case less in width than the wall framing supported thereon, shall be placed under all walls or partitions that rest on masonry or reinforced concrete foundations.

Lumber specified in the above locations shall have physical properties equal to eighty-five (85) per cent heart Long Leaf Southern Yellow Pine or No. 1 Common Tidewater Red Cypress, or No. 1 Common all-heart Port Orford Cedar, Western Red Cedar or Cypress, the heart Common grade of Redwood, or the No. 1 Common grade of any lumber which is treated with an approved preservative by any method that will thoroughly impregnate the wood through the sap to the heart. Brush treatment is not approved, except that it is required on end cuts and all other cuts in timber treated as specified above.

**ISOLATION.** All sills or partitions that rest on masonry or reinforced concrete walls or piers must have the top of the masonry wall or pier covered with eighty-five (85) pound slate covered roofing or twenty-four (24) gauge galvanized iron or other approved material before the sill is placed. Sill to be anchored as required in Sections 2204 and 2506.

All Type V buildings three (3) stories in height (See Sections 1102 and 1202) shall have the exterior walls thoroughly covered with a solid diagonal sheathing of wood not less than five-eighths ( $\frac{5}{8}$ ) of an inch thick, or approved fiber-board not less than seven-sixteenths ( $\frac{7}{16}$ ) of an inch thick or approved incombustible sheathing not less than one-half ( $\frac{1}{2}$ ) inch thick.

All exterior walls shall be covered on the outside with weatherboarding, shingles, stucco, masonry veneer or galvanized metal as specified in this Section or by other similar approved materials.

The minimum requirements for wall coverings for Type V buildings are as specified in parts (a), (b), (c), (d) and (e) of this Section.

**Sec. 2205. WEATHERBOARDING.** (a) Weatherboarding, when in place, shall have an average thickness of not less than five-eighths ( $\frac{5}{8}$ ) of an inch and a minimum thickness of not less than three-eighths ( $\frac{3}{8}$ ) of an inch. Such weatherboarding shall be securely nailed to the studding with not less than two nails to each stud in each piece of such weatherboarding. Horizontal joints in the weatherboarding shall be tongued and grooved or shiplapped joints, or such weatherboarding shall be laid shingle fashion and lapped not less than one-half ( $\frac{1}{2}$ ) inch. Siding patterns known as rustic, drop siding or shiplap shall have an average thickness in place of not less than nineteen thirty-seconds ( $\frac{19}{32}$ ) of an inch and a minimum thickness of not less than three-eighths ( $\frac{3}{8}$ ) of an inch. Bevel siding shall have a minimum thickness measured at the butt section of not less than twenty-thirty-seconds ( $\frac{20}{32}$ ) of an inch and a tip thickness of not less than one-quarter ( $\frac{1}{4}$ ) inch. Fourteen thirty-seconds ( $\frac{14}{32}$ ) thickness shall be permissible in width not greater than six (6) inches and limited to one (1) story and fourteen (14) feet in height. (Recommended but not mandatory: Studs shall be covered on the outside face with one layer of two (2) ply waterproofed building paper applied and tacked shingle fashion with joints horizontal; horizontal joints of the paper shall be lapped at least two (2) inches and perpendicular joints at least six (6) inches.)

(b) **SHINGLES OR SHAKES.** Shingles or Shakes may be used for the exterior wall covering when applied as follows: The outside face of the studs shall be first sheathed with board of uniform thickness not less than twenty-five thirty-seconds (25/32) of an inch thick and such sheathing shall be securely nailed to the studding with not less than two (2) eight (8) penny common nails to each stud in each piece of sheathing eight (8) inches or less in width and not less than three (3) such nails when such sheathing boards exceed eight (8) inches in width. Shingles or shakes shall be nailed securely to the wall sheathing with at least two nails in each piece. (Recommended but not mandatory: Waterproofed building paper as noted in sub-Section (a) above.)

(c) **Stucco.** Stucco shall be applied over solid diagonal sheathing or approved similar backing. Stucco shall consist of **NOT LESS THAN two (2) coats.**

In all cases except in back plastered construction a substantial waterproofed paper or asphalt saturated felt weighing not less than fourteen (14) pounds per one hundred (100) square feet or any substantial waterproofed paper which successfully passes a sixty (60) pound Mullen test shall be applied weatherboard fashion directly over the studs or sheathing. Horizontal joints shall be lapped not less than two (2) inches and vertical joints not less than six (6) inches.

In all cases a galvanized metal reinforcement shall be used of either expanded metal or wire fabric as follows:

(1) Expanded galvanized metal cut from sheets not less than twenty (20) U. S. gauge in thickness with mesh not less than three-fourths ( $\frac{3}{4}$ ) of an inch in least dimension nor more than four (4) inches in greatest dimension and not exceeding six (6) square inches in area; the fabric shall weigh not less than one and eight-tenths (1.8) pounds per square yard.

(2) Wire fabric composed of wires not smaller than shown in the following table and with no openings or mesh therein less than three-fourths ( $\frac{3}{4}$ ) of an inch nor greater than two (2) inches. The minimum allowable gauge of the wire for the various meshes shall be as follows:

For openings not exceeding 1 inch—18 W. & M. Gauge.

For openings not exceeding 2 inches—16 W. & M. Gauge

(3) Expanded galvanized metal lath weighing not less than three (3) pounds per square yard.

(4) Electrically welded or hot dipped galvanized after weaving, wire of sixteen (16) W. & M. gauge with openings not exceeding two (2) inches in greatest dimensions and not exceeding four (4) square inches in area.

Galvanized metal reinforcing shall be securely fixed in place, using a furring device that will positively fix the metal reinforcing at least one-fourth ( $\frac{1}{4}$ ) inch from the studs, sheathing or other backing. No form of strip or metal rods shall be used for furring which will serve to weaken the stucco. Metal reinforcing shall be secured with not less

than four penny (4d) nails driven to at least three-fourth ( $\frac{3}{4}$ ) inch penetration in the studs or sheathing. Nails and furring devices shall be not more than six (6) inches apart vertically. Horizontal and vertical joints of the metal reinforcing shall be lapped at least one full mesh. All horizontal joints between studding shall have not less than one tie with number eighteen (No. 18) annealed tie wire except when building is sheathed and all vertical joints shall be made at the studs when attached directly thereto. All lath shall be applied with one and one-half ( $1\frac{1}{2}$ ) inch self-furring nails, galvanized, unless self-furring lath is used.

Stucco shall consist of two (2) coats: (1) First or scratch coat shall completely cover the metal lath or reinforcing. (2) Finish coat. The total thickness of the two coats shall be not less than seven-eighths ( $\frac{7}{8}$ ) of an inch thick at every point.

The stucco shall be of Portland cement and sand as specified in Chapter 26, with an addition of not more than ten (10) per cent of hydrated lime or similar material based on volume of cement in the scratch coat and with not more than twenty (20%) per cent of hydrated lime or similar material based on volume of cement in the finish coat.

The first or scratch coat of stucco shall be shoved thoroughly through the galvanized metal reinforcing until all space between the metal and the backing is filled solidly and fully covering lath and reinforcing; and such coat shall be kept thoroughly moist during the first twenty-four (24) hours after being applied. The first or scratch coat shall be kept thoroughly moist for a period of not less than twenty-four (24) hours before applying finishing coat, and shall be thoroughly wetted immediately prior to applying the finish coat in order to provide a proper bond.

The above galvanized metal lath requirements shall not apply to stucco placed on masonry backing, but metal lath shall overlap intersecting masonry at least two (2) inches. Before applying stucco on any masonry backing such backing shall be thoroughly washed and cleaned.

Gunite, as defined in Chapter 26, shall be applied in not less than two (2) coats, and shall be reinforced as specified for "Stucco" in this section. Gunite shall be not less than five-eighths ( $\frac{5}{8}$ " ) of an inch in thickness.

(d) Masonry Veneer. In all cases before applying masonry veneer a substantial waterproofed paper or asphalt saturated felt weighing not less than fourteen (14) pounds per one hundred (100) square feet shall be applied weatherboard fashion directly over the solid diagonal sheathing as specified for "Stucco" under part (c) of this Section.

Masonry veneer shall not be less than three and three-quarters ( $3\frac{3}{4}$ " ) inches thick. The masonry shall be bonded to the solid diagonal sheathing by means of not less than twenty-four (24) gauge galvanized iron strips securely nailed to the sheathing, and spaced not more than sixteen (16) inches apart horizontally and twelve (12) inches apart

**vertically.** Such veneer shall not be permitted above two (2) stories, except for gables. The veneer shall be supported directly on the foundation.

(e) Galvanized iron not less than twenty-two (22) gauge may be applied over diagonal solid sheathing with approved galvanized bolts and washers as specified in Section 2105, spaced not more than twelve (12) inches on center horizontally and not more than two feet (2') vertically.

**Sec. 2206. INTERIOR PARTITIONS.** All interior partitions shall be constructed, framed and fire stopped as required for exterior walls, as specified in Section 2205, except that interior non-bearing partitions may have a single top plate, and except that where non-bearing partitions are approximately parallel and not more than four (4) feet apart, two inch by three inch (2"x3") studs sixteen (16) inches on centers, may be used.

**Sec. 2207. FLOOR CONSTRUCTION.** Girders supporting only first floor joists in residence buildings shall be solid and not less than four inches by six inches (4"x6") nominal size (placed on edge) for spans not exceeding those specified in Section 2204.

The following table gives the maximum allowable spans for floor joists for Southern Yellow Pine, or Douglas fir (Oregon pine) using materials of grade equal to No. 1 Common, surfaced four sides, American Lumber Standard sizes and based on a uniform distributed live load of forty (40) pounds per square foot.

See page 310 for new chart

Size of Joists (Inches)	Spacing of Joists, Center to Center (Inches)	Maximum Allowable Span (Feet and Inches)	
		Plastered Ceiling Below	Without Plastered Ceiling Below
2 x 6	12	10-0	12-0
	16	9-1	10-0
2 x 8	12	13-0	15-11
	16	12-1	13-11
2 x 10	12	16-8	19-11
	16	15-3	17-4
	24	13-5	14-5
2 x 12	12	20-1	23-11
	16	18-5	20-11
	24	16-2	17-5
2 x 14	12	23-5	27-8
	16	21-5	24-4
	24	18-11	20-3
3 x 6	12	11-8	15-0
	16	10-8	13-1
	24	9-4	10-10
3 x 8	12	15-4	19-8
	16	14-0	17-4
	24	12-4	14-4
3 x 10	12	19-3	24-7
	16	17-8	21-8
	24	15-7	18-0
3 x 12	12	23-1	29-4
	16	21-3	25-11
	24	18-9	21-8
3 x 14	12	26-11	30-0
	16	24-10	30-0
	24	22-1	25-2

See Page 310

See page 311 for new chart

Joists of other grades, other woods and other sizes may be used, in which case they shall not be stressed to exceed the maximum allowable fiber stress as specified in Chapter 25.

Floor joists shall have a clearance of not less than eighteen (18) inches between the bottom of the joists and the surface of the ground underneath. (See Section 2511.)

Joists under bearing partitions shall be installed as specified in Section 2506-(j). All joists, beams and girders shall be framed away at least two (2) inches from all flues and chimneys and at least four (4) inches from the back of any fireplace. All wood floor joists having a span of more than six (6') feet shall have bridging as specified in Section 2506-(k).



Solid backing not less than two (2) inches in thickness and the full depth of the joists shall be provided in the following places: over all girders except when not ceiled on the under side of joists, bearing walls, bearing partitions and around all stairways or other vertical openings. Such solid blocking shall serve as the required bridging specified in Section 2506-(k).

Trimmers and header joists more than four (4) feet long shall be doubled. Header joists over six (6) feet long and tail joists over twelve (12) feet long shall be hung in stirrups or metal joists hangars. Header beams shall be placed not closer than eighteen (18) inches from the face of a chimney. All space between chimney and wood joists or beams shall be filled with loose incombustible materials placed in an incombustible support, or metal collar connected to the chimney and fastened to the joists, beams or flooring to form an effective fire stop.

All joists shall have a minimum bearing of not less than four (4) inches on the supporting member; except where entering exterior stud walls they shall extend through to the outer edge of the stud, shall be securely nailed to the stud, and shall be supported on a ribbon let into the studs if no plate is provided. (See Section 2506-h. Anchors shall be required as specified in Section 2506-f).

Cutting of wood girders, beams or joists shall be limited to that permitted in Section 2506-(m).

Sec. 2208. ROOF AND CEILING CONSTRUCTION. The following table gives the maximum allowable span for ceiling joists and rafters of Southern Yellow Pine or Douglas Fir (Oregon Pine), using materials of grade equal to No. 1 Common, surfaced four (4) sides, American Lumber Standard sizes.

Size of Joists (Inches)	Spacing of Joists, Center to Center (Inches)	Maximum Allowable Span (Feet and Inches)	
		For Ceiling Joists	For Roof Rafters
2 x 4	12	11- 0	10- 4
	16	10- 0	9- 0
2 x 6	12	16- 7	15- 8
	16	15- 4	13- 9
	24	13- 8	11- 5
2 x 8	12	21- 8	20- 8
	16	20- 2	18- 2
	24	18- 0	15- 1
2 x 10	12	26-10	25- 9
	16	25- 0	22- 9
	24	22- 6	18-10

\*Note: Limited to one (1) story buildings of Group I Occupancy  
See page 310 for new chart

See Page 311

and shall be used only for ceiling joists and/or rafters when the roof framing is designed for and is covered with roofings of light weight coverings, such as wood shingles, asphalt composition and other similar light types.

Roof framing for pitched type roofs shall be anchored by not less than the equivalent of one inch by six inch (1"x6") nominal size boards securely spiked with not less than two (2) eight (8) penny nails to at least each third (3rd) rafter at a point near the center of the span, with the opposite end securely spiked in like manner to the ceiling joist or partition immediately underneath; such bracing shall be placed on each slope (or rise) between plate of exterior walls and the ridge; in addition to the above anchorage, each rafter shall be laterally braced to each other at a point underneath the ridge, in order to form a brace known as the "A" Type or "Collar Beam," provided, however, that roof construction of the "Exposed Cathedral Type" or "Exposed Shed Type" may have such bracing omitted when they are securely anchored and braced in an approved manner to the satisfaction of the Building Inspector.

Roof framing for the flat deck type roof construction shall be anchored in a like manner by at least two (2) braces evenly spaced (at third points) of the span. An air space of not less than eighteen (18) inches shall be required between the top of the ceiling joists and the bottom of the roof rafter for ventilation.

Roof framing and trussing of all other type roof construction shall be anchored in an approved manner or by an approved method to the satisfaction of the Building Inspector.

Roof joists when supported on a ribbon shall be securely nailed to the stud and ceiling joist; and when supported on a plate, shall be securely nailed to the ceiling joists and plate and at least each second rafter shall be anchored to the plate with an approved metal strap anchor.

Joists or rafters of other grades, other woods and other sizes may be used, in which case they shall not be stressed to exceed the maximum allowable fiber stress as specified in Chapter 25.

The allowable span of roof rafter shall be measured from plate to ridge, except that where rafters are braced to ceiling joists and a complete truss is formed, to the satisfaction of the Building Inspector, the span shall be considered as the distance between intersecting points of trussing, when the allowable stresses are not exceeded.

Roof spaces shall be subdivided by a tightly fitted partition of matched wood or approved incombustible materials extending from the ceiling to the roof sheathing, so located as to subdivide this space into areas not exceeding twenty-five hundred (2500) square feet. All openings in such partitions shall have self-closing doors or equally effective devices to provide effective resistance to the passage of flames and gases.

**Sec. 2209. ROOF COVERING.** Roof covering shall be "fire re-

tardant" roofing as specified in Section 4305, as required for Type V buildings based on occupation as defined in Part III of this Code, provided the requirements of Chapter 16 for types of construction in Fire Zone are complied with; and provided further that dwellings as defined in Chapter 14 may be covered by "ordinary" roofing. Wherever a composition roofing is used the roof construction shall be solidly sheathed in wood, sheathing to be not less than twenty-five thirty-seconds (25/32) of an inch thick, provided, however, stripping will be permitted under wood shingles.

Stripping to be not less than one by four (1x4") inch nominal size, set not more than eight (8) inches on center and nailed with not less than two eight-penny nails to each supporting rafter.

Sec. 2210. ENCLOSURE OF VERTICAL OPENINGS. Except for dwellings under Group I Occupancy, enclosure walls for elevator shafts, vent shafts, stair wells and similar vertical openings through a building shall be not less than one-hour fire-resistive construction as specified in Chapter 30 and 43 and where required under Occupancy in Part III, except that chute and dumb-waiter shafts with a cross-sectional area of not more than four (4) square feet may be lined with not less than one-fourth ( $\frac{1}{4}$ ) inch asbestos covered with not less than twenty-six (26) gauge sheet metal with all joints in such sheet metal lock-lapped. All openings into any such vertical enclosure shall be closed with a slab wood door not less than one and three-eighths ( $1\frac{3}{8}$ ) inches thick at all points, or doors of equivalent or greater fire resistance, all so hinged and hung as to be gravity self-closing.

Sec. 2211. GENERAL. Other parts of Type V buildings may be constructed of wood, or shall be constructed of approved combustible materials, and all such wood construction shall be as specified in Chapter 25. The carrying capacity of all members shall be calculated by the accepted principles of mechanics. The actual dimensions of timbers shall be used and not the nominal sizes in computations for stress and determination of size.

Combustible insulating materials may be placed in partitions, floors or roof framing, but shall in no way interfere with the fire blocking or fire separations required by this Code.

Sec. 2212. ATTACHED GARAGES. When a private garage is located underneath or attached to a Group I Building, the following regulations as to its construction shall be rigidly observed:

The ceiling construction above the garage, when it is located beneath the roof when the garage is attached, shall be unpierced and shall have a fire-resistance of one (1) hour, as specified in Chapter 43. The floor may be of earth fill, or any incombustible material.

Walls and partitions of the garage portions shall be one (1) hour fire-resistive construction, as specified in Chapter 43.

Openings into the garage shall be restricted to a single doorway.

such openings shall be protected by a solid slab wood door, not less than one and three-eighths ( $1\frac{3}{8}$ " ) inches thick at all points, a metal-covered door, or other closure of equivalent or greater fire-resistance, all mounted so as to be gravity closing, or with spring hinges or door closers. No glass shall be permitted in such door.

**GARAGE VENTILATION.** Private garages which are constructed in conjunction with any Group H or I buildings and which have openings into such buildings shall be equipped with fixed levered or screened openings or exhaust ventilation and with exhaust openings located within six (6) feet of the floor. The clear area of the levered openings or the openings into the exhaust ducts shall be not less than sixty (60) square inches per car stored in such private garage. Under no circumstance shall a private garage have any opening into a living or sleeping room.

Sec. 2213. Except in dwellings, all windows above the third floor line, where window stools are less than three (3) feet above finished floor, shall be provided with approved metal guards up to the three-foot height. Approved guards shall also be provided for all other openings which do not open on balconies, porches or platforms, in accordance with Sections 3401 and 3501.

## PART VI.

# ENGINEERING REGULATIONS, QUALITY AND DESIGN OF THE MATERIALS OF CONSTRUCTION

## CHAPTER 23

### Live and Dead Loads

Sec. 2301. **DEFINITIONS.** **Dead Load.** The dead load of a building shall include the weight of the walls, permanent stationary construction entering into and becoming a part of a building.

**Live Load.** The live load includes all loads except dead loads.

Sec. 2302. **GENERAL.** (a) **Loads.** Buildings and all parts thereof shall be of sufficient strength to support the estimated or actual imposed dead and live loads in addition to their own proper dead load, without exceeding the stresses noted elsewhere in this Code, provided that no building or part thereof shall be designed for live loads less than those specified in the following sections. Impact shall be considered in the design of any structure where impact loads occur.

(b) **Design.** Any system or method of construction to be used shall admit of a rational analysis in accordance with well established principles of mechanics.

Sec. 2303. **SPECIAL LOAD CONSIDERATIONS.** (a) **Provision**

shall be made in designing office floors for load of two thousand (2000) pounds placed upon any space two and one-half ( $2\frac{1}{2}$ ) feet square wherever this load upon an otherwise unloaded floor would produce stresses greater than those by a uniformly distributed load of fifty (50) pounds per square foot.

(h) Corridors and stairs in dwellings shall be designed for not less than forty (40) pounds per square foot.

(c) In designing floors to be used for industrial or commercial purposes the actual live load caused by the use to which the building or part of the building is to be put, shall be used in the design of such building or part thereof, and special provision shall be made for machine or apparatus loads when such machine or apparatus would cause a greater load than specified in Section 2304.

(d) Floors in office buildings and in other buildings subject to shifting of partitions without reference to arrangement of floor beams or girders shall be designed to support in addition to other loads a single partition of the type used in the building placed in any position.

(e) Public garages and commercial or industrial buildings in which loaded trucks are placed, used or stored shall have the floor systems designed for maximum loads in the most critical position.

Sec. 2304. UNIT LIVE LOADS. The following unit loads shall be taken as the minimum live loads in pounds per square foot to be used in the design of buildings for the occupancies listed, and loads at least equal shall be assumed for uses not listed in this Section but which create or accommodate similar loadings.

Apartments .....	40
Armories .....	150
Auditoriums—Fixed Seats .....	75
Movable Seats .....	100
Balconies and Galleries—Fixed Seats .....	75
Movable Seats .....	100
Dance Halls .....	100
Drill Rooms .....	100
Dwellings .....	40
Exterior Balconies .....	100
Fire Escapes .....	100
Garages .....	100
Gymnasiums .....	100
Hospitals—Wards and Rooms .....	40
Corridors and Public Rooms .....	80
Hotels—Guest Rooms .....	40
Corridors .....	80
Public Rooms .....	100
Corridors (Public Main Floor) .....	100
Libraries—Reading Rooms .....	60
Corridors .....	100
Stack Rooms .....	125*
Loft Building .....	100

Manufacturing—Light .....	75
Heavy .....	125*
Marquise .....	60*
Offices .....	50
Printing Plants—Press Rooms.....	150*
Composing and Linotype Rooms .....	100*
Public Rooms .....	100
Rest Rooms .....	50
Reviewing Stands and Bleachers .....	100
Roof Loads.....	(See Section 2305)
Schools—Class Rooms .....	40
Corridors .....	80
Sidewalks—800 lbs. Concentrated or .....	250
Skating Rinks .....	100
Stairways (Except Residences) .....	80
Storage—Light .....	125
Heavy (Load to be determined from proposed use or occupancy, but never less than) .....	250*
Stores—Retail (Light Merchandise) .....	75
Wholesale (Light Merchandise) .....	100

\*Load to be determined from proposed use or occupancy but never less than specified here.

Sec. 2305. ROOF LOADS. Roofs having a rise of four (4) inches or less per foot of horizontal projection shall be designed for a vertical live load of thirty (30) pounds per square foot of horizontal projection applied to any or all slopes. Roofs with a rise more than four (4) inches per foot shall be designed for a live load force acting normal to the slope, such live load to be computed in accord with accepted Engineering Principles and in accord with Section 2307.

Sec. 2306. REDUCTION OF LIVE LOADS. The following reductions in assumed live loads shall be permitted in designing of columns, piers, walls, foundations and girders:

(1) No reduction of the assumed live load shall be allowed in the design of any slabs, joists or beams.

(2) A reduction of the total live load used in the design of girders based on a certain tributary floor area shall be permitted as noted in the following schedule. This reduction shall not be carried into the columns nor shall such reduction be used in design of buildings to be used or occupied as warehouses or for storage purposes.

Reduction Allowed	Tributary Floor Area
5%	100 sq. ft.
10%	200 sq. ft.
15%	300 sq. ft. or more.

(3) For determining the total live loads carried by columns the following reductions shall be permitted, the reductions being based on the assumed live loads applied to the tributary floor area:

Allowable Reductions for Warehouses and Storage Buildings:

Roof.....	0 per cent
1st Floor below roof.....	0 per cent
2nd Floor below roof.....	5 per cent
3rd Floor below roof.....	10 per cent
4th Floor below roof.....	15 per cent
5th Floor below roof and succeeding floors.....	20 per cent

Live Load Reductions for Manufacturing Buildings, Stores and Garages (Columns)

Roof.....	0 per cent
1st Floor below roof.....	0 per cent
2nd Floor below roof.....	10 per cent
3rd Floor below roof.....	20 per cent
4th Floor and succeeding floors below roof.....	30 per cent

Allowable Live Load Reductions for All Other Buildings, Except Warehouses or Storage Buildings

Roof.....	0 per cent
1st Floor below roof.....	0 per cent
2nd Floor below roof.....	10 per cent
3rd Floor below roof.....	20 per cent
4th Floor below roof.....	30 per cent
5th Floor below roof.....	40 per cent
6th Floor below roof.....	45 per cent
7th Floor and succeeding floors below roof.....	50 per cent

(4) The base area of the footings of all buildings shall be designed in the following manner: The area of the footing which has the largest percentage of live load to total load shall be determined by dividing the total load by the allowable soil load. From the area thus obtained the dead load soil pressure of such footing is determined and the areas of all other footings of the building shall be determined on the basis of their respective dead loads only and such dead load soil pressure. In no case shall the load per square foot under any portion of any footing, due to the combined dead, live, wind and/or any other loads, exceed the safe sustaining power of the soil upon which the footing rests. The total reduced live load occurring in the column immediately above the footing shall be the live load used in the above computation.

Sec. 2307. WIND PRESSURE. For purposes of design the wind pressure upon all vertical plane surfaces of all buildings and structures shall conform to the following table:

Maximum Height Above Ground	Normal Wind Pressure Over Entire Height
25 feet	25 pounds per sq. ft.
75 feet	35 pounds per sq. ft.
over 75 feet	45 pounds per sq. ft.

Exceptions:

- (a) Buildings and structures whose height does not exceed

one and one-half ( $1\frac{1}{2}$ ) times the least width, need not be designed for the wind loads tabulated above. This exception does not apply to buildings and structures in which the width is a single structural span or in which the interior construction does not materially contribute to the lateral rigidity of the structure.

(b) The wind pressure upon sprinkler tanks, sky signs, or other similar exposed structures and their supports shall be taken as not less than fifty (50) pounds per square foot of the gross area of the plane surface, acting in any direction. In calculating the wind pressure on circular tanks, towers or stacks this pressure shall be assumed to act on six-tenths ( $6/10$ ) of the projected area.

(c) The overturning moment resulting from the above calculations shall in no case exceed fifty (50) per cent of the dead load resisting moment.

(d) For combined stresses due to wind and other loads the allowable unit stresses may be increased thirty-three and one-third ( $33\frac{1}{3}$ ) per cent in excess of the values given in Chapters 24, 25, 26 and 27, except that in members whose wind stress is fifty (50) per cent or more of the total stress in that member, no increase may be made in the allowable stresses. In no case shall the section be less than required if the wind stress be neglected.

#### Sec. 2308. LIVE LOADS AND SEATING CAPACITY POSTED.

The live loads for which each floor or part thereof of a commercial or industrial building is or has been designed, shall have such designed live loads conspicuously posted by the owner in that part of each story in which they apply, using durable metal signs, and it shall be unlawful to remove or deface such notices. The occupant of the building shall be responsible for keeping the actual load below the allowable limits.

The maximum seating capacity shall be conspicuously posted by the owner of the building by means of durable metal signs placed in each assembly room, auditorium or room used for a similar purpose where fixed seats are not installed, and it shall be unlawful to remove or deface such notice or to permit more than this legal number of persons within such space.

Sec. 2309. OCCUPANCY PERMITS FOR CHANGED FLOOR LOADING. Plans for other than residential buildings filed with the Building Inspector with applications for permits shall show on each drawing the live loads per square foot of area covered, for which the building is designed, and occupancy permits for buildings hereafter erected shall not be issued until the floor load signs, required by Section 2308, have been installed. No changes in the occupancy of a building now existing or hereafter erected shall be made until a revised occupancy permit has been issued by the Building Inspector certifying that the floors are suitable for the loads characteristic of the proposed occupancy. (See Sections 206 and 207. )

Sec. 2310. RETAINING WALLS AND BASEMENT FLOORS. When earth or water, or earth and water cause or may cause a pressure on any building or structure, such total pressure created shall be cal-



culated in accordance with the best accepted engineering practice, and such calculations and design shall take into account any possible surcharge due to moving or fixed loads.

## CHAPTER 24 MASONRY

### (Quality and Design)

#### Sec. 2401. QUALITY OF MATERIALS AND TESTS REQUIRED.

The quality and design of materials used in the construction of masonry buildings or of the masonry portions of any building shall conform to the minimum standards as specified in this Chapter. (See Chapter 29 for methods of assembling masonry units into any walls).

The following materials, when used with mortar and plain concrete and gypsum shall be classed as masonry and whenever used in any building shall conform to the minimum requirements specified in this Chapter.

- |  |                             |
|--|-----------------------------|
| (a) Brick (clay, sand-lime or concrete). | (d) Gypsum (see note (a*)). |
| (b) Concrete (plain concrete).           | (e) Hollow tile (clay).     |
| (c) Concrete (block or tile).            | (f) Stone.                  |

\*Note: (a) This applies only to gypsum used in floor or roof construction, non-bearing walls or partitions, fireproofing or similar uses where not exposed to the weather.

The Building Inspector may require structural and fire-resistive materials to be subjected to tests to determine their quality whenever there is reason to believe the materials used do not come up to the requirements of this Code and may require any tests to be repeated if there is any reason to believe that the material is no longer up to the specifications on which the approval was based.

In any case where the Building Inspector orders a test to be made, the Owner, General Contractor or Manufacturer shall pay, except where there is no General Contractor, the Owner shall pay for this test.

Test of materials shall be made in accordance with the Standard Specifications of the American Society for Testing Materials as such standard specifications are noted in this Chapter.

"Brick" as used in this Code shall mean a structural unit of burned clay or shale, sand-lime or concrete, formed while plastic into a rectangular prism, usually solid and about eight by three and three-quarters by two and one-quarter ( $8 \times 3\frac{3}{4} \times 2\frac{1}{4}$ ) inches in size, and shall be of the quality specified in Section 2402, 2403 and 2404.

Sec. 2402. BURNED CLAY OR SHALE BRICK. Brick as used in this Code shall mean a structural unit of burned clay or shale formed

while plastic into a rectangular prism, usually solid and about eight inches by three and three-quarters inches by two and one-fourth inches ( $8'' \times 3\frac{3}{4}'' \times 2\frac{1}{4}''$ ) in size.

Brick of burned clay or shale shall have an average absorption of not more than twelve (12) per cent in a five (5) hour immersion test, with an individual maximum of not more than fifteen (15) per cent. The average modulus of rupture of brick tested flatwise shall be not less than four hundred fifty (450) pounds per square inch, taken on five (5) representative specimens and not less than three hundred (300) pounds per square inch on any individual specimen. Tests shall be made in accordance with the Standard Methods of Testing Brick A.S.T.M. Designation C67-31 of the American Society for Testing Materials. All brick shall conform to the Standard Specifications for Building Brick, A.S.T.M. Designation C62-30 of the American Society for Testing Materials.

Sec. 2403. SAND-LIME BRICK. Sand-lime brick shall have an average absorption of not more than twelve (12) per cent in a five (5) hour immersion test, with an individual maximum of not more than fifteen (15) per cent. The average modulus of rupture of brick tested flatwise shall be not less than four hundred fifty (450) pounds per square inch, taken on five (5) representative specimens, and not less than three hundred (300) pounds per square inch on any individual specimen.

Tests shall be made in accordance with the Standard Methods of Testing Brick A.S.T.M. Designation C-67-30 of the American Society for Testing Materials.

Sand-lime brick shall conform to the standard specifications for Sand-lime Building Brick, A.S.T.M. Designation C73-30 of the American Society for Testing Materials.

Sec. 2404. CONCRETE BRICK. Concrete brick shall have an average absorption of not more than twelve (12) per cent in a five (5) hour immersion test, with an individual maximum of not more than fifteen (15) per cent. The average modulus of rupture of brick tested flatwise shall be not less than four hundred fifty (450) pounds per square inch, taken on five (5) representative specimens, and not less than three hundred (300) pounds per square inch of any individual specimen.

Tests shall be made in accordance with the Standard Methods of Testing Brick, A.S.T.M. Designation C67-30 of the American Society for Testing Materials.

Concrete brick shall conform to the Tentative Specifications for Concrete Building Brick, A.S.T.M. Designation C55-33T of the American Society for Testing Materials.

Sec. 2405. PLAIN CONCRETE. Monolithic concrete construction containing less than two-tenths ( $2/10$ ) of one (1) per cent of reinforcement shall be classed as plain concrete. Plain concrete in walls and piers shall have a strength of not less than fifteen hundred (1500)

pounds per square inch as specified in Section 2606, and such concrete shall be governed by the requirements specified in Chapter 26.

Cement, fine aggregate and coarse aggregate shall conform to the requirements specified in Chapter 26.

Sec. 2406. **HOLLOW CONCRETE BLOCK.** All hollow concrete block used for exterior, party or division walls shall be as specified in this Section.

The average compressive strength of five units at the time of delivery to the site shall be not less than the following:

Minimum Face Shell Thickness Inches	Average Compressive Strength in Pounds per Square Inch Gross Cross Sectional Area as Laid in the Walls	Minimum Compressive Strength Permitted on any Test Unit in Pounds per Square Inch Gross Cross Sectional Area
1¼ or over	700	600
Under 1¼ and over ¾	1000	800

In lieu of the test of five (5) units required by this Section, the Building Inspector may accept certificates furnished by the Underwriters' Laboratories.

Concrete masonry units shall not absorb more than ten (10%) per cent of water under a twenty-four (24) hour immersion test. Units which will be suitably protected from the soil or weather in the finished work need not conform to the absorption requirement of this paragraph.

All hollow concrete units except "Special" units which are specially covered in this Section, shall meet the requirements of the Tentative Specifications and Tests for Load-bearing Concrete Units, A. S. T. M. Designation C90-34T of the American Society for Testing Materials, and its subsequent amendments. All such units shall be composed of cement, sand, aggregate and water as specified in Chapter 26 and shall be mixed in not less than the following proportion: All coarse aggregate shall be of such size as to be retained on a No. 4 U. S. Standard screen and pass through a five-eighths (5/8") inch U. S. Standard mesh wire, the batch shall be proportioned five (5) parts fine aggregate, four (4) parts coarse aggregate, with one (1) part cement to seven (7) parts combined fine and coarse aggregate; shall be mixed in a dry condition for at least one (1) minute, then mixed in a wet-damp consistency for a period of not less than one (1) minute before being placed in the mould. All units to meet the requirements of this Code shall be cured for a period of not less than forty-eight (48) hours under a suitable shed or protection plus an additional time for curing in order to meet the strength test specified in this Section.

"Special" concrete block or tile, in addition to meeting the requirements in this Section, shall comply with the Underwriters Laboratories' Standard for Hollow Concrete Building Units, dated September 26, 1930, and shall have a compressive strength of not less than an average of seven hundred (700) pounds per square inch per unit of gross area as laid in the wall.

Underwriters' Laboratories certified hollow concrete building units may be considered as "Special" units.

The total cubical contents of concrete units specified in this Section shall contain not less than twenty-five (25) per cent voids or air space.

Manufacturers may register with the Building Inspector an identifying symbol to be used on their products for easy identification, but in no event shall the requirements of this section be waived as to construction, strength, inspection and test.

Sec. 2407. GYPSUM. Gypsum as used in this Section means a product containing not less than sixty-four and one-half (64½) per cent by weight of calcium sulphate combined with water.

Neat Gypsum, gypsum fiber concrete or gypsum coarse aggregate concrete used in floor and roof construction of either the reinforced gypsum suspension system or reinforced gypsum in which the gypsum acts structurally shall develop the following minimum ultimate compressive strength in pounds per square inch when dried to constant weight.

- (a) Neat gypsum (as used in pre-cast tile).....1800
- (b) Gypsum fiber concrete containing not more than three (3) per cent by weight of wood chips, excelsior or fiber .....1000
- (c) Gypsum fiber concrete containing not more than twelve and one-half (12½) per cent weight of wood chips, excelsior or fiber..... 500

Gypsum coarse aggregate concrete of the following volumetric mixes:

- (d) One and one-half (1½) parts gypsum cement; one (1) part sand; three (3) parts cinders..... 500
- (e) One and one-half (1½) parts gypsum cement; one (1) part sand; three (3) parts slag..... 800
- (f) One and one-half (1½) parts gypsum cement; one (1) part sand; three (3) parts gravel..... 800
- (g) One and one-half (1½) parts gypsum cement; one (1) part sand; three (3) parts stone..... 800

NOTE: "Compressive tests shall be made on" cylinders six (6) inches in diameter and twelve (12) inches long. The average compressive strength shall be not less than noted above and no one specimen shall test less than seventy-five (75) per cent of the average of the lot tested and not less than five (5) samples from the lot shall be tested to determine the average.

Gypsum tile or block used for partitions, walls, furring and enclosures may contain, intimately mixed, not more than fifteen (15) per cent by weight of binding material consisting of wood chips, excelsior or fiber.

Gypsum partition tile or block shall be equal in quality to that specified in the Standard Specifications for Gypsum Partition Tile or Block, A. S. T. M. Designation C52-33, of the American Society for Testing Materials.

The chemical and physical properties of the gypsum and calcined gypsum shall be equal to that specified in the Standard Specifications for Gypsum and Calcined Gypsum A. S. T. M. Designation C22-25 and C23-30, respectively, of the American Society for Testing Materials.

Sec. 2408. HOLLOW CLAY TILE. All hollow burned clay wall tile used for exterior, party or division walls shall be load-bearing tile and shall be well-burned units of clay or shale of a quality at least equal to one of the two grades noted below.

Grade	Absorption Limits Per Cent		Compressive Strength Based on Gross Area in Lbs. per Sq. In.*			
			End Construction		Side Construction	
	Mean of 5 tests	Individual Maximum	Mean of 5 tests	Individual Minimum	Mean of 5 tests	Individual Minimum
A	16 or less	19	1400 or more	1000	700 or more	500
B	25 or less	28	1000 or more	700	500 or more	350

\*Gross area shall be taken as the total area enclosed by the outside dimensions of the unit taken in a direction perpendicular to that in which the load is carried.

All hollow burned-clay load-bearing wall tile shall meet the requirements of the Tentative Specifications and Tests for Hollow Burned-Clay load-bearing Wall Tile, A. S. T. M. Designation C34-33T of the American Society for Testing Materials.

(a) CAST STONE. All cast stone shall be branded with a permanent identification mark of the manufacturer which shall be registered with the Building Inspector.

The average compressive strength of cast stone taken on four (4) representative samples at the age of twenty-eight (28) days or when delivered on the job shall not be less than five thousand (5,000) pounds per square inch with an individual minimum of forty-five hundred (4,500) pounds per square inch, and the average absorption of such samples shall be not more than seven (7) per cent of their dry weight with an individual maximum of eight (8) per cent.

Test samples shall consist of two by two (2x2) inch cylinders or two (2) inch cubes, cut from the stone as delivered on the job or from the regular stock in the yard, and shall be taken in such a manner that they are composed of approximately one-half of the facing and one-half of the backing material and so that they can be tested in the position in which the cast stone will be laid in the masonry. Tests of cast stone specimens shall be made in accordance with the tentative specifications

for cast stone, Serial Designation P-3-A-29T of the American Concrete Institute.

Sec. 2409. MORTARS. All cements and limes used in mortars shall conform to the requirements of the Standard Specifications of these materials issued by the American Society for Testing Materials, having A. S. T. M. Designation as listed below:

Quicklime for Structural Purposes C5-26.

Hydrated Lime for Structural Purposes C6-31.

Specifications and Tests for Portland Cement C9-30.

All mortar used in unit masonry construction shall be either lime-cement mortar or cement mortar. For isolated piers, footings and exterior foundation walls, and for all unit masonry below the grade where subjected to wet conditions, only cement mortar shall be used.

(a) Lime-cement mortar shall be composed of one (1) part lime putty or hydrated lime, one (1) part Portland cement and six (6) parts of sand by volume.

(b) Cement mortar shall be composed of one (1) part of cement and three (3) parts of sand by volume with an allowable addition of lime putty or hydrated lime of not to exceed fifteen (15) per cent by volume of the cement content.

(c) Mortar composed of cement, lime putty or hydrated lime and sand and having proportions intermediate to those specified in paragraphs (a) and (b) may be used in place of lime-cement mortar, provided the ratio, by volume, of the sand and cementitious material does not exceed three (3) to one (1). The allowable working stress for such mortar shall be determined by the following formula:

$$P_1 = P_1 + \frac{(C-L)}{(C+L)} (P_c - P_1)$$

$P_1$  = Maximum allowable unit working stress for the mortar used.

$P_1$  = Maximum allowable unit working stress for Lime-Cement Mortar.

$C$  = Number of parts (by volume) of cement in mortar used.

$L$  = Number of parts (by volume) of lime in mortar used.

$P_c$  = Maximum allowable unit working stress for cement mortar.

The proportions shall be based strictly according to the volume of the constituent parts. Sand and water shall conform to the requirements of Section 2604.

#### Sec. 2410. ALLOWABLE WORKING STRESSES.

(a) The maximum allowable working compressive stresses in brick masonry due to combined live, dead and other loads, shall not exceed the limits for the respective compressive strengths of the individual units listed in the following table:

Minimum Average Compressive Strength of Units	Maximum Unit Working Stresses (pounds per square inch) Using Various Mortars		
	Lime Mortar	Lime Cement	Cement Mortar
4500	110	300	400
2500	100	250	300
1250	90	150	175

The above stresses are based on good workmanship with full mortar beds and full mortar joints and shall be allowed only with such construction.

The maximum allowable compressive stresses in hollow walls of brick due to combined live and dead loads, shall not exceed the stresses given in the above table, based upon the effective net cross-sectional area of the wall.

(b) Concrete—plain. The maximum allowable working stresses in masonry of plain concrete shall be the following percentages of the ultimate strength of the concrete in compression as determined by the requirements of Chapter 26:

Compression .....  $0.20f_c$ .

Shear and diagonal tension.....  $0.02f_c$ .

where  $f_c$  represents the ultimate compressive strength.

(c) Concrete Block or Tile. The maximum allowable compressive stresses, due to combined live and dead loads, in masonry of concrete block or tile, complying in all respects with Section 2406, shall not exceed eighty (80) pounds per square inch of gross cross-sectional area when laid in cement mortar or seventy (70) pounds per square inch of gross cross-sectional area when laid in lime cement mortar.

(d) Gypsum. Gypsum suspension systems, poured-in-place or precast, shall not be less than three (3) inches in thickness, and shall be of such character as to be readily calculable by other loads, with a factor of safety of not less than four (4), and shall be of such character as to be readily calculable by the use of accepted engineering formulas, in which the stress in the suspension wires or cables shall be determined by the formula:

$$T = \frac{WL}{8d\sqrt{L^2 + 16d^2}}$$

**NOTE:**

T equals maximum tension in wires or cables in pounds per foot width of slab.

W equals load in pounds per square foot.

L equals clear span in feet between supports.

d equals deflection or "dip" of wires or cables in feet at center of span.

The wires or cables used shall be cold-drawn steel in which the allowable working stress shall not exceed twenty thousand (20,000) pounds per square inch.

When pre-cast or poured-in-place slabs or tiles or reinforced gypsum in which the gypsum acts structurally, are used, they shall be designed to carry the total dead, live or other loads in accordance with the formulae for reinforced concrete construction as provided in Chapter 26.

The following working stresses expressed in pounds per square inch shall not be exceeded:

	HEAT GYPSUM	GYPSUM FIBER CONCRETE with not more than 3 per cent of wood chips, excelsior or fiber.	GYPSUM FIBER CONCRETE with not more than 12 1-2 per cent of wood chips, excelsior or fiber	GYPSUM COARSE AGGREGATE CONCRETE
Extreme fiber stress in Compression in flexure	350	220	125	125
Direct compression or bearing	200	165	100	100
Bond between gypsum and reinforcing	40	30	30	30
Shearing Stress	30	25	20	20
Modulus of elasticity in lbs. per square inch	1,000,000	600,000	200,000	200,000
Ratio of modulus of elasticity of steel to that of gypsum (n).	30	50	150	150

(e) Load-bearing Clay Tile. The maximum allowable compressive stresses, due to combined live and dead loads, in masonry of load-bearing clay tile which complies in all respects to Section 2408, shall not exceed eighty (80) pounds per square inch of the gross cross-sectional area when laid in cement mortar or seventy (70) pounds per square inch of the gross cross-sectional area when laid in lime-cement mortar.



(f) Stone. The maximum allowable compressive stresses in rubble stonework, due to combined live and dead loads, shall not exceed one hundred and forty (140) pounds per square inch when laid in Portland cement mortar, nor one hundred (100) pounds per square inch in lime-cement mortar.

The maximum allowable compressive stress in ashlar-masonry due to combined live and dead loads shall not exceed the following limits:

Unit	Maximum Unit Working Stresses (pounds per square inch) laid in	
	Lime Cement Mortar	Portland Cement Mortar
Granite.....	640	800
Limestone.....	400	500
Marble.....	400	500
Sandstone.....	320	400
Coral Rock.....	150	200

Sec. 2411. GENERAL REQUIREMENTS. The effects of eccentric loads and lateral forces shall be fully analyzed and allowances made for them in design. Concentrated loads shall be distributed so as not to exceed the allowable working stresses as specified in Section 2410 by more than twenty-five (25) per cent.

NOTE: Wherever specifications or reference to Standards are made in this Chapter, it shall mean such designated specifications and its subsequent amendments to date.

## CHAPTER 25

### WOOD

#### (Quality and Design)

Sec. 2501. GENERAL. The quality and design of all wood except finish and millwork, used in the construction of all buildings shall conform to the requirements of this Chapter.

All members shall be so framed, anchored, tied and braced together as to develop the maximum strength and rigidity necessary for the purpose for which they are used. No member shall be stressed in excess of the strength of its details and connections.

Workmanship in fabrication, preparation and installation of material shall conform throughout to good engineering practice.

American Lumber Standards as set forth in "Simplified Practice Recommendations, R16-29" of the United States Department of Commerce, effective July 1, 1929, is hereby declared to be the basis for

the determination of minimum acceptable sizes, for the assignment of allowable working stresses and quality of structural lumber for the purpose of this Code. Manufacturers' association grades conforming to these provisions shall be accepted as complying with the requirements of this Code.

Sec. 2502. DETERMINATION OF REQUIRED SIZES. All wood structural members shall be of sufficient size and strength to carry their imposed loads safely and without exceeding the allowable working stresses as specified in Section 2503 and 2504.

In computations to determine the required size of timber members the net cross sectional area of actual size shall be used and not the nominal size. Sizes required by this Code shall be deemed to refer to the nominal or commercial description of size unless stated in fractional minimums. American lumber standards dressed sizes shall be accepted as conforming to nominal or commercial descriptions of sizes.

Sec. 2503. ALLOWABLE UNIT STRESSES. Allowable unit working stresses for lumber shall be determined on the basis of the quality (Grade) of lumber used. The plans and specifications shall show grades, quality and kind of lumber used in the design of the building or structure.

For the purpose of assigning Allowable Unit Working Stresses three general classes of lumber shall be recognized as follows:

- (a) "STRUCTURAL LUMBER"
- (b) "YARD LUMBER"
- (c) "OTHER LUMBER"

(a) STRUCTURAL LUMBER is (1) lumber manufactured and graded in accordance with any of the lumber association Structural Grades conforming to the American Lumber Standards, or (2) lumber graded under the Structural Grade Examples of the American Lumber Standards (Part IV—Simplified Practice Recommendations R16-29) and in either case adequately identified.

Each piece of Structural Lumber shall be grade-marked and shall bear the trade-mark of the lumber association under whose rules the lumber is graded; provided, however, that the Building Inspector may accept a lumber manufacturer's Association Certificate of Grade in lieu of such grade and trade-mark.

The allowable unit working stresses for each Grade of such lumber shall be as given in Table 1 of this Section.

(b) YARD LUMBER is (1) lumber manufactured and graded in accordance with the rules of a lumber association for "Yard Lumber," or (2) lumber graded in accordance with the basic Grade Classifications and with the Size Standards for "Yard Lumber" in American Lumber Standards. (Part III—Simplified Practice Recommendations R16-29.)

YARD LUMBER shall be used for load-bearing purposes only after working stresses for the Grades used shall have been assigned by the Building Inspector. Such working stresses shall be assigned when evidence is furnished to the satisfaction of the Building Inspector, as to the Grade of the lumber. Such evidence may be either (1) "Grade-Marks" on the lumber when accompanied by an Association "Trade-Mark" or (2) a lumber Association Certificate of Grade, or (3) in the absence of such identification, the Building Inspector may determine the Grade of the Lumber by visual inspection.

The allowable unit working stresses for any Grade of "YARD LUMBER" shall be assigned by the Building Inspector as follows:

He shall determine the maximum defects, present or permitted, in the lumber to be used. This determination may be made by inspecting the lumber or by referring to the "Grading Rules" of the lumber association under which the lumber was graded.

He shall compare the effect of defects found or permitted in the Grade of Lumber to be used, with the effect of defects permitted in the Grade Example for "Common" Structural Material as set forth in American Lumber Standards. (Part IV-Simplified Practice Recommendations R16-29.)

On the basis of such comparison he shall estimate the ratio of strength of lumber used to strength of lumber graded under the Grade Example for "Common" Structural Material.

This ratio shall be applied to the values in Table II for the same species of lumber, and working stresses shall be assigned proportionately.

(c) OTHER LUMBER is —All lumber which does not for any reason, qualify as a Grade of "Structural Lumber" or "Yard Lumber" as defined hereinbefore.

OTHER LUMBER shall be used for load-bearing purposes only when approved by the Building Inspector.

The allowable unit working stresses for such lumber shall be assigned by the Building Inspector as follows:

He shall inspect such lumber and determine the maximum defects in any pieces thereof.

He shall compare the effect of defects found with the effect of the defects permitted in the Grade Example for "Common" Structural Material as set forth in American Lumber Standards.

On the basis of such comparison, he shall estimate the ratio of strength of lumber used to strength of lumber graded under the Grade Example for "Common" Structural Material.

**TABLE 1**  
**ALLOWABLE UNIT STRESSES FOR "STRUCTURAL LUMBER" AND TIMBER**  
**ALL SIZES DRY LOCATION**

Stress-grade and Species	Equivalent Commercial Grade	Rules under which graded	Allowable Unit Stresses in lbs. per sq. in. (a) for Joists or Planks, Beams and Stringers		
			Extreme Fiber in Bending	Maximum Horizontal Shear	Modulus of Elasticity
1000#f Western Red Cedar	Structural	West Coast Lumbermens Assn.	1000	100	200
1400#f Tidewater Red Cypress	1400#f Tidewater Red Cypress	Southern Cypress Manufacturers Assn.	1400	120	300
1100#f Tidewater Red Cypress	1100#f Tidewater Red Cypress	West Coast Lumbermens Assn.	1100	100	300
1800#f Dense Douglas Fir (Coast Region)	Dense Select Structural	West Coast Lumbermens Assn.	1800	120	380
1600#f Close Gr. Douglas Fir (Coast Region)	Select Structural		1600	100	345
1200#f Douglas Fir (Coast Region)	No. 1 Dimension	Western Pine Assn.	1200(b)	100	325
1800#f Dense Douglas Fir (Inland Empire)	Select Structural		1800	120	380
1600#f Close Gr. Douglas Fir (Inland Empire)	Structural	Northern Hemlock & Hardwood Mfg. Assn.	1600	80	335
1200#f Douglas Fir (Inland Empire)	Common Structural		1200	80	315
1100#f Eastern Hemlock	Select Structural	West Coast Lumbermens Assn.	1100	70	300
1040#f West Coast Hemlock	No. 1 Dimension	West Coast Lumbermens Assn.	1040(b)	100	300
1800#f Dense Larch	Select Structural	Western Pine Assn.	1800	120	380
1600#f Close Gr. Larch	Structural		1600	100	345
1200#f Larch	Common Structural	National Hardwood Lumber Assn.	1200	100	325
1400#f Oak	Select Dimension		1400	120	500
1100#f Oak	Common Dimension	Southern Pine Assn.	1100	100	350
2000#f Dense Longleaf Southern Pine	Select Structural		2000	120	380
1800#f "	Prime Structural	Southern Pine Assn.	1800	120	380
1600#f "	Merchantable Structural		1600	120	380
1400#f "	Structural Sq. Edge & Sound	Southern Pine Assn.	1600	120	380
1400#f "	No. 1 Structural		1400	100	380
2000#f Dense Shortleaf Southern Pine	Dense Select Structural	Southern Pine Assn.	2000	120	380
1800#f "	Dense Structural		1800	120	380
1600#f "	Dense Str. Sq. Edge & Sound	Southern Pine Assn.	1600	120	380
1200#f "	Dense No. 1 Structural		1200	100	380
1600#f Close Gr. Redwood	1600#f Close Gr. Redwood	California Redwood Assn.	1600	80	267
1400#f Close Gr. Redwood	1400#f Close Gr. Redwood		1400	80	267
1200#f "	1200#f Close Gr. Redwood	California Redwood Assn.	1200	70	267

(a) For stresses in compression parallel to grain, see following table 111, Sec. 2504. (b) With slope of grain not more than 1 in 10.

TABLE 11

Basis for Determining Allowable Unit Working Stresses  
For "Yard Lumber" and "Other Lumber"

(From Recommendations of United States Forest Products Laboratory  
for Lumber Conforming to the Grade Example of "Common" Structural  
Material in American Lumber Standards.)

ALWAYS DRY LOCATIONS					
SPECIES	Allowable stress in Pounds per sq. in.				Modulus of Elasticity
	Extreme Fiber In Bending	Compression		Horizontal Shear	
		Parallel to Grain Short Columns*	Perpendic- ular to Grain		
Cypress, Tidewater Red.....	1040	880	350	80	1,200,000
Douglas Fir (Coast Region).....	1200	880	325	72	1,600,000
Eastern Hemlock .....	880	560	300	56	1,100,000
Oak, Commercial Red and White .....	1100	800	500	100	1,500,000
Pine, Southern Yellow ..	1200	880	345	100	1,600,000

\*For Posts and Timbers 6"x16" and larger and with unsupported length not greater than 10 times least dimension.

Sec. 2506 (n):

Rafters with contact ceiling to be sizes and spacing shown in Rafter Table, as Flat 40#, based on Twelve Hundred (1200) pounds stress. Provide approved insulation between rafters and two inch by two inch (2"x2") furring strips spaced sixteen inches (16") on center at right angles to rafters. Ceiling to be rated one (1) hour.

# ALLOWABLE UNIT STRESSES FOR TIMBER COLUMNS AND COMPRESSION MEMBERS

Allowable Unit stresses in Compression parallel to grain (columns)  
(c) in pounds per sq. in. of net cross-sectional area for ratios of  
length-to-least dimension (Z/D) equalling.

**TABLE 111**

Stress-grade and Species	Equivalent Commercial Grade	Rules Under Which Graded	Short column Z/d 11 or less									
			Z/d 14	Z/d 17	Z/d 20	Z/d 23	Z/d 26	Z/d 30	Z/d 33	Z/d 40	Z/d 50	
800#c Western Red Cedar	Structural	West Coast Lumbermen's Assn.	800	762	716	638	519	405	304	223	170	109
1200#c Tidewater Red Cypress	1200#c T. Red Cypress	Southern Cypress Mfg. Assn.	1200	1110	1093	823	622	486	365	268	206	132
1000#c Tidewater Red Cypress	1000#c T. Red Cypress	Southern Cypress Mfg. Assn.	1000	947	885	780	622	486	365	268	206	132
1300#c Dense Douglas Fir (Coast Region)	Dense Select Structural	West Coast Lumbermen's Assn.	1300	1235	1158	1030	826	649	487	358	274	175
1200#c Close Gr. Douglas Fir (Coast Region)	Select Structural	West Coast Lumbermen's Assn.	1200	1148	1088	988	828	649	487	358	274	175
1100#c Douglas Fir (Coast Region)	No. 1 Timbers	West Coast Lumbermen's Assn.	1100	1060	1015	937	811	649	487	358	274	175
880#c Douglas Fir (Coast Region)	No. 1 Dimension	West Coast Lumbermen's Assn.	880	2860	837	796	705	649	487	358	274	175
1300#c Dense Douglas Fir (Inland Empire)	Select Structural	Western Pine Assn.	1300	1235	1156	1030	828	649	487	358	274	175
1200#c Close Gr. Douglas Fir (Inland Empire)	Structural	Western Pine Assn.	1200	1132	1074	959	776	649	487	358	274	175
1100#c Douglas Fir (In. Emp.)	Common Structural	Western Pine Assn.	1100	1055	1013	914	774	608	457	336	257	164
700#c Eastern Hemlock	Select Structural	No. Hemlock and Hardwood Mfg.	700	678	653	611	554	446	335	246	188	121
720#c West Coast Hemlock	No. 1 Dimension	W. Cst. L'bermen's Assn.	720	706	688	660	615	549	448	313	240	153
1300#c Dense Larch	Select Structural	Western Pine Assn.	1300	1202	1087	895	673	527	396	291	223	142
1200#c Close Gr. Larch	Structural	Western Pine Assn.	1200	1122	1032	877	673	527	396	291	223	142
1100#c Larch	Common Structural	Western Pine Assn.	1100	1041	970	851	673	527	396	291	223	142
1100#c Oak	Select Dimension	National Hardwood Lumber Assn.	1100	1055	1013	914	774	608	457	356	257	164
1000#c Oak	Common Dimension	National Hardwood Lumber Assn.	1000	967	927	860	755	608	457	356	257	164
1400#c Dense Longleaf S. Pine	Select Structural	So. Pine Assn.	1400	1319	1224	1064	838	649	487	356	274	175
1300#c Dense Longleaf S. Pine	Prime Structural	So. Pine Assn.	1300	1235	1158	1030	828	649	487	356	274	175
1200#c Dense Longleaf S. Pine	Merchantable Struct	So. Pine Assn.	1200	1148	1088	988	838	649	487	356	274	175
1200#c Dense Longleaf S. Pine	Struct. Sq. Edge & Sd.	So. Pine Assn.	1200	1148	1088	988	838	649	487	356	274	175
1000#c Dense Longleaf S. Pine	No. 1 Structural	So. Pine Assn.	1000	971	936	878	786	649	487	356	274	175
1400#c Dense Shortleaf S. Pine	Dense Select Struct.	So. Pine Assn.	1400	1319	1224	1064	838	649	487	356	274	175
1300#c Dense Shortleaf S. Pine	Dense Structural	So. Pine Assn.	1300	1235	1158	1030	828	649	487	356	274	175
1200#c Dense Shortleaf S. Pine	Dense Str. Sq. Edge & Sd.	So. Pine Assn.	1200	1148	1088	988	838	649	487	356	274	175
900#c Dense Shortleaf S. Pine	Dense No. 1 Structural	So. Pine Assn.	900	878	853	810	742	649	487	356	274	175
1200#c Close Gr. Redwood	1200#c Cl. Gr. Redwood	California R. Assn.	1200	1119	1003	823	622	486	365	268	206	132
1100#c Close Gr. Redwood	1100#c Cl. Gr. Redwood	California R. Assn.	1100	1030	948	810	622	486	365	268	206	132
1000#c Close Gr. Redwood	1000#c Cl. Gr. Redwood	California R. Assn.	1000	947	885	780	622	486	365	268	206	132

For stresses other than compression parallel to grain, see Table No. 1.  
NOTE: Values for Z/D ratio exceeding 11 were computed using the Forest Products Laboratory fourth-power-parabolic-Euler formula.

Sec. 2504. ALLOWABLE UNIT STRESSES FOR COLUMNS.

(a) The unit working stresses in compression with grain for columns whose ratio of unsupported length to least dimension does not exceed ten (10) (short columns) shall be not greater than that given in Section 2503.

(b) For columns the ratio of whose unsupported length to least dimension is greater than ten (10) (intermediate columns) the following formula shall be used until the reduction in allowable stress equals one-third the stress for short columns:

$$\frac{P}{A} = S \left[ 1 - \frac{1}{3} \left( \frac{l}{Kd} \right)^4 \right]$$

where P = Total load in pounds

A = Area in square inches

P

— = Unit compressive stress

A

S = stress in compression with grain for short columns

l = Unsupported length in inches

d = Least dimension in inches

E = Modulus of elasticity

K = The  $\frac{l}{d}$  at the point of tangency of the

parabolic and Euler curves, at which

$$\frac{P}{A} = \frac{2}{3} S.$$

The value of K for any species and grade is

$$K = \frac{\pi}{2} \sqrt{\frac{E}{6S}}$$

NOTE: For "Structural" lumber the value of "S" to be used is the value given in Table 1 of Section 2503 for "Compression Parallel to Grain" for the respective Grades and Species.

For "Yard Lumber" and "Other Lumber" the value of "S" to be used shall be assigned by the Building Inspector in the same manner as provided in Section 2503 (b) or 2503 (c).

(c) For columns the ratio of whose unsupported length to

least dimension  $\left(\frac{l}{d}\right)$  is greater than "K"

(long columns) the Euler formula below shall be used.

$$\frac{P}{A} = \frac{\pi^2 E}{36 \left(\frac{l}{d}\right)^2}$$

(d) Columns shall be limited in slenderness to  $\frac{l}{d} = 50$ .

Sec. 2505. FRAMING DETAILS; VERTICAL MEMBERS. (a) Wood columns and posts shall be squared at the ends; shall be provided with metal base plates and approved anchors; shall be supported in basements, or locations exposed to the weather, by footings projecting at least one (1) inch above the finished floors; shall be superimposed on approved metal appliances where continuing through more than one story; shall not rest directly or indirectly on any floor beams, except in cases where there is no column below.

(b) Wood holsters may be used to support a single floor or the roof beams only.

(c) Wood preservatives shall be applied to column ends where necessary to protect against possible dampness.

(d) Wood columns in basements when built in solid partitions shall be open on at least two (2) sides unless columns meet the requirements specified in Section 2511 (i).

(e) Wood posts, except for minor structures and as piles, shall not be used as foundations below ground.

Sec. 2506. FRAMING DETAILS; HORIZONTAL MEMBERS. (a) Girders or beams where entering or resting on masonry walls shall have a bearing of at least four (4) inches with the under surface protected by a piece of asphalt or saturated felt or paper, or a metal bearing plate and such end shall be dipped or painted with creosote or an approved wood preservative.

Where members meet at columns they shall be fitted around or butted up close and held in place by metal strips of not less than one-fourth by one and one-half inches ( $\frac{1}{4} \times 1\frac{1}{2}$ ") in thickness, unless the post caps provide sufficient anchorage.

(b) All built-up timbers shall have members bolted or spiked tightly together and contact faces thereof treated with approved wood preservative.

(c) Joists and rafter ends may be supported by a four inch by four inch (4"x4") wood strip or cleat spiked or bolted to the girder, or larger member if required by the loading. Minimum joist or rafter bearing shall be four (4) inches.

(d) Wood members entering masonry party fire walls shall be separated from the opposite side of the wall and from beams entering the opposite side of the wall by four (4) inch masonry. The end of the joists, beams and/or girders shall be fire-cut to a bevel of not less than three (3) inches in their depth, and shall have the under surface protected as specified in paragraph (a) above.

(e) Where girders and beams enter masonry they shall be provided with wall plates, boxes and anchors of an approved type so arranged as to leave an air space of not less than one (1) inch at sides of member. Rigid boxes shall be provided in concrete walls. The ends of girders shall not be sealed in; provided that where ends of timbers are well treated with creosote or other approved preservatives they may be sealed in.



Where sills or plates are placed on masonry or concrete, they shall meet the requirements of Section 2511 (i); shall be isolated from the masonry as specified in Section 2511 (f); sills shall be bolted as specified in Section 2204, and plates bolted with not less than one-half ( $\frac{1}{2}$ ) inch bolt securely embedded in the masonry and spaced not over six (6) feet apart.

(f) Anchors for each tier of joists shall be provided where they enter masonry walls and where they are parallel to masonry walls. Such anchors shall be of a standard type anchor and spaced not more than four (4) feet apart. Such anchors shall, in all cases, occur on the opposite end of the same run of joists and ends of joists shall be lapped and spiked so as to form a continuous tie across the building.

(g) The minimum permissible thickness of joists, rafters and studs shall be of one and five-eighths ( $1\frac{5}{8}$ ) inches.

(h) Floor joists shall be supported by sill, girders, bearing partitions or exterior walls, and shall be anchored as specified in subsection (f) of this Section. Where entering exterior stud walls, the joists shall extend through to the outer edge of the stud, and shall be supported by a ribbon not less than one by four (1"x4") inches nominal size or larger member if required by the loading, let in the studs if no plate is provided. Joists shall be well nailed to the supporting studs. Studs shall be doubled under the ends of doubled joists.

(i) Header joists over six (6) feet long and tail joists over twelve (12) feet long shall be hung in approved stirrup irons or joists hangers.

(j) Joists under bearing partitions and running parallel thereto shall be designed to carry the superimposed load and well spiked or separated by solid bridging not more than sixteen (16) inches on centers to permit the passage of pipes.

(k) Wood cross bridging shall be placed between joists if the span is over six (6) feet. The distance between bridging or between bridging and bearing, shall not exceed six (6) feet. Wood cross bridging in dwellings may be one by four (1"x4") inches nominal size in cross sectional area, but in other buildings shall not be less than one by six (1"x6") inches nominal size.

Metal cross bridging of equal or greater strength may be used in place of the wood cross bridging.

(l) Solid two (2) inch bridging shall be placed between floor joists at all supports. Solid bridging shall be placed between joists at the edge of flooring when attic space is only partially covered.

(m) Cutting of wood girders, beams or joists shall be limited to cuts and bore holes not deeper than one-fifth (1-5) the beam depth below its top located not further from the beam end than three (3) times the beam depth. Cuts in excess of above or bore holes

with a diameter more than two (2) inches are not permitted without special provisions for framing the beams approved by the Building Inspector.

Sec. 2506 (n)—Refer to Page 137.

**Sec. 2507. FRAMING DETAILS; STUD WALLS AND PARTITIONS.** (a) Stud partitions shall be provided with soles or plates with dimensions not less than the studs where the partition studs do not rest on walls, sills, girders, beams, or do not pass through the floor to the top plates at the partition below.

(b) In bearing partitions the top plate shall be doubled and lapped at each intersection. Joints in the upper and lower members of the top plate shall be staggered not less than two (2) feet.

(c) Studs in bearing partitions and walls shall not be less than two inches by four inches (2"x4") nominal size. Where a bearing partition supports more than the weight of the roof and one floor the studs shall be not less than two inches by six inches (2"x6") nominal size or three inches by four inches (3"x4") nominal size except that underpinning may be of the same size as the studs immediately above when such underpinning is not more than four (4) feet in height.

(d) Where studs pass through from floor to floor they shall be fire-stopped at point of passage through floors.

(e) Angles at corners where stud walls or partitions meet shall be framed solid so no lath can extend from one room to another. All exterior and main cross stud partitions shall be effectively and thoroughly angle braced.

(f) Stud partitions containing plumbing, heating or other pipes shall be so framed and the joists underneath so spaced as to give proper clearance for the piping. Where a partition containing such piping runs parallel to the floor joists, the joists underneath such partition shall be doubled and spaced to permit the passage of such pipes and shall be bridged with solid bridging. Where plumbing, heating or other pipes are placed in or partly in a partition necessitating the cutting of the soles or plates, a metal tie not less than one-eighth ( $\frac{1}{8}$ ) inch thick and one and one-half ( $1\frac{1}{2}$ ) inches wide shall be fastened to the plate across and to each side of the openings with not less than four (4) sixteen penny (16-d) nails.

(g) Openings in stud partitions and walls shall be framed around with double studs at each side and double headers across the top resting on the short stud at each end. The double header shall be placed on edge and shall be trussed above for all openings over four (4) feet in width or where more than two (2) studs are cut away.

(h) Wood lath, furring or framing shall be placed not less than two (2) inches from any chimney, and not less than four (4) inches from the back of any fireplace.

(i) Where wood partitions and masonry walls join, the stud abutting the masonry shall be doubled and bolted with three (3) one-half ( $\frac{1}{2}$ ) inch galvanized bolts, one to be embedded in tie beam,

one in mid-section, and one near the base. The end of plate abutting masonry wall shall be anchored to end studs and to plate on masonry wall in an approved manner.

**Sec. 2508. ROOF FRAMING.** (a) Valley rafters shall be not less than one and five-eighths by five and one-half inches ( $1\frac{5}{8}'' \times 5\frac{1}{2}''$ ) in size. Roof sheathing shall have a minimum thickness of twenty-five thirty-seconds ( $25/32$ ) of an inch.

Stripping to be not less than one by four ( $1'' \times 4''$ ) inch nominal size, set not more than eight (8) inches on center and nailed with not less than two eight penny nails to each supporting rafter.

(b) Flashing shall be placed around openings in and extensions of mechanical appliances or equipment through the roof.

(c) Anchors for joists and rafters shall be provided where they enter masonry walls, where they are parallel to masonry walls, and where they rest on plates as specified for joists in section 2506 (f).

(d) Parapets not less than six (6) inches shall be required on exterior walls of Type V construction, where the "flat-deck" type of roof framing is used; provided, however, that the parapet may be omitted on one end to provide proper roof drainage as specified in Section 3206; and may be omitted when the building is more than five (5) feet from the property line or more than ten (10) feet from buildings on the same lot. Parapet for masonry exterior walls is specified in Sec. 2935.

(e) An air space of not less than eighteen (18) inches measured from the top of the ceiling joist to the bottom of the roof rafter shall be required on the "flat-deck" type roof construction, to provide ventilation.

**Sec. 2509. FRAMING DETAILS; TRUSSES.** (a) Wood trusses and truss framing shall have all joints accurately cut and fitted together so that each bearing is true and drawn tight to the full bearing. All such trusses shall be properly secured in place by lateral bracing.

(b) Washers of sufficient size to distribute the loads properly shall be used in connection with rods or metal members. Before a truss is loaded, the tension rods shall be well tightened.

(c) Timber trusses shall be securely anchored to the wall at points of bearing.

**Sec. 2510. FIRE STOPS.** (a) Fire Stops shall be provided at all intersections of interior and exterior walls with floors, ceilings and roof in such a manner as to effectively cut off communication by fire through hollow concealed spaces and prevent both vertical and horizontal drafts.

(b) Furred walls shall have fire stopping placed immediately above and below the junction of any floor construction with the walls or shall be fire stopped the full depth of the joists.

(c) All stud walls or partitions shall have a continuous row of bridging or fire stopping which shall form a complete and effective separation in the entire width of partition at the point, placed in such a manner that there shall be no concealed air space greater than seven (7) feet in any dimension. Fire stops shall be the full width of the studding and sufficiently stiff to act as lateral bracing for the individual studs.

(d) Stair stringers shall be fire-stopped at least once in the middle portion of each run, and shall be fire-stopped by a header beam at the top and bottom, so as to effectively prevent the passage of fire. Full width fire blocking shall be placed between studs along and in line with the run of stairs adjoining such partitions.

(e) When sliding doors are pocketed in partitions, such pockets shall be completely fire-stopped at end, sides, top and bottom.

(f) All spaces between chimneys and wood framing shall be solidly filled with refuse mortar, loose cinders or other incombustible material placed in incombustible supports.

(g) All fire-stopping as required in this Section shall be not less than one and five-eighths ( $1\frac{5}{8}$ " ) inches in thickness and not less in width than the enclosed space within the partition except as provided in paragraph (f) hereof for chimneys.

Sec. 2511. TERMITE PROVISIONS. Whenever the Building Inspector has knowledge of the existence of termites in any building or structure, he shall have the power, and it is his duty to notify, the tenant, the agent, or owner of such building or structure in writing to take the necessary measures for the extermination of termites from any such building or structure within a reasonable length of time, not to exceed sixty (60) days. Any tenant, agent, or owner failing to comply with such notice shall be deemed guilty of violating the provisions of this Ordinance and shall be subject to all the penalties provided herein.

(a) Before any new building is erected all stumps and roots shall be removed from the soil to a depth of at least twelve (12) inches below the surface of the ground in the area to be occupied by the building.

(b) The exterior walls of, and all wood posts supporting girders in wood frame buildings, shall be placed on masonry or concrete foundation walls or piers.

(c) All masonry for foundation purposes shall be laid in Portland cement mortar. Portland cement mortar shall be composed of one part cement, three (3) parts of sand by volume, with an allowable addition of lime, putty, or hydrated lime as specified in Section 2409.

(d) The top of every masonry or concrete foundation, wall or pier which supports and is in contact with wood construction of any kind shall be not less than six (6) inches above the final grade level of

finished surface of any ground adjacent thereto (except as provided in the case of slabs). Masonry or concrete foundation walls shall in all cases extend at least as high as the top of any adjacent concrete or masonry slab which is supported by either natural ground or earth fill.

**CLEARANCE.** (e) Floor joists shall have a clearance of not less than eighteen (18) inches between the bottom of the joists and the surface of the ground underneath. The ground underneath shall be leveled or smoothed off so as to maintain a reasonably even surface under the entire area covered by the floor joists.

**WOOD SILLS.** (f) All wood sills and plates in contact with masonry or concrete shall be of the grade and kind of lumber specified in paragraph (i) of this Section, and shall be isolated from such masonry or concrete with eighty-five (85) pound slate covered roofing or twenty-four (24) gauge galvanized iron or other approved material.

**WOOD FURRING.** (g) All wood furring in contact with masonry, also all wood foundation screen vents shall be treated four sides with approved preservative.

(h) Reserved.

(i) **TYPE OF LUMBER.** Lumber permitted in the above locations shall have physical properties equal to eighty-five (85) per cent or better Heart Long Leaf Southern Yellow Pine, or No. 1 Common Tidewater Red Cypress, or No. 1 common all heart Port Orford Cedar, Western Red Cedar or Cypress, the heart common grade of Redwood, or the No. 1 common grade of any lumber which is treated with approved preservative by any method that will thoroughly impregnate the wood through the sap to the heart. Brush treatment is not approved, except that it is required on end cuts and all other cuts in timber treated as specified above.

(j) Wood posts or columns shall not extend through or be placed directly on concrete floors. They shall be supported on concrete floatings extending at least two (2) inches above the finished floor or may be placed on a corrosion-resisting metal plate at least one thirty-second (1/32) of an inch thick and not smaller than the base of post of column.

(k) Where timbers extend into a masonry wall at a point below the level of the ground outside of the wall, metal wall boxes shall be provided on the end and all surfaces of the timber within one (1) foot of the end shall be painted with at least two (2) coats of hot coal tar creosote or other approved wood preservatives.

**FOUNDATION WALL VENTS.** (1) Solid foundation walls under the first floor joist of all Type II buildings (except such space as is occupied by a basement or cellar) shall be provided with ventilated openings to insure ample ventilation, and such openings shall be covered with non-corrosive wire mesh of not less than sixteen (16)

mesh per lineal inch. Such ventilated openings shall be proportioned on the basis of not less than two (2) square feet for each fifteen (15) lineal feet or major fraction thereof of all exterior foundation walls distributed on not less than three (3) sides to produce adequate cross-ventilation in at least one direction.

(m) All wood forms which have been used in placing concrete, if within the ground or less than eighteen (18) inches above the ground, shall be removed before a building is occupied or used for any purpose. Tops of footings shall be at a level with the surface of the grade.

(n) Loose or casual wood shall not be stored in direct contact with the ground under any building, and this space must be thoroughly cleaned of all blocks of wood and other debris.

## CHAPTER 26

### REINFORCED CONCRETE

#### (Quality and Design)

Sec. 2601. SCOPE. (a) These regulations cover the use of reinforced concrete in any structure to be erected under the provisions of the building code of which they form a part. They are intended to supplement the general provisions of the code in order to provide for the proper design and construction of structures of this material. In all matters pertaining to the design and construction where these specific regulations are in conflict with other provisions of the code, these regulations shall govern.

Sec. 2602. PERMITS AND DRAWINGS. (a) Drawings and typical details of all reinforced-concrete construction showing the sizes and position of all structural members, metal reinforcement, and the live-load used in the design shall be filed with the department as a permanent record before a permit to construct such work shall be issued. All calculations made may be required by the department to be submitted with the drawings.

Sec. 2603. SPECIAL SYSTEMS OF REINFORCED CONCRETE. (a) The sponsors of any system of reinforced concrete which has been in successful use, or the adequacy of which has been shown by test, and the design of which is either in conflict with these provisions or not covered by them, shall have the right to present the data on which their design is based to a "Board of Examiners for Special Construction." This Board shall be composed of competent engineers, architects and builders. The Board shall have the power to investigate the data so submitted and to formulate rulings governing the design and construction of such systems, which ruling shall be of the same force and effect as the provisions of this code. This Board is to be designated as provided elsewhere in the code.

Sec. 2604. DEFINITIONS.

**AGGREGATE.** Inert material which is mixed with Portland cement and water to produce concrete; in general, aggregate consists of sand, pebbles, gravel, crushed stone, blast-furnace slag, or similar materials.

**ANCHORAGE.** The embedment in concrete of a portion of a reinforcement bar, either straight or with hooks, designed to prevent pulling out or slipping of the bar when subjected to stress. (The anchorage of tension reinforcement in beams includes only the embedded length beyond a point of contra-flexure or of zero moment.)

**BLAST-FURNACE SLAG.** The non-metallic product, consisting essentially of silicates and alumino-silicates of lime, which is developed simultaneously with iron in blast furnaces.

**COLUMN.** An upright compression member the length of which exceeds three times its least lateral dimension.

**COLUMN CAPITAL.** An enlargement of the upper end of a reinforced concrete column designed and built to act as a unit with the column and flat slab.

**COLUMN STRIP.** A portion of a flat slab panel one-half panel in width occupying the two quarter-panel areas outside of the middle strip. (See Middle Strip.)

**COMBINATION COLUMN.** A column in which a structural steel section, designed to carry the principal part of the load, is wrapped with wire and encased in concrete of such quality that some additional load may be allowed.

**COMPOSITE COLUMN.** A column in which a concrete core enclosed by spiral reinforcement and further reinforced by longitudinal bars encases a structural steel or cast iron column designed to carry a portion of the load.

**CONCRETE.** A mixture of Portland cement, fine aggregate, coarse aggregate and water. (See Mortar.)

**CONSISTENCY.** A general term used to designate the relative plasticity of freshly mixed concrete or mortar.

**CRUSHED STONE.** Bedded rock or boulders which have been broken by mechanical means into fragments of varying shapes and sizes.

**DEAD-LOAD.** The weight of the permanent parts of the structure

**DEFORMED BARS.** Reinforcement bars with closely spaced shoulders, lugs or projections formed integrally with the bar during rolling so as to firmly engage the surrounding concrete. Wire mesh with welded intersections not farther apart than twelve inches in the directions of the principal reinforcing and with cross wires not smaller than No. 10 may be rated as a deformed bar.

**DIAGONAL BAND.** In a four-way flat slab system a group of bars covering a width approximately 0.4 the average span, symmetrical

with respect to the diagonal running from corner to corner of the panel.

**DIAGONAL DIRECTION.** A direction parallel or approximately parallel to the diagonal of the panel of a flat slab.

**DIRECT BAND:** In a four-way flat slab system, a group of bars covering a width approximately  $0.4 l_1$ , symmetrical with respect to the line of centers of supporting columns.

**DROPPED PANEL.** The structural portion of a flat slab which is thickened throughout an area surrounding the column capital.

**EFFECTIVE AREA OF CONCRETE.** The area of a section which lies between the centroid of the tension reinforcement and the compression surface in a beam or slab, and having a width equal to the width of the rectangular beam or slab, or the effective width of the flange of a Tee beam.

**EFFECTIVE AREA OF REINFORCEMENT.** The area obtained by multiplying the right cross-sectional area of the metal reinforcement by the cosine of the angle between its direction and that for which the effectiveness of the reinforcement is to be determined.

**FLAT SLAB.** A reinforced-concrete slab generally without beams or girders to transfer the loads to supporting members.

**FOOTING**—A structural unit used to distribute wall or column loads to the foundation materials.

**GRAVEL**—Rounded particles larger than sand grains resulting from the natural disintegration of rocks. (See Sand.)

**LAITANCE.** Extremely fine material of little or no hardness which may collect on the surface of freshly deposited concrete or mortar, resulting from the use of excess mixing water, usually recognized by its relatively light color.

**LIVE-LOAD.** Loads and forces other than the dead-load.

**MIDDLE STRIP.** A portion of a flat slab panel one-half panel in width, symmetrical with respect to the panel center line and extending through the panel in the direction in which moments are being considered.

**MORTAR.** A mixture of Portland cement, fine aggregate, and water. (See Concrete.)

**NEGATIVE BENDING MOMENT.** That moment which exists between a support of a slab or beam and the point of inflection on either side of the support.

**NEGATIVE REINFORCEMENT.** Reinforcement so placed as to take tensile stress due to negative bending moment.

**PANELED CEILING.** A paneled ceiling refers to a flat slab in which approximately that portion of the area enclosed within the intersection of two middle strips is reduced in thickness.

**PANEL LENGTH.** The distance in either rectangular direction between centers of two columns of a panel.



**PEDESTAL.** An upright compression member whose height does not exceed three times its least lateral dimension.

**PEDESTAL FOOTING.** A column footing projecting less than one-half its depth from the faces of the column on all sides and having a depth not more than three times its least width.

**PLAIN CONCRETE.** Concrete without metal reinforcement.

**PORTLAND CEMENT.** The product obtained by finely pulverizing clinker produced by calcining to incipient fusion an intimate and properly proportioned mixture of argillaceous and calcareous materials, with no additions subsequent to calcination excepting water and calcined or uncalcined gypsum.

**POSITIVE BENDING MOMENT.** That moment which exists at all other points in beams or slab except where negative moments exist.

**POSITIVE REINFORCEMENT.** Reinforcement so placed as to take tensile stress due to positive bending moment.

**PRINCIPAL DESIGN SECTION.** The vertical sections in a flat slab on which the moments in the rectangular directions are critical. (See Section 2667.)

**RATIO OF REINFORCEMENT.** The ratio of the effective area of the reinforcement cut by a section of a beam or slab to the effective area of the concrete at that section.

**RECTANGULAR DIRECTION.** A direction parallel to a side of the panel of a flat slab.

**REINFORCED CONCRETE.** Concrete in which metal is embedded in such a manner that the two materials act together in resisting forces.

**SAND.** Small grains resulting from the natural disintegration of rocks or the artificial crusher. (See Gravel.)

**SCREEN.** A metal plate with closely spaced circular perforations. (See Sieve.)

**SIEVE.** Woven wire cloth with square openings. (See Screen.)

**STRUT.** A compression member other than a column or pedestal.

**SURFACE WATER.** By the term "surface water" is meant all water carried by the aggregate except that held within the aggregate particles themselves by absorption.

**WALL BEAM.** A reinforced-concrete beam which extends from column to column along the outer edge of the wall panel.

**WATER-CEMENT RATIO.** By the water-cement ratio is meant the total quantity of water entering the mixture including the surface water carried by the aggregate, expressed in terms of the quantity of cement. The water-cement ratio shall be expressed in U. S. gallons per sack (94 lbs.) of cement.

**Sec. 2605. MATERIALS AND TESTS.** (a) The tests called for in these regulations when ordered in accordance with the provisions of this chapter by the Building Inspector or his authorized representatives shall be arranged for by the owner or his representative. No responsi-

bility for the expense of these tests shall attach to the Department of Building. Such tests shall be made in accordance with the standard method of test covering the particular material under consideration, of the American Society for Testing Materials in effect on the date of the adoption of these regulations, except as noted herein.

(b) All such tests shall be made by competent persons. The competency of the persons making the tests shall be judged by their training and experience. The Building Inspector may disapprove for just cause those whose records show technical incompetency. Copies of the results of all tests shall be kept on file in the office of the Building Inspector for a period of two years after the acceptance of the structure. Tests shall be made on any material entering into concrete or reinforced-concrete construction when there is reasonable doubt as to its suitability for the purpose.

(c) The Building Inspector or his authorized representative shall have the right to require reasonable tests of the concrete from time to time to determine whether the materials and methods in use are such as to produce concrete of the necessary quality. Specimens for such tests shall be taken at the place where concrete is being deposited, and shall be taken, cured and tested in accordance with the "Standard Method of Making Compression Tests of Concrete" (Serial Designation: C 39-27) of the American Society for Testing Materials.

Sec. 2606. LOAD TESTS. (a) The Building Inspector or his authorized representative shall have the right to order the test under load of any portion of a completed structure, when the conditions have been such as to leave reasonable doubt as to the adequacy of the structure to serve the purpose for which it was intended. Such tests shall not be required to be made on any concrete construction which is less than 60 days old.

(b) In such tests, the member or portion of the structure under consideration shall be subject to a superimposed load equal to one and one-half times the live load plus one-half of the dead load. This load shall be left in position for a period of twenty-four hours before removal. If, during the test, or upon removal of the load, the member or portion of structure shows evident failure, such changes or modifications as are necessary to make the structure adequate for the rated capacity shall be made, or where lawful, a lower rating shall be established. The structure will be considered to have failed to pass the test if within twenty-four hours after the removal of the load the slabs or beams do not show a recovery of at least 75 per cent of the maximum deflection shown during the twenty-four hours while under load.

Sec. 2607. INSPECTION. (a) All concrete work shall be inspected by the Architect or Engineer responsible for its design or by a competent representative responsible to the Architect or the Engineer. A record shall be kept of such inspection which shall cover the quantity and quality of concrete materials, including water, the mixing and placing of the concrete, and the placing of the reinforcing steel. The

inspection record shall also include a complete record of the progress of the work and of the temperatures, when these fall below 40 deg. F., and of the protection given to the concrete while curing. These records shall be available for inspection by the Building Inspector at all times during the progress of the work and shall be preserved for two (2) years after the acceptance of the structure.

Sec. 2608. PORTLAND CEMENT. (a) Portland Cement shall conform to the "Standard Specifications and Tests for Portland Cement" (Serial Designations: C9-30) of the American Society for Testing Materials.

Sec. 2609. CONCRETE AGGREGATES. (a) Concrete aggregates shall consist of natural sands and gravels, crushed rocks, crushed air-cooled blast-furnace slag, or other inert materials having clean, uncoated grain of strong and durable minerals. Aggregates containing soft, friable, thin, flaky, elongated or laminated particles totaling more than 3 per cent, or containing shale in excess of 1½ per cent, or silt and crusher dust finer than No. 100 standard sieve in excess of 2 per cent shall not be used.

These percentages shall be based on the weight of the combined aggregate as used in the concrete. When all three groups of these deleterious materials are present in the aggregates, the combined amounts shall not exceed five (5) per cent by weight of the combined aggregate.

(b) Aggregates shall not contain strong alkali or organic material which gives a color darker than the standard color when tested in accordance with the "Standard Method of Test for Organic Impurities in Sands for Concrete" (Serial Designations: C 40-27) of the American Society for Testing Materials.

(c) The maximum size of the aggregate shall be not larger than one-fifth of the narrowest dimension between forms of the member for which the concrete is to be used nor larger than three-fourths of the minimum clear spacing between reinforcing bars. By maximum size of aggregate is meant the clear space between the sides of the smallest square opening through which 95 per cent by weight of the material can be passed.

Sec. 2610. WATER. (a) Water used in mixing concrete shall be clean, and free from strong acids, alkalis, or organic materials.

Sec. 2611. METAL REINFORCEMENT. (a) Metal reinforcement shall conform to the requirements of the "Standard Specification for Billet-Steel Concrete Reinforcement Bars" of Intermediate Grade, (Serial Designation: A 15-35, or for "Rail-Steel Concrete Reinforcement Bars.") (Serial Designation: A 16-35 of the American Society for Testing Materials.) The provision in these specifications for machining deformed bars testing shall be eliminated.

(b) Wire for concrete reinforcement shall conform to the requirements of the "Standard Specifications for Cold-Drawn Steel Wire for Concrete Reinforcement." (Serial Designation: A 82-34 of the American Society for Testing Materials.)

(c) Structural steel shall conform to the requirements of the "Standard Specifications for Structural Steel for Buildings." (Serial Designation: A 9-24) of the American Society for Testing Materials.

(d) Cast-iron sections for composite or combination columns shall conform to "Standard Specifications for Cast-Iron Pipe and Special Castings" (Serial Designation: A 44-04) of the American Society for Testing Materials.

Sec. 2612. STORAGE OF MATERIALS. (a) Cement and aggregate shall be stored at the work in a manner to prevent deterioration or the intrusion of foreign matter. Any material which has deteriorated or has been damaged shall be immediately and completely removed from the work.

Sec. 2613. CONCRETE QUALITY. (a) The working stresses for the design of reinforced concrete structures shall be based upon the minimum ultimate 28-day strength of the concrete to be used in the structure in accordance with the values given in Section 2618. All plans submitted for approval on the work shall clearly show the strength of concrete for which all parts of the structures were designed. The strength of concrete shall be fixed in terms of the water-cement ratio in accordance with one of the following methods:

(1) By established results for average materials, as provided in Section 2614.

(2) By specific test of materials for the structures, as provided in Section 2615.

(b) By the water-cement ratio is meant the total quantity of water entering the mixture including the surface water carried by the aggregate, expressed in terms of the quality of cement. The water-cement ratio shall be expressed in U. S. gallons per sack (94 lbs.) of cement.

NOTE: Grade. This recommendation is in accordance with "Commercial Standard No. 1 (New Billet-Steel Concrete Reinforcing Bars)" of the U. S. Department of Commerce, which establishes the intermediate grade as the single standard for billet-steel reinforcement. Until such time as existing stocks of structural and hard-grade billet-steel reinforcement, meeting the requirements of A. S. T. M. Specifications A 15-14 are exhausted, these grades may be used with the unit stresses specified in Section 2619.

Sec. 2614. WATER-CEMENT RATIO FOR AVERAGE MATERIALS. (a) Where no preliminary tests of the materials to be used are made, the water-cement ratio shall not exceed the values in the following table. The mixes shown in the tables are approximate only, and may require adjustment to give proper workability.

## ASSUMED STRENGTH OF CONCRETE MIXTURES

Water-Cement Ratio U. S. gallons per 94-lb. sacks of cement	Approximate Mix Volume of Portland Cement to Sum of Separate Volumes of fine and coarse Aggregate as Measured Dry	Assumed Compressive Strength at 28 Days in pounds per square inch
<b>PLASTIC CONCRETE</b>		
8¼	1:7	1,500
7½	1:6	2,000
6¾	1:5¼	2,500
6	1:4½	3,000
<b>Moderately Wet Concrete</b>		
8¼	1:6½	1,500
7½	1:5½	2,000
6¾	1:4¾	2,500
6	1:4	3,000

Note: In interpreting this table, surface water contained in the aggregate must be included as part of the mixing water in computing the water-cement ratio. See Section 2617 for Mix.

(b) During the progress of this work, a reasonable number of compression tests shall be made as may be required by the Building Inspector, but at least one specimen shall be tested for each 100 cu. yd. of concrete being placed. The tests shall be made in accordance with provisions of Section 2616. Should the average 28-day strength fall below the minimum ultimate strength called for on the plans, the Building Inspector shall have the right to require a load test under the provisions of Section 2606.

### Sec. 2615. WATER-CEMENT RATIO BY TEST OF MATERIALS.

(a) Where the water-cement ratios for the various strengths of concrete are to be established by test these tests shall be made in advance of the beginning of operations using the materials proposed and consistencies suitable for the work and in accordance with the "Standard Method of Making Compression Tests of Concrete" (Serial Designation: C 39-27) of the American Society for Testing materials, including the provisions for curing in a moist room at 70 deg. F. and testing wet. A curve representing the relation between the average 28-day strength of the concrete and water-cement ratio shall be established for a range of values including all of the strengths called for in the plans. The tests shall include at least four different water-cement ratios and at least four specimens for each water-cement ratio. The water-cement ratio to be used in the structure shall be that corresponding to a point on the curve established by these tests representing a strength of concrete 15 per cent higher than the minimum ultimate strength called for on the plans and satisfactory evidence shall be submitted to show that these water-cement ratios are not exceeded. No substitution shall

be made in the materials being used on the work without additional tests in accordance herewith, to show the new water-cement ratios to be used.

(b) During the progress of the work, a reasonable number of additional 28-day compression tests may be required by the Building Inspector, but at least one specimen shall be tested for each 50 cubic yards of concrete of any one strength, and not less than two specimens of each strength of concrete for any one day's operation. Such tests shall be made in accordance with the provisions of Section 2616. Should the average strengths of the control cylinders shown by these tests for any portion of the structure fall below the minimum ultimate 28-day strengths called for on the plans, the Building Inspector shall have the right to order a change in the mix of the water-cement ratios for the remaining portion of the structure and to require load tests as specified in Section 2606 on the portions of the building affected. Should the average strengths shown by the cylinders cured on the job and tested subsequent to 28 days fall below the required strength, the Building Inspector shall have the right to require conditions of temperature and moisture necessary to secure the required strength.

Sec. 2616. FIELD TESTS OF CONCRETE. (a) Field tests of concrete, when required, shall be made in accordance with the "Standard Method of Making Compression Tests of Concrete" (Serial Designation: C 39-33 of the American Society for Testing Materials) with the following exceptions:

(1) Two sets of samples of concrete for test specimens shall be taken as the concrete is being delivered at the point of deposit, care being taken to obtain a sample representative of the entire batch.

(2) One set designated as control cylinders shall be placed under moist curing conditions at approximately 70 deg. F. within 24 hours after molding and maintained therein until tested.

(3) The second set, designated as job cylinders, shall be kept as near to the point of sampling as possible and yet receive the same protection from the elements as is given to the portions of the structure being placed. Specimens shall be kept from injury while on the work. They shall be sent to the laboratory not more than 7 days prior to the time of test and while in the laboratory shall be kept in the ordinary air at a temperature of approximately 70 deg. F.

(b) All specimens and tests shall be made by a properly qualified person or testing laboratory, who shall furnish the Building Inspector with a report, certified in the presence of a notary public, showing the results of tests and stating that they were made in accordance with the provisions of this Code.

Sec. 2617. CONCRETE PROPORTIONS AND CONSISTENCY.

(a) The proportions of aggregates to cement for concrete of any water-cement ratio shall be such as to produce concrete that will work readily into the corners and angles of the form and around the reinforcement without excessive puddling or spading and without permitting

the materials to segregate or free water to collect on the surface. The combined aggregate shall be of such composition of sizes that when separated by the No. 4 standard sieve, the weight retained on the sieve shall not be less than one-third nor more than two-thirds of the total nor shall the amount of coarse material be such as to produce harshness in placing or honeycombing in the structure. When forms are removed, the faces and corners of the members shall show smooth and sound throughout.

(b) The methods of measuring concrete materials shall be such that the proportion of water to cement can be accurately controlled during the progress of the work and easily checked at any time by the Building Inspector or his authorized representative.

(c) CONCRETE MIX. For all concrete work not supervised by a designing engineer or approved by a testing laboratory, or when the methods of proportioning the concrete ingredients are not subject to greater accuracy, the minimum concrete quality recognized by the Building Inspector shall be 2000 pounds strength proportioned as follows: One (1) cubic foot or one (1) sack of cement, two and one-half ( $2\frac{1}{2}$ ) cubic feet of sand as specified in Section 2609 and four (4) cubic feet of coarse aggregate mixed one and one-half ( $1\frac{1}{2}$ ) minutes in a machine mixer with sufficient water to make a plastic mix with no free water.

Sec. 2618. ALLOWABLE UNIT STRESSES IN CONCRETE.

(a) The unit stresses in pounds per square inch on the concrete to be used in the design shall not exceed the following values, where  $f'$  equals the minimum ultimate strength at 28 days:

Building code requirements for reinforced concrete A.C.I. (American Concrete Institute) 318-47 DTD. Sept., 1947 — Adopted as part of building code.—See page 311 .

DESCRIPTION	Allowable Unit Stresses			
	For any Strength of concrete as fixed by test in accordance with Section 2615 $n=30,000$ $f'_c$	When strength of concrete is fixed by the Water-Cement Ratio in Accordance with Section 2614		
		$f'_c=2000$ lb. $n=15$	$f'_c=2500$ lb. $n=12$	3000 lb $f'_c=$ $n=10$
Flexure $f_c$				
Extreme fibre stress in compression ( $f_c$ ) .....	$0.40f'_c$	800	1000	1200
Extreme fibre stress in compression adjacent to supports of continuous or fixed beams or of rigid frames ( $f_c$ ) .....	$0.45f'_c$	900	1125	1350
Shear: $v$				
Beams with no web reinforcement and without special anchorage of longitudinal steel ( $v_c$ ) .....	$0.02f'_c$	40	50	60
Beams with no-web reinforcement, but with special anchorage of longitudinal steel ( $v_c$ ) .....	$0.03f'_c$	60	75	90
Beams with properly designed web reinforcement but without special anchorage of longitudinal steel ( $v$ ) .....	$0.06f'_c$	120	150	180
Beams with properly designed web reinforcement and with special anchorage of longitudinal steel ( $v$ ) .....	$0.09f'_c$	180	225	270
For conditions determining the use of greater shear values see Section 2664 (e) .....				
Flat slabs at distance $d$ from edge of column cap or drop panel ( $v_c$ ) .....	$0.03f'_c$	60	75	90
Footings where longitudinal bars have no special anchorage ( $v_c$ ) .....	$0.02f'_c$	40	50	60
Footings where longitudinal bars have special anchorage ( $v_c$ ) .....	$0.03f'_c$	60	75	90



<b>Bond: <math>u</math>.</b>					
<b>In beams and slabs and one-way footings:</b>					
Plain bars ( $u$ ) .....	$0.04f'_c$	80	100	120	
Deformed bars ( $u$ ) .....	$0.05f'_c$	100	125	150	
<b>In two-way footings:</b>					
Plain bars ( $u$ ) .....	$0.03f'_c$	60	75	90	
Deformed bars ( $u$ ) .....	$0.0375f'_c$	75	94	112	
(Where special anchorage is provided (See Section 2664) double these values in bond may be used.)					
<b>Bearing: <math>f_c</math>.</b>					
Where a concrete member has an area at least twice the area in bearing ( $f_c$ ) .....					
Axial compression: $f_c$	$0.25f'_c$	500	625	750	
In columns with lateral ties ( $f_c$ ) .....	$0.225f'_c$	450	563	675	
In columns with continuous spirals enclosing a circular core:*					
Ratio of longitudinal reinforcement	} $p=0.01$ .....	$300+0.14f'_c$	580	650	720
		$300+0.18f'_c$	660	750	840
		$300+0.22f'_c$	740	850	960
		$300+0.26f'_c$	820	950	1080
		$300+0.30f'_c$	900	1050	1200
		$300+0.34f'_c$	980	1150	1320
(Spiral reinforcement not to be less than $\frac{1}{4}$ the longitudinal.)					

\*Unit stress in spirally reinforced columns =  $[300 + (0.10 + 4p)f'_c]$ .

Sec. 2619. ALLOWABLE UNIT STRESSES IN REINFORCEMENT. (a) The following unit stresses in reinforcing steel shall not be exceeded:

**TENSION:**

Intermediate grade billet steel,.....( $f_s$ ) = 20,000 lb. per sq. in.  
 Rail steel bars .....( $f_s$ ) = 20,000 lb. per sq. in.  
 Web reinforcement .....( $f_s$ ) = 16,000 lb. per sq. in.  
 Structural steel shapes .....( $f_s$ ) = 18,000 lb. per sq. in.  
 Other steel reinforcement 50 per cent of the yield point stress, but not to exceed. ( $f_s$ ) = 20,000 lb. per sq. in.

**COMPRESSION:**

Bars .....  $nf_c$   
 Structural Steel section in composite columns..... 15,000 lb. per sq. in.  
 Cast iron section in composite columns..... 9,000 lb. per sq. in.

(See Section 2685 for stresses in structural steel and cast iron not encased in concrete).

Structural Steel section in combination column (see Section 2686).

Until existing stocks of structural and hard grades of billet-steel reinforcement are exhausted, these grades, if conforming to the provision of Section 2611, may be used with the following unit stresses:

Structural Grade ..... ( $f_s$ ) = 18,000 lbs. per sq. in.  
Hard Grade ..... ( $f_s$ ) = 20,000 lbs. per sq. in.

#### MIXING AND PLACING CONCRETE.

Sec. 2620. REMOVAL OF WATER FROM EXCAVATION. (a) Water shall be removed from excavations before concrete is deposited, unless otherwise directed by the Building Inspector. Any flow of water into the excavation shall be diverted through proper side drains to a sump, or be removed by other approved methods which will avoid washing the freshly deposited concrete. Water vent pipes and drains shall be filled by grouting or otherwise, after the concrete has thoroughly hardened.

Sec. 2621. CLEANING FORMS AND EQUIPMENT. (a) Before placing concrete, all equipment for mixing and transporting the concrete shall be cleaned, all debris and ice shall be removed from the places to be occupied by the concrete, forms shall be thoroughly wetted (except in freezing weather) or oiled, and clay or cement tile that will be in contact with concrete shall be well drenched (except in freezing weather). Reinforcement shall be thoroughly cleaned of ice or other coatings.

Sec. 2622. Reserved.

Sec. 2623. INSPECTION. (a) Concrete shall not be placed until the forms and reinforcement have been inspected by the Architect or Engineer responsible for the design or his authorized representative.

Sec. 2624. MIXING. (a) The concrete shall be mixed until there is a uniform distribution of the materials and the mass is uniform in color and homogeneous. The mixer shall be of such type as to insure the maintaining of the correct proportions of the ingredients. The mixing shall continue for at least one minute after all the ingredients are in the mixer.

Sec. 2625. TRANSPORTING. (a) Concrete shall be handled from the mixer to the place of final deposit as rapidly as practicable by methods which will prevent the separation or loss of the ingredients. It shall be deposited as nearly as practicable in its final position to avoid rehandling or flowing. Under no circumstances shall concrete that has partially hardened be deposited in the work.

NOTE: Steel. Until existing stocks of structural and hard grades of billet-steel reinforcement are exhausted, these grades, if conforming to the provision of Sec. 2611, may be used with the following unit stresses:

Structural Grade ..... ( $f_s$ ) = 18,000 lb. per sq. in.  
Hard Grade ..... ( $f_s$ ) = 20,000 lb. per sq. in.

(b) When concrete is conveyed by chuting, the plant shall be of such size and design as to insure a practically continuous flow in the chute. The slope of the chute shall be such as to allow the concrete to flow without separation of the ingredients. The delivery end of the chute shall be as close as possible to the point of deposit. When the operation is intermittent, the spout shall discharge into a hopper. The chute shall be thoroughly flushed with water before and after each run; the water used for this purpose shall be discharged outside the forms.

Sec. 2626. Reserved.

Sec. 2627. PLACING.

(a) When concreting is once started, it shall be carried on as a continuous operation until the placing of the section or panel is completed. Where construction joints are necessary, they shall be made in accordance with Section 2636.

(b) Concrete shall be thoroughly compacted by puddling with suitable tools during the operation of placing, and thoroughly worked around the reinforcement, around embedded fixtures, and into the cornice of the forms.

(c) Where conditions make puddling difficult, or where the reinforcement is congested, batches of mortar containing the same proportion of cement to sand used in the concrete shall first be deposited in the forms and the operation of filling with the regularly specified mix be carried on at such a rate that the mix is at all times plastic and flows readily into the spaces between the bars.

(d) A record shall be kept on the work of the time and date of placing the concrete in each portion of the structure. Such record shall be kept until the completion of the structure and shall be open to the inspection of the Building Inspector.

Sec. 2628. CURING.

(a) Exposed surfaces of concrete shall be kept moist for a period of at least 7 days after being deposited. In hot weather, exposed concrete shall be thoroughly wetted twice daily during the first week.

Sec. 2629. DEPOSITING IN COLD WEATHER. (a) When depositing concrete at freezing or near freezing temperatures, the concrete shall have a temperature of at least 50 deg. F., but not more than 120 Deg. F. The concrete shall be maintained at a temperature of at least 50 Deg. F. for not less than 72 hours after placing or until the concrete has thoroughly hardened. When necessary, concrete materials shall be heated before mixing. Dependence shall not be placed on salt or other chemicals for the prevention of freezing. No frozen materials or materials containing ice shall be used. Manure shall not be applied directly to concrete when used for protection.

#### FORMS AND DETAILS OF CONSTRUCTION.

Sec. 2630. DESIGN OF FORMS:

(a) Forms shall conform to the shape, lines, and dimensions of the member as called for on the plans. They shall be substantial and sufficiently tight to prevent leakage of mortar; they shall be properly braced or tied together so as to maintain position and shape and insure safety

to workmen and passersby. Temporary openings shall be provided where necessary to facilitate cleaning and inspection immediately before depositing concrete.

Sec. 2631. REMOVAL OF FORMS. (a) The removal of forms shall be carried out in such a manner as to insure the complete safety of the structure. Where the structure as a whole is supported on shores, removable floor forms, beams and girder sides, column and similar vertical forms may be removed within 24 hours, providing the concrete has hardened sufficiently that it is not injured. In no case shall the supporting forms be disturbed until the concrete has hardened sufficiently to permit their removal with safety. Shoring shall not be removed until the member has acquired sufficient strength to support safely its weight and the load upon it.

Sec. 2632. CLEANING AND BENDING REINFORCEMENT.

(a) Metal reinforcement, before being placed, shall be free from rust, scale or other coatings that will destroy or reduce the bond. Reinforcement shall be formed to the dimensions indicated on the plans. Cold bends shall be made around a pin having a diameter of four or more times the least dimension of the bar.

(b) Metal reinforcement shall not be bent or straightened in a manner that will injure the material. Bars with kinks or bends not shown on the plans shall not be used. Heating of reinforcement for bending will not be permitted.

Sec. 2633. PLACING REINFORCEMENT. (a) Metal reinforcement shall be accurately placed and secured, and shall be supported by concrete or metal chairs or spacers, or metal hangers. The minimum center to center distance between parallel bars shall be  $2\frac{1}{2}$  times the diameter for round bars or 3 times the side dimension for square bars; if the ends of bars are anchored as specified in Section 2664, the center to center spacing may be made equal to 2 diameters for round bars or to  $2\frac{1}{2}$  times the side dimension for square bars, but in no case shall the clear spacing between bars be less than 1 inch, nor less than  $1\frac{1}{3}$  times the maximum size of the coarse aggregate. Bars at the upper face of any member shall be embedded a clear distance of not less than one diameter, nor less than 1 inch.

Sec. 2634. SPLICES AND OFFSETS IN REINFORCEMENT.

(a) In slabs, beams, and girders, splices of reinforcement shall not be made at points of maximum stress without the approval of the Building Inspector. Splices, where permitted, shall provide sufficient lap to transfer the stress between bars by bond and shear. In such splices, the bars shall be spaced at the minimum distance specified in Section 2633.

(b) Splices in column bars shall provide a lap of 24 diameters for deformed bars and 30 diameters for plain bars.

(c) Where changes in the cross-section of a column occur, the longitudinal bars shall be sloped for the full length of the column or offset in a region where lateral support is afforded. Where offset, the

slope of the inclined portion from the axis of the column shall not be more than 1 in 6.

Sec. 2635. PROTECTIVE COVERING OF CONCRETE. (a) At those surfaces of footings and other principal structural members in which the concrete is deposited directly against the ground, metal reinforcement shall have a minimum covering of 3 inches of concrete. At other surfaces of concrete exposed to the ground or weather, metal reinforcement shall be protected by not less than 2 inches of concrete.

(b) In fire-resistive construction, metal reinforcement shall be protected by not less than 1 in. of concrete in slabs and walls, and not less than  $1\frac{1}{2}$  in. in beams, girders and columns, provided coarse aggregate is used, which is free from disruptive action under high temperatures, as, for example, limestone or trap rock; when impracticable to obtain aggregate of this grade, the protective covering shall be  $\frac{1}{2}$  in. thicker and shall be reinforced with metal mesh having openings not exceeding three inches placed 1 in. from the finished surface. In similar structures where the fire hazard is limited, the metal reinforcement shall not be placed nearer the exposed surface than  $\frac{3}{4}$  in. in slabs and walls, or 1 in. in beams, girders and columns.

(c) Cement or gypsum plaster,  $\frac{3}{4}$  in. or more in thickness (on metal lath weighing not less than  $2\frac{1}{2}$  lb. per sq. yd. when used vertically, nor less than three lb. per sq. yd. when used horizontally) may be substituted for a part of the protective covering of concrete, provided that only two-thirds of the thickness of the plaster be considered effective and the concrete protection shall in no case be reduced to less than  $\frac{3}{4}$  in.

(d) Exposed reinforcement bars intended for bonding with future extensions shall be protected from corrosion.

Sec. 2636. CONSTRUCTION JOINTS. (a) Joints not indicated on the plans shall be so made and located as to least impair the strength of the structure. Where a horizontal joint is to be made, any excess water and laitance shall be removed from the surface after concrete is deposited. Before depositing of concrete is resumed, the hardened surface shall be cleaned and roughened and all weak concrete removed.

(b) At least 2 hours must elapse after depositing concrete in the columns or walls before depositing in beams, girders, or slabs supported thereon. Beams, girders, brackets, column capitals, and haunches shall be considered as part of the floor system and shall be placed monolithically therewith.

(c) Construction joints in floors shall be located near the middle of spans of slabs, beams, or girders, unless a beam intersects a girder at this point, in which case the joints in the girders shall be offset a distance equal to twice the width of the beams. In this last case provision shall be made for shear by use of inclined reinforcement.

#### DESIGN--GENERAL CONSIDERATIONS.

Sec. 2637. ASSUMPTIONS. (a) The design of reinforced-concrete members under these specifications shall be made with reference to

working stresses and safe loads. The accepted theory of flexure as applied to reinforced concrete shall be applied to all members resisting bending involving the following assumptions:

- (1) The steel takes all tensile stress,
- (2) The ratio  $n$  of the modulus of elasticity of the steel to that of the concrete shall be taken as follows (applies also for compression members):

$$n = \frac{E_s}{1,000 f'_c} = \frac{30,000}{f'_c}$$

Sec. 2638. NOTATION. (a) The symbols and notation used in these regulations are defined as follows:

- $a$  = width of face of column or pedestal;
- $\alpha$  = angle between inclined web bars and axis of beam.
- $A$  = total area of top of pedestal, pier, or footing;
- $A'$  = loaded area of pedestal, pier, or footing at the column base;
- $A_c$  = area of core of spirally-hooped column measured to the outside diameter of the spiral;
- $A_g$  = gross area of tied columns with lateral ties;
- $A_s$  = effective cross-sectional area of metal reinforcement in tension in beams or compression in columns; and the effective cross-sectional area of metal reinforcement which crosses any of the principal design sections of a flat slab and which meets the requirements of Sec. 2671, 2673, 2674 and 2675;
- $A_v$  = total area of web reinforcement in tension within a distance of  $s$  (measured perpendicular to the direction of the web reinforcement bar), or the total area of all bars bent up in any one plane;
- $b$  = width of rectangular beam or width of flange of T-beam;
- $b'$  = thickness of web in beams of I or T sections;
- $b_1$  = dimension of the dropped panel of a flat slab in the direction parallel to  $l_1$ ;
- $c$  = diameter in feet of column capital of a flat slab at the underside of the slab, or dropped panel. No portion of the column capital shall be considered for structural purposes which lies outside of the largest 90° cone that can be included within the outlines of the column capital;
- $c$  = projection of footing from face of column or pedestal;
- $d$  = depth from compression surface of beam or slab to center of longitudinal tensile reinforcement;
- $E_c$  = modulus of elasticity of concrete in compression;
- $E_s$  = modulus of elasticity of steel in tension or compression = 30,000,000 lb. per sq. in.;

- $f_c$  = compressive unit stress in extreme fiber of concrete in flexure or axial compression in concrete in column;
- $f'_c$  = ultimate compressive strength of concrete at age of 28 days;
- $f_r$  = compressive unit stress in metal core;
- $f_s$  = tensile unit stress in longitudinal reinforcement;
- $f_w$  = tensile unit stress in web reinforcement;
- $h$  = unsupported length of column;
- $I$  = moment of inertia of a section about the neutral axis for bending;
- $l$  = span length of beam or slab (generally distance from center to center of supports); for special cases, see Sec. 2642 and Sec. 2670;
- $l$  = span length of flat slab panel (usually expressed in feet) center to center of columns, in the direction in which moments are considered. (See Sec. 2668);
- $l_1$  = span length of flat slab, center to center of columns, perpendicular to the rectangular direction in which moments are considered;
- $M$  = bending moment or moment of resistance in general;
- $M_o$  = sum of positive and negative bending moments at the principal design sections of a panel of a flat slab (see Sec. 2668);
- $\eta = E_s/E_c$  = ratio of modulus of elasticity of steel to that of concrete;
- $\Sigma_o$  = sum of perimeters of bars in one set;
- $p$  = ratio of effective area of tensile reinforcement to effective area of concrete in beams =  $A_s/bd$ ; and the ratio of effective area of longitudinal reinforcement to the area of the concrete core in columns;
- $p_s$  = permissible unit stress on pedestal, pier, or footing when the full area is loaded;
- $P$  = total safe axial load on column whose length does not exceed 11 times its least cross-sectional dimension;
- $P'$  = total safe axial load on long column;
- $r_s$  = permissible unit working stress in concrete over the loaded area of a pedestal, pier, or footing;
- $R$  = least radius of gyration of a section;
- $s$  = spacing of stirrups measured perpendicular to the direction of the stirrup;
- $t$  = thickness of flange of T-beam;
- $t_1$  = thickness of flat slab without dropped panels; or the thickness of flat slabs, including dropped panels where one is used;
- $t_2$  = thickness of flat slab with dropped panels at points away from the dropped panel;

$u$  = bond stress per unit of area of surface of bar;  
 $v$  = shearing unit stress;  
 $v_c$  = unit shearing stress permitted on the concrete of the web; the value depending on the anchorage of the longitudinal reinforcement;  
 $V$  = Total shear;  
 $V'$  = excess of the total shear over that permitted on the concrete;  
 $w$  = uniformly distributed load per unit of length of beam or slab;  
 $w$  = upward reaction per unit of area of base of footing;  
 $w'$  = uniformly distributed dead and live load per unit of area of a floor or roof (in flat slabs usually expressed in pounds per square foot);  
 $W$  = total dead and live load uniformly distributed over a single panel area (in flat slabs usually expressed in pounds and includes the dead weight of any raised or depressed portions).

Sec. 2639. DESIGN LOADS. (a) The provisions for design herein specified are based on the assumption that all structures shall be designed for all dead-and live-loads coming upon them, the live-loads to be in accordance with the general requirements of the Building Code of which this forms a part, with such reductions for girders and lower story columns as are permitted therein.

Sec. 2640. WIND LOADS. (a) Provisions shall be made for wind loads in accordance with the general provisions of the Code of which this forms a part. In designing the members to resist wind loads, the allowable unit stresses for dead-and live-loads and wind loads may be increased to 150 per cent of the allowable values specified in Sec. 2618 and 2619, but the section shall not be less than that required if the wind load be neglected.

#### FLEXURAL COMPUTATIONS AND MOMENT COEFFICIENTS.

Sec. 2641. FORMULAS FOR FLEXURE. (a) Computations of flexural resistance of reinforced-concrete beams and slabs shall be based on the assumptions of Sec. 2637. The customary formulas or their equivalent shall be used.

Sec. 2642. SPAN LENGTH. (a) The span length of freely supported beams and slabs shall be the clear span plus the depth of beam or slab, but shall not exceed the distance between centers of the supports.

(b) The span length for continuous or restrained beams built to act integrally with supports shall be the clear distance between faces of supports.

(c) For continuous or restrained beams having brackets built to act integrally with both beam and support and of a width not less than the width of the beam and making an angle of 45 degrees or more with the horizontal, the span shall be measured from the section where the combined depth of the beam and bracket is at least one-third more than the depth of the beam. No portion of such a bracket shall be



considered as adding to the effective depth of the beam. Bracket making an angle of less than 45 degrees with the horizontal may be considered as increasing the effective depth of the beam, but not as decreasing the span length.

(d) Maximum negative moments are to be considered as existing at the ends of the span, as defined above.

Sec. 2643. DEPTH OF BEAM OR SLAB. (a) The depth of the beam or slab shall be taken as the distance from the centroid of the tensile reinforcement to the top surface of the structural slab. Any floor finish not placed monolithic with the floor slab shall not be included as a part of the structural member. When the finish is placed monolithic with the structural slab in buildings of the warehouse or industrial class where the finish is subjected to unusual wear from trucking or other causes, there shall be placed an additional depth of  $\frac{1}{2}$  in. over that used in the design of the member.

Sec. 2644. POINT OF INFLECTION. (a) For the purpose of these regulations, the point of inflection in beams and slabs of equal spans symmetrically loaded shall be assumed to be located at the fifth point of the span as defined in Sec. 2642.

Sec. 2645. DISTANCE BETWEEN LATERAL SUPPORT. (a) The clear distance between lateral supports of a beam shall not exceed 32 times the least width of compression flange.

Sec. 2646. REQUIREMENTS FOR T-BEAMS. (a) In T-Beam construction the slab shall be built integrally with the beam. The effective flange width to be used in the design of symmetrical T-beams shall not exceed one-fourth of the span length of the beam, and its overhanging width on either side of the web shall not exceed eight times the thickness of the slab nor one-half the clear distance to the next beam.

(b) For beams having a flange on one side only, the effective overhanging flange width shall not exceed one-twelfth of the span length of the beam, nor six times the thickness of the slab, nor one-half the clear distance to the next beam.

(c) Where the principal reinforcement in a slab which is considered as the flange of a T-beam (not a rib in ribbed floors) is parallel to the beam, transverse reinforcement shall be provided in the top of the slab. This reinforcement shall be designed to carry the load on the portion of the slab assumed as the flange of the T-beam. The spacing of the bars shall not exceed five times the thickness of the flange, or in any case 18 in.

(d) Provision shall be made for the compressive stress at the support in continuous T-beam construction, care being taken that the provisions of Sec. 2633, relating to the spacing of bars, and Sec. 2627 (c) relating to the placing of concrete shall be fully met. In no case shall the area of steel in compression at any cross-section adjacent to the support exceed 2 per cent of the cross-sectional area of the stem of the beam in that section.

(e) The overhanging portion of the flange of the beam shall not be considered as effective in computing the shear and diagonal tension resistance of T-beams.

(f) Isolated beams in which the T-form is used only for the purpose of providing additional compression area, shall have a flange thickness not less than one-half the width of the web and a total flange width not more than four times the web thickness.

Sec. 2647. RIBBED FLOOR CONSTRUCTION. (a) Ribbed floor construction includes floor systems of ribs and slabs placed monolithically in which the ribs are not farther apart than 36 in. face to face. The ribs shall be straight, not less than 4 in. wide, nor of a depth more than 3 times the width.

(b) Where removable forms or fillers not complying with (c) are used the thickness of the concrete slab shall not be less than 1/12 of the clear distance between ribs and in no case less than 2 in.

(c) When burned clay or cement tile are used and concrete is placed on the top of such tile, it shall not be less than 1½ in. in thickness, nor less than one-twelfth of the clear distance between ribs. When the tile is so placed that the joints in alternate rows are staggered, the webs of the tile in contact with the ribs may be included in calculations involving shear or negative bending moment. No other portion of the tile may be included in design calculations.

(d) Where the floor is subject to impact from moving loads, or to wear, the slab thicknesses shall be increased ½ in. If a floor or covering ½ in. or more in thickness, not included in the structural slab, is used for a wearing surface, no increase need be made.

(e) Where the slab contains conduits or pipes, the thickness shall not be less than 1 in. plus the total overall depth of such conduits or pipes at any point. Such conduits or pipes shall be so located as not to reduce the strength of the construction.

(f) Shrinkage reinforcement in the slab must be provided as required in Section 2652.

Sec. 2648. *Moment Coefficients for Freely Supported or Slightly Restrained Continuous Beams or Slabs of Approximately Equal Span; Uniform Load;*

(a) Beams and slabs of approximately equal spans freely supported or built to act integrally with beams, girders, or other slightly restraining support, or beams and slabs built into brick or masonry walls in a manner which develops only partial end restraint, and carrying uniformly distributed loads shall be designed for the following moments at critical sections:

- (1) Beams and slabs of one span,  
Positive moment near center,

$$M = \frac{wl^2}{8} \quad (1)$$

- (2) Beams and slabs continuous for two spans only,  
Positive moment near center,

$$M = \frac{wl^2}{10} \dots\dots\dots (2)$$

Negative moment over interior support,

$$M = \frac{wl^2}{8} \dots\dots\dots (3)$$

- (3) Beams and slabs continuous for more than two spans,  
Positive moment near center and negative moment at  
support of interior spans,

$$M = \frac{wl^2}{12} \dots\dots\dots (4)$$

Positive moment near center of end spans and negative  
moment at first interior support.

$$M = \frac{wl^2}{10} \dots\dots\dots (5)$$

- (4) Negative moment at end supports for cases (1), (2),  
and (3) of this section,

$$M = \text{not less than } \frac{wl^2}{24} \dots\dots\dots (6)$$

Sec. 2649. MOMENT COEFFICIENTS FOR FULLY RESTRAINED CONTINUOUS BEAMS OR SLABS OF APPROXIMATELY EQUAL SPAN; UNIFORM LOAD: (a) Beams and Slabs of approximately equal spans built to act integrally with columns, walls or other restraining supports and assumed to carry uniformly distributed loads, shall (except as provided in Sec. 2648) be designed for the following moments at critical sections:

- (1) Interior spans;  
Negative moment at interior supports except the first,

$$M = \frac{wl^2}{12} \dots\dots\dots (7)$$

Positive moment near centers of interior spans,

$$M = \frac{wl^2}{16} \dots\dots\dots (8)$$

- (2) End spans of continuous beams or slabs, and beams or  
slabs of one span;

Where  $l/l$  is less than twice the sum of the values of  $l/h$  for the exterior columns above and below which are built into the beams;

Positive moment near center of span and negative moment at first interior supports,

$$M = \frac{wl^2}{12} \dots\dots\dots (9)$$

Negative moment at exterior supports,

$$M = \frac{wl^2}{12} \dots\dots\dots (10)$$

Where  $l/l$  is equal to or greater than twice the sum of the values of  $l/h$  for the exterior column above and below which are built into the beams;

Positive moment near center of span and negative moment at first interior support,

$$M = \frac{wl^2}{10} \dots\dots\dots (11)$$

Negative moment at exterior support,

$$M = \frac{wl^2}{16} \dots\dots\dots (12)$$

(b) In this section,  $I$  represents the moment of inertia which for those calculations, shall be computed on the assumption that the member is homogeneous, neglecting the reinforcement, but including that portion of the concrete section outside of the reinforcement which is ordinarily considered as fireproofing.  $l$  and  $h$  are the span length and column height, respectively, as defined in Sec. 2642 and 2681.

Sec. 2650. MOMENT COEFFICIENTS FOR CONTINUOUS BEAMS OR SLABS OF UNEQUAL SPAN OR WITH NON-UNIFORM LOADS: (a) Continuous beams with substantially unequal spans, or with other than uniformly distributed loading, whether freely supported or restrained, shall be designed for the maximum moments resulting from the most severe probable combination of loading and restraint. Provision shall be made where necessary for negative moment near the center of short spans which are adjacent to long spans, and for the negative moment at the end supports, if restrained.

Sec. 2651. COMPRESSION STEEL IN FLEXURAL MEMBERS.

(a) Where it is necessary to introduce steel in compression in girders, beams, or slabs, such steel shall be thoroughly anchored by ties or stirrups not less than  $\frac{1}{4}$  in. in size which shall be spaced not more than 8 in. apart over the distance where the compression steel is required.

Sec. 2652. SHRINKAGE AND TEMPERATURE REINFORCEMENT.

(a) Reinforcement for shrinkage and temperature stresses normal to the principal reinforcement shall be provided in floor and roof slabs where the principal reinforcement extends in one direction only. Such reinforcement shall provide for the following minimum ratios of reinforcement area to concrete area, but in no case shall such reinforcing bars be placed farther apart than five times the slab thickness nor more than 18 in.:

Floor slabs where plain bars are used.....	0.0025
Floor slabs where deformed bars are used.....	0.002
Floor slabs where wire fabric is used, having welded intersections not farther apart in the direction of stress than 12 in.....	0.0018

Roof slabs where plain bars are used.....	0.003
Roof slabs where deformed bars are used.....	0.0025
Roof slabs where wire fabric is used, having welded intersections not farther apart in the direction of stress than 12 in. ....	0.0022

**\*Sec. 2653. FLOORS REINFORCED IN TWO DIRECTIONS.**

(a) Concrete floors supported on four sides by beams, girders, or walls, and reinforced in two directions, shall be designed as follows, using moment coefficient given in Sections 2648—2649—2650, as required, except as indicated under (e).

(b) If the length of the slab exceeds one and one-half times its width, the entire load shall be carried in the short direction.

(c) In case of square panels and uniformly distributed load, one-half the live—and dead—load may be assumed as being resisted by each cross band.

(d) In rectangular panels of length  $L$  and breadth  $B$ , the portion of the load which shall be assumed as being supported by the slab in the short direction shall be equal to  $(\frac{L}{B} + 1)$  times the total load.

$$\frac{L}{B} + 1$$

The remainder of the load shall be assumed as being supported by the slab in the long direction. The reinforcement in the long direction shall in no case be less than that specified in Sec. 2652 for shrinkage and temperature reinforcement.

(e) In placing the reinforcement account may be taken of the facts that the moment is less in the portions of the band which are adjacent and parallel to the supporting beams. In the one-quarter width of band parallel and adjacent to the beams, the computed moment may be reduced 50 per cent.

(f) Beams supporting such slabs shall be assumed to take the portion of the load as determined in (b), (c) or (d) without advantage of any reduction in live-load permitted in other sections of this Code. The total load for each beam shall be assumed as uniformly distributed.

(g) In slabs other than ribbed floor construction or flat slabs, the principal reinforcement shall not be spaced farther apart than two times the slab thickness, nor shall the ratio of reinforcement be less than specified in Sec. 2652-(a).

\*The committee feels that this section may be too conservative. However, the additional investigation necessary to determine proper design methods requires more time than has been available.

**Sec. 2654. SHEAR AND DIAGONAL TENSION.** Shearing Unit Stress: (a) The shearing unit stress ( $v$ ) in reinforced-concrete beams shall be computed by formula (14):

$$v = \frac{8V}{7bd} \quad (14)$$

When the value of the shearing unit stress computed by formula (14) exceeds the unit shearing stress ( $v_c$ ) permitted on the concrete of the web (See Section 2618-A), web reinforcement shall be provided to carry the excess.

(b) For beams of  $I$  or  $T$  section  $b'$  shall be substituted for  $b$  in formula (14).

(c) In tile and joist construction,  $b$  may be taken as a width equal to the thickness of the concrete web plus the thickness of the vertical webs of the concrete or clay tile in contact with the joist as in Sec. 2647.

Sec. 2655. TYPES OF WEB REINFORCEMENT: (a) Web reinforcement may consist of:

- (1) Vertical stirrups or web reinforcing bars;
- (2) Inclined stirrups or web reinforcing bars forming an angle of 30 deg. or more with the axis of the beam.
- (3) Longitudinal bars bent up at an angle of 15 deg. or more with the axis of the beam.

(b) Stirrups or bent-up bars to be considered effective as web reinforcement shall be anchored at both ends, according to the provisions of Sec. 2665.

Sec. 2656. STIRRUPS. (a) Area of steel required in stirrup shall be computed by formula (15).

$$A_v = \frac{V'}{14000d} \quad (15)$$

Sec. 2657. SPACING OF STIRRUPS. (a) Where the shearing stress is not greater than  $0.06f'_c$  the distance between two successive stirrups measured perpendicular to the direction of the stirrup shall not exceed  $\frac{3}{4}d$ , and where unit shearing stress exceeds  $0.06f'_c$ , it shall not be greater than  $\frac{3}{8}d$ .

Sec. 2658. BENT-UP BARS. (a) Where there is a series of parallel bent-up bars at varying distances from the support, they shall be considered as inclined stirrups and the area required determined from formula (15).

(b) Where bent-up bars in a single plane are used for web reinforcement, the required area of the bar shall be computed by formula (16).

$$A_v = \frac{V'}{16,000s \text{ in } \alpha} \quad (16)$$

(c) In formula (16),  $V'$  shall not exceed  $0.035f'_c bd$  nor  $\alpha$  be less than 15 deg. Only the center three-fourths of the inclined portion of such bar or group of bars shall be considered effective in resisting shear. Between the face of the support and the area reinforced by the bent-up bar, other web reinforcement shall be provided, except that when the distance is less than  $d/2$  and the beam is designed for uniform load only, such additional reinforcement need not be provided.

Sec. 2659. COMBINED WEB REINFORCEMENT. (a) Where two or more types of web reinforcement are used in conjunction, the total shearing resistance of the beam shall be assumed as the sum of the shearing resistances computed for the various types separately. In such computations the shearing resistance of the concrete shall be included only once.

Sec. 2660. SHEARING STRESS IN FLAT SLABS. (a) In flat slabs, the shearing unit stress on a vertical section which lies at a distance  $t_1-1\frac{1}{2}$  in. from the edge of the column capital and parallel with it, shall not exceed the following values when computed by formula (14) (in which  $d$  shall be taken as  $t_1-1\frac{1}{2}$  in.):

- (1)  $0.03f'_c$  when at least 50 per cent of the total negative reinforcement passes directly over the column capital;
- (2)  $0.025f'_c$  when 25 per cent of the total negative reinforcement passes directly over the column capital (which is the least that shall be permitted);
- (3) For intermediate percentages, intermediate values of the shearing unit stress shall be used.

(b) In flat slabs the shearing unit stress on a vertical section which lies at a distance of  $t_2-1\frac{1}{2}$  in. from the edge of the dropped panel and parallel with it shall not exceed  $0.03f'_c$  when computed by formula (14) (in which  $d$  shall be taken as  $t_2-1\frac{1}{2}$  in.). At least 50 per cent of the cross-sectional area of the negative reinforcement in two-column strips must be within the width of strip directly above the dropped panel.

Sec. 2661. SHEAR AND DIAGONAL TENSION IN FOOTINGS.

(a) The shearing unit stress computed by formula (14) on a vertical section, which lies at a distance  $d$  from the face of the supported column or pier and parallel with it, shall not exceed  $0.02f'_c$  for footings with straight bars, nor  $0.03f'_c$  for footings in which the bars are anchored at both ends by adequate hooks or otherwise specified in Section 2664.

(b) In footings supported on piles, the critical section for diagonal tension shall be considered the distance  $d/2$  from the face of the column or pedestal and any piles whose centers are at or within this section shall be excluded in computing the shear.

Sec. 2662. BOND AND ANCHORAGE: COMPUTATION OF BOND STRESS IN BEAMS. (a) Where reinforcement is used to resist tensile stresses developed by beam action, the bond stress shall be taken as not less than that computed by formula (17).

$$u = \frac{8V}{7\Sigma od} \quad (17)$$

(b) For continuous or restrained members, the critical section for bond for the positive reinforcement shall be assumed to be at the point of inflection, that for the negative reinforcement shall be assumed to be at the face of the support, and at the point of inflection.

For simple beams, or at the outer ends of freely supported end spans of continuous beams, the critical section for bond shall be assumed to be at the face of the support.

(c) Bent-up longitudinal bars which, at the critical section, are within a distance  $d/3$  from horizontal reinforcement under consideration may be included with the straight bars in computing  $\Sigma_0$ .

Sec. 2663. ORDINARY ANCHORAGE REQUIREMENTS. (a) Tensile negative reinforcement in any span or a continuous, restrained, or cantilever beam, or in any member of a rigid frame, shall have a length of anchorage beyond the face of the supporting member sufficient to develop the full maximum tension at an average bond stress not greater than  $0.04f'_c$ , for plain bars, or  $0.05f'_c$  for deformed bars. Within any such span, not less than one-third of the negative reinforcements shall extend along the tension side of the beam at least to or beyond the point of inflection, and any bars not so extended shall be bent down at an angle of not more than 45 deg. with the axis of the member and made continuous with the positive reinforcement or anchored in a region of compression.

(b) Of the positive reinforcement in continuous beams, not less than one-fourth the area shall extend at the same face of the beam into the support to provide an embedment of ten or more bar diameters beyond the face of the support.

(c) For non-continuous beams not less than one-half the area of positive reinforcement shall extend at the same face of the beam into the support to provide an embedment of ten or more bar diameters.

Sec. 2664. SPECIAL ANCHORAGE REQUIREMENTS. (a) Where increased shearing or bond stresses on account of special anchorages are permitted as specified in Section 2618, anchorage of all reinforcement as required in Section 2663 shall be increased to conform with the requirements of (b), (c), (d) and (e) of this section.

(b) In continuous and restrained beams, anchorage beyond points of inflection of at least one-third the area of the negative reinforcement and beyond the face of the support of at least one-third the area of the positive reinforcement, shall be provided to develop one-third of the allowable working stress in tension at average bond stresses not to exceed  $0.04f'_c$  for plain bars nor  $0.05f'_c$  for deformed bars.

(c) In footings, all bars shall be anchored by means of hooks at the end of the bar. The total length of bar shall be the width of the footing plus 20 bar diameters. The outer face of the hook shall not be less than 3 in. nor more than 4 in. from the face of the footing.

(d) In simple beams, or at the outer ends of freely supported end spans of continuous beams, at least one-half of the tensile reinforcement shall extend along the tension side of the beam to provide an anchorage beyond the face of the support for one-third of the allowable working stress in tension at an average bond stress not to exceed  $0.04f'_c$  for plain bars, nor  $0.05f'_c$  for deformed bars.



(e) In cases where the design of unusual members involves the use of unit shearing stresses in excess of  $0.09f'_c$ , values up to  $0.12f'_c$ , may be used, providing the requirements of this section are fully met, that the members in which these stresses are used shall be specially designated on the plans and that these members shall be constructed under the personal supervision of the designing engineer who shall notify the Building Inspector at least one day in advance of the placing of the concrete in such member. When required by the Building Inspector, the designing engineer shall submit an affidavit certifying that he has personally supervised the construction of these members and that the design and construction were in all respects as called for on the plans and in conformity with the provisions of this code.

Sec. 2665. ANCHORAGE OF WEB REINFORCEMENT. (a) Web reinforcement shall be anchored at both ends by one of the following methods or combination thereof, but only anchorage meeting the requirements of (1), (2) or (3) shall be used for shearing unit stresses in excess of  $0.08f'_c$ .

- (1) Providing continuity with the main longitudinal reinforcement.
- (2) Bending around the longitudinal bar or steel shape;
- (3) A hook which has a radius of bend not less than 4 times the diameter of the web bar;
- (4) A length of embedment sufficient to develop the stress in the stirrup by bond as provided below, provided also that the other end of the stirrup is anchored as in (1).

(b) The end anchorage of a web member not bearing on the longitudinal reinforcement shall be such as to engage an amount of concrete sufficient to prevent the bar from pulling out. In all cases the stirrups shall be carried as close to the upper and lower surfaces as fireproofing requirements permit.

(c) The stress in a stirrup or web reinforcement bar shall not exceed a value equal to the surface area of the bar embedded within the upper or lower one-half of the beam multiplied by  $0.04f'_c$  for plain bars, or  $0.05f'_c$  for deformed bars, except that when wire fabric is used for web reinforcement it shall have welded intersections not farther apart than 6 in., but in no case shall the stress exceed 16,000 lb. per sq. in.

Sec. 2666. FLAT SLABS: LIMITATIONS. (a) The term flat slabs as used in these regulations refers to concrete slabs, having reinforcement bars extending in two or four directions, without beams or girders to carry the load to supporting members.

(b) The moment coefficients, moment distribution, and slab thicknesses specified herein are for a series of slabs of approximately uniform size arranged in three or more rows of panels in each direction, and in which the ratio of length to width of panel does not exceed 1.33.

(c) Slabs with paneled ceiling or with dropped panels shall be considered as coming under the requirements herein given, provided the

dropped panel shall have a length or diameter in each direction parallel to a side of the panel of not less than 0.35 of the panel length in that direction, and provided further that the depth of the thicker portion of the slab does not exceed one and one-half times the depth of the remainder of the slab.

(d) For structures having a width of less than three rows of panels, or in which irregular panels are used, an analysis shall be made of the moments developed in both slabs and columns. When so required, computation shall be submitted to the Building Inspector for approval.

Sec. 2667. PANEL STRIPS AND PRINCIPAL DESIGN SECTIONS. (a) For convenience of reference, a flat slab panel shall be considered as consisting of strips as follows:

A MIDDLE STRIP one-half panel in width symmetrical with respect to the panel center line and extending through the panel in the direction in which moments are being considered;

A COLUMN STRIP one-half panel in width occupying the two-quarter panel areas outside of the middle strip.

When considering moments in the direction of the width of the panel, the panel is similarly divided by strips, the widths of which are each one-half the length of the panel.

(b) The critical sections for moment calculations are referred to as principal design sections and are located as follows:

SECTIONS FOR NEGATIVE MOMENT. These shall be taken along the edges of the panel, on lines joining the column centers, and following the circumference of the column capital.

SECTIONS FOR POSITIVE MOMENT. These shall be taken on the center lines of the panel.

#### GENERAL CASE

Sec. 2668. MOMENTS IN INTERIOR PANELS. (a) The numerical sum of the positive and negative moments in the direction of either side of a rectangular panel shall be not less than that given by formula (19).

$$M_o \approx 0.09Wl \left(1 - \frac{2c}{3l}\right) \dots \dots \dots (19)$$

where  $M_o$  = sum of positive and negative bending moments at the principal design sections, in the direction in which the length is given by  $l$ . This moment is in foot-pounds when  $c$  and  $l$  are in feet and  $W$  is in pounds.

(b) The moments in the principal design sections shall be those given in the following table of moments, except that the maximum negative moment in the column strip may be greater or less than the values given in the table of moments by not more than  $0.03M_o$ , provided that the sum of the moments on the principal section remains equal to  $M_o$ , and provided further that the moment in each of the three other critical design sections be modified by not more than  $0.01M_o$ .

MOMENTS TO BE USED IN DESIGN OF FLAT SLABS

For Interior Panels Fully Continuous

General Case: All values of  $c$ :  $M_o$  given by formula (19)

Strip	Flat Slabs without Dropped Panels		Flat Slabs with Dropped Panels	
	Negative	Positive	Negative	Positive
Slabs with 2-Way Reinforcement				
Column Strip	$-M_c = 0.46M_o$	$+M_c = 0.22M_o$	$-M_c = 0.50M_o$	$+M_c = 0.20M_o$
Middle Strip	$-M_m = 0.16M_o$	$+M_m = 0.16M_o$	$-M_m = 0.15M_o$	$+M_m = 0.15M_o$
Slabs with 4-Way Reinforcement				
Column Strip	$-M_c = 0.50M_o$	$+M_c = 0.20M_o$	$-M_c = 0.54M_o$	$+M_c = 0.19M_o$
Middle Strip	$-M_m = 0.10M_o$	$+M_m = 0.20M_o$	$-M_m = 0.08M_o$	$+M_m = 0.19M_o$

(c) The width of section at the column head shall be taken as the width of the dropped panel where used or half the width of panel where no dropped panel is used.

(d) The band width in the two-way system shall be such as to provide reinforcement over the entire one-half panel width.

(e) The band width for the direct bands in the 4-way system shall be approximately  $4/10$  of the panel width at right angles to the direction of the band ( $0.4l_1$ ) and for the diagonal bands approximately  $0.4$  of the average span length. In proportioning the reinforcement in this system, it shall be assumed that reinforcement in the direct band resists the entire positive moment for the column strip and the two diagonal bands resist the entire positive moment for the middle strip. Reinforcement for negative moment for the column strip shall include the area of reinforcement for negative moment in the diagonal bands, multiplied by the cosine of the angle between the diagonal band and the axis of the direct band considered, plus the full area of the reinforcement for negative moment in the direct band. The negative reinforcement for the middle strip shall be provided independently of the diagonal bands.

Sec. 2669. Moments in Interior Panels—Special Case,  $c = 0.225$  times the average span length:

Sec. 2669. MOMENTS IN INTERIOR PANELS. (a) For the particular case where  $c$  is equal to  $0.225$  times the average span length (the average of the distances center to center of columns on the two sides of the panel), formula (19) reduces to formula (19a).

$$M_o = 0.065Wl \dots \dots \dots (19a)$$

(b) For two-way slab, the values of  $M_o$  may be obtained from formula (19a) and the distribution taken from the table in Sec. 2668-(b).

(c) For the four-way slab with dropped panel, the following table of coefficients may be used in computing the reinforcement required in each of the bands, provided that  $l$  for the direct bands shall be the center to center distance between columns in the direction in which

the band extends, and for the diagonal bands the average value of  $l$  for the two direct bands of the panel. The moments in the table are those on SECTIONS at RIGHT ANGLES to the direction of the respective bands:

BAND	LOCATION	AMOUNT
Direct .....	Center .....	+0.012 $Wl$ .....
Diagonal .....	Center .....	+0.009 $Wl$ .....
Direct .....	At column head .....	-0.020 $Wl$ .....
Diagonal .....	At column head .....	-0.011 $Wl$ .....
Top band across direct band.....	Between Columns .....	-0.005 $Wl$ .....

Sec. 2670. THICKNESS OF SLABS AND DROPPED PANELS.

(a) For slabs without dropped panels, using concrete of 2,000 lb. per sq. in. ultimate strength, the total thickness of the slab  $t_1$ , in inches, shall be not less than the value given by formula (20).

$$t_1 = 0.038 \left( 1 - 1.44 \frac{c}{l} \right) l \sqrt{w' + 1} \frac{1}{2} \dots \dots \dots (20)$$

where  $w'$  = uniformly distributed dead and live-load, lb. per sq. ft.

(b) For Slabs with dropped panels, using concrete of 2,000 lb. per sq. in. ultimate strength, the total thickness in inches at points beyond the dropped panel shall be not less than

$$t_2 = 0.02 l \sqrt{w' + 1} \dots \dots \dots (21)$$

(c) The dropped panel shall have a thickness not greater than  $1.5t_2$  nor less than  $1.25t_2$ . The side or diameter of the dropped panel shall not be less than 0.35 times the side of the panel in the parallel direction.

(d) In determining minimum thickness by formulas (20) and (21), the value of  $l$  shall be the panel length center to center of the columns, on the long side of the panel. For concrete of 2,000 lb. per sq. in. ultimate strength, the slab thickness  $t_1$  or  $t_2$  shall in no case be less than  $l/32$  for floor slabs, and not less than  $l/40$  for roof slabs.

(e) Where concretes of higher ultimate strengths than 2,000 lb. per sq. in. are used, the thickness given by formulas (20) and (21) and the limiting thicknesses may be reduced by multiplying by the factor

$$\frac{8}{\sqrt{\frac{2,000}{f'_c}}}$$

in which  $f'_c$  is the ultimate strength of the concrete to be used.

Sec. 2671. LIMITING PERCENTAGES OF REINFORCEMENT.

(a) The ratio of reinforcement for negative moment in the column strip shall not exceed the values of  $p$  calculated for balanced reinforcement, that is, the amount of reinforcement for which both the steel and concrete are stressed to the full amount permitted by Sec. 2618 and 2619. Any reinforcement in excess of this amount shall not be included in the calculation. In computing the ratio of reinforcement for

negative moment in the column strip, the width of section shall be taken as in Sec: 2668 (c). In the case of four-way design, the steel area shall consist of the area of steel for negative moment as defined in 2668 (e).

(b) The ratio of flat slab reinforcement in any strip shall not be less than .0025. Bars shall not be spaced farther apart than  $1\frac{1}{2}$  times the slab thickness.

Sec. 2672. POINT OF INFLECTION. (a) In the middle strip the point of inflection for slabs without dropped panels shall be assumed at a line  $0.33l$  ( $l-c$ ) distant from the center of the span and for slabs with dropped panels  $0.3l$  distant from the center of the span.

(b) In the column strip, the point of inflection for slabs without dropped panels shall be at a line  $0.33$  ( $l-c$ ) distant from the center of the panel and  $0.3$  ( $l-c$ ) for slabs with dropped panels.

Sec. 2673. ARRANGEMENT OF REINFORCEMENT AT COLUMN HEADS TWO AND FOUR WAY SYSTEMS. (a) In both two and four-way systems, provision shall be made for securing the reinforcement in place so as to resist properly not only the critical moments, but also the moments at intermediate sections. The full area of steel required for negative moment at the column head shall be continued in the same plane close to the upper surface of the slab to the edge of the dropped panel, but in no case less than a distance  $0.2l$  from the center line of column. Lapped splices shall not be permitted at or near regions of maximum stress except as described in Sec. 2633.

Sec. 2674. ARRANGEMENT OF REINFORCEMENT-TWO-WAY SYSTEM. (a) For column strips at least four-tenths of the area of steel required at the section for positive moment in the column strip shall be of such length and so placed as to reinforce the negative moment section at the two adjacent column heads. These bars, and any other bars for negative reinforcement shall extend into the adjacent panel to a point at least  $0.05l$  beyond the point of inflection. Not less than one-third of the bars used for positive reinforcement in the column strip shall extend into the dropped panel at least twenty diameters of the bar, but not less than 12 in. or in case no dropped panel is used, shall extend to within  $0.125l$  of the center line of the columns or the supports. The balance of the bars for positive reinforcement in the column strip shall extend at least  $0.33l$  on either side of the center line of panel.

(b) For the middle strip at least one-half of the bars for positive moment shall be bent up and extend over the main bands at both sides of the panel to a point at least  $0.25l$  beyond the center line of columns. The location of the bands shall be such that for a distance  $0.15l$  for slabs with dropped panels, (or  $0.125l$  for slabs without dropped panels), on each side of the center line of columns, the full reinforcement required for negative moment will be provided in the top face of the slab. The full reinforcement for positive moment in the middle strip shall extend in the bottom face of the slab to a point at least  $0.3l$  on either side of the panel center line, and at least 50 per cent of it shall

extend to points  $0.325l$  on either side of the panel center line for slabs with dropped panels, or  $0.35l$  for slabs without dropped panels.

Sec. 2675. ARRANGEMENT OF REINFORCEMENT-FOUR-WAY SYSTEM. (a) For direct bands, all provisions governing the placing of steel in column strips in two-way systems apply as well to the direct bands in four-way systems.

(b) For diagonal bands, at least four-tenths of the area of steel required at the section for positive moment shall be of such length and so placed as to reinforce the negative moment section at the two diagonally opposite column heads. These bars and any other bars for negative reinforcement shall extend into the adjoining panel to points at least  $0.4l$  beyond a line drawn through the column center perpendicular to the direction of the band. The straight bars for positive moment in the diagonal bands shall not be shorter than the longer straight bars in the direct bands.

(c) For negative moment in the middle strip, the required steel shall extend not less than  $0.25l$  on either side of the column center line.

Sec. 2676. Reserved.

Sec. 2677. WALL AND OTHER IRREGULAR PANELS. (a) In wall panels and other panels in which the slab is non-continuous on one edge, the maximum positive moments on the principal design sections parallel to the discontinuous edge (reinforcement perpendicular to that edge) shall be increased by 25 per cent.

(b) The positive moment reinforcement perpendicular to the discontinuous edge shall extend to this edge and have an embedment of at least 6 in. in spandrel beams or columns. All negative moment reinforcement shall be bent or hooked at spandrel beams or columns to provide adequate bond resistance.

(c) At the wall or discontinuous edge the negative moment in the column strip shall be taken as not less than 90 per cent and in the middle strip not less than  $62\frac{1}{2}$  per cent of the corresponding moments for a normal interior panel as given in the table of Sec. 2668 (b).

(d) Where there is a beam or a bearing wall at the center line of columns in the interior portion of a continuous flat slab, the negative moment at the beam or wall line in the middle strip perpendicular to the beam or wall shall be taken as 30 per cent greater than the negative moment specified in Sec. 2668 (b) for a middle strip. The half column strip adjacent and parallel to and lying on either side of the beam or wall shall be designed to resist moments at least one-fourth of those specified in Sec. 2668 (b) for a column strip. The beam or wall in such cases shall be designed to carry a uniformly distributed load equal to one-fourth of the panel load on either side in addition to the loads directly imposed upon it.

Sec. 2678. PANELS WITH MARGINAL BEAMS. (a) In panels having marginal beam on one edge or on each of the two adjacent edges, the beam shall be designed to carry at least the load super-

imposed directly upon it, exclusive of the panel load. A marginal beam which has a depth greater than  $1\frac{1}{2}$  times the minimum slab thickness, shall be designed to carry, in addition to the load superimposed directly upon it, a uniformly distributed load equal to at least  $\frac{1}{4}$  of the total live and dead load for which the adjacent panel or panels are designed. Slabs supported by marginal beams on opposite edges shall be designed as freely supported slabs for the entire load.

(b) The half column strip adjacent to and parallel with marginal beams, having a depth not greater than  $1\frac{1}{2}$  times the minimum slab thickness, shall be designed to resist half the moment specified for a full column strip.

(c) In wall panels having exterior columns where brackets, (the faces of which make an angle with the face of the column, projected upward, of not more than 45 deg.) are used in place of capitals, the value of (c) in the direction in which the bracket extends may be taken as twice the distance from the center of the column to a point where the structural portion of the bracket is  $1\frac{1}{2}$  in. thick, and averaged with the value of (c) for an interior column capital in the computations for moment in formula (19). The value of (c) for column strips parallel and adjacent to a non-continuous edge of a slab where either no marginal beam is used, or where the beam used is not deeper than  $1\frac{1}{2}$  times the minimum slab thickness, should be taken as equal to the width of the wall column if no bracket is used in this direction.

(d) The value of (c) for column strips parallel and adjacent to marginal beams having a depth greater than the thickness of the slab at the wall columns, shall, if no bracket is used in this direction, be taken as equal to the width of the wall column plus twice the difference between the depth of the beam and the depth of the slab through the dropped panel. This value of c is to be used in calculating the  $-M_c$  and  $+M_o$  for the half column strip parallel and adjacent to the marginal beams only. This half column strip should be designed to resist a moment at least one-fourth as great as that specified for a column strip in the Table of Moments.

(e) It shall be permissible to omit the dropped panels at wall columns provided the design complies with the requirements of Section 2668-b and 2671-a for slabs without dropped panels.

Sec. 2679. OPENINGS IN FLAT SLABS. (a) Openings of any size may be cut through the floor in the area common to two intersecting middle strips, provided the total positive and negative resisting moments be maintained as required in Sec. 2668 (b) and that these total positive and total negative moments be redistributed between the remaining principal design sections to meet the new conditions.

(b) In any area common to two column strips, not more than one opening shall be allowed and the greatest dimension of such an opening shall not exceed  $1/20 l$ .

(c) In any area common to one column strip and one middle strip, openings shall not interrupt more than one-quarter of the bars in either strip and the equivalent of the bars so interrupted shall be provided by extra steel on both sides of the opening.

(d) Any opening larger than described above shall be completely framed on all sides with beams to carry the loads to the columns.

#### REINFORCED—CONCRETE COLUMNS AND WALLS.

Sec. 2680. LIMITING DIMENSIONS. (a) Unless designed as long columns under the provisions of Sec. 2687, reinforced-concrete columns shall not be longer than eleven times the least lateral dimension. Principal columns in buildings shall have a minimum diameter or thickness of 12 in. Posts that are not continuous from story to story shall have a minimum diameter or thickness of 6 in.

Sec. 2681. UNSUPPORTED LENGTH OF COLUMNS. (a) The unsupported length of reinforced-concrete columns shall be taken as:

- (1) In flat-slab construction the clear distance between the floor and under side of the capital;
- (2) In beam-and-slab construction, the clear distance between the floor and the under side of the shallowest beam framing into the column at the next higher floor level;
- (3) In floor construction with beams in one direction only, the clear distance between floor slabs;
- (4) In columns supported laterally by struts or beams only, the clear distance between consecutive pairs (or groups) of struts or beams, provided that to be considered an adequate support, two such struts or beams shall meet the column at approximately the same level and the angle between the two planes formed by the axis of the column and the axis of each strut respectively is not less than 75 deg., nor more than 105 deg.

(b) When reinforced-concrete brackets are used at the junction of beams or struts with columns, the clear distance between supports may be considered as reduced by the depth of the bracket, provided the width of the bracket is at least equal to that of the beam and not less than one-half of the column.

Sec. 2682. DESIGN OF SPIRAL COLUMNS. (a) The permissible axial load on columns reinforced with longitudinal bars and closely spaced spirals enclosing a circular core, shall not be greater than that determined by formula (22):

$$P = A_c [1 + (n-1)p] f_c \dots \dots \dots (22)$$

in which  $A_c$  is the area within the outer circumference of the spiral hooping, and the values of  $f_c$  are as given in Sec. 2618, or as may be found for intermediate values of  $p$  by interpolation, or in general, by the formula:

$$f_c = [300 + (0.10 + 4p) f'_c] \dots \dots \dots (22a)$$

(b) The longitudinal reinforcement shall consist of at least six



bars of minimum diameter of  $\frac{1}{2}$  in., and of an effective cross sectional area not less than 0.01, nor more than 0.06 of that of the core. The number of longitudinal bars concentrated in the ring at the periphery of the core shall be governed by the spacing requirements of Section 2633-a. If all the bars cannot be placed at the periphery of the core, the bars within shall be stayed at intervals of 24 in., and shall not be nearer to the outer ring than two-tenths times the core diameter. When the ratio of reinforcement in a spirally reinforced column is greater than 0.04, special placing drawings illustrating the proper distribution of steel shall be submitted with the detail plans. Splices in longitudinal reinforcement shall provide a lap of at least 24-bar diameters for deformed bars, and 30 diameters for plain bars.

(c) The ratio of the spiral reinforcement shall be not less than one-fourth the ratio of the longitudinal reinforcement. Spiral reinforcement shall consist of evenly spaced continuous spirals held firmly in place and true to line by at least three vertical spacer bars. At the ends of all spirals and at points of splice, the outside diameter shall be maintained. The spacing of the spirals shall not be greater than one-sixth of the diameter of the core and in no case more than 3 in.

(d) Reinforcement shall be protected everywhere by a covering of concrete cast monolithic with the core which shall have a minimum thickness of  $1\frac{1}{2}$  in.

**Sec. 2683. DESIGN OF COLUMNS WITH LATERAL TIES.**

(a) The permissible axial load on columns reinforced with longitudinal bars and separate lateral ties shall not be greater than that determined by formula (23):

$$P = 0.225 f'_c A_g [1 + (n-1) p] \dots\dots\dots (23)$$

(b) The ratio of longitudinal reinforcement shall not be less than 0.005 nor shall the ratio considered in the calculations be more than 0.02 of the total area of the column. The longitudinal reinforcement shall consist of not less than four bars of minimum diameter of  $\frac{5}{8}$  in., placed with clear distance from the face of the column not less than 2 in., nor more than 3 in. Splices in longitudinal reinforcement shall provide a lap of at least 24-bar diameters for deformed bars, and 30 diameters for plain bars.

(c) Lateral ties shall be at least  $\frac{1}{4}$  in. in diameter spaced not more than 12 in. apart. In columns of rectangular section, cross ties shall be arranged to afford support to the vertical bars at intervals not greater than the shorter side of the section, but such interval need not be less than 12 in. in any case.

**Sec. 2684. BENDING IN COLUMNS.** (a) The bending moments in interior and exterior columns shall be determined on the basis of loading conditions and end restraint, and shall be provided for in the design.

(b) In flat-slab construction, the least dimension of the column shall be not less than one-fifteenth of the average center to center span, nor less than 16 in. For known eccentric loads or unequal spacing

of columns, computations of moments shall be made accordingly. Wall columns in flat-slab construction shall be designed to resist a bending moment of  $Wl/35$ . Any counter moment due to the weight of the structure that projects beyond the column center line may be deducted from the moment computed as just described. Resistance to the bending moments shall be divided between the columns immediately above and below in direct proportion to the values of their ratios of  $l/h$ . (See Sec. 2649 and 2681.)

(c) The recognized methods shall be followed in calculating the stresses due to combined axial load and bending. The column section shall not be less than that required where axial load alone is considered. The limiting combined unit stresses shall be as follows:

(1) Columns with spiral reinforcement,

$$[300 + (0.10 + 4p) f'_c] + 0.15 f'_c.$$

(2) Columns with lateral ties  $0.3 f'_c$ . The total amount of reinforcement considered in the computations shall not be more than 4 per cent of the total area of the column.

(3) Tension in longitudinal-reinforcement due to bending on the column shall not exceed 16,000 lb. per sq. in.

(d) Where the allowable unit stress in columns is increased (to provide for combined axial load and bending) and wind loads are also added, the total shall still come within the allowable values specified for wind loads in Sec. 2640.

Sec. 2685. COMPOSITE COLUMNS. (a) The permissible load on composite columns in which a structural steel or cast-iron column is thoroughly encased in a concrete core reinforced with not less than 0.02 nor more than 0.04 longitudinal reinforcement in the form of bars arranged at the periphery of the core, nor less than 0.01 of spiral reinforcement meeting the requirements for spirals of Sec. 2668 (c), shall be based on a certain unit stress for the steel or cast-iron section, plus a unit stress of 0.25% on the net area of the concrete within the outer circumference of the spiral hooping enclosing the core. The longitudinal and spiral reinforcement ratios stated shall be based on the total core area enclosed within the outer circumference of the spiral hooping.

(b) The unit compressive stress on the steel section shall not exceed 15,000 lb. per sq. in. Where the steel section is required to carry construction or other loads prior to its encasement in concrete, the stress shall not exceed that given by formula (24)

$$f_r = \frac{18,000}{1 + \frac{h^2}{18,000R^2}} \quad (24)$$

(c) The unit stress on the cast-iron section shall not exceed 9,000 lb. per sq. in. Where the cast-iron section is required to carry con-

struction, or other loads prior to its encasement in concrete, the stress shall not exceed that given by formula (25):

$$f_s = 12,000 - 60 \frac{h}{R} \quad (25)$$

(d) The unit stress on the longitudinal reinforcement shall be  $0.25n'c$ .

(e) The diameter of the cast-iron section shall not exceed one-half the diameter of the core, nor shall its total area exceed 12 per cent of the core area, (area included within outer circumference of the spiral hooping). The dimension of the structural steel section shall be such as to provide at least 3 in. between the spiral and the corners of the section and its area shall not exceed 12 per cent of the core area. Metal columns shall be accurately milled at splices and positive provision shall be made for alignment of one column above another. The spiral reinforcement shall be not less than 0.01 of the volume of the core, and shall conform in quality, spacing and other requirements to the provisions for spirals in Sec. 2682 (c).

(f) In composite columns, provision shall be made at the base to transfer the load from the middle section at safe unit stresses in accordance with Section 2692. The base of the metal section shall be designed to transfer the load from the entire composite column to the foundation, or it may be designed to transfer the load from the metal section only, provided it is so placed in the pier or pedestal as to leave ample section of concrete above the base for the transfer of the load from the reinforced-concrete section of the column by means of bond on the vertical reinforcement, and by direct compression from the concrete. At the top of the metal section, provision shall be made to receive the full load to be transferred to the metal section at this point. At points in the structure below this, where the load on the metal section is increased, positive means, consisting of cast or built-up brackets rigidly attached to the metal section, shall be provided to receive the increase in load.

(g) Ample section of concrete and continuity of reinforcement shall be provided at the junction with beams or girders. The area of the concrete between the spiral and the metal column shall be not less than that required to carry the total floor load of the story above on the basis of a stress in the concrete of  $0.35'c$ , unless special brackets are arranged on the metal column to receive directly the beam or slab load.

Sec. 2686. COMBINATION COLUMNS. (a) Structural steel columns of any rolled or built-up section wrapped with the equivalent of No. 8 U. S. standard gage wire spaced 4 in. on center and encased in concrete not less than 2 in. thick overall of metal except rivet heads and connections will be permitted to carry a load equal to  $(1 + A_c/100A_s)$  times permissible load for unencased steel columns.

(b) The permissible load for unencased steel columns shall be determined by formula (24), provided the structural steel column act-

ing independently of the concrete shall have sufficient capacity to carry all dead loads which will be placed thereon, and provided the quality of the concrete is such that it shall show a compressive strength of at least 2,000 lb. per sq. in. at 28 days when tested in accordance with Sec. 2605 (c).

Sec. 2687. LONG COLUMNS. (a) The permissible working load on the core in axially loaded spiral or composite columns which have a length greater than 50 times the least radius of gyration of the column core (50R) shall not be greater than that determined by formula (26).

$$\frac{P'}{P} = 1.50 - \frac{h}{100R} \quad (26)$$

(b) The permissible working load on axially-loaded tied columns, which have a length greater than 40 times the least radius of gyration of the column section (40R), shall not be greater than that determined by formula (26a)

$$\frac{P'}{P} = 1.33 - \frac{h}{120R} \quad (26a)$$

(c) The radius of gyration of a column shall be computed from the concrete area used in design and the transformed section of the longitudinal steel area; that is, the actual area of steel multiplied by  $n$ .

#### FOOTINGS.

Sec. 2688. LOADS. (a) Footings resting directly on soil or on piles shall be proportioned as to area or number of piles on the basis of the total column load plus the weight of the footing itself. For computation of moments and shears, an upward reaction per unit area or per pile shall be based on the total column load (not including the weight of the footing itself) divided by the area or by the number of piles.

Sec. 2689. SLOPED OR STEPPED FOOTINGS. (a) Footings in which the thickness has been determined by the requirements for shear as specified in Sec. 2661, may be sloped or stepped between the critical section and the edge of the footing, provided that the shear on no section outside the critical section exceeds the value specified, and provided further that the thickness of the footing above the reinforcement at the edge shall not be less than 6 in. for footings on soil, nor less than 12 in. for footings on piles. Sloped or stepped footings shall be cast as a unit.

Sec. 2690. BENDING IN FOOTINGS. (a) The critical section for bending in a concrete footing which supports a concrete column or pedestal, shall be considered to be at the face of the column or pedestal. Where steel or cast-iron column bases are used, the moment in the footing shall be computed at the middle and at the edge of the base; the load shall be considered as uniformly distributed over the column or pedestal base.

(b) The bending moment at the critical section in a square footing supporting a concentric square column, shall be computed from

the load on the trapezoid bounded by one face of the column, the corresponding outside edge of the footing, and the portions of the two diagonals. The load on the two corner triangles of this trapezoid shall be considered as applied at a distance from the face equal to six-tenths of the projection of the footing from the face of the column. The load on the rectangular portion of the trapezoid shall be considered as applied at its center of gravity. The bending moment is expressed by formula (27).

$$M = \frac{w}{2} (a + 1.2c) c^2 \dots\dots\dots (27)$$

(c) For a round or octagonal column, the distance  $a$  shall be taken as equal to the side of a square of an area equal to the area enclosed within the perimeter of the column.

Sec. 2691. SHEARING AND BOND STRESSES. See Sec. 2661, also 2662 to 2665.

Sec. 2692. TRANSFER OF STRESS AT BASE OF COLUMN.

(a) The compressive stress in longitudinal reinforcement at the base of a column shall be transferred to the pedestal or footing by dowels. There shall be at least one dowel for each column bar, and the total sectional area of the dowels shall not be less than the sectional area of the longitudinal reinforcement in the column. The dowels shall extend into the column and into the pedestal or footing not less than 30 diameters of the dowel bars for plain bars, or 24 diameters for deformed bars.

(b) The permissible compressive unit stress on top of the pedestal or footing directly under the column shall be not greater than that determined by formula (28).

$$p_s = P_s \frac{3}{A'} \frac{A}{\dots\dots\dots} \dots\dots\dots (28)$$

(c) The value of  $p_s$  shall not exceed  $0.25f'_c$  for plain concrete. When lateral reinforcement in the form of spiral or hoops is provided, the value of  $p_s$  for the area within the spiral may be increased  $(1 + 2.5\pi p')$  times that for plain concrete, but no area outside the outer face of the spiral shall be considered. Where piers are designed as columns, the value of  $p_s$  shall be computed by the proper column design formula.

(d) In no case shall the total load computed by formula (28) be taken as greater than the load computed, using a stress equal to  $p_s$ , on the gross area of the pedestal, pier or footing at a point below special reinforcing provided at the top.

(e) Where the loaded area is not central on the top of the pedestal pier, or footing, the total area  $A$  shall not be taken as greater than the area of the largest circle that can be drawn about the load as a center and lying entirely within the top of the pedestal, pier or footing.

(f) Where lateral reinforcement is provided to increase the value

of  $p_s$ , shall extend to within 3 in. of the top of the pedestal, pier or footing and to a depth equal to the diameter of the spiral, and the loaded area shall lie at the center of the spiral or hoops. The pitch of the spiral or the spacing of the hoops *in the clear* shall not be less than 2 in., nor more than 5 in. The designed pitch shall be maintained by at least four spacers securely fastened to each spiral turn or hoop. The ratio of lateral reinforcement shall not exceed 0.015.

(g) In sloped or stepped footings,  $A$  may be taken as the area of the top horizontal surface of the footing or as the area of the lower base of the largest frustum of a pyramid or cone contained wholly within the footing and having for its upper base the loaded area  $A'$ , and having the slopes of 1 vertical to 2 horizontal.

Sec. 2693. PEDESTALS WITHOUT REINFORCEMENT. (a) The allowable compressive unit stress on the gross area of a concentrically loaded pedestal or on the minimum area of a pedestal footing shall not exceed  $0.25f'_c$ , unless reinforcement is provided and the member designed as a reinforced-concrete column.

(b) The depth of a pedestal or pedestal footing shall not be greater than three times its least width and the projection on any side from the face of the supported member shall not be greater than one-half the depth. The depth of a pedestal whose sides are sloped or stepped shall not exceed three times the least width or diameter of the section midway between the top and bottom. A pedestal footing supported directly on piles shall have a mat of reinforcing bars having a cross-sectional area of not less than 0.20 sq. in. per ft. in each direction, placed 3 in. above the top of the piles.

## CHAPTER 27

### STEEL AND IRON

#### (Quality and Design)

Sec. 2701. QUALITY AND DESIGN. The quality and design of all structural steel and iron used in buildings shall conform to the requirements specified in this Chapter.

(a) Structural steel shall be of such quality as to conform to Standard Specifications for Structural Steel for Buildings, A. S. T. M., Designation A9-33, of the American Society for Testing Materials.

(b) Cast steel used in buildings and/or structures shall be of such quality as to conform with the Standard Specifications for Steel Castings, A. S. T. M., Designation A27-24, of the American Society for Testing Materials.

(c) Cast iron used in buildings and/or structures shall be of such quality as to conform with the Tentative Specifications for Gray Iron Castings, A. S. T. M., Designation A48-32T, of the American Society for Testing Materials.

(d) All structural steel shall be tested in accordance with the above specifications when deemed necessary by the Building Inspector and copies of such tests shall be filed in the office of the Building Inspector. No structural steel shall be used in any building or structure which does not comply with the above requirements or for which no test results have been filed with the Building Inspector. All steel tests shall be made by competent testing laboratories and at the expense of the owner.

(e) The computations and design shall be properly made so that the unit working stresses specified in this Chapter are not exceeded. The structure and its details shall possess the requisite strength and rigidity for proper stability and the design of every structural frame shall be such as to admit of a rational analysis according to well established principles of mechanics and sound engineering practice.

(f) All structural steel sections shall be straight and true and any sections so damaged as to affect its proper carrying capacity shall not be used in the construction of any building.

Sec. 2702. ALLOWABLE UNIT STRESSES. All parts of the structure shall be so proportioned that the sum of the maximum static stresses in pounds per square inch shall not exceed those specified in this Section.

(a) Tension:

Rolled Steel, on net section.....	18,000
Cast Steel, on net section .....	16,000
Cast Iron, on net section.....	(Not allowed)

(b) Compression, on short lengths or where lateral deflection is prevented:

Rolled Steel .....	18,000
Cast Steel.....	16,000
Cast Iron .....	10,000

On gross section of structural steel columns:

$$P = 18,000$$

$$\frac{2}{l^2}$$

$$1 + \frac{18,000 \cdot 2}{l^2}$$

with a maximum of ..... 15,000

For main compression members, the ratio  $l/r$  shall not exceed one hundred and twenty (120) and for bracing, struts and similar members two hundred (200).

On gross sections of steel pipe columns, with square or fixed ends:

$$P = 11,000 - 35l/r$$

with a minimum gross diameter of five (5) inches.

On cast iron columns, with square or fixed ends:

$$P = 9,000 - 40l/r$$

with a minimum gross diameter of six (6) inches and with the ratio  $l/r$  never in excess of seventy (70).

In the foregoing formulae  $P$  equals the maximum unit working stress in pounds per square inch;  $l$  equals the unsupported length of the column or compression member in inches; and  $r$  equals the least radius of gyration of the column or compression member.

(c) Bending. On extreme fibers of rolled shapes, and build-up sections, net section, if lateral deflection is prevented, 18,000. When the unsupported length of  $L$  exceeds fifteen (15) times  $b$ , the width of the compression flange, the stress in pounds per square inch in the latter shall not exceed  $F$  in the following formula:

$$F = \frac{20,000}{L^2} \left( 1 + \frac{L^2}{2,000b^2} \right)$$

The laterally unsupported length of beams and girders shall in no case exceed forty (40) times  $b$  the width of the compression flange.

Girders, beams, lintels and similar members may be laterally braced by joists, tie rods or similar members anchored thereto so as to laterally stay such members in both directions. Two or more cast iron or steel separators rigidly joining such members together shall be considered as lateral support if the length of flanges between separators does not exceed 40  $b$ .

On extreme fibers of pins, when the forces are assumed as acting at the center of gravity of the pieces..... 27,000

(d) Shearing. On pins .....	13,500
On power-driven rivets .....	13,500
On turned bolts in reamed holes with a clearance of not more than one-fiftieth (1/50) of an inch.....	13,500
On hand-driven rivets.....	10,000
On unfinished bolts.....	10,000

On the gross area of the webs of beams and girders, where  $h$ , the height between flanges in inches, is not more than sixty (60) times  $t$  the thickness of the web in inches..... 12,000

On the gross area of the webs of beams and girders if the web is not stiffened where  $h$ , the height between flanges in inches, is more than sixty (60) times  $t$ , the thickness of the web, the maximum shear per square inch,  $S/A$  shall not exceed.

$$S/A = \frac{18,000}{1 + \frac{h^2}{7,200t^2}}$$

in which  $S$  is the total shear, and  $A$  is the gross area of web in square inches.

Double Shear and Single Shear

BEARING.	Shear	Shear
On pins .....	30,000	24,000



On power-driven rivets .....	30,000	24,000
On turned bolts in reamed holes.....	30,000	24,000
On hand driven rivets.....	20,000	16,000
On unfinished bolts .....	20,000	16,000
On ends of web stiffeners.....	See Section 2704 (e)	

(f) Combined Stresses: For combined stresses due to wind and other loads, the permissible working stress must conform to 2307 (d).

Members subject to both direct and bending stresses shall be so proportioned that the greatest combined stresses shall not exceed the allowed limits.

All members and their connections which are subject to stresses of both tension and compression due to the action of live loads shall be designed to sustain the stress giving the largest section, with fifty (50) per cent of the smaller stress added to it. If the reversal of stress is due to the action of wind, the member shall be designed for the stress giving the largest section and the connections proportioned for the largest stress.

(g) The load in pounds per linear inch on expansion rollers shall not exceed six hundred (600) times the diameter of the roller in inches.

Sec. 2703. ECCENTRIC LOADS. (a) Every member and combination of members shall be designed to provide for any stress due to an eccentric load or force, whenever the increase in stress due to eccentric load or force exceeds ten (10) per cent of the stress due to a direct load or force on the member or members; but a member framed directly to a central web of another member shall not be considered an eccentric load or force in case the resultant of the load or force acts parallel with the said central web.

(b) Where a structural member is directly connected or framed to the flange of another member by means of a web connection, the lever arm shall be taken as the distance in the direction of bending from the neutral axis to the flange connection plus one-half ( $\frac{1}{2}$ ) inch; and in all other cases of an eccentric load or force, the lever arm shall be taken as the distance in the direction of bending from the neutral axis to the center line or center of bearing of the load or force.

(c) Where an eccentric load or force acts parallel with the axis of a compression member, the stresses due to the eccentric action may be provided for by adding to any direct load or force on the compression member an amount equal to  $M. K.$  as given in the following formula, and by then designing the compression member so that the maximum unit stress therein will not exceed that specified in Section 2702.

$$M. K. \text{ equals } A (Px/S);$$

in which formula  $M. K.$  equals an equivalent concentric load or force for any given eccentric load or force;  $A$  equals the cross sectional area of the compression member;  $P$  equals the amount of the eccentric load or force in pounds;  $x$  equals the distance from the neutral axis of the com-

pression member to the line of action of the eccentric load or force; and  $S$  equals the section modulus of the compression member in the direction of the bending.

Sec. 2704. BEAMS AND GIRDERS. (a) Rolled beams shall be proportioned by the moment of inertia of their net section. Plate girders with webs fully spliced for tension and compression shall be so proportioned that the unit stress on the net section does not exceed the stresses specified in Section 2702 as determined by the moment of inertia of the net section.

When two (2) or more rolled beams or channels are used to form a girder, they shall be so connected to each other as to properly distribute the loads to be carried.

(b) Built-up Girders. Plate, box and similar structural steel girders shall be proportioned by the moment of inertia of their net sections, or shall be proportioned by assuming that one-eighth ( $\frac{1}{8}$ ) of the gross area of the web or webs act as a part of the flanges thereof in the event that every joint in the web is spliced so as to transmit the stress therein.

(c) Plate girder webs shall have a thickness of not less than one, one hundred-sixtieth ( $\frac{1}{160}$ ) of the unsupported distance between the flanges.

(d) Web splices shall consist of a plate on each side of the web capable of transmitting the full stress through the splice rivets.

(e) Stiffeners shall be provided on both sides of the webs of built-up girders over bearings and at points of concentrated loading. Intermediate stiffeners shall be provided on both sides of the webs wherever the thickness of the web is less than one-sixtieth ( $\frac{1}{60}$ ) of the unsupported distance between flanges and shall not be spaced farther apart in inches than the value of  $S$  in the following formula; and shall not exceed six (6) feet in any case;

$$S = 85t \sqrt{\frac{18,000A}{V} - 1}$$

in which formula  $A$  equals the gross area of the web in inches;  $V$  equals the total vertical shear on the web;  $t$  equals the thickness of the web in inches; and  $S$  equals the clear distance between stiffeners in inches; provided, however, that stiffeners need not be provided on both sides of webs in case other adequate provision is made against buckling, torsion and for the transmission of all stresses.

Stiffeners over bearings and at points of concentrated loading shall not be crimped but shall be milled and fitted for bearing against the flange angles nearest the bearing load and shall be designed to distribute the force from the reactions and concentrated loads into the web. The bearing area of the ends of stiffeners shall be taken as the outstanding portion of the leg of the stiffeners, excluding any chamfered portion thereof over the fillets of flange angles, and the bearing value of such portion may be taken at not to exceed twenty-four thousand

(24,000) pounds per square inch; provided, however, that where fillers are provided between stiffeners and the web, equal in thickness to the radius of the fillet plus the thickness of the flange angle, the full area of the end of the stiffener may be used, but the bearing value shall not be taken at more than eighteen thousand (18,000) pounds per square inch.

Intermediate stiffeners need not bear against flange angles, and when girders are completely encased in concrete such stiffeners may be cut off at the edge of the fillet of the flange angle.

(f) Crane runway girders and the supporting framework shall be proportioned to resist a horizontal force equal to twenty (20) per cent of the maximum wheel loads.

(g) Rivets connecting the flanges to the web at points of direct load on the flange between stiffeners shall be proportioned to carry the resultant of the longitudinal and transverse shears.

(h) The flange plates of all girders, unless stiffened, shall be limited in width so as not to extend beyond the outer line of rivets connecting them to the flange angles more than six (6) inches or twelve (12) times the thickness of the thinnest outside plate connected.

(i) Beams, channels, girders and other members acting as skew-backs for floor arches shall be of ample strength and rigidity to withstand the lateral thrusts in addition to all other loads they may sustain.

Sec. 2705. THICKNESS OF MATERIALS. The minimum thickness of metal in structural steel shapes shall be one-fourth ( $\frac{1}{4}$ ) inch at every point and shall not be less than one-half ( $\frac{1}{2}$ ) inch at every point for any cast iron or cast steel member except as follows:

Exceptions: (1) The webs of channels and I-beams, the edges of rolled steel sections, steel joists, signs, skylight bars, non-bearing walls and partitions, suspended ceilings, cornice brackets, steel studs, and similar steel shapes shall not be limited by the above thickness requirements.

Sec. 2706. COMPRESSION SPLICES. The ends and abutting joints of all compression members shall be fully spliced, or where laterally supported and where no reversal of stresses is possible, may be faced to a plain surface parallel to the surfaces against which they bear and normal to the line of stress, and be spliced sufficiently to hold the connected members accurately and firmly in place.

Sec. 2707. NET SECTIONS. In calculating tension members, the net section shall be used, and in deducting rivet holes they shall be assumed to be at least one-eighth ( $\frac{1}{8}$ ) of an inch greater in diameter than the nominal diameter of the rivets.

Pin-connected tension members shall have the section through the pin hole at least twenty-five (25) per cent in excess of the net section of the member, and a net section back of the pin hole equal to at least seventy-five (75) per cent of that required through the pin hole.

Sec. 2708. CONNECTIONS. Connections carrying calculated stresses, except for lacing, sag bars or angles, hand rails, or beam con-

nections, shall not have less than two (2) rivets; or for field connections not less than three (3) rivets .

Members meeting at a joint shall have their lines of center of gravity meet at a point if practicable; if not, provision shall be made for any eccentricity.

The rivets at the ends of any member transmitting the stresses into that member shall have their centers of gravity in the line of the center of gravity of the member; if not, provision shall be made for the effect of the resulting eccentricity. Pins may be so placed as to counteract the effect of bending due to dead load.

When a beam or girder is connected to another member in such a manner that such beam or girder acts as a continuous or fixed end beam, proper provision shall be made for the bending moments at such a connection.

Where stress is transmitted from one piece to another, through a loose filler, the number of rivets shall be properly increased; tight-fitting fillers shall be preferred.

All joints in riveted work, whether in tension or compression, shall be so spliced as to properly transmit all stresses, except as provided in Section 2706.

The minimum distance between centers of rivet holes shall be three diameters of the rivet but the distance shall preferably be not less than as specified in Table A.

TABLE A

MINIMUM DISTANCE	FOR RIVETS OF
4½ inches	1¼ inches
4 inches	1⅛ inches
3½ inches	1 inch
3 inches	¾ inches
2½ inches	¾ inches
2 inches	⅝ inches
1¾ inches	½ inches

NOTE.—The minimum distance between the center of the rivets and edge of plates or angles shall be as in Table B.

Maximum distance from any edge shall be twelve (12) times the thickness of plate, but shall not exceed six (6) inches.

TABLE B

MINIMUM DISTANCE	FOR RIVETS OF
2¼ inches	1¼ inches
2 inches	1⅛ inches
1¾ inches	1 inch
1½ inches	¾ inches
1¼ inches	¾ inches
1⅛ inches	⅝ inches
1 inch	½ inches

The maximum pitch in the line of stress of compression members composed of plates and shapes shall not exceed sixteen (16) times the thinnest outside plate or shape, or twenty (20) times the thinnest enclosed plate or shape with a maximum of twelve (12) inches, and at right angles to the direction of stress the distance between lines of rivets shall not exceed thirty (30) times the thinnest plate or shape. For angles in built sections with two (2) gage lines, with rivets staggered, the maximum pitch in the line of stress in each gage line shall not exceed twenty-four (24) times the thinnest plate with a maximum of eighteen (18) inches.

Sec. 2709. RIVETS AND BOLTS. In proportioning rivets, the nominal diameter of the rivet shall be used.

Rivets carrying calculated stresses, and whose grip exceeds five (5) diameters, shall have their number increased one (1) per cent for each additional one-tenth (1/10) inch in the rivet grip. Special care shall be used in heating and driving such rivets.

Rivets shall be used for the connections of main members carrying live loads which produce impact, and for connections subject to reversal of stresses.

Finished bolts in reamed holes may be used in shop or field work where it is impractical to obtain satisfactory power-driven rivets. The finished shank shall be long enough to provide full bearing, and washers used under the nuts to give full grip when turned tight.

Unfinished bolts may be used in shop or field work for connections in small structures used for shelters and for secondary members of all structures such as purlins, girts, door and window framing, alignment bracing and secondary beams in floor.

Sec. 2710. WELDED CONNECTIONS. (a) Fusion welding may be used (in place of riveting or bolting) for connecting structural steel or wrought iron parts or members to one another, but in no case shall the stresses in joints exceed the allowable working unit stresses given in the following table:

Allowable Unit Working Stresses for Static Loads

Tension in weld metal (butt welds).....	13,000 lbs. per sq. in.
Shear in weld metal (fillet welds).....	11,300 lbs. per sq. in.
Compression in weld metal.....	15,000 lbs. per sq. in.

Maximum fibre stresses due to bending shall not exceed the values prescribed above for tension and compression, respectively. In designing welded joints, adequate provision shall be made for bending stresses due to eccentricity, if any, in the disposition or section of base metal parts.

(b) The same proportional increase in the above working stresses shall be allowed for the various given conditions as specified in parts (f) and (g) in Section 2702.

(c) The electrode wire shall conform to the American Welding Society Specifications E No. 1-A or E No. 1-B as published December,

1921, in the American Welding Society Bulletin No. 2, and its subsequent amendments.

All portions of the members at the point of welding shall be completely freed from rust, paint and other foreign matter by brushing the surfaces with an iron brush, by chipping or by hammering.

(d) The Building Inspector shall require the welding operator to furnish evidence of his experience and competence in structural arc welding and may require the welder to make sample butt welds. Such sample welds must show an average tensile strength of forty-five thousand (45,000) pounds per square inch with no one sample developing a tensile strength of less than forty thousand (40,000) pounds per square inch.

(e) Where electric spot or resistance welding is used, the portion of the members to be welded shall be thoroughly cleaned of rust, scale or other foreign matter by pickling in a suitable acid before welding.

Sec. 2711. CONSTRUCTION DETAILS. (a) Trusses preferably shall be riveted structures and only when there are good reasons to justify, such as where riveted field connections become unwieldy, may they be designed as pin-connected structures.

(b) All joints in riveted work, whether in tension or compression, shall be spliced as to properly transmit the stresses.

(c) Bracing shall be sufficient to safely withstand wind and other lateral forces when the building is in the process of erection as well as after completion.

(d) When two or more plates are in contact, they shall be stitch riveted with rivets not more than twelve (12) inches apart in either direction.

(e) The ends of beams, channels, girders and trusses that bear on masonry or reinforced concrete shall be so framed that the allowable stresses for masonry or reinforced concrete shall not be exceeded, and anchors of ample size and strength shall be provided thoroughly embedded in the masonry or reinforced concrete construction.

(f) The ends of all beams, channels, girders, girts, purlins and similar members that meet on a beam, girder, truss, column or pier shall be connected to each other by a strap or through the carrying members with not less than two (2) bolts or rivets each not less than five-eighths ( $\frac{5}{8}$ ) of an inch in diameter in the end of each connecting member.

(g) Tie rods shall be proportioned to resist their respective stresses, and holes for them shall be placed as near the spring of the arches as practicable.

Sec. 2712. LATTICE. (a) Compression members of two or more pieces not connected by web or cover plates shall have their open sides provided with lattice or tie plates, and have tie plates as near each end as practicable, and at intermediate points where the lattice is interrupted. In main members the end tie plates shall have a length not less than the distance between the lines of rivets connecting them to flanges,

and intermediate ones not less than half this distance, and their thickness shall be not less than one-fiftieth ( $1/50$ ) of the same distance and the rivet pitch shall not be more than four (4) diameters. The latticing of compression members shall be proportioned to resist a shearing stress at least equal to two (2) per cent of the direct stress in the member.

(b) The minimum thickness for lattice bars shall be for single lattice one-fortieth ( $1/40$ ) and for double one-sixtieth ( $1/60$ ) of the distance between end rivets, and not less than one-fourth ( $1/4$ ) inch in thickness.

(c) The inclination of all lattice bars to the axis of the member shall not be less than forty-five (45) degrees and when the distance between the rivet lines in the flanges is more than fifteen (15) inches, the lattice shall be doubled.

(d) Lattice bars shall be so placed that the ratio  $l/r$  of the flange included between their connections shall not be over three-fourths ( $3/4$ ) of that of the member as a whole, where  $l$  and  $r$  are as defined in Section 2702 (b).

Sec. 2713. PINS AND PIN HOLES. (a) Pins shall be long enough to insure a full bearing of all parts connected upon the turned-down body of the pin.

(b) Members packed on pins shall be held against lateral movement.

(c) Pin holes shall be reinforced by plates wherever necessary to give proper bearing. At least one plate shall be as wide as the projecting flanges will allow. Where angles are used, this plate shall contain sufficient rivets to distribute their portion of the pin pressure to the full cross section of the member.

Sec. 2714. STEEL JOISTS. (a) Steel joists may be rolled structural sections, sections built up of rolled structural sections, or shapes made from strip or sheet steel securely spot-welded together so as to form a cohesive structural unit, all of which shall have the general shape and contour of an I-Beam; or such steel joist may be a determinate truss design built up of rolled structural steel sections effectively fusion welded together as specified in part (f) of this Section. Joists other than those consisting of a single rolled structural steel section with solid web shall not be used in the floor construction of buildings over eight (8) stories in height.

(b) Steel joists shall be considered as secondary members of the structural steel frame. They shall be designed to carry all dead, live and other loads to which they may be subjected during the erection and after the completion of the structure. Such secondary members shall not be considered as affecting the vertical rigidity of the framework but they shall be designed and considered as carrying horizontal forces to such parts of the frame as are designed to carry these horizontal forces to the foundation.

(c) Stresses in steel joists shall not exceed those specified in Section 2702 and no joist under its calculated load shall have a deflec-

tion exceeding one three-hundred-sixtieth ( $1/360$ ) of the span. Bridging shall be provided during the period of construction to adequately support the top chord or flange against lateral movement and such bridging shall be designed to hold each joist in a vertical plane. Permanent bridging shall be installed sufficient to laterally stay the joists and to transmit any horizontal forces in either direction perpendicular to the direction of the joists. Such bridging shall consist of solid concrete sections, structural steel shapes or plates, portal bridging, diagonal rods, or other bridging which will provide equivalent stiffness. Any row of bridging shall be capable of transferring five hundred (500) pounds from each joist to adjoining joists. The actual spacing of the joists center to center shall be determined by their capacity to sustain the loads which they carry and the allowable load carrying capacity of the floor structure between members.

(d) When used in buildings of Type I construction, steel joists shall be connected to the supporting beams and/or girders by fusion welding, riveting, bolting or rigid connecting. Fusion welds shall be made on both sides of each bearing, shall be not less than one (1) inch in length measured from the starting end to the center of the finishing crater, and shall have a minimum bead one-fourth ( $1/4$ ) inch. Riveting and bolting shall comply with the requirements of Section 2709. When steel joists are supported on masonry or reinforced concrete, the end bearing shall be not less than four (4) inches in length and the ends of such joists shall be provided with approved joist anchors thoroughly embedded in the supporting masonry or reinforced concrete placed at not to exceed six (6) feet center to center. Bearing plates securely welded, bolted or riveted to the joists shall be provided when required by the design of the joist. In buildings over eight (8) stories in height in which steel joisted floor construction is used, all connections between steel joists and primary members of the structure shall be approved standard connection angles and power-driven rivets or unfinished bolts as provided for light steel beams in the handbook, Steel Construction of the American Institute of Steel Construction, Inc., dated January, 1934, and its subsequent amendments.

~~(e) Strip or sheet steel used to produce steel joists shall in no case be less than seventy-two thousandths (.0072) of an inch in thickness. The flange width of such joists shall not exceed one-half ( $1/2$ ) their depth.~~

(f) Trussed steel joists shall be so constructed that the lines of force of all connected members shall intersect at a point, or proper allowance shall be made in the design for any resulting stress.

The joints of all trussed steel joists shall be made by connecting the members directly to one another by fusion welds or by rivets of sufficient capacity to develop the ultimate strength of the smallest connected member. When welds are used, each connection of member to member shall be made with not less than two (2) welds, and each weld shall be not less in length measured from starting end to the center of the finishing crater than twice the diameter of the smallest

Refer to page 306



member connected, nor less in cross sectional area than one-fourth ( $\frac{1}{4}$ ) of the cross sectional area of the smallest member connected. Welds shall be located symmetrically on both sides of all connected members so as to eliminate eccentricity at joints. When sections other than round bars are used, the length and cross sectional area of the welds shall be the same as those required for round bars of equivalent area.

(g) Whenever deemed necessary by the Building Inspector, any welded connections or welded joints shall be tested to not less than twice the designed load by the manufacturer or user and such load shall be sustained without any signs of failure. Should any signs of failure develop, the joist or joists shall be rejected and removed immediately from the premises.

Sec. 2715. EXPANSION. Proper provision shall be made for expansion and contraction.

Sec. 2716. WORKMANSHIP. (a) All workmanship shall be equal to the best practice in modern structural shops.

(b) Drifting to enlarge unfair holes shall not be permitted.

(c) The several pieces forming built-up sections shall be straight and fit close together; and finished members shall be free from twists, bends or open joints.

(d) Rolled sections shall not be heated in any manner which will impair their strength or quality.

(e) All steel castings shall be properly annealed.

(f) Material may be punched one-sixteenth ( $\frac{1}{16}$ ) inch larger than the nominal diameter of the rivets, whenever the thickness of the metal is equal to or less than the diameter of the rivets, plus one-eighth ( $\frac{1}{8}$ ) inch. When the metal is thicker than the diameter of the rivet, plus one-eighth ( $\frac{1}{8}$ ) inch, the holes shall be drilled or sub-punched and reamed.

(g) The rivets are to be driven hot, and wherever practicable, by power. Rivet heads shall be of hemispherical shape and uniform in size throughout the work for the same size rivet, full, neatly finished, and concentric with the holes. Rivets after driving shall be tight, completely filling the holes, and with heads in full contact with the surface. Rivets shall be heated uniformly and their temperature before driving shall not exceed 1950 deg. F., which is a light yellow color. An air hammer should not be used for driving after the temperature is below 1000 deg. F., which is a blood red color.

(h) Compression joints depending upon contact bearing shall have the bearing surfaces truly faced after the members are riveted. All other joints shall be cut or dressed true and straight.

(i) Gas cutting may be done under the following conditions:

(1) The Contractor shall be required to satisfy the Building Inspector as to his ability to produce satisfactory gas cuts.

(2) Gas-cut edges shall be regular in contour.

(3) Gas cutting may be used in the preparation of base metal parts for welding, provided the edges so cut are thoroughly cleaned after cutting so as to expose clean metal.

(4) Gas cutting shall not be permitted to replace the milling of surfaces specified elsewhere in this Code.

(5) Gas cutting shall not be permitted on any member while it is carrying stress. This restriction shall not apply to detail cutting for the correction of minor fabricating errors, where the removal of metal resulting from such gas cutting will not reduce the required strength of the member that is to be cut.

(6) Gas cutting of holes in any member which has not been designed therefor shall not be permitted.

Sec. 2717. PAINTING-PROTECTION OF STRUCTURAL METAL AGAINST CORROSION. (a) All metal structural work shall be cleaned of all scale, dirt and rust, and be given one coat of paint at the shop completely covering all exposed surfaces. After erection all such work shall be painted at least one additional coat of a shade different from the first coat. This first coat of paint shall be made of pigments which shall be chemically inert after application, and shall be mixed with linseed or other drying oil. The amount of volatile matter shall be sufficient for easy spreading, and shall not injure the film of the paint. The paint must dry sufficiently hard within 24 hours so that it will not rub off or abrade easily. When the steel reaches the job, all abraded or injured portions must be thoroughly recoated with the same material as the shop coat before the second coat is applied. The second coat of paint shall be such as will not act as a solvent of the first coat, and shall be mixed with a pigment which shall be inert after application, and the vehicle shall be one that will not saponify under the action of cement mortar.

(b) Surfaces of riveted work which come in contact with each other shall be painted with two coats of paint before assembling.

(c) All iron or steel, except steel sheet pile for bulkhead work, used in damp locations or under water shall be embedded in Portland cement concrete. No paint shall be applied to the steel surfaces which are to be encased in concrete.

(d) Any structural steel work which may be so placed as to be inaccessible for inspection after erection, shall be thoroughly cleaned of all rust and encased in Portland cement concrete before it is rendered inaccessible.

(e) Machine-finished surfaces shall be protected against corrosion.

(f) Cast iron columns shall not be painted until after acceptance by the Building Inspector.

Sec. 2718. ERECTION. (a) The frame of all steel skeleton buildings shall be carried up true and plumb, and temporary bracing shall be introduced wherever necessary to take care of all loads to which the structure may be subjected, including erection equipment, and the operation of the same. Such bracing shall be left in place as long as required for safety or deemed necessary by the Building Inspector.

(b) As erection progresses the work shall be securely bolted up to take care of all dead load, wind and erection stresses.

(c) Wherever piles of material, erection equipment or other loads are carried during erection, proper provision shall be made to take care of the resulting stresses.

(d) No riveting or welding shall be done until the structure has been properly aligned.

(e) Rivets driven in the field shall be heated and driven with the same care as those driven in the shop.

(f) In the setting or erection of steel work the individual pieces shall be considered plumb or level when the error does not exceed 1 to 500. For exterior columns and columns adjacent to elevator shafts of multiple story buildings the error shall not exceed 1 to 1000 to the total height of the column.

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## PART VII

### CHAPTER 28

#### DETAILED REGULATIONS

#### EXCAVATIONS, FOOTINGS AND FOUNDATIONS

Sec. 2801. EXCAVATIONS. All excavations shall be protected against danger to life and property by the person or persons causing the excavation to be made.

Permanent excavations shall have retaining walls of masonry or reinforced concrete, or interlocking steel piling.

No excavation for any purpose shall extend within one (1) foot of the angle of repose or natural slope of the soil under any footing or foundation unless such footing or foundation is first properly underpinned and/or protected against settlement.

Sec. 2802. FOOTINGS AND FOUNDATIONS. Footings and foundations, unless specifically provided, shall be constructed of masonry or reinforced concrete or structural steel encased in concrete. Masonry units used in foundation walls and footings shall be laid up in Portland cement mortar. The base areas of all footings and foundations shall be proportioned as specified in Section 2306.

Footings shall be so designed that the allowable bearing capacity of the soil in tons per square foot as given below shall not be exceeded unless the particular soil on which the building is to be placed shows a greater bearing capacity than that specified in this Section.

ROCK, if solid, with no pot holes..... 5 tons\*

ROCK, if pot holes are cleaned and filled with concrete..... 3 tons

SAND, in Natural Bed (with no underlying unstable stratum.)

Exposed water-front structures must have bottoms of footings on foundations at least one (1) foot below mean low water, although at the discretion of the Building Inspector, this distance may be increased. 2½ tons

Filled Land ..... ½ ton

\*The Building Inspector shall require Borings to indicate that the thickness of Rock below bottom of footings is at least 5 feet.

Where the bearing capacity of the soil is not definitely known or is in question, the Building Inspector may require load tests or other adequate proof as to the permissible safe bearing capacity at that particular location. To determine the safe bearing capacity of soil it shall be tested by loading an area not less than two (2) square feet to not less than twice the maximum bearing capacity desired for use. Such double load shall be sustained by the soil until no additional settlement takes place for a period of not less than forty-eight (48) hours in order that such desired bearing capacity may be used. Examination of sub-soil conditions may be required when deemed necessary.

Foundations shall be built upon natural solid ground where possible. Filled land, loam or soil containing organic matter shall not be used to support buildings exceeding one story in height, and such buildings must be Type V construction. Where solid natural ground does not occur at the foundation depth, such foundations shall be extended down to natural solid ground or piles shall be used, unless there is a practically level fill of good ground which has been in place a sufficient length of time to settle properly, when such fill may be used.

Sec. 2803. PILES. (a) General Requirements. All piles used to support any building or part thereof shall be driven to a reasonably solid bearing in such a manner as not to impair their strength. No pile or group of piles shall be loaded eccentrically.

(b) Wood Piles. Wood piles shall be of Dade County pine or other approved wood containing no evidences of decay. They shall be driven green. The piles shall be free from short kinks or reverse bends and shall have a uniform taper from butt to tip. A straight line drawn from the center of the butt to the tip shall lie wholly within the body of the pile. The diameter of wood piles at the point shall be not less than six (6) inches and at the butt shall be not less than ten (10) inches for piles eighteen (18) feet or less in length, and not less than twelve (12) inches at the butt for piles more than eighteen (18) feet in length. No piles with spiral grain which exceeds one complete turn in forty (40) feet shall be used. All wood piles and capping shall be cut off and/or placed below mean low water level or below lowest ground water level; with the exception of creosoted piles as covered in this Section.

Creosoted piles of Douglas fir or Southern pine when treated with Grade 1 creosote under pressure with a full-cell creosote treatment complying with Specification No. 41-a or No. 39-a of the American Wood Preservers Association in such a manner as to provide a final retention of not less than sixteen (16) pounds per cubic foot in Douglas fir piling, and not less than twenty (20) pounds per cubic foot in Southern pine piling, may be used as follows:

1. Where the upper portion of the creosoted piling is to be exposed and available for inspection the cut-off may be above ground level or above water level.
2. Where the upper part of the creosoted piling will not be readily available for inspection the cut-off shall be below ground level but may be above ground water level provided the tops of the cut-off piles are treated with three (3) coats of hot creosote and capped with concrete so that no part will be exposed to the air.

No creosoted piling shall be used which has been so injured in handling or driving as to penetrate the creosoted shell, except in the case of bolt holes and unavoidable framing including the top cut-off, all of which shall be treated with three (3) coats of hot creosote.

The Building Inspector may require any piles which are to be used for the support of permanent structures to be inspected by an approved testing laboratory or other qualified inspector satisfactory to the Building Inspector. This inspection shall include a certificate of inspection indicating whether or not the piles, creosote and method of treatment conform to the requirements of this Code. Each pile shall be so marked or branded by the Inspector issuing the certificate of inspection as to identify the pile with respect to conformity to the provisions of this Code. Wood piles shall be spaced apart not less than two (2) feet six (6) inches, center to center.

The allowable load on wood piles shall in no case exceed the values determined by the following formulae:

For piles driven by drop hammer:

$$l=2 wh/s+0.1 \dots\dots\dots(2)$$

For piles driven by steam hammer; operating at efficiency recommended by the manufacturer:

$$l=2 wh/s-+-0.1 \dots\dots\dots(2)$$

Where (L) equals the safe load in tons, (W) equals the weight of the hammer in tons, (H) equals the height of fall or stroke of the hammer in feet, (S) equals the average penetration in inches under the last five (5) blows. The allowable load on a wood pile shall in no case exceed twenty (20) tons for an untreated pile, or fifteen (15) tons for a creosoted pile.

(c) Concrete Piles. Concrete piles shall be of material complying with the requirements for Portland cement, fine aggregate, coarse aggregate and reinforced as specified in Chapter 26 and steel as specified in Chapter 27. The maximum allowable working stress on any concrete pile shall not exceed twelve (12) per cent of the ultimate compressive strength of the concrete used in the piles, determined by tests as specified in Chapter 26. The maximum allowable load on any pile shall not exceed such working stress multiplied by the average cross sectional area of the pile.

EXCEPTIONS: When such pile is cast in a tight steel tube not less than five-sixteenths (5/16) inch thick, the allowable working stress shall be not more than twenty-five (25) per cent of the

ultimate compressive strength of the concrete plus an allowable stress not to exceed seventy-five hundred (7500) pounds per square inch for the steel tube, not including in such latter computation the outer one-sixteenth ( $1/16$ ) inch of steel shell. In no case shall the value of such pile exceed fifty (50) tons.

Concrete piles cast in place shall be made in such a manner as to insure the exclusion of any foreign matter and to secure a full-sized shaft. The length of such piles shall be limited to not more than thirty (30) times the average diameter, except that when cast in steel tubes with a thickness of not less than five-sixteenths ( $5/16$ ) inch the length of such piles shall be not greater than forty (40) times the average diameter. The diameter of concrete-filled steel tubes shall be not less than ten (10) inches and such piles shall be driven to proper resistance. The diameter of other piles cast in place shall be not less than eight (8) inches at the point and shall have an average diameter of not less than eleven (11) inches.

Pre-cast concrete piles shall be sufficiently cured to attain the ultimate strength upon which their use is based before driving. Such piles shall be reinforced with a minimum of 1.2% of longitudinal reinforcing and one-quarter ( $1/4$ ) inch round hooping not over eight (8) inches on centers in shaft of pile and three (3) inches on centers for a distance of eighteen (18) inches at head of point, and so handled as not to be fractured in any manner which will affect their durability or strength. Pre-cast concrete piles shall have a size at the point of not less than seven (7) inches, and an average size not less than ten (10) inches. The length of such piles when driven to rock shall be limited to twenty (20) times the average diameter and shall not exceed forty (40) times the average diameter in any other case.

The allowable load on a concrete pile when driven by a drop hammer or by a steam hammer shall not exceed the values determined by Formulas No. 1 and No. 2, respectively, of this Section or the maximum values in paragraph C of this Section.

Rolled structural steel piles shall comply with the requirements for structural steel as specified in Chapter 27. The minimum thickness of metal shall be three-eighths ( $3/8$ ) inch. The allowable load on a structural steel pile shall be determined by the formulas given in paragraph (b) of this Section. In lieu of the determination of the allowable load by formula, the pile may be required to carry a test load equal to one and one-half ( $1\frac{1}{2}$ ) times the load which the pile is to carry.

(d) The safe bearing power of any pile shall be determined by a load test whenever deemed necessary and ordered by the Building Inspector. The test pile or piles shall be loaded to twice the design load and the resultant settlement shall be measured until during a forty-eight (48) hour period no appreciable additional settlement takes place. The total settlement in inches shall not exceed one one-hundredth ( $1/100$ ) times the test load in tons where the foundations carry a structure continuous over two or more spans nor twice this amount where the foundation carries non-continuous spans.

**CHAPTER 29.**  
**WALLS AND PARTITIONS.**

Solid Masonry Walls

Sec. 2901. GENERAL PROVISIONS: SOLID MASONRY WALLS.

Solid masonry walls shall be supported at right angles to the walls face at such intervals that the wall panel within the vertical and horizontal supporting members will not have an area greater than 256 sq. ft., but the distance between vertical supports shall not exceed twenty (20) feet center to center. Such lateral support may be obtained by masonry cross walls, concrete piers, columns or buttresses for the vertical members and by floors, roof, or concrete tie beams for the horizontal members.

Concrete columns shall be required at all corners and at intervals as stated above, and may be the same thickness as the walls, or a minimum of eight (8) inches and shall be not less than twelve (12) inches in width, reinforced with four (4) five-eighth-inch ( $\frac{5}{8}$ " ) continuous vertical rods with one-quarter ( $\frac{1}{4}$ ) inch ties spaced on twelve (12) inch centers.

A tie-beam of reinforced concrete designed in accordance with the Engineering Section of this Code shall be placed in all masonry walls below each tier of floor or ceiling joists or over main interior horizontal frame and on top of walls forming a coping. This tie-beam shall have a minimum width of not less than eight (8) inches and the height shall be not less than twelve (12) inches, reinforced with not less than four, five-eighths inch ( $\frac{5}{8}$ " ) rods, two at the top and two at the bottom.

V-type beam Blk.—See page 311

Coping beams may be a minimum of eight by eight (8"x8") inches, or sixty-four (64) square inches, reinforced with two (2) one-half ( $\frac{1}{2}$ ) inch rods, and such coping shall be anchored to the tie-beam immediately underneath with the equivalent of eight by twelve (8"x12") inch concrete struts reinforced with four (4), one-half inch ( $\frac{1}{2}$ " ) rods; such struts to be spaced directly over columns below.

In addition to the above, there shall be an eight (8) inch by (8) inch or sixty-four (64) square inches reinforced concrete tie-beam, constructed in the same manner as above coping beam, on the rake at the end of gables.

An ornamental finish above the uppermost beam or coping, as specified above, shall be properly bended and coped as shall be required by the Building Inspector.

Bending and anchoring of horizontal and vertical framing members to the wall shall be provided sufficient to resist the assumed wind force acting in any direction. Floors and roof shall be so constructed and anchored to such walls as to form a continuous and sufficient anchorage across the building from wall to wall. Anchoring of wood framing to masonry walls shall be as specified in Sections 2506, 2507, 2508 and 2509. Piers or buttresses relied upon for lateral support shall have suf-

ficient strength and stability to transfer the wind force acting in either direction to the ground. When walls are dependent upon floors for their lateral support, provision shall be made in the building to transfer the lateral force resisted by all floors to the ground.

Corbels may be built into masonry walls to furnish bearings for joists or other structural parts, but such corbels shall not exceed one-fourth ( $\frac{1}{4}$ ) the total thickness of the wall, and the projection for each course in such corbel shall not exceed one-half ( $\frac{1}{2}$ ) inch. Corbeling of walls eight (8) inches or less in thickness shall not be allowed.

All masonry units must be thoroughly wetted before placing same in the walls.

Sec. 2902. WORKING STRESSES. The maximum allowable compressive stresses in solid masonry due to combined live, dead and other loads shall not exceed those specified in Sections 2410 and 2411.

Sec. 2903. THICKNESS OF EXTERIOR WALLS OTHER THAN SKELETON CONSTRUCTION. (a) The thickness of solid masonry walls shall be sufficient at all points to keep the combined stresses due to live, dead and other loads for which the building is designed within the limits specified in Sections 2410 and 2411 and as specified for wind pressure in Section 2307.

The minimum thickness of solid masonry exterior, bearing or party walls shall be not less in thickness than specified in the following table No. 1; provided, that in no case shall the uppermost thirty-five (35) feet of such walls be less than twelve (12) inches in thickness, and each successive thirty-five (35) feet or fraction thereof measured downward from the top shall be increased not less than four (4) inches in thickness.

Table No. 1

8th	12							
7th	12	12						
6th	12	12	12					
5th	16	12	12	12				
4th	16	16	12	12	12			
3rd	16	16	16	12	12	12		
2nd	20	16	16	16	12	12	12	
1st	20	20	20	16	16	16	12	12
Basement	20	20	20	20	16	16	16	12
Stories	8	7	6	5	4	3	2	1

Exceptions: (1) The top story exterior or bearing walls of a building not exceeding four (4) stories or fifty-five (55) feet in height, or the wall of a one-story building of Group E, F or G may be eight (8) inches; provided, that such eight (8) inch wall does not exceed twelve (12) feet unsupported height and that the roof beams or trusses are so placed or constructed as not to develop any direct thrust against the wall.

(2) Exterior walls for Group I buildings shall be as specified in part (c) of this Section.



(3) Solid masonry exterior bearing or party walls constructed as specified in part (d) of this Section may be of lesser thickness.

(b) Non-bearing walls of masonry shall be not less in thickness than specified in Paragraph (c) of Table 3.

(c) Masonry walls, either bearing or non-bearing, for Groups H and I buildings not over three (3) stories in height shall not be less in thickness than specified in Table No. 3, provided structural columns at least 8" in thickness are poured integral with the masonry at intervals not greater than 16'-0" and also, provided the tie-beam as specified in Section 2901 is poured at each floor and roof level.

Table No. 3

3rd .....	8		
2nd .....	8	8	
1st .....	8	8	8
Foundation Wall.....	12		

(d) Where solid masonry bearing or non-bearing walls other than fire walls or fire division walls are strengthened laterally by masonry buttresses or cross walls the wall thickness specified in parts (a), (b) and (c) of this Section may be reduced between buttresses by one-half ( $\frac{1}{2}$ ) the thickness added at the buttress, except that no part of such buttressed wall shall be less than eight (8) inches thick. Buttresses shall be not less than one-eighth ( $\frac{1}{8}$ ) the clear distance between them in width and their clear distance apart shall not exceed twenty-four (24) times the reduced wall thickness. Principal girders and trusses shall rest on the buttresses.

In one-story buildings having walls not over sixteen (16) feet high to the under side of girders or trusses and pilastered as above provided for an eight (8) inch wall between pilasters, such walls may be considered as bearing walls for roof loads and parapet walls only. All materials used in solid masonry walls shall conform in all respects to the requirements for such materials in Chapters 24 and 26.

Sec. 2904. BONDS. In all solid unit masonry walls at least every sixth course on both sides of the wall shall be a header course or there shall be at least one full header in every seventy-two (72) square inches of each wall surface. In walls more than twelve (12) inches thick the inner joints of header courses shall be covered with another header course which shall break joints with the course below. Blind headers may be permitted in lieu of full headers.

Where running bond is used, every sixth course on each face shall be bonded into the backing by using a full header course at right angles to the face behind split brick. Tothing shall not be permitted.

Sec. 2905. PIERS. The unsupported height of isolated piers shall not exceed ten (10) times their least dimensions. Piers of solid unit masonry shall be laid up in cement mortar.

Walls in which the openings are of such an extent as to leave relatively narrow sections exceeding ten (10) feet in height shall have such narrow sections computed and constructed as for isolated piers.

Sec. 2906. CHASES AND RECESSES. There shall be no chases in twelve (12) inch walls or less in thickness or within the required area of any pier, and no chase in any wall or pier shall be deeper than one-third (1/3) the wall thickness. No horizontal chase shall exceed four (4) feet in length unless otherwise reinforced, nor shall the horizontal projection of any diagonal chase exceed four (4) feet. No vertical chase shall be closer than two (2) feet to any pilaster, cross wall, end wall or other stiffener.

Recesses for stairways or elevators may be made in walls, but in no case shall the walls at such points be less than the required thickness of walls of the fourth story above the ground floor unless reinforced by additional piers, by steel or reinforced concrete girders or steel or reinforced concrete columns and girders, securely anchored to the walls on each side of such recesses. Recesses for alcoves and similar purposes shall have not less than eight (8) inches of material at the back. Such recesses shall not be more than eight (8) feet in width and shall be arched over or spanned with lintels.

The aggregate area of recesses and chases in the wall of any one story shall not exceed one-fourth (1/4) the whole area of the face of the wall in that story.

No chases or recesses shall be permitted in fire or fire division walls that will reduce the thickness below the minimum specified in this Code.

Openings for doors and windows shall have well-buttressed arches or lintels of masonry, or of metal with bearing at each end of not less than four (4) inches on the wall. On the inside of openings less than four (4) feet wide, in which the thickness of arches and lintels is less than that of the wall supported, timber may be used, which will rest at each end not more than two (2) inches on the wall and be chamfered or cut to serve as arch centers, only in case a relieving arch is turned above it.

The maximum percentage of openings in the horizontal cross section of any wall shall not exceed fifty (50) per cent unless the wall is increased four (4) inches in thickness or such portions of the wall between openings shall be as required for piers in Section 2905.

**WALLS OF HOLLOW TILE, CONCRETE BLOCK OR TILE, HOLLOW WALLS OF BRICK AND HOLLOW MONOLITHIC PLAIN CONCRETE WALLS.**

Sec. 2907. GENERAL PROVISIONS.

**HOLLOW WALLS.** Walls of hollow clay tile, of concrete block or tile, hollow walls of solid masonry units and hollow monolithic plain concrete walls shall be supported at right angles to the face at intervals not exceeding sixteen (16) feet, except at the discretion of the Building Inspector. Such lateral supports may be in the form of cross walls, piers, or buttresses.

Piers or buttresses relied upon for lateral support shall be of reinforced concrete or structural steel and shall be poured, with the ends of the two spandrel wall sections to be used as forms for concrete.

All walls shall be adequately bonded to columns, piers and buttresses. When walls are dependent on floors for their lateral support, provision shall be made in the building to transfer the lateral force resisted by all floors to the ground.

The general provisions relating to solid masonry walls shall apply to hollow walls as included in this Section; provided, that corbeling from hollow walls shall not be permitted except when such corbels are constructed of solid masonry or reinforced concrete.

When air spaces are built into the wall the area of such air spaces combined with the area of the cellular space in the tile used in the construction of the wall shall not exceed forty-five (45) per cent of the gross cross-sectional area of the wall.

Masonry walls composed of a combination of solid and hollow units shall not be less in thickness than the minimum thickness required for hollow walls as provided in Section 2909.

All materials used in walls of hollow clay tile or concrete block or tile, hollow walls of solid masonry units and hollow monolithic concrete walls shall conform in all respects to the requirements for such materials in Chapters 24 and 26.

Glass building units shall not be used to carry other than their own load, shall not be used in broken panels exceeding one hundred (100) square feet, and shall not be used in solid panels exceeding two hundred (200) square feet. The bonding and mortar shall be as required by the Building Inspector.

Sec. 2908. **WORKING STRESSES.** The maximum allowable compressive stresses in walls of hollow tile, concrete block or tile, hollow walls of brick or hollow monolithic plain concrete walls due to combined live, dead and other loads shall not exceed those specified in Chapters 24 and 26.

Sec. 2909. **THICKNESS AND HEIGHT OF WALLS OTHER THAN SKELETON CONSTRUCTION.** Walls of hollow clay tile and concrete block or tile, hollow walls of solid masonry units and hollow monolithic concrete walls shall be not less in thickness than as specified in the following table No. 4; provided, that in no case shall the uppermost twenty-five (25) feet of such walls be less than twelve (12) inches in thickness, and each successive twenty-five (25) feet or fraction thereof measured downward from the top shall be increased not less than four (4) inches in thickness.

Table No. 4

8th	12							
7th	12	12						
6th	16	12	12					
5th	16	16	12	12				
4th	20	16	16	12	12			
3rd	20	20	16	16	12	12		
2nd	24	20	20	16	16	12	12	
1st	24	24	20	20	16	16	12	12
Basement	28	24	24	20	20	16	16	12
Stories	8	7	6	5	4	3	2	1

Except that walls of Grade A hollow clay tile or Grade A or Grade A Special hollow concrete block or tile, as specified in Section 2406 and 2408, may be of the same thickness as solid masonry walls when not exceeding two (2) stories in height, and such walls shall be laid in cement mortar proportioned as specified in Section 2409.

One-story private garages and one-story residences may have bearing and non-bearing walls of hollow tile, concrete block or tile, hollow brick or hollow monolithic plain concrete walls eight (8) inches thick.

Sec. 2910. BOND. All hollow masonry units in a wall shall have all contact surfaces solidly embedded in mortar and laid with a full bond.

Where two (2) or more hollow units are used to make up the thickness of a wall the inner and outer courses shall be bonded at vertical intervals not exceeding three (3) courses by lapping at least one (1) cell completely over a cell of the unit below.

Sec. 2911. BEAM SUPPORTS. For floors above the first story, the reinforced concrete tie-team required in Section 2907 shall act as a support for all beams and joists, to which support the beams and joists shall be anchored in accordance with Section 2506f.

Sec. 2912. PIERS. Hollow tile or concrete block or tile, except Grade A hollow clay tile and Special Hollow concrete block or tile, shall not be used for isolated piers, unless the cells are filled with cement grout or concrete and reinforced with not less than four (4) three-eighths ( $\frac{3}{8}$ " ) inch bars of sufficient length to be anchored into the foundation. Isolated piers shall be laid up in cement mortar.

Sec. 2913. CHASES AND RECESSES. Chases and recesses in walls of hollow tile, hollow concrete block or tile, or in hollow walls of brick shall not exceed in extent those permitted for solid masonry walls under the same conditions. (See Sec. 2906.) Chases and recesses shall not be cut in walls of the above types, but may be built in. No chases or recesses shall be permitted in fire walls that will reduce the thickness below the minimum specified in this Code.

Reinforced tile lintels over openings made by filling the cells of the hollow units with cement mortar or concrete and inserting reinforcing bars may be used. Such lintels shall be computed as reinforced concrete beams on the basis of the enclosed concrete or mortar.

#### **REINFORCED CONCRETE WALLS.**

Sec. 2914. GENERAL PROVISIONS:

REINFORCED CONCRETE WALLS. The general provisions of Chapter 26 of this Code shall apply to the design and construction of reinforced concrete walls provided that where any conflict may occur the provisions of this Article shall govern.

Reinforced concrete bearing walls shall have a thickness of not less than one-twenty-fifth ( $\frac{1}{25}$ ) of the unsupported height; provided, that approved buttresses, built-in columns or piers may be used in lieu of greater thicknesses.

Reinforced concrete walls shall be supported at right angles to the wall face at intervals not exceeding twenty-two (22) times the wall thickness in the top story or twenty-five (25) times the wall thickness elsewhere. Such lateral support may be obtained by masonry or reinforced concrete cross walls, piers, buttresses or built-in columns when the limiting distance is measured horizontally or by floors or roof when the limiting distance is measured vertically. Bonding and anchoring shall be provided between the wall and the supports to resist the assumed wind force acting in any direction. Piers, buttresses or built-in columns relied upon for lateral support shall have sufficient strength and stability to transfer the wind force acting in either direction to the ground. When walls are dependent upon floors for their lateral support, provision shall be made in the building to transfer the lateral forces resisted by all floors, to the ground. Anchoring of interior wood framing shall be as specified in Chapter 25.

Corbeling of reinforced concrete walls for the support of beams, girders and other members shall be fully provided for in the design of the wall at that point.

Sec. 2915. IN SKELETON CONSTRUCTION. The maximum allowable compressive stress in reinforced concrete walls due to combined live, dead and other loads shall not exceed 0.07% when the unsupported height of the wall is twenty-five (25) times the thickness, nor 0.15% when the unsupported height of the wall is fifteen (15) times the thickness or less with allowable stresses proportional between those limits of height.

Sec. 2916. WORKING STRESSES. THICKNESS OF WALLS OTHER THAN. The thickness of reinforced concrete bearing walls shall be sufficient at all points to keep the combined stresses due to dead, live and/or other loads for which the building is designed, within the limits specified in Section 2915.

The minimum thickness of reinforced concrete bearing or party walls shall be not less than the thickness specified in Table No. 5.

Table No. 5

8th	8							
7th	9	8						
6th	10	9	8					
5th	11	10	9	8				
4th	12	11	10	9	8			
3rd	13	12	11	10	9	8		
2nd	14	13	12	11	10	9	8	
1st	15	14	13	12	11	10	9	8
Basement	16	15	14	13	12	11	10	8
Stories	8	7	6	5	4	3	2	1

Such reinforced concrete walls shall have not less than one-tenth (1/10) of one (1) per cent of reinforcement in each direction, horizontally and vertically and the steel shall be distributed equally to each face of the wall with a maximum bar spacing of twenty-four (24) inches in each face.

Non-bearing walls of reinforced concrete complying with all the provisions of this Section shall be of not less thickness than that specified in the following Table No. 6.

Table No. 6

8th .....	6							
7th .....	7	6						
6th .....	8	7	6					
5th .....	9	8	7	6				
4th .....	10	9	8	7	6			
3rd .....	11	10	9	8	7	6		
2nd .....	12	11	10	9	8	7	6	
1st .....	13	12	11	10	9	8	7	6
Basement .....	14	13	12	11	10	9	7	7
Stories .....	8	7	6	5	4	3	2	1

All such reinforced concrete walls shall be laterally supported by a reinforced concrete or fireproofed structural steel floor system when supported from one side only and may be supported by combustible floors when supported laterally from both sides.

Sec. 2917. PIERS. The unsupported height of piers of reinforced concrete walls shall not exceed ten (10) times their least dimensions unless designed as reinforced concrete columns.

Walls in which the openings are of such an extent as to leave relatively narrow sections exceeding ten (10) times their least dimension in height shall be considered as piers.

Sec. 2918. CHASES AND RECESSES. Chases and recesses shall be as permitted in solid masonry walls in Section 2906.

Openings for doors and windows shall have reinforced concrete lintels designed as specified in Chapter 26, or fireproofed steel lintels as specified in Chapter 27.

#### STONE WALLS.

Sec. 2919. QUALITY OF MATERIAL. Stones used in masonry wall construction shall be at least equal in strength to the minimum specified for plain concrete in Section 2405.

Sec. 2920. WORKING STRESSES. The maximum allowable compressive stresses in rubble stonework due to combined live, dead and other loads shall not exceed those specified in Sections 2410 and 2411.

Sec. 2921. LATERAL SUPPORT AND THICKNESS. Rubble stone walls shall be four (4) inches thicker than is required for solid brick or concrete walls of the same respective heights, but in no part less than sixteen (16) inches.

The minimum thickness for walls or piers of ashlar masonry properly bonded shall be the same as required for solid brick walls and piers under similar conditions.

The lateral support for stone walls shall conform to the same requirements specified for solid masonry walls in Section 2901.

Sec. 2922. BOND. Bond stones extending through the wall and uniformly distributed shall be provided to the extent of not less than twenty (20) per cent of the area, and there shall be at least one bond stone for every five (5) stretchers.

Sec. 2923. CHASES AND RECESSES. Chases and recesses in stone walls shall not exceed in extent those permitted for solid masonry walls under the same conditions.

#### VENEERED WALLS.

Sec. 2924. QUALITY OF MATERIAL. Materials used in veneering of masonry and reinforced concrete walls shall conform in all respects to the requirements for such materials in Chapter 24 of this Code. Stone, cellular architectural terra cotta, slab terra cotta, tile cast stone ashlar or other approved masonry materials used for veneering shall be of the thicknesses set forth as follows:

Stone .....	not less than 3 inches
Cellular architectural terra cotta.....	not less than 3 inches
Slab terra cotta .....	not less than 1¼ in.
Brick (Clay, concrete or sand-lime).....	not less than 2 inches
Hollow tile .....	not less than 2 inches
Cast stone .....	not less than 2 inches
Other approved masonry .....	not less than 3 inches

Glass or other vitreous materials used for decorative purposes shall be of a thickness as shall be approved by the Building Inspector and shall be anchored as required in Section 2926.

In stone ashlar, each stone shall have a reasonable uniform thickness, but all stones need not necessarily be of the same thickness.

Sec. 2925. WORKING STRESSES. The maximum allowable compressive stress on the backing of veneered walls, due to combined live and dead loads, shall not exceed those permitted for masonry of the type which forms such backing. In no case shall the veneering be considered a part of the wall in computing the strength of bearing walls, nor shall it be considered a part of the required thickness of the wall.

Sec. 2926. ATTACHMENT OF VENEERING. When walls are veneered with brick, hollow tile, cellular architectural terra cotta, slab terra cotta, stone and/or cast stone, the veneering shall be tied into the backing either by a header for every three hundred (300) square inches of wall surface or by substantial, non-corrosive metal wall ties spaced not farther apart than one (1) foot vertically and two (2) feet horizontally. Headers shall project at least three and three quarters (3¾") inches into the backing and anchors shall be of substantial pattern. Tile veneering not more than one (1) inch in thickness with individual units not exceeding twenty (20) inches in any one dimension and having not more than two hundred (200) square inches of superficial area and having corrugations or scorings on the back side thereof, need not be anchored in accordance with the above requirements but shall be cemented solidly to the backing with cement

mortar so as to provide a continuous integral support to the backing.

Glass or other vitreous materials used for veneering shall be of a quality as specified and anchored as approved by the Building Inspector, and as specified in this Section.

**GLASS VENEER.** The minimum thickness of glass veneer shall be 11/32". The maximum area of a single section of glass veneer shall not exceed ten (10) square feet, when not more than 15' above the level of the sidewalk, and shall not exceed six (6) square feet where more than 15' above the level of the sidewalk directly below.

The maximum length of any section of glass veneer shall be 48 inches.

**BACKING FOR GLASS VENEER.** Glass veneer may be placed only against substantial, rigid, incombustible surfaces of true plane, plumb and straight. In no case shall the backing provide less rigidity and stability than that provided by one inch thick cement mortar on wire lath secured to studs spaced not more than 12 inches on centers. Studs may be of wood. Wood backing surfaces are forbidden regardless of whether they are fireproofed.

**SETTING OF GLASS VENEER.** Glass veneer shall be set only when the backing is thoroughly dry and after the application of a thorough and uniform approved bond coat. The bond coat shall be such as to effectively seal the portions of the veneer backing to insure against the absorption of the vital properties of the mastic cement.

An approved mastic cement shall be applied in bulk to the wall or to the back surface of the glass veneer, and the glass veneer shall be applied to the backing with a substantial and uniform pressure over its entire area, sufficient to flatten out the mastic cement bulk to not less than 1/4" and not more than 5/8" thickness. Sufficient mastic cement shall be applied to insure that at least 50% of the total area of the section is bonded to the backing.

The bond coat and the mastic cement shall be certified to be of such composition as to insure an approved bond between the two materials.

Abutting edges of glass veneer shall be ground square and uniformly buttered with an approved pointing compound. All horizontal joints shall be held to a thickness of 1/16" by an approved non-rigid substance or device.

Where glass veneer extends to the sidewalk surface each such section shall rest on cushions of approved resilient material, placed so as to insure at least 1/4" clearance above sidewalk. The joint between the bottom edge of the glass section and the top of the sidewalk shall be caulked with a resilient waterproof compound.

Where the height of the glass veneer between the sidewalk line, and the sill of show window is 16" high or over, the glass veneer shall contain at least one horizontal joint between the top and bottom edges.

In no case should glass veneer be set so as to extend below the level of the sidewalk. In case sidewalk is set above the bottom of



glass veneer after glass veneer is in place, an expansion joint of not less than  $\frac{1}{4}$  inch shall be provided between the outer face of the glass veneer and the edge of the sidewalk. This expansion joint space shall be filled with a resilient caulking compound from the level of the sidewalk to a depth of at least  $\frac{3}{4}$  inch below said level.

On all glass veneer, starting on a line with the top of the bulkhead facing or at a maximum of 36" above the sidewalk line, the mastic cement binding shall be supplemented by the use of approved metal shelf angles secured to the backing in a manner satisfactory to the Building Inspector. Shelf angles shall be of not less than 18 U. S. Gauge and not less than 2" in length. These angles shall be located in the horizontal joints in every second course; however, if two or more courses total to less than 24", the angles may be set at vertical intervals of 24" to 30".

Glass Veneer on the exterior of structures may be used only in accordance with the provisions of this Code:

Where glass veneer is applied at an elevation greater than the sills of the second story windows, the mastic cement shall be supplemented by the use of fastenings on each vertical or horizontal edge of each section of veneer. Fastenings shall be secured to the backing by means satisfactory to the Building Inspector. Fastenings shall not be less than 2" in length, and shall be of not less than No. 18 U. S. Gauge. Fastenings shall be so designed as to furnish bearing support and also hold the veneer in a vertical plane independently of the mastic cement.

Where glass veneer is confined between non-resilient materials at ends, expansion shall be provided for by means of an expansion joint at each end of not less than  $\frac{1}{4}$ " throughout the entire height of the veneer.

All abutting edges on the plane face of glass veneer shall be ground square. Mitres are prohibited except for wide angles.

At terminations of structural glass installations, exposed edges are to be flashed water tight with approved metal and caulked with waterproof compound.

Sec. 2927. HEIGHT OF VENEERED WALLS. Veneer on masonry or reinforced concrete walls other than panel walls shall not exceed forty (40) feet in height above foundations or other definite and secure supports. Where slab terra cotta is anchored by means of substantial, non-corrosive metal ties, spaced as required in Section 2926, and grouted or cemented solidly with cement mortar to provide a continuous integral support to the masonry backing, and where flat tile is anchored in accordance with the provisions in Section 2926 for tile veneer, this height limit does not apply.

Where glass or other vitreous materials are used for decorative purposes on walls facing or over public streets and arcades which are open to the public, the height, size and anchorage shall be as required by Sections 2924 and 2926 and as approved by the Building Inspector.

### FACED WALLS.

Sec. 2928. **QUALITY OF MATERIAL.** Material used in the backing and facing of faced walls shall conform in all respects to the requirements prescribed for such materials in Part VI.

Sec. 2929. **WORKING STRESSES.** The maximum allowable compressive stresses on faced walls due to combined live, dead and other loads shall not exceed those permitted for masonry of the type which forms the backing. Where bonded to the backing as provided in Section 2931, the full cross section of the facing may be considered in computing bearing strength.

Sec. 2930. **THICKNESS.** Faced walls shall be not less in thickness than is required for masonry walls of the type which forms the backing. Where bonded to the backing as provided in Section 2931 the facing may be considered a part of the wall thickness.

Sec. 2931. **BOND.** Solid unit masonry facing, or cellular architectural terra cotta facing, with all voids filled solidly with masonry or concrete grout shall be bonded to wall of solid masonry or of hollow clay tile, or of concrete block or tile, with at least one (1) header course in every six (6) courses, or there shall be at least one (1) full length header in every seventy-two (72) square inches of wall surface.

Stone ashlar facing, or cellular architectural terra cotta facing with all voids filled solidly with masonry or concrete grout shall have at least fifteen (15) per cent of the superficial area not less than three and three-fourths ( $3\frac{3}{4}$ ) inches thicker than the remainder of the facing to form bond units, which shall be uniformly distributed throughout the wall.

### FIRE WALLS, FIRE DIVISION WALLS AND PARAPET WALLS.

Sec. 2932. **FIRE WALLS: SOLID MASONRY.** Solid masonry and reinforced concrete fire walls shall be not less in thickness than required for exterior bearing walls of corresponding height but never less than twelve (12) inches thick when of solid masonry and eight (8) inches thick when of reinforced concrete, except that solid masonry fire walls for Group H and I buildings shall be not less than eight (8) inches thick for the uppermost twenty-five (25) feet of height and shall be not less than twelve (12) inches thick for the remaining lower portion. No eight (8) inch fire wall shall be broken into subsequent to building, for the insertion of structural members, and a separation of not less than four (4) inches of solid masonry shall be provided in all fire and party walls between combustible members which may enter such walls from opposite sides. Party walls which function also as fire walls shall conform to the requirements of fire walls. No chases or recesses shall be built into fire walls which will reduce the required minimum thickness. Fire and party walls shall be continuous from foundation to a point eighteen (18) inches above the immediate roof level and, when of masonry, shall be coped as required in Section 2901, except that such walls in fire-resistive buildings need not extend above the top of the roof beam.

Sec. 2933. HOLLOW FIRE WALLS. Hollow masonry fire walls shall not be permitted as fire walls in Fire Zone No. 1.

Fire walls of hollow clay tile, concrete block or tile shall be not less than sixteen (16) inches thick in any part, except that for Group H and I buildings they may not be less than twelve (12) inches thick. Hollow walls of solid masonry units used as fire walls shall be not less than twelve (12) inches thick. No fire walls of the above types shall be broken into, subsequent to erection, for the insertion of structural members.

When combustible or unprotected steel building members frame into the hollow part of fire walls of thickness not greater than twelve (12) inches, they shall not project more than four (4) inches into the walls and shall be so spaced that the distance between embedded ends is not less than four (4) inches. The space above, below and between such members shall be filled solidly with burnt clay materials, mortar, concrete or equivalent fire resistive materials, to a depth of not less than four (4) inches on all sides of the members.

All open cells in tile blocks occurring at wall ends shall be filled solid with concrete or cement mortar for at least a depth of six (6) inches, or closure tile set in the opposite direction shall be used.

Party walls which function as fire walls shall conform to the requirements of fire walls. Parapet shall be constructed as specified in Section 2935, and when of masonry shall be coped as required in Section 2901.

Sec. 2934. FIRE DIVISION WALLS. Fire division walls shall be not less in thickness than required for exterior bearing walls of corresponding height and materials, except in skeleton construction where they shall be not less than required for panel walls. Fire division walls shall have a fire-resistive rating of not less than four hours.

Sec. 2935. PARAPET WALLS. On all buildings, except on Group H and I buildings three (3) stories or less in height, all exterior, fire or party walls shall project above the roofs as parapets; provided, that where such wall fronts on a street and where the roof construction is entirely of incombustible materials, such parapet wall may be omitted; and provided, further, that for buildings twenty (20) feet or less in height or where the adjoining roof slopes more than twenty (20) degrees from the horizontal such parapet walls may be omitted. All required parapet walls shall be not less than eighteen (18) inches above the roof immediately adjacent thereto and when exceeding six (6) times their thickness in height shall be laterally supported. All masonry parapet walls shall be coped as specified in Section 2901.

On Group H and I buildings not more than three (3) stories high, exterior and fire walls shall extend above combustible roofs to a height not less than twenty-four (24) inches above the roof where the pitch of the roof does not exceed three (3) inches in twelve (12) inches. Where the pitch of the roof exceeds three (3) inches in

twelve (12) inches such walls may terminate at the upper side of roof boards.

#### PARTITIONS.

Sec. 2936. BEARING PARTITIONS. All interior bearing walls, which do not extend through more than one (1) story, except fire walls, fire division walls and party walls shall be considered as bearing partitions.

Solid masonry bearing partitions shall be not less than eight (8) inches thick and those of hollow clay tile, concrete block or tile or hollow walls of brick shall be not less in thickness than one-eighteenth (1/18) of the height between floors or floor beams but never less than eight (8) inches.

Sec. 2937. NON-BEARING PARTITIONS. Brick non-bearing partitions shall be not less than three and three-fourths (3 $\frac{3}{4}$ ) inches thick for a height not exceeding twelve (12) feet between floors or floor beams or roofs. Non-bearing partitions of hollow clay tile, concrete block or tile, plain concrete, hollow walls of brick or gypsum block or other similar materials shall be built solidly against the floor and ceiling construction below and above and shall not exceed the following unsupported heights.

Thickness Exclusive of Plaster (Inches)	Maximum Unsupported Heights (Feet)
2	8*
3	12
4	15
6	20
8	25

\*Height or length.

Solid or hollow non-bearing partitions of reinforced plaster shall have a thickness of not less than one-sixtieth (1/60) of the unsupported height, but never less than one and one-half (1 $\frac{1}{2}$ ) inches for solid partitions nor have a shell thickness of less than three-fourths ( $\frac{3}{4}$ ) of an inch for hollow partitions. Such partitions shall have vertical steel or iron channels with a depth of not less than one-half ( $\frac{1}{2}$ ) the thickness of the partition, made of not less than number twenty-four (No. 24) U. S. Gauge metal and spaced not more than twenty-four (24) inches o. c.

Solid or hollow non-bearing partitions or reinforced gunite shall have a thickness of not less than one-seventieth (1/70) of the unsupported height but never less than one and one-half (1 $\frac{1}{2}$ ) inches for solid partitions nor have a shell thickness of less than three-fourths ( $\frac{3}{4}$ ) of an inch for hollow partitions. Vertical channels shall be installed in gunite partitions as specified for plaster partitions above.

Sec. 2938. FOUNDATION WALLS. Solid masonry foundation walls and those of concrete block or coursed stone shall be not less

in thickness than ten (10) inches thick unless otherwise specified in Chapter 28; it is the intent of this Section that foundation walls for masonry exterior walls shall provide not less than four (4) inch bearing surface for wood joists and eight (8) inches to support unit masonry, or a minimum thickness of twelve (12) inches; provided, however, that foundation walls for Type V construction may be constructed as specified in Section 2204; and provided further that when exterior masonry walls are supported on reinforced concrete floor slabs designed in accordance with the engineering Sections of this Code and supported on a reinforced concrete foundation wall, such foundation wall may be of a lesser thickness, but never less than eight (8) inches. When built of concrete cast in place, foundation walls shall be at least as thick as the walls supported, but in no case less than eight (8) inches. When built of rubble stone, they shall be at least sixteen (16) inches thick. Rough or random rubble without bonding or level beds shall not be used as foundations for walls exceeding thirty-five (35) feet in height nor shall coursed bonded rubble walls be used as foundations for walls exceeding seventy-five (75) feet in height.

Foundations for walls of hollow clay tile, concrete block or tile and hollow walls of brick, shall be of the same thickness, respectively, as required in the paragraph above, and shall be built of brick, stone, concrete (plain or reinforced), hollow clay tile, concrete block or tile or as a hollow wall of brick. Tile foundation walls shall be not less than twelve (12) inches thick.

When the stresses due to earth pressure and super-imposed building load exceed the maximum working stress permitted in this Code for the materials used, and the additional stresses are not otherwise provided for, the wall thickness shall be increased to bring the stresses within the required limits.

All foundation walls shall extend below the level of frost action, and shall not be constructed of gypsum.

Materials for foundation walls shall be equal in quality in all respects to those required for exterior bearing walls, except that mortar used for exterior foundation walls below grade shall be cement mortar.

Foundations built of masonry units, whether hollow or solid, shall be sealed below any woodwork with a cement wash or equally effective seal.

#### **PANEL AND ENCLOSURE WALLS.**

Sec. 2939. **PANEL AND ENCLOSURE WALLS.** Panel and enclosure walls in skeleton framed buildings shall be not less than eight (8) inches thick if of solid brick, hollow clay tile, concrete block or tile, plain concrete or hollow walls of brick, nor less than one-twenty-fourth (1/24) the distance between supporting or enclosing members. Panel and enclosure walls of reinforced concrete shall be not less than six (6) inches thick and sufficiently reinforced to resist the wind pressure as specified in Section 2307 from either direction. Panel and enclosure walls of reinforced gunite shall be not less than four (4) inches thick and shall be reinforced as required for reinforced concrete walls.

Enclosure walls shall be securely fastened to the adjoining framing members.

When panel or enclosure walls are built monolithic with columns or bearing walls they may be reinforced to carry their own weight.

#### MISCELLANEOUS REQUIREMENTS.

Sec. 2940. ANCHORING OF WALLS. All walls shall be securely anchored and bonded at points where they intersect and where they abut or adjoin the frame of a skeleton framed building.

When walls are not built at the same time the perpendicular joint shall be regularly toothed with not less than four (4) inch offsets and the joint shall be provided with anchors not less than two inches by three-eighths inch ( $2'' \times \frac{3}{8}''$ ) metal with ends bent up not less than two (2) inches or with cross pins to form anchorage. Such anchors shall be not less than three (3) feet long extending eighteen (18) inches in from each side of the joint and spaced not more than three (3) feet apart in the direction of the height of the wall.

Reinforcing in concrete walls shall be extended not less than twenty-four (24) inches around all corners and wall intersections.

Sec. 2941. USE OF EXISTING WALLS. An existing masonry wall may be used in the renewal or extension of the building providing it meets the requirements of this Code, and is structurally sound or can be made so by reasonable repairs. Existing walls which are structurally sound but which are of insufficient thickness when increased in height shall be strengthened by an addition of the same material not less than eight (8) inches in thickness laid up in Portland cement mortar, or the wall may be built out with gunite to the thickness required for a new wall of that height. Foundations and lateral supports shall be provided as required for newly constructed walls under similar conditions. All additions or linings shall be thoroughly bonded into existing masonry by toothings to assure combined action of wall and lining. Such toothings shall be distributed uniformly throughout the wall and shall aggregate in vertical cross-sectional area not less than fifteen (15) per cent of the total vertical area of the wall or lining.

### CHAPTER 30

#### ENCLOSURE OF VERTICAL OPENINGS

Sec. 3001. ENCLOSURES; WHEN REQUIRED. Vertical openings are required to be enclosed in certain buildings depending upon the occupancy of the building, height of building or the type of construction. The vertical openings required to be enclosed are specified under Occupancy in Part III, and for stairways and ramps are specifically included in Chapter 33.

Sec. 3002. STAIRWAY, RAMP AND ELEVATOR ENCLOSURES. When stairways and/or ramps are required to be enclosed such enclosures shall also include a complete passageway not less in width at any

part than the required width of such stairway or ramp and such enclosure shall extend from the lowest point to the highest point required. All doors shall be of not less than one-hour fire-resistive construction, except that doors in buildings not more than three stories in height of Types II, III, IV and V construction may be a solid wood slab door, not less than one and three-eighths ( $1\frac{3}{8}$ ) inch thick at all points, but shall not be allowed in smokeproof towers as specified in Section 3315, and all windows shall be of wire glass and metal frames and sash; except that when such openings face directly on a street or court and are not within ten (10) feet of an adjacent lot line such protection may be omitted. All such doors shall be self-closing and be kept normally closed. (See Paragraph 5 of this Section for elevator doors.)

Walls and partitions enclosing stairways, ramps or elevators shall be of not less than two-hour fire-resistive construction as specified in Section 4302; except as specifically provided in Sections 1907 and 2007, where one-hour fire-resistive construction is specified. See Section 2210 for dwellings and garage apartments under Group I occupancy.

When ramps are required to be enclosed, such enclosures shall consist of a solid wall, as required for enclosures of vertical openings and shall extend from floor to floor, separating the ramps from the remainder of the building. There shall be no opening in this wall other than the necessary door openings, and such openings shall be provided with self-opening doors of one-hour fire-resistive construction.

Walls or partitions enclosing stairs, ramps and elevators shall comply with the requirements for enclosure or vertical openings for the type of construction.

Enclosing walls or partitions around elevators shall be of masonry, conforming to the requirements for partitions based on the type of construction of the building, with not more than two (2) openings for each story. Such openings shall be not wider than the width of elevator platform and not more than seven (7) feet, six (6) inches in height. Such elevator openings shall be protected by walls and doors of not less than one-hour fire-resistive construction.

Not more than two (2) elevators shall be allowed in one enclosure. Walls of not less than one-hour fire-resistive construction shall be required between banks of two elevators.

Sec. 3003. OTHER VERTICAL OPENINGS. All shafts, ducts, chutes and other vertical openings not covered in Section 3002 shall have enclosing walls conforming to the requirements specified under Type of Construction of the building in which they are located, and where not specifically required, shall have the inner vertical surfaces completely covered with incombustible materials. Combustible material of partitions and floors through which the ducts pass shall be kept at least three (3) inches from the lining or be protected by not less than three-eighths ( $\frac{3}{8}$ ) of an inch of plaster or one-fourth ( $\frac{1}{4}$ ) of an inch asbestos or plaster board. Openings between any ducts and the floor construction through which they pass shall be filled with mortar or other incombustible material supported by wire baskets that prevent the

passage of fire. All doors opening into such vertical shafts shall be of metal. Windows in such shafts shall be wire glass and metal frames and sash or such frame and sash may be of wood entirely clad with metal of not less than twenty-six (26) gauge.

## CHAPTER 31.

### FLOOR CONSTRUCTION.

Sec. 3101. GENERAL. Floor construction shall be of materials and construction as specified under Occupancy in Part III and under Types of Construction in Part V.

All floors shall be so framed and tied into the framework and supporting walls as to form an integral part of the whole building. Fire-resistive standards of floor construction are specified in Section 4303.

The type of floor construction used shall provide means to keep the beams and girders from separating by installing ties or bridging.

Sec. 3102. CONCRETE FLOORS. Concrete rib slab floors shall be not less than two and one-half ( $2\frac{1}{2}$ ) inches thick and for solid floors shall be not less than four (4") inches thick. Topping when poured monolithic with the slab may be included as a structural part of the slab. Sleepers for the nailing of a wood floor shall not decrease the required structural depth of the slab unless placed in the direction of span and then shall not be placed more than one-half ( $\frac{1}{2}$ ) inch into the slab. Concrete joists shall be solidly bridged for lateral support as follows: One row of concrete bridging shall be placed in clear spans where joists are greater than twenty (20) feet in length.

Sec. 3103. STEEL JOISTED FLOORS. Steel joisted floors shall consist of steel joists as specified in Section 2714. When used in Type I or Type II buildings they shall have a reinforced concrete or gypsum slab not less than two and one-half ( $2\frac{1}{2}$ ) inches thick placed on and secured to the top thereof and a fire-resistive ceiling as specified in Section 4303 on the underside thereof, fully covering and protecting the joists; provided when such joists are used in places where unprotected wood joists are permitted the steel joists need not be protected with fire-resistive materials as specified above. Fire-resistive ceilings as specified in Section 4303 shall, except in the case of one-hour fire-resistive construction, be designed and constructed to support a load of not less than ten (10) pounds per square foot in addition to its own weight.

The reinforced concrete or gypsum slab placed on and secured to the top of the steel joists shall be sufficiently reinforced to support all dead, live and/or other loads between joists. Joists other than those consisting of a single rolled structural steel section with solid



web, shall be securely cross bridged at intervals not to exceed eight (8) feet along the joist length. The lateral unsupported length at the top chord of any steel joist shall not exceed forty (40) times the width of any compression flange.

Sec. 3104. **MILL CONSTRUCTED FLOORS.** Mill constructed floors shall be not less than three (3) inches nominal spliced or tongued and grooved plank covered with one (1) inch nominal flooring laid crosswise or diagonal. Top flooring shall not extend closer than one-half ( $\frac{1}{2}$ ) inch to walls to allow for swelling in case the floor becomes wet. Such one-half ( $\frac{1}{2}$ ) inch space shall be covered by a molding fastened to the wall and so arranged that it will not obstruct the swelling or shrinking movements of the floor. Corbeling of masonry walls under floor planks may be used in place of such molding.

If laminated floors are used, at least two (2) laminations at the wall shall be omitted until after glazing and roofing has been completed.

Laminated floors consisting of planks not less than six (6) inches wide set on edge close together and spiked at about eighteen (18) inch intervals shall have the joints broken in such manner that no continuous line will occur across the floor and such flooring shall not be spiked to the supporting girders. Joints shall be made only at the supports and at the quarter points with no more than two-thirds ( $\frac{2}{3}$ ) of such joints away from supports. Joints between the planks of a laminated floor shall be made and kept tight.

The framing, fire cutting and anchoring of supported timbers shall comply with the requirements of Chapter 25.

Floor timbers shall be not less than six (6) inches nominal in either cross sectional dimension.

Sec. 3105. **WOOD JOISTED FLOORS.** Wood joisted floors shall be framed and constructed and anchored to supporting wood stud or masonry walls as specified in Chapter 25. Wood joisted floors need not be fire protected on the under side except where specifically required under Occupancy in Part III, Location in Part IV or Type of Construction in Part V.

Sec. 3106. **PUBLIC TOILET FLOORS.** All floors in Public Toilet Rooms, Lavatories, water closet compartments, or any other inclosure where Plumbing Fixtures are used within the building, shall have a floor and base made of asphalt, glass, marble, vitrified tile, terrazo or other impervious or non-absorbent material as approved by the Building Inspector.

Sec. 3107. **PUBLIC GARAGE AND SERVICE STATION GREASE DRAINS.** Public Garages, Service Stations, Automobile Laundries and all other places used for the washing, polishing and greasing of Automobiles, shall have that portion of floor space provided with approved grease drains or traps as required by the Plumbing Department of the City of Miami.

## CHAPTER 32.

### ROOF CONSTRUCTION AND COVERING.

Sec. 3201. GENERAL. Roof covering shall be as required under occupancy in Part III, location in Part IV or Types of Construction in Part V. All roofs shall be so framed and tied into framework and supporting walls as to form an integral part of the whole building.

PROTECTION OF SKY LIGHTS AND ROOFS. Where walls are carried up above the roofs of adjoining buildings, proper means shall be provided and used by the person erecting the walls for the protection of the skylights and roofs of such adjoining buildings.

Should the owner of such adjoining building refuse permission to have his roofs and skylights protected, such refusal shall be reported in writing to the Building Inspector, and it shall then be the duty of the owner refusing such permission to make his skylight and roofs safe at his own expense. Such refusal by said owner shall relieve the owner or person erecting the building from any responsibility for damage done to persons and/or property on or within the premises affected.

Sec. 3202. CONSTRUCTION. The general requirements for construction of floors as specified in Chapter 31 shall apply to roofs except that in Type II buildings the roof sheathing shall be not less than two and one-half ( $2\frac{1}{2}$ ) inches nominal in thickness and except that *precast* concrete or gypsum roof slabs shall be not less than two (2) inches in thickness. Reinforced concrete slab roofs shall be constructed as specified in Chapter 26.

Roof trusses shall have all joints well fitted and shall have all tension members well tightened before any load is placed on the truss. Diagonal and sway bracing shall be used to brace all roof trusses. The allowable working stresses of material in trusses shall be as specified in Chapters 25 and 27. The minimum net section of the members after framing shall be used in determining the strength of the truss at any point.

Roof rafters shall be anchored as required in Section 2208 or Section 2506 (f) or Section 2508 (c). Roof rafters shall be braced as specified in Section 2208.

An air space of not less than eighteen (18) inches measured from the top of the ceiling joists to the bottom of the roof rafter shall be required on the "flat-deck" type roof construction, to provide ventilation.

Sec. 3203. DESIGN. The design of the roof construction shall be in accordance with engineering regulations for the materials used.

Sec. 3204. ROOF COVERINGS. Roof covering shall be required over all combustible roof construction and shall be of one of the classes specified in Section 4305 as they are specified under Occupancy in Part III, Location in Part IV and Types of Construction in Part V. (*See also Section 104 (d) .*)

Sec. 3205. ACCESS TO ROOF. All buildings shall have access provided to the attic space and through the roof by means of a stair-

way or permanent ladder or a scuttle. The openings provided through the ceilings for such access to the attic space and through the roof shall be not less than two feet by three feet (2'x3') and shall be located in the hallway or corridor of all buildings except Group I and J. All scuttles shall be securely kept in place by hooks or bolts. Scuttles in roofs with Class "A" or "B" roofing as specified in Chapter 43, shall have the top and edges covered with an approved incombustible material, provided however, that this shall not prohibit such top and edges being covered with the same roofing as is required for the capping sheet of the roof covering.

Types III or V buildings, one or two stories in height shall have scuttle holes into the attic space and through the roof which are not less than eighteen (18) inches square.

Sec. 3206. ROOF DRAINAGE. All buildings shall be provided with metal water downspouts, which shall be connected to the storm sewer. Where there are no storm sewers, such downspouts shall be connected by pipes below surface to the street gutter. Where water is not drained into the street gutter or storm sewer, a sump of not less than three feet by three feet (3'x3') and of not less than four (4) feet in depth shall be required, said sump not to be placed closer than three (3) feet from footing. Detached dwellings may be exempt from the requirements of this Section at the discretion of the Building Inspector.

The cross section or diameter of roof downspouts shall be determined by the total area of the roof to be drained and shall be not less than one (1) inch per one hundred fifty (150) square feet of roof surface and in no case less than four (4) square inches.

If the roof is so constructed as to form a basin, the only outlet of which is the roof water downspouts, the cross section or diameter of the roof water downspouts shall be increased one (1) inch in diameter over that specified in the above paragraph. Wherever practical, roof outlets other than the roof water downspouts shall be provided. Wherever practical, roofs shall slope toward the street or storm sewer.

WEEP HOLES. Where roof deck is enclosed by parapet walls, weep-holes of equal area as required for downspouts, shall be provided for overflow in event roof drain becomes clogged.

### CHAPTER 33.

### STAIRS, RAMPS AND SMOKEPROOF TOWERS.

Sec. 3301. GENERAL REQUIREMENTS. All exits as required for buildings in this Code shall comply with the requirements specified in this Chapter for a stairway, ramp or smokeproof tower. Wherever stairways are mentioned, ramps may be substituted when constructed as specified in Section 3310. A smokeproof tower constructed as specified in Section 3315 shall be considered as a required stairway as specified in Section 3309. Such smokeproof towers may be substituted for stairways wherever the latter are required in this Code.

All stairways shall be constructed of materials permitted for floors as specified under Types of Construction in Part V for that type of building in which such stairways are located, except as specified in Sections 3315 and 3316. All stairways of wood construction shall be protected on the under side by not less than one-hour fire-resistive construction as specified in Chapter 43. Metal stairways entirely enclosed as specified in this Chapter shall not be required to be fireproofed as required for floors in Part V of this Code. The provisions of this Chapter shall not apply to Group I buildings except as specifically stated in Sections 3302 and 3314.

Elevators and escalators shall not be included in the calculations of the number of stairways required. Revolving doors shall not be considered in calculating exit requirements.

Sec. 3302. GENERAL DESIGN. All stairways and all platforms, landings and balconies forming a part of such stairway shall be designed to sustain an assumed live load of not less than one hundred (100) pounds per square foot.

There shall be no variation in the width of treads in any flight and the variations in heights of risers in any flight shall not exceed three-sixteenth (3/16) of an inch. All treads shall have a nosing of not less than one (1) inch.

The surface material of stair treads and landings shall be such as not to involve danger of slipping.

An arrangement of treads known as winders shall be permitted in Group I buildings or for monumental stairways which are not serving as a required means of exit but in no case shall any tread have a width at any point less than eight (8) inches exclusive of nosing.

Stairways and intermediate landings shall continue with no decrease in width along the direction of exit travel, and not more than two (2) stairways may be combined at the second floor level with such combined width extending to the first floor level, provided that no less than two (2) stairways shall extend from the second floor level to the first floor or street level. *Note:* (This section shall not prohibit exterior fire escapes as provided in Section 3316.)

Sec. 3303. ARRANGEMENT AND ACCESS. One-half of the required number of stairways shall be continued their full width to and through the roof by means of a penthouse in all buildings three stories or more in height with approved openings to roof, exit level and each floor; provided, that not more than two of the required number of stairways may terminate at the second floor level, and provided they lead directly to the street, alley or front of the building and that not more than one stairway shall be required to continue to and through the roof when the roof has a slope of more than six (6) inches for each twelve (12) inches of horizontal projection. In two story buildings scuttles not less than two feet by three feet (2'x3') shall be provided to and through the roof. Stairways leading to roofs of buildings shall have signs conspicuously placed with letters not less than four (4) inches in height indicating such access at the ground floor level.

All stairways shall lead to the street directly or by means of a yard, court or fire-resistive passageway having a width at least equal to the aggregate widths of all the exits discharging into it; provided, they lead directly to a street, alley or front of the building and are provided with a balcony on the exterior of the building not less than three (3) feet wide and five (5) feet long. Such balcony shall be constructed of incombustible materials and when the floor of such balcony is located more than twelve (12) feet above the sidewalk directly below, such balcony shall be equipped with an approved counter-balanced stairway or ladder.

Where stairways discharge through the fire-resistive passageways such passageways shall be not less than seven (7) feet in clear height and with a width at least equal to the stairway or stairways served by such passageways. All openings into such passageways shall be protected by one-hour fire-resistive doors as specified in Section 4304.

All exits shall be so arranged as to make clear the direction of egress to the exterior of the building and shall be so located that they are readily accessible and visible. When not visible to all occupants, adequate signs shall be provided to indicate their location. For buildings with sleeping rooms, schools and places of detention, exits shall be so arranged that it is possible to go in either direction at any point in a corridor to an exit.

Stairways shall abut on not more than one side of an elevator enclosure.

No portion of any building shall be more than one hundred fifty (150) feet (along the line of travel) from the nearest exit, and no corridor exit door shall be more than one hundred (100) feet (measured along the line of travel) from the nearest exit. In Group D and H buildings all doors providing egress from public hallways and all doors providing egress from the building shall open in the direction of exit travel.

Sec. 3304. DOORS. Doors shall not open immediately on a flight of stairs but on a landing at least equal to the width of the door.

Doors giving access to stairways shall swing with the direction of exit travel. Vertical sliding doors and rolling shutters shall not be used. There shall be no obstructions on stairways or landings nor to the full swing of doors. Swinging doors in their swing shall not reduce the effective width of stairways or landings to less than thirty (30) inches nor when open interfere with the full use of the stairs.

All doors in exit enclosures or providing access to exterior stairways shall be self-closing and be kept normally closed and shall be of not less than one-hour fire-resistive construction as specified in Section 4304, except that doors facing a street and at street level may be unprotected wood. All doors shall be constructed and installed in a workmanlike and tight fitting manner.

All doors used in connection with exits shall be so arranged as to be readily opened from the side from which egress is made or from

both sides when the building is occupied. Locks if provided shall not require a key to operate from the inside.

Sec. 3305. RAILINGS. All stairways shall have walls or well secured balustrades or guards on each side and handrails shall be placed on at least one side of every stairway and for stairways exceeding forty-four (44) inches in width shall have handrails placed on each side. Stairways over seven (7) feet wide shall be provided with one or more continuous intermediate handrails substantially supported and the number and position of intermediate handrails shall be such that there is not more than sixty-six (66) inches between adjacent handrails.

Handrails and railings shall be placed thirty (30) inches above the nosing of treads and ends of handrails shall be returned to the wall. All handrails shall be constructed to withstand the pressure of sixteen (16) pounds per lineal foot applied to the handrail. All handrails shall be securely fastened to the wall and there shall be a clearance behind every handrail of not less than one and one-half ( $1\frac{1}{2}$ ) inch at every point.

Sec. 3306. LIGHTING. Every stairway or other means of exit into corridors and passageways appurtenant thereto shall be provided with an adequate system of lighting, either natural or artificial. Lights in the exit signs shall be kept burning at all times that the building served by such stairways or exits is being used or occupied.

Sec. 3307. DETAILED REQUIREMENTS. Stairways and landings, returns and passageways serving such stairways shall be not less than forty-four (44) inches wide; except, that for dwellings and when serving mezzanines or not more than one family or one apartment in buildings not exceeding two stories in height the required width may be reduced to not less than three (3) feet. All such widths shall be clear of all obstructions; except that handrails attached to walls may project within the required width not more than three and one-half ( $3\frac{1}{2}$ ) inches at each side when the stairway is forty-four (44) or more inches in width and on one side when the stairway width is less than forty-four (44) inches. If newells project above tops of rails a minimum clear width of not less than that specified in this paragraph shall be provided between the face of the newell and the face of the wall or newell opposite.

The rise of stairways shall be not more than seven and one-half ( $7\frac{1}{2}$ ) inches and the tread exclusive of the nosing not less than ten (10) inches (maximum pitch 37 degrees), and there shall be not more than seventeen (17) risers in any one run between landings; provided, that stairways in dwellings and stairways serving mezzanine floors may have a rise of not more than eight (8) inches and a tread exclusive of the nosing of not less than nine (9) inches. Rules governing construction of hotels, apartment houses, rooming houses and restaurants, as promulgated by the Hotel Commission of the State of Florida, governing occupancies, as specified in Chapter 13, prohibit more than thirteen (13) risers without a platform or platforms.

LANDING. At the top and bottom of every flight of stairs there

shall be a proper landing, which shall be level in every part and on the same level as the floors of the building which they serve; shall have a length of not less than forty-four (44) inches, and a width of not less than the widest flight connected thereto, with a minimum of forty-four (44) inches.

Width and length of all quarter landings shall be not less than the required width of the widest flight connected thereto. The length of that part of any floor landing in front of the ascending or descending flights connecting therewith, or both of them, except, at the exit level, shall be regulated in the same manner as a half landing, and the landing at the exit level shall be not less than four (4) feet in length; provided, however, the size of any landing over which a door swings shall be such that an arc with a radius equal to the width of the door plus the minimum required width of any connected flight, using the door hinge as a center, shall clear the newell post or the wall framing.

The walls at the outer corners of landings shall be curved on a radius of at least two (2) feet, or a forty-five (45) degree splay not less than twenty (20) inches wide shall be provided to eliminate right angle corners.

Sec. 3308. STAIRWAY ENCLOSURES. (a) Enclosed interior stairways shall be constructed in accordance with Chapters 30 and 43 and shall be of not less than two-hour fire-resistive construction.

(b) Smokeproof tower stairways shall be constructed in accordance with Section 3315.

(c) Outside stairways shall be constructed as required in Section 3316.

All required stairways and ramps in buildings three stories or more in height, including landings and parts of floors between stairways which lie in the path of travel shall be enclosed as specified under Occupancy in Part III, under Types of Construction in Part V, and in Chapter 30; except that monumental stairways leading only from the street floor level to the mezzanine floor and second floor or basement and which do not constitute required means of exit in public buildings or stores shall be exempted from the enclosure requirements.

Exit enclosures shall not be used for storage in any manner whatsoever and shall not contain any material or equipment liable to cause fire, explosion or panic.

At the top of every stairway enclosure a ventilating skylight with a horizontal area with not less than eight (8) square feet shall be installed as specified in Section 3402, or in lieu of such skylight an equivalent window opening glazed with plain glass may be provided in the penthouse walls. Fixed openings not less than five hundred (500) square inches in area shall be provided at the top of each stairway enclosure for ventilation.

All parts of every stairway shall be kept in perfect repair at all times; sufficiently lighted by either natural or artificial lighting; no mirror shall be placed or maintained in any stairway at any time; and nothing shall be built or placed in any manner or location so that it will conceal any stairway door.

**Sec. 3309. STAIRWAYS REQUIRED.** The number of stairways provided for each use or occupancy shall be as required in the following tabulation for three (3) story buildings. For two (2) story buildings the allowable area may be increased fifty (50) per cent. For buildings four (4) stories or more in height the allowable area shall be decreased two (2) per cent per floor for each floor above the third floor to and including the eighth floor and shall be decreased one (1) per cent for each additional floor above the eighth floor; provided, that in no case shall there be less than two (2) stairways serving each floor for each building three (3) stories or more in height. Where the entire building is sprinkled in accordance with the provisions of Chapter 38 the allowable areas tabulated below may be increased thirty-three and one third (33 1-3) per cent.

Elevators shall not be included in the calculations of the number of stairways required. All buildings, except Group I buildings and buildings in Division 1 and 2 of Group J, shall have not less than two (2) stairways from each floor.

The number of required stairways for Group A, B and C buildings is specified in Chapters 6, 7 and 8 respectively.

NOTE: Basic Area for computing required number of stairways; provided, however, the distance of travel specified in Section 3303 shall not be violated.

**BASIC AREA FOR COMPUTING REQUIRED NUMBER OF STAIRWAYS.**

No. of Stairways required	Maximum Areas for Types I and II Buildings (Sq. Ft.)				
	Group D Buildings	Group E Buildings	Group F Buildings	Group G Buildings	Group H Buildings
2	Up to 8000	Up to 9000	Up to 12000	Up to 12000	Up to 9000
3	Up to 18000	Up to 20000	Up to 25000	Up to 25000	Up to 20000
4	Up to 28000	Up to 30000	Up to 40000	Up to 40000	Up to 30000
5	Up to 40000	Up to 40000	Up to 57000	Up to 60000	Up to 42000
6	Up to 54000	Up to 50000	Up to 76000	Up to 85000	Up to 56000
7	Up to 70000	Up to 60000	Up to 97000	Up to 115000	Up to 72000
8	Up to 88000	Up to 70000			Up to 90000
9	Up to 108000	Up to 80000			Up to 110000
10		Up to 90000			
Maximum Areas for Types III, IV and V Buildings (Sq. Ft.)					
2	Up to 8000	Up to 9000	Up to 12000	Up to 12000	Up to 9000
3	Up to 15000	Up to 17000	Up to 21000	Up to 24000	Up to 17000
4	Up to 24000	Up to 27000	Up to 32000	Up to 38000	Up to 26000
5	Up to 35000	Up to 38000	Up to 45000	Up to 56000	Up to 37000
6	Up to 48000	Up to 52000	Up to 60000	Up to 79000	Up to 50000
7	Up to 63000	Up to 68000	Up to 77000	Up to 108000	Up to 65000
8	Up to 80000	Up to 86000	Up to 96000		Up to 82000

Exceptions: (1) Group D buildings shall be provided with not



less than one (1) smokeproof tower constructed as specified in Section 3315 when such building exceeds two (2) stories in height.

(2) Group E—In automobile storage garages where a system of ramps continuous from the ground floor to top floor is used to transport automobiles from floor to floor, the number of stairways required shall be not less than one-half that shown in the above tabulation.

(3) Where one horizontal opening is provided, the allowable areas tabulated may be increased fifteen (15) per cent and where more than one such exit is provided, such areas may be increased not to exceed twenty-five (25) per cent.

Sec: 3310. RAMPs. Wherever stairways are required by this Code, ramps with a slope not greater than one (1) foot in eight (8) feet may be substituted.

Ramps shall comply with all the requirements for stairways as to construction, width, enclosures, landing, lighting and ventilation.

Ramps shall be surfaced with an approved non-slip material.

Handrails shall not be required where the slope of the ramp is less than one (1) foot in ten (10) feet.

Sec. 3311. HORIZONTAL EXIT. A horizontal exit shall consist of one (1) or more protected openings through or around an exterior or fire wall or of one (1) or more bridges connecting two (2) buildings or parts of buildings entirely separated by fire walls.

Openings used in connection with horizontal exits shall be protected by one-hour fire-resistive doors as specified in Section 4304. If swinging doors are used there shall be adjacent openings with doors swinging in opposite directions, with signs on each side of the wall indicating the exit door which swings with the travel from that side.

Such doors shall be kept continuously unlocked whenever the building is occupied and shall be self-closing.

Sec. 3312. SIGNS AND LIGHTING. Signs having white lights not less than five (5) inches high on a green field indicating location of exits shall be provided not only at the exit but at other points in the building wherever necessary to clearly indicate the direction of egress. Lights shall be kept burning during all times that the building is used or occupied.

Sec. 3313. PASSAGEWAYS AND CORRIDORS. Every building shall be constructed so that one (1) main corridor on each floor shall be at least forty-two (42) inches in clear width, and the width of any such corridor which serves more than twelve (12) rooms shall be increased at the rate of one (1) inch for each additional room up to a maximum width of six (6) feet; provided such main corridor on each floor shall run through to the outside wall at each end, or it may turn at right angles at either or both ends, provided the distance from the main hall to the outside wall at any point is not more than the depth of the room facing the outside of the building, and provided further that

the main corridor, so turned, shall extend to an exterior wall adjacent to a street, alley or court, and that a door or window shall be provided in the said hall at the end of the main corridor.

Sec. 3314. EXCEPTIONS. Stairways in Group I buildings, stairways serving only one apartment not above the second floor level, or stairways leading to mezzanine floors not exceeding one thousand (1000) square feet in area are exempted from the width, rise, tread and enclosure provisions in this Chapter but in no case shall such stairways have a rise of more than eight (8) inches and a tread exclusive of the nosing of less than nine (9) inches.

Sec. 3315. SMOKEPROOF TOWER. (1) Where required. A smokeproof tower consisting of a stairway with exterior access, entirely closed by masonry walls of not less than four-hour fire-resistive construction and floors and ceilings of not less than two-hour fire-resistive construction as specified in Chapter 43 and constructed as specified in this Section shall be required in every building of Group D, E, F, G and H occupancies three (3) stories or more in height. Smokeproof towers shall be installed in Group A, B and C buildings as specified in Chapters 6, 7 and 8, respectively.

(2) Construction. The stairways, landings, platforms and balconies of smokeproof towers shall be constructed as required for stairways, except that they shall be of incombustible materials throughout, except for handrails which may be of wood. The enclosure shall extend from the street level to a penthouse on the roof of the building and shall be roofed over with incombustible materials. Light and ventilation shall be provided at the top of every such enclosure as required for stairways.

Balustrades on the vestibules and balconies shall be not less than three (3) feet and six inches (3'-6") in height. Exit lights shall be provided as required in Section 3312.

(3) Access and Egress. Access to the smokeproof tower shall be provided from each story by means of vestibules open to the outside on an exterior wall or by means of balconies over-hanging an exterior wall but not subject to severe fire exposure. Every such vestibule, balcony or landing shall have an unobstructed length not less than the combined required width of exit doors opening upon such balcony or landing and shall be directly open to a street, alley or yard or to an enclosed court open at the top and not less than fifteen (15) feet in width and six hundred (600) square feet in area.

Access from the building to vestibules or balconies and to the enclosure shall be through doorways not less than thirty (30) inches wide nor less than seventy-five (75) inches in clear height. These openings shall be provided with self-closing fire-doors of not less than one-hour fire-resistive construction, as specified in Section 4302, swinging in the direction of exit travel; provided that clear wire glass not exceeding seven hundred and twenty (720) inches in area shall be provided in all such doors giving access to the enclosure from the balcony or vestibule. Where locks or latches are provided they shall be of an approved pres-

sure-release type and shall be so designed as to provide access from the building at every floor and roof level.

Stairways of smokeproof towers shall provide continuous uniform egress from the roof and all stories to street grade. Egress shall be provided at the ground floor level either directly or through a passageway not less than forty-four (44) inches in clear width and eight (8) feet in clear height to a street, yard or alley not less than ten (10) feet in width. The walls of such passageway shall be of not less than four-hour fire-resistive construction and the ceiling and floor of not less than two-hour fire-resistive construction as specified in Chapter 43. The walls of any such passageway shall be unpierced throughout their entire length.

(4) Location. Every smokeproof tower required by this Code shall be located so as to furnish the best means of egress for the occupants of the building and access shall be provided thereto by means of a public room, public hall or passageway not less than thirty-six (36) inches in clear width and in no case shall access thereto be through another apartment, guest room, office or private room of any nature.

Sec. 3316. OUTSIDE STAIRWAYS. Outside stairways of the return platform or straight run type may be used as a required means of exit for buildings not exceeding three (3) stories or fifty-five (55) feet in height but in no case shall such stairways constitute more than fifty (50) per cent of the required exit capacity. All outside stairways shall be located so as to lead directly to a street or alley or to a yard directly connected with a street or alley.

The stairways, landings, platforms and balconies shall be constructed as specified for stairways in this Chapter, except that they shall be of incombustible materials throughout; provided that stairways serving only the second floor may be constructed of combustible material, except in No. 1 Fire Zone. Structural metal shall be not less than one-quarter ( $\frac{1}{4}$ ) inch thick and shall be so framed as to permit ready access for inspection and painting. All windows and other openings adjacent to such stairways shall be provided with fixed metal covered sash and frames and wire glass or be provided with shutters or doors of one-hour fire-resistive construction as specified in Chapter 43.

No part of any such outside stairway shall be within ten (10) feet of a lot line which does not form the boundary of a street or alley.

## CHAPTER 34.

### DOORS, WINDOWS AND SKYLIGHTS.

Sec. 3401. DOORS AND WINDOWS. Fire doors where required shall be as specified in Section 4304. All such doors shall be self-closing and if not kept normally closed shall be arranged to close automatically with the fusing of an approved fusible link.

Windows required to have metal frames shall be constructed either of steel or wrought iron rolled shapes or of hollow galvanized sheet iron as specified in Section 4304.

**PLATE GLASS WINDOWS.** Plate glass windows, except minor transoms, facing on public streets or arcades, set in any first floor exterior wall, shall be not less than one-fourth ( $\frac{1}{4}$ " ) inch in thickness, shall be not more than ninety-one (91) square feet (maximum of eighty-four (84") inches in height and one hundred and fifty-six (156") inches in length) in size without approved division bars, and shall be set in approved non-corrosive metal setting. If wood sill is used it shall be covered with the same approved quality of non-corrosive metal, side rails shall be securely fastened with non-corrosive screws into side jambs of not less than one and one-eighth by three and one-half ( $1\frac{1}{8} \times 3\frac{1}{2}$ " ) inches and such jambs shall be securely fastened to the masonry wall with not less than three-eighth ( $\frac{3}{8}$ " ) inch expansion bolts, or approved steel screw nails, not more than four (4) feet apart, and when such jambs are attached to wood members they shall be securely nailed or bolted in an approved manner.

See page 312

For floors above first floor these requirements may be increased at the discretion of the Building Inspector.

When wire glass is required, it shall mean glass the thickness of which at the thinnest point shall not be less than one-fourth ( $\frac{1}{4}$ ) of an inch and in which a wire netting is embedded. Wire glass shall be set with putty and metal stops.

**GUARD RAILS.** Except in dwellings, all windows above the third (3rd) floor line, the window stools shall not be less than three (3) feet above finished floor, provided however, that stools may be less than specified above if approved metal guard rails are placed across windows. Guard rails not less than three (3) feet above finished floor shall be provided for all other openings which do not open on balconies, porches or platforms, in accordance with Section 3501.

Every window in every building more than three (3) stories in height shall be equipped with approved device or devices which shall permit cleaning of the exterior of windows without danger to person or persons cleaning such windows; such devices to be of such pattern and construction as will reasonably and safely answer the purpose for which they are intended; provided, however, that if windows are of such construction that they may be easily cleaned from the inside of the building, they need not be equipped with such devices.

**STORM SHUTTERS.** All buildings now existing or hereafter erected shall be required to have approved storm shutters, capable of withstanding a wind pressure of at least thirty (30) pounds per square foot, for openings on that portion of the building facing public streets or other public places, as a protection to the public from flying debris during windstorms; the construction and anchorage of which shall be approved by the Building Inspector. See page 312

Suitable place for storage of these shutters shall be provided on the premises or any place of easy access where they may be transported to the site within a reasonable time after notification of an impending windstorm.

It is not the intent of this Section to require that minor window openings, or solid doors which are provided with substantial bolting, or standard windows in a high and inaccessible place not readily reached from the ground level, to be so protected; however, large windows, plate glass windows, and openings of similar character shall be protected especially in business areas where the public gathers for transaction of business and where the preservation of such structures is deemed essential for the public good.

It is not the intent of this Section to require residences of Group I Occupancy or other minor buildings in areas outside of business centers, to be so protected; however, such protection is recommended as a preservation for the structure and a safeguard against flying debris during such windstorms.

Sec. 3402. SKYLIGHTS. All skylights constructed with metal frames shall be substantially built with interlocking seams. All skylights, the glass of which is set at an angle of less than forty-five (45) degrees from the horizontal, if located above the first story, shall be set at least one (1) foot above the roof. The curbs on which the skylight rests shall be constructed as required for inner court walls or for masonry.

When wire glass is required for skylights the size shall not exceed seven hundred and twenty (720) square inches in area or forty-eight (48) inches in any dimension in any one panel. All glass in skylights shall be wire glass, except that skylights over vertical shafts extending through two or more stories shall be glazed with plain glass as specified in this Section; provided, that wire glass may be used if ventilation equal to not less than one-eighth ( $\frac{1}{8}$ ) the cross sectional area of the shaft, but never less than four (4) feet, is provided at the top of such shaft.

Any glass not wire glass shall be protected above and below with a screen constructed of galvanized wire not smaller than No. 12 B. and S. gauge with a mesh not larger than one (1) inch. The screen shall be substantially supported below the glass.

Skylights installed for the use of photographers may be constructed of galvanized metal frames and plate glass without wire netting.

Skylights in foundries or buildings in which acid fumes are present as an incident to the occupancy of the building, may be of wood, by special permission of the Building Inspector.

Ordinary glass may be used in the roofs and skylights for greenhouses, provided the height of the greenhouse at the ridge does not exceed twenty (20) feet above the grade. The use of wood in the frames of skylights will be permitted in greenhouses outside of Fire Zones No. 1 and 2, if the height of the skylight does not exceed twenty (20) feet above the grade, but in other cases galvanized metal frames and galvanized metal sash bars shall be used.

Glass used for the transmission of light, if placed in floors or

sidewalks, shall be supported by metal or reinforced concrete frames, and such glass shall be not less than one-half ( $\frac{1}{2}$ ) inch in thickness. Any such glass over sixteen (16) square inches in area, shall have wire mesh embedded in the same or shall be provided with a galvanized wire screen underneath as specified for skylights in this Section. All portions of the floor lights or sidewalk lights shall be of the same strength as is required by the Code for floor or sidewalk construction, except in cases where the floor is surrounded by a railing not less than three feet and six inches (3'-6") in height, in which case the construction shall be calculated for not less than skylight loads.

**PROTECTION OF SKYLIGHTS AND ROOFS.** Where walls are carried up above the roofs of adjoining buildings, proper means shall be provided and used by the person erecting the walls for the protection of the skylights and roofs of such adjoining buildings.

Should the owner of such adjoining building refuse permission to have his roofs and skylights protected, such refusal shall be reported in writing to the Building Inspector, and it shall then be the duty of the owner refusing such permission to make his skylights and roofs safe at his own expense. Such refusal by said owner shall relieve the owner or person erecting the building from any responsibility for damage done to persons or property on or within the premises affected.

## CHAPTER 35. BAYS AND BALCONIES

**Sec. 3501. CONSTRUCTION.** Construction of walls and floors in bay and oriel windows shall conform to the construction allowed for exterior walls and floors of the Type of construction of the building to which they are attached. The roof covering of a bay or oriel window shall conform to the requirements for roofing of the main roof of the building.

All exterior balconies attached to or supported by masonry walls shall have brackets or beams constructed of wire, steel, concrete or other incombustible material. All railings for balconies or porches shall be not less than three feet and six inches (3'-6") in height above the floor of such balcony or porch. Balconies or porches shall be designed to support, in addition to their own weight, a live load of not less than one hundred (100) pounds per square foot. Railings of balconies shall be designed to support a horizontal thrust of not less than twenty (20) pounds per lineal foot of railing uniformly distributed along its length.

## CHAPTER 36.

### PENTHOUSES AND ROOF STRUCTURES

Sec. 3601. PENTHOUSES AND ROOF STRUCTURES. Bulkheads or penthouses, when used only for the purpose of enclosing staircases on roofs, elevator machinery, water-tanks, ventilating apparatus, exhaust chambers or other machinery need not be considered in determining the height of the building.

No penthouse or other projection above the roof shall exceed twenty-eight (28) feet in height above the roof when used as an enclosure for tanks or for elevators which run to the roof and in all other cases shall not extend more than twelve (12) feet in height above the roof. The aggregate area of all penthouses and other roof structures shall not exceed twenty (20) per cent of the area of the roof. No penthouse, bulkhead or any other similar projection above the roof shall be used for manufacturing, business, habitation, offices or storage, except that they shall be permitted to be used for the making of blue-prints, photographic prints, for scientific observation, or summer houses; when used for private dwellings, they shall be considered as a floor of the building and such height shall then be computed in determining the allowable height of the building.

Roof structures of Type I buildings shall be constructed with floors, walls and roof as required for the main portion of the building.

Walls of roof structures parallel to and within four (4) feet of the exterior wall of Type II or III buildings shall be constructed the same as the exterior wall of the story immediately below. Such wall shall project two (2) feet above the roof and two (2) feet beyond the sides of such roof structures, except that the side projection shall not be required when the adjoining side walls are of masonry. Walls other than those occurring within four (4) feet of an exterior wall on Type II or III buildings shall be of not less than one-hour fire-resistive construction. The restrictions of this paragraph shall not prohibit the placing of wood flagpoles or similar structures on the roof of any building.

1. Supporting members of tanks installed in or on all new or existing buildings shall be designed and constructed in strict conformity to the design regulations of this Code.
2. In or near the bottom of each tank there shall be a pipe or outlet of adequate size, fitted with a suitable gate valve, to permit ready drainage of the tank in case of necessity.
3. Coverings of tanks on roofs shall be of metal and shall be securely fastened down. Hoops of wooden tanks shall be of metal having circular cross section, and shall be equipped with take up turn buckles.

Sec. 3602. TOWERS AND SPIRES. Towers or spires when enclosed shall have exterior walls as required for the building to which they are attached. Towers not enclosed and which extend more than seventy-five (75) feet above grade shall have their framework con-

structed of iron, steel or reinforced concrete. No tower or spire shall occupy more than one-fourth ( $\frac{1}{4}$ ) of the street frontage of any building to which it is attached and in no case shall the base area exceed sixteen hundred (1,600) square feet unless conforming entirely to the Type of Construction requirements of the building to which it is attached and being limited in height as a main part of the building. If the area of the tower or spire exceeds one hundred (100) square feet at any horizontal cross section its supporting frame shall extend directly to the ground. The roof covering of spires shall be as required for the main roof of the rest of the structure.

Skeleton towers used as wireless masts and placed on the roof of any building shall be constructed entirely of incombustible materials and shall be directly supported on an incombustible framework to the ground. They shall be designed to withstand a wind load from any direction as specified in Section 2307 in addition to any other loads.

## CHAPTER 37.

### CHIMNEYS AND HEATING APPARATUS

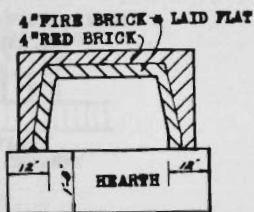
Sec. 3701. CHIMNEYS. Chimneys shall be constructed in conformity with "A Standard Ordinance for Chimney Construction" recommended by the National Board of Fire Underwriters, Fifth Edition, revised 1935 or as subsequently revised, except as specified in this Chapter. All chimneys shall be designed in accordance with the Engineering Section of this Code.

The walls of all chimneys whether used for appliances using coal, coke, wood, gas or oil shall be built of brick, concrete, stone, hollow tile or clay or concrete or of concrete blocks; provided, that a metal smokestack as specified in Section 3702 may be used.

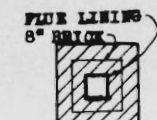
Flue linings shall be made of fire clay or other suitable refractory clays adapted to withstand reasonably high temperatures and flue gases and shall have a softening point not lower than nineteen hundred and ninety-four (1994) degrees Fahrenheit. Flue linings shall be not less than five-eighths ( $\frac{5}{8}$ ) of an inch in thickness and shall be built in as the outer walls of the chimney are constructed. All joints and spaces between the masonry and lining shall be thoroughly slushed and grouted full as each course of masonry is laid. Cracked, broken or otherwise defective linings shall not be used. Flue linings shall start from a point not less than eight (8) inches below the center line of smoke pipe intakes or in the case of fireplaces from the apex of the smoke chamber and shall be continuous to a point not less than six (6) inches above the enclosing walls.

Exceptions: Flue linings may be omitted in brick chimneys for residence buildings provided the walls of the chimneys are not less than eight (8) inches thick and that the inner course shall be of fire brick with a fire resistance equal to that required for flue linings.

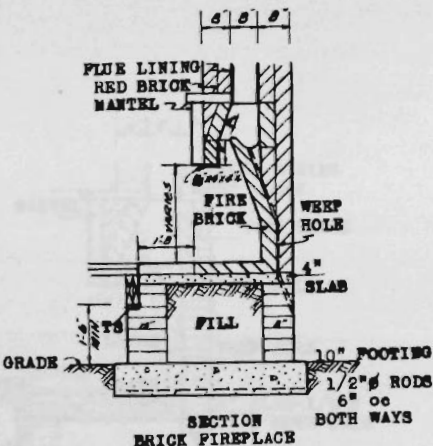




PLAN  
BRICK FIREPLACE

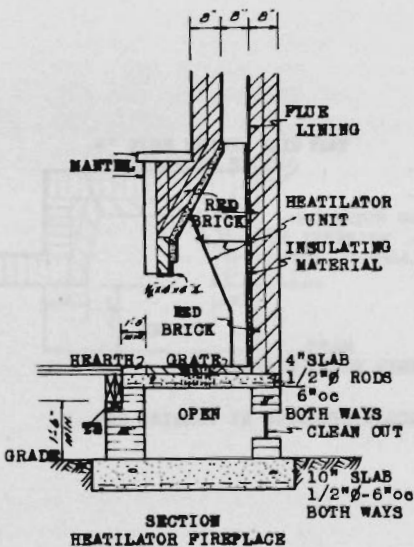


CHIMNEY PLAN  
BRICK FIREPLACE

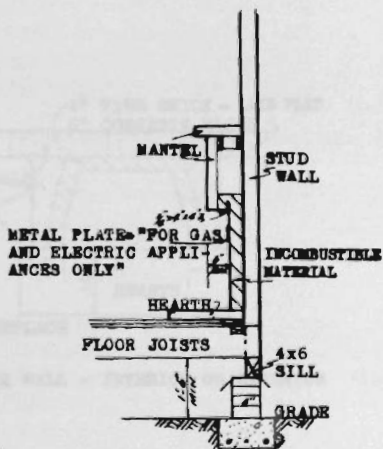


SECTION  
BRICK FIREPLACE

FOR CHIMNEY IN FRAME RESIDENCE OR INDEPENDENT CHIMNEY IN CBS RESIDENCE

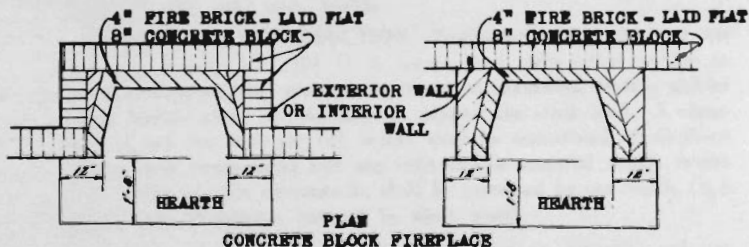
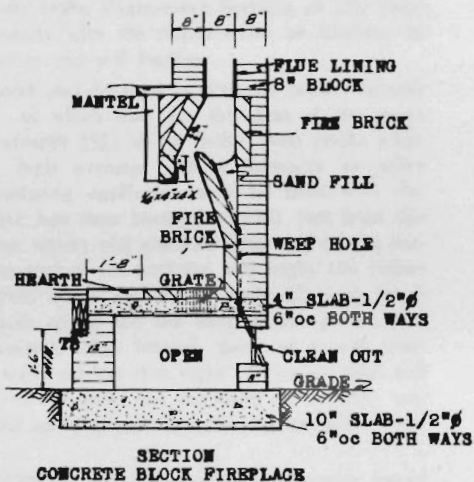
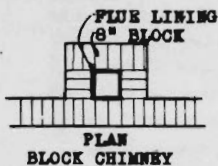


SECTION  
HEATILATOR FIREPLACE



SECTION OF RECESS  
GAS AND ELECTRIC  
SPACE HEATERS

DETAIL  
CHIMNEY AND FIREPLACE CONSTRUCTION  
RESIDENCES



FOR CHIMNEY IN CONCRETE BLOCK WALL - INTERIOR OR EXTERIOR

DETAIL  
CHIMNEY AND FIREPLACE CONSTRUCTION  
RESIDENCES

The walls of brick chimneys shall be not less than eight (8) inches thick and shall be lined except as provided above. All brick work shall be laid with full mortar joints and shall be struck smooth where exposed to the weather. No mortar lining shall be permitted. Brick set on edge shall not be permitted in chimney construction.

Concrete chimneys cast in place shall be suitably reinforced vertically and horizontally. The walls shall be not less than eight (8) inches thick and shall have a flue lining as specified in this Section.

Hollow blocks or building tile of clay or concrete shall not be used for the walls of an independent chimney but may be used for chimneys built in connection with exterior party walls of hollow units for buildings not exceeding three (3) stories in height, provided they shall be lined as specified above. The outer eight (8) inches of such a wall may serve as the outside wall of the chimney.

Chimneys shall extend at least three (3) feet above flat roofs and not less than two (2) feet above the ridge of gable and hip roofs or the high point of mansards nearest thereto.

Chimneys shall be built upon solid masonry or reinforced concrete foundations properly proportioned to carry the weight imposed without settlement or cracking. The chimney shall carry no load except its own weight and such load shall be transmitted to the foundation in such manner as to prevent the shearing or falling off of any part of the chimney.

Flues shall be built as nearly vertical as possible and in no case at an angle greater than thirty (30) degrees from the vertical.

When any single flue has an effective area exceeding two hundred (200) square inches the wall shall be not less than eight (8) inches thick and shall have flue lining as specified in this section, except that when flues become too large for fire clay flue lining such flues shall be lined with fire brick for a distance at least twenty-five (25) feet from the point of intake.

There shall be but one connection to a flue irrespective of whether the fuel used be coal, coke, wood or oil. Ordinary and low pressure heating devices burning solid fuels shall have a minimum effective flue area of not less than the following, and such area shall be provided by a flue having its short dimensions not less than two-thirds (2/3) the long dimensions.

Small special stoves and heaters.....	28 sq. inches
Stoves, ranges and heaters .....	40 sq. inches
Fireplaces (at least 1/12 the fireplace opening).....	50 sq. inches
Warm Air furnaces, steam and hot water boilers.....	70 sq. inches

All flues to which large ranges, heating furnaces, boilers, automatic gas water heaters or fireplaces are to be connected shall be subjected to a smoke test before acceptance but the test shall not be made until the mortar has thoroughly seasoned. Such test shall be made by the mason contractor in the presence of the Building Inspector.

Sec. 3702. SMOKESTACKS. Masonry smokestacks (whether

radial or of other shapes) constructed for high temperatures, Incinerators, Boilers, Power Plants and other heavy industrial uses shall conform to a recognized Engineering Standard for such construction for the particular use intended, shall conform to the requirements of Chapter 23 of this Code for wind stresses and to the Engineering Sections of this Code for masonry, and shall comply with the requirements of Chapter 28 of this Code as to foundation and soil loading.

Steel or iron smokestacks may be used in place of brick chimneys specified in Section 3701, in which case the thickness of the metal shall be not less than one-fourth ( $\frac{1}{4}$ ) of an inch. Such stacks when used for manufacturing, high pressure boilers, furnaces or other similar heating or manufacturing appliances shall be lined with fire brick for a distance of not less than twenty-five (25) feet from the place where the smoke pipe enters and shall be protected on the outside up to and through the roof of the building with eight (8) inches of masonry or a metal shield which provides an eight (8) inch ventilated air space between such shield and the steel or iron stack; provided, that a metal smokestack when located inside of a vent shaft having masonry enclosing walls not less than eight (8) inches thick and having an air space between the walls and the stack on all sides may have such masonry or metal shield protection omitted when placed outside of the building.

**SMOKESTACKS SUPPORTS.** All stacks shall be properly guyed when the height of the stack exceeds ten (10) times its least diameter. Guys to be secured to three way split collar on stack. At least one round turn on collar bolt and twisted back on standing part of wire with loose end secured by clamp. Wire not less than one-quarter ( $\frac{1}{4}$ ) inch pliable stranded of good quality. Bottom end of wire at deadman equipped with setup turn buckle.

**SMOKESTACK CONSTRUCTION.** Smokestacks constructed of not less than number ten (10) U. S. Gauge steel, with either welded or riveted joints, may be mounted directly upon industrial, heating and/or power boilers which are designed to support the stack load. A clearance of not less than six (6) inches shall be maintained at all times around such smokestacks and any inflammable material within twelve (12) inches of such smokestacks shall be protected by one-fourth ( $\frac{1}{4}$ ) of an inch of asbestos covered by sheet metal.

Stacks not more than twelve (12) inches in diameter and not higher than fifteen (15) feet shall be constructed of not less than twenty (20) gauge U. S. Standard Sheet iron. Stacks larger than twelve (12) inches in diameter and not higher than thirty (30) feet shall be constructed of not less than sixteen (16) gauge U. S. Standard Sheet iron.

**Sec. 3703. GAS VENTS.** Gas furnaces, gas water heaters and other gas appliances shall be vented, and in lieu of the chimney required in Section 3701, be provided with a vent of unglazed fire clay or concrete tile pipe not less than one-half ( $\frac{1}{2}$ ) inch in thickness and having a sleeve or flange not more than twenty-four (24) inches apart

and at every joint in such vent pipe. Such sleeves or flanges shall project at least three-fourths ( $\frac{3}{4}$ ) of an inch beyond the outer surface of the joint and shall securely join the section of such vent and all joints shall be well cemented. The sleeves or flanges shall be securely attached to the portions of the building or structure adjoining such vents and act as a spacer to provide an air space around such vent, or such vent may be entirely enclosed in a galvanized iron pipe with such sleeves or flanges separating the outer pipe at least one-half ( $\frac{1}{2}$ ) inch from the clay or concrete vent. The area of any flue or vent shall be not less than the area of the largest vent connection inlet plus fifty (50) per cent of the areas of all other additional inlets, provided that no gas flue or vent shall have an area of less than twelve (12) square inches and shall be not less than two (2) inches in any internal dimension. No vent connection inlet shall be located at the bottom or within one (1) foot of the bottom of any gas vent, and any two (2) inlets must be offset or staggered so that it will be impossible for any horizontal plane to pass through any part of both inlets.

**ASBESTOS VENT PIPING.** In place of unglazed fire clay or concrete tile pipe an asbestos flue pipe approved by the National Board of Fire Underwriters may be used, either round or oval. The round flue pipe shall be tapered at both ends, and all fittings tapered on all lags so that any two pieces may be joined together by the use of a tapered coupling. For oval flue pipes the joints shall be formed with an oval coupling, which provides a space of three-sixteenths ( $\frac{3}{16}$ ) inches for cementing. An approved flue pipe cement shall be used for all types of joints.

**GAS VENTS.** A single galvanized or copper bearing metal vent connection exposed to view in a room throughout its entire length may be used to connect the appliance to the vent. Such metal vent connection shall be not less in diameter than the connection on the appliance and shall be maintained not less than six (6) inches distant from any combustible portion of the building or the combustible material shall be protected by not less than one-hour fire-resistive construction as specified in Chapter 43.

Every portion of a vent connection shall have a rise of not less than one (1) inch to the foot from the appliance to the chimney and the length of such connection shall be no greater than the height of the vent from the point at which the vent connection enters to the top of the vent.

Every vent shall extend in as nearly a vertical direction as possible and be continuous from the gas appliance to the outside of the building and extend at least two (2) feet above any portion of the roof within fifteen (15) feet of said vent.

No vent connection connected to any gas appliance having pilot provision for automatic or remote control, shall be connected to any chimney flue which is used as a smoke flue for any stove, boiler, heater or other apparatus designed to burn wood, coal, oil or any fuel other than gas unless such pilot provision is so designed that the sup-

ply of gas to the main burners in connection therewith will be automatically shut off when combustion of gas is not taking place at the pilot.

Sec. 3704. PATENT CHIMNEYS. Patent chimneys may be used, except for fireplaces, when complying with the requirements of this Section.

All patent chimneys shall be constructed with a flue lining enclosed in a metal outer casing which is so arranged as to provide not less than a one (1) inch air space between the flue lining and the casing. The flue lining shall be made of fire clay or suitable refractory clays adapted to withstand reasonably high temperatures and flue gases, shall have a softening point not lower than nineteen hundred and ninety-four (1994) degrees Fahrenheit and shall be not less than one (1) inch in thickness. Such chimneys shall be built up from the floor level on which they are used and in no case shall a stove pipe enter the bottom of a patent chimney nor shall such chimneys be used for fireplaces.

When such chimneys are erected on the outside of a building they shall be supported by a substantial iron bracket attached to the studs or framework of the building with through bolts. When erected on the inside of a building such patent chimneys shall be provided with a smokeproof clean-out of approved design at or near the floor. The floor on which they are placed shall be protected by not less than eight (8) inches of masonry or terra cotta set on a one-fourth ( $\frac{1}{4}$ ) inch metal plate. Partitions enclosing patent chimneys shall have an opening opposite the clean-out on the chimney for the purpose of cleaning the flue.

All patent chimneys shall be built plumb and without bends. All joints in such chimneys shall be made with cement mortar and the bands covering the joints shall be of not less than twenty-four (24) U. S. Gauge galvanized iron. All patent chimneys shall be braced every six (6) feet in their height by not less than sixteen (16) gauge wire secured to the chimney by locks or collars and extending in at least three (3) directions.

Not more than two inlets for smoke pipes will be permitted in any patent chimney. When only one inlet is provided the flue shall be not less than six (6) inches in diameter and shall be not less than eight (8) inches in diameter where two inlets are provided.

All galvanized iron used for the casing of patent chimneys shall be of twenty-four (24) U. S. Gauge riveted together with rivets not more than three (3) inches apart or seamed and with such seams secured with rivets at the top and bottom of each section. There shall be not less than one (1) inch clearance between the chimney and the casing at all points and such casing shall be ventilated by not less than six (6), one (1) inch holes punched near the top of the chimney above the roof so as to permit the escape of hot air.

Sec. 3705. SMOKE PIPES AND THIMBLES. All smoke pipes

shall be as short and straight as possible. Smoke pipes for furnaces, boilers or apparatus burning solid or liquid fuel shall be constructed of black iron of not less than twenty-four (24) U. S. Gauge or masonry and shall fit tightly into the chimney. Galvanized iron shall not be used.

Smoke pipes shall enter the side of chimneys through a fire clay or metal thimble or a flue-ring of masonry. The top of smoke pipe intakes shall be set not less than eighteen (18) inches below sheet metal ceilings, wood lath and plaster or exposed wood framing. Neither the intake pipe nor the thimble shall project into the flue. No wood-work shall be placed within six (6) inches of the thimble. When a smoke pipe enters a chimney breast through a studded off chimney partition the thimble shall be kept six (6) inches clear of all wood-work.

Sec. 3706. FIREPLACES. All fireplace walls shall be not less than eight (8) inches thick and if built of stone or hollow units shall be not less than twelve (12) inches thick. The faces of all such minimum thickness walls exposed to fire shall be lined with fire brick, soap stone, cast iron or other suitable fire-resistive material. When lined with four (4) inches of fire brick such lining may be included in the required minimum thickness. All fireplaces shall be connected to a regulation chimney as specified in Section 3701.

All fireplaces and chimney breasts shall have trimmer arches or other approved fire-resistive construction supporting hearths. The arches and hearths shall be not less than twenty (20) inches wide measured from the face of the chimney breast and not less than (12) inches wider than the fireplace opening on each side. The arches shall be of brick, stone or hollow tile not less than (4) inches thick. A flat stone or reinforced concrete slab may be used to carry the hearth instead of an arch if it be properly supported and a suitable fill provided between it and the hearth. Hearths shall be of brick, stone, tile or concrete. Wood centering under a trimmer arch shall be removed after the masonry has thoroughly set.

False fireplaces for gas or electrical heaters shall not be constructed in imitation of fireplaces unless complying with all the requirements for fireplaces. Gas and electrical space heaters may be installed in recesses not more than six (6) inches in depth, provided the entire recess is constructed of incombustible material. Such recesses shall be labeled by means of a metal plate bearing the words "For Gas and Electrical Appliances Only."

No heater burning solid or liquid fuel shall be placed in a fire place which does not comply with the requirements of this Section. No such heaters shall be connected to a gas vent flue. No wood shall be placed within eight (8) inches of the jambs or within twelve (12) inches of the top or arch of any fireplace opening.

Sec. 3707. WARM AIR FURNACES. Warm air furnaces designed to burn solid or liquid fuel shall be encased in a double metal shield with an air space between and shall be protected with at least

three (3) inches of sand on top and shall rest on masonry or concrete floors. No wood partitions shall be built within seven (7) feet of the front or four (4) feet of the sides of the outer shield of such furnaces, but the distance to the partitions at the side may be reduced to two (2) feet if they are covered with sheet metal or asbestos paper of not less than one quarter ( $\frac{1}{4}$ ) inch in thickness with the edges and joints covered with twenty-six (26) U. S. gauge galvanized iron, or metal lath and cement plaster. The distance from the top shield of such furnace to any ceiling or framing of wood above shall be not less than twenty-four (24) inches unless such wood ceiling or framing is protected with not less than one-hour fire-resistive construction.

Every furnace designed to burn solid or liquid fuel shall set upon a masonry floor or be placed on a bed of not less than four (4) inches of masonry, and every portion thereon including the smokepipe shall be at least two (2) feet from any combustible material or such combustible material shall be protected by a covering of number twenty-four (24) U. S. gauge galvanized iron, furred with metal furring not less than one and one-half ( $1\frac{1}{2}$ ) inches from such combustible construction, or shall be entirely covered by one-hour fire-resistive construction. Any such furnace set in brick shall be completely and tightly covered with at least four (4) inches of brick, concrete, tile, sand or a combination of such materials. Every such furnace shall be connected to a regulation chimney as specified in Section 3701.

Every gas furnace other than single pipe floor furnaces shall be set in a furnace room upon a masonry floor or shall be set upon not less than (2) inches of masonry on asbestos board not less than one-half ( $\frac{1}{2}$ ) inch in thickness covered with No. 20 U. S. Standard Gauge galvanized iron or steel. The top of such furnace shall be not less than nine (9) inches from protected combustible material nor less than eighteen (18) inches from unprotected combustible material. Gas furnaces shall not be installed in any location inaccessible for inspection and repair. An opening or door not less than thirty by thirty-six (30"x36") inches shall be provided for access to the room or space in which any gas furnace is installed.

Every such furnace shall be vented into a regulation chimney as specified in Section 3701 or as provided in Section 3703.

An air supply for combustion shall be provided for every warm air furnace. Such supply shall be from outside the building into the furnace space through one or more openings. Such openings shall have a net area of not less than four hundred (400) square inches. No obstructions of any kind shall be placed over such openings except wire netting with openings not less than one-half ( $\frac{1}{2}$ ) inch square. Air used for conveying heat and for ventilation may be taken from outside the building, from inside the building or from both sources.

Where such air is taken from inside the building or from both inside and outside the building it shall be conducted to the furnace by means of ducts of incombustible material.

The floor of the furnace room shall be not less than seven (7)



feet in the clear below the bottom of the lowest joists of any floor under which lateral heat pipes from the furnace or furnaces are taken; where furnace is located in an enclosed furnace room, ceiling in such room shall be protected by not less than one-hour fire-resistive construction. Where furnace is located in an open basement or cellar, the ceiling immediately over the furnace and not less than three (3) feet on all sides, shall be protected by not less than one-hour fire-resistive construction.

Sec. 3708. LOW PRESSURE STEAM HEATING PLANTS. Steam hot water heating plants, for not more than fifteen (15) pounds pressure, and hot water heaters using solid or liquid fuel, shall rest upon masonry or reinforced concrete floors and shall be protected on the outside by asbestos. The clearance of wooden partitions, ceilings and other combustible materials shall be the same as given for warm air furnaces.

Sec. 3709. BOILERS. Large boilers for power or steam purposes or for generating high pressure steam shall be so located that no wood or other combustible material shall be less than five (5) feet from the top or sides or ten (10) feet from the front of such apparatus and all combustible material less than ten (10) feet from the top or sides or less than twenty (20) feet from the front shall be protected with at least four (4) inches of concrete, brick or other similar incombustible material and shall be well ventilated to prevent the temperature rising above one hundred and twenty-five (125) degrees Fahrenheit. Steel, cast iron or concrete columns adjacent to such boilers shall not be in direct contact with furnace setting but there shall be an open unobstructed space at least four (4) inches wide for ventilation.

Sec. 3710. STOVES. All stoves used for heating, cooking or laundry purposes using solid or liquid fuel shall have all combustible partitions in back of and extending not less than twelve (12) inches beyond each side of such stove protected by not less than one-hour fire-resistive construction as specified in Chapter 43. Such stoves shall be securely supported at least twelve (12) inches above any wood floors by metal supports and there shall be a metal and asbestos pad at least three-eighths ( $\frac{3}{8}$ ) of an inch thick below such stove extending at least six (6) inches beyond each side and at least twelve (12) inches in front of such stove. Such stoves shall not be placed nearer than six (6) inches to any combustible partition.

All such stoves shall be connected by a smoke pipe to a chimney meeting the requirements as specified in Section 3701.

Sec. 3711. GAS RANGES, DOMESTIC WATER HEATERS AND HOT PLATES. Gas ranges, domestic hot water heaters and hot plates shall be supported at least six (6) inches above any wood floor or other combustible material and where burners are not provided with a shield below, the wood or other combustible material shall be protected with a double metal shield and with a one (1) inch air space between or with a one-half ( $\frac{1}{2}$ ) inch pad of metal and asbestos. Combustible

partitions or walls within six (6) inches of any such appliance shall be protected by one-fourth ( $\frac{1}{4}$ ) of an inch of asbestos covered with a twenty-six (26) gauge metal covering or shall have not less than a one-hour fire-resistive protection as specified in Chapter 43. Wood ceilings or other combustible materials shall be at least three (3) feet above such installation. The oven of ranges and all water heaters shall be connected to a vent pipe meeting the requirements of Section 3702 or to a regulation chimney as specified in Section 3701.

**Sec. 3712. GAS RANGES FOR RESTAURANTS AND HOTELS.**

Gas ranges for restaurants, bakeries or hotels shall be supported at least six (6) inches above any wood floor and if less than twelve (12) inches above the floor, the wood shall be protected by a metal shield or such ranges may rest on a steel and masonry support. Such ranges shall not be placed nearer to any wood partitions or other combustible material than six (6) inches and if nearer than twelve (12) inches, such partitions shall be protected with a metal or asbestos shield. The distance from any such range to any wood ceiling or other combustible material above shall not be less than twelve (12) inches; and if less than three (3) feet, the ceiling or combustible material above shall be protected with a double metal shield with one (1) inch air space between or with one (1) inch of metal lath and Portland cement plaster or one (1) inch of asbestos. Hood and ventilating flues from such ranges may be of sheet metal or masonry and if of sheet metal shall be protected from all wood or other combustible materials by four (4) inches of concrete, gypsum or terra cotta tile or an eight (8) inch air space and a metal shield. Such ventilating flues shall not be carried through wood floors or up combustible partitions unless protected by at least four (4) inches of masonry or concrete.

**Sec. 3713. OIL BURNERS.** Stoves, furnaces and other heating or power apparatus in which oil burners are installed shall be constructed and erected as required for similar apparatus using solid fuel.

Oil burning apparatus using commercial fuel oil, furnace oil, diesel oil or other inflammable liquids shall be constructed and installed in compliance with the regulations of the National Board of Fire Underwriters for the construction and installation of Oil Burning Equipments and for the Storage and uses of Oil Fuels in connection therewith recommended by the National Fire Protection Association, Edition of 1928, and its subsequent amendments.

**Sec. 3714. OTHER SOURCES OF HEAT.** Other sources of heat and flame not specifically mentioned herein shall be constructed and so protected as to prevent heating any wood or other combustible material used in the construction of floors, ceilings, partitions or other parts of a building, to a temperature of over one hundred and twenty-five (125) degrees Fahrenheit, when in full operation, and shall be so constructed as not to be liable to undue corrosion or deterioration and not subject to accidental overturn or other disarrangement conducive to dangerous conditions.

**Sec. 3715. WARM AIR DUCTS AND APPURTENANCES.** For

gravity systems no leader heat pipes shall be over twenty (20) feet in length measured horizontally, except where a booster fan is installed, when such length shall not exceed forty (40) feet. All such pipes under first floor joists shall have a uniform rise of at least one (1) inch per lineal foot of horizontal run. Warm air pipes and appurtenances serving first floor rooms shall have a minimum cross sectional area in square inches of not less than the cubic foot capacity of the room or rooms in which registers are located, divided by forty (40); provided, that no leader pipe shall have a net area less than fifty (50) square inches. Risers and appurtenances serving floors above the first floor shall have a net area of not less than two-thirds ( $2/3$ ) that required to serve the first floor.

Registers shall be located in or near the wall of the room nearest the furnace. No register shall be located in outside walls except in cases of absolute necessity. Where double registers are supplied by one leader pipe each register shall have a capacity of not less than two-thirds ( $2/3$ ) the area of the leader pipe. When necessary to install appurtenances in an outside wall at least the weather side shall be covered with air-cell asbestos paper.

Ninety (90) degree bends in round pipes shall be made by not less than four (4) piece elbows. Sixty (60) degree bends shall be made by means of not less than three (3) piece elbows. All warm air pipes and fittings, cold air or recirculating pipes, ducts, boxes and fittings, shall be made of bright tin or galvanized iron.

**WARM AIR DUCTS AND APPURTENANCES.** All such appurtenances except leader heat pipes under the first floor shall be covered with two thicknesses of asbestos paper weighing at least eight (8) pounds to one hundred (100) square feet or with air-cell asbestos insulation, or shall be double walled with a one-fourth ( $1/4$ ) inch space between the inner and outer walls. Horizontal warm air pipes shall be kept at least three (3) inches from any combustible material or shall be protected with an asbestos shield and a one (1) inch air space. Air-cell asbestos paper not less than one-fourth ( $1/4$ ) of an inch in thickness shall be securely cemented around all leader pipes.

All riser pipes shall be braced or held in place by means of metal strips securely fastened to the pipe and shall in no case be held in place by nailing diagonally through the corners of such pipe. No joint shall depend wholly upon solder to make it tight. All leader pipes shall be securely fastened in place by means of wires or metal strips.

In the installation of Y runs or branch runs the cross sectional area of the warm air pipe at the furnace shall equal in square inches the cubic contents of all the rooms served by such warm air pipe divided by forty (40). Sizes of branch runs shall be determined in the same manner on the basis of the room or rooms served. Branches from trunk lines shall be taken off in a generally horizontal plane at an angle not less than forty-five (45) degrees from the line of the pipe. Fifteen (15)

degrees Y branches may be permitted in forced draft systems. Riser pipes shall not be taken off the top of the first floor register boxes.

Where warm air pipes and appurtenances are to be installed in a building the joists and studs shall be so arranged as to provide not less than fourteen (14) inches clear space in continuous horizontal runs and/or vertical risers from the gas furnace to the register served.

Sec. 3716. INCINERATORS. All incinerators which are built as an integral part of a building shall have the enclosing walls of the fire boxes or combustion chamber of solid masonry or reinforced concrete not less than eight (8) inches in thickness where the horizontal area does not exceed fifteen (15) square feet and not less than twelve (12) inches in thickness where the combustion chamber is of greater area. The inner four (4) inches of such combustion chamber walls shall be of fire brick laid in fire clay or cement mortar, except that the walls surrounding the ash chamber below the fire grate need not be so lined. The inner walls of any combustion chamber shall not be offset in excess of one (1) inch for every three (3) inches of rise in the height of the wall unless supported by reinforced concrete or structural steel.

Chimneys for every incinerator shall be as specified in Section 3701.

Any incinerator constructed and installed in compliance with the recommended rules and regulations of the National Board of Fire Underwriters for Incinerators as of edition of January 1, 1935, or its subsequent amendments, or as recommended in the Fifth Edition of the National Board of Underwriters Building Code or its subsequent amendments, shall be accepted as complying with this Section.

Sec. 3717. SOLAR HEATERS. The word or term "Solar" is herein used to indicate all heaters used for gathering heat from the sun for the purpose of heating water. No such solar water heater shall be erected, constructed, built or placed in the City of Miami which does not conform to the requirements of this Section.

Coil boxes shall be made of not less than twenty-four (24) gauge galvanized iron or other material of equal strength and rust and decay resisting qualities and shall be so constructed that there will be no sag in side and rails when supported; shall be anchored to supports of at least one and one-quarter by one and one-quarter by one-eighth ( $1\frac{1}{4} \times 1\frac{1}{4} \times \frac{1}{8}$ ) inch galvanized angle iron, or other material equal in strength and rust decay resisting qualities. These supports shall be fastened to a galvanized metal floor plate and the floor plate shall be anchored to the roof rafters in an approved manner.

Tanks shall be galvanized inside and outside, or shall be of some other rust-resisting material and shall be designed to operate under not less than one hundred (100) pound pressure and be tested to 150 hydrostatic pressure.

Tank supports for floor plates and uprights shall be of galvanized angle iron not less than one and one-half by one and one-half by one-eighth ( $1\frac{1}{2} \times 1\frac{1}{2} \times \frac{1}{8}$ ) inch or some other material and shape of equal

strength and rust, fire and decay resisting strength; other supports and braces shall be of material of similar qualities and strength. Tank box base to support tank shall be bolted or attached in an approved manner to the metal tank frame. Tank box base, if made of wood, shall be of at least four (4) pieces of two by four (2x4) inch nominal size timbers covered with at least one (1) inch nominal size stock; and if made of other material, must be rust resisting and of at least equal strength. Floor on part carrying tank and insulation must be covered with thirty-pound felt or its equivalent.

All floor plates of coil boxes and tank stands shall be anchored to frame members with not less than three-eighths ( $\frac{3}{8}$ ) inch hot tempered galvanized jay bolts or approved equal.

All insulation around tank must be at least five (5) inches of ground regranulated cork or its equivalent, tamped in tank box in such a manner as to lose not more than one degree of heat from tank per hour.

Tank box must extend five (5) inches above tank and down each side to a point at least to the top of metal tank supports and shall be securely fastened to the two-by-fours (2x4) forming tank base. Where exposed to view, tank box shall be completely covered with galvanized iron lath and cement plaster, or twenty-four (24) gauge galvanized iron, or sixteen (16) ounce copper, or other approved covering.

All existing wooden systems when repaired are required to be replaced with equivalent equal to the requirements of this Section.

Hot and cold water supply pipes installed by Plumbers under the provisions of the Plumbing Code of the City of Miami and its subsequent amendments, shall be installed to a point above the ceiling joist and adjacent to location of tank box. All connections between tank and heating elements and tank and hot and cold water supply lines specified in this Section shall be made as one installation under the provisions of this Code.

## CHAPTER 38. FIRE EXTINGUISHING APPARATUS

Sec. 3801. AUTOMATIC SPRINKLERS WHERE REQUIRED. Standard Automatic Sprinklers shall be installed as specified in this chapter in the following places and where required by this Code. The mechanical operation and all tests of Sprinkler Systems required by this Code, shall be under the jurisdiction of the Plumbing Inspector of the City of Miami, Florida.

(1). In cellar or basement of all buildings, except Group I occupancies, in Fire Zone No. 1, except where such basement or cellar is

separated from the structure above by a concrete slab of at least four (4) inches thickness, provided openings are protected by automatic labeled fire doors as specified in Section 4304-(a). Such automatic sprinklers shall be required in basements of all buildings in all fire zones, regardless of occupancy or fire separation, if such basement is used for storage of inflammable or combustible materials.

(2) In buildings of Group A, B and C occupancy; in Motion Picture Booths, under the gridiron, under the stage floor, under all fly and tie galleries, in all dressing rooms, storerooms, property rooms, carpenter shops, paint shops, passageways, and all other places back of the proscenium wall, a line of sprinklers shall be installed in the arch of the proscenium opening in front of every proscenium curtain.

(3) In all Group E buildings occupied wholly or in part as a planing mill, box factory, wood working establishment where lumber is made into a finished product and in which more than two power operated wood working machines, exclusive of saws, are used.

(4) In all Group E buildings occupied wholly or in part as a mattress factory used to manufacture, assemble or renovate mattresses or stuffed furniture using cotton, silk floss, mohair or other like materials for packing or stuffing.

(5) In all Group E buildings used as film exchanges. (Group E buildings used for Aircraft Hangars shall comply with the regulations of the National Board of Fire Underwriters governing the construction and protection of Airplane Hangars, edition of September 1, 1930, as amended November 15, 1931, and its subsequent amendments).

(6) In Group B and C buildings in any enclosed occupied space below or over a stairway, except where the entire construction is as required for Type I buildings, and in all portions of basements or cellars used for storage or maintenance work rooms.

(7) In Group D, Division 2, buildings and Group H, division 2, buildings, if two or more stories in height.

Sec. 3802. AUTOMATIC SPRINKLER REQUIREMENTS. Every automatic sprinkler system required by this Code shall comply in all respects with the regulations of the National Board of Fire Underwriters governing the installation of automatic sprinkler equipment, edition of 1931, and its subsequent amendments, where not contrary to the specific statement of this Chapter.

EXCEPTIONS: A single water supply equal to the primary supply required by such regulations may be accepted as complying with the requirements of this Code. In no case where connection to city water main constitutes the source of supply shall such connection be less than four (4) inches in diameter.

Sprinklers required in paragraph 6 above may be supplied from the domestic water system and need not comply with the provisions of this section, except as to the pipe sizes and spacing of heads, provided that where the domestic water supply has a pressure less than twenty-

five (25) pounds per square inch, an approved automatic chemical extinguisher may be used in lieu of the sprinkler.

Sec. 3803. STANDPIPES WHERE REQUIRED. Every Group A, B and C building of any height and every Group D, E, F, G and H building four (4) or more stories in height shall be equipped with one (1) or more interior standpipes extending from the cellar or basement into the topmost story, located to the approval of the Building Inspector; the installation and tests shall be made under the direction of the Plumbing Inspector.

Every building four (4) or more stories in height shall be equipped with one (1) or more standpipes.

Sec. 3804. STANDPIPE REQUIREMENTS. Construction. Standpipes shall be wrought iron or galvanized steel, or any other approved metal and together with fittings and connections shall be of sufficient strength to safely withstand the pressure to which they may be subjected, when ready for service, without leaking at the joints, valves or fittings, and so installed that the system can be entirely drained; and when placed within the front wall of a building, they shall not project beyond the face of the wall.

Tests shall be conducted by the owner or contractor in the presence of a representative of the Fire Department whenever deemed necessary and ordered by the Plumbing Inspector. The tests shall be applied at the top and bottom connections of such standpipes and the owner or contractor shall be responsible for any damage caused by breakage or faulty installation while such tests are being conducted. After such standpipes have been tested, the owner or contractor shall remove all water therefrom.

Size. Standpipes in buildings exceeding four stories in height shall be of such a size as to be capable of delivering two hundred and fifty (250) gallons per minute from each of any three (3) outlets simultaneously under the pressure created by fire engine or pumper. No part of a standpipe system other than hose connection shall be less than four (4) inches in diameter for four stories in height and for buildings more than four stories in height, shall be of a size required by the National Board of Fire Underwriters' Code of 1928, and its subsequent amendments, governing the installation of size of standpipes;

Four inch for buildings not exceeding six (6) stories or seventy-five (75) feet in height.

Six inch for buildings exceeding six (6) stories or seventy-five (75) feet in height.

Any approved formula which determines pipe sizes on a pressure drop basis may be used to determine pipe sizes for wet standpipe systems. The Plumbing Inspector may require delivery and pressure tests on completed standpipe systems before approving such systems, but in no case shall sizes be less than those in above table.

Number required. Every building four or more stories in height where the area of any floor above the second floor is ten thousand

(10,000) square feet or less shall be equipped with not less than one (1) standpipe and an additional standpipe shall be installed for each additional ten thousand (10,000) square feet or fractional part thereof.

Location. Standpipe shall be located within stairway enclosures or as near stairways as possible or shall be on the outside of, embedded within or immediately inside of an exterior wall and within one (1) foot of an opening in a stairway enclosure or the balcony or vestibule or a smokeproof tower or an outside exit stairway.

Siamese Connections. All interior standpipes shall be equipped with a Siamese fire department inlet connection located on the street front of the building and such connection shall have two (2) inlets for buildings five (5) stories or less in height, three (3) inlets for buildings six (6) to ten (10) stories inclusive in height, and four (4) inlets for buildings more than ten (10) stories in height.

"Additional Siamese connections may be required at the discretion of the Plumbing Inspector and the Fire Division Inspector."

All Siamese inlet connections shall be located on a street front of the building and not less than one (1) foot nor more than four (4) feet above the grade and shall be equipped with clapper-checks and substantial plugs. All Siamese inlet connections shall be recessed in the wall or otherwise substantially protected. All Siamese connections shall be equipped with threads uniform with that used by the local Fire Department.

OUTLET. All standpipes shall extend from the ground floor to and over the roof and shall be equipped with a two and one-half ( $2\frac{1}{2}$ ) inch outlet with reducers to one and one-half ( $1\frac{1}{2}$ ) inch for use of small hose, and not more than four (4) feet above the floor level at each story. All standpipes shall be equipped with a two-way two and one-half ( $2\frac{1}{2}$ ) inch outlet above the roof. All outlets shall be equipped with gate valves with substantial chains.

SIGNS. An iron or bronze sign with raised letters at least one (1) inch in height shall be rigidly attached to the building adjacent to all Siamese connections and such sign shall read: "CONNECTION TO STANDPIPE."

Sec. 3805. STANDPIPES REQUIREMENTS DURING CONSTRUCTION. During construction of every building five (5) or more stories in height, where standpipes are required, such standpipes shall be installed and maintained ready for service to a point not more than one story below the floor construction.

Sec. 3806. Number Required. Standpipes shall be so located that any portion of the building can be reached therefrom with a hose not exceeding seventy-five (75) feet in length.

Location. In Group A, B and C occupancy, outlets shall be located as follows:

On each side of the stage, on each side of the rear of the auditorium and on each side of the rear of the balconies. Where seating capacities are less than five hundred (500) the number of locations



noted above may be reduced upon the approval of the Building Inspector. In buildings of Group D, E, F, G, H, I and J the location of all interior wet standpipes shall be approved by the Building Inspector.

**Threads.** All hose threads in connection with the installation of such standpipes, including valves and reducing fittings, shall be uniform with that used by the local fire department.

**Water Supplies.** All interior standpipes shall be connected to a street water main of not less than four (4) inches in diameter or when the water pressure is insufficient to maintain thirty pounds (30) pressure at the highest hose outlet, such standpipe shall be connected to a pressure tank, gravity tank or fire pump. Such supply shall be sufficient to furnish at least thirty (30) pounds pressure at the topmost standpipe outlet.

When more than one (1) interior standpipe is required in the building, such standpipes shall be connected at their tops by pipes of equal size.

**Pressure and Gravity Tanks.** Tanks shall have a capacity sufficient to furnish at least two hundred and fifty (250) gallons per minute for a period of not less than ten (10) minutes. Such tanks shall be located so as to provide not less than twenty-five (25) pounds pressure at the topmost hose outlet for its entire supply.

Discharge pipes from pressure tanks shall extend two (2) inches into and above the bottom of such tanks. All tanks shall be equipped with a manhole, ladder and platform, drain pipe, water and pressure gauges. Every pressure tank shall be tested in place after installation and proved tight at a hydrostatic pressure fifty (50) per cent in excess of the working pressure required. Where such tanks are used for domestic purposes the supply pipe for such purposes shall be located at or above the center line of such tanks. Incombustible supports shall be provided for all such supply tanks and not less than three (3) foot clearance shall be maintained over the top and under the bottom of all pressure tanks.

**Fire Pumps.** Fire pumps shall have a capacity of not less than two hundred and fifty (250) gallons per minute with a pressure of not less than twenty-five (25) pounds at the topmost hose outlet. The source of supply for such pumps shall be a street water main of not less than four (4) inch diameter or a well or cistern containing a one (1) hour supply. Such pumps shall be supplied with an adequate source of power and shall be automatic in operation.

**Hose and Hose Reels.** Each hose outlet of all interior standpipes shall be supplied with a hose not less than one and one-half (1½") inches in diameter. Such hose shall be equipped with a suitable brass or bronze nozzle and shall be not over seventy-five (75) feet in length. An approved standard form of wall hose reel or rack shall be provided for the hose and shall be located so as to make the hose readily accessible at all times and shall be recessed in the walls or protected by suitable cabinets.

Sec. 3807. BASEMENT PIPE INLETS. Basement pipe inlet shall be installed in the first floor of every store, warehouse or factory where there are cellars or basements under same, except where in such cellars or basements there is installed an automatic sprinkler system as specified by this Code, or where the cellars or basements are used for banking purposes, safe deposit vaults or similar uses.

All basement pipe inlets shall be of cast iron, steel, brass or bronze with lids of cast brass or bronze and shall consist of a sleeve not less than eight (8) inches in diameter through the floor extending to and flush with the ceiling below and with a top flange, recessed with an inside shoulder, to receive the lid and flush with the finished floor surface. The lid shall be a solid casting and have a ring lift recessed in the top thereof, so as to be flush. The lid shall have the words "Fire Department Only", "Do Not Cover Up", cast in the top thereof. The lid shall be installed in such a manner as to readily permit its removal from the inlet.

The location of such basement pipe inlets shall be approved by the Building Inspector and shall be kept readily accessible at all times to the Fire Department.

#### CHAPTER 39. STAGE.

Sec. 3901. STAGE VENTILATORS. There shall be one or more ventilators constructed of metal or other incombustible material near the center and above the highest part of any permanent stage raised above the stage roof and have a total ventilation area equal to at least five (5) per cent of the floor area within the stage walls. Detailed drawings showing the construction and operation of ventilators shall be approved by the Building Inspector before the installation is begun. The entire equipment shall conform to the following requirements or their equivalent.

- (1) Doors shall open by force of gravity sufficient to overcome the effect of neglect, rust, dirt or expansion by heat or warping of the framework.
- (2) Glass, if used in ventilators, must be protected against falling on the stage. A wire screen, if used under the glass, shall be so placed that if clogged it cannot reduce the required ventilating area or interfere with the operating mechanism or obstruct the distribution of water from the automatic sprinklers.
- (3) The doors and other covers shall be arranged to open instantly after the outbreak of fire, by the use of approved automatic fusible links which will fuse and separate at not more than one hundred and sixty (160) degrees Fahrenheit. A manual control shall also be provided by a chain or heavy stranded wire running down to the stage at a point on each side of the stage designated by the Building Inspector.

(4) The fusible link and the chain or heavy stranded wire shall hold the doors closed against a force of at least thirty (30) pounds excess counter-weight tending to open the door. The fusible link shall be placed in the ventilators above the roof line and in at least two other points in each controlling chain or heavy stranded wire and so located as not to be affected by the sprinkler heads above. No automatic sprinkler heads shall be placed in the compartment above the fusible links. Each stage ventilator shall be operated to an open and closed position at least once before each performance.

Sec. 3902. GRIDIRONS. Gridirons, fly galleries and pin-rails shall be constructed of incombustible materials and fireproofing of steel and iron may be omitted. Gridirons and fly galleries shall be designed to support not less than seventy-five (75) pounds per square foot, and shall be readily accessible by metal stairs or ladders. No combustible materials shall be allowed in any gridiron, fly gallery or stairs.

The main counter-weight shear beam shall be designed to support a horizontal and vertical uniformly distributed load equal to not less than five (5) pounds per square foot over the area of the gridiron directly back of the proscenium opening.

Sec. 3903. ROOMS ACCESSORY TO STAGE. In buildings of Groups A and B occupancy, Division 1, the dressing room sections, workshops, and storerooms shall be located on the stage side of the proscenium wall and shall be separated from each other and from the stage by a "Special Fire Separation" as provided in Section 503.

In buildings of Group C occupancy the dressing room section, workshops and storerooms shall be located as required for Groups A and B occupancy and shall be separated from the rest of the building and from each other by an "Ordinary Fire Separation".

Sec. 3904. PROSCENIUM WALLS. In buildings of Groups A and B occupancy, a stage as defined in Section 401 shall be completely separated from the auditorium by a proscenium wall of solid masonry of not less than four-hour fire-resistive construction as provided in Section 4302. The proscenium wall shall extend not less than four (4) feet above the roof over the auditorium.

In buildings of Group C occupancy, a stage as defined in Section 401, shall be completely separated from the auditorium by a proscenium wall of solid masonry or by metal incombustible studs protected on the stage side by two (2) inches of Portland cement stucco on metal lath and on the auditorium side by three-quarters ( $\frac{3}{4}$ ) of an inch of plaster on metal lath.

A proscenium wall shall have not more than four (4) openings as follows: One (1) at the orchestra pit level, two (2) at the auditorium floor or stage level and the main opening for viewing performances.

Proscenium walls may have, in addition to the main proscenium opening, one (1) opening at the orchestra pit level and not more than two (2) openings at the stage floor level, each of which shall be not more than twenty-five (25) square feet in area.

The openings in the proscenium wall other than the main opening shall be not more than twenty-five (25) square feet in area.

Openings in the proscenium wall shall be protected on each side by one-hour fire-resistive doors as specified in Section 4304, except that in buildings of Group C occupancy only one (1) fire-door will be required for each opening. The proscenium opening, which shall be the main opening for viewing performances, shall be provided with a self-closing fire-resistive curtain as provided in Chapter 41.

Sec. 3905. STAGE FLOORS. For buildings of Group A and B occupancy, and when the space under the stage is usable in Group C occupancy, all parts of stage floors shall be of Type I construction except the part of the stage extending back from and the full width of the proscenium opening, which may be constructed of steel or heavy timbers covered with a wood floor not less than one and five-eighths ( $1\frac{5}{8}$ ) inches thick. No part of the combustible construction except the floor finish shall be carried through the proscenium opening. All parts of the stage floor shall be designed to support not less than one hundred and twenty-five (125) pounds per square foot.

Sec. 3906. PLATFORMS. Walls and ceilings of a platform in an assembly room shall be fire-protected on the inside with not less than the equivalent of metal lath and plaster.

Any trapped air space of more than two (2) feet in height, over a platform, shall be vented through the roof to the outside with vents having an area of not less than two (2) per cent of the horizontal projection of the trapped area, controlled as specified for stage ventilators.

Any usable space under a raised platform of an assembly room shall be of one-hour fire-resistive construction throughout.

Sec. 3907. STAGE EXITS. Not less than one (1) exit two feet and six inches (2'-6") wide shall be provided from each side of the stage opening directly or by means of a passageway not less than three (3) feet in width to a street or exit court. An exit stair not less than two feet and six inches (2'-6") wide shall be provided for egress from each fly gallery. Each tier of dressing rooms shall be provided with at least two (2) means of egress not less than two feet and six inches (2'-6") wide and all such stairs shall be constructed as specified in Chapter 33. The stairs required in this sub-section need not be enclosed.

Sec. 3908. MISCELLANEOUS. A protecting hood shall be provided over the full length of the stage switchboard.

Steam boilers, other than low pressure, shall be located outside of the buildings, at or under the sidewalk or extension, but in no case under or within any portion of the building; the space allotted shall be enclosed by walls of four-hour fire-resistive construction. Each doorway in said walls connecting with the building shall have an approved automatic fire door. No floor register for heating, ventilating, or other purposes, shall be permitted in aisles, corridors or passageways.

All blowers used to circulate air through heating or ventilating

pipes with openings to the auditorium shall be provided with a device to stop the blow automatically in case of fire. The device for this purpose shall be located near the blower, both inside and outside the pipe leading to openings in the auditorium.

No coil, radiator or pipe shall be so placed as to obstruct any aisle or passageway. Any exposed radiator or coil shall be guarded.

#### CHAPTER 40.

### CONSTRUCTION OF MOTION PICTURE MACHINE BOOTHS AND STORAGE AND HANDLING OF ALL PHOTOGRAPHIC AND X-RAY NITROCELLULOSE FILMS.

Sec. 4001. MOTION PICTURE MACHINE BOOTHS; PHOTOGRAPHIC AND X-RAY NITROCELLULOSE FILMS. Every motion picture machine using inflammable films, together with all electrical devices, rheostats, sewing machines and all films present in any Group A, B or C buildings shall be enclosed in a booth large enough to permit the operator to walk freely on either side or in back of the machine and shall be not less than seven (7) feet high and have a floor area of not less than fifty (50) square feet to each motion picture machine in such booth.

The floor of such booth shall be constructed of masonry or reinforced concrete or shall be covered with not less than two (2) inches of masonry. The walls and ceiling shall be of not less than one-hour fire-resistive construction as specified in Chapter 43.

**FIRE DOORS.** The entrance to booth shall be equipped with a tight fitting self-closing fire door of Types 4, 5 or 6 as specified in Section 4304. Such doors shall open outwardly and shall not be equipped with any latch.

**CONSTRUCTION.** Machine and observation posts in machine booth walls shall be of three (3) kinds; projection ports, observation ports, and combination observation and spot light ports. These ports shall be limited in size and number as follows: There shall be not more than one projection port for each machine head, including stereoptical machines. The area of each projection port shall be more than one hundred and twenty (120) square inches. There shall be not more than one observation port for each projection port and their area shall not exceed one hundred and fifty (150) square inches each. There shall be not more than three combination observation and spot light ports and they shall not exceed thirty (30) inches by twenty-four (24) inches. Where the openings in the front wall of the projection booths are larger than the ports specified, they may be reduced to the required size by bolting No. 10 gauge steel plate over the opening on the booth side of the wall, in such a manner that they cannot be readily removed or moved on the

slides. These steel plates shall have the openings of the required size cut in them. There shall be not less than one (1) foot of wall space between openings for combination ports. In no case shall the openings which are to be reduced in size by the steel plate be larger than thirty-six (36) inches square. Each port opening in the projection booth wall shall be completely covered with a single pane of plate glass. Each such opening together with any fresh air inlets, shall be provided with a shutter of not less than No. 10 gauge sheet metal large enough to overlap at least one (1) inch on all sides of such openings and arranged to slide without binding. These shutters shall be held normally open by means of small chains fastened to a one hundred and sixty (160) degree Fahrenheit fusible link, the whole so arranged that the shutters may be easily released and closed either by hand or automatically when released by the fusible link and shall be so designed as to effect a weight of not less than eight (8) pounds on each fusible link. Pieces of film shall not be used in place of fusible links. The shutters shall be so hung that the operation of closing shall be smooth and without noise. The closing of all shutters shall be effected in five (5) seconds. Each such opening, together with any fresh air inlets, shall be provided with a shutter of not less than fourteen (14) U. S. gauge sheet metal large enough to overlap at least one (1) inch on all sides of such opening and arranged to slide without binding and with the joint between the shutter and the wall to be smoke tight when shutter is down. These shutters shall be held normally open by means of a fine combustible cord fastened to a one hundred and sixty (160) degrees Fahrenheit fusible link (pieces of film shall not be used in place of fusible links), the whole so arranged that the shutters may be easily released and closed either by hand or automatically when released by the fusible link and shall be so designed as to effect a weight of not less than eight (8) pounds on each fusible link.

**VENTILATION.** Every booth shall be equipped with a ventilating inlet not less than thirty (30) square inches in area placed near the floor on each of three sides and protected by wire netting. At the top of every booth there shall be at least a ten (10) inch diameter vent for each motion picture machine. Such vent shall be constructed of sheet metal not less than twenty-four (24) U. S. gauge and shall connect into a masonry flue or go directly through the roof and twelve (12) inches above, and shall be provided with an exhaust fan which will produce a complete change of air in the booth every ten (10) minutes. No wood or other combustible material shall be allowed to come within four (4) inches of the vent. There shall be not more than one elbow or change in direction of this metal vent in any attic space. No such vent shall pass through any occupied room unless encased in not less than four (4) inches of solid masonry.

**METAL FIXTURES.** All shelves, furniture and fixtures within the booth shall be constructed of metal or other incombustible material. Every motion picture machine shall be securely fastened to the floor to prevent overturning.

**CARE OF FILMS.** All films not in actual use shall be stored in metal cabinets or boxes constructed of galvanized iron or steel with metal partitions and shelves. Each such compartment shall not have a capacity in excess of ten (10) reels of film, and shall have tight self-closing doors of iron or steel. No solder shall be used in the construction of such metal boxes or cabinets.

**Exceptions:**

Sec. 4002. The provisions in this Section do not apply to:

(a) Film for amateur photographic use in original packages of "roll" and "film pack" films in quantities of less than fifty (50) cubic feet.

(b) Safety film (cellulose acetate base.)

(c) Dental X-ray film.

(d) Establishments manufacturing photographic films and storage incident thereto.

(e) Films stored or being used in standard motion picture booths (*See Section 4001.*)

Safety photographic and X-ray film (cellulose acetate base) may be identified by the marking on the edge of the film. This marking shows plainly before and after developing.

Where film is not so marked it shall be inspected to determine whether it is of the safety acetate or nitrate type.

**GENERAL REGULATIONS.**

All regulations for the storage and handling of photographic and X-ray nitrocellulose films shall conform to the regulations of the National Board of Fire Underwriters for the Storage and Handling of Photographic and X-ray Nitro-cellulose Films as recommended by the National Fire Protection Association, Edition of July 15, 1931, or its subsequent amendments.

Exception: Where definite fire-resistive materials are specified, materials of equal fire resistance as specified in this Code may be used.

**CHAPTER 41.**

**PROSCENIUM CURTAINS.**

Sec. 4101. **GENERAL.** Proscenium curtains for Group A and B buildings shall be made of incombustible materials constructed and mounted so as to intercept hot gases, flame and smoke, and to prevent glow from a severe fire on the stage showing on the auditorium side within a period of five (5) minutes. The curtain shall be raised and lowered each evening at the close of the performance. The closing of the curtain from the full open position shall be effected in less than thirty (30) seconds, but the last five (5) feet of travel shall require not less than five (5) seconds.

Sec. 4102. MATERIALS. A proscenium curtain for stage openings not over sixty (60) feet in width shall be of not less fire-resistive qualities than as specified in this Section. The curtain shall be made of one thickness of asbestos cloth weighing not less than three and one-quarter ( $3\frac{1}{4}$ ) pounds per square yard.

The asbestos cloth used in the construction of the curtain shall have incorporated into the yarn before weaving, either monel metal, nickel, brass or other metal or alloy having not less strength than these metals at temperatures up to seventeen hundred (1700) degrees Fahrenheit and no less resistance to corrosion at ordinary temperatures. Asbestos cloth made of long fibre blue crocidolite asbestos may be used in place of chrysotile asbestos cloth of the same weight. The wires used to reinforce the yarn shall be either single or double but the tensile strength of each wire shall be sufficient to support a load of not less than three (3) pounds at ordinary temperatures, and the strength of two strands of yarn and one wire twisted together shall be sufficient to support a load of six (6) pounds. The strength of the cloth in tension when tested by the strip method shall be not less than one hundred and sixty (160) pounds per inch of width of warp and fifty-two (52) pounds per inch of filling.

The asbestos fibre of yarns may contain cotton or other combustible fibre not to exceed twenty (20) per cent of the weight of the asbestos. The total carbon content of the cloth shall not exceed ten (10) per cent of the total weight of the fibre. When required by the Building Inspector, a sample of the cloth of sufficient size for testing shall be submitted.

In addition to any decoration, the curtain shall be painted on both sides with a mineral paint having a silicate of soda binder, which will completely fill the cloth. Filler paint shall have not less than four (4) parts of casein in each ten (10) parts of silicate of soda. This paint shall be well brushed into the cloth so that no light or smoke can come through.

Sec. 4103. DESIGN AND CONSTRUCTION. The curtain shall be made of continuous strips of asbestos cloth. The width of cloth shall overlap at the seams not less than one (1) inch and shall be sewed with a double row of stitching of asbestos thread.

The curtain shall be wide enough to extend into steel smoke grooves on each side of the proscenium opening at least eight (8) inches, and shall overlap the top of the proscenium opening at least twelve (12) inches.

Six (6) inch pockets shall be sewed in the top and the bottom of the curtain to hold the pipe battens; the sides shall be hemmed at least three inches deep. A two (2) inch pipe batten shall be placed at the top and a one and one-half ( $1\frac{1}{2}$ ) inch batten at the bottom. For stage openings over forty (40) feet in width the bottom batten shall be not less than two and one-half ( $2\frac{1}{2}$ ) inches in diameter. The batten shall be reinforced at the joints with six (6) foot sections of pipe housed and



riveted. Both top and bottom battens shall have six (6) inch nipples reamed and welded on each end.

The curtain shall be held to structural steel guides in the smoke pockets with substantial roller grips riveted or bolted to the side hem, not more than eighteen (18) inches on center. Each roller grip shall be fastened to the curtain with not less than three (3) bolts or rivets. Sixteen (16) gauge galvanized metal strips not less than six (6) inches wide shall be placed vertically along each side edge, to which shall be riveted the side roller grips.

The top of the curtain shall have a smoke stop fitted to make it as smoke tight as practicable. The bottom of the curtain shall have a yielding pad of incombustible material not less than three (3) inches thick to form a seal against the floor.

Sec. 4104. OPERATING EQUIPMENT. Structural steel guides shall be built into the side smoke pockets and shall extend from the floor to the gridiron. Guides and roller grips shall be designed, constructed and attached to the curtain so as to safely support it and work smoothly with a wind load of one (1) pound per square foot over the entire area of the curtain.

The support for the curtain shall be not less than six (6) three-eighths inch flexible steel cables. These cables shall be spaced not more than fourteen (14) feet on centers. Supporting cables shall be tied to the top batten with a clove hitch and the end secured with two (2) three-eighths inch iron rope clips.

The supporting cables shall pass through sheaves in the gridiron and over to the counter-weight guides and shall fasten to the counter-weight by means of three-eighths inch shackle and eye turnbuckles with clove hitches and wire cable clips. Eveners shall be provided where the cables connect to the counter-weights so that the weight of the counter-weights will be evenly divided on the cables.

There shall be at least six (6) safety stop chains of one-quarter inch straight link welded chain, fastened to the top curtain batten. The other end shall be attached to the proscenium wall by means of seven-eighths inch bolts passing entirely through the wall, or equally substantial supports. Safety chains shall be so adjusted as to support the curtain when it is lowered and the bottom batten is on the floor.

All cables shall be carried over head and loft blocks of not less than sixteen (16) inch diameter wheels. These blocks shall be ball bearing and the wheel grooves shall be machined. All blocks supporting the asbestos curtain shall be supported on the proscenium wall by means of steel brackets or shall be mounted on the beams of the gridiron with through bolts.

The mechanism and devices for controlling the curtain shall be of simple design and shall be positive in operation. Opening of the curtain may be by hand, hydraulic or electric power. Closing for emergency or for automatic operation shall be the same as for ordinary operation and shall be by gravity obtained by counterbalancing the curtain

by counter-weights weighing not less than one-quarter ( $\frac{1}{4}$ ) pound per square foot of curtain.

The operating hand line shall be not less than three-quarter-inch manila rope permanently fastened to the top and bottom of the counter-weight arbor and shall pass through the stage floor and over a tension pulley, not less than eleven (11) inches in diameter, under the stage floor. This operating line shall be fitted to an automatic control line, or becket of sash cord, which when freed by the breaking of a fusible link will allow the curtain to automatically lower itself by means of a becket release. Not less than four (4) fusible links shall be placed on the automatic control line, one on each side of the stage and two over head in the gridiron.

Smoke grooves which protect the sides of the curtain shall be of structural steel shapes and plates not less than one-quarter ( $\frac{1}{4}$ ) inch thick. These grooves shall be not less than twelve (12) inches deep and six (6) inches wide. Grooves shall extend from the stage floor to a point immediately under the gridiron, and shall be securely bolted to the proscenium wall. Details of grooves shall be submitted to the Building Inspector for approval.

Top and bottom counter-weights shall be cast iron four (4) inches wide by three (3) inches high by sixteen and three-quarters ( $16\frac{3}{4}$ ) inches long. There shall be smooth grooves on the ends of the top and bottom weights which engage the steel guides. Intermediate weights shall be four (4) inches wide by three (3) inches high by twelve (12) inches long, grooved to drop into place on top of the lower carrying weight. Two (2) three-quarter-inch bolts shall pass through each arbor of counter weights. These bolts shall hold the sections of the counter-weights together and shall also have the supporting cables tied to them.

Counter-weight guide tracks shall be of cold rolled steel elevator tees two and three-quarters by two by twenty-three thirty-second ( $2\frac{3}{4} \times 2 \times 23/32$ ) inches. The guide frame shall be securely bolted to the proscenium wall, and shall extend from the stage floor to the gridiron.

All machine and hoisting gear shall be designed in accordance with the Safety Code for Elevators, Dumb-Waiters and Escalators, published in 1931, or its subsequent amendments, by the American Society of Mechanical Engineers, as such requirements are specified for passenger elevators, machines and cables. Travel limit stops and room for over-travel shall be provided.

Sec. 4105. TESTS. The complete installation of every proscenium curtain shall be subjected to operating tests and any theatre in which such proscenium curtain is placed shall not be opened to public performances until after the proscenium curtain has been accepted and approved by the Building Inspector.

Sec. 4106. NEW DESIGNS. Curtains of other designs and materials, when not obviously of greater fire-resistance than specified in this chapter, shall before acceptance be subjected to the standard fire test specified in Chapter 42, as applicable to non-bearing partitions, except

that such tests shall be continued only for a period of five (5) minutes unless failure shall have occurred previously. The unexposed face of the curtain shall not glow within a period of five (5) minutes nor shall there be any passage of smoke or flame through the curtain.

## PART VIII

### FIRE-RESISTIVE STANDARDS FOR FIRE PROTECTION.

#### CHAPTER 42. GENERAL.

Sec. 4201. FIRE-RESISTIVE CONSTRUCTION DEFINED. Building materials, systems, units and forms of construction as regulated by this Code shall be classified as "four-hour fire-resistive construction," "three-hour fire-resistive construction," "two-hour fire-resistive construction" and "one-hour fire-resistive construction," for fire-resistive purposes and protection. Materials, systems, units and forms of construction, in order to be classed as four-hour, three-hour, two-hour or one-hour fire-resistive construction shall meet the respective requirements for such rating as specified in Standard Specifications for Fire Tests of Building Construction and Materials, A. S. T. M. Designation C19-33, of the American Society for Testing Materials, and its subsequent amendments.

Except that for buildings having a structural steel frame, the standard specifications for fire-proofing structural steel buildings, dated October 8, 1927, and its subsequent amendments, of the American Institute of Steel Construction, Inc., may be followed.

Any materials, systems, units or forms of construction which meet the requirements of the aforesaid Standard Specifications shall be accepted as fire-resistive construction of the degree specified, if and when they shall be shown by an authoritative test conducted in accordance with all of the provisions of such aforesaid specifications, to possess such fire resistance.

Sec. 4202. FIRE-RESISTIVE MATERIALS. The following materials, combinations of materials, systems and units shall be classed as fire-resistive materials:

- Brick.
- Concrete brick, block or tile.
- Gypsum block or tile.
- Gypsum (plain or reinforced.)
- Gypsum plaster board (or lath) and plaster.
- Hollow clay tile.
- Metal.
- Metal and asbestos.
- Metal lath and plaster.
- Portland cement concrete (plain or reinforced.)
- Sand-lime brick.

Sec. 4203. FIRE-RESISTIVE CONSTRUCTION. All fire-resistive construction of burned clay, concrete or gypsum units or other similar units shall be solidly bedded and laid in gypsum mortar, lime-cement mortar or cement mortar; provided that gypsum units shall be laid in gypsum mortar only. All such units shall be thoroughly bonded together by broken joints in alternate courses or by sufficient metal ties or bonds.

All concrete, gunite, gypsum or similar protection for steel or iron structural members which is cast, poured or similarly applied shall be reinforced at the edges of such members in a sufficient manner to prevent cracking and disintegrating of such protection. All such applied fire protection materials shall be reinforced by metal rods, galvanized wire or mesh to provide against cracking and disintegrating of the protecting material.

All plaster fire protection shall consist of gypsum mortar, Portland cement mortar or other equally fire-resistive material. Gypsum plaster only shall be used for plastering on gypsum units. Wherever plaster is used for fire protection purposes it shall be reinforced with galvanized metal mesh or lath; provided, that where such plastering is placed on masonry or reinforced concrete such reinforcing may be omitted when the plastering is not more than one (1) inch thick. Gunite applied to masonry need not be reinforced and when properly bonded shall be considered a part of the required thickness.

## CHAPTER 43

### FIRE-RESISTIVE STANDARDS

Sec. 4301. PROTECTION OF STRUCTURAL PARTS. The thickness of fire-resistive materials for fire protection of structural parts shall be as shown in the following table for the respective degrees of fire protection shown. The figures shown shall be the net thickness of the protecting materials and shall not include any hollow space or spaces between the fire protecting materials and member protected. The thickness of plaster protection shall be measured from the face of the plaster to the plane of the back surface of the metal or wire lath where such lath is used and shall include two-thirds (2/3) of the thickness of the gypsum plaster board (or lath) where such board (or lath) is used.

**MINIMUM PROTECTION OF STRUCTURAL PARTS BASED ON  
TIME PERIODS FOR VARIOUS INCOMBUSTIBLE  
INSULATING MATERIALS**

Structural Parts to Be Protected	Insulating Material Used	Minimum thickness of material in inches for the following fire-resistant periods			
		4 hr.	3 hr.	2 hr.	1 hr.
Steel or Cast Iron Columns; Projecting Steel Beam or Girder Flanges; All Members of Primary Trusses	Grade A concrete	2	2	1½	1
	Grade B concrete	3	2½	2	1½
	Gunite	2	1½	1	¾
	Brick of clay, shale, concrete or sand-lime	3¾	3¾	2¼	1¼
	Clay tile, clay tile and concrete or concrete block (see note 2)	4 or 2 pl.	4 or 2 pl.	2	2
	Solid gypsum blocks	2 pl.	2 pl.	2	2
	Hollow gypsum blocks	3 pl.	3	2	2
	Poured gypsum	2	1½	1	1
	Metal lath and gypsum or Portland cement plaster	-----	-----	2½*	1
	Webs of Steel Beams and Girders	Grade A concrete	2	1½	1
Grade B concrete		3	2½	1½	1
Gunite		2	1½	1	¾
Brick of clay, shale, concrete or sand-lime		3¾	2¼	2¼	2¼
Clay tile, clay tile and concrete or concrete block		3 or 2 pl.	2	2	2
Solid gypsum block		2 pl.	2	2	2
Hollow gypsum block		3 pl.	2	2	2
Poured gypsum		2	1½	1	1
Metal lath and gypsum or Portland cement plaster		-----	-----	2	1
Reinforcing Steel in Reinforced Concrete Columns, Beams, Girders and Trusses	Grade A concrete	1½	1½	1½	1
	Grade B concrete	2	1½	1½	1
Reinforcing Steel in Reinforced Concrete Joists	Grade A concrete	1¼	1¼	1	¾
	Grade B concrete	1¾	1½	1	¾
Ceiling Protection for Roof Trusses and Secondary Trusses	Metal or wire lath and gypsum or cement plaster, concrete, burned clay Products or gypsum	2	1½	1	¾
	Gunite	1½	1	¾	¾
Reinforcing and Tie Rods in Floor and Roof Slabs	Grade A Concrete	1	1	¾	¾
	Grade B Concrete	1¼	1	1	¾
	Gypsum	1	1	¾	¾

NOTE: (1) pl. in above table shall be not less than ½ inch gypsum or cement plaster.  
(2) re-entrant parts of protected members shall be filled solid for 4 and 3 hour protections.

\*Two ¾ inch layers with ¾ inch air space between.

*NOTE:* Grade A concrete shall mean concrete with a coarse aggregate of limestone, pumice, calcareous pebbles, trap rock, blast furnace, slag, burnt clay, burnt shale, coral rock, or other coarse aggregates containing not more than sixty-five (65) per cent of siliceous material, such as granite, sandstone, chert pebbles, flint, cinders or quartz.

Grade B concrete shall mean concrete with a coarse aggregate other than that allowed in Grade A concrete.

For flat ceilings where the ceiling protection for beams, girders or slabs is suspended to form a free air space of not less than one (1) inch between the member and the protection, the protection thicknesses may be one-half ( $\frac{1}{2}$ ) inch less than that required in the above table for flat ceiling protection, but no thickness shall be less than three-fourths ( $\frac{3}{4}$ ) of an inch.

Soffit tile protecting beam and girder flanges shall be tied to the flange with steel or iron ties.

If the structural part is of iron or steel the thickness given in the foregoing table shall be measured outside of the extreme edges of the structural shapes, except that projecting edges of lugs and brackets shall be given a minimum protection of one (1) inch thickness. For reinforced concrete members, the thickness given in the foregoing table shall be outside of the reinforcement. For purposes of design the protection shall not be considered as carrying load except as permitted for tied columns in Chapter 26.

Plaster protections of over one (1) inch in thickness shall have an additional layer of galvanized metal lath, galvanized wire or galvanized metal mesh embedded not more than three-fourths ( $\frac{3}{4}$ ) of an inch from the surface and securely tied into the supporting members. (See Section 4203.)

Galvanized wire of not less than number ten (No. 10) B. and S. gauge wound or tied around members at not more than a six (6) inch pitch, or wire or expanded galvanized metal mesh shall be placed and well embedded in all concrete gypsum and gunite protections.

Galvanized wire mesh or other forms of metal ties in concrete protections shall be held away from the structural members and embedded in the protection not less than three-fourths ( $\frac{3}{4}$ ) of an inch from its outer surface at points of minimum thickness. Hollow tile or gypsum block protections shall have iron or steel ties embedded in each horizontal joint, or have outside iron or steel ties over each unit, the diameter of wire to be 0.18 inch or of equivalent area in ties of other forms. Galvanized wire mesh, where used for tying protections, shall weigh not less than one and one-half ( $1\frac{1}{2}$ ) pounds per square yard. Where galvanized metal laths or galvanized wire mesh is used as a plaster base or tie, it shall weigh not less than two and two-tenths (2.2) lbs. per square yard, and two and one-half ( $2\frac{1}{2}$ ) or more meshes per inch or equivalent. Gypsum plaster board not less than three-eighths ( $\frac{3}{8}$ ) of an inch thick and having not more than fifteen (15) per cent combustible material combined with the gypsum may be substituted for galvanized

metal lath for resistance periods of not more than two (2) hours, provided the plaster is reinforced with galvanized metal or galvanized wire mesh weighing not less than one and one-half ( $1\frac{1}{2}$ ) pounds per square yard, standing away from the board and secured to the supporting members, and two-thirds ( $\frac{2}{3}$ ) of the thickness of the plaster board may be considered as plaster.

Concrete aggregates whose mineral composition is unknown or undetermined shall for the application of these regulations be classed as Grade B aggregates.

Sec. 4302. FIRE-RESISTIVE WALLS AND PARTITIONS. Fire-resistant bearing and non-bearing walls and partitions shall be of not less than the thicknesses and construction specified in this Section, to be classed for the respective degrees of protection indicated.

The structural requirements of the following masonry and reinforced concrete walls are specified in Chapters 24 and 29 for the specific location or use of the walls and all walls shall comply with those structural requirements as well as the fire-resistant limitations as specified in this Section.

The following tabulated thicknesses are minimum and shall not be broken into; provided that where combustible floor or partition members project into solid masonry or reinforced concrete walls or partitions the required effective thickness of wall shall be measured from two (2) inches back along the member from the end in the wall, to the opposite face of the wall. Where such members project into hollow walls and the space between the members and for not less than four (4) inches above and below them is filled solid with fire-resistant incombustible materials for the full thickness of the wall.

Plaster, in order that it may be considered as adding to the fire-resistance of walls and partitions shall be gypsum or Portland Cement plaster applied to an average thickness of not less than one-half ( $\frac{1}{2}$ ) of an inch on each side. Plaster over one (1) inch in thickness, as measured to the plaster base, shall have an additional layer of galvanized metal lath, galvanized wire or galvanized metal mesh embedded not more than three-fourths ( $\frac{3}{4}$ ) of an inch from the surface and securely tied into the supporting members.

Required fire-resistant plastering or stucco on the outside of exterior masonry walls may be omitted from inaccessible portions of the wall provided the inside plastering opposite the inaccessible portions is doubled in thickness.

Gypsum plaster board (or lath) not less than three-eighths ( $\frac{3}{8}$ ) of an inch in thickness and having not more than fifteen (15) per cent of combustible material combined with the gypsum may be substituted for galvanized metal lath for resistance periods of not more than two (2) hours, provided the plaster is reinforced with galvanized metal or galvanized wire mesh weighing not less than one and one-half ( $1\frac{1}{2}$ ) pounds per square yard, standing away from the board (or lath) and

secured to the supporting studs or joists. Two-thirds ( $2/3$ ) of the thickness of the plaster board (or lath) may be considered as plaster.

Gypsum plaster board (or lath) conforming to the specifications contained in the preceding paragraph may be substituted for galvanized metal lath and the reinforcement of the plaster omitted, provided, that the joints of the plaster board (or lath) are covered with strips of metal fabric not less than three (3) inches in width and the plaster board (or lath) is plastered with not less than one-half ( $1/2$ ) inch of fibered gypsum plaster containing not more than thirty-three and one-third ( $33\frac{1}{3}$ ) per cent by weight of silica.

A three-eighths ( $3/8$ ) inch gypsum plaster board (or lath) with a mechanical key may be substituted for galvanized metal lath without the necessity for stripping the joints in the plaster board (or lath) with strips of metal fabric provided, wall assemblies containing such plaster board (or lath) have passed the standard fire test as specified in Section 4201.

Galvanized metal or wire lath shall weigh not less than two and two-tenths (2.2) pounds per square yard. Galvanized metal or wire mesh where used as ties in concrete shall weigh not less than one and one-half ( $1\frac{1}{2}$ ) pounds per square yard. Where used as ties for plaster it shall weigh not less than two and two-tenths (2.2) pounds per square yard and have not less than two and one-half ( $2\frac{1}{2}$ ) meshes per inch, or equivalent.

Wood studs for bearing partitions or walls shall be not less than the two inch by four (2"x4") inch nominal size and be spaced not more than sixteen (16) inches apart.

*Note:* The term "plastered" in following table shall mean walls plastered with not less than one-half ( $1/2$ ) inch of gypsum or Portland cement plaster on each side of wall.

RATED FIRE RESISTANCE PERIODS FOR VARIOUS WALLS AND PARTITIONS.

Material.	Construction.	Minimum Finished Thickness face to face (including plaster where mentioned) in inches.			
		4-hr.	3-hr.	2-hr.	1-hr.
Brick of clay shale, sand-lime or concrete, and plain concrete.	Solid unplastered .....	8			4*
	Solid plastered .....	9			5*
	Hollow (rowlock) unplastered..	12	10	8	
	Hollow (rowlock) plastered....	9			



	End or side construction. One cell in wall thickness. Plastered				3*
Hollow clay tile wall.	End or side construction. Two cells in 8-in. or less thickness. Unplastered	16	12		6* or 8
	End or side construction. Two cells in 8-in. or less thickness. Plastered	13	9		7*
Hollow clay tile A. S. T. M. load-bearing.	End or side construction. Two cells in wall thickness. Unplastered				6
	End or side construction. Two cells in wall thickness. Plastered				5*
	End or side construction. Three cells in 8-in. or less thickness. Unplastered	12			
	End or side construction. Three cells in 8-in. or less thickness. Plastered one side			8½	
	End or side construction. Three cells in 8-in. or less thickness. Plastered	9			
Combination of brick and A. S. T. M. load-bearing tile.	4-in. brick and 4-in. tile plastered one side (tile side)	9			
Special hollow concrete block or tile.	One cell in 8-in. or less thickness. Unplastered	12†	8	6	4*
	One cell in 8-in. or less thickness. Plastered	9†			5*
Hollow concrete block or tile.	One cell in 8-in. or less thickness. Unplastered	16	12	10	6* or 8
	One cell in 8-in. or less thickness. Plastered	13	11	9	7* or 7*
Solid concrete.	Reinforcement not less than 0.2% in each direction	6	5*	4*	2*
Solid gunite.	Reinforcement of not less than 0.2% in each direction	or 6	5*	4*	3* 2*
Hollow gypsum blocks.	Unplastered	6*#	5*#	4*#	3*#
	Plastered	5*#	4*#	4*#	3*#
Hollow wall of reinforced gunite.	Outer shell 2-in. thick for 10-in. wall and 1½-in. thick for 8-in. wall	10*	8*		

Solid Gypsum or Portland cement plaster.	Incombustible studding with galvanized metal or galvanized wire lath .....	2*
Hollow partitions with Gypsum or Portland cement plaster or Gunitite on each side.	Incombustible studding with galvanized metal or galvanized wire or lath 3/4-in. plaster on each side .....	3*
	Incombustible studding with galvanized metal or galvanized wire lath 1-in. plaster on each side .....	4 1/2*
	Wood studs with galvanized metal or galvanized wire lath.	3*
	Fire-stopped .....	or 5

\*Indicates that such walls and partitions shall be used for non-bearing purposes only.

†This thickness to be given a four-hour rating only after an A. S. T. M. certified fire test.

‡Not permitted for exterior walls.

Sec. 4303. FIRE RESISTIVE FLOOR CONSTRUCTION. Fire-resistive floor construction shall be accepted for the following respective degrees of fire-resistive protection when constructed as specified in this Section. For the structural details of any floor construction, the particular details specified under Part VI of this Code shall govern.

Four-hour, three-hour and two-hour fire-resistive floors as specified in this Section shall be constructed entirely of incombustible materials.

(a) Four-hour fire-resistive floor construction shall consist of reinforced concrete, gypsum and/or solid masonry slabs or arches not less than four (4) inches in thickness or shall consist of hollow masonry slabs or arches not less than four (4) inches in thickness with a top covering of not less than two (2) inches of solid masonry, or shall consist of steel joists protected with fire-resistive materials of the kind and thickness shown in the table in this Section. Except in the case of steel joisted construction, all reinforcing tie rods and supporting structural members in such floors shall be protected with not less than four-hour fire-resistive construction as specified in Section 4301.

(b) Three-hour fire-resistive floor construction shall consist of reinforced concrete, gypsum and/or solid masonry slabs or arches not less than three (3) inches in thickness or shall consist of hollow masonry slabs or arches not less than four (4) inches in thickness with a top covering of solid masonry not less than one and one-half (1 1/2) inches in thickness, or shall consist of steel joists protected with fire-resistive materials of the kind and thickness shown in the table in this Section. Except in the case of steel joisted construction, all reinforcing, tie rods and supporting structural members in such floor construction shall be

protected with not less than three-hour fire-resistive construction as specified in Section 4301.

(c) Two-hour fire-resistive floor construction shall consist of reinforced concrete, gypsum and/or solid masonry slabs or arches not less than two and one-half ( $2\frac{1}{2}$ ) inches in thickness; or shall consist of hollow masonry slabs or arches not less than three (3) inches in thickness with a top covering of not less than one (1) inch of solid masonry, or shall consist of steel joists protected with fire-resistive materials of the kind and thickness shown in the table in this Section. Except in the case of steel joisted construction, all reinforcing, tie rods and supporting structural members in such floor construction shall be protected with not less than two-hour fire-resistive construction as specified in Section 4301.

(d) One-hour fire-resistive floor construction shall consist of reinforced concrete, gypsum and/or solid masonry slabs or arches not less than two and one-half ( $2\frac{1}{2}$ ) inches in thickness or shall consist of hollow masonry slabs or arches not less than three (3) inches in thickness with all joints in such hollow unit construction thoroughly filled with cement or gypsum mortar; or shall consist of steel joists protected with fire-resistive materials of the kinds and thicknesses shown in the table in this Section. Except in the case of steel joisted construction, all reinforcing, tie rods and supporting structural members shall be protected with not less than one-hour fire-resistive construction as specified in Section 4301; or

Wood joisted construction with a double wood floor on top (the sub floor not less than three-fourths ( $\frac{3}{4}$ ) of an inch thick, and the total thickness of the two layers not less than one and one-fourth ( $1\frac{1}{4}$ ) inches thick, and with a fire-resistive ceiling, as shown in the table in this Section, securely fastened to or suspended from the under side of such joists. Except the galvanized metal lath and plaster ceiling shall not be required below the lowest floor joist over unusable space.

All flat ceilings where the ceiling protection for beams, girders or slabs is suspended to form a free-air space between the members and the protection, the protection thicknesses may be one-half ( $\frac{1}{2}$ ) inch less than that required in the following table for flat ceiling protection, but no thickness shall be less than three-fourths ( $\frac{3}{4}$ ) of an inch minimum protection of metal and wood joists based on time periods for various insulating materials.

In any reinforced concrete floor construction which includes a galvanized metal lath and cement or gypsum plastered ceiling on the under side, not less than three-fourths ( $\frac{3}{4}$ ) of an inch thick, the required slab thickness may be reduced one-half ( $\frac{1}{2}$ ) inch but in no case shall be less than two and one-half ( $2\frac{1}{2}$ ) inches thick.

**Minimum Protection for Metal and Wood Joists  
Based on Time Periods for Various Insulating Materials**

Joists to be Protected	Insulating Material Used	Minimum thickness of material in inches for the following fire-resistive periods			
		4-hr.	3-hr.	2-hr.	1-hr.
Ceiling protection of Steel Joists where incombustible slab not less than 2½ in. thick is placed above	Galvanized metal or galvanized wire lath and gypsum or Portland cement plaster, concrete, burned clay products or gypsum	2	1½	1	¾
	Gunite	1½	1	¾	¾
Ceiling protection of Wood Joists with double floor on top	Galvanized metal or galvanized wire lath and gypsum or Portland cement plaster				¾

Sec. 4304. (a) FIRE DOORS, SHUTTERS AND WINDOWS. Fire-resistive Doors. One-hour fire-resistive doors shall be constructed as specified for one of the following types, 1, 2 or 3, or any door which will successfully pass the one-hour fire test specified in Section 4201, and all such doors to receive the one-hour rating shall be hung in place as specified in this Section:

1. Tin-clad wood-core doors with the core made of three (3) plies of wood one (1) inch nominal in thickness and covered with sheet metal, the door to be constructed in accordance with the Underwriters' Standard for Tin-Clad Fire-Doors and Shutters," Edition of August, 1935, and its subsequent amendments, as published by the Underwriters' Laboratories.

2. Sheet metal doors constructed of two (2) sheets of metal of not less than twenty-six (26) U. S. Gauge corrugated sheet metal, one sheet on each side of a structural steel frame, corrugations vertical on one side and horizontal on the other and having not less than one-sixteenth (1/16) of an inch of asbestos placed in between the two metal sheets.

3. Sheet metal doors constructed of two (2) sheets of metal of not less than twenty-six (26) U. S. Gauge fastened to a structural steel frame in such manner as to leave a one (1) inch space in the panels, which space shall be filled with asbestos and with a one-eighth (1/8) inch asbestos covering on the stiles and structural steel frame.

Fire-resistive doors used for openings in stairway enclosures, smoke-proof towers, corridors and passageways, moving picture booths, room partitions, exterior walls facing streets or more than twenty-five (25) feet from adjacent property lines and for "Ordinary Fire Separations," as specified in Section 503, shall be constructed as specified for one of the following types, 1, 2, 3, 4, 5 or 6 or any door which will provide

equivalent protection against fire when hung in place as specified in this Section.

4. Tin-clad wood-core doors made of two (2) plies of wood one (1) inch nominal in thickness and covered with sheet metal, the door to be constructed in accordance with the "Underwriters' Standard for Tin-Clad Fire Doors and Shutters" Edition of August, 1935, and its subsequent amendments, as published by the Underwriters' Laboratories.

5. Sheet metal doors as specified in paragraph 3 above, but with one-fourth ( $\frac{1}{4}$ ) of an inch of asbestos placed between the metal sheets in the panels and with no asbestos required on the stiles and structural frame:

6. Metal-clad doors which shall be wood panel doors with frame not less than one and three-fourths ( $1\frac{3}{4}$ ) inches in thickness and with wood panels not less than three-fourths ( $\frac{3}{4}$ ) of an inch in thickness, the whole door covered with not less than number twenty-six (26) gauge metal. The panels of such doors shall fit into the frame not less than three-fourths ( $\frac{3}{4}$ ) of an inch and all joints of metal shall be lapped and nailed tightly to the wood frame.

Metal shall in all cases be fastened to the wood or metal frame by nailing, bolting or riveting and no solder shall be used on any door except for filling of joints.

Glass panels of one-quarter ( $\frac{1}{4}$ ) inch wire glass shall be permitted in any of the above doors except when such doors are used on openings in fire walls, fire division walls, all openings for the stage portion of any Group A building or for openings in "Special Fire Separations," as specified in Section 503. Such glass panels shall be not more than seven hundred and twenty (720) square inches in area, nor exceed fifty-four (54) inches in height or forty-eight (48) inches in width. Grooves not less than three-fourths ( $\frac{3}{4}$ ) of an inch in depth and three-eighths ( $\frac{3}{8}$ ) of an inch wide, providing, not less than five-eighths ( $\frac{5}{8}$ ) of an inch of bearing for the glass shall be required.

Fire doors bearing the label of the Underwriters' Laboratories, Incorporated, shall be accepted as meeting the requirements of any of the above doors.

Hardware for sheet metal and tin-clad fire doors referred to in paragraphs No. 1, 2, 3, and 4, shall be made of good quality malleable iron not less than one-fourth ( $\frac{1}{4}$ ) of an inch thick or of flat rolled structural steel not less than three-eighths ( $\frac{3}{8}$ ) of an inch thick; provided, that tubular steel track made of at least one-eighth ( $\frac{1}{8}$ ) inch steel may be used. Sliding tracks shall be supported so that a wall fastening is directly opposite each door hanger when door is in a closed position. Hangers supporting doors shall be fastened to the door with not less than three (3) one-half ( $\frac{1}{2}$ ) inch bolts extending through the door. Latches for fire doors shall be not less than two and one-half inches by three-eighths inch ( $2\frac{1}{2}'' \times \frac{3}{8}''$ ), and latch bars shall be not less than one and one-half inches by one-fourth inch ( $1\frac{1}{2}'' \times \frac{1}{4}''$ ).

Hardware for swinging hollow metal and metal-clad doors as referred to in paragraphs No. 5 and 6 shall be made as follows:

**HINGES.** For doors not exceeding eight (8) feet in height the hinges shall be of steel or bronze. If made of steel they may be either full, half surfaced, or butt hinges four and one-half inches by four and one-half inches ( $4\frac{1}{2}'' \times 4\frac{1}{2}''$ ) and not less than one-eighth ( $\frac{1}{8}$ ) inch in thickness. If made of bronze they shall be butt hinges four and one-half by four and one-half inches ( $4\frac{1}{2}'' \times 4\frac{1}{2}''$ ) and not less than three-sixteenths ( $\frac{3}{16}$ ) of an inch in thickness. When bronze hinges are used a steel stud and socket shall be provided at each hinge. The studs shall be attached to the rear jamb and shall engage a socket at least three-fourths ( $\frac{3}{4}$ ) inch deep in rear edge of the door.

**LOCKS.** Doors shall be provided with a mortise or unit lock which has a latch bolt with a throw of not less than three-fourths ( $\frac{3}{4}$ ) of an inch.

When mounted in pairs the normally standing door shall have a push bolt at the top and at the bottom which has a throw of not less than three-fourths ( $\frac{3}{4}$ ) of an inch.

Special locking devices shall be provided as required in Part III under Occupancy, also as provided in Sections 3304, 3311 and 3315.

**ASTRAGALS.** Swinging fire doors mounted in pairs shall be provided with at least one astragal attached to one door and overlapping the opposite door at least three-fourths ( $\frac{3}{4}$ ) of an inch. The above provision need not apply when the doors meet on a mullion.

(a) Fire doors required by this Code shall be installed in the manner prescribed in the "Regulations of the National Board of Fire Underwriters for the Protection of Openings in Walls and Partitions Against Fire," recommended by the National Fire Protection Association, Edition effective October 15th, 1930, and corrected to May 1st, 1935, or its subsequent amendments.

All fire doors shall be so hung that when closed they will fit tightly into place against the wall or frame so as to prove an effective stop for fire and smoke. Space around fire doors necessary for their operation shall at all times be kept unobstructed and, when deemed necessary by the Building Inspector, a screen or railing protection shall be installed to insure no storing or placing of material against any fire door which would prevent its operation in case of emergency.

(b) Fire-Resistive Shutters. One-hour fire-resistive shutters shall be constructed as specified for any one of the types of fire-resistive doors specified in part (a) of this section.

(c) One-hour Fire-resistive Windows. One-hour fire-resistive windows shall have frames and sash of solid metal bars or hollow metal forms fabricated by pressing, welding or crimping together but not by the use of solder or other fusible alloy. All glass used in fire-resistive windows shall be wire glass and shall be not less than one-fourth ( $\frac{1}{4}$ )

of an inch in thickness and no one light shall exceed seven hundred and twenty (720) square inches in area. Grooves three-fourths ( $\frac{3}{4}$ ) of an inch in depth shall be provided and glass so arranged as to have not less than five-eighths ( $\frac{5}{8}$ ) of an inch of bearing in hollow metal frame and with grooves not less than one-half ( $\frac{1}{2}$ ) inch and with glass provided with not less than three-eighths ( $\frac{3}{8}$ ) of an inch of bearing in windows of solid metal section. Continuous glazing angles shall be provided on the inside. Fire-resistive windows with hollow metal frames shall be limited to a maximum size of sixty (60) square feet with a six (6) foot maximum width and a ten (10) foot maximum height for double hung and counter-balanced windows and to a maximum size of seventy (70) square feet with a seven (7) foot maximum width and ten (10) foot maximum height for stationary windows. Solid metal section windows shall be limited to a maximum size of eighty-four (84) square feet in area with a maximum dimension in either direction of twelve (12) feet. Multiple section windows of these above sizes may be used when hollow metal or solid section mullions are provided. Hollow metal mullions shall be limited to a maximum length of twelve (12) feet and shall be used for non-bearing purposes only. Solid section mullions when used in lengths exceeding twelve (12) feet shall be fireproofed as required in Section 4301 in accordance with the fire-resistive construction of the building in which they are placed. Where fire-resistive windows are required by this Code, wood sash and plain glass may be substituted when protected as specified in Parts (a) and (b) of this Section.

Fire-resistive windows bearing the label of the Underwriters' Laboratories, Incorporated, shall be accepted as one-hour fire-resistive windows.

Occupants of building shall close all fire doors, shutters and windows at the close of each business day.

Sec. 4305. ROOF COVERINGS. Roof coverings for all buildings shall be either "Fire Retardant" or "Ordinary" roofings as specifically required either by Location in Part IV, by Type of Construction in Part V or as specified in Sections 1109 and 1209. The roof covering shall be securely fastened to the supporting roof construction. The exposed edge of wood sheathing in all cases shall be covered and protected with a non-corrosive metal or felt of the same weight and character as roofing surface. The edges of gravel surface roofs when not bound by parapet walls shall be protected with a non-corrosive metal flashing to protect exposed surfaces of wood and also prevent the displacement of the surface material.

FIRE RETARDANT ROOFINGS. (a) "Fire Retardant" roofings shall be any roof covering which meets any one of the following requirements, or shall be any roofing meeting the requirements of Class A or B specifications of the Underwriters' Laboratories, Incorporated. Roofings bearing the label, and laid in the manner provided by the Underwriters' Laboratories, Inc., for Class A and B may be accepted as meeting the requirements of this section for fire retardant roofs.

Roof coverings built of roll roofing, roofing felt, felt membrane, or asphalt shingles, shall conform to the following requirements as to physical properties of materials, weights, number of layers and method of laying. The following requirements shall not be construed to prohibit the use of more layers, substitution of materials with heavier dry felt base content of similar quality and of not less than equal finished weight of material so substituted.

#### METHOD OF LAYING

The first layer shall be spot-mopped and tin-capped and nailed to the solid sheathing, not over twelve (12) inches on centers and shall be thoroughly mopped between each additional layer with a bituminous compound so that no one layer touches unmopped the layer next above. Bituminous compound for mopping plies together shall be air refined asphalt or coal tar pitch but shall not be any type of emulsion, cold cut back liquid cement, oil or grease.

1. Not less than two layers No. 32 (30 lb. asphalt roofing) or No. 41 (40 lb. asbestos roofing). For top layer see note below.

2. Not less than four layers No. 15 (14 lb. asphalt felt). For top layer see note below.

3. Not less than three layers of a combination of No. 32 (30 lb. asphalt roofing) or No. 41 (40 lb. asbestos roofing) and No. 15 (14 lb. asphalt felt) or No. 14 (14 lb. asbestos felt). For top layer see note below.

4. Not less than three layers of No. 18 (18 lb. asbestos felt membrane) or No. 20 (20 lb. asphalt membrane). For top layer see note below.

5. Not less than one layer of No. 30 (26 lb. asphalt felt) roofing felt and two layers of No. 15 (14 lb. asphalt felt) or No. 14 (14 lb. asbestos felt) or No. 18 (18 lb. asbestos felt membrane) or No. 20 (20 lb. asphalt membrane). For top layer see note below.

NOTE: The above composition fire retardant roofings shall be thoroughly mopped between layers with a bituminous compound so that no one layer touches unmopped the layer next above, and every roof covering shall have for its top layer a layer of No. 82 or any mineral surfaced roofing bearing the Class C label of the Underwriters' Laboratories, Inc., or such roof covering shall be entirely covered with a flowing coat of bituminous compound and completely covered with gravel, crushed rock, crushed brick, other crushed earthenware or similar mineral surfacing material, a sufficient quantity being embedded in the bituminous compound in accordance with good standard practice.

6. Hydraulic compressed rigid shingles not less than one-eighth ( $\frac{1}{8}$ ) inch thick, composed of Portland cement and asbestos fibers, laid over a layer of saturated felt weighing not less than No. 32 (30 lbs.) to the one hundred (100) square feet. The aforesaid felt may be



omitted when the compressed shingles are placed over an existing roof covering, and shall be secured with not less than two (2) non-corrosive nails penetrating at least three-fourths ( $\frac{3}{4}$ ) of an inch into wood deck, and storm nails where provided in shingles.

When there is no parapet wall on gable edge, shingles shall be protected by either non-corrosive metal strip or cemented down to roofing with Portland cement or fibrous plastic cement, and shingles shall not project more than one-half ( $\frac{1}{2}$ ) inch at the face of eave.

7. Asphalt saturated mineral surfaced prepared composition shingles laid so there shall be not less than two (2) thickness at all places. The compound weight of such shingles shall not be less than one hundred and ninety (190) pounds to the one hundred (100) square feet of completed roof area.

8. Concrete Slab or Concrete Tile. Concrete slab roofs shall be constructed as specified in Chapter 26 and need not be covered with any additional roof covering.

9. Metal Roof Covering. Metal roof covering may be of a corrugated, standing seam or flat type of not less than number twenty-six (No. 26) U. S. Gauge metal. All flat metal roof covering shall be laid on solid sheathing. Corrugated or standing seam metal shall be designed to support the required live load between supporting members. The anchorage of this type roof covering shall be in accordance with the requirements of the Building Inspector. See page 312-313.

10. SLATE. Each slate shingle shall be securely fastened to the supporting roof construction with not less than two (2) non-corrosive nails of such length as to provide not less than three-fourths ( $\frac{3}{4}$ ) of an inch of penetration into the sheathing, laid over a layer of saturated felt weighing not less than thirty (30) pounds to the one hundred (100) square feet.

11. TILE. Roof tile shall not absorb more than fifteen (15) per cent of the dry weight of the tile during a forty-eight (48) hour immersion test. All tile must be given a thirty (30) minute immersion in water immediately before being laid.

All roof tile shall be cemented in place and in addition the first three horizontal courses shall be nailed and in addition such other nailing that may be required to prevent tile from slipping. All nails shall be of a non-corrosive material and shall be of such length as to provide not less than three-fourths ( $\frac{3}{4}$ ) of an inch penetrating into the sheathing.

Mix cement specified in this Section shall be of not less than one part cement and three parts sand and not more than twenty-five (25%) per cent lime by volume.

All tile shall be laid over not less than one layer of No. 82 or any mineral surfaced roofing felt securely fastened with non-corrosive nails penetrating not less than three-fourths ( $\frac{3}{4}$ ) of an inch into solid sheathing, or by spot-mopping with hot bituminous roofing compound to the sheathing.

(b) ORDINARY ROOFINGS. "Ordinary" roof coverings shall be any roof covering which meets the requirements specified for the following roof coverings, 12 to 18 inclusive, or shall be any roofing meeting the Class C Specifications of the Underwriters Laboratories, Incorporated. Where one layer of roofing is specified it shall be spot-mopped and top edge blind nailed to sheathing not less than six (6) inches on centers, such lap to be not less than two and one-half (2½) inches. Where two layers or more of roofing is specified the first layer shall be spot-mopped and tin-capped and nailed to the solid sheathing not over twelve (12) inches on centers, and shall be thoroughly mopped between layers with a bituminous compound so that no one layer touches unmopped the layer next above. No laps shall be less than two and one-half (2½) inches. All nails shall be non-corrosive.

12. One layer of No. 41 roll roofing, or one layer of No. 82 roll roofing.

13. Such roof covering may be asphalt shingles laid in one or more layers.

14. Such roof coverings may be a combination of one or more layers of No. 15 or No. 14 roofing and a layer of No. 32 roll roofing.

15. Two or more felt layers of No. 14 roofing felt or No. 18 felt membrane.

16. One layer of No. 30 roofing felt and one layer of No. 14 or No. 18.

17. Such roof covering may consist of not less than two layers of No. 15 roofing felt, or No. 20 felt membrane, which shall have a covering of gravel as required for fire retardant roof covering.

18. Wood Shingles used as roof covering shall be of non-resinous wood, such as red cedar, cypress or red wood. (These woods are approved, as they provide a slow-burning and fire retardant quality).

All wood shingles for application as permanent roof covering (see "Exceptions" for temporary roof covering), shall be of 100% heart wood, 100% clear of defects, and 100% vertical grain and uniform in thickness: the following thickness to be standard or minimum.

Wood shingles bearing an approved certification label, certifying compliance with standard C. S. 31-35, of not less than No. 1 grade, of the U. S. Department of Commerce, Bureau of Standards, and its subsequent amendments, may be accepted as meeting the requirements of this Code.

16" shingles shall measure 2" across face of 5 butts

18" shingles shall measure 2¼" across face of 5 butts.

24" shingles shall measure 2½" across face of 5 butts.

Exceptions:

Vertical Grain Specifications may be omitted on 100% heart wood shingles when butt thickness is ⅝" of each unit, or 3⅛" across the face of 5 butts.

Vertical Grain Specifications may be omitted on heart wood shingles when used under cover course, to produce shadow courses or doubling at eaves.

TEMPORARY ROOF. Heart wood and Vertical Grain Specifications may be omitted for application on temporary roof only when permitted by Chapter 16, and provided the roof surface is not greater than 300 square feet in any one roof or unit, and provided further that on each application it be in an approved manner and for such length of time as permitted by this Code.

APPLICATION. No wood shingle may be applied with more than one-third of the length, exposed to the weather, after deducting 1" for head lap; the following shall be approved exposures:

LENGTH OF SHINGLE	16"	18"	24"
8" rise to the foot will be	5"	5½"	7½"
7" rise to the foot will be	4¾"	5¼"	7¼"
6" rise to the foot will be	4½"	5"	7"
5" rise to the foot will be	4¼"	4¾"	6¾"
4" rise to the foot will be	4"	4½"	6½"
3" rise to the foot will be	3¾"	4¼"	6¼"

(Note that the exposure shortens ¼" with each inch less of roof pitch).

No application of wood shingles will be permitted over existing wood shingles. (See Section 104-e), provided, however, that where the existing wood shingles are removed, application will be permitted as provided in this Code.

Application of wood shingles shall be upon open sheathing, evenly spaced the same number of inches from center to center as the exposure to insure uniform nailing points.

All flashings, ridges, drip-strips and roof appurtenances shall be of copper or an approved galvanized metal. 3d approved non-corrodible nails shall be the minimum approved size of nails permitted. Shingles shall be fastened with two (2) nails to the sheathing.

No wood shingle application over composition roof coverings will be permitted without stripping with 1"x2", or 1"x3" wood strips to insure air space under shingles and proper base to receive shingle nails.

(c) PHYSICAL PROPERTIES OF COMPOSITION ROOFING. Physical properties of roll roofing, roofing felt, or felt membrane shall conform to the following requirements:

Felt is the dry or de-saturated product produced by "Felting" vegetable or animal fibres or other suitable materials; or "Felting" not less than eighty-five (85) per cent by weight of asbestos fibres.

Felt shall be smooth and when split or torn on the bias shall appear free from lumps of underbeaten stock or fragments of metal, leather or rubber.

Roofing felt is felt saturated with a bituminous saturant, then coated on both sides with a bituminous coating and then surfaced on both sides with powdered talc, mica or other suitable mineral matter; provided, that such roll roofing need not be coated nor surfaced if felt is produced from asbestos and two or more layers are used in combination.

Felt membrane is felt saturated with bituminous saturant, then coated on one or both sides with a bituminous coating.

Saturant and Coating shall be principally of bitumin with a flash point of not less than four hundred (400) degrees Fahrenheit by the Pinsky-Martin closed-cup method.

Weight of roll roofings, roofing felts and felt membranes dry or de-saturated felt, and percentage of saturation, shall conform to not less than the specific minimum requirements given in the following table:

Reference Number	Name or Designation	Wt. per 108 sq. ft.	Felt Wt. per 108 sq. ft.	Saturation Percentage
No. 32	Roll Roofing	30	6.5 (V)	130
No. 41	Roll Roofing	40	13.0 (A)	50
No. 43	Roll Roofing	41	6.4 (A)*	40
No. 42	Roll Roofing	40	10.0 (V)	140
No. 82	Roll Roofing	80	10.0 (V)**	140
No. 82	Shingles	80	10.0 (V)***	140
No. 15	Roofing felt	14	5.6 (V)	140
No. 14	Roofing felt	14	9.5 (A)	40
No. 18	Felt Membrane	18	8.5 (A)	50
No. 20	Felt Membrane	20	5.0 (V)	120
No. 30	Roofing Felt	26	10.0 (V)	140

NOTES:

“(V)” designates felt that is produced by felting vegetable and animal fibres.

“(A)” designates the felt that is produced by felting asbestos fibres.

\* No. 43 roll roofing is produced with two or more layers of felt, each weighing 6.4 pounds, cemented together in the process of manufacture.

\*\* No. 82 roll roofing is a mineral surfaced product.

\*\*\*Asbestos shingles are mineral surfaced and cut from not lighter than No. 82 roll roofing.

Pliability at seventy-seven (77) degrees Fahrenheit; four strips out of five of No. 32 and No. 42 roll roofing shall not crack on a ten (10) millimeter mandrel; four strips out of five of No. 15 roofing felt shall not crack when bent one hundred (100) degrees over a one-sixteenth

( $\frac{1}{16}$ ) inch mandrel; four strips out of five of No. 14 roofing felt or No. 18 felt membrane shall not crack when bent one hundred and eighty (180) degrees over a one (1) inch mandrel. Asphalt shingles shall not be subject to any requirements for pliability.

Heating of roll roofing to one hundred and seventy-six (176) degrees Fahrenheit, for two (2) hours shall not show a loss of volatile matter exceeding one and eight-tenths (1.8) per cent and there shall be no flowing, sagging, blistering or absorption of the surface coatings. Mineral surfacing shall not slide more than one-sixteenth ( $\frac{1}{16}$ ) inch when roofing is suspended vertically. Roofing felt and felt membrane when heated to two hundred and twenty-one (221) degrees Fahrenheit for five (5) hours shall not lose more than four (4) per cent of the weight thereof.

Finished roll roofing, roofing felt or felt membrane shall be free from visible external defects such as holes, breaks, cracks, tears, deeply ribbed surfaces, sagged or untrue edges. Mineral surfacing shall be sufficiently free from fine dust to permit adhesion of the larger particles uniformly distributed and embedded in the coating so that when rubbed vigorously the coating will remain completely covered.

TEST METHODS, used to determine the physical properties of roll roofing, roofing felt, or felt membrane shall be those methods set forth in the "Standard Methods of Testing Felted and Woven Fabrics Saturated With Bituminous Substances For Use in Waterproofing and Roofing." A. S. T. M. Designation D 146-27, of the American Society for Testing Materials, and its subsequent editions. Such tests shall be confined to specific requirements given in this section for physical properties of such materials.

#### CHAPTER 44.

### TEMPORARY USE OF STREETS DURING CONSTRUCTION.

Sec. 4401. TEMPORARY USE OF STREETS DURING CONSTRUCTION. No building material or materials shall be placed upon the streets or sidewalks except as provided in this Chapter.

Temporary permission for use of streets or sidewalks for any construction purpose shall be obtained from Department of Public Safety.

Building materials required for use immediately or in connection with the construction of a building may be placed upon the street or sidewalk in front of the building in course of construction or alteration. The maximum width of such occupied space shall not exceed one-third ( $\frac{1}{3}$ ) the width of the street, measured between curbs, and in no case shall the space within five (5) feet of the nearest rail of any rail-

way track be occupied for building materials. The sidewalk space may be occupied for building construction purposes provided the owner or his agent constructs a temporary sidewalk not less than five (5) feet in width in the outer position of the permissible occupied space, and such temporary sidewalk shall be protected on the building side by a tight fence not less than eight (8) feet in height, and shall be open on both ends and on the side next to the street.

In Fire Zone No. 1 and when the proposed building exceeds a height of two (2) stories in any part of the City, the owner or his agent shall construct before any building is commenced, a temporary covered walk-way not less than five (5) feet wide and eight (8) feet in clear height, of sufficient strength to protect the public from falling materials during construction and such covered walk-way shall remain in place until the completion of all the exterior portions of the building. When the area occupied by the sidewalk or temporary walk-way is to be excavated, such walk shall be made of boards not less than two (2) inches thick, designed to support a load of not less than one hundred and fifty (150) pounds per square foot, provided with suitable ramps at each end, and with handrails on each side. The roof over such walk-way shall be full width of the walk-way and of not less than two (2) layers of one (1) inch boards with joints broken, and shall be placed not less than ten (10) feet above the temporary walk-way. Whenever such roof is used for storing of materials a railing and foot board shall be so installed as to prevent the materials from spilling into the street.

Building materials may be placed in front of the property adjoining a building site under the same conditions as provided for the occupation of the street immediately in front of the building site, provided the written consent and waiver of claim for damage against the City of Miami, is obtained from the owner of such adjoining property, and filed in the office of the Building Inspector.

No building material, fence, shed or any obstruction of any kind shall be placed so as to obstruct free approach to any fire hydrant, lamp post, manhole, fire alarm box, or catch basin, or so as to interfere with the passage of water in the gutter.

Mortar or concrete may be prepared in the space permitted for storage of building materials, but shall be done in a mechanical mixer or in a tight box or on a tight mixing board in such a manner that dripping or splashing is prevented. Pavements shall be well cleared of all building materials at the completion of the construction of a building.

The covered walk-way shall be kept well lighted continuously between sunset and sunrise and the outer edge of the occupied space of the street or sidewalk shall have placed thereon red lights which shall be kept burning continuously between sunset and sunrise.

The street side of any barricade or fence and handrails and sidewalks shall be kept reasonably smooth and in good repair while construction work is in progress or while such barricades, fences or walkways are placed on or over public property.

## CHAPTER 45.

### PERMANENT OCCUPANCY OF PUBLIC PROPERTY.

#### Sec. 4501. PERMANENT OCCUPANCY OF PUBLIC PROPERTY.

No portion of any building whatsoever nor any accessory thereto other than signs and awnings, which are specifically covered by Chapters 47 and 49, shall project over the public street, alley sidewalk or other public place, except as specified in this Section.

(a) No Bay, Oriel or show window shall project beyond the building line at any point, except cornices of show windows more than ten (10) feet above curb level may project not more than eighteen (18) inches beyond the building line.

(b) Reserved.

(c) Roof cornices constructed of fire-resistive materials if more than ten (10) feet above the sidewalk or alley may project over a public street not more than forty (40) inches. The construction and anchorage of all such projections shall be subject to the approval of the Building Inspector and may be erected only upon a revokable permit issued by the Building Inspector.

(d) Fixed marquee, porches and exterior balconies shall not be permitted to project over any public property except as herein specified:

#### MARQUEE AND EXTERIOR BALCONIES.

(1) Marquee and exterior balconies designed in accordance with the engineering section of this Code, and not accessible or to be used for human occupancy, shall be supported in an approved manner entirely from the building, and the framework shall be of steel, iron, reinforced concrete or any incombustible material. Such marquee or exterior balcony shall be at least ten (10) feet in the clear between the lowest point of any projection and the sidewalk immediately below. Exterior balconies shall extend not more than three (3) feet from the building; marquee shall extend not more than nine (9) feet from the building and never closer than twelve (12) inches measured from the curb line; shall be protected with not less than one-hour fire-resistive construction as specified in Chapter 43, and all wood members shall be treated with an approved wood preservative as specified in Section 2511.

Marquee and exterior balconies shall not support any enclosures or structures with roof above.

The roof of any marquee or exterior balcony shall be sloped to downspouts which shall conduct any drainage under the sidewalk to the curb.

#### PORCHES AND EXTERIOR BALCONIES.

(2) Porches and exterior balconies designed in accordance with the engineering section and in accordance with Section 3501 of this Code and to be used for human occupancy, shall not be constructed except upon special permit by the City Commission after

approval by the Building Inspector. There shall be at least ten (10) feet in the clear between the lowest point of any projection and the sidewalk immediately below; exterior balconies shall not extend more than three (3) feet from the building, and no portion of porches or exterior balconies shall extend closer than twelve (12) inches measured from the curb. Porches shall be supported on masonry or metal columns designed in accordance with the engineering section of this Code, and metal columns shall be anchored and protected as required by the Building Inspector. All porches, balconies and railings shall be constructed of incombustible materials, and the railing or balustrade on the upper deck shall not project higher than the window sill of the second floor. Every porch or exterior balcony shall be provided with a railing or balustrade which shall be not less than three feet six inches (3'-6") in height, and all railings or balustrades shall be bonded in an approved manner to the supporting masonry and framework; porches and exterior balconies shall not support any enclosure or be covered with any roof or enclosure other than an approved canvas awning as permitted by the Building Inspector.

Porches not accessible for human occupancy and to be used only as a covered areaway over sidewalks, may have the railing or balustrade omitted but shall otherwise comply with the requirements of this Section.

Porches and exterior balconies shall be provided with downspouts to conduct any drainage to the curb or gutter, and the downspouts for exterior balconies shall be installed in an approved manner so as to conduct such drainage under the sidewalk to the curb.

(3) Every marquee, porch or exterior balcony shall be so located as not to interfere with the operation of any standpipes, stairways or exits from the building, and such location shall meet with the approval of the Building Inspector.

(4) Construction specified in this Section may be erected only upon a revocable permit issued by the Building Inspector.

(e) Water tables, belt courses, sills, bases, columns, plasters, capitals or other decorative features shall not project more than six (6) inches beyond any lot line, and shall be securely bonded to the exterior wall. Such projection may be erected only upon a revocable permit issued by the Building Inspector.

(f) No part of any show window, store front or show case except the sill, as provided in paragraph (e) of this Section, shall project beyond the property line. Doors shall not project beyond the property line bordering a street and shall not project into an alley.

(g) VAULTS OR EXCAVATIONS UNDER SIDEWALK. It shall be unlawful to construct beneath or under any sidewalk, any excavation, vault, cellar-way or other sub-structures, or to make any openings through any street or sidewalk in the City of Miami, into any such cellar-way, excavation or other substructure, or to use any such sidewalk or



areaways, cellar openings, underground vaults, or other substructures, for any purpose whatsoever or to erect, construct, operate, use or permit to be used or to exist in front of any building used or occupied, any such areaway, cellar or opening, or other substructure beneath the sidewalk, for the purposes of transporting through the same, any goods, merchandise, or other articles, without first obtaining from the Department of Public Service of the City of Miami, Florida, a special permit therefor, and then performing the work in all particulars in strict accordance with plans and specifications submitted and in full compliance with the regulations as shall be prescribed by the Department of Public Service. In all cases, a retaining wall shall be constructed to protect adjacent soil banks, and the roof or covering over that portion excavated shall be of improved incombustible material, constructed in accordance with the engineering requirements of this Code and of sufficient strength to safely withstand a live load of not less than that specified in Section 2304. Glass used for the transmission of light in sidewalks shall meet the requirements of Section 3402. When such area or such openings are covered with solid iron doors they shall be not more than three (3) feet in width with the rough surface set flush with the sidewalks, and may project from the building a distance not greater than that permitted by the Department of Public Service.

The occupation of this space may be revoked by the City of Miami, Florida at any time, and the owner of the building or the permit holder occupying such space shall be required to pay all costs attending therewith.

(h) No projection whatsoever shall be allowed in alleys except a curb or buffer block extending not more than nine (9) inches from the face of the building and not more than nine (9) inches above the adjacent alley grade.

#### **CHAPTER 46.**

### **DEPARTMENT OF PUBLIC SERVICE.**

## **RULES AND REGULATIONS PERTAINING TO PUBLIC PROPERTY.**

*RESERVED.*

#### **CHAPTER 47.**

### **SIGNS—BILLBOARDS—POSTER-BOARDS. CONSTRUCTION AND MAINTENANCE.**

Sec. 4701. That no signs, billboards or poster-boards shall hereafter be constructed in the City of Miami, contrary to the provisions of this Code, or which do not conform to the requirements hereinafter set out.

**BILLBOARDS AND GENERAL ADVERTISING SIGNS.** Shall not be permitted in R Districts or in a B-1, or B-2 District and shall only be allowed within other districts at such locations and in such manner as will not constitute a traffic hazard or eyesore. Any sign for which a permit may be granted must be properly maintained otherwise the City reserves the right to remove any Billboard or Advertising Sign which shows neglect or becomes dilapidated. Districts specified in this section are defined in the Zoning Code.

**NO ADVERTISING DEVICE ON BISCAYNE BOULEVARD ABUTTING PROPERTY.** No sign, sign board, billboard, or other similar advertising device shall be erected, placed, maintained or continued in or along Biscayne Boulevard in the City of Miami, at any place between Northeast Thirteenth Street and Northeast Fifty-fourth Street, nor on any property abutting on said part of Biscayne Boulevard in such manner that such sign, sign board, billboard or other similar advertising device shall extend into, on, over, or above such part of Biscayne Boulevard, or any public walk or parkway in said street between Northeast Thirteenth Street and Northeast Fifty-fourth Street, provided that the prohibition herein contained shall in no wise affect signs, sign boards, billboards, or other similar advertising devices heretofore erected and now in place in or along said street or on property adjacent thereto.

**VIOLATIONS.** Each separate day on which any such sign, sign board, billboard or similar advertising device shall be so erected, placed, maintained or allowed to stand, in or extending into, over or above Biscayne Boulevard, or any public walk, way or parkway in the same, at any place between the streets herein above named, shall constitute a separate violation, and the existence of any such sign, sign board, billboard or similar advertising device in, on, or in front of any lot or parcel of land abutting Biscayne Boulevard and extending in, into, over or above Biscayne Boulevard or any public walk, way or parkway in the same, at any place between Northeast Thirteenth Street and Northeast Fifty-fourth Street, shall be prima facie evidence of a violation by the party or parties at such time in possession of such abutting property.

The construction, erection and maintenance of all signs using electric power in any manner shall be subject to the requirements of Ordinance No. 1305 of the City of Miami and its subsequent amendments being "An Ordinance Regulating and Governing Electrical Construction and the Sale, Installation and Maintenance of Electrical Wiring and Apparatus, etc."

Sec. 4702. For the purpose of this Code, the following definitions, terms and their application shall be used and applied in the sections embodied in this Code.

(a) The term "signs" shall apply to display boards, screens or structures used as such and having characters, letters or illustrations applied thereto in any manner.

(b) The term "banner signs" shall apply to all signs produced on cloth, paper or fabric of any kind, either with or without frames.

(c) The term "signboards" shall apply to any display board or screen carrying characters or illustrations and intended to be erected parallel to the face or on the outside wall of any building or buildings or upon any marquee or upon open lots.

(d) The term "projecting signs" shall apply to any display board or screen carrying characters or illustrations thereon and erected on the face or outside wall of any building and projecting out at an angle therefrom.

(e) The term "roof signs" shall apply to display boards, screens or structural steel frames intended to carry characters or illustrations produced in pigment, colors or upon applied paper or by means of electric light and intended to be erected upon the roofs of buildings.

(f) The term "bulletin" and "poster boards" shall apply to structures especially built for the display of characters, lettering or designs. All of which may be produced by applying pigment or colors directly thereto, or by applying paper sheets upon which such characters, lettering or illustrations may already have been produced.

Sec. 4703. PERMITS AND LICENSES. Permits. (a) No projecting sign over five (5) feet in length, bulletin, poster board or roof sign shall be erected or materially altered unless a permit shall have first been secured from the Building Inspector, except in case of repairing or rebuilding such sign for the purpose of making it secure and safe.

(b) No signboard shall be erected or materially altered unless a permit shall have been secured from the Building Inspector, unless such signboard shall be less than one hundred and fifty square feet in area.

(c) Permits will not be necessary for signboards one hundred fifty (150) square feet in area or less, announcing the business name or line of business or both of the owner, when such sign is to be placed upon a building parallel to the walls thereof in which such business is conducted; nor for temporary signboards advertising the occupancy, sale or rental of property, provided that such signs are not of more than sixty (60) square feet in area, nor for banner signs where same are to be placed on face of walls of buildings and parallel therewith.

(d) All applications for permits for signboards, projecting signs, poster boards and roof signs shall be accompanied by such drawings and descriptions as are necessary to fully advise and acquaint the Building Inspector with the locations, construction, weight, materials and manner of illuminating and of securing or fastening such proposed signs, and shall comply with the requirements of Section 2307 for wind stress.

(e) If said sign, as indicated in said drawings and descriptions, shall be in accordance with the provisions of this Code, then the said Building Inspector shall issue a permit for the erection of any such signs upon the payment of the prescribed fee.

(f) Licenses. No person shall make or paint any sign, billboard or poster board for any purpose under the provisions of this ordinance without a license.

Sec. 4704. INSPECTION OF SIGNS. (a) Should upon inspection by the Building Inspector any sign be found unsafe or insecure, or not properly built, according to the requirements of this ordinance, the owner shall be required to make it safe and secure and of proper construction within forty-eight (48) hours from the time of notification in writing to that effect from the Building Inspector, and if said notice is not complied with, within the time specified, the Building Inspector shall cause same to be removed at the expense of the owner.

Sec. 4705. GENERAL CONDITIONS. All signs attached to or placed on any building shall be thoroughly secured thereto by sign hooks, iron or metal anchors, bolts, supports, chains, stranded steel cables or braces. No staples or wooden plugs shall be used for securing any projecting signs to a building.

(a) Sign or sign boards on Buildings. The face of all signs or signboards attached to and placed parallel to the face of walls of buildings when more than two feet in height, or if more than 100 feet in area, shall be of metal (or of fireproof material), except the outer moulding, which may be of wood, substantially mounted upon wood or metal frame.

(b) Obstruction of Windows, etc. No sign or signboard shall be attached to or placed against a building in such a manner as to prevent ingress or egress through any door or window of any building, nor shall any sign or signboard obstruct or be attached to a fire escape in any form, shape or manner.

(c) Sky signs shall be set back at least eight (8) feet from the cornice or wall on a street front, (except, that when such signs shall be placed or constructed at an angle across the corner of a building, the two ends thereof may rest upon and be supported by the outside walls of such building,) and no sky sign shall project more than twenty-five (25) feet above the roof of a building, and each such sign shall have a space of at least six feet between the bottom of the sign and the roof.

Sec. 4706. SIGNS ACROSS STREETS, ETC. No sign of any character shall be permitted to project or be suspended across any public street, and no person shall paint, paste, print or mail any banner sign, paper sign, or any advertisement or notice of any kind whatsoever, or cause same to be done on any curbstone, flagstone, or any other portion or part of any sidewalk or street, or upon any trees, lamp post, hitching post, telephone pole, telegraph pole, hydrant, bridge, or upon any other structure within the limits of any street within the City of Miami, except by and with the permission of the City Commission, and no person shall paint, paste, print or mail any banner sign, handbill, advertisement, or notice of any kind, or cause the same to be done, upon any private wall, window, door, gate, fence, advertising board or sign, or upon any other private structure or building, unless he is the owner or lessee or has the permission of such owner or such lessee of such wall, window, door, fence, gate, advertising board, or sign, or other private building or structure, except legal notices required by law to be so posted.

Sec. 4707. CONSTRUCTION OF POSTER BOARDS. All bulletin and poster boards upon open lots and larger than sixty (60) square feet in area, shall be constructed with good skeleton frame, built of not less than two-inch stock, and shall be well supported and braced. Such upright supports shall be not less than four by four (4x4) inches, and the braces not less than two by four (2x4) inches in size, with the exception that where steel frames are used, the size shall be of strength equal to the wood frames specified. The top of such bulletin and poster boards shall not extend over twenty (20) feet above the ground level, exclusive of ornamentation. Such bulletin and poster boards shall be so constructed as to withstand a wind pressure of thirty-five (35) pounds for each square foot of surface exposed.

Sec. 4708. PROJECTION SIGNS. (a) Weight of signs. No projecting sign of any class mentioned or described shall have a greater weight than six hundred (600) pounds, except vertical signs, the weight of which shall not exceed one thousand (1000) pounds.

(b) Non-illuminated and Reflector Signs. Non-illuminating signs or signs designed to be illuminated by means of light reflected upon them from a source outside of the main body of the sign, may have an area not to exceed twenty-four (24) square feet and a maximum projection of not over five (5) feet from the building line. Guy wires shall not extend more than ten (10) feet from the base of the building to which they are fastened.

(c) Horizontal Signs. No horizontal signs of any description (other than signs across streets, or elsewhere herein provided for) shall have an area to exceed seventy-two (72) square feet or a maximum projection of more than eleven (11) feet six (6) inches from the building line. Guy wires shall not extend more than ten (10) feet from the face of the building to which they are fastened.

(d) Vertical Signs. Vertical signs, either illuminated or non-illuminated, may exceed the areas given above, providing they do not project more than five (5) feet from the building line or property wall, or above the coping of that part of the building to which they are attached.

(e) Location of Signs. All projecting signs of any kind shall be erected in such position that the lower edge shall be at least eight (8) feet above the grade of the sidewalk, or twelve (12) feet above the grade of the alley, as the case may be, and in no event shall the inner edge of any sign be more than eighteen (18) inches from the building wall or property line nor the outer edge more than eleven feet six inches (11'-6") from the building; provided, in case any such sign shall project beyond the curb, the lower edge thereof shall not be less than fifteen (15) feet above the street level. No projecting sign shall project, in any case, within the following distance of any power carrying cable:

The distance of any part of a sign, to an electrical overhead conductor, where the difference of potential between any two conductors,

or between one of the conductors and earth, does not exceed 750 volts, shall not be less than eighteen (18) inches.

Where the difference of potential is in excess of 750 volts, the difference between such conductor and the outer edge or any other part of a sign shall not be less than four (4) feet.

(f) Construction. All projecting signs projecting more than five (5) feet from the building wall or property line shall be constructed of metal or other non-combustible material, but may have border moulding, letter, or other trim of wood securely fastened to such body. Other type of signs may use wood trim, letters or ornaments if securely fastened to body of the sign, and not closer than two inches to nearest lamp or receptacle. No sheet metal shall be used in the construction of any sign unless galvanized or equally protected against corrosion, and no sheet metal lighter than 30 U. S. gauge shall be used in any parts of any such sign.

(g) All projecting electric signs shall be provided with a sufficient number of drainage holes of not less than one-fourth ( $\frac{1}{4}$ ) inch to prevent collection of moisture inside.

(h) Flat Electric Signs. All parts of any such electric signs, whether of exterior or interior illumination, shall be of metal or other non-combustible material, excepting that other material may be used for trim, letters or ornamentation, if placed at least two inches from any lamp, receptacle or current carrying wire. No such electric sign which is attached and placed parallel with the face of walls of the building shall have a greater area than one hundred (100) square feet, and no part thereof shall extend more than twenty (20) inches from the wall.

Sec. 4709. ROOF SIGNS. All roof bulletin boards and poster boards having the bottom edge placed twenty-five (25) feet or more above the ground or grade level and all other roof bulletin boards shall be made of metal or other non-combustible materials except the bend, columns, or crown moulding that is placed around the outer border or such bulletin board or poster boards, or ornaments thereon, which may be of wood and where such sign exceeds one hundred and fifty (150) square feet in area, it shall be constructed of galvanized iron surface made into sections and placed upon fabricated steel frame.

(a) No roof bulletin board or poster board shall be placed so that the face of the sign shall extend beyond the outer wall of such building, nor shall the top of said bulletin board or poster board be a greater distance than twenty-five (25) feet above the average height of said roof of building on which it may be located.

Sec. 4710. ELECTRIC ROOF SIGNS. All roof electric signs may have electric characters, letterings, or illustrations thereon. In no case shall less than fifty (50) per cent of such electric sign be of any other than open work construction, except such signs having an area of less than two hundred fifty (250) square feet, and in no case shall such sign be permitted to extend more than twenty-five (25) feet above the roof of the building on which it may be located.

(a) No roof bulletin or poster board or roof sign shall be so constructed that it shall have a clearance between supports and beneath the lower edge of sign of less than six (6) feet on buildings of over three (3) stories. On buildings of three stories and under, this clearance may be two (2) feet or more.

Sec. 4711. IMPRINT, OWNER'S OR MAKER'S NAME. Signs of every class must carry the imprint of the manufacturer or producer in clearly legible letters either as an imprint board above the sign, or applied in the border there of in color or by metal tag.

#### CHAPTER 48.

### **ELEVATORS, ESCALATORS, DUMBWAITERS; CONSTRUCTION AND MAINTENANCE**

Sec. 4801. GENERAL. In addition to the requirements of this Chapter, the construction, alteration, use and maintenance of all elevators, escalators and dumbwaiters shall comply with the requirements of "Safety Code for Elevators" recommended by the American Standards Association 1925 Edition and its subsequent editions and amendments.

In addition to the above requirements and subject to the inspection and approval of the Electrical Inspector of the City of Miami, the installation of any and all electric wiring apparatus or appliance and power for all elevators, escalators and dumbwaiters shall comply with the requirement of the "National Electrical Code," 1935 Edition effective November 1, 1935, and its subsequent editions and amendments.

Elevators and escalators shall not be included in the calculation of the number of stairways required in this Code.

Stairways shall abutt on not more than one side of an elevator enclosure.

Walls and partitions of shafts and chutes and openings therein shall comply with the requirements of Chapter 30.

Not more than two (2) elevators shall be allowed in one enclosure. Not less than one-hour fire-resistive construction shall be required between banks of two elevators.

Sec. 4802. DEFINITIONS. The term "elevator" as used in this Code shall include all elevators, escalators or lifts used for carrying passengers or freight. The term "dumbwaiter" shall include such special form of elevator, the dimensions of which do not exceed six (6) square feet in horizontal section and four (4) feet in height, and which is used for the conveyance of small packages and merchandise.

Any *hand power elevator* having a rise of more than thirty-five (35) feet shall comply with all the requirements of this section. No belt elevators driven from a countershaft shall be installed for passenger service.

Sec. 4803. Before any elevator shall hereafter be installed or altered in any building, the owner shall submit, on appropriate blanks

furnished therefor, to the Building Inspector an application in triplicate stating the construction and mode of operation of such elevator to be installed or altered, accompanied by such plans and drawings as may be necessary, and shall obtain his approval therefor. Before any such elevator shall be put into service, the same shall have been duly tested and inspected by the Building Inspector and a certificate of inspection and approval obtained. In making any change or alterations to elevator shafts, rails, overhead machinery or power, all the work changed or altered shall be made to conform to these regulations.

Sec. 4804. CARRYING CAPACITY. The owner of any elevator now in operation and the manufacture of any such elevator hereafter placed in any building, shall cause to be fastened in a conspicuous place in said elevator, a metal plate having suitable raised letters on same which shall designate the number of pounds which said elevator shall be permitted to carry, but in no case shall a carrying capacity of less than one hundred (100) pounds per square foot of platform area inside the car be permitted on any passenger elevator.

Sec. 4805. OPERATOR. Every elevator, except full automatic push button elevators, shall be in charge of a competent, reliable operator not less than eighteen years of age, who shall have had at least one week's experience in running an elevator under the constant supervision of a person who has received a certificate of competency as an elevator operator.

Sec. 4806. CERTIFICATE OF COMPETENCY. No person shall run any passenger or freight elevator in the City of Miami unless he shall first register at the office of the Department of Buildings, his name and residence, also the location of the building in which he is to perform such service and shall first receive from the Building Inspector a certificate of competency.

Sec. 4807. DOORS AND THEIR CONTROL. Not more than one door in the elevator shaft shall be allowed on each floor, and all openings in the several stories shall be one above the other, except where the operating device of the elevator is so placed that the operator can readily control all doors without leaving the car control, in which case more than one door opening may be permitted on a floor.

All elevators hereafter installed in vertical shafts shall be controlled by some mechanical device that will automatically prevent the car being moved until the shaft door or gate at which the car is standing is shut and securely fastened; and which will prevent any of its gates or doors being moved until the shaft door or gate at which the car is standing shall be locked or bolted, all in such a manner as to permit opening only by the operator of the car.

Sec. 4808. COUNTERWEIGHTS. All counterweights shall have their sections strongly bolted together. There shall be not less than three (3) feet clearance between the top of counterweights and the under side of overhead beams when the car is resting on the bumpers. No continuous forged straps shall be permitted on counterweights.



Sec. 4809. CARS. Elevator cars shall be constructed of incombustible materials, except that flooring may be of hardwood. There shall be not more than one and one quarter ( $1\frac{1}{4}$ ) inches space between the floor of the car and the floor saddles, and where the saddles project into the shaft the same shall be properly leveled on the under side. The under side of the car shall be of incombustible materials. Cars for all elevators shall be properly lighted.

Sec. 4810. GUIDE RAILS. All guide rails for both car and counterweights shall be of steel, and shall be bolted to the sides of the shaft with steel or cast iron brackets, so spaced that the guide rails will be rigid. The splices in the rails shall be located as near such rigid supports as possible and elevators with a travel-speed not exceeding one hundred (100) feet per minute may be installed with guide rails for car and counterweights, made of suitable hardwood.

Sec. 4811. FREIGHT AND PASSENGER COMBINATION PROHIBITED. No passenger elevator shall be permitted to have a freight compartment attached to it in any manner.

Sec. 4812. GRATING AT TOP OF SHAFT. Immediately under the sheaves at the top of every elevator shaft in any building, there shall be provided a concrete slab of substantial grating of steel having not more than one (1) inch space between the members of said grating, and of such construction as shall be approved by the Building Inspector.

Sec. 4813. OPENINGS AND CLEARANCE; TOP AND BOTTOM OF SHAFT. A clear space of not less than three (3) feet shall be provided between the bottom of the shaft and the lowest point of the underside of the car floor when the car is at its lowest landing; and between the top of the cross head of the car and the underside of the overhead grating when the car is at its top landing; except that this latter space shall not be less than five (5) feet for elevators having a speed in excess of three hundred fifty (350) feet per minute, and may be reduced to two (2) feet for elevators having a total rise of not exceeding thirty (30) feet and a speed not exceeding one hundred (100) feet per minute.

Sec. 4814. MACHINERY ENCLOSURE. All parts of the elevator machinery shall be enclosed by suitable partitions of incombustible materials, and such enclosures shall be lighted. Free and safe access shall be provided to all parts of the elevator machinery. Where the machine is located at the bottom of the shaft it shall be protected with a substantial pit pan.

Sec. 4815. BUFFER. At the top and bottom of all elevator shafts there shall be placed substantial buffer springs for car and counterweights.

Sec. 4816. LIVE LOADS. The carrying beams and other supports for all machinery shall be of steel designed for double the live loads to be supported.

Sec. 4817. **EMERGENCY EXITS.** Every passenger elevator shall have a trap door in the top of the car of such a size as to afford easy egress for passengers, or where two cars are in the same shaft such means of egress may be provided in the side of each car.

Sec. 4818. **NIGHT SERVICE.** In every building exceeding one hundred (100) feet in height, at least one passenger elevator shall be kept in readiness for immediate use by the fire department during all hours of the night and day, including holidays and Sundays.

Sec. 4819. **SPEED AND SAFETY DEVICES.** It shall be unlawful to use any elevator that is not provided with safety devices for bringing the elevator car to rest without serious injury to passengers or operators whenever it may for any reason exceed its rated speed by more than forty per cent, or reach a speed of eight hundred fifty (850) feet per minute. Safety devices are not required upon the plunger type of elevators, nor upon sidewalk elevators which travel less than thirty (30) feet.

Sec. 4820. **INSPECTIONS.** The Building Inspector shall cause an inspection of elevators carrying passengers or employees to be made at least once every three (3) months, and shall require any necessary repairs to be made promptly by the owner. If the Building Inspector at any time considers an elevator to be unsafe, he may require its operation to cease until such repairs or alterations have been made as will, in his judgment, produce safety. In lieu of such inspection by his own Department, the Building Inspector may accept the report of inspections made by other reliable and properly constituted authorities which in his judgment are competent and satisfactory.

The Building Inspector shall issue and enforce such other regulations regarding the construction, erection, operation or repair of elevators as he may consider necessary to insure safety.

#### CHAPTER 49.

### **AWNINGS, AWNING-SHUTTERS, ROLLER-CURTAINS, CANOPIES AND TENTS**

#### **Construction, Permits Required and Permissible Use**

Sec. 4901. **AWNINGS.** No awning, awning-shutter, roller-curtain, detachable canvas or other cloth protection, canopy or tent shall hereafter be constructed or erected in the City of Miami, contrary to the provisions of this Code, or which do not conform to the requirements of this chapter, and to the Zoning Code of the City of Miami. Construction permitted by Section 4906 over public sidewalks, streets, alleys or other public places may be erected only upon a revocable permit issued by the Building Inspector.

Nothing contained in this section shall prohibit the enforcement of Ordinance No. 750 of the City of Miami and its subsequent amendments, "Being an ordinance governing and regulating the construction, installation, repairs and alterations of awnings, canopies and other

canvas protections in the City of Miami; providing for a license, together with the deposit of One Thousand (\$1,000.00) Dollars under certain conditions and bond thereof, and providing for a penalty for the violation of said Ordinance."

Sec. 4902. DEFINITIONS. An awning is a temporary, movable, detachable canvas or other cloth protection against sun or weather, on a folding metal frame supported entirely from the walls of a building and raised and lowered with ropes and pulleys, rollers or other mechanical devices.

AWNING SHUTTER. An awning-shutter is a movable mounted structure made of wood or metal or other rigid material which, in one position, will serve as an awning to protect a window opening from excessive sunlight, etc., and which, in a shifted position will function as a shutter to close the opening entirely in the event of a storm, or vacancy.

ROLLER. A roller curtain is a temporary, movable, detachable canvas or other cloth protection against sun or weather having a wooden or metal roller attached to its lower edge which is supported entirely by the canvas and is raised and lowered by ropes and pulleys or other mechanical devices.

STATIONARY AWNINGS. A stationary awning is a detachable canvas or other cloth protection against sun or weather on a rigid metal frame and supported entirely from the walls of a building.

CANOPY. A canopy is a temporary detachable canvas or other cloth protection against the sun or weather, on a rigid metal frame supported entirely or in part by wooden or metal posts attached to the ground or to deck, floor or parapet of a building, except when it is apart from any building and used as a domicile, home or sleeping room for man or beast, in which case it shall be considered to be a tent.

TENT. A tent is a canvas or other cloth shelter from sun or weather supported by wooden frame or by poles, stakes and ropes or both and not attached to any building.

Sec. 4903. PERMITS. A permit must be obtained from the Building Inspector for the installation, removal, repair or alteration of any awning, stationary awning, roller curtain or canopy within the City Limits of the City of Miami, Florida, over public property, before such work is begun and all such work shall conform to the requirements of this Code. (See Section 203.) Permits for renewals or repairs will not be required provided structural framework meets requirements.

Complete plans and specifications in duplicate, when demanded, must be submitted to the Building Inspector and approved by said Building Inspector before permit is issued.

PERMITS FOR TENTS. Tents for temporary use may be pitched within the fire zones for a specified period of time only, and under such rules and regulations as the Building Division shall prescribe.

Sec. 4904. USE OF AWNINGS, STATIONARY AWNINGS, CANOPIES AND TENTS. No business of any kind or character whatsoever shall be transacted, nor shall any merchandise or other goods be stored or displayed within the area covered by an awning, stationary awning, tent or canopy except under special permit from the Building Division.

Awnings, canopies and stationary awnings with metal frames may be erected upon private property (either attached to or apart from a building) for the purpose of temporarily shading and protecting one automobile, seats, playgrounds and other personal property; except when on the same city lot where gasoline or other inflammable or combustible materials are stored and except when it comes under the classification of a TENT and except when it conflicts with Chapter 3 of this Code, and except that in no case may such shelter be used for storage of anything; and shall not be used for motor vehicles in the First and Second Fire Zones.

If an awning, canopy or stationary awning is of sufficient size to protect more than one automobile, a special permit must be obtained from the Building Division. Small awnings may be erected on filling station and other storage places for inflammables only when at a distance from storage tanks and by special permit from the Building Division.

Sec. 4905. CONSTRUCTION. (a) All canopies and stationary awnings whether on public or private property shall be equipped with rafters and corner braces of sufficient size and strength to withstand ordinary wind pressure, and in no case shall the cloth support the frame. Rafters must not be more than five (5) feet apart.

(b) All awnings, stationary awnings and canopies shall have metal frames when erected within Fire Zone No. 1 and No. 2; provided, however, that in case of canopies, the metal frame may be supported by heavy wooden posts.

(c) All awnings, stationary awnings, canopies and roller curtains shall be substantially constructed and securely fastened. The minimum construction requirements—size of pipes and frames:

#### SIZES OF PIPES AND FRAMES

Front bars not over 3' wide	_____	_____	1/2" pipe
Front bars not over 7' "	_____	5/8" iron or	3/8" pipe
Front bars not over 9' "	_____	_____	1/2" pipe
Front bars not over 14' "	_____	_____	3/4" pipe
Front bars not over 20' "	_____	_____	1" pipe

NOTE: Where 3 or more extensions are used 3/4" pipe—front bars permitted up to 20'.

One or more center arms 14' wide.

#### EXTENSIONS

Up to 2'6" extension	_____	_____	1/2" iron
Up to 3'0" "	_____	5/8" iron or	3/8" pipe
Up to 4'0" "	_____	_____	1/2" pipe
Over 4'0" "	_____	_____	3/4" pipe

### EXTENSIONS FOR CANOPIES

Up to 5'0" Extension.....	3/4" pipe
Over 6'0" to 12'0" Extension.....	1" Pipe
Over 12'0" Extension.....	1 1/4" pipe

All canopies or stationary awnings shall be laced on and no rafters or front bars in pockets.

No form or type of construction of fastening shall be used unless approved by the Building Division.

(d) When wooden or metal head rods are used to fasten awnings to face of building with expansion bolts or expansion fittings, fibre or metal expansion shields may be used but in no case will plugs be permitted. On awnings up to seven (7) feet in width head rod fastenings shall not be more than three (3) feet apart, and on awnings over seven (7) feet in width head rod fastenings shall not be more than two feet and six inches (2'6") apart.

(e) The cloth part of canopies and stationary awnings must be securely laced, tied or otherwise securely fastened to the metal frame, and in no case shall roller curtains be used to cover stationary frames of canopies or stationary awnings.

(f) No existing awnings, stationary awnings, roller curtain or canopy shall be renewed, repaired, re-erected or altered unless and until it conforms to this Chapter.

(g) All awning-shutters must be so constructed that all parts of same shall be of sufficient strength and reinforced and so constructed to enable them to be raised or lowered or otherwise operated from one position to another without danger or injury to the person so operating them or to the public.

(h) All awning-shutters shall be so constructed that where attached to a building, the construction shall be of a permanent nature and in no case considered temporary construction.

Stationary awning, awning-shutters or canopies attached to a business structure are limited in area to the floor area of the structure.

Awning permit must be secured before erecting or altering any awning, canopy, stationary awning or tent and must be shown to any City Building, Sanitary, Police, or Fire Inspector upon demand.

The same rules and regulations regarding special permits and licenses that apply to canvas construction shall also apply to awning-shutter construction.

(i) The part of this construction that fastens permanently to the building shall be of metal or other material which is not subject to any considerable decay or deterioration and this construction shall be anchored or fastened to the building with lag screws, anchor bolts, or other fastenings approved by the Building Division and considered by them practical to make permanent construction, and in no case shall these fastenings be over eighteen (18") inches apart and such fastenings should, where possible, be placed on the concrete lintel over the opening.

(j) Canvas sides and front curtains may be attached to the rigid body of an awning-shutter either for the purpose of decoration or shade but in no case shall the body of an awning-shutter be made of other than an approved rigid material.

(k) Where movable parts of an awning-shutter are fastened to the permanent header construction or to each other by means of hinges or other metal devices these hinges or other metal devices shall at all times be secured by either bolts or rivets and in no case by screws or nails.

Sec. 4906. CONSTRUCTION OVER SIDEWALKS. No canopy shall be erected on the first or street floor so that it projects over any sidewalk or other public area, except that temporary, collapsible canopies that can be removed quickly under all conditions and of construction approved by the Building Division may be erected over public property by securing special permit from the Building Division.

Awnings and stationary awnings may be erected over sidewalks under the following general conditions:

(a) The frame must be of metal.

(b) No metal part of an awning, stationary awning or roller curtain shall be less than seven feet six inches (7'6") from the top of the sidewalk and no part of the cloth shall be less than six feet six inches (6'6") from the top of the sidewalk.

(c) No awning or stationary awning shall project more than nine (9') feet from the building wall or property line, or nearer than ten (10") inches to the curb line.

(d) The front bar of an awning when it is pulled up shall not be higher than the head of the awning.

(e) Awnings shall not be equipped with slide rod except where they can be made to operate automatically. The projection shall never be greater than two times the height, and where slide rods are used, balanced arms must also be supplied.

(f) All awnings must be equipped with supporting chains or fireproof cables, one end of which fastens to the front bar, or to side arm not over six (6") inches back of front bar, and the other end of which fastens to a point just under the head of the awning but never to the headrod or headrod fastenings. Such chains and cables shall be of sufficient strength and securely enough fastened to withstand the stress of the awning being accidentally dropped when being raised or lowered and to keep the frame from going below the horizontal in case the cloth stretches, tears or burns. Balanced arms are not permitted as meeting this requirement.

(d) The projection of a stationary awning shall in no case be greater than three (3) times the height.

(h) Roller curtains over sidewalks can only be erected over sidewalks when the method of securing the bottom of curtain has been approved by the Building Division and a special permit granted.

(i) No awning-shutters can be erected over the first floor where they project over sidewalk or any public area when a special permit has been granted for said construction by the Building Inspector.

(j) All awnings, frames and covers of whatsoever nature, including canvas covers or stationary or canopy frames on store or window fronts over public sidewalks, walkways or other public thoroughfares or passageways must, as soon as such store or other premises are vacated, be removed from such position over said public spaces and stored within said vacant store or rooms or elsewhere.

## CHAPTER 50.

### PART X.

Sec. 5001. All ordinances or parts of ordinances in conflict herewith are hereby repealed.

Sec. 5002. The specifications, regulations and standards of tests and inspections which are mentioned by title and date of publication in various parts of this ordinance are hereby adopted and declared to be a part of this ordinance when not in conflict with the specific statement contained in the body of this ordinance to the contrary.

Sec. 5003. In the event any section, sub-section, sentence, clause or phrase of this ordinance shall be declared or adjudged invalid or unconstitutional, such adjudication shall in no manner affect the other sections, sub-sections, sentences, clauses or phrases of this ordinance, which shall be in full force and effect, as if the section, sub-section, sentence, clause or phrase so declared or adjudged invalid or unconstitutional was not originally a part thereof.

Sec. 5004. Any person, firm, partnership, corporation, association, or other organization, or any combination of any thereof, violating any provision of this Ordinance, shall, upon conviction, be fined by a fine not exceeding Five Hundred (\$500.00) Dollars, or imprisonment not exceeding sixty (60) days, or both such fines and imprisonment in the discretion of the Municipal Judge of the City of Miami. Each day's violation shall constitute a separate offense and shall subject such violator to be punished by a fine not exceeding Five Hundred (\$500.00) Dollars, or by imprisonment not exceeding sixty (60) days or by both such fine and imprisonment.

Sec. 5005. This ordinance is hereby declared to be an emergency measure on the ground of urgent public need for the preservation of peace, health, and safety and property of the City of Miami, Florida.

Sec. 5006. The reading of this ordinance on two separate days is dispensed with by a four-fifths vote of this Commission.

PASSED AND ADOPTED THIS 4TH DAY OF AUGUST, A. D. 1936.

A. D. H. FOSSEY,

MAYOR.

Attest: FRANK J. KELLY,  
CITY CLERK.

## APPENDIX.

Sec. 5002. The following list includes all the documents included in the Uniform Building Code in the order in which they occur. The S. D. reference at the end of each document name refers to the book Specification Documents:

NOTE: Wherever mention is made in this code, to the following specifications, it is intended to mean "and its subsequent editions."

1. ~~Suggested Ordinances Regulating the Use, Handling, Storage and Sale of Flammable Liquids and the Products Thereof, adopted by the National Fire Protection Association, May, 1926; reprint of 1929. (S. D. page 373).~~
2. Standard Methods of Testing Brick, A. S. T. M. Designation C-67-31 amended by C67-35 of the American Society for Testing Materials. (S. D. page 129).
3. Standard Specifications for Building Brick, A. S. T. M. Designation C62-30 amended by C61-35T of the American Society for Testing Materials. (S. D. page 119).
4. Standard Specifications for Sand-Lime Building Brick, A. S. T. M. Designation C73-30 of the American Society for Testing Materials. (S. D. page 127).
5. Standard Specifications for Concrete Building Brick, A. S. T. M. Designation C55-34 of the American Society for Testing Materials. (S. D. page 121).
6. Standard Specifications for Tests of Concrete Block or Tile, Serial Designation P-1A-29 of the American Concrete Institute. (S. D. page 139).
7. Underwriters' Laboratories' Standard for Hollow Concrete Building Units, February 21, 1929. (S. D. page 136).
8. Standard Specifications for Gypsum Partition Tile or Block, A. S. T. M. Designation C52-33 of the American Society for Testing Materials. (S. D. page 112).
9. Standard Specifications for Gypsum and Calcined Gypsum A. S. T. M. Designations C22-25 and C23-30 respectively, of the American Society for Testing Materials. (S. D. pages 95-97).
10. Tentative Specifications and Tests for Hollow Burned-clay Load-bearing Wall Tile, A. S. T. M. Designation C34-34T amended by C34-35T of the American Society for Testing Materials. (S. D. page 133).
11. Tentative Specifications for Quicklime for Structural Purposes, A. S. T. M. Designation C5-34T of the American Society for Testing Materials. (S. D. page 151).
12. Standard Specifications for Hydrated Lime for Structural Purposes, A. S. T. M. Designation C6-31 amended by 6-34T of the American Society for Testing Materials. (S. D. page 153).



## ORDINANCE NO. 1678

Passed and Adopted Jan. 27th, 1937.

That there is hereby created and established a Board of Appeals consisting of three members; one of whom shall be the Chief Building Inspector of the City of Miami, and the remaining members to be composed of Master Builders, Structural Engineers, and/or Architects of at least ten years experience, to be appointed by the City Manager of the City of Miami. That the said Board shall have power and are hereby authorized to hear any person, persons, firm, partnership or corporation not satisfied with any decision of the Building Inspector in regard to the condemnation of any building, buildings, or structures, as provided for in this Ordinance; that such appeal of any person, persons, firm, partnership or corporation shall be made to the Board of Appeals within five days after the final decision of the Building Inspector as provided for in this Ordinance; and the decision of such Board shall be final; further, the Board is given power and authority to make rules and regulations governing the conducting of such hearings as to time and place for any person, persons, firm, partnership or corporation, appealing to such Board for a review from the decision of the Building Inspector. Expense of such hearing to be borne by the City of Miami after approval by proper officers of the City.

(EDITOR'S NOTE: Ordinance No. 1678 adds the above as a new 9th paragraph to Sec. 301).

## ORDINANCE No. 2568

AN ORDINANCE AMENDING SECTION 1601, CHAPTER 16, PART IV OF ORDINANCE NUMBER 1554; PROVIDING FOR THE ADDITION OF CERTAIN REAL ESTATE WITHIN THE SECONDARY FIRE ZONE; PROVIDING PENALTIES FOR THE VIOLATION OF THE PROVISIONS OF THE ORDINANCE; REPEALING ALL LAWS IN CONFLICT; DECLARING AN EMERGENCY TO EXIST; AND DISPENSING WITH THE REQUIREMENT OF READING THE ORDINANCE ON TWO SEPARATE DAYS BY A FOUR-FIFTHS VOTE OF THE MEMBERS OF THE COMMISSION.

WHEREAS, the Planning Board of The City of Miami, at a meeting held September 2, 1941, unanimously passed and adopted Resolution Number 771, recommending the adoption of an ordinance amending the Building Code of The City of Miami by placing an area in Coconut Grove within the secondary fire zone, thus prohibiting the erection of new frame structures therein, upon the ground that the amendment, if adopted, will be beneficial to the general city plan:

NOW, THEREFORE, BE IT ORDAINED BY THE COMMISSION OF THE CITY OF MIAMI:

Section 1. That Section 1601, Chapter 16, Part IV of Ordinance Number 1554, otherwise known as the Building Code of The City of Miami, be, and it is hereby, amended by including an additional area of land within the secondary fire zone, and which is described as follows:

All of Percival & Sanford Revised, a subdivision according to the plat thereof recorded in Plat Book 1, Page 140 of the Public Records of Dade County, Florida;

All of McFarlane Homestead Plat, a subdivision according to the plat thereof recorded in Plat Book 5, Page 81 of the Public Records of Dade County, Florida;

All of St. Alban's Park, a subdivision according to the plat thereof recorded in Plat Book 4, Page 173 of the Public Records of Dade County, Florida;

South One-Half (S $\frac{1}{2}$ ) of Block 5, and all of Blocks 6, 15, 16, 24, 25, 26, 27 and Lots 11 to 20, both inclusive, of Block 28, and all of Blocks 29, 30, 31, 32, 33, 34, 35 and 38, and Lots 1 to 24, both inclusive, and Lots A and F, all of Block 36; Lots 1 to 12, both inclusive, Block 37, and Lots 2 to 4 and 6 to 11, inclusive, Block 40, all of Frow Homestead Amended, a subdivision according to the plat thereof recorded in Plat Book "B" at Page 106 of the Public Records of Dade County, Florida;

All of DeHedowville, a subdivision according to the plat thereof recorded in Plat Book "B", Page 150 of the Public Records of Dade County, Florida.

Section 2. That any person, persons, firms, corporations, associations or co-partnerships violating any of the provisions of this ordinance shall be punished by a fine not exceeding \$500.00 or by imprisonment

not exceeding 6 days, or by both such fine and imprisonment, within the discretion of the Municipal Judge.

Section 3. That all ordinances or parts of ordinances in conflict herewith are hereby, repealed, insofar as there is conflict.

Section 4. That this ordinance is hereby declared to be an emergency measure upon the ground of urgent public need for the preservation of peace, health, safety or property of the people of the City of Miami, Florida.

Section 5. That the requirement of reading this ordinance on two separate days is hereby dispensed with by a four-fifths vote of the members of the Commission.

PASSED AND ADOPTED this 8th day of October, A. D. 1941.

C. H. REEDER,  
Mayor.

ATTEST:

FRANK J. KELLY,  
City Clerk.

# Revised Building Permit Fees

PAGES 7, 8 & 9 - MIAMI BUILDING CODE      AUGUST 1, 1945

## ORDINANCE NO. 2972

An Ordinance to amend Section 203 of Chapter 1 of Ordinance No. 1554, passed and adopted the 4th day of August, 1936, and entitled, "An Ordinance Regulating the Erection, Construction, Removal, Enlargement, Alteration, Repairing, Moving, Demolition, Conversion, Occupancy, Equipment, Use, Height, Area and Maintenance of Building and/or Structures, including Signs, Billboards, Poster Boards, Awnings, Awning-Shutters, Stationary Awnings, and Canopies in the City of Miami, Florida: Providing for the issuance of Permits and collection of Fees therefor; Declaring and establishing Fire Zones or Districts; Providing for the removal or making safe of Condemned Buildings or Structures and for the abatement or removal of Nuisances and further providing for Liens for Expenses incurred and for the recovery of such Expenditures; Providing for the temporary and permanent occupancy of Public Property for certain uses under specified conditions and regulations; Creating a Board of Review and Appeal and providing for its Appointment, Qualification, Duties and Powers; Adopting and approving certain Specifications, Regulations and Standards of Tests and Inspections by Specific Reference; Providing for the enforcement of certain other Ordinances or Parts of Ordinances of the City of Miami by Specific Reference; Repealing specifically Ordinance Numbers 299, 313, 327 and 342, City Council Series of the City of Miami, Florida; and repealing specifically Ordinance Numbers 121, 187, 271, 421, 617, 618, 685, 690, 879, 940, 984, 986, 1003, 1011, 1144, 1159, 1175, 1233 and 1342, City Commission Series of the City of Miami, Florida; And repealing all other Ordinances or Parts of Ordinances in conflict herewith; Providing for Penalties for the violation thereof; Providing that in the event any Section, Sub-Section, Sentence, Clause, or Phrase of this Ordinance shall be declared or adjudged invalid or unconstitutional, such adjudication or invalidity shall in no manner affect the other Sections, Sub-Sections, Sentences, Clauses or Phrases of this Ordinance;" and repealing all Laws in conflict.

BE IT ORDAINED BY THE COMMISSION OF THE CITY OF MIAMI:

Section 1. That Section 203 of Chapter I of Ordinance No. 1554, passed and adopted the 4th day of August, 1936, being an Ordinance entitled, "AN ORDINANCE REGULATING THE ERECTION, CONSTRUCTION, REMOVAL, ENLARGEMENT, ALTERATION, REPAIRING, MOVING, DEMOLITION, CONVERSION, OCCUPANCY, EQUIPMENT, USE, HEIGHT, AREA AND MAINTENANCE OF BUILDING AND/OR STRUCTURES, INCLUDING SIGNS, BILLBOARDS, POSTER BOARDS, AWNINGS, AWNING-SHUTTERS, STATIONARY AWNINGS, AND CANOPIES IN THE CITY OF MIAMI, FLORIDA; PROVIDING FOR THE ISSUANCE OF PERMITS AND COLLECTION OF FEES THEREFOR; DECLARING AND ESTABLISHING FIRE ZONES OR DISTRICTS; PROVIDING FOR THE REMOVAL OR MAKING SAFE OF CONDEMNED BUILDINGS OR STRUCTURES AND FOR THE ABATEMENT OR REMOVAL OF NUISANCES AND FURTHER PROVIDING FOR LIENS FOR EXPENSES INCURRED AND FOR THE RECOVERY OF SUCH EXPENDITURES; PROVIDING FOR THE TEMPORARY AND PERMANENT OCCUPANCY OF PUBLIC PROPERTY FOR CERTAIN USES UNDER SPECIFIED CONDITIONS AND REGULATIONS; CREATING A BOARD OF REVIEW AND APPEAL AND PROVIDING FOR ITS APPOINTMENT, QUALIFICATION, DUTIES AND POWERS; ADOPTING AND APPROVING CERTAIN SPECIFICATIONS, REGULATIONS AND STANDARDS OF TESTS AND INSPECTIONS BY SPECIFIC REFERENCE; PROVIDING FOR THE ENFORCEMENT OF CERTAIN OTHER ORDINANCES OR PARTS OF ORDINANCES OF THE CITY OF MIAMI BY SPECIFIC REFERENCE; REPEALING SPECIFICALLY ORDINANCE NUMBERS 299, 313, 327 and 342, CITY COUNCIL SERIES OF THE CITY OF MIAMI, FLORIDA; AND REPEALING SPECIFICALLY ORDINANCE NUMBERS 121, 187, 271, 421, 617, 618, 685, 690, 879, 940, 984, 986, 1003, 1011, 1144, 1159, 1175, 1333 and 1342, CITY COMMISSION SERIES OF THE CITY OF MIAMI, FLORIDA; AND REPEALING ALL OTHER ORDINANCES OR PARTS OF ORDINANCES IN CONFLICT HERewith; PROVIDING FOR PENALTIES FOR THE VIOLATION THEREOF; PROVIDING THAT IN THE EVENT ANY SECTION, SUB-SECTION, SENTENCE, CLAUSE OR PHRASE OF THIS ORDINANCE SHALL BE DECLARED OR ADJUDGED INVALID OR UNCONSTITUTIONAL, SUCH ADJUDICATION OR INVALIDITY SHALL IN NO MANNER AFFECT THE OTHER SECTIONS, SUB-SECTIONS, SENTENCES, CLAUSES OR PHRASES OF THIS ORDINANCE," be, and the same is hereby, amended to read as follows, to-wit:

"Section 203. FEES. Any person desiring a building permit shall, in addition to filing an application therefor, pay to the City of Miami, Florida, before such permit is issued, a fee as required in this section, based on the estimated cost of construction, as follows:

<b>NEW BUILDING AND/OR ADDITIONS:</b>	
Up to \$200.00 . . . . .	\$ 2.50
\$201.00 to \$1,000.00 . . . . .	5.00
For each additional \$1,000.00 or fraction thereof . . . . .	2.00
(This includes Pile Driving, Seawalls, and Swimming Pools)	
<b>ALTERATIONS, REMODELING AND/OR AIR-CONDITIONING:</b>	
Up to \$1,000.00 . . . . .	2.50
For each additional \$1,000.00 or fraction thereof . . . . .	2.00
<b>GENERAL REPAIRS, ROOFING, AND/OR PAINTING:</b>	
From \$50.00 up to \$1,000.00 . . . . .	2.00
Each additional \$1,000.00 or fraction thereof . . . . .	2.00
<b>SIGNS, BILLBOARDS, AND/OR POSTER BOARDS:</b>	
Up to \$500.00 . . . . .	1.00
Each additional \$500.00 or fraction thereof . . . . .	1.00
<b>AWNINGS AND/OR CANOPIES:</b>	
Each awning over city property . . . . .	1.00
Each canopy, any location . . . . .	1.00
<b>CIRCUS, CARNIVAL, OR GOSPEL TENTS:</b>	
Each tent . . . . .	2.50
<b>HOUSE MOVING:</b>	
Houses having up to 5 rooms . . . . .	5.00
Houses having over 5 rooms . . . . .	10.00
Houses having floor area of more than 1,000 sq. ft., 1st floor	10.00
<b>PROPERTY LINE FENCES:</b>	
Each fence . . . . .	1.00
<b>DEMOLITIONS:</b>	
Each structure demolished, for each \$1,000.00 or fraction thereof . . . . .	1.00
<b>CONCRETE AND/OR HARD SURFACED WALKS, DRIVEWAYS, PAVING, ETC., ON PRIVATE PROPERTY:</b>	
Per \$1,000.00 or fraction thereof . . . . .	1.00
<b>ELEVATOR INSTALLATIONS:</b>	
Each elevator installed or replaced . . . . .	5.00

Ord. # 3971  
Page 336

The City of Miami, the County of Dade, the State of Florida, and the United States of America, shall be exempt from the paying of any fee for any building permit. Permit for any such work shall be issued by the Building Inspector, on the approved form and marked "no charge." Churches and charitable organizations may be exempt from permit fees upon approval by the Building Inspector and Director of Public Service, provided the proposed work is done only on structures relating to religious or charitable affairs. However, nothing in this section shall exempt the above from procuring permits from the Building Department on the blanks provided therefor.

Application for building permits shall furnish an estimate of the cubic contents of the building as a basis for determining the proper fee to be charged. The cubic contents shall be taken as the area of the building in square feet multiplied by the height in feet, taking the

height from the grade level or cellar or basement floor to the average height of the roof.

The estimated cost of any building shall be determined by the cost per cubic foot as given in the following table:

GROUP	TYPE	COST PER CU. FT.	GROUP	TYPE	COST PER CU. FT.
A	I	\$.47	F	I	\$.54
B	I	.47		II	.40
	II	.37		III	.37
	III	.34		IV	.14
C	I	.54		V	.27
	II	.40	G	I	.34
	III	.37		II	.23
	IV	.14		III	.20
	V	.27		IV	.14
D	I	.68		V	.14
	II	.54	H	I	.75
	III	.50		II	.54
	IV	.27		III	.54
	V	.40		IV	.40
E	I	.34		V	.34
	II	.23	I	I	.81
	III	.20		II	.68
	IV	.14		III	.40
	V	.14		IV	.34
J	I	.34		V	.27
	II	.27	J	I	.34
	III	.14		II	.27
	IV	.07		III	.14
	V	.07		IV	.07
				V	.07

See Ord. # 4049  
Page 305A-305B-305C

Where work for which a permit is required by this ordinance is started or proceeded with prior to obtaining said permit, the fees above specified shall be doubled, but the payment of such double fee shall not relieve any persons from fully complying with the requirements of this ordinance in the execution of the work nor from any other penalties prescribed herein.

The Building Inspector shall keep a permanent, accurate account of all fees collected and received under this ordinance and give the name of the persons upon whose account the same were paid, the date and the amount thereof, together with the location of the building or premises to which they relate,"

Section 2. That all laws or parts of laws in conflict herewith be, and the same are hereby repealed, insofar as there is conflict.

PASSED AND ADOPTED this 1st day of August, A. D. 1945.

PERRINE PALMER, JR., Mayor

ATTEST: FRANK J. KELLY, City Clerk.

## ORDINANCE NO. 4049

AN ORDINANCE TO AMEND ORDINANCE NO. 2972 PASSED AND ADOPTED AUGUST 1, 1945, ENTITLED, "AN ORDINANCE TO AMEND SECTION 203 OF CHAPTER 1 OF ORDINANCE NO. 1554, PASSED AND ADOPTED THE 4TH DAY OF AUGUST, 1936, AND ENTITLED, 'AN ORDINANCE REGULATING THE ERECTION, CONSTRUCTION, REMOVAL, ENLARGEMENT, ALTERATION, REPAIRING, MOVING, DEMOLITION, CONVERSION, OCCUPANCY, EQUIPMENT, USE, HEIGHT, AREA AND MAINTENANCE OF BUILDING AND/OR STRUCTURES, INCLUDING SIGNS, BILLBOARDS, POSTER BOARDS, AWNINGS, AWNING-SHUTTERS, STATIONARY AWNINGS, AND CANOPIES IN THE CITY OF MIAMI, FLORIDA; PROVIDING FOR THE ISSUANCE OF PERMITS AND COLLECTION OF FEES THEREFOR; DECLARING AND ESTABLISHING FIRE ZONES OR DISTRICTS; PROVIDING FOR THE REMOVAL OR MAKING SAFE OF CONDEMNED BUILDINGS OR STRUCTURES AND FOR THE ABATEMENT OR REMOVAL OF NUISANCES AND FURTHER PROVIDING FOR LIENS FOR EXPENSES INCURRED AND FOR THE RECOVERY OF SUCH EXPENDITURES; PROVIDING FOR THE TEMPORARY AND PERMANENT OCCUPANCY OF PUBLIC PROPERTY FOR CERTAIN USES UNDER SPECIFIED CONDITIONS AND REGULATIONS; CREATING A BOARD OF REVIEW AND APPEAL AND PROVIDING FOR ITS APPOINTMENT, QUALIFICATION, DUTIES AND POWERS; ADOPTING AND APPROVING CERTAIN SPECIFICATIONS, REGULATIONS AND STANDARDS OF TESTS AND INSPECTIONS BY SPECIFIC REFERENCE; PROVIDING FOR THE ENFORCEMENT OF CERTAIN OTHER ORDINANCES OR PARTS OF ORDINANCES OF THE CITY OF MIAMI BY SPECIFIC REFERENCE; REPEALING SPECIFICALLY ORDINANCE NUMBERS 299, 313, 327 and 342, CITY COUNCIL SERIES OF THE CITY OF MIAMI, FLORIDA; AND REPEALING SPECIFICALLY ORDINANCE NUMBERS 121, 187, 271, 421, 617, 618, 685, 690, 879, 894, 940, 986, 1003, 1011, 1144, 1159, 1175, 1333 and 1342, CITY COMMISSION SERIES OF THE CITY OF MIAMI, FLORIDA; AND REPEALING ALL OTHER ORDINANCES OR PARTS OF ORDINANCES IN CONFLICT HEREWITH; PROVIDING FOR PENALTIES FOR THE VIOLATION THEREOF; PROVIDING THAT IN THE EVENT ANY SECTION, SUB-SECTION, SENTENCE, CLAUSE, OR PHRASE OF THIS ORDINANCE SHALL BE DECLARED OR ADJUDGED INVALID OR UNCONSTITUTIONAL, SUCH ADJUDICATION OR INVALIDITY SHALL IN NO MANNER AFFECT THE OTHER SECTIONS, SUB-SECTIONS, SENTENCES, CLAUSES OR PHRASES OF THIS ORDINANCE'; AND REPEALING ALL LAWS IN CONFLICT" BY CHANGING THE SCHEDULE OF ESTIMATED COST SET FORTH IN SECTION 1 THEREOF, BEING SECTION 203 OF CHAPTER 1 OF ORDINANCE NO. 1554 AS AMENDED, IN ORDER THAT SUCH ESTIMATED COSTS MORE NEARLY CONFORM TO AC.



TUAL INCREASED BUILDING COSTS; AND REPEALING ALL LAWS IN CONFLICT HEREWITH.

WHEREAS, since the adoption of Ordinance No. 2972 on August 1, 1945, actual building costs have increased, and

WHEREAS, it is desirable that the estimated cost of any building as reflected by the schedule of estimated cost set forth in Section 1 of such ordinance, being Section 203 of Chapter 1 of Ordinance No. 1554, should more nearly conform to actual building costs since such increases,

NOW, THEREFORE, BE IT ORDAINED BY THE COMMISSION OF THE CITY OF MIAMI, FLORIDA:

Section 1. That Section 1 of Ordinance No. 2972, passed and adopted August 1, 1945, being entitled,

"AN ORDINANCE TO AMEND SECTION 203 OF CHAPTER 1 OF ORDINANCE NO. 1554, PASSED AND ADOPTED THE 4TH DAY OF AUGUST, 1936, AND ENTITLED, 'AN ORDINANCE REGULATING THE ERECTION, CONSTRUCTION, REMOVAL, ENLARGEMENT, ALTERATION, REPAIRING, MOVING, DEMOLITION, CONVERSION, OCCUPANCY, EQUIPMENT, USE, HEIGHT, AREA AND MAINTENANCE OF BUILDING AND/OR STRUCTURES, INCLUDING SIGNS, BILLBOARDS, POSTER BOARDS, AWNINGS, AWNING-SHUTTERS, STATIONARY AWNINGS, AND CANOPIES IN THE CITY OF MIAMI, FLORIDA; PROVIDING FOR THE ISSUANCE OF PERMITS AND COLLECTION OF FEES THEREFOR; DECLARING AND ESTABLISHING FIRE ZONES OR DISTRICTS; PROVIDING FOR THE REMOVAL OR MAKING SAFE OF CONDEMNED BUILDINGS OR STRUCTURES AND FOR THE ABATEMENT OR REMOVAL OF NUISANCES AND FURTHER PROVIDING FOR LIENS FOR EXPENSES INCURRED AND FOR THE RECOVERY OF SUCH EXPENDITURES; PROVIDING FOR THE TEMPORARY AND PERMANENT OCCUPANCY OF PUBLIC PROPERTY FOR CERTAIN USES UNDER SPECIFIED CONDITIONS AND REGULATIONS; CREATING A BOARD OF REVIEW AND APPEAL AND PROVIDING FOR ITS APPOINTMENT, QUALIFICATION, DUTIES AND POWERS; ADOPTING AND APPROVING CERTAIN SPECIFICATIONS, REGULATIONS AND STANDARDS OF TESTS AND INSPECTIONS BY SPECIFIC REFERENCE; PROVIDING FOR THE ENFORCEMENT OF CERTAIN OTHER ORDINANCES OR PARTS OF ORDINANCES OF THE CITY OF MIAMI BY SPECIFIC REFERENCE; REPEALING SPECIFICALLY ORDINANCE NUMBERS 299, 313, 327 AND 342, CITY COUNCIL SERIES OF THE CITY OF MIAMI, FLORIDA; AND REPEALING SPECIFICALLY ORDINANCE NUMBERS 121, 187, 271, 421, 617, 618, 685, 690, 879, 940, 984, 986, 1003, 1011, 1144, 1159, 1175, 1333 AND 1342, CITY COMMISSION SERIES OF THE CITY OF MIAMI, FLORIDA; AND REPEALING ALL OTHER ORDINANCES OR

PARTS OF ORDINANCES IN CONFLICT HEREWITH; PROVIDING FOR PENALTIES FOR THE VIOLATION THEREOF; PROVIDING THAT IN THE EVENT ANY SECTION, SUBSECTION, SENTENCE, CLAUSE, OR PHRASE OF THIS ORDINANCE SHALL BE DECLARED OR ADJUDGED INVALID OR UNCONSTITUTIONAL, SUCH ADJUDICATION OR INVALIDITY SHALL IN NO MANNER AFFECT THE OTHER SECTIONS, SUB-SECTIONS, SENTENCES, CLAUSES OR PHRASES OF THIS ORDINANCE; AND REPEALING ALL LAWS IN CONFLICT:"

be, and the same is hereby, amended in the following respects:

The Schedule of Estimated Cost set forth in such Section is hereby amended to read as follows:

Group	Type	Cost Per Cu. Ft.	Group	Type	Cost Per Cu. Ft.
A	I	\$ .70		I	\$ .80
				II	.60
			F	III	.55
B	I	.70		IV	.20
	II	.55		V	.40
	III	.50			
				I	.50
				II	.35
C	I	.80	G	III	.30
	II	.60		IV	.20
	III	.55		V	.20
	IV	.20			
	V	.40		I	1.10
				II	.90
			H	III	.80
D	I	.90		IV	.60
	II	.80		V	.50
	III	.75			
	IV	.40		I	1.20
	V	.60		II	1.00
			I	III	.60
				IV	.50
E	I	.50		V	.40
	II	.35			
	III	.30		I	.50
	IV	.20		II	.40
	V	.20	J	III	.20
				IV	.10
				V	.10

Section 2. That all laws or parts of laws in conflict herewith be, and the same are hereby, repealed.

PASSED AND ADOPTED this 19th day of July, A. D. 1950.

Effective the 18th day of August, A.D., 1950.

## ORDINANCE No. 3334

AN ORDINANCE AMENDING SECTION 2714, CHAPTER 27, PARAGRAPH (e) OF ORDINANCE NO. 1554, COMMONLY KNOWN AS THE BUILDING CODE, TO REQUIRE DETAILED SPECIFICATIONS CONCERNING CELLULAR STEEL FLOORS.

WHEREAS, Section 2714, of Chapter 27, Paragraph (e) of Ordinance No. 1554, commonly known as the Building Code, specifies "strip or sheet steel used to produce steel joists shall in no case be less than seventy-two thousandths (.0072) of an inch in thickness. The flange width of such joists shall not exceed one-half ( $\frac{1}{2}$ ) their depth," and

WHEREAS, the above specifications are vague, indefinite and of no value for Building Code use concerning Cellular Steel Floors; and

WHEREAS, many requests are being made to use Cellular Steel Floors in important buildings exceeding eight (8) stories in height:

NOW, THEREFORE, BE IT ORDAINED BY THE COMMISSION OF THE CITY OF MIAMI, FLORIDA:

Section 1. That Paragraph (e), of Section 2714, Chapter 27, Ordinance No. 1554, which reads "strip or sheet steel used to produce steel joists shall in no case be less than seventy-two thousandths (.0072) of an inch in thickness. The flange width of such joists shall not exceed one-half ( $\frac{1}{2}$ ) of their depth", shall be amended to read as follows:

"(e) Strip of sheet steel used to produce steel joists shall in no case be less than seventy-two thousandths (.0072) of an inch in thickness. The flange width of such joists shall not exceed one-half ( $\frac{1}{2}$ ) their depth.

### "CELLULAR STEEL FLOOR:

"(e-1) Construction shall consist of sheet or strip steel formed into an integrated system of parallel steel beams which combine the function of load-bearing members and a continuous deck spanning between main supporting girders, beams or walls.

"When used in fire-resistive construction, steel floors shall have minimum of two inches (2") of concrete fill on top and shall be protected with a fire-resistive ceiling suspended from the underside, meeting the specifications of the National Board of Fire Underwriters as to fire ratings.

"(e-2) The steel used in the manufacture of steel floor units shall be equal to the requirements of A.S.T.M. 'Tentative Specifications for Light Gauge Structural Quality Flat Hot-Rolled Carbon Steel', (A24542T), Grades A, B, or C.

"(e-3) The thickness of the steel used in the manufacture of steel floors shall be not less than U. S. Standard Gauge No. 18.

"(e-4) Cellular steel floors shall admit of a rational analysis, and such floor assemblies shall have been tested and certified by a recognized testing agency to substantiate stress values used.

"Flexural stress values shall not exceed 60 per cent of the yield

point specified for the grade steel permitted in subsection (e-2) of this Section.

"When plastered ceilings are suspended from steel sub-floor units, the maximum permissible deflection due to the full live load after the plaster is applied shall not exceed 1/360 of the span."

PASSED AND ADOPTED this 4th day of June, A. D., 1947.

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*Mayor.*

ATTEST:

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*City Clerk.*

## ORDINANCE No. 3703

AN ORDINANCE TO AMEND THE FOLLOWING SECTIONS AND CHAPTERS OF ORDINANCE NO. 1554, OTHERWISE KNOWN AS THE BUILDING CODE OF THE CITY OF MIAMI, FLORIDA, TO-WIT: CHAPTER 2 (GENERAL PROVISIONS SEC. 201 (APPLICATION FOR PERMIT); CHAPTER 18 (TYPE I BUILDINGS) SEC. 1804 (FOUNDATIONS); CHAPTER 19 (TYPE II BUILDINGS) SEC. 1904 (FOUNDATIONS); CHAPTER 20 (TYPE III BUILDINGS) SEC. 2004 (FOUNDATIONS); CHAPTER 21 (TYPE IV BUILDINGS) SEC. 2104 (FOUNDATIONS); CHAPTER 22 (TYPE V BUILDINGS) SEC. 2204 (FOUNDATIONS); CHAPTER 22 (TYPE V BUILDINGS) SEC. 2207 (FLOOR CONSTRUCTION); CHAPTER 22 (TYPE V BUILDINGS) SEC. 2208 (ROOF AND CEILING CONSTRUCTION); CHAPTER 26 (REINFORCED CONCRETE); CHAPTER 27 (STEEL AND IRON); CHAPTER 29 (WALLS AND PARTITIONS SEC. 2901 (GENERAL PROVISIONS SOLID MASONRY WALLS); CHAPTER 34 (DOORS, WINDOWS AND SKYLIGHTS) SEC. 3401 (DOORS AND WINDOWS); AND CHAPTER 43 (FIRE-RESISTIVE STANDARDS) SEC. 4305 (ROOF COVERINGS).

WHEREAS, the Building Inspectors of Municipalities west of Biscayne Bay and unincorporated Areas in Dade County are anxious to adopt a uniform Building Code conforming to Ordinance No. 1554 commonly known as The Building Code of the City of Miami, Florida, with certain amendments as hereinafter set forth, and

WHEREAS, the said Building Inspectors have agreed to accept the City of Miami Building Code provided the following amendments are made,

NOW, THEREFORE, BE IT ORDAINED BY THE COMMISSION OF THE CITY OF MIAMI, FLORIDA:

Section 1. That Chapter 2 "GENERAL PROVISIONS", Sec. 201, of Ordinance No. 1554, otherwise known as The Building Code of the City of Miami, is hereby amended to read as follows, to-wit:

Section 201. APPLICATION FOR PERMIT. No person shall erect or construct or proceed with the erection or construction of any building or structure, nor add to, enlarge, move, improve, alter, convert, extend or demolish any building or structure, or any group of buildings and/or structures under one or joint ownership whether on one or more lots or tract of land, or cause the same to be done, "where the cost of the repairs is Fifty (\$50.00) Dollars" or more in value, and on any remodeling or alteration job of any value, without first obtaining a building permit therefor from the Building Inspector.

Section 2. That Chapter 2 "GENERAL PROVISIONS", Sec. 201, sub-paragraph (f) of Ordinance No. 1554, otherwise known as The

Building Code of The City of Miami, is hereby amended to read as follows, to-wit:

(f) In addition to the above requirements, the Building Inspector may require approval by the Fire Department for fire regulations and approval by the Department of Public Service for street lines and grade wherever necessary and such approval shall be stamped on the plans by those departments.

Sanitary Facilities on Construction Work; Flyproof privy must be provided for workmen on all construction work where water washed sanitary facilities are not available. Such privy must include at least two private booths or stalls.

Section 3. That Chapter 18, "Type I Buildings", Sec. 1804 "FOUNDATIONS", of Ordinance No. 1554, otherwise known as The Building Code of The City of Miami, is hereby amended by adding thereto two new sub-paragraphs numbered (a) and (b) and reading as follows, to-wit:

(a) All foundations for masonry construction must be allowed to cure for 12 hours before any masonry elements are laid thereon.

(b) Foundations for masonry walls used for fences, planting box walls, or walls up to four (4) feet in height, shall not be less than ten (10) inches wide and eight (8) inches in depth reinforced with 2 ½" rods.

Section 4. That Chapter 19, "Type II Buildings", Sec. 1904 "FOUNDATIONS", of Ordinance No. 1554, otherwise known as The Building Code of The City of Miami, is hereby amended by adding thereto, two new sub-paragraphs numbered (a) and (b) and reading as follows, to-wit:

(a) All foundations for masonry construction must be allowed to cure for 12 hours before any masonry elements are laid thereon.

(b) Foundations for masonry walls used for fences, planting box walls, or walls up to four (4) feet in height, shall not be less than ten (10) inches wide and eight (8) inches in depth reinforced with 2 ½" rods.

Section 5. That Chapter 20, "Type III Buildings", Sec. 2004, "FOUNDATIONS", of Ordinance No. 1554, otherwise known as The Building Code of the City of Miami, is hereby amended by adding thereto, two new sub-paragraphs numbered (a) and (b) and reading as follows, to-wit:

(a) All foundations for masonry construction must be allowed to cure for 12 hours before any masonry elements are laid thereon.

(b) Foundations for masonry walls used for fences, planting box walls, or walls up to four (4) feet in height, shall not be less than ten (10) inches wide and eight (8) inches in depth reinforced with 2 ½" rods.

Section 6. That Chapter 21, "Type IV Buildings", Sec. 2104, "FOUNDATIONS", of Ordinance No. 1554, otherwise known as The Building Code of The City of Miami, is hereby amended by adding

thereto, two new sub-paragraphs numbered (a) and (b) and reading as follows, to-wit:

- (a) All foundations for masonry construction must be allowed to cure for 12 hours before any masonry elements are laid thereon.
- (b) Foundations for masonry walls used for fences, planting box walls, or walls up to four (4) feet in height, shall not be less than ten (10) inches wide and eight (8) inches in depth reinforced with 2 ½" rods.

Section 7. That Chapter 22, "Type V Buildings", Sec. 2204, "FOUNDATIONS", of Ordinance No. 1554, otherwise known as The Building Code of The City of Miami, is hereby amended by adding thereto, two new sub-paragraphs numbered (a) and (b) and reading as follows, to-wit:

- (a) All foundations for masonry construction must be allowed to cure for 12 hours before any masonry elements are laid thereon.
- (b) Foundations for masonry walls used for fences, planting box walls, or walls up to four (4) feet in height, shall not be less than ten (10) inches wide and eight (8) inches in depth reinforced with 2 ½" rods.

Section 8. That Chapter 22, "Type V Buildings", Sec. 2207, "FLOOR CONSTRUCTION", of Ordinance No. 1554, otherwise known as The Building Code of The City of Miami, is hereby amended by adding thereto, a new Table to read as follows, to-wit:

Size of Joists (Inches)	Spacing of Joists, Center to Center (Inches)	Maximum Allowable Span—Fibre Stress 1200 (Feet and Inches)		
		50#	40#	Ceiling
		2nd Fl.	1st Fl.	
2 x 6	12	10-0	11-0	13-0
	16	9-0	10-0	11-0
2 x 8	12	14-0	15-0	17-0
	16	12-0	13-0	15-0
2 x 10	12	18-0	19-0	22-0
	16	15-0	17-0	19-0
2 x 12	12	21-0	23-0	26-0
	16	19-0	20-0	23-0

See Page 311A

Section 9. That Chapter 22, "Type V Buildings", Sec. 2208, "ROOF AND CEILING CONSTRUCTION", of Ordinance No. 1554,

otherwise known as The Building Code of The City of Miami, is hereby amended by adding thereto a new Table to read as follows, to-wit:

See Page 311A

Size of Joists (Inches)	Spacing of Joists, Center to Center (Inches)	Maximum Allowable Span—Fibre Stress 1200 (Feet and Inches)	
		Flat 40#	Tile 50#
2 x 6	12	11-0	10-0
	16	10-0	9-0
2 x 8	12	15-0	14-0
	16	13-0	12-0
2 x 10	12	19-0	18-0
	16	17-0	15-0
2 x 12	12	30-0	21-0
	16	20-0	19-0

NOTE: 2" x 4" roof rafters will not be allowed without specific permission in writing by the Building Inspector, with a maximum span of 8'-0". All 2" x 4" roof rafters, where permitted, shall be #1 grade.

Section 10. That Chapter 26, "REINFORCED CONCRETE", of Ordinance No. 1554, otherwise known as The Building Code of The City of Miami, is hereby amended by adoption of the Building Code Requirements for Reinforced Concrete ACI (American Concrete Institute) 318-47 dated September, 1947.

Section 11. That Chapter 27, "STEEL AND IRON", of Ordinance No. 1554, otherwise known as The Building Code of The City of Miami, is hereby amended by adoption of The Steel Construction Manual of The American Institute of Steel Construction, 5th Edition, as a standard of allowable factors for structural steel requirements.

Section 12. That Chapter 29, "WALLS AND PARTITIONS", Sec. 2901, "GENERAL PROVISIONS", second paragraph, of Ordinance No. 1554, otherwise known as The Building Code of The City of Miami, is hereby amended to read as follows, to-wit:

Concrete Columns shall be required at all corners and at intervals as stated above, and may be the same thickness as the walls, or a minimum of eight (8) inches and shall be not less than twelve (12) inches in width, reinforced with four (4) five-eighth-inch ( $\frac{5}{8}$ " ) continuous vertical rods with one-quarter inch ( $\frac{1}{4}$ " ) ties spaced on twelve inch (12" ) centers. U-Type Blocks will not be permitted for reinforced concrete column use.

Section 13. That Chapter 29, "WALLS AND PARTITIONS", Sec. 2901, "GENERAL PROVISIONS", the third paragraph, of Ordinance No. 1554, otherwise known as The Building Code of the City of Miami, is hereby amended by adding thereto a sub-paragraph to read as follows, to-wit:

The unsupported maximum span allowable for U-Type Beam Block is seven (7) feet, reinforcing consists of 2  $\frac{7}{8}$ " rods minimum, placed one on top and one in the bottom of beam.



ADDITIONAL TABLE TO BE USED AS AN EXTENSION OF THE TABLES SET UP IN SECTIONS 2207 and 2208 as SHOWN ON PAGES 310 and 311 of the UNIFIED BUILDING CODE.

SIZE JOIST	SPACING (inches)	MAXIMUM ALLOWABLE SPAN AT 1200 P.S.I.			
		50# LL	40# LL	30# LL	10# LL
2 x 6	12	10-0	11-0	13-0	16-0
	16	9-0	10-0	11-0	15-0
3 x 6	12	12-0	13-0	14-0	
	16	10-0	11-0	12-0	
	24	9-0	10-0	11-0	
4 x 6	16	12-0	13-0	14-0	
	24	11-0	12-0	13-0	
2 x 8	12	14-0	15-0	17-0	21-0
	16	12-0	13-0	15-0	20-0
3 x 8	12	16-0	17-0	19-0	
	16	14-0	15-0	17-0	
	24	12-0	13-0	15-0	
4 x 8	16	17-0	18-0	19-0	
	24	15-0	16-0	17-0	
2 x 10	12	18-0	19-0	22-0	26-0
	16	15-0	17-0	19-0	25-0
3 x 10	16	17-0	19-0	21-0	
	24	15-0	17-0	19-0	
2 x 12	12	21-0	23-0	26-0	
	16	19-0	20-0	23-0	

50# LL - Second floor joists with plaster under or rafters and tile roof.

40# LL - First floor joists not plastered under or flat roofs with plaster under.

30# LL - Ceiling joists with attic space or flat roofs without plaster under.

10# LL - Ceiling joists without usable attic space.

Section 14. That Chapter 29, "WALLS AND PARTITIONS", Sec. 2901, "GENERAL PROVISIONS", the sub-paragraph of the fourth paragraph of Ordinance No. 1554, otherwise known as The Building Code of The City of Miami, is hereby amended to read as follows, to-wit:

In addition to the above, there shall be an eight (8) inch by eight (8) inch or sixty-four (64) square inches reinforced concrete tie beam, constructed in the same manner as above coping beam, on the rate at the end of gables however, if the rake and height is less than twenty-four (24) inches, no coping beam is necessary.

Section 15. That Chapter 34, "DOORS, WINDOWS AND SKYLIGHTS", Sec. 3401, "PLATE GLASS WINDOWS", of Ordinance No. 1554, otherwise known as The Building Code of The City of Miami, is hereby amended to read as follows, to-wit:

Plate glass windows, except minor transoms, facing on public streets or arcades, set in any first floor exterior wall, shall not be less than one-fourth ( $\frac{1}{4}$ ) inch in thickness, shall be not more than one hundred and fifty (150) square feet (Maximum of twelve (12) feet in height) in size without approved division bars, and shall be set in approved non-corrosive metal setting. If wood sill is used, it shall be covered with the same approved quality of non-corrosive metal, side rails shall be securely fastened with non-corrosive screws into side jambs or not less than one and one-eighth by three and one-half ( $1\frac{1}{8} \times 3\frac{1}{2}$ ) inches and such jambs shall be securely fastened to the masonry wall with not less than three-eighth ( $\frac{3}{8}$ ) inch expansion bolts, or approved steel screw nails, not more than four (4) feet apart, and when such jambs are attached to wood members they shall be securely nailed or bolted in an approved manner.

For floors above first floor these requirements may be increased at the discretion of the Building Inspector.

When wire glass is required, it shall mean glass the thickness of which at the thinnest point shall not be less than one-fourth ( $\frac{1}{4}$ ) of an inch and in which a wire netting is embedded. Wire glass shall be set with putty and metal stops.

**BULKHEADS:** Bulkheads shall have a minimum of six (6) inches above the sidewalk or floor level and such concrete bulkheads must be poured integral with the footing or securely doweled into the footing.

**STORM SHUTTERS:** Removable Metal Storm Shutters and their fasteners shall conform to strength requirements for steel, sheet metal, or aluminum siding.

Section 16. That Chapter 43, "FIRE RESISTIVE STANDARDS," Sec. 4305 "ROOF COVERINGS," under METHOD OF LAYING, paragraph 9 of Ordinance No. 1554, otherwise known as The Building Code of The City of Miami, is hereby amended by adding thereto, two new

sub-paragraphs numbered (a) and (b) to read as follows, to-wit:

#### Metal Roofing and Siding

(a) STEEL: Steel roofing and siding may be corrugated, deck, standing seam, V Crimp or flat type. All such material shall, except as hereinafter noted, have a protective coating. If the material is not to be exposed to the weather, the coating may be of paint. Sheets to be exposed to the elements shall have a coating of zinc, or other non-corrosive metal. Corrugated steel roofing and/or siding of whatever type which is coated with layers of asphalt and asphalt impregnated felt may be used. Stainless steel without protective coating is approved.

The minimum gauge of the steel sheets of any type shall be No. 26 and all such material shall be used only on solid wood sheathing. All sheets are to be properly lapped at sides and ends and approved mastic cement shall be used at such points. All sheets of whatever type are to be fastened to the sheathing with approved galvanized roofing nails and minimum  $\frac{3}{8}$ " diameter lead or neoprene type washers. Nailing shall be done through the high corrugations, standing seams or V crimps. Nails to be spaced 12" centers at side laps or in accordance with manufacturer's directions. Corrugated sheets are to be nailed at alternate corrugations at end of sheets. Intermediate nailing shall be about 12" centers between end laps and about 8" center laterally. The nailing of special type sheets shall be subject to the decision of the Building Inspector.

Eaves shall be sheathed solid and steel sheets at this location shall be nailed at each corrugation.

When it is desired to eliminate the wood sheathing and span the steel sheets between two or more supports, such as purlins, rafters or girts, the minimum gauge of the metal shall be No. 24. Corrugations shall not be less than  $\frac{1}{2}$ " high and load carrying capacity of the material shall be established by the manufacturer's load tables and/or mathematical computations, using a fibre stress of 18,000 lbs. per square inch. Sheets shall be secured to wood members by galvanized nails and lead or neoprene washers spaced about 5" on centers in the high corrugations. Side laps are to be bolted or riveted 12" centers. Where sheets are not nailed, they are to be secured with 1"x20 guage steel straps which are to go completely around the supports and be spaced 12" centers. Both ends of straps are to be connected to the high corrugations of the sheets with bolts and lead or neoprene washers. Sheets shall have proper side and end laps and mastic cement shall be used at such locations. Steel roof decks supported on steel members may be used subject to the manufacturer's load tables and standard specifications. Such decks are to be welded (not clipped) to such members and welds are to be not more than 12" apart.

(b) ALUMINUM: Aluminum roofing and siding may be of the same type and be used in the same manner as steel except as follows:

(1) No gauge thinner than .024 (24 gauge) is permitted and material of this thickness shall only be used in the manner as specified for 26 gauge steel, that is on solid wood sheathing.

(2) Where the wood decking is eliminated, the minimum gauge shall be .027 but the corrugations of such material shall be at least  $\frac{1}{2}$ " high and the load carrying capacity must be established by the manufacturer's load tables and/or mathematical computations, using a factor of safety of 2 and a fibre stress not more than 12,000 lbs. per square inch. Exception,  $2\frac{1}{2}$ " x  $1\frac{1}{2}$ " x .027 corrugated sheets shall not be used for spans greater than 30".

(3) Aluminum hot-dipped galvanized or cadmium plated nails, bolts, screws or rivets shall be used to fasten sheets. Heavy (18 ga.) aluminum or asphalt coated 20 gauge steel straps shall be used where supports are of steel and widely spaced.

(4) Washers may be of aluminum, lead or neoprene type.

(5) Aluminum sheets shall not be permitted in contact with steel members. Provide bitumastic paint, aluminum asphalt asbestos combination paint or equal.

(6) Special types of steel and/or aluminum sheets or fastenings other than covered by this code, will be approved by the building inspector subject to submitting adequate proof of their required strength and durability.

PASSED AND ADOPTED this 4th day of February, A. D. 1949.

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Mayor.

ATTEST:

City Clerk

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## ORDINANCE NO. 2471

AN ORDINANCE AMENDING SECTION 1601 OF CHAPTER 16, PART IV OF ORDINANCE NUMBER 1554, OTHERWISE KNOWN AS THE BUILDING CODE OF THE CITY OF MIAMI; PLACING AN ADDITIONAL AREA WITHIN THE CORPORATE LIMITS IN FIRE ZONE NUMBER I; PROVIDING PENALTIES FOR THE VIOLATION OF THE PROVISIONS OF THIS ORDINANCE AND REPEALING ALL LAWS IN CONFLICT.

WHEREAS, the Planning Board of the City of Miami at the meeting held December 2, 1940, unanimously passed and adopted Resolution Number 602, recommending the adoption of an ordinance amending Ordinance Number 1554, by adding to the areas in the City of Miami included in Fire Zone Number I, certain areas situated on the outskirts of the downtown Fire Zone Number I and hereinafter more fully described, so as to prevent the erection of new frame structures therein; and for the reason that the recommendation, if adopted, will reduce the danger of fire within such area and within the downtown area, together with benefiting the general city plan;

NOW, THEREFORE, BE IT ORDAINED BY THE COMMISSION OF THE CITY OF MIAMI:

Section 1. That Section 1601 of Chapter 16, Part IV of Ordinance Number 1554, otherwise known as the Building Code of the City of Miami, be and it is hereby amended by adding to the third paragraph thereof, which is entitled, "FIRE ZONE NUMBER I (or 'Fire District')," an additional area of land situated in the City of Miami, Dade County, Florida, and particularly described as follows:

Beginning at the intersection of the center lines of Northwest Twentieth Street and Northwest Fourteenth Avenue; thence run southerly along center line of Northwest Fourteenth Avenue a distance of 145 feet more or less; thence run easterly parallel and 145 feet more or less south of the center line of Northwest Twentieth Street to the northwest corner of Lot 4 of Block 1 of Amended Plat of Greenwood Park; thence continue easterly to the east property line of Northwest Thirteenth Avenue; thence run southerly to the southwest corner of Lot 1 of Block 2 of Amended Plat of Greenwood Park; thence easterly along the south lines of Lots 1, 2, 3 and 4 of Block 2, Lots 1, 2, 3 and 4 of Block 3 of Amended Plat of Greenwood Park to the southeast corner of said Lot 4 of Block 3, said corner being 150 feet more or less south of the center line of Northwest Twentieth Street; thence run easterly parallel and 150 feet more or less, south of the center line of Northwest Twentieth Street to a point 128 feet more or less west of the center line of Northwest Seventh Avenue; thence run southerly to the northwest corner of Lot 2 of Block 1 of North Highland; thence continue southerly along the west lines of Lot 2 of Block 1, Lots 2 and 23 of Block 2, Lots 2 and 23 of Block 3, Lots 2 and 23 of Block 4 of North High-

land to the south property line of Northwest Seventeenth Street; thence run westerly to the northwest corner of Lot 1 of Block 1 of Highland Park; thence run southerly along the west lines of Lots 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 and 14 of Block 1, Lots 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 and 11 of Block 5, Lots 1, 2, 3, 4, 5, 6, 7 and 8 of Block 6, Lots 15, 16, 17, 18, and 5 of Block 9, Lots 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16 and 21 of Block 10 of Highland Park to the south property line of Northwest Eleventh Street; thence run westerly to the northwest corner of Block 1 of Spring Garden Subdivisions No. 1 and No. 2; thence run southerly to the northwest corner of Block 4 of Spring Garden Subdivisions No. 1 and No. 2; thence run easterly to the northwest corner of Lot 6 of said Block 4; thence run southerly along the west lines of Lots 6, 5, 4, 3, 2 and 1 of Block 4 of Spring Garden Subdivisions No. 1 and No. 2 to the south property line of Northwest Ninth Street; thence run westerly to the northwest corner of Block 5 of Spring Garden Subdivisions No. 1 and No. 2; thence run southeasterly along the southwesterly line of Block 5 of Spring Garden Subdivisions No. 1 and No. 2 to an intersection with the northwesterly line of Lot 23 of Block 11 of Spring Garden Subdivisions No. 1 and No. 2 produced northeasterly across Northwest Eighth Street Road; thence run southwesterly along the said northeasterly production and along the said northwesterly line of Lot 23 of Block 11 of Spring Garden Subdivisions No. 1 and No. 2 to the easterly line of the Seybold Canal; thence run southerly along the easterly line of the Seybold Canal to the northeasterly channel line of Miami River; thence southeasterly along the northeasterly channel line of Miami River to the center line of the Northwest Fifth Street Bridge; thence northeasterly along the center line of the Northwest Fifth Street Bridge and along its northeasterly approach to the center line of Northwest Seventh Avenue; thence run northerly along the center line of Northwest Seventh Avenue to an intersection with the center line of Block 70 N of Miami (A. L. Knowlton); thence run easterly along the center lines of Blocks 70 N, 69 N, 68 N and 67 N of Miami (A. L. Knowlton) to the center of said Block 67 N; thence run northerly along the center lines of Blocks 67 N, 54 N, 47 N, 34 N, 27 N, 14 N and 7 N of Miami (A. L. Knowlton) to the north property line of Northwest Eleventh Terrace; thence continue northerly long the center lines of Block 11, 8 and 2 of Sost's Subdivision to the center line of Northwest Fourteenth Street; thence run easterly along the center line of Northwest Fourteenth Street to the center line of Block 41 of Johnson and Waddell Addition; thence run northerly along the center lines of Blocks 41, 40, 31, 30, 21 and 20 of Johnson and Waddell Addition to the center line of Northwest Twentieth Street; thence run easterly along the center lines of Northwest and Northeast Twentieth Streets to the west line of Lot 16 of Block 1 of West Bay Side extended southerly; thence run northerly along the west lines of Lot 16 of Block 1, Lot 16 of Block 2 of West Bay Side, Lot 16 of Block 2 and Lot 16 of Block 1

of Bay View Addition, to the north line of a 10 foot alley between Bay View Addition and Rural Home; thence run westerly to the southwest corner of Lot 15 of Rural Home; thence run northerly along the west lines of Lot 15 of Rural Home and Lot 16 of Ridgeview to the south line of West Edgewater; thence run easterly to the southwest corner of Lot 15 of Block 2 of West Edgewater; thence run northerly along the west lines of Lot 15 of Block 2 and Lot 15 of Block 1 of West Edgewater to the north line of a 10 foot alley along the south side of Park Place; thence run easterly to the southwest corner of Lot 13 of Block 4 of Park Place; thence run northerly along the west lines of Lot 13 of Block 4 and Lot 17 of Block 3 to the north line of a 10 foot alley between Blocks 3 and 2 of Park Place; thence run easterly to the southwest corner of Lot 11 of Block 1; thence run northerly along the West lines of Lot 11 of Block 2 and Lot 11 of Block 1 of the south line of amended Plat of Pomelo Park; thence run easterly to the southwest corner of Lot 9 of Amended Plat of Pomelo Park; thence run northerly to the northwest corner of said Lot 9; thence run northeasterly across Northeast Twenty-sixth Street to the southwest corner of Lot 16; thence run northerly along the west line of Lot 16 of Amended Plat of Pomelo Park to the south line of Halcyon Heights; thence run easterly to the southwest corner of Lot 39 of Halcyon Heights; thence run northerly along the west lines of Lots 39 and 10 of Halcyon Heights to the south line of Amended Plat of Flagler Park; thence run easterly to the southwest corner of Lot 10 of Amended Plat of Flagler Park; thence run northerly along the west lines of Lots 10 and 9 of Amended Plat of Flagler Park to the south line of Western Boulevard Tract; thence run westerly to the southwest corner of Lot 43 of Western Boulevard Tract; thence run northerly along the west lines of Lots 43, 44, B, A, 1 and 2 of Western Boulevard Tract to the south line of West Broadmoor; thence continue northerly along the west lines of Lots 5, 4, 3, 2 and 1 of Block 5, Lots 7, 6, 5, 4, 3, 2 and 1 of Block 2, Lots 15, 14, and 13 of Block 1 to the south line of Lot 12 of Block 1 of West Broadmoor; thence run westerly to the easterly property line of the F. E. C. R.R.; thence run northeasterly along the easterly property line of the F. E. C. R.R. to the center line of Northeast Thirty-sixth Street; thence run westerly to the center line of Northeast Second Avenue; thence run northerly to the north line of Lot 3 of Youngs Addition to the Town of Buena Vista; thence run westerly to the east line of Lot 24; thence run northerly to the northeast corner of said Lot 24; thence run westerly to the northwest corner of Lot 27 of Youngs Addition to the Town of Buena Vista; thence continue westerly to the southeast corner of Lot 1 of Block 5 of Central Addition Buena Vista; thence continue westerly along the south lines of Lot 1 of Block 5, Lots 14 and 1 of Block 2 of Central Addition Buena Vista to the center line of North Miami Avenue; thence continue westerly to the northwest corner of Lot 24 of Block 10 of Princess Park; thence run southerly along the west lines of Lots

24 and 23 of Block 10 of Princess Park to the north property line of Northwest Thirty-sixth Street; thence continue southerly across Northwest Thirty-sixth Street to the northwest corner of Lot 1 of Block 1 of Wyndwood Park; thence continue southerly along the west lines of Lots 1, 2, 3, 4, 5, 6, 7 and 8 of Block 1, Lots 1, 2, 3, 4, 5, 6, 7 and 8 of Block 6, Lots 1, 2, 3, 4, 5, 6, 7 and 8 of Block 7, Lots 1, 2, 3, 4, 5, 6, 7 and 8 of Block 12, Lots 1, 2, 3, 4, 5, 6, 7 and 8 of Block 13 of Wyndwood Park; thence continue southerly along the west lines of Lots 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 and 11 of Block A of Price's Addition to St. James Park to the north property line of Northwest Thirty-first Street; thence continue southerly across Northwest Thirty-first Street to the northwest corner of Lot 1 of Block 1 of Amended Plat of St. James Park; thence continue southerly along the west lines of Lots 1, 2, 3, 24, 25 and 26 of Block 1, Lots 1, 2 and 3 of Block 4 to the center line of Block 4 of Amended Plat of St. James Park; thence run westerly along the center lines of Blocks 4 and 3 of Amended Plat of St. James Park to the center line of Northwest Second Avenue; thence continue westerly along the center lines of Blocks 11 and 12 to the west line of Lots 3 of Block 13 of Northern Boulevard Tract; thence run southerly along the west lines of Lots 3, 23 and 24 of Block 13, Lots 1, 2, 3, 23 and 22 of Block 16 of Northern Boulevard Tract to the center line of Northwest Twenty-eighth Street; thence run westerly to the center line of Northwest Tenth Avenue; thence run southerly to the north line of Washington Park; thence run westerly along the north line of Washington Park to the intersection of Northwest Twelfth Avenue and Northwest Twenty-third Street; thence run westerly to the center line of Northwest Fourteenth Avenue; thence run southerly to the place of beginning.

Section 2. That any person, persons, firm, corporation, association or co-partnership violating any of the provisions of this ordinance shall be punished by a fine not exceeding Five Hundred Dollars (\$500.00) or by imprisonment not exceeding sixty (60) days, or by both such fine and imprisonment, within the discretion of the Municipal Judge. Each day that a violation is permitted to exist shall constitute a separate offense.

Section 3. That all ordinances or parts of ordinances in conflict herewith are hereby repealed, so far as there is conflict.

PASSED AND ADOPTED this 26th day of March, A. D. 1941.

(Signed) ALEXANDER ORR, Jr.  
MAYOR.

Attest: (Signed) FRANK J. KELLY,  
CITY CLERK.



## ORDINANCE No. 3970

AN ORDINANCE AMENDING SECTION 1601 OF CHAPTER 16, PART IV OF ORDINANCE NUMBER 1554, OTHERWISE KNOWN AS THE BUILDING CODE OF THE CITY OF MIAMI, AND ORDINANCE 2471 AMENDATORY THERETO, BY PLACING AN ADDITIONAL AREA WITHIN THE CORPORATE LIMITS IN FIRE ZONE NUMBER 1; PROVIDING PENALTIES FOR THE VIOLATION OF THE PROVISIONS OF THIS ORDINANCE; AND REPEALING ALL LAWS IN CONFLICT.

WHEREAS, the City Planning Board of Miami at its meeting held December 12, 1949, unanimously passed and adopted its Resolution No. 2261, recommending the extension of Fire Zone No. 1 by adding certain areas thereto, as hereinafter set forth:

NOW, THEREFORE, BE IT ORDAINED BY THE COMMISSION OF THE CITY OF MIAMI, FLORIDA:

Sec. 1. That Section 1601 of Chapter 16, Part IV of Ordinance No. 1554, otherwise known as the Building Code of the City of Miami, and Ordinance No. 2471 amendatory thereto, are hereby amended by adding to the third paragraph thereof entitled "FIRE ZONE NUMBER 1" (OR "FIRE DISTRICT") an additional area of land, more particularly described as follows:

BEGINNING at the intersection of the center lines of Northeast Thirteenth Street and Northeast Second Avenue; thence run Northerly along the center line of Northeast Second Avenue to the intersection of the center lines of Northeast Second Avenue and Northeast Twentieth Street; thence run Westerly along the center line of Northeast Twentieth Street to the West line of Lot 16 of Block 1 of West Bay Side extended southerly; thence run Northerly along the west lines of Lot 16, Block 1, Lot 16 of Block 2, of West Bay Side, Lot 16 of Block 2 and Lot 16 of Block 1 of Bay View Addition, to the north line of a 10-foot alley between Bay View Addition and Rural Home; thence run Westerly to the southwest corner of Lot 15 of Rural Home; thence run Northerly along the west lines of Lot 15 of Rural Home and Lot 16 of Ridgeview to the south line of West Edgewater; thence run Easterly to the southwest corner of Lot 15 of Block 2 of West Edgewater; thence run Northerly along the West lines of Lot 15 of Block 2 and Lot 15 of Block 1 of West Edgewater to the north line of a 10-foot alley along the South side of Park Place; thence run Easterly to the southwest corner of Lot 13 of Block 4 of Park Place; thence run Northerly along the west lines of Lot 13 of Block 4 and Lot 17 of Block 3 to the north line of a 10-foot alley between Blocks 3 and 2 of Park Place; thence run Easterly to the southwest corner of Lot 11 of Block 2; thence run Northerly along the west lines of Lot 11 of Block 2 and Lot 11 of Block 1 of Park Place to the south line of Amended Plat of Pomelo Park; thence run Easterly to the southwest corner of Lot 9 of Amended Plat of Pomelo Park; thence

run Northerly to the northwest corner of said Lot 9; thence run Northeasterly across Northeast Twenty-sixth Street to the southwest corner of Lot 16; thence run Northerly along the west line of Lot 16 of Amended Plat of Pomelo Park to the south line of Halcyon Heights; thence run Easterly to the southwest corner of Lot 39 of Halcyon Heights; thence run Northerly along the west lines of Lots 39 and 10 of Halcyon Heights to the south line of Amended Plat of Flagler Park; thence run Easterly to the southwest corner of Lot 10 of Amended Plat of Flagler Park; thence run Northerly along the west lines of Lots 10 and 9 of Amended Plat of Flagler Park to the south line of Western Boulevard Tract; thence run Westerly to the southwest corner of Lot 43 of Western Boulevard Tract; thence run Northerly along the west lines of Lots 43, 44, B, A., 1 and 2 of Western Boulevard Tract to the South line of West Broadmoor; thence continue Northerly along the west lines of Lots 5, 4, 3, 2 and 1 of Block 5, Lots 7, 6, 5, 4, 3, 2 and 1 of Block 2, Lots 15, 14, and 13 of Block 1 to the south line of Lot 12 of Block 1 of West Broadmoor; thence run Westerly to the Easterly property line of the F.E.C. R.R.; thence run Northeasterly along the Easterly property line of the F.E.C. R.R. to the center line of Northeast Thirty-sixth Street; thence run Westerly along the center line of Northeast Thirty-sixth Street to the intersection of the center lines of Northeast Thirty-sixth Street and Northeast Second Avenue; thence Northerly along the center line of Northeast Second Avenue to the intersection of the center lines of Northeast Second Avenue and Northeast Thirty-seventh Street; thence Easterly along the center line of Northeast Thirty-seventh Street and its easterly extension to the intersection of the center line of Northeast Thirty-seventh Street extended easterly and the Westerly U. S. Harbor Line of Biscayne Bay; thence run Southerly along the aforesaid Westerly U. S. Harbor Line of Biscayne Bay to the intersection of the Westerly U. S. Harbor Line of Biscayne Bay and the center line of Northeast Thirteenth Street; thence run Westerly along the center line of Northeast Thirteenth Street to the place of BEGINNING.

Sec. 2. That any person, persons, firm, corporation, association or co-partnership violating any of the provisions of this ordinance shall be punished by a fine not exceeding Five Hundred Dollars (\$500.00) or by imprisonment not exceeding sixty (60) days, or by both such fine and imprisonment, within the discretion of the Municipal Judge. Each day that a violation is permitted to exist shall constitute a separate offense.

Sec. 3. That all laws, or parts of laws, in conflict herewith, and the same are, hereby repealed in so far as there is conflict.

PASSED AND ADOPTED this 19th day of April, 1950.

(Signed) ROBERT L. FLOYD,  
ACTING MAYOR.

Attest: (Signed) F. L. CORRELL,  
CITY CLERK.

## ORDINANCE NO. 3746

AN ORDINANCE TO REQUIRE THE OWNER OR CONTRACTOR TO DEPOSIT A PERFORMANCE BOND OR CASH DEPOSIT PRIOR TO THE ISSUANCE OF A PERMIT FOR CONSTRUCTION, EXCAVATING, CLEARING, FILLING OR GRADING OF LAND BY THE DIVISIONS OF PUBLIC SERVICE; TO REQUIRE SAID BOND OR DEPOSIT TO BE A MINIMUM OF \$50.00; TO REQUIRE THE CHIEF BUILDING INSPECTOR TO DETERMINE AND FIX THE SAID BOND OR DEPOSIT BASED UPON THE VALUE OF PUBLIC IMPROVEMENTS AT THE SITE WHERE THE PERMIT IS ISSUED; TO PROVIDE AN APPEAL TO THE DIRECTOR OF PUBLIC SERVICE AS TO THE AMOUNT OF THE SAID BOND OR DEPOSIT; TO AUTHORIZE THE CHIEF BUILDING INSPECTOR TO USE THE SAID BOND OR DEPOSIT TO MAKE REPAIRS OR TO REMOVE UNDESIRABLE MATERIALS OR SHEDS AFTER NOTICE TO THE OWNER OR CONTRACTOR; TO PROVIDE FOR THE RETURN OF BOND OR DEPOSIT AFTER FINAL INSPECTION; PROVIDING PENALTIES FOR THE VIOLATION OF THIS ORDINANCE; AND REPEALING ALL LAWS, OR PARTS OF LAWS, IN CONFLICT.

WHEREAS, damage has frequently resulted to pavement, trees, shrubs and other public property by the use of heavy equipment in the constructions, clearing, excavating, filling or grading on land within the City of Miami; and

WHEREAS, the failure to remove rubbish, construction sheds and other undesirable materials from the place of operation of any construction, clearing, excavating, filling or grading on land within the City limits has caused the City of Miami and the citizens of said City undue and unnecessary expense for the removal of same; and

WHEREAS, it is deemed necessary that the City be protected against such resulting damage and the cost of repairing or replacing public property; and

WHEREAS, some guarantee should be established in order to insure that such construction, clearing, excavating, filling or grading on lands within the City will not cause undue and unnecessary expense to the City or its citizens; and

WHEREAS, the Director of the Department of Public Service has recommended that for the proper operation of his department to prevent further damage and expense to the City a performance bond or cash deposit should be required;

NOW, THEREFORE, BE IT ORDAINED BY THE COMMISSION OF THE CITY OF MIAMI, FLORIDA:

Section 1. That before any permits shall be issued by the Divisions of the Department of Public Service of the City of Miami, the owner

or contractor applying for said permits for construction, clearing, excavating, filling or grading on land within the City of Miami in compliance with any of the laws of the said City, the Division issuing the said permit shall require the posting of a performance bond or cash deposit by the owner or contractor, the amount of same to be determined as hereinafter set forth.

Section 2. The Chief Building Inspector, or his duly authorized representative, shall consider the value of public property and improvements at the site for which the permit is to be issued to determine and fix the amount of the performance bond or cash deposit required for said permit, however, said bond or deposit shall be a minimum of fifty (\$50.00) Dollars.

Section 3. That the Chief Building Inspector, or his duly authorized representative, shall give the owner or contractor the receipt for any cash deposit.

Section 4. That if the owner or contractor shall determine that the said bond or deposit so fixed by the Chief Building Inspector, or his representative, to be excessive, he may appeal by writing a letter to the Director of Public Service.

Section 5. The Chief Building Inspector or his duly authorized representative shall return the said bond or deposit to the owner or contractor after final inspection has been made of the site for which the permit was issued, if there has been no damage to public property or improvements and the said site has been cleared of all rubbish, construction sheds or other undesirable materials as a result of said construction, excavating, filling or grading on land.

Section 6. That in the event there has been damage to public property or improvements, or that rubbish, construction sheds or other undesirable materials have been left at the site for which the permit is issued, then the Chief Building Inspector or his duly authorized representative shall notify the owner or the contractor to commence correction of the above mentioned conditions within five (5) days. That in the event the owner or contractor fails to make a bona fide attempt to correct the conditions caused by the issuance of the said permit, the Chief Building Inspector shall be authorized to have the repairs made or undesirable materials or sheds removed, and pay for the same from the cash deposit or moneys received from the surety on the performance bond. That in the event there should be a difference between the deposit and the bond remaining after such work is done, that the amount unexpended shall be returned to the said owner or contractor.

Section 7. Any person or persons and the member of any firm and the officers and directors of any corporation violating this ordinance or any of its provisions or sections or parts of sections, shall, upon conviction, be punished by a fine not to exceed Five Hundred Dollars (\$500.00), or by imprisonment not to exceed sixty (60) days or by both such fine and imprisonment, in the discretion of the court, for each separate violation.

Section 8. In the event any section, subsection, sentence, clause or phrase of this ordinance shall be declared or adjudged invalid or incompetent, such adjudication shall in no manner affect the other sections, subsections, clauses or phrases of this ordinance, which shall be and remain in full force and effect as if the section, subsection, sentence, clause or phrase so declared or adjudged invalid or unconstitutional was not originally a part thereof.

Section 9. That all laws, or parts of laws in conflict herewith be, and the same are, hereby repealed insofar as there is conflict.

PASSED AND ADOPTED this 20th day of April, A. D. 1949.

(Signed) PERRINE PALMER, JR.,  
*Acting Mayor.*

ATTEST:

(Signed) F. L. CORRELL,  
*City Clerk.*

## ORDINANCE NO. 3827

AN ORDINANCE REQUIRING A REGISTERED LAND SURVEYOR'S CERTIFICATE AND PLAN SHOWING ESTABLISHED PROPERTY CORNERS, PROPERTY LINE DIMENSIONS, EXISTING UTILITIES, ELEVATIONS AND OTHER PERTINENT SURVEY DATA AS A REQUIREMENT IN CONNECTION WITH THE APPLICATION FOR AND THE ISSUANCE OF A BUILDING PERMIT.

WHEREAS, in the past, litigation has developed in the erection of new structures, additions to existing structures and in the moving of buildings, due to the lack of a property survey plan indicating established property corners, property line dimensions, existing utilities, elevations and other pertinent survey data and information; and

WHEREAS, in the erection of new structures, additions to existing structures and in the moving of buildings, it is proper that the owner shall have the property involved duly surveyed by a registered land surveyor of the State of Florida; and

WHEREAS, in order to properly administer the various ordinances and laws relating to the erection of new structures, additions to existing structures and the moving of buildings, a property survey is necessarily essential;

NOW, THEREFORE, BE IT ORDAINED BY THE COMMISSION OF THE CITY OF MIAMI, FLORIDA:

Section 1. That, as a requirement in connection with the application for and the issuance of a building permit for a new structure, an addition to an existing structure and/or for the moving of a building, there shall be attached to the building plans a registered land surveyor's certificate and plan, on which plan there shall be shown property corner stakes; property line dimensions; interior property line angles; existing structures, their dimensions and relation to property lines; general elevation of property; all existing utilities and related data; existing rights-of-way of streets, avenues, alleys, courts, lanes, terraces; any and all easements of record; existing sidewalks; street zoning of record; property zoning of record; building setbacks required by law; general block plan and other pertinent survey data which may be required.

Section 2. In the event any section, subsection, sentence, clause or

phrase of this ordinance shall be declared or adjudged invalid or incompetent, such adjudication shall in no manner affect the other sections, subsections, clause or phrase, but shall be restricted and limited in its operation and effect to that specific portion of said section involved in the litigation in which such decision shall have been rendered.

PASSED AND ADOPTED this 20th day of August, 1949.

.....  
*Mayor.*

ATTEST:

.....  
*City Clerk.*

## ORDINANCE NO. 3963

AN ORDINANCE PROVIDING FOR THE VACATION, REMOVAL, REPAIR OR DEMOLITION OF ANY BUILDING OR STRUCTURE WHICH IS OR THREATENS TO BE A PUBLIC NUISANCE, DANGEROUS TO THE HEALTH, MORALS, SAFETY OR GENERAL WELFARE OF THE PEOPLE OF THE CITY OF MIAMI, FLORIDA, OR WHICH MIGHT TEND TO CONSTITUTE A FIRE MENACE; SETTING FORTH THE DUTIES OF THE BUILDING INSPECTOR; PROVIDING FOR WRITTEN NOTICE TO OWNER OR OTHER PARTY INTERESTED IN THE PROPERTY TO BE VACATED, REMOVED, REPAIRED OR DEMOLISHED; CREATING A BOARD OF APPEALS, APPOINTING THE MEMBERS THEREOF AND SETTING FORTH THE DUTIES AND FUNCTIONS OF SAID BOARD; SETTING FORTH THE DUTIES OF THE CITY ATTORNEY, THE DIVISION OF FIRE AND THE DIVISION OF POLICE OF SAID CITY; PRESCRIBING PENALTIES FOR VIOLATIONS OF THE PROVISIONS HEREOF; PROVIDING FOR THE SEPARABILITY OF THE PROVISIONS HEREOF; REPEALING ALL ORDINANCES OR PARTS OF ORDINANCES INCONSISTENT OR IN CONFLICT HEREWITH; DECLARING THIS ORDINANCE TO BE AN EMERGENCY MEASURE AND DISPENSING WITH THE REQUIREMENT OF READING THIS ORDINANCE ON TWO (2) SEPARATE DAYS BY A VOTE OF NOT LESS THAN FOUR-FIFTHS (4/5) OF THE MEMBERS OF THE COMMISSION.

WHEREAS, in the City of Miami, County of Dade, State of Florida, there are, or may be in the future, buildings or structures which are dilapidated, unsafe, dangerous, insanitary, a menace to the health, morals, safety and general welfare of the people of this City, and which might tend to constitute a fire menace, and which are a public nuisance;

NOW, THEREFORE, BE IT ORDAINED BY THE COMMISSION OF THE CITY OF MIAMI, FLORIDA:

Section 1. DANGEROUS BUILDINGS DEFINED. All buildings or structures which have any or all of the following defects shall be deemed "dangerous buildings":

(a) Those whose interior walls or other vertical structural members list, lean or buckle to such an extent that a plumb line passing through the center of gravity falls outside the middle third of its base.

(b) Those which, exclusive of the foundation, show thirty-three per centum (33%), or more, of damage or deterioration of the supporting member or members, or fifty per centum (50%) of damage or deterioration of the non-supporting enclosing or outside walls or covering.

(c) Those which have improperly distributed loads upon the floors or roofs or in which the same are overloaded, or which have insufficient strength to be reasonably safe for the purpose used.



(d) Those which have been damaged by fire, wind or other causes so as to have become dangerous to life, safety, morals, or the general health and welfare of the occupants or the people of the City of Miami.

(e) Those which have become or are so dilapidated, or decayed, or unsafe, or insanitary, or which so utterly fail to provide the amenities essential to decent living that they are unfit for human habitation, or are likely to cause sickness or disease, so as to work injury to the health, morals, safety or general welfare of those living therein.

(f) Those having light, air and sanitation facilities which are inadequate to protect the health, morals, safety or general welfare of human beings who live or may live therein.

(g) Those having inadequate facilities for egress in case of fire or panic or those having insufficient stairways, elevators, fire escapes or other means of communication.

(h) Those which have parts thereof which are so attached that they may fall and injure members of the public or property.

(i) Those which because of their condition are unsafe, or insanitary, or dangerous to the health, morals, safety or general welfare of the people of this City.

(j) Those structures which have any of the following listed basic deficiencies:

1. Toilet: Shared, privy or outside the structure or none.
2. Bath: Shared, outside the structure or none on premises.
3. Water: Contaminated, private supply where City water available, or outside the structure.
4. Dual Egress: Lacking in unit.
5. Electricity: None installed.
6. Outside windows: Lacking in any room.
7. Sewage disposal system not meeting City Code.
8. Deterioration: Penalty score of 15 points or more.
9. Room Crowding: Over 1.5 person per room.
10. Persons per sleeping room: Total number of persons equals or exceeds the following: 2 times the number of sleeping rooms, plus 2.
11. Sleeping area: Less than 40 square feet per person.

The appraisal technique for the measurement of the quality of housing developed by the Committee on the Hygiene of Housing of the American Public Health Association shall be employed in determining the above listed deficiencies.

Section 2. STANDARDS FOR REPAIR, VACATION OR DEMOLITION. The following standards shall be followed in substance by the Building Inspector and the Building Board of Appeals in ordering repair, vacation or demolition of said building:

(a) If the "dangerous building" can reasonably be repaired so that it will no longer exist in violation of the terms of this ordinance it shall be ordered repaired by the Building Inspector or Building Board of Appeals.

(b) If the "dangerous building" is in such condition as to make it dangerous to the health, morals, safety, or general welfare of its occupants, it shall be ordered to be vacated by the Building Inspector or the Building Board of Appeals.

(c) If the "dangerous building" is fifty per centum (50%) damaged or decayed, or deteriorated from its original value or structure, it shall be demolished.

(d) If the "dangerous building" cannot be repaired so that it will no longer exist in violation of the terms of this ordinance, it shall be demolished.

(e) If the "dangerous building" is a fire hazard existing or erected in violation of the terms of this ordinance or any ordinance of this City or statute of the State of Florida, it shall be demolished, providing the said fire hazard is not eliminated by the owner or other interested persons within a reasonable time.

Section 3. DANGEROUS BUILDING—NUISANCES. All "dangerous buildings" within the terms of Section 1 of this ordinance are hereby declared to be public nuisances, and shall be repaired, vacated or demolished as hereinbefore and hereinafter provided.

Section 4. DUTIES OF BUILDING INSPECTOR. The Chief Building Inspector and/or his authorized representative shall:

(a) Inspect or cause to be inspected semi-annually, all public buildings, schools, halls, churches, theaters, hotels, tenements, commercial, manufacturing or loft buildings for the purpose of determining whether any conditions exist which render such places a "dangerous building" within the terms of Section 1 of this ordinance.

(b) Inspect any building, wall or structure about which complaints are filed by any person to the effect that a building, wall or structure is, or may be, existing in violation of this ordinance.

(c) Inspect any building, wall or structure reported (as hereinafter provided for) by the Division of Fire or Police of this City as probably existing in violation of the terms of this ordinance.

(d) Inspect annually buildings in all sections of this City to determine whether they are "dangerous buildings" within the terms of Section 1 of this ordinance.

(e) Place a notice on all "dangerous buildings" reading as follows:

"This building has been found to be a dangerous building by the Building Inspector. This notice is to remain on this building until it is repaired, vacated, or demolished in accordance with the notice dated ..... which has been given the

owner, occupant, lessee, mortgagee, or agent of this building, and all other persons having an interest in said building as shown by the land records of the City of Miami, as recorded by the Clerk of the Circuit Court of Dade County. It is unlawful for anyone to remove this notice until such notice is complied with."

(f) Appear at all hearings conducted by the Building Board of Appeals and testify as to the condition of the "dangerous buildings."

(g) Report to the Building Board of Appeals any non-compliance with the "notice" provided for in Section 5 hereof.

Section 5. NOTICE BY BUILDING INSPECTOR OR BUILDING BOARD OF APPEALS. Notice by Building Inspector or Building Board of Appeals must be in writing and shall be sent via registered mail to the owner, occupant, lessee, mortgagee, agent and all other persons having an interest in the said building as shown by the land records of the City of Miami, which are kept by the Clerk of the Circuit Court of Dade County (hereinafter referred to as the "land records"), Florida, on any building found by the Inspector or said Building Board of Appeals to be a "dangerous buildings" within the standard set forth in Section 1 of this ordinance, and the said notice shall cover the following information:

(a) Name of owner or other persons interested, as provided hereinabove.

(b) Street address and legal description of the property on which said building is located.

(c) General description of type of building, wall or structure deemed unsafe.

(d) A complete, itemized statement or list of particulars which caused the building, wall or structure to be a "dangerous building" as defined in Section 1 hereinabove.

(e) Whether or not said building should be vacated by its occupants and the date of such vacation.

(f) Whether or not the statement or list of particulars, as provided for in paragraph (d) above, can be removed or repaired.

(g) Whether or not the said building constitutes a fire menace.

(h) Whether or not it is unreasonable to repair the said building and whether or not the said building should be demolished.

(i) A statement of the reasonable time for party receiving notice to commence to vacate and/or make repairs, and/or demolish the building, as provided in said notice. A reasonable time shall not exceed thirty (30) days, except in cases of an unusually large building. The time to commence may be extended by the Building Inspector or said Building Board of Appeals for an additional period of sixty (60) days, provided, however, the extension is applied for by the owner, or other person interested in the property as hereinabove defined, at least five (5) days before the expiration of the time to commence vacation, repair or demolition under the said notice.

(j) A reasonable time to complete the vacation, repairs or demolition as provided in said notice, and said reasonable time for completion shall not exceed sixty (60) days, unless the time is extended by resolution of the City Commission of the City of Miami.

Section 6. BUILDING BOARD OF APPEALS. That there is hereby created and established a board to be known as the "Building Board of Appeals of the City of Miami" (sometimes called herein the "Board"), which shall consist of five (5) members, one of whom shall be elected by said members to serve in the capacity of Chairman.

Each member of the Board shall either reside or have his principal place of business in the City. Two of the members of said Board shall be master builders, and the remaining three members shall be structural engineers and/or architects, and each member shall have had at least ten (10) years' experience in his profession.

The first Board, which shall serve from the effective date hereof, shall be comprised of the following members:

Alfred Parker who shall serve until June 30, 1951;  
George Moffat who shall serve until June 30, 1952;  
Robert E. Baxter who shall serve until June 30, 1952;  
T. T. Russell who shall serve until June 30, 1953; and  
Julius Gaines who shall serve until June 30, 1953;

or until their respective successors shall have been duly appointed and qualified.

At least ten (10) days prior to the date of the term of any member of the Board, or within ten (10) days after the death, resignation or removal of any member, his successor shall be named and appointed by the City Commission of the City of Miami by means of the adopting of a resolution naming such member. Any member of the Board shall be eligible for reappointment. The successor in each case shall be appointed and shall hold office for a term of two (2) years from the date of expiration of the term of his predecessor, except that any person appointed to fill a vacancy shall serve only for the unexpired term.

Said Board shall have the power, and it is hereby authorized, to hear any person, persons, firm, partnership or corporation which may appeal the decision of the Building Inspector with respect to the vacation, repair or demolition of any building, buildings, walls or structures, which may have been found by said Building Inspector to be a "dangerous building" under the provisions of Section 1 of this Ordinance; such appeal shall be made by written statement to the Board within five (5) days after the final written decision from the Building Inspector as provided in this ordinance; after notice of hearing, as provided in this ordinance, the decision of said Building Board of Appeals shall be final; the said Board is hereby given power and authority to make rules and regulations governing the conduct of such hearings, and the expenses of such hearings shall be borne by the City of Miami after approval of the proper officials of the City.

Section 7. DUTIES OF BUILDING BOARD OF APPEALS. The Building Board of Appeals shall:

(a) Upon receipt of a report of the Building Inspector, as provided for in Section 4, subsection (g) hereof, give a written notice, sent via registered mail, to the owner, occupant, mortgagee, lessee, agent and all other persons having an interest in said building as shown by the land records, as hereinabove defined, to appear before it on the date specified in the notice to show cause why the building or structure reported to be a "dangerous building" should not be repaired, vacated or demolished in accordance with the statement of particulars set forth in the Building Inspector's notice provided for herein in Section 5.

(b) Hold a hearing to hear such testimony as may be presented by any department of the City of Miami, the Building Inspector or the owner, occupant, mortgagee, lessee, or any other persons having an interest in said building, as shown by the land records, with relation to the "dangerous building."

(c) Make written findings of fact from the testimony offered pursuant to subsection (b) as to whether or not the building in question is a "dangerous building" within the terms of Section 1 hereof by a vote of not less than three members of said Board.

(d) After a personal inspection of the "dangerous building," issue an order based upon findings of fact made pursuant to subsection (c) and signed by the Chairman of said Board, commanding the owner, occupant, mortgagee, lessee, agent and all other persons having an interest in said building, as shown by the land record description, to repair and/or to vacate and/or to demolish any building found to be a "dangerous building" within the terms of this ordinance.

(e) If the owner, occupant, mortgagee, lessee, or other person having an interest in said building fails to comply with the order provided for in subsection (d) hereof, within ten (10) days, or any reasonable time ordered by said Board, then said Board shall cause such building or structure to be repaired, vacated or demolished as the facts may warrant under the standards hereinbefore provided in Section 2 of this ordinance, and the costs of such repair, vacation or demolition shall be a lien charged against the land, on which said building or structure existed, in favor of the City of Miami, or such costs shall be attached to the tax statement as an assessment lien against the land on which the building or structure stands, or did stand, or shall be recovered in a suit at law or equity against the owner; provided, however, that in cases where such procedure is desirable, and any delay thereby caused will not be dangerous to the health, morals, safety or general welfare of the people of this City, said Board shall notify the City Attorney to take legal action to force the owner to make all necessary repairs, vacate or demolish the building or structure.

(f) Report to the City Attorney the names of all persons not complying with the order provided for in Section 7, subsection (d), hereof.

Section 8. DUTIES OF THE CITY ATTORNEY. The City Attorney shall:

(a) Prosecute all persons failing to comply with the terms of the notices provided for herein in Section 5 and the order provided for in Section 7, subsection (d).

(b) Appear at all hearings before the Building Board of Appeals in regard to "dangerous building."

(c) Bring suit to collect costs incurred by the Board in repairing or causing to be vacated or demolished said "dangerous buildings."

(d) Take such other legal action as is necessary to carry out the terms and provisions of this ordinance.

Section 9. DUTIES OF THE DIVISION OF FIRE. The employees of the Division of Fire shall make a report, in writing, to the Building Inspector of all buildings or structures, which are, may be, or are suspected to be "dangerous buildings" within the purview of this ordinance. Such reports must be delivered to the Building Inspector within twenty-four (24) hours of the discovery of such building or buildings by any employee of the Division of Fire.

Section 10. DUTIES OF THE DIVISION OF POLICE. The employees of the Division of Police shall make a report, in writing, to the Building Inspector of any buildings or structures which are, may be, or are suspected to be "dangerous buildings" within the purview of this ordinance. Such reports must be delivered to the Building Inspector within twenty-four (24) hours of the discovery of such buildings by any employee of the Division of Police.

Section 11. EMERGENCY CASES. In cases where it reasonably appears that there is immediate danger to the life or safety of any person unless a "dangerous building" as defined herein is immediately repaired, vacated or demolished, the Building Inspector shall report such facts to the Board and the said Board shall cause the immediate repair, vacation or demolition of such "dangerous building." The costs of such emergency repair, vacation or demolition of such "dangerous building" shall be collected in the same manner as provided in this ordinance.

Section 12. WHERE OWNER ABSENT FROM THE CITY. In cases, except emergency cases, where the owner, occupant, lessee or mortgagee, or other interested party, is absent from the City, all notices or orders provided for herein shall be sent, via registered mail, to the owner, occupant, mortgagee, lessee and all other persons having an interest in said building, as described by the land records, to the last known address of each and a copy of such notice shall be posted in a conspicuous place on the "dangerous building" to which it relates. Such mailing and posting shall be deemed adequate service.

Section 13. ADMINISTRATIVE LIABILITY. No officer, agent or employe of the City of Miami shall render himself personally liable for any damage that may accrue to persons or property as a result of any act required or permitted in the discharge of his duties under this ordinance. Any suit brought against any officer, agent or employe of the City of Miami, as a result of any act required or permitted in the discharge of his duties under this ordinance, shall be defended by the City Attorney until the final determination of the proceedings therein.

Section 14. PENALTIES FOR VIOLATIONS. That every person violating any of the provisions of this ordinance shall be punishable by a fine not exceeding five hundred dollars (\$500), or by imprisonment not exceeding sixty (60) days, or by both such fine and imprisonment, in the discretion of the Municipal Judge, and each day's violation shall constitute a separate offense punishable under this ordinance.

Section 15. SEPARABILITY OF PROVISIONS. That if any clause, sentence, paragraph, section or other part of this ordinance shall be adjudged by any court of competent jurisdiction to be invalid, such judgment shall not affect, impair or invalidate the remainder hereof, but shall be confined in its operation and effect to that specific part of this ordinance which was directly involved in the controversy in which such judgment was rendered.

Section 16. REPEAL OF INCONSISTENT AND CONFLICTING PROVISIONS. That Ordinance No. 1678, and the conflicting portion of Section 301 of Ordinance No. 1554, and all other ordinances or parts of ordinances, in so far as they are inconsistent or in conflict with the provisions of this ordinance, be, and the same are, hereby repealed.

Section 17. EMERGENCY MEASURE. That this ordinance is hereby declared to be an emergency measure upon the ground of urgent public need for the preservation of peace, health, safety and property.

Section 18. DISPENSING WITH READING REQUIREMENT. That the requirement of reading this ordinance on two (2) separate days is hereby dispensed with by a vote of not less than four-fifths (4/5) of the members of the Commission.

PASSED AND ADOPTED this 5th day of April, 1950.

(Signed) WILLIAM M. WOLFARTH,  
*Mayor.*

ATTEST:

(Signed) F. L. CORRELL,  
*City Clerk*

## ORDINANCE NO. 3965

AN ORDINANCE AMENDING SECTION 202 OF ORDINANCE NO. 1554, OTHERWISE KNOWN AS THE BUILDING CODE OF THE CITY OF MIAMI; PROVIDING FOR THE ACCEPTANCE OF APPLICATIONS FOR AND THE ISSUANCE OF BUILDING PERMITS UNDER CERTAIN CONDITIONS; PROVIDING AN EXCEPTION THERETO FOR REPAIRS, REMODELING, OR ADDITIONS FOR WHICH CONSTRUCTION COSTS SHALL NOT EXCEED \$2,500 IN VALUE, EXCEPT WHERE STRUCTURAL CHANGES ARE INVOLVED; AND REPEALING ALL LAWS IN CONFLICT.

WHEREAS, in the interest of the public safety, health and welfare, and to provide additional safeguards in the construction of buildings and/or structures hereafter erected, constructed, altered, enlarged, repaired, removed, or converted; it is determined necessary to amend Ordinance No. 1554, otherwise known as the Building Code of the City of Miami, as hereinafter set forth:

NOW, THEREFORE, BE IT ORDAINED BY THE COMMISSION OF THE CITY OF MIAMI, FLORIDA:

Section 1. That Section 202 of Ordinance No. 1554, otherwise known as the Building Code of The City of Miami, is hereby amended by adding an additional paragraph to follow the existing portion of Section 202, which additional paragraph shall read as follows:

*"Applications for building permits will be accepted only from contractors licensed in their respective classifications and qualified under the existing laws of The City of Miami; provided, however, that a sole owner may make application for a building permit and perform and supervise work in connection with the construction of his (her) own private residence for his (her) own occupancy or the maintenance of, addition to, alteration to, or repair of his (her) own private residence, subject to the laws, ordinances, rules and regulations relating to the construction, alterations, repair, or demolition of buildings and structures in the City of Miami.*

*"The provisions herein set forth shall not apply to maintenance, repairs, or additions to existing property or new construction, the cost of which does not exceed \$2,500.00, except where it may effect structural changes; subject, however, to existing laws, ordinances, rules and regulations relating to construction, alteration or demolition of buildings or structures in the City of Miami; it being the intent of the provisions of this paragraph to permit a sole owner to perform or supervise work of construction, repairs or additions to his (her) own single family or duplex residential property."*



Section 2. That all laws, or parts of laws, in conflict herewith be, and the same are, hereby repealed in so far as there is conflict.

PASSED AND ADOPTED this 5th day of April, 1950.

(Signed) WILLIAM M. WOLFARTH,  
*Mayor.*

ATTEST: (Signed) F. L. CORRELL,  
*City Clerk.*

## ORDINANCE NO. 3971

AN ORDINANCE TO REQUIRE THE LAND OWNER, OR THE OPERATOR, OR AUTHORIZED AGENT OF A CIRCUS OR CARNIVAL TO MAKE A CASH DEPOSIT PRIOR TO THE ISSUANCE OF A PERMIT BY THE BUILDING DIVISION FOR THE SHOWING OF A CIRCUS, OR CARNIVAL; TO REQUIRE SAID DEPOSIT TO BE A MINIMUM OF \$100 FOR CARNIVALS, AND A MINIMUM OF \$500 FOR CIRCUSES; TO REQUIRE THE CHIEF BUILDING INSPECTOR TO DETERMINE AND FIX THE SAID DEPOSIT BASED UPON THE AREA OF THE SITE, AND THE VALUE OF PUBLIC IMPROVEMENTS AT THE SITE WHERE THE PERMIT IS ISSUED; TO PROVIDE AN APPEAL TO THE DIRECTOR OF PUBLIC SERVICE AS TO THE AMOUNT OF THE SAID DEPOSIT; TO AUTHORIZE THE CHIEF BUILDING INSPECTOR TO USE THE SAID DEPOSIT TO MAKE REPAIRS TO PUBLIC PROPERTY, OR TO REMOVE UNDESIRABLE TRASH AND MATERIALS FROM THE SITE AFTER NOTICE TO THE OWNER, OR THE OPERATOR, OR AUTHORIZED AGENT OF THE CARNIVAL OR CIRCUS; TO PROVIDE FOR THE RETURN OF UNUSED PORTION OF DEPOSIT AFTER FINAL INSPECTION BY THE DEPARTMENT OF PUBLIC SERVICE; PROVIDING PENALTIES FOR THE VIOLATION OF THIS ORDINANCE: AND REPEALING ALL LAWS, OR PARTS OF LAWS, IN CONFLICT.

WHEREAS, damage has frequently resulted to pavements, trees, shrubs, sidewalks, curbs and other public property by the use of heavy equipment and trucks in preparing and moving to, on, off, and from a site for the showing of a carnival or circus within the City of Miami, and

WHEREAS, the failure to remove rubbish, trash and other undesirable materials from the area during and after showing has caused the City of Miami and the citizens of said City undue and unnecessary expense for the removal of same, and

WHEREAS, it is deemed necessary that the City be protected against such resulting damage and the cost of repairing or replacing public property, and the cleaning up of the area; and

WHEREAS, some guarantee should be established in order to insure that the showing of such carnivals and circuses on lands within the City will not cause undue and unnecessary expense to the City or its citizens, and

WHEREAS, the Director of the Department of Public Service has recommended that for the proper operation of his department to prevent further damage and expense to the City a cash deposit should be required;

NOW, THEREFORE, BE IT ORDAINED BY THE COMMISSION OF THE CITY OF MIAMI, FLORIDA:

Sec. 1. That before any permit for the showing of a carnival or

circus shall be issued by the Building Division of the City of Miami; the owner of the land, or the operator, or authorized agent of the carnival or circus desiring to show thereon, shall post a cash deposit, amount of same to be determined as hereinafter set forth.

Sec. 2. That the Chief Building Inspector, or his duly authorized representative, shall consider the routes of travel as well as the value of public property and improvements at the site for which the permit is to be issued, and shall also consider the area of the site to be cleaned up after the occupancy of the carnival or circus, in order to determine and fix the amount of the cash deposit required for said permit, however, said cash deposit shall in no case be less than a minimum of Five Hundred Dollars (\$500.00) for a circus, and One Hundred Dollars (\$100.00) for a carnival.

Sec. 3. That the Chief Building Inspector, or his duly authorized representative, shall give the owner, operator, or agent a receipt for the cash deposit.

Sec. 4. That if the owner, operator, or agent shall consider the deposit so determined by the Chief Building Inspector or his duly authorized representative, to be excessive, he may appeal in writing to the Department of Public Service.

Sec. 5. That after the circus or carnival has vacated the site, the Department of Public Service shall inspect the travelled routes and site and if there has been no damage to public property and if the site has been cleared of all rubbish, trash and undesirable material said Department shall authorize the Chief Building Inspector to refund the cash deposit.

Sec. 6. That in the event there has been damage to public property or public improvements, or that rubbish, trash, and undesirable materials have been left on the site for which the permit is issued, then the Chief Building Inspector or his duly authorized representative shall notify in writing the holder of the permit or depositor to commence correction of the above mentioned conditions within 48 hours. In the event the holder of the permit or depositor fails to comply with such notice to correct the conditions, the Chief Building Inspector shall have the repairs made or undesirable materials, trash, rubbish, etc., removed, and pay for the same from the cash deposit. That in the event there should be a balance remaining after such work is done, the unexpended balance of any cash deposit shall be returned to the said permittee or depositor.

Sec. 7. Any person or persons, and the officers and directors of any carnival or circus violating this ordinance or any of its provisions or sections or parts of sections, shall, upon conviction, be punished by a fine not to exceed Five Hundred Dollars (\$500.00) or by imprisonment in the discretion of the Court, for each separate violation.

Sec. 8. In the event any section, subsection, sentence, clause or

phrase of this ordinance shall be declared or adjudged invalid or incompetent, such adjudication shall in no manner affect the other sections, subsection, clauses or phrases of this Ordinance, which shall be and remain in full force and effect as if the section, subsection, clause or phrase so declared or adjudged invalid or unconstitutional was not originally a part thereof.

Sec. 9. That all laws or parts of laws in conflict herewith be, and the same are, hereby repealed insofar as there is conflict.

PASSED AND ADOPTED this 19th day of April, 1950.

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Acting Mayor

ATTEST:

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City Clerk

## ORDINANCE NO. 2149

AN ORDINANCE AMENDING SUBSECTIONS (d), (h) and (j) OF SECTION 4820 OF CHAPTER 48, OF ORDINANCE NUMBER 1554, AS AMENDED BY ORDINANCE NUMBER 2050, OF THE CITY OF MIAMI, PROVIDING FOR THE FILING OF ALL ELEVATOR INSPECTION REPORTS WITH THE BUILDING INSPECTOR; PROVIDING FOR THE WAIVER OF AN INSPECTION FEE UPON ALL TYPES OF ELEVATORS, ESCALATORS, DUMBWAITERS, HOISTS OR OTHER LIFTING APPARATUS OR THE FILING OF AN INSPECTION REPORT BY AN APPROVED INSPECTOR OF AN INSURANCE OR CASUALTY COMPANY; PROVIDING THAT ALL FEES COLLECTED UNDER THE PROVISIONS OF THIS ORDINANCE SHALL BE PAID TO THE TAX COLLECTOR OF THE CITY OF MIAMI INSTEAD OF BEING CREDITED TO A SPECIAL ELEVATOR FUND, DECLARING THIS ORDINANCE TO BE AN EMERGENCY MEASURE; AND DISPENSING WITH THE READING OF SAME ON TWO SEPARATE DAYS BY A FOUR-FIFTHS VOTE OF THE COMMISSION OF THE CITY OF MIAMI.

BE IT ORDAINED BY THE COMMISSION OF THE CITY OF MIAMI:

Section 1. That Subsection (d) of Section 4820, of Chapter 48 of Ordinance No. 1554, as amended by Ordinance No. 2050, which reads as follows:

"(d) Issuance of Certificates: Every elevator inspector shall file with the Building Inspector a full report of each and every inspection made of any elevator, escalator, dumbwaiter, hoist or other lifting apparatus, showing the exact condition of the said elevator, escalator, dumbwaiter, hoist or other lifting apparatus, with definite statement of any repairs or replacements required. If this report indicates that the said elevator, escalator, dumbwaiter, hoist or other lifting apparatus is in a safe condition to operate, the Building Inspector shall issue a certificate of operation for a capacity not to exceed that named in the said report of inspection, which certificate shall be valid for three (3) months after date of inspection for passenger elevators, freight elevators, escalators and building hoists; and six (6) months for dumbwaiters, electric or hand power type, freight elevators hand power type, or other lifting apparatus, unless future inspections indicate an unsafe condition. No passenger elevator, freight elevator, dumbwaiter, escalator, or building hoist or other lifting apparatus, may be lawfully operated without having such a certificate conspicuously posted in the elevator car, cage or platform."

be, and the same is hereby, amended to read as follows:

"(d) Issuance of Certificates: Each elevator inspector, whether employed by the City of Miami or by an insurance or casualty company, shall file with the Building Inspector of the City of Miami a full report of each and every inspection made of any

elevator, escalator, dumbwaiter, hoist or other lifting apparatus showing the exact condition of the said elevator, escalator, dumbwaiter, hoist or other lifting apparatus, with a definite statement of any repairs or replacements required. If this report indicates that the said elevator, escalator, dumbwaiter, hoist or other lifting apparatus is in a safe operating condition, the Building Inspector shall issue a certificate of operation for a load capacity not to exceed that named in the said report of inspection. This certificate shall be valid for three (3) months after the date of inspection as to passenger elevators, freight elevators, escalators and building hoists, and for six (6) months after date of inspection as to dumbwaiters of either electric or hand power type, freight elevators of the hand power type or other lifting apparatus unless subsequent inspections indicate an unsafe condition. No passenger elevator, freight elevator, dumbwaiter, escalator, building hoist, or other lifting apparatus may be operated without this certificate first having been conspicuously posted in the elevator car, cage or platform."

Section 2. That Subsection (h) of Section 4820, of Chapter 48, of Ordinance No. 1554, as amended by Ordinance No. 2050, which reads as follows:

"(h) Fees to be charged: The fee for each inspection and certificate of operation for all types of elevators, escalators, dumbwaiters, hoists or other lifting apparatus, shall be three (\$3.00) dollars,"

be, and the same is hereby, amended to read as follows:

"(h) Fees to be charged: The fee for each inspection shall be TWO DOLLARS AND FIFTY CENTS (\$2.50) and for each certificate of operation FIFTY CENTS (50c) for all types of elevators, escalators, dumbwaiters, hoists or other lifting apparatus, provided, however, that on and after July 1, 1939, the City of Miami will waive the inspection fee of \$2.50 as fixed in this subsection upon the filing of an inspection report by an insurance or casualty company inspector, that said elevator, escalator, dumbwaiter, hoist or other lifting apparatus is in a safe operating condition, but not before said inspector has been approved by the Building Inspector of the City of Miami, and the inspection report has been made in conformity with Section 1. of this Ordinance."

Section 3. That Subsection (j) of Section 4820 of Chapter 48, of Ordinance No. 1554, as amended by Ordinance No. 2050, which reads as follows:

"(j) Disposition of Fees Collected: All fees collected under the provisions of this ordinance shall be paid to the City of Miami, Florida, and credited by the Director of Finance to a special elevator fund out of which shall be paid all the expenses incident to the enforcement of this ordinance, and no monies except those derived from fees collected under the provisions of this ordinance shall be used in the work herein provided for. The employment of inspectors and the incurring of other expenses must be limited to

the revenue collected under this ordinance. This public service must be entirely self-supporting,"

be, and the same is hereby, amended to read as follows:

"(j) Disposition of Fees Collected: All fees collected for City inspections under the provisions of this ordinance shall be paid to the Tax Collector of the City of Miami, Florida."

Section 4. This ordinance is hereby declared to be an emergency measure upon the ground of urgent public need for the preservation of the peace, health, safety and welfare of the people of the City of Miami, Florida.

Section 5. The reading of this ordinance on two separate days is hereby dispensed with by a four-fifths vote of the City Commission.

PASSED AND ADOPTED this 2nd day of August, A. D. 1939.

E. G. SEWELL.

*Mayor.*

ATTEST:

FRANK J. KELLY,  
*City Clerk.*