MANUAL

Standard Building Code

of

New Jersey

STATE OF NEW JERSEY
RICHARD J. HUGHES, GOVERNOR

1968 Printing

MANUAL

STANDARD BUILDING CODE

OF

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PART A - General Provisions and Definitions
B - Structural, Fire, and General Safety Requirements
C - Elevators, Motor Stairways, and Conveyor Equipment
D - Air Conditioning, Mechanical Ventilation and Refrigeration
E - Plumbing (published separately)
F - Electrical Equipment and Wiring

Parts A and B adopted December 23, 1953
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Rules for Construction of One and Two Family Dwellings, adopted June 18, 1958 (published separately).

PREPARED PURSUANT TO
LAWS OF 1946, CHAPTER 120

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SUPPLEMENT #3, 1967

SUPPLEMENT NO. 1

(Adopted October 1964)

The following Sections in the Manual of the Standard Building Code of New Jersey have been changed to bring the Code up to date.

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MANUAL

STANDARD BUILDING CODE

OF NEW JERSEY

GENERAL PROVISIONS

STRUCTURAL, FIRE, AND GENERAL SAFETY REQUIREMENTS

FOREWORD

This Manual is presented as a component part of the Standard Building Code of the State of New Jersey. Its purpose is to control the construction, use, and occupancy of all buildings, by presenting those standards of design and construction which are currently considered reasonable and adequate to assure public safety and health in the construction, use, and occupancy of buildings and other structures within the State.

This Manual, through periodic revision by the State Board of Standards, will provide the elasticity necessary to keep the Code abreast of advancing techniques and technological developments in the art of building construction.

Wherever possible, nationally recognized standards of good practice are specified without modification. Where such standards are affected by state law, or deviations are necessary for other reasons, requirements are set forth for those matters in this Manual. Where recognized standards are not available, or are published in a form not suited to adoption by reference in this Manual, a New Jersey standard has been prepared from the most authoritative material available on the matter. If and when a recognized standard becomes available on such matters, steps will be taken by the Board of Standards to adopt them in this Manual.

The Manual will be revised from time to time as progress and technological developments dictate. Additions will be made, covering other acceptable materials and methods of construction which are found to conform to the basic requirements set forth in the Code.

Users of the Code are required to comply with the standards of practice set forth in this Manual unless permission in writing is granted by the Building Official to use other standards of equal acceptability.

In order to facilitate its use, the sub-divisions of this Manual are titled to correspond with the section titles in the Code. Where no corresponding title is contained in the Manual, the particular matter is considered to be fully covered by the provisions of the Code.

The material herein submitted is not intended to indicate the full contents of this Manual. The Manual, in its developed form, will contain as much detailed information as necessary or desirable.

MANUAL – STANDARD BUILDING CODE OF NEW JERSEY

CONTENTS

SUPPLEMENT NO. 3

The following Sections in the Manual of the Standard Building Code of New Jersey have been changed to bring the Code up to date.

The following pages of Supplement No. 2 included herein have not been changed in Supplement No. 3.

M A N U A L

STANDARD BUILDING CODE OF NEW JERSEY

PART A

GENERAL PROVISIONS

SEC. MA-103.0

(The text of the sections of the New Jersey Revised Statutes as cited in the code can be examined in any law library or at the offices of the State Bureau of Housing, in Trenton, New Jersey).

For legal advice, consult attorney.

M A N U A L

STANDARD BUILDING CODE OF NEW JERSEY

PART B

STRUCTURAL, FIRE, AND GENERAL SAFETY

SEC. MB-201.1b TABLE - USE GROUP A-2, HIGH HAZARD USES

Acetylene gas and gases under pressure of fifteen (15) pounds or more and in quantities of greater than twenty-five hundred (2500) cubic feet; including hydrogen, illuminating, natural, ammonia, chlorine, phosgene, sulphur dioxide, carbon dioxide, methyl oxide and all gases subject to explosion, fume or toxic hazard.

Cereal, feed, flour and grist or pulverizing mills.

Chemicals creating a toxic, fire or explosion hazard.

Dusts creating explosion or toxic hazard.

Finishing operations with flammable liquids.

Gasoline Bulk plants.

Grain elevators.

Hydrogenation processes.

Operations employing solids or substances which ignite or produce flammable gas on contact with water.

Manufacture of products utilizing sulphur and phosphorous, such as matches.

Paint and varnish manufacturing operations.

Pyroxylin plastic manufacturing.

Refineries and Petro-chemical processes.

Waste paper shredding or sorting.

SEC. MB-201.2a TABLE - USE GROUP B-1, STORAGE USES - MODERATE HAZARD

Livestock Shelters
Lumber Yards

Motor Vehicle repair shops
Petroleum Warehouses for storage of lubricating oils with a flash point of three hundred (300) degrees F. or higher (See Sec. B-302.6a).
Public Garages and Stables

Note: Storage or warehousing on the site of an industrial operation shall be governed by design criteria applying to Sec. MB-201.4.

SEC. MB-201.2b TABLE - USE GROUP B-2, STORAGE USES - LOW HAZARD

Asbestos
Chalk and crayons
Food Products
Glass
Ivory
Metals, except magnesium
Porcelain and pottery
Talc and soapstones

Note: Combustible storage with a fire load rating of three (3) pounds or less per square foot shall be considered as low hazard storage provided that not more than 25% of the gross area exceeds the maximum fire load limit of three (3) pounds per square foot.

SEC. MB-201.4 TABLE - USE GROUP D, INDUSTRIAL USES

Assembly Plants
Bakeries
Boiler Works
Breweries
Canneries

Carpet and Rug Manufacturing
Clothing Manufacturing
Creameries
Dry Cleaning using other than volatile flammable liquids in cleaning or dying operation.
Electric substations, electric light plants and power houses.

Electrolitic reducing works
Food Products
Glass Plants
Glue, Mucilage, Paste and Size
Ice Plants

Leather Processing
Linoleum Manufacturing
Metal Workers
Millwork
Packing Houses

Paper Mills
Printing, Lithographing, Book-binding
Pumping Stations
Research Centers
Smoke Houses

Sugar Refineries
Talc and Soapstone
Textile Mills
Tanneries
Water base paint finishing operations

Woodworking

SEC. MB-401.0 NATIONAL EXITS CODE

(1) Accepted Engineering Practice:

Building Exits Code	NFPA 101-1962
Exits and Access in Buildings by Physically Handicapped	ASA-A-117.1-61

SEC. MB-501.0 NATIONAL STANDARD

(1) Accepted Engineering Practice

Industrial Lighting	ASA-A-11.1-1952
Guide and Data Books	
Fundamentals and Equipment	ASHRAE - 1963
Applications	ASHRAE - 1962

SEC. MB-504.0 REQUIRED FRESH AIR SUPPLY

(1) Mechanical or gravity systems of ventilation shall provide the minimum air changes per hour specified in Table B-504 but in no case less than the fresh air supply in cubic feet per minute per square foot of floor area of rooms and spaces as herein prescribed.

(2) Workrooms.

(2a) Workrooms with occupants engaged in sedentary work shall be provided with not less than one (1) cubic foot of fresh air;

(2b) Workrooms in which arduous work is performed shall be provided with not less than one and one-half ($1\frac{1}{2}$) cubic feet of fresh air;

(2c) The above ventilation requirements may be reduced fifty (50) per cent when the net space per occupant exceeds one thousand (1000) cubic feet.

(3) Auditoriums. Auditoriums, department stores, lecture rooms, libraries, theatres, school and classrooms, gymnasiums, restaurants and dining halls, shall be provided with not less than one and one-half ($1\frac{1}{2}$) cubic feet of fresh air.

(4) Art Galleries. Art galleries, museums, railroad stations, convention halls, offices, asylums, orphanages, jails, and prisons shall be provided with not less than one-half ($\frac{1}{2}$) cubic foot of fresh air.

(5) Hospital Wards. Hospital wards and dormitories of institutional buildings shall be provided with not less than one and one-half ($1\frac{1}{2}$) cubic feet of fresh air.

(6) Operating Rooms. Operating rooms of institutional buildings shall be provided with not less than five (5) cubic feet of fresh air.

(7) Chemical Laboratories. Chemical laboratories shall be provided with not less than two (2) cubic feet of fresh air, except that when instrument benches are equipped with exhaust hoods or canopies with separate exhaust vents, the fresh air supply may be reduced fifty (50) per cent.

(8) Dance Halls. Dance halls and interior cooking spaces shall be provided with not less than two (2) cubic feet of fresh air.

(9) Kitchens. Kitchens which supply food for institutions, restaurants, hotel dining rooms, and cafeterias shall be provided with not less than three (3) cubic feet of air.

(10) Exitways. Exitways in multi-family dwellings (use group L-2) and in institutional (use group H) buildings shall be provided with not less than one and one-half ($1\frac{1}{2}$) cubic feet of fresh air.

SEC. MB-504.1 REQUIRED MINIMUM OUTDOOR AIR SUPPLY FOR AIR CONDITIONING SYSTEMS

(1) Outdoor air supply for air conditioned building shall be not less than a minimum of 20% of the quantity of air circulated.

(continued)

SEC. MB-504.1 REQUIRED MINIMUM OUTDOOR AIR SUPPLY FOR AIR CONDITIONING SYSTEMS (con't)

(2) Systems shall provide at least the following outdoor air supply requirements:

Application	Smoking	Cfm per Person		Cfm per sq. ft. of Floor
		Recommended	Minimum	Minimum
Apartment	Some	20	10	-
Art Gallery	None	-	-	.25
Auditorium	None	10	7½	-
Banking Space	Occasional	10	7½	-
Barber Shops	Considerable	15	10	-
Beauty Parlors	Occasional	10	7½	-
Chemical Labs.	None	-	-	1.0
Cocktail Bars	Very Heavy	40	25	-
Corridors - Exitways	None	-	-	0.5
Dance Halls	None	-	-	1.0
Department Stores	None	10	7½	0.25
Directors' Rooms	Extreme	50	30	-
Dormitories(Institution)	None	-	-	0.5
Drug Stores	Considerable	10	7½	-
Factories	Not Permitted	10	7½	0.1-1.0
Five & Ten Cent Stores	None	10	7½	.5
Funeral Parlors	None	10	7½	-
Garages (Public)	Not Permitted	-	-	1.0
Hospital				
Operating Rooms	None	-	-	2.0
Private Rooms	None	30	25	0.33
Wards	None	20	10	-
Hotel Rooms	Heavy	30	25	0.33
Kitchens				
Restaurant	-	-	-	4.0
Residential	-	-	-	2.0
Laboratories	Some	20	15	-
Lecture Halls	None	-	-	1.0
Library	None	15	10	-
Meeting Rooms	Very Heavy	50	30	1.25
Museums	None	-	-	.25
Offices				
General	Some	15	10	-
Private	Considerable	30	25	.25
Prisons	None	10	7½	-
Jails	None	-	-	.25
Railroad Station	Some	-	-	.25
Restaurants				
Cafeteria	Considerable	12	10	-
Dining Room	Considerable	15	12	-
Retail Stores	None	10	7½	-
Theater	None	15	10	-

NOTE: These values are nominal. Each engineering design requires the consideration of intensity of dust odors, heat and vapor generation and presence of hazardous solvents and similar contaminants for the accurate determination of requirements.

SEC. MB-510.3 AIR INTAKES TO COURT

(1) The walls, floors and ceilings of intakes or passages to courts shall have a fireresistance rating of not less than two (2) hours in buildings of types 1, 2 or 3 construction and not less than three-quarter (3/4) hour in type 4 construction.

SEC. MB-600 SCOPE This section of the manual supplements the provisions of Sec. B-600 of the code governing the structural design of all structures and foundations, the quality, workmanship, and requirements for all materials and methods of construction used in the construction of all buildings and other structures.

SEC. MB-601.0 STRUCTURAL DESIGN PROCEDURE

(1) Accepted Engineering Practice

Steel and Iron	Manual of Steel Construction, Sixth Edition	AISC-63
	Specification for the Design, Fabrication and Erection of Structural Steel for Buildings	AISC-63
	Specifications for Structural Joints Using ASTM A325 Bolts or A490 Bolts	AISC-66
	Specification for Architecturally Exposed Structural Steel	AISC-60
	Standard Specifications and Load Table for Open Web Steel Joists Longspan or LA-Series (See MB-601.3a(3)	AISC-61
	Standard Specifications and Load Table for Open Web Steel Joists High Strength Longspan or LH-Series (See Sec. MB-601.3a (8)	AISC-61
	Standard Specifications and Load Tables for Open Web Steel Joists J-Series and H-Series (See Sec. MB-601.3a (8)	AISC-65
	Code for Welding in Building Construction	AWS D 1.0-63
	Light Gage Cold-Formed Steel Design Manual	AISI-62
	Specification for the Design of Light Gage Cold-Formed Steel Structural Members	AISI-62
	Tentative Criteria for Structural Applications of Steel Cables for Buildings	AISC-66
Concrete	Building Code Requirements for Reinforced Concrete	ACI 318-63
	Building Code Requirements for Reinforced Concrete	ASA A 89.1-64
	Specifications for Reinforced Gypsum Concrete	ASA A 59.1-54
	Specifications for Ready-Mixed Concrete	ASA A 37.69-57
	Recommended Practice for Selecting Proportions for Concrete	ACI 613-54
	Specifications for Light Weight Aggregates for Structural Concrete	ASTM C 330-64 T
	Reinforced Concrete Columns, Steel Spirals for Simplified Practice Recommendations	USDC R 53-63
	Asbestos-Cement Non-Pressure Sewer Pipe, Specifications for	ASTM C 428-65 T
	Asbestos-Cement Pressure Pipe, Specifications for	ASTM C 296-65 T
	Rubber Rings for Asbestos-Cement Pipe	ASTM D 1869-66
Masonry and Plaster	Building Code Requirements for Masonry	ASA A 41.1-53
	Specifications for Clay Tile Facing & Veneer	TCA Hndbk-67
	Standards for Cast Stone	ACI 704-44
	Minimum Standard Requirements for Precast Concrete Floor Units	ACI 711-58
	Specification for Vermiculite Plaster	VI-56
	Specifications for Hollow Non-Load-Bearing Concrete Masonry Units	ASTM C 129-64 T
	Recommended Building Requirements, Engineered Brick Masonry	SCPI-66
Lumber and Miscellaneous	National Design Specification for Stress-Grade Lumber and its Fastenings	N-FPA-62 (NLMA)
	Tentative Methods for Establishing Structural Grades of Lumber	ASTM D 245-64 T
	Working Stresses, Stress Grade Lumber	N-FPA #1-62 (NLMA)
	Heavy Timber Construction Details (Wood Construction Data)	N-FPA #5-60 (NLMA)
	Timber Construction Standards	AITC 100-62
	Wood Structural Design Data, Fifth Edition	NFPA-62
	Lumber, Structure, Glued, Laminated, Inspection Manual	AITC 200-63
	Lumber, Structure, Glued, Laminated	CS 253-63
	Plywood Design Specification	APA-66
	Plywood Beams, Specification for Design & Fabrication	DFPA SPEC. BB-8-63
	Plywood, Lumber Structural Assemblies, Spec. for Design	DFPA SPEC. #1-64
	Plywood Panels, Curved, Spec. for Design & Fabrication	DFPA SPEC. CP-8-63
	Plywood Panels, Flat with Stressed Covers, Spec. for Design & Fabrication	DFPA SPEC. SS-8-63
	Plywood Folded Plates, Specification for Fabrication	DFPA SPEC. FP-62-62
	Adhesive, Casein Type, Water & Mold Resistive	FS-MMM-A-125b-64
	Adhesive, Urea-Resin Type (Liquid and Powder)	FS-MMM-A-188-60
	Condensation Control in Dwelling Construction	HHFA-50
	Insulation Board, Thermal (Polystyrene)	FS-HH-I-524a-66
	Insulation Block, Pipe Covering and Boards, Thermal (Cellular Glass), also Amendment #3	FS-HH-I-551c-65
	Building Code Requirements for Signs & Outdoor Display Structures	ASA A-60.1-49
	Engineering Regulations for the Construction of Farm Buildings and Structures (Rutgers University)	SEC. MB-802.0-V
	Specifications for Structures of Aluminum Alloy	Al. Const. Manual-1963
	Fiber Pipe, Bituminized Drain and Sewer	USDC CS 116-54

SEC. MB-601.3A UNIT WORKING STRESSES FOR ORDINARY AND CONTROLLED MATERIALS

The working stresses herein prescribed shall apply to that construction utilizing identified materials both ordinary and controlled. When structural material is described as unidentified it shall be accompanied by test data of strength and stress grade acknowledged and acceptable to the satisfaction of the enforcing official.

(1) Masonry

(1a) Ordinary:

Ordinary masonry design and construction shall conform to the provisions of Building Code Requirements for Masonry ASA-A-41.1-53.

(1b) Controlled:

Controlled solid clay masonry design and construction shall conform to acceptable engineering practices, and the following provisions shall be complied with by the engineer in the determination of required constructional dimensions; slenderness ratio, allowable bearing stress, Table A, and Table B.

SLENDERNESS RATIO

The slenderness ratio (ratio of effective height or length of the wall panel to the effective thickness) shall not exceed 30 (thirty) for walls of solid units, 20 (twenty) for walls of hollow units, and 25 (twenty-five) for walls of filled cell, grouted masonry, and cavity wall.

ALLOWABLE BEARING STRESSES

Allowable bearing stresses may be taken as one and one-half times the corresponding allowable compressive stress provided that, the area of the member supporting the bearing plate and the least distance between the edges of the loaded and unloaded areas is a minimum of one-fourth of the parallel side dimension of the loaded area. For bearing on the full area, the allowable bearing stress shall be taken as equal to the allowable compressive strength. For reasonably concentric bearing areas greater than one-third but less than the full area, the allowable bearing stress be interpolated between 1.0 and 1.5 times the allowable compressive strength.

TABLE A – ALLOWABLE COMPRESSIVE STRESSES IN SOLID CLAY UNIT MASONRY

Minimum average compressive strength of unit, psi	Allowable compressive stresses on gross cross-sectional area, psi (1) Mortar Type (2) (5)			
Multi-wythe or Single-wythe bonded or metal tied: (3)	M	S	N	O
16,000 plus, psi	705	640	420	300
14,000 psi	675	615	405	275
12,000 psi	650	590	390	250
10,000 psi	615	560	370	225
8,000 psi	530	485	320	200
6,000 psi	505	460	300	170
4,000 psi	420	380	250	140
Grouted masonry or single wythe:				
16,000 plus, psi	880	800	530	
14,000 psi	825	750	495	
12,000 psi	770	700	460	
10,000 psi	715	650	430	
8,000 psi	605	550	360	
6,000 psi	550	500	330	
4,000 psi	440	400	265	
Cavity wall: (4)				
8,000 plus, psi	230	200	170	
4,500 psi	175	160	140	
2,500 psi	130	120	105	
1,200 psi	100	90	80	

(1) Linear interpolation may be used for determining allowable stresses for masonry units having compressive strengths which are intermediate between those given in the table.

(2) Mortar designations shall be defined as: Type "M" as A-1, Type "S" as A-2, Type "N" as B and Type "O" as C.

(3) These stresses apply to metal-tied walls only where the collar joint is filled with mortar; otherwise the allowable stresses for cavity walls shall apply.

(4) On Gross cross-sectional area of wall minus area of cavity between wythes. The allowable compressive stresses in Table A are based on the assumption that floor and roof loads bear upon but one of the two wythes. Where hollow walls are concentrically loaded the allowable stresses shown in Table A may be increased 25 per cent.

(5) Where masonry cement mortars are used, allowable stresses in Table A shall be reduced 70%.

TABLE B – ALLOWABLE STRESSES IN TENSION IN FLEXURE AND SHEAR FOR SOLID CLAY UNIT MASONRY

CONSTRUCTION	TENSION IN FLEXURE			SHEAR	
	Normal to bed joints (1) Type (3)		Parallel to bed joints (2)	Mortar Type (3)	
	M or S	N	M, S or N	M or S	N
Multi-wythe (Masonry bonded or metal-tied with cellar joint filled), single wythe and grouted masonry	36	28	72	50	40
Cavity Walls of solid units	28	20	56	40	30

(1) Direction of stress is normal to bed joints; vertically in normal masonry construction.

(2) Direction of stress is parallel to bed joints; horizontally in normal masonry construction. If masonry is laid in stack bond, tensile stresses in the horizontal direction shall not be permitted.

(3) Where masonry cement mortars are used, allowable stresses shall be reduced by 50 per cent.

(2) Reinforced Concrete. The allowable working stresses for ordinary materials shall be based on the following proportions by dry volumetric measurement and maximum water content per sack of cement in accordance with the standard building code requirements for reinforced concrete specified subject to the ten (10) per cent reduction prescribed herein for ordinary materials.

28-day strength of concrete in pounds per square inch	Concrete Proportions	Gals. of water per sack of cement
2,000	1:5½	7½
2,500	1:4½	6¾
3,000	1:3½	6

SEC. MB-601.3a UNIT WORKING STRESSES FOR ORDINARY MATERIALS (Con't)

(3) Reinforced Gypsum Concrete. When ordinary materials are used, the allowable working stresses shall be based on the following proportions, measured dry by weight with sufficient water to make a plastic mix that will fill the forms: 100 per cent neat calcined gypsum: 97 per cent gypsum and 3 per cent wood chips; shavings, or fibers; and 87.5 per cent gypsum and 12.5 per cent wood chips, shavings, or fibers, with ultimate compressive strengths of 1800, 1000 and 500 pounds per square inch respectively.

The working stresses shall not exceed the values prescribed in the standard for reinforced gypsum concrete herein listed subject to the ten (10) per cent reduction prescribed for ordinary materials

(4) Steel Reinforcement. The allowable working stresses for reinforcement specified in the standard building code requirements for reinforced concrete herein listed shall be used in all reinforced construction, including reinforced concrete, reinforced gypsum concrete and all forms of reinforced masonry subject to the ten (10) per cent reduction specified for ordinary, unidentified materials except as follows:

Type of Steel Element	Maximum stress in lbs. per sq. inch
High Yield Strength Steel (50 per cent of Yield Point)	30,000
Steel Pipe, concrete-filled (45 per cent of Yield Point)	16,000

(5) Structural Steel. When materials are not identified as to manufacture and grade, or do not conform to the requirements of SEC. 1.4 of the AISC Specifications, or are not substantiated with certified mill test reports, the allowable working stresses specified in the standard for the design, fabrication and erection of structural steel shall be reduced ten (10) per cent. For proprietory steels substantiated with certified mill test data, the above reduction shall be based on the allowable stresses for the nearest applicable ASTM standard cited in SEC. 1.4 of the AISC Specifications, providing the test data results equal or exceed those required by such ASTM standard.

(6) Cast Steel and Steel Forgings. The allowable stresses shall be the same as those specified for Structural Steel.

(continued)

SEC. MB-601.3a UNIT WORKING STRESSES FOR ORDINARY MATERIALS (Con't)

(7) Cast Iron — In lbs. per sq. inch

Tension	3,000
Extreme tension (fiber stress in bending)	3,000
Extreme Compression (fiber stress in bending)	16,000
Shear	3,000
Column Compression	9,000 minus $40\frac{l}{r}$

Ratio $\frac{l}{r}$ not to exceed seventy (70)

(8) Open Web Steel Joists. The allowable working stresses specified for open-web steel joists shall be in accordance with the standard specifications for steel joist construction listed herein. In no case shall the allowable loads for open-web steel joists exceed the standard load tables of the standard specification: For all other open-web steel joists unless specifically approved and identified by load tests prescribed in SEC. B 607, the allowable working stresses and loading specified by the standard shall be reduced ten (10) per cent.

(9) Formed Steel Construction. The allowable working stresses for light gage cold-formed steel structural members not substantiated by certified tests prescribed by the AISI specifications shall be reduced ten (10) per cent.

(10) Lumber. When the grade of lumber is not identified for controlled materials, the maximum allowable working stress shall not exceed 1200 pounds per square inch. Short duration load factors shall not be considered in determining the allowable working stress.

(11) Poles for Permanent Pole-Type Buildings Sec. MB 802.0-V

How to design Pole-Type Buildings by Don Patterson AWPI-65.

SEC. MB-601.5 MATERIAL STANDARDS
(1) Accepted Engineering Practice
(1a) ASTM Test Standards

Masonry	Sampling and Testing Brick	C 67-66
	Test for Absorption and Bulk Specific Gravity of Natural Building Stone	C 97-47
	Test for Compressive Strength of Natural Building Stone	C 170-50
	Test for Modulus of Rupture of Natural Building Stone	C 99-52
	Sampling and Testing Structural Clay Tile	C 112-60
Concrete	Making and Curing Concrete Compression and Flexure Test Specimens in the Field	C 31-66
	Test for Compressive Strength of Molded Concrete Cylinders	C 39-64
	Test for Compressive Strength of Concrete using portions of Beams Broken in Flexure	C 116-65 T
	Test for Flexural Strength of Concrete	C 293-64
	Method of Test for Resistance of Concrete Specimens to Rapid Freezing and Thawing in Water	C 290-63 T
	Method of Test for Resistance of Concrete Specimens to Rapid Freezing in Air and Thawing Water	C 291-61 T
	Test for Organic Impurities in Sand for Concrete	C 40-66
Lumber and Wood Products	Testing Small Clear Specimens of Timber	D 143-52
	Static Test of Structural Size of Timbers	D 198-27
	Testing Veneer, Plywood, and other Glued Veneer Constructions	D 805-63
	Evaluating the Properties of Wood-Base Fiber and Particle Panel Materials	D 1037-64
	Testing Structural Insulating Board Made from Vegetable Fibers	C 209-60
	Combustible Properties of Treated Wood by the Crib Test	E 160-50
	Method of Establishing Structural Grades of Lumber	D 245-64 T
	Tentative Methods for Establishing Clear Wood Strength Values	D2555-66 T
	Determining Design Stresses for Load Sharing	D2018-62 T
	Veneer, Plywood and Other Glued Veneer Constructions – Methods of Testing	D 805-63
	Truss Assemblies – Methods of Testing	E 73-52
Plastics	Accelerated Service Test for Plastics	D 756-56
	Methods of Test for Tensile Properties of Plastics	D 638-64 T
	Methods of Test for Compressive Properties of Rigid Plastics	D 695-63 T
	Methods of Test for Shear Strength of Plastics	D 732-46
	Methods of Test for Deformation of Plastics Under Load	D 621-64
	Methods of Test for Coefficient of Linear Thermal Expansion of Plastics	D 696-44
	Recommended Practice for Accelerated Weathering of Plastics Using S-1 Bulb and Fog Chamber	D 795-65 T
	Method of Test for Water Absorption of Plastics	D 570-63
Roofing Materials	Test for Weather Resistance of Natural Slate	C 217-58
	Testing Asphalt Roll Roofing, Cap Sheets, and Shingles	D 228-64
	Accelerated Weathering Test for Bituminous Materials	D 529-62
	Sampling and Testing Felted and Woven Fabrics Saturated with Bituminous Substances for Use in Waterproofing and Roofing	D 146-65
Misc.	Laboratory Measurement of Airborne Sound Transmission Loss of Buildings, Floors and Walls	E 90-61 T

(Continued)

SEC. MB-601.5 MATERIAL STANDARDS (Con't.)
(1b) ASTM Standard Specifications for Materials

Masonry	Building Brick (Solid Masonry Units Made from Clay or Shale)	C 62-62
	Ceramic Glazed Structural Clay Facing Tile, Facing Brick, and Solid Masonry Units	C 126-62
	Portland Blast-Furnace Slag Cement	C 205-64 T
	Clay Drain Tile	C 4-62
	Concrete Building Brick	C 55-66 T
	Sand-Lime Building Brick	C 73-51
	Facing Brick (Solid Masonry Units Made from Clay or Shale)	C 216-65
	Mortar for Unit Masonry	C 270-64 T
	Hollow Load-Bearing Concrete Masonry Units	C 90-66 T
	Hydrated Lime for Masonry Purposes	C 207-49
	Structural Clay Load-Bearing Wall Tile	C 34-62
	Structural Clay Non-Load-Bearing Tile	C 56-62
	Structural Clay Floor Tile	C 57-57
	Structural Clay Facing Tile	C 212-60
	Asbestos-Cement Roofing Shingles	C 222-66
	Asbestos-Cement Siding	C 223-66
	Standard Strength Clay Sewer Pipe	C 13-65 T
	Concrete Sewer Pipe	C 14-65
	Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe	C 76-66 T
Bypsum & Wall Board	Structural Insulating Board Made from Vegetable Fibers	C 208-60
	Hydraulic Hydrated Lime for Structural Purposes	C 141-61
	Gypsum	C 22-50
	Gypsum Lath	C 37-66
	Gypsum Plasters	C 28-66
	Gypsum Partition Tile or Block	C 52-54
	Gypsum Sheathing Board	C 79-54
	Gypsum Wall Board	C 36-66
Steel	Low-Carbon Steel Externally and Internally Threaded Standard Fasteners	A 307-65
	Structural Rivet Steel	A 502-66
	High Strength Structural Rivet Steel	A 502-66
	Steel for Bridges and Buildings	A 7-66
	Structural Steel	A 36-66 T
	High Strength Low Alloy Structural Steel	A 242-66 T
	High Strength Low Alloy Structural Manganese Vanadium Steel	A 441-66 T
	High Strength Structural Steel	A 440-66 T
	High Strength Steel Bolts for Structural Steel Joints, Including Suitable Nuts and Plain Hardened Washers	A 325-66
	Alloy Steel Bolts, Quenched and Tempered for Structural Steel Joints-Standard Specifications for	A 490-64
	Steel Sheet Piling	A 328-66
	Flat-Rolled Carbon Steel Sheets of Structural Quality	A 245-64
	Hot-Rolled Steel Strip of Structural Quality	A 303-64
	High Strength Low Alloy Cold-Rolled Steel Sheets and Strip	A 374-62 T
	High Strength Low Alloy Hot-Rolled Steel Sheets and Strip	A 375-64
	Zinc-Coated (Galvanized) Steel Sheets of Structural Quality, Coils and Cut Lengths	A 446-65 T
	Welded and Seamless Steel Pipe	A 53-65
	Mild-to Medium-Strength Carbon Steel Castings for General Application	A 27-65
	High strength Steel Castings for Structural Purposes	A 148-65
	Carbon Steel Forgings for General Industrial Use	A 235-63 T
	Alloy Steel Forgings for General Industrial Use	A 237-63 T
	Mild Steel Arc-Welding Electrodes	A 233-64 T

(Continued)

SEC. MB-601.5 MATERIAL STANDARDS (Cont'd.)

(1b) ASTM Standard Specifications for Materials (Con't.)

Concrete	Natural Cement	C 10-64
	Portland Cement	C 150-66
	Masonry	C 91-66
	Air Entraining Portland Cement	C 175-66
	Ready-Mixed Cement	C 94-65
Conc. Rein.	Billet-Steel Bars for Concrete Reinforcement	A 15-65
	Rail-Steel Bars for Concrete Reinforcement	A 16-65
	Specifications for Deformed Rail Steel Bars for Concrete Reinforcement with 60,000 Psi Minimum Yield Strength	A 61-65
	Specification for Cold-Drawn Steel Wire for Concrete Reinforcement (Tentative)	A 82-62 T
	Axle-Steel Bars for Concrete Reinforcement	A 160-65
	Specifications for High Strength Deformed Billet Steel Bars for Concrete Reinforcement with 75,000 Psi Minimum Yield Strength	A 431-65
	Specification for Deformed Billet Steel Bars for Concrete Reinforcement with 60,000 Psi Minimum Yield Strength	A 432-65
	Minimum Requirements for the Deformations of Deformed Steel Bars for Concrete Reinforcement	A 305-65
	Welded Steel Wire Fabric for Concrete Reinforcement	A 185-64
Misc. Metals	Welded Wrought Iron Pipe	A 72-64 T
	Gray Iron Castings	A 48-64
	Cast Iron Soil Pipe and Fittings	A 74-66
	Copper Brazed Steel Tubing	A 254-64
	Seamless Copper Pipe, Standard Sizes	B 42-62
	Seamless Copper Water Tube	B 88-66
	Seamless Red Brass Pipe, Standard Sizes	B 43-62
Misc. Metals	Aluminum-Alloy Bars, Rods, Shapes, Tubes	B 221-66
	Aluminum-Alloy Bars, Rods and Wire	B 211-66
	Aluminum-Alloy Die and Hand Forgings	B 247-66
	Aluminum-Alloy Pipe	B 241-66
	Aluminum-Alloy Sheet and Plate	B 209-66
	Aluminum-Alloy Standard Structural Shapes, Rolled or Extruded	B 308-66
	Aluminum-Alloy Drawn Seamless Tubes	B 210-66
	Aluminum-Alloy Round Welded Tubes	B 313-65
	Aluminum and Aluminum-Alloy Welding Rods and Bare Electrodes	B 285-61 T
	Aluminum-Alloy Rivet and Cold Heading Wire and Rods	B 316-66
	Aluminum-Alloy Die Castings	B 85-60
	Aluminum-Alloy, Permanent Mold Castings	B 108-66
	Aluminum-Alloy Sand Castings	B 26-65
	Aluminum Sliding Glass Doors	AAMA 402.4-65
	Aluminum Windows	AAMA 302.4-65
	Cast Iron Pipe, Pressure, Specifications for	A 377-66
	Cast Iron Pipe, Soil Pipe and Fittings, Specifications for	A 74-66
	Concrete Pipe, Sewer, Specifications for	C 14-65
Lumber, Woodproducts, Roofing and Misc.	Asphalt Roll Roofing Surfaced with Powdered Talc or Mica	D 224-58
	Asphalt Shingles Surfaced with Mineral Granules	D 225-65
	Asphalt-Saturated Asbestos Felts for Use in Waterproofing and Constructing Built-up Roofs	D 250-60
	Asphalt-Saturated and Coated Asbestos Felts for Use in Constructing Built-up Roofs	D 655-47
	Asphalt-Saturated Roofing Felt for Use in Waterproofing and in Constructing Built-up Roofs	D 226-60
	Coal-Tar Saturated Roofing Felt for Use in Waterproofing and in Constructing Built-up Roofs	D 227-56
	Wood Shingles, Red Cedar, Red Cypress, Hardwood	CS 31-52
	Plywood, Hardwood	CS 35-61
	Softwood Plywood, Construction and Industrial (Formerly CS-45-60, CS-122-60 and CS-259-63)	P.S. 1-66
	House and Garden Bulletin	DA 64-60
	Primer, Paint, Exterior	FS TT-P25a-51
	Wood Preservatives	FS TT-W-571g-61
	Timber, Structural, Glued, Laminated	CS 253-63
	Plastic Drain, Waste and Vent Pipe & Fittings Acrylonitrile-Butadiene-Styrene (ABS)	USDC CS 270-65
	Plastic Drain, Waste and Vent Pipe & Fittings Polyvinyl Chloride (PVC)	USDC CS 272-65
	Pressure Treated Timber Foundation Piles for Permanent Structures	AWPI-65
	Wood Handbook No. 72	USDA-55

(1c) ASA Specifications for Materials

Masonry	Gypsum Wall Boards	ASA A 69.1-64
	Building Brick (Solid Masonry Units Made from Clay or Shale)	ASA A 98.1-63
	Facing Brick (Solid Masonry Units Made from Clay or Shale)	ASA A 99.1-64
	Compressive Strength of Concrete Using Portion of Beams Broken in Flexure	ASA A 37.24-64
	Test for Flexural Strength of Concrete	ASA A 37.22-64
	Gypsum Lath	ASA A 67.1-56
	Gypsum Plastering	ASA A 42.1-64
	Interior Lathing & Furring	ASA A 42.4-55
	Portland Cement Stucco	ASA A 42.2-46
	Portland Cement Plastering	ASA A 42.3-46
	Gypsum	ASA A 49.1-51
	Gypsum Wall Board Finishes	ASA A 97.1-65

SEC. MB-601.5 MATERIAL STANDARDS (Con't)

(1b) ASTM Standard Specifications for Materials (Con't)

Concrete	Natural Cement	C 10-62 T
	Portland Cement	C 150-62
	Masonry Cement	C 91-60
	Air-Entraining Portland Cement	C 175-61
	Ready-Mixed Cement	C 94-62
Conc. Rein.	Billet-Steel Bars for Concrete Reinforcement	A 15-62 T
	Rail-Steel Bars for Concrete Reinforcement	A 16-62 T
	Axle-Steel Bars for Concrete Reinforcement	A 160-62 T
	Minimum Requirements for the Deformations of Deformed Steel Bars for Concrete Reinforcement	A 305-56 T
	Welded Steel Wire Fabric for Concrete Reinforcement	A 185-61 T
Misc. Metals	Welded Wrought-Iron Pipe	A 72-62 T
	Gray Iron Castings	A 48-62
	Cast Iron Soil Pipe and Fittings	A 74-42
	Copper Brazed Steel Tubing	A 254-61 T
	Seamless Copper Pipe, Standard Sizes	B 42-62
	Seamless Copper Water Tube	B 88-62
	Seamless Red Brass Pipe, Standard Sizes	B 43-62
Roofing & Misc.	Asphalt Roll Roofing Surfaced with Powdered Talc or Mica	D 224-58
	Asphalt Shingles Surfaced with Mineral Granules	D 225-62 T
	Asphalt-Saturated Asbestos Felts for Use in Waterproofing and Constructing Built-up Roofs	D 250-60
	Asphalt-Saturated and Coated Asbestos Felts for Use in Constructing Built-up Roofs	D 655-47
	Asphalt-Saturated Roofing Felt for Use in Waterproofing and in Constructing Built-up Roofs	D 226-60
	Coal-Tar Saturated Roofing Felt for Use in Waterproofing and in Constructing Built-up Roofs	D 227-56
	Wood Shingles, Red Cedar, Red Cypress, Redwood	CS 31-52
	Hardwood Plywood	CS 35-61
	Douglas Fir Plywood	CS 45-60
	Western Softwood Plywood	CS122-60
	House & Garden Bulletin	DA 64-60
	Primer, Paint, Exterior	FS TT-P25a-51
	Wood Preservatives	FS TT-W-571g-61
	Timber, Structural, Glued, Laminated	CS 253-63

(1c) ASA Specifications for Materials

Masonry	Gypsum Wall Boards	ASA A 69.1-61
	Building Brick (Solid Masonry Units Made from Clay or Shale)	ASA A 98.1-61
	Facing Brick (Solid Masonry Units Made from Clay or Shale)	ASA A 99.1-61
	Compressive Strength of Concrete Using Portion of Beams Broken in Flexure	ASA A 37.24-51
	Test for Flexural Strength of Concrete	ASA A 37.22-58
	Gypsum Lath	ASA A 67.1-56
	Gypsum Plastering	ASA A 42.1-55
	Interior Lathing & Furring	ASA A 42.4-55
	Portland Cement Stucco	ASA A 42.2-46
	Portland Cement Plastering	ASA A 42.3-46
	Gypsum	ASA A 49.1-51
	Gypsum Wall Board Finishes	ASA A 97.1-58

SEC. MB.-606.0 STRUCTURAL LOAD TESTS

(1) Accepted Engineering Practice (A.S.T.M.)

Method of Test for Water Absorption of Core Materials for Structural Sandwich Constructions	C 272-53
Method of Shear Test in Flatwise Plane of Flat Sandwich Constructions or Sandwich Cores	C 273-61
Method of Tension Test of Flat Sandwich Constructions in Flatwise Plane	C 297-61
Methods of Conducting Strength Tests of Panels for Building Construction	E 72-61
Methods of Testing Truss Assemblies	E 73-52

SEC. MB-611.0 NATIONAL STANDARD FOR FOUNDATIONS

(1) Accepted Engineering Practice

Building Code Requirements for Excavations and Foundations	ASA A 56.1-52
Specifications for Welded and Seamless Steel Pipe Piles	ASTM A-252-62 T
Pile Foundations (Fourth Edition)	AISI-63

SEC. MB-701.3 LABELED MATERIALS AND DEVICES.

(1) Typical Situations.

Class A Doors--Fire wall openings in accordance with SEC. B-705.2
Class B Doors--Vertical shafts and openings in fire partitions in accordance with SEC. B-705.3 and SEC. B-705.5
Class C Doors--Openings in corridor, room and fireresistive partitions in accordance with SEC. B-705.4
Class D Doors and Windows--Openings in exterior walls in exposing and exposed buildings of high hazard use (use group A) in accordance with SEC. B-800 and along exterior stairways in accordance with SEC. B-416.2
Class E Doors and Windows--Openings in exterior walls and along fire escapes except where Class D protectives are required in accordance with SEC. B-400.

(2) Special Situations. Approved labeled opening protective assemblies shall be accepted as complying with the required time-temperature performance ratings specified in this code including the following special situations which shall comply with the requirements of SEC. B-800 except as otherwise indicated.

Class A Doors--High pressure boiler room walls.
Volatile flammables, film, pyroxylin products and fur storage vaults
Grinding and grain processing rooms.
Paint and flammable storage rooms.
Dry cleaning rooms of high and moderate hazard.
Proscenium walls of theatres.
Transformer room walls in accordance with PART I of this code.
Class B Doors-- Motion picture studios.
Dressing rooms.
Show rooms in public garages.
Theatre exits and property rooms.
Fire and smokeproof towers in accordance with SEC. B-400.
Horizontal exits in accordance with SEC. B-700 and SEC. B-400.
Class C Doors--Projection and trial exhibition rooms.
Paint spray rooms.
Service stations and repair shops.
Kitchen and service pantries in places of assembly.
Corridor rooms and all fireresistive partitions in accordance with SEC. B-700.
Class D Doors--Attached garage.
Switchboard rooms where required in this code.

SEC. MB-702.0 FIRE RESISTANCE OF BUILDING MATERIALS

(1) Accepted Engineering Practice

Fire Tests of Building Construction and Materials	ASTM E 119-61
Fire Tests of Door Assemblies	ASTM E 152-66
Fire Resistance of Walls of Lightweight Concrete	NBS-BMS-117-50
Standard Methods of Fire Tests of Building Materials	NFPA-251-63
Standards for Fire Tests of Building Construction and Materials	UL-263

Fire Resistance Ratings of Construction Assemblies issued by American Insurance Association.

SEC. MB-702.3 OPENING PROTECTIVES

(1) Structural Integrity. Fire door and fire window assemblies shall not develop any through openings in the specimen itself or openings markedly in excess of the initial clearances at the outside or meeting edges; except that small portion of glass dislodged by the hose stream shall not be considered sufficient weakness to nullify the acceptance and approval of doors or windows when constructed in accordance with accepted standards, provided the dislodged portions do not exceed twenty-five (25) per cent of the total glass area. The door frames and anchorage shall remain structurally intact without excessive distortion that would prevent operation of the door or window.

(2) Smoke and Flame Barrier. Tests of door and window assemblies shall be considered unsuccessful unless the assembly prevents the passage of smoke or flames in considerable volume and remains securely in the opening during the fire exposure and following the hose stream test.

SEC. MB-703.0 FLAME RESISTANCE OF BUILDING MATERIALS

(1) Accepted Engineering Practice

Fire Retardant Treated Wood (Treatment Method)	AWPA-C-1-61
Flash Point Test by Closed Tag Cup	ASTM-D-56-64
Flash and Fire Point Test by Cleveland Open Cup	ASTM-D-92-66
Fire Retardant Properties of Treated Fabrics (Specs.)	ASTM-D-626-55 T
Fire Retardant Properties of Wood by Fire Tube Test	ASTM-E-69-50
Test for Combustible Properties of Treated Wood by the Crib Test	ASTM-E-160-50
Methods of Test for Tensile and Compressive Properties of Plastics at Subnormal and Supernormal Temperatures	ASTM-D-759-48
Flammability Test for Plastics under 1/20" Thick	ASTM-D-568-61
Flammability Test for Plastics over 1/20" Thick	ASTM-D-635-63
Fire, Water and Weather Resistant Duck and Cotton-Fed. Spec.	CCC-E-428-A-59
Flame-Resistant Textiles and Films, Fire Test for	NFPA-701-66
Fire Tests of Accoustical and other Finished Materials – Fed. Spec.	SS-A-118b-54
Test for Surface Burning Characteristics of Building Materials	ASTM-E-84-61

(2) Fire Retardant Wood. All wood pressure-treated with fire retardant chemicals where required to be flame resistant or permitted for use in trim, finish or light structural members under the provisions of this code shall meet the test requirements for the respective classifications listed above or the following optional requirements when tested under the standard ASTM procedure for the crib test or fire tube test, or similar approved procedure.

(2a) Test Samples. Test samples of fire retardant wood shall be taken at the treating plant or at other points of supply under conditions approved by the building official. The test samples shall be cut as prescribed in the applicable test specifications, except that samples of roof decking, scaffolding and shoring shall be cut so that the treated surface will be not less than a one-half (½) and not more than a three-quarter (3/4) inch face of the test sample and the cut face shall be placed facing inwards in the crib test.

(2b) Retreatment. If the test samples fail to meet the requirements the material which they represent may be treated in accordance with the approved rules.

(2c) Approved Labeled Material. In place of the procedure prescribed herein for selection and testing of fire retardant wood, the building official may accept such materials that conform to the inspection service and bear the label of accredited authoritative testing agencies which comply with the provision of this code.

(continued)

SEC. MB-703.0 FLAMERESISTANCE OF BUILDING MATERIALS (continued)

(3) Tents and Tarpaulins. Where required by Sec. MB-800, canvas for tents and by Sec. MB-900 canvas for tarpaulins shall meet the test requirements of the accepted NFPA tests, publication #701, "Flame Proofed Textiles" 1951, and ASTM Standard Methods of Fire Tests of Roof Coverings, ASTM-E-108-58.

(4) Interior Hangings and Decorations.

(4a) Acceptance Criteria. Where required to be flameresistive under the provisions of this code, all materials specified or required for artistic enhancement or use for decorations, draperies, curtains, scenery and hangings shall comply with this section for noncombustible or fireretardant materials; or if treated to be flameresistant shall not generate smoke or gases more than those given off by untreated wood or paper burning under comparable conditions when tested in an approved vertical flame test. The test criteria for acceptance of flameresistant materials shall be as follows:

For materials which weigh eight (8) oounces or more per square yard the length of char shall not exceed four and one-half ($4\frac{1}{2}$) inches;

For materials which weigh five (5) ounces or more but less than eight (8) ounces per square yard, the length of char shall not exceed five (5) inches;

For materials which weigh less than five (5) ounces per square yard, the length of char shall not exceed five and one-half ($5\frac{1}{2}$) inches;

In no case shall the specimen continue flaming for more than two (2) seconds after removal of the test flame.

(4b) Limitation of Approval. All approvals of organic decorative materials shall be limited to one (1) year. The owner or his authorized agent shall file an affidavit with the building official certifying that the process and materials used comply with this code and stating the date of treatment and the warranted period of effectiveness of the process.

(4c) Field Test for Decorative Materials. The building official shall subject decorative materials where required to be flameresistant to a field test consisting of the application of the flame from a three-quarter (3/4) inch paraffin candle for a period of one (1) minute. The material shall not flash, nor support combustion, nor continue to flame for more than two (2) seconds or glow for more than thirty (30) seconds after removal of the test flame.

(4d) Replacement of Defective Materials. All treated hangings, draperies, canvas and other decorative and tent materials that fail to meet the check test requirements shall be re-treated or replaced by an approved installation.

(continued)

SEC. MB-703.0 FLAMERESISTANCE OF BUILDING MATERIALS (continued)

(5) Plastic Material for Exterior Uses

(Subject to New Jersey Department of Labor & Industry regulations.)

SEC. MB-705.2 FIRE WALLS AND PARTY WALLS

(1) Solid Brick. In other than frame buildings, when constructed of solid brick masonry, the wall thickness shall conform to the requirements of SEC. B-600 except that in all buildings more than twenty-five (25) feet in height used for moderate fire hazard storage (use group B-1) and all high hazard uses (use group A), no part of an unplastered masonry fire wall shall be less than twelve (12) inches thick.

(2) Reinforced Concrete. When constructed of reinforced concrete, the wall thickness shall be not less than six (6) inches for the uppermost twenty-five (25) feet or portion thereof and shall increase two (2) inches for each additional twenty-five (25) feet or portion thereof measured down from the top of the wall; except that in buildings more than twenty-five (25) feet in height used for storage of moderate fire hazard (use group B-1) and high hazard (use group A), no part of an unplastered reinforced concrete fire wall shall be less than eight (8) inches thick.

SEC. MB-705 5 VERTICAL SHAFTS AND HOISTWAYS

(1) Miscellaneous Incinerator Flue Enclosures. All incinerator flues not provided for in SEC. MB-711.0 including flues for rubbish and waste material incinerators, shall be enclosed with not less than eight (8) inches of clay or shale brick masonry, unless otherwise approved by the building official.

(1a) Connection to Chimneys and Stacks. Nothing in this section shall prohibit the connection of an incinerator by means of an approved breeching to a smokestack or chimney flue which serves a heat appliance; provided the cross-sectional area of such stack or flue is at least four (4) times that of the incinerator breeching and such stack or flue and the connection meet the requirements of this section for incinerator flues.

SEC. MB-705.7 COLUMNS

(1) Masonry Unit Ties. Block and tile fireproofing units shall be securely anchored or bonded by wall ties, metal mesh or metal u-clips in the horizontal joints, or by outside tie wires not less than No. 16 U.S. gage with at least one (1) tie around every block course; or shall consist of special masonry units designed to furnish positive anchorage to the structural member and to each other.

(2) Exposed Ties. When outside tie wires are used, they shall be protected by not less than one-half (1/2) inch of cement mortar, or gypsum plaster or the equivalent fireresistive covering.

SEC. MB-705.9e WIRED GLASS PANELS

(1) Wire glass in approved opening protective assemblies shall be not less than one-quarter (¼) inch thick and shall be limited in area and location as herein required.

(2) Fire Wall Protectives. Wired glass in fire doors located in fire walls shall be prohibited, except when serving as horizontal exits, the self-closing swinging door may be provided with a vision panel of not more than one hundred (100) square inches with no dimension exceeding twelve (12) inches.

(3) Fire Partition Protectives. Wired glass vision panels may be used in fire doors of one and one-half (1½) hour fire resistance rating intended for use in fire partitions; but in no case shall the glass panels be more than one hundred (100) square inches in area with no dimension exceeding twelve (12) inches.

(4) Fire Resistive Partition Protectives. Wired glass panels in three-quarter (3/4) hour fire doors shall not exceed a total exposed area of one thousand two hundred and ninety-six (1,296) square inches; except as provided in SEC. B-705.9d.

(5) Maximum area of exposed wired glass panels. (See Table I NFPA #80, 1966).

(6) Exitway Protectives. Unless specifically required in SEC. B-800 to be solid in such locations where unusually hazardous conditions prevail, fire doors in elevator and stairway shaft enclosures may be equipped with vision panels which shall be so located as to furnish clear vision of the passageway or approach to the elevator or stairway. Such vision panels shall not exceed the size limits specified in Table I NFPA #80, 1966).

SEC. MB-711.a CHIMNEYS AND FLUES

(1) Accepted Engineering Practice:
Clay Flue Linings A.S.A. A 62.4-1947

(2) Fuel Fired Incinerator Chimneys. Chimneys for fuel-fired incinerators shall be constructed of at least four (4) inches of clay or shale brick masonry which is lined with not less than four and one-half (4½) inches of firebrick for at least forty (40) feet above the roof of the combustion chamber; and beyond the forty (40) foot level shall be enclosed with not less than eight (8) inches of clay or brick masonry.

(3) Non-fuel Fired Incinerator Chimneys. All incinerators that are constructed as an integral part of the building structure, other than portable, domestic incinerator units of less than two (2) square feet grate area or gas-fired incinerators or not more than four (4) bushel capacity shall comply with the requirements of this section. Chimneys for non-fuel-fired incinerators shall be constructed as herein specified.

(3a) Nine Square Feet Grate Area. When the grate area of the combustion chamber is not more than nine (9) square feet, and the height of the building is not more than three (3) stories, the flue shall be enclosed with not less than eight (8) inches of unlined clay brick masonry or of shale brick masonry, lined with approved fire-clay flue lining complying with SEC. MB-712.1..

(3b) Over Nine Square Feet Grate Area. When the grate area of the combustion chamber is more than nine (9) square feet, or when such grate area is less than nine (9) square feet but is installed in a building over three (3) stories in height, the flue shall be enclosed with at least four (4) inches of clay or shale brick masonry and lined with not less than four and one-half (4½) inches of fire brick for at least forty (40) feet above the roof of the combustion chamber; and beyond the forty (40) foot level, the flue shall be enclosed with at least eight (8) inches of clay or shale brick masonry.

MB-711.2 HEATING APPLIANCE CLASSIFICATION

(1) Low heat appliances shall include among others:

Baking ovens
Candy furnaces
Coffee ovens
Core ovens
Fertilizer ovens
Forge Furnaces (solid fuel-fired)
Gypsum kilns
Lead melting furnaces
Paraffine furnaces
Resin Melting Furnaces
Zinc amalgamating furnaces

(2) Medium heat appliances shall include among others:

Alabaster gypsum kilns
Annealing furnaces
Charcoal furnaces
Feed dryers (direct fired)
Fertilizer dryers (direct fired)
Galvanizing furnaces
Gas producers
Hardening furnaces
Lime kilns
Linseed Oil boiling
Pulp dryers (direct fired)
Wood distilling furnaces
Wood gas retorts

(3) High heat appliances shall include among others:

Bessemer retorts
Blast, billet and bloom and open hearth furnaces
Brass furnaces
Cement, brick and tile kilns
Coal and water gas retorts
Cupolas
Glass kilns and furnaces
Porcelain baking and glazing kilns
Reverberatory furnaces
Welding furnaces
Wood carbonizing furnaces

SEC. MB-711.3 CHIMNEY CONSTRUCTION

(1) Low Temperature Chimneys.

(1a) Solid Masonry. When constructed of solid masonry, the walls shall be not less than eight (8) inches thick, except as herein provided in dwellings and small business buildings.

(1b) Reinforced Concrete. When constructed of reinforced concrete the walls shall be not less than six (6) inches thick, except as provided for dwellings.

(1c) Dwellings. In residential buildings (use groups L-2 and L-3), the walls of a chimney in which the area of the flue is not more than two hundred (200) square inches may be of solid masonry or reinforced concrete not less than four (4) inches thick when provided with a fire clay lining; or such chimneys in one- and two-family dwellings may be erected of the alternate construction specified in SEC. B-712. .

(1d) Lining. Low temperature masonry chimneys with less than eight (8) inch walls shall be lined with an approved flue lining that conforms to the requirements of item (8) of SEC. MB-712.1, and the outside face of the interior walls shall be smoothly parged or stuccoed so as to be gas tight, or the flue walls within the building shall be eight (8) inches thick.

(1e) One-Story Buildings. The building official may approve masonry flues with four (4) inch walls in one-story buildings of business and storage use of low fire hazard when the required cross-sectional flue area is not more than fifty-seven (57) square inches.

(2) Medium Temperature Chimneys.

(2a) Solid Masonry. When constructed of solid masonry, the walls shall be not less than eight (8) inches thick and shall be lined as provided in item (8) of SEC. MB-712.1.

(2b) Reinforced Concrete. When constructed of reinforced concrete the walls shall be not less than six (6) inches thick with approved lining.

(2c) Lining. Medium temperature chimneys shall be lined with not less than four and one-half ($4\frac{1}{2}$) inches of fire brick laid up in fire clay mortar from at least two (2) feet below to not less than twenty-five (25) feet above the inlet opening to the chimney; or the walls shall be of double-wall construction with an intervening air space of not less than two (2) inches.

(3) High Temperature Chimneys. All high temperature chimneys shall be built with double masonry or double reinforced concrete walls, each of the same thickness required for medium temperature chimneys, with an intervening air space of not less than two (2) inches; or of a single wall with an interior metal stack and intervening air space. The inside face of the interior wall of double-wall construction shall be of fire brick at least four and one-half ($4\frac{1}{2}$) inches thick laid in fire clay or approved high temperature cement mortar; and the interior metal stack shall be lined as specified in item (8) of SEC. MB-712.1.

(4) Size. Only one inlet shall be permitted in a flue eight (8) by eight (8) inches nominal size or smaller, or with a cross-sectional area of less than seventy-four (74) square inches. For a larger number of inlets, the size of the flue shall be proportionately increased. For flues larger than one hundred and twenty (120) square inches,

(Continued)

SEC. MB-711.3 CHIMNEY CONSTRUCTION (continued)
except as specified in item (1c) of this section, the walls shall not be less than eight (8) inches thick in any case. No change in the size or shape of a chimney shall be made within six (6) inches of the roof framing through which it passes.

SEC. MB-712.1 FLUES FOR SOLID AND LIQUID FUELS.

(1) All heating appliances, except electric and gas-fired appliances specifically exempted by the provisions of SEC. B-714.0, shall be connected by smokepipes or breechings to flues which conform to the provisions of this chapter.

(2) Design. The cross-sectional area of a flue for an oil or solid fuel-fired appliance shall be designed and proportioned for the conditions of temperature within and without the flue, the thickness of walls, the weather exposure, shape and material of construction in accordance with accepted engineering practice, but in no case shall the area be less than specified in item (6) below.

(3) Existing Flues. No existing flue, except one which does not endanger the fire safety of a building or structure and is acceptable to the building official, shall be continued in use unless it conforms to all requirements of this section for new flues.

(4) Labeling Flues. Flues or alternate chimneys installed and approved for use with gas appliances, but which are not suitable for solid or liquid fuel-fired equipment shall be plainly and permanently labeled to that effect.

(5) Cleanouts and Maintenance. Whenever a new flue is completed or an existing flue is altered, it shall be cleaned and left smooth on the inside. Cleanouts or other approved devices shall be provided at the base of all chimneys to enable the flues to be maintained clean.

(6) Number and size. No more than two (2) flues shall be enclosed in a single chimney unless separated by not less than four (4) inches of masonry or reinforced concrete bonded into the chimney walls. When not so separated, the bed joints of the flue linings shall be staggered not less than seven (7) inches. When no masonry division is provided between flues, the flue linings shall extend to the bottom of the cleanout; and all flue linings shall be supported on solid brick offsets. The cross-sectional area of flues shall be not less than specified in the following table:

MINIMUM SIZES OF FLUES

TYPE OF EQUIPMENT	CROSS-SECTIONAL AREA IN SQUARE INCHES
Small space stove or heater	27
Stove, range or room heater	35
Fireplace (not less than 1-12 fireplace opening)..	57
Hot water and low pressure steam boiler	57
Bakery oven with venting capacity of a nominal 8" x 12" standard tile-lined 4" brick chimney and similar equipment	120

(7) Vent Pipes Prohibited. Vent pipes as defined in this Code shall not be used with solid or liquid fuel-fired equipment.

(continued)

SEC. MB-712.1 FLUES FOR SOLID AND LIQUID FUELS (continued)

(8) Temperature Flue Lining. Flue Lining Materials. Flue linings shall be made of fire clay or other approved refractory materials other than shale, capable of withstanding the action of flue gases and of resisting the temperatures to which they are subjected but not less than two thousand (2000) degrees F. without softening or cracking. The thickness of the shell of flue linings shall be not less than five-eighth (5/8) inches.

(8a) Flue Lining Construction. Flue linings shall be constructed in advance of the chimney and shall start from a point not less than eighteen (18) inches below the inlet of the smoke pipe or throat of a fireplace, except as provided in item (6). The lining shall be constructed as nearly vertical as possible and shall extend not less than four (4) inches above the top or cap of the flue.

SEC. MB-713.0 SMOKESTACKS

(1) Thickness of Metal

(1a) Exterior Smokestacks. Exterior metal smokestacks shall be of adequate thickness to resist all wind stresses specified in SEC. B-604.7 but shall be not less than one-eighth (1/8) inch thick for diameters up to three (3) feet, three-sixteenths (3/16) inch thick for diameters up to four (4) feet and not less than one-quarter (¼) inch thick for larger diameters.

(1b) Interior Smokestacks. Interior metal smokestacks shall be constructed of metal not less than No. 16 U.S. gage for areas not more than one hundred and fifty-five (155) square inches; No. 14 U.S. gage for areas not more than two hundred (200) square inches; No. 12 U.S. gage for areas not more than two hundred and fifty-five (255) square inches; and not less than No. 10 U.S. gage for greater areas.

(2) Smokestack Cleanout Openings. A cleanout shall be provided at the base of every smokestack.

(3) Smokestack Lining. All high temperature smokestacks as defined in SEC. B-711.1 shall be lined with four and one-half (4½) inches of fire brick laid in fire clay mortar. Such lining shall extend at least twenty-five (25) feet above the smokepipe entrance.

SEC. MB-716.0 FLUES AND VENTS FOR GAS FUELS.

(1) Gas-Fired Appliances Requiring Flues or Vents. The following gas-fired appliances shall be connected to the outer air through an approved flue or vent.

(1a) All domestic appliances with a rating in excess of fifty thousand (50,000) B.T.U. per hour other than manually controlled cooking ranges, or when equipped with automatic means for shutting off the gas supply to one or more burners or when equipped with automatic means for turning on the gas supply to one or more burners when such burners are furnished with automatic ignition and an automatic pilot;

(1b) All automatically controlled appliances with a rating in excess of five thousand (5000) B.T.U. per hour, except when equipped with controls which cannot automatically reduce the gas supply to less than thirty (30) percent of the peak demand;

(1c) All automatically controlled appliances with a rating of five thousand (5000) or less B.T.U. per hour equipped with an automatic pilot; except instantaneous water heaters which supply water to one integral faucet and other automatic appliances equipped with controls as specified in item (5b) above;

(1d) All multiple appliances which have an aggregate input rating of thirty (30) B.T.U. per hour or more per cubic foot of room volume when not vented, other than domestic gas ranges;

(1e) All room or space heaters installed in sleeping quarters for transients other than heaters with a sealed combustion chamber and direct air supply for complete combustion from outside the space being heated and direct discharge of all-products of combustion to the outer air; and

(1f) All gas-fired incinerators.

(2) Prohibited Use. Water heaters shall not be installed in normally closed bathrooms, bedrooms, or other normally closed rooms for human occupancy; except approved equipment provided with sealed combustion chambers and vented as specified for space heaters in item (1e) above.

SEC. MB-716.2 GAS VENTS

(1) All vents from gas-fired appliances required under the provisions of SEC. MB-716.0 shall be constructed as herein provided and in accordance with accepted engineering practice.

(2) Size of Vents. The cross-sectional area of vent flues for gas-fired appliances shall be not less than one (1) square inch per seventy-five hundred (7500) hourly B.T.U. input, nor shall the diameter be less than three (3) inches in any case. For rough brick-lined flues, the allowable design capacity shall be decreased fifteen (15) percent.

(3) Draft Hoods. Every vented appliance, except incinerators, dual oven-type combustion ranges and units designed for power burners or for forced venting, shall be equipped with an effective draft hood installed in accordance with the approved rules, unless the integral construction of the equipment serves the same purpose.

(4) Protection. Suitable provision shall be made to prevent mechanical injury to a vent where it extends through walls, floors or roofs. A double thimble with the annular ventilated space filled with approved noncombustible insulating material shall be provided in such openings. No gas appliance vent, other than that specifically exempted in this section, shall pass through an attic, concealed space, combustible floor or roof, wall or partition, unless all the provisions of this section governing clearances and protection are complied with.

(5) Clearances. All vents and vent pipes shall be installed with a clearance from combustible construction to prevent a transmitted temperature to the surface of such construction of more than two hundred and fifty (250) degrees F. but in no case less than specified for vent connectors in item (9c) of this section. When type B vents are used, the minimum clearance for boilers, warm air furnaces and water and space heaters shall be one (1) inch from combustible construction and for floor furnaces not less than three (3) inches for a distance of not less than three (3) feet from the outlet of the draft hood.

(6) Metal Vents. The thickness of metal vents shall be not less than specified in table of SEC. MB-717.0 for metal ducts. When installed on the outside of a building, vent pipes shall be securely strapped to the wall with a capped tee for condensate at the base and a vent cap at the top of the riser. They shall extend not less than two (2) feet above flat roofs or peaked roofs within thirty (30) feet horizontally of the riser, or the highest part of the parapet walls.

(7) Vent Connection. Vent pipes from gas appliances shall not be interconnected with any other vent, connector vent pipe, smokepipe or flue unless the gas appliance so connected is equipped with an automatic device to prevent the escape of unburned gas at the main burner. A gas appliance vent connector and a smokepipe may be connected into the same masonry flue through separate openings or through a Y-fitting located close to the flue.

(Continued)

SEC. MB-716.2 GAS VENTS (Continued)

(8) Dampers. Fixed baffles may be used in gas vents but no manually operated damper shall be placed in any gas flue, vent pipe or vent connector to which a gas-fired appliance is connected.

(9) Vent Connectors.

(9a) Construction. Vent connectors shall be constructed of approved metal, terra cotta, cement, glazed sewer tile, asbestos cement or other corrosion-resistive, noncombustible materials of sufficient thickness and low heat conductivity to withstand damage. Copper pipe shall be of not less than sixteen (16) ounce copper, monel metal of not less than No. 26 U.S. gage and galvanized steel or Allegheny iron of not less than No. 28 U.S. gage.

(9b) Length and Pitch. The vent connector shall provide a rise of not less than one-quarter (¼) inch to the horizontal foot from the appliance to the flue or vent. When a horizontal run is necessary, the length shall not exceed seventy-five (75) percent of the height of the flue and whenever possible a verticle run shall be provided before the horizontal branch. Bends shall be avoided and connections shall be made with forty-five (45) degree elbows.

(9c) Clearances. Connectors shall comply with the applicable provisions of this section with the following minimum clearances from combustible construction:

Type of Appliance	Clearance in Inches
Boiler, warm air furnace, water and space heaters...	6
Floor furnaces.....	9
Incinerators.....	18

(9d) Reduced Clearances. The clearances specified in paragraph (9c) may be reduced when the combustible construction is protected as herein provided:

TYPE OF PROTECTION	REDUCED CLEARANCE
¼ inch asbestos millboard with 1-inch noncombustible furring	6 inches reduced to 3 inches
	9 inches reduced to 6 inches
	18 inches reduced to 12 inches
No. 28 U.S. Gage metal on ¼ inch asbestos millboard, or on 1-inch noncombustible furring	6 inches reduced to 2 inches
	9 inches reduced to 4 inches
	18 inches reduced to 9 inches

(9e) Size of Connectors. The vent connector shall be not smaller than the size of the flue collar of the gas-fired equipment. Where more than one outlet is provided, the common vent connector shall equal the combined area of the outlets.

SEC. MB-717.0 METAL DUCTS AND VENTS

(1) Material. Ducts and vents shall be constructed of aluminum, copper, monel metal, galvanized steel, cement-asbestos or other approved, noncombustible, corrosion-resistive materials of adequate strength, durability and for the temperatures involved, and the seams shall be securely welded or riveted and made substantially air and gas tight.

(2) Thickness of Metal. The weight and thickness of material, type of joints, connections, bracing and other structural features shall conform to the approved rules; but shall be at least equivalent to the minimum thickness prescribed in following table. Aluminum shall be of not less than No. 26 B & S gage, copper of not less than 16 ounce sheets, galvanized iron and monel metal of not less than No. 28 U.S. gage, except as provided for one- and two-family dwellings in table of item (4a).

METAL DUCT AND VENT CONSTRUCTION, OTHER THAN DWELLINGS

Diameter, or Diagonal of rectangular ducts dimension in inches	Minimum Thickness Galvanized steel U.S. gage number	Aluminum B & S gage number
Up to 12	28	26
12-20	26	24
20-30	24	22
30-48	22	20
48-60	20	18
60-90	18	16
90 and over	16	14

(3) One- and Two-Family Dwellings.

(3a) Material. Warm air supply ducts in heating and air-conditioning systems of one- and two-family dwellings shall be constructed of aluminum copper, galvanized steel, as specified in following table, or other approved noncombustible materials of equal strength and durability.

DUCTS FOR DWELLINGS

Diameter, or diagonal of rectangular ducts, dimensions in inches	MINIMUM THICKNESS AND WEIGHT Tin weight per square in pounds	Galvanized steel U.S. gage number	Aluminum B & S gage number
Up to 12	IC 107	30	26
12-18	IX 135	28	26
18 and over	IX 135	26	24

(Continued)

SEC. MB-717.0 METAL DUCTS AND VENTS
One- and Two-Family Dwellings (Cont'd)

(3b) Supports. All ducts shall be securely supported by metal or other approved noncombustible straps, hangers, lugs and brackets.
(3c) Clearances. Horizontal runs of such ducts shall be located not less than one (1) inch from adjacent combustible construction unless insulated or protected as required in item (5) below; and ducts in vertical partitions or concealed ceiling spaces shall be insulated in all cases with not less than twelve (12) pound asbestos paper with five-sixteenths (5/16) inch intermediate air space or protected with one-quarter (¼) inch air-cell asbestos or equivalent.

(4) High Temperature Ducts.

(4a) Construction. A single metal duct for a high temperature system which is enclosed in a combustible partition, or in a concealed ceiling space shall be of double construction with a continuous intervening air space of not less than one (1) inch; or the duct shall be covered on the exterior with approved noncombustible, insulating materials not less than one-fourth (¼) of an inch thick of air-cell asbestos or its equivalent. Approved asbestos cement ducts, not less than one-quarter (¼) inch thick, shall be insulated by an air-space of not less than one-eighth (1/8) inch. When not insulated, clearances shall comply with SEC. MB-716.0.
(4b) Exception. When sufficiently insulated to prevent more than two hundred and fifty (250) degrees F. temperature on the exterior, the clearances herein specified shall not be required.

(5) Duct Lining. The lining of high temperature ducts shall be of approved noncombustible materials.

(6) Cold Air Ducts. The construction of cold air ducts shall comply with all the provisions governing warm air supply ducts except as to heat insulation.

(7) Firestopping. Whenever the passage of ducts in walls, floors or partitions requires the removal of firestopping, the surrounding spaces shall be completely filled with approved noncombustible materials; and the required clearance shall be maintained by a metal thimble which is filled with approved noncombustible insulating materials, or closed at both ends with metal collars.

(8) Ducts from Warm Air Furnaces. The clearances of a metal duct from combustible materials for a distance of six (6) feet from warm air furnaces shall comply with SEC. MB-720. A duct which enters a floor, wall or partition of combustible construction within six (6) feet from the furnace shall change direction through an angle of ninety (90) degrees or more before it enters such floor, wall or shaft and shall be enclosed with approved fire-resistive assemblies as required in SEC. B-718.0 for duct shafts.

(9) Fire-Clay Vents. Where permitted for use with gas-fired appliances, fire-clay vents shall have a thickness of not less than one-half (½) inch for and internal diameter of six (6) inches or less than three quarter (3/4) inchas for an internal diameter of more than six (6) inches. The joints shall be made gastight with calked bell and spigot, sheet metal sleeves, or galvanized iron bands of not less than No. 26 U.S. gage, all thoroughly cemented and secured in place with high temperature cement mortar.

SEC. MB-720.0 HEATING SYSTEM REQUIREMENTS

(1) Accepted Engineering Practice.

Oil Burners	USDC-CS-75-56
Oil Burning Floor Furnaces	USDC-CS-113-63
Solid Fuel Burning Forced Air Furnaces	USDC-CS-109-44
Warm Air Furnaces with Pot-type Burners	USDC-CS-104-63
Warm Air Furnaces, Vaporizing-Type Oil Burners	USDC-CS-101-63
Installation of Blower and Exhaust Systems	ASA-Z-33.1-61
Gas-Burning Appliances	ASA-Z-21
Installation of Gas Burning Equipment in Large Boilers	ASA-Z-21.33-56
Installation of Gas Piping and Gas Appliances	ASA-Z-21.30-64
Heating, Ventilating, Air-Conditioning Systems	NFPA-90A-66 and NFPA-90B-65
Incinerators	NFPA-82-60
Oil Burning Equipment	NFPA-31-65
Pulverized Fuel Systems	NFPA Std. 60-61
Blower and Exhaust Systems	NFPA Std. 91-61
Standards for Class A Ovens & Furnaces, Design Location and Equipment	NFPA-86A-66
Ferrous Range Boilers Expansion and Solar Tanks	S P R,*R-8-50
Pipes, Ducts and Fittings for Warm Air Heating and Air-Conditioning Systems	S P R,*R-207-60
Steel Fire-Box Boilers and Steel Heating Boilers Commercial and Residential	S P R,*R-157-50
Boiler and Pressure Vessel Code (Seven Sections)	ASME-65

*Simplified Practice Recommendations, U. S. D. C.

SEC. MB-720.0 HEATING SYSTEM REQUIREMENTS

A. HEAT APPLIANCE FOUNDATION MOUNTINGS

(1) Unless specifically exempted in SEC. MB-720.3, all floor-mounted industrial heat appliances shall be mounted on the ground, or an a foundation of the following specified fireresistive construction with the required noncombustible insulated flooring or finish. No combustible material shall be permitted against the underside of the appliance or under the foundation unless specifically exempted. Such construction and insulation shall extend not less than the specified distances from the sides of the appliance. The fireresistive floor and its finish shall have equal heat insulation value as the protection herein required or such protection shall cover the entire surface under the appliance . The installation of heating appliances which operate at higher temperatures or pressures and industrial power or process boilers and furnaces shall be governed by accepted engineering practice.

(2) Low Heat Appliances. Under a low heat appliance, the floor shall be of masonry or other noncombustible construction which affords not less than two (2) hour fireresistance and shall extend not less than twelve (12) inches beyond the appliance on all sides. When solid fuel is used, the floor on the firing side or where ashes are removed shall be protected for at least eighteen (18) inches with not less than one-quarter ($\frac{1}{4}$) inch asbestos lumber covered with No. 24 U. S. gage sheet metal, or its approved equivalent.

(3) Medium Heat Appliances. Under a medium heat appliance, the floor shall be of masonry or other noncombustible construction which affords not less than three (3) hours fireresistance and shall extend not less than three (3) feet beyond the appliance on all sides. When solid fuel is used, the fireresistive floor shall extend not less than eight (8) feet at the front or side from which the appliance is fired or the ashes are removed and shall be protected with not less than No. 24 U. S. gage sheet metal.

(4) High Heat Appliances. Under a high heat appliance, the floor shall be of masonry or other noncombustible construction which affords not less than four (4) hours fireresistance and shall extend not less than ten (10) feet beyond the appliance and not less than thirty (30) feet at the front or side where hot products are removed and shall be protected with not less than No. 24 U. S. gage sheet metal.

SEC. MB-720.0 HEATING SYSTEM REQUIREMENTS

B. STEAM AND HOT WATER PIPES

(1) Clearances. Unless otherwise specifically provided in SEC. B-700 for special uses and occupancies, all high pressure steam pipes shall have a minimum clearance of one (1) inch from all combustible materials; and when such pipes pass through combustible floors or partitions, the openings shall be protected by metal or other approved noncombustible sleeves; and vertical risers arranged in groups extending through two (2) or more stories shall be enclosed in a shaft of fireresistive construction as specified in SEC. B-718.0. The clearance of low pressure steam and hot water piping in walls, floors and ceilings of combustible construction shall be not less than one-half ($\frac{1}{2}$) inch.

(2) Floor Sleeves. When heating pipes pass through floors which may be subject to serious flooding, metal sleeves shall be installed to a height of at least six (6) inches above the finished floor surface and shall be provided with perforated cap plates.

(3) Firestopping. When heating pipes pass through floors and partitions, the open sleeve space shall be filled with noncombustible materials.

(4) Insulation. All coverings or insulation used on steam and hot water pipes shall be of approved noncombustible materials; and where such pipes pass through stock shelving or are in close proximity to other combustible materials, the insulation shall be not less than one (1) inch thick.

(5) Freezing Temperatures. All concealed heating pipes located in exterior walls shall be protected against freezing in accordance with the approved rules.

(6) Expansion and Contraction. All heating pipes shall be installed to provide for all expansion and contraction movements due to temperature changes.

(7) Hot Water Line Exceptions. Hot water lines which are equipped with approved automatic temperature control devices which prevent a temperature of the circulation water in excess of one hundred and seventy (170) degrees F. shall be exempt from the requirements of SEC. MB-720.0-B.

SEC. MB-720.0 HEATING SYSTEM REQUIREMENTS

C. HEATING PANELS

Heating Panels. Air chambers or spaces in walls, partitions or ceilings used as heat exchangers in warm air heating systems shall be used only with automatic temperature limit controls that cannot be set at more than two hundred (200 degrees F. Such spaces shall be entirely enclosed with noncombustible material with noncombustible interior linings. Where hung or supported from the wall or floor construction, the bases, hangers and other supports shall be of steel or other approved noncombustible materials.

SEC. MB - 720.0 HEATING SYSTEM REQUIREMENTS

D HOT AND COLD AIR DUCTS

(1) Hot Air Ducts. Hot air ducts for both low and high temperature systems shall be constructed entirely of noncombustible material equivalent in structural strength to the materials specified in tables of SEC. MB-717. All vision panels for inspection purposes shall be constructed of wired glass or tightly fitted and secured metal panels.

(2) Cold Air Ducts. Cold air ducts shall comply with all the provisions governing hot air supply ducts except in respect to the requirements for heat insulation and clearance from combustible construction.

(3) Floor Openings. Where warm air ducts pass through combustible floors, the surrounding space shall be tightly fitted with asbestos cement or other noncombustible insulating material. Where such ducts enter combustible floors, walls or partitions within six (6) feet of the heating furnace, a five-sixteenth (5/16) inch clearance shall be provided around the duct for the entire six (6) foot length. Where required firestopping is removed from walls, floors and partitions by the passage of ducts, the surrounding space shall be completely filled with asbestos, mineral wool or other noncombustible materials.

(4) Integral Ducts. When hot air ducts form an integral part of the structure, the duct walls shall be constructed of not less than one-half (1/2) hour fireresistance.

(5) Insulation. Only noncombustible exterior covering shall be used on ducts carrying air at a temperature of more than two hundred (200) degrees F. and on the interior of ducts when required.

(continued)

SEC. MB - 720.0 HEATING SYSTEM REQUIREMENTS

D HOT AND COLD AIR DUCTS (Continued)

(6) Clearances. Clearances of hot air metal ducts from unprotected combustible construction shall be not less than one (1) inch unless the duct is insulated with not less than one-half (1/2) inch of approved noncombustible materials or the exposed construction is protected to afford not less than one-half (1/2) hour fireresistance.

(7) Air Recirculation. No return duct of a mechanical warm air system shall be permitted from a kitchen, bathroom or garage or other place in which flammable or noxious vapors may be present; nor shall the recirculation of air from one dwelling unit to another dwelling unit be permitted.

(8) Air Filters

(8a) Construction. Air filters shall be of a flameresistive type which do not give off large volumes of smoke or other objectionable products of combustion in the event of fire. Air filters shall be kept clean in accordance with the approved rules.

(8b) Filter Coatings. Liquid adhesive coatingsused on filters shall have a flash point not less than three hundred and fifty (350) degrees F. in an open cup tester.

(9) Air Conditioning. The construction and installation of fire doors, dampers, fresh air inlets, emergency controls and fire-extinguishing equipment and outlets for air conditioning, ventilating and heating systems in other than one- and two-family dwellings shall comply with the provisions of Part D of this code.

SEC. MB - 720.0 HEATING SYSTEM REQUIREMENTS

E WARM AIR HEATING SYSTEMS

(1) Warm air heating systems in one- and two-family dwellings shall be classified as follows:

(1a) Low Temperature Systems. Low temperature systems shall include all systems which use low pressure steam or hot water for heating the air and those systems which have automatically fired warm air furnaces equipped with fans to circulate the air. The operation shall be controlled by automatic limit temperature controls that cannot be set higher than two hundred (200) degrees F.

(1b) High Temperature Systems. High temperature systems shall include all gravity warm air hand-fired and automatically controlled systems in which the temperature limit controls can be set above two hundred (200) degrees F; and any other system that does not conform to the requirements for low temperature systems.

(2) Furnace Controls of Low Temperature Systems.

(2a) Automatic Shut-off. The furnaces of an automatically-fired low temperature system which is equipped with an air circulating fan shall be provided with an approved automatic control of the fuel supply whenever the temperature of the air in the furnace bonnet or at the main supply duct exceeds two hundred (200) degrees F.

(2b) Over-run control. When the furnace is stoker-fired, it shall be equipped with an automatic over-run control to operate the fan when the air in the furnace bonnet or at the main supply duct reaches a temperature of two hundred (200) degrees F. after the stoker and fan have shut down in normal operation.

(3) Furnace Controls of High Temperature Systems. A high temperature system which has an automatic fuel supply controlled by thermostat shall have the same controls as a low temperature system; except that the temperature setting may permit a maximum of two hundred and fifty (250) degrees F.

(4) Warm Air Furnaces

(4a) Mounting and Clearances. The mounting of warm air heating furnaces shall comply with SEC. MB -720.0-A and clearances with SEC. MB-720.3. Top clearances shall be measured from the top of the furnace bonnet or the warm air plenum chamber, whichever is higher.

(Continued)

SEC. MB-720.0 HEATING SYSTEM REQUIREMENTS

E WARM AIR HEATING SYSTEMS (Continued)

(4b) Gravity Systems. Gravity warm air furnaces shall be encased in a double metal casing with intervening air space extending from the top of the casing down to the bottom of the fire-box. The top of the bonnet shall be insulated with not less than three (3) inches of sand or the equivalent in magnesia, asbestos or other approved noncombustible material. Gravity furnaces shall be equipped with automatic controls to shut off the fuel supply when the temperature of the warm air pipe at any point within twenty-four (24) inches of the furnace exceeds two hundred and fifty (250) degrees F.

(5) Registers

(5a) Combustible Construction. When a register is located in a floor or wall of combustible construction, the register box shall be covered with twelve (12) pound asbestos paper and a clear space of not less than five-sixteenths (5/16) inch shall be left between the sides of the box and any combustible material.

(5b) Over-Head Furnace Register. When a register is installed in the floor over the furnace, the register box shall be of double construction, with an intervening air space of not less than four (4) inches, except when the warm air duct is surrounded by a cold air passage.

(5c) Non-Automatic System. A system which is not automatically fired and which is not equipped with an approved temperature limit control shall be provided with dampers and shutters which are not capable of shutting off more than eighty (80) percent of the total duct area; or in lieu thereof, one register or grille shall be installed without a closeable shutter, and the duct leading thereto shall be installed without a damper.

(5d) Return Air Connections. Registers on more than one floor shall not be connected to the same vertical duct stack for return air to the heater.

SEC. MB-720.0 HEATING SYSTEM REQUIREMENTS
F. CENTRAL RECIRCULATING SYSTEMS

(1) Air Supply. A central fan heating system of the recirculating type for use in structures with large open areas such as garages and airplane hangars, shall provide a positive air recirculation of at least one (1) cubic foot per minute when the average ceiling height is fifteen (15) feet or less; and with greater heights the air recirculation shall be increased proportionately; but in no case shall less than five (5) percent of the air moved by the fan be taken directly from outside of the building.

(2) Air Duct. Air ducts for fresh air supply shall be installed without dampers and shall be fully open at all times.

SEC. MB-720.0 HEATING SYSTEM REQUIREMENTS
G. UNIT HEATERS

(1) Clearances. Steam and hot water heaters shall be installed to provide clearances from combustible material of not less than one (1) inch to all heated portions thereof, including the steam and hot water supply piping.

(2) Supports. All ceiling type direct-fired unit heaters shall be substantially supported by metal hangers, brackets or other approved noncombustible supports with the clearances, specified for low heat appliances in SECTION MB 720.3..

(3) Wall Heaters. A wall heater shall not be located in a wall of combustible construction unless approved by the building official and shall be installed in accordance with the conditions of such approval.

(4) Fireplace Heaters. Unit gas-fired heaters, labeled for use in fireplace recesses, shall not be used elsewhere.

SEC. MB-720.0 HEATING SYSTEM REQUIREMENTS
H FLOOR FURNACES

(1) Location. A floor furnace shall be located so as to be readily accessible and shall not be installed in the floor of any corridor, aisle or passageway, nor in any exitway in a place of public assembly; nor shall any but a gas-fired floor furnace be installed above the first story of a building, and then only when the furnace assembly projects below the floor into a non-habitable space, enclosed in two (2) hour fire-resistive walls, with clearances of at least six (6) inches on all sides and bottom, except as provided for one- and two-family dwelling in item (5) below.

(2) Enclosures. Enclosures of floor furnaces shall be constructed entirely of non-combustible materials with a fireresistance rating of not less than three-quarter (3/4) hours, provided with suitable means for combustion-air intake which furnishes adequate direct air supply to insure proper combustion complying with SEC. B-727.2, and with means of access for purposes of servicing the furnace.

(3) Furnace Supports. Floor furnaces shall be installed only in floors of non-combustible construction of not less than two (2) hours fireresistance, except as provided for one- and two-family dwellings in item (5) of this section with the following clearances:

(3a) Pit Clearances. Such floor furnaces, when other than gas-fired shall be mounted independently of the floor grille with the following clearances: six (6) inches at the bottom and twelve (12) inches at the sides, except that the clearance on the control side shall be not less than eighteen (18) inches.

(3b) Pit Waterproofing. When there is likelihood of water rising above the bottom clearance, the pit shall be constructed with an approved watertight enclosure with the sides extending not less than four (4) inches above the ground level.

(3c) Pit Access Openings. The access foundation wall opening or floor trap door shall be at least eighteen by twenty-four (18 x 24) inches in size; and the under floor passage to the furnace shall be at least twenty-four by twenty-four (24 x 24) inches in cross-section.

(4) Furnace Clearances. Floor furnace clearances shall comply with SEC. MB-720.3 and flue and vent clearances with SEC. MB-716.2.

(5) One- and Two-Family Dwellings. Furnace enclosures may be constructed of non-combustible materials with a fireresistance of not less than three-quarter (3/4) hours and a minimum clearance of six (6) inches at sides and bottom for servicing. Means shall be provided for supporting the furnace when the floor grille is removed.

(6) Pressure Regulator. The outlet duct temperature shall be not greater than two hundred and fifty (250) degrees F. unless such installation is specifically approved by the building official; and in gas-fired furnaces, a gas pressure regulator shall be provided so that the gas input does not exceed the manufacturer's rating.

SEC. MB-720.0 HEATING SYSTEM REQUIREMENTS
I RESTAURANT COOKING APPLIANCES

(1) All ranges, ovens, broilers and other miscellaneous low heat appliances of the types designed for floor mounting in hotel and restaurant kitchens shall comply with the provisions of SEC. MB-720.3 for low heat appliances and as herein provided.

(2) Ventilating Hoods. Unless enclosed and vented in an approved manner, a range, candy kettle, cruller furnace, appliances for the frying of bakery and confectionery products and any similar apparatus generating hot and noxious smoke and gases shall be provided with a ventilating hood and ducts to remove such smoke, gases and vapors directly to the outer air.

(3) Construction. Hoods and their ducts shall be constructed of approved non-combustible materials with tight joints and the width and length of the hood shall be not less than that of the appliance served.

(3a) Height. The hood shall be installed not more than seven (7) feet above the floor and shall completely cover the appliance served with not less than eighteen (18) inch clearances to combustible material unless the construction is protected as specified in item (6) of SEC. MB-720.3.

(3b) Flue Connection. The hood or duct from a restaurant range or similar appliance shall connect directly to an approved masonry flue or metal smokestack complying with SEC. B-713. Connections to any other ventilating system shall be prohibited.

(4) Vents. The vent of a floor-mounted gas-burning restaurant type cooking appliance installed under a hood may discharge into the space under the hood, providing the vent extends through or beyond any grease screen installed in the hood.

(5) Filters and Screens. The exhaust duct shall be equipped with filters or screens which are readily accessible for removal and cleaning to prevent grease from accumulating in the smoke flue, chimney or smokestack to which it is connected.

SEC. MB-720.0 HEATING SYSTEM REQUIREMENTS
J HOT WATER SUPPLY HEATERS

(1) All range boilers, hot water heaters and storage tanks shall be equipped with temperature limit controls and pressure relief valves as herein required.

(2) Automatic Hot Water Supply. Automatic or remote control ignition equipment on domestic hot water heating devices using gas or liquid fuel shall be installed only in connection with a burner equipped with a safety pilot or other approved device arranged to automatically shut off the fuel supply to the main burners if the pilot flame is extinguished. All gas water heaters with an automatic remote-control pilot, or with means of lighting other than a manual method, shall be equipped with approved down draft diverters on the flue pipe from the heater arranged to prevent extinguishment of the pilot or heating flame in accordance with SEC. MB-716.

(3) Direct-Fired Gage Equipment. Approved relief valves and pressure gages shall be installed in all direct-fired cast iron water heaters with cored sections, and in all heaters with a check valve located between the water meter and the heater or tank.

(4) Pressure Relief Valves. The rate of discharge of pressure valves shall limit the pressure rise to ten (10) percent of the pressure at which the valve is set to open for any given heat input.

(5) Temperature Relief Valves. Temperature relief valves shall be capable of discharging sufficient hot water at two hundred and ten (210) degrees F. without any further rise in temperature.

(6) Vacuum Relief Valves. All copper tanks shall be equipped with approved vacuum relief valves.

(7) Relief Outlet Wastes. The size of relief outlet waste valves shall be not less than the cross-sectional area of the valve discharge outlet. No pressure, temperature or other type relief valve shall discharge directly to the building drainage system.

(8) Prohibited Uses. No solid or liquid fuel or gas-fired water heaters shall be installed in bathrooms, bedrooms, or other habitable spaces or in any enclosed space with a volume of less than three hundred (300) cubic feet; nor shall vent pipes designed for use with gas appliances be used with solid or liquid fuel-fired equipment except as provided in SEC. B-712 for alternate flue construction.

SEC. MB-720.0-K HEATING SYSTEM REQUIREMENTS
GAS FIRED EQUIPMENT

(1) All gas-fired boilers, furnaces and other equipment shall be provided with approved safety devices in accordance with the manufacturer's approved specifications to limit the gas input in the event of low water, excessive steam or air pressures and excessive temperatures.

(2) Gas Space Heaters. Gas-fired space heaters used in sleeping rooms or other rooms normally kept closed shall be of the vented type equipped with an automatic pilot arranged to shut off the gas supply to the main burner when not in operation. Where applicances are installed in a tightly closed room, provisions shall be made to furnish necessary ventilation complying with SEC. B-500.

(3) Gas Piping. Gas piping shall be of wrought iron or steel with malleable iron or steel fittings or copper tube complying with Part E-plumbing code. No cast iron pipe or fittings in sizes less than four (4) inches or aluminum tubing shall be used for gas piping. When subject to corrosion from surrounding materials, the piping shall be of approved corrosion-resistive alloys. All connections to appliances shall be of the rigid type; except that approved semi-rigid connections may be used on appliances which burn not more than ninety (90) cubic feet of gas per hour.

(4) Flexible Connections. Only fully portable appliances used in construction operations or commercial and industrial equipment shall be connected by flexible gas tubing and only when exposed to temperatures of not more than one hundred and twenty-five (125) degrees F. No appliances with a control valve that permits complete shut-off of the gas supply shall be connected with flexible tubing, except where flexible metallic tubing is permitted.

(5) Electric Connections and Wiring. All electric wiring shall comply with Part F of this code.

(5a) Uninterrupted Power. All electric controls shall be connected into a permanent live circuit and gas-fired central heating plants shall be supplied from separate independent circuits.

(5b) Control Circuits. Control circuits shall be run in multiple-conductor cables of not lighter than No. 18 B & S gage with approved thermoplastic coverings. Cables with more than two (2) conductors shall be color-coded.

SEC. MB-720.0 HEATING SYSTEM REQUIREMENTS

L. OIL BURNERS

(1) Permits. Before any oil burning installation of more than six (6) gallons of fuel capacity is placed in operation, a special permit shall be secured from the building official except as herein specified. No permit shall be required for the installation and use of portable burners of the type commonly used for household purposes which do not require a flue connection including oil-stoves, oil heaters, and oil lamps equipped with a woven-wick or for such portable apparatus required in construction operations as blow torches, soldering pots and tar and bitumen heaters.

(2) Identification. Each approved burner shall have permanently and prominently affixed thereto a metal plate tag or other approved device which certified that it has been tested and approved. Said certification shall also bear the manufacturer's or distributor's name, the number of the appliance, the hourly B. T. U. output rating, and the grade of fuel oil for which it is approved.

(3) Instruction Card. When installed each burner shall be accompanied by complete printed instructions for igniting, operating maintenance and shut-down procedure, which shall be attached in a convenient location accessible to the installation.

(4) Construction. An approved burner, including the oil burning heater shall be an assembly of approved parts which are suitable for use with each other and for the service intended.

(4a) Safety Devices. Each burner shall be provided with approved safeguards and protective devices for control of the oil supply, the mixing of the air, the ignition, high pressure or high temperature limits, high and low water limits and for the control of the burner when ignition fails.

(4b) Flexible Tubing. Flexible tubing over seventy-two (72) inches in length shall not be used as an integral part of a burner, and such tubing shall be of a type complying with the approved rules.

(5) Quality of Oil. Oil for use in oil burners shall be free from acid, grit, fibrous and other foreign matter, with a flash point not lower than one hundred (100) degrees F. The use of crankcase refuse oil shall be prohibited.

(6) Flue Gas. The operation of an approved burner shall insure a CO^2 content in the flue gas of not less than eight (8) percent without the emission of smoke throughout the operating range.

(7) Tests. When assembled, each burner shall be tested for defects and proper functioning throughout the operating range as provided in the approved rules.

SEC. MB 720.0 HEATING SYSTEM REQUIREMENTS.

M. FUEL OIL TANKS AND EQUIPMENT

(1) All fuel oil storage tanks, piping, vents and valves shall be installed in compliance with this Code and accepted engineering practice.

(2) Integral Tanks. A tank for the storage of six (6) gallons or less of fuel oil shall be considered an integral part of the burner installation and shall be included in the approval of the burner.

(3) Separate Tanks. All tanks of more than six (6) gallons capacity shall be constructed of tank-steel plates of approved quality and thickness and shall be welded, riveted and caulked, or riveted and welded to meet test requirements. Interior small storage tanks may be constructed of other materials than steel when tested and approved to withstand a hydrostatic pressure of twenty-five (25) pounds per square inch.

(4) Storage Tank Identification. At the time of installation, a storage tank shall have permanently and prominently affixed thereto a metal plate or tag certifying that it has been tested and approved. Said certification shall also bear the name of the tank manufacturer, the gage thickness of the material of which the tank was constructed, the minimum weight of the tank and its capacity.

(5) Tank Vents. All fuel oil storage tanks shall be equipped with an approved relief vent discharging to the open air. The vent openings and vent pipes shall be designed to prevent abnormal pressure in the tank during filling, but in no case shall such vents be less than one and one-quarter ($1\frac{1}{4}$) inch pipes; except that one-half ($\frac{1}{2}$) inch vent branches may be installed from auxiliary tanks and connected to the main tank vent.

(6) Vent Discharge Outlet. The vent pipe from fuel-oil tanks shall terminate outside the building with the discharge and located not less than two (2) feet vertically and horizontally from any window, skylight or roof structure opening in the same or any adjoining building, and not more than twelve (12) feet above the fill pipe terminal. The tops of such vents shall be protected with a weatherproof hood.

(7) Emergency Pressure Relief. All exposed fuel oil tanks unless otherwise approved by the building official shall be provided with an approved device for relieving excessive internal pressure in the event of fire.

(8) Fuel Oil Preheaters. Where oil preheaters are installed they shall be of an approved type equipped with a relief valve to prevent excessive oil pressure. The relief valve shall be set to discharge at one and one-half ($1\frac{1}{2}$) times the working pressure of the system.

(9) Fuel Oil Storage. The interior and exterior storage of fuel oil shall comply with the provisions of the manual as established in SEC. MB-800 for special use and occupancy requirements.

SEC. MB-720.0 HEATING SYSTEM REQUIREMENTS
N. ASH PITS AND BINS

(1) Ash Pit Enclosures. Ash pits and bins shall be constructed of masonry or concrete with walls not less than six (6) inches thick, or of steel or other approved non-combustible materials or combinations thereof as herein provided.

(2) Floors and Roofs. The floor and roof of such pits and bins shall be of approved two (2) hour fire resistive construction; and the ceilings of rooms which contain uncovered ash pits shall be constructed of two (2) hour fireresistance; except that roofs over ash pits may be constructed of approved noncombustible materials.

(3) Opening Protectives. All openings to ash storage bins shall be protected with tightly fitted approved sheet metal doors with metal frames and bucks securely anchored to the walls and roof.

SEC. MB-720.0-0
0. NON-FUEL-FIRED INCINERATORS

(1) Enclosure Walls. In buildings or structures designed for residential (use groups L-1 and L-2), for institutional (use group H-2), for school and church (use group F-4), uses, in which the non-fuel-fired incinerator has the refuse chute identical with the smoke flue, the enclosing walls of the combustion chamber shall be constructed of approved masonry not less than four (4) inches thick when the horizontal grate area is not more than nine (9) square feet, and not less than eight (8) inches thick when the grate area exceeds nine (9) square feet.

(2) Wall Lining. The walls of non-fuel-fired incinerators shall be lined with fire brick laid in fire clay mortar not less than four and one-half ($4\frac{1}{2}$) inches thick with an intervening air space in eight (8) inch and thicker walls.

(3) Opening Protectives. All service openings into the chute shall be equipped with approved three-quarter (3/4) hour fireresistive self-closing hoppers so constructed that the chute opening is closed while the hopper is being charged. No part of the hopper shall project into the chute or flue, nor shall the service opening exceed one-third (1/3) the area of the chute or flue.

(4) Flue Construction. The combined chute and flue shall be constructed in accordance with the provisions of SEC. MB-711.0.

SEC. MB-720.0 HEATING SYSTEM REQUIREMENTS

P. FUEL-FIRED INCINERATORS

(1) All fuel-fired incinerators and non-fuel-fired incinerators not covered by the provisions of SEC. MB-720.0-0, shall conform to the requirements of this section.

(2) Combustion Chamber

(2a) Nine Square Feet Grate Area. The combustion chamber for incinerators with a capacity of less than two hundred and fifty (250) pounds refuse per hour or grate area not more than nine (9) square feet shall be constructed of eight (8) inches of approved masonry which is lined with four and one-half ($4\frac{1}{2}$) inches of fire brick laid in fire clay mortar.

(2b) Over Nine Square Feet Grate Area. When the capacity exceeds two hundred and fifty (250) pounds of refuse per hour or grate area more than nine (9) square feet, the combustion chamber shall be constructed of eight (8) inches of approved masonry which is lined with nine (9) inches of fire brick laid in fire clay mortar.

(2c) Steel Enclosure. The exterior four (4) inches of masonry on the unfired side may be replaced by a steel plate casing not less than three-sixteenth (3/16) inches thick.

(3) Structural Reinforcement. The walls of the combustion chamber shall be strongly braced and stayed with structural steel shapes, or reinforced concrete or other approved reinforcement.

(4) Location. Combustion chambers and waste material bins or containers shall be located in a room or compartment devoted to no other purpose, or they may be located in the same room with the boiler or heating plant. Such room shall be separated from the rest of the building by floors, walls and ceilings of not less than two (2) hours fireresistance with approved one and one-half ($1\frac{1}{2}$) hour fire doors or the approved labeled equivalent in all openings complying with SEC. MB-701.3.

(5) Incinerator Smokepipes.

(5a) Thickness of Metal. Flue connections and breechings shall be constructed of not less than No. 16 U. S. gage sheet metal when less than twelve (12) inches and No. 12 U. S. gage metal when more than twelve (12) inches in diameter or largest dimension.

(5b) Lining. When the breeching is between twelve (12) and eighteen (18) inches in diameter, it shall be lined with not less than two and one-half ($2\frac{1}{2}$) inches of fire brick; and when it is over eighteen (18) inches in diameter it shall be lined with not less than four and one-half ($4\frac{1}{2}$) inches of fire brick laid in fire clay mortar.

(continued)

SEC. MB-720.0 HEATING SYSTEM REQUIREMENTS (continued)
P. FUEL-FIRED INCINERATORS

(5c) Combined Breechings. When an incinerator breeching combines with a smokepipe from another appliance, such connection shall also be lined as required for a direct incinerator flue connection. except than when the cross-sectional area of the combined connection is not less than four (4) times the area of the incinerator breeching, the lining may be omitted.

(6) Clearance of Incinerator Smokepipes. A flue connection or breeching shall have a clearance on all sides from combustible materials or construction of not less than thirty-six (36) inches, except as provided in SEC. MB-720.3.

SEC. MB-720.0 HEATING SYSTEM REQUIREMENTS

Q. MISCELLANEOUS REFUSE INCINERATORS

(1) Integral Construction. When constructed as an integral part of a building, incinerators for the reduction of garbage, refuse or other waste materials shall be installed in accordance with the provisions of SEC. MB-720.0-C, SEC. MB-720.0-P.

(2) Portable Equipment. Incinerators that do not form an integral part of the building construction shall comply with the provisions of SEC. MB-720.0-A and SEC. MB-725 for low or medium heat industrial furnaces. The chimneys and smokepipes shall comply with the requirements of SEC. MB-711.3; SEC. MB-713 and SEC. MB-714 for low and medium temperature flues and smokestacks.

SEC. MB-720.0 HEATING SYSTEM REQUIREMENTS.

R REFUSE CHUTES

(1) Chute Discharge. A refuse chute shall not feed directly to the combustion chamber of an incinerator, but shall discharge into an enclosed room or bin separated from the incinerator room by ceiling and walls of not less than two (2) hours fireresistance, unless otherwise approved by the building official.

(2) Chute Enclosures. Refuse chutes shall be enclosed with walls of masonry of not less than two (2) hour fireresistance rating for interior chutes and of non-combustible (type 2) construction for exterior chutes. All chutes shall be supported on substantial foundations complying with SEC. B-612.0.

(3) Chute Height. An interior refuse chute shall extend not less than four (4) feet above the roof and shall be covered with an approved ventilating skylight complying with SEC. B-710.2.

(4) Service Compartments. Service openings for chutes shall be located in separate rooms or compartments enclosed in walls, partitions, floors and ceilings which have a fireresistance rating of not less than three-quarter (3/4) hours and in which the openings are equipped with fire doors or other approved protectives of not less than three-quarter (3/4) hours fireresistance rating.

(5) Opening Protectives. All openings between refuse rooms, chutes and incinerator rooms shall be protected with one and one-half ($1\frac{1}{2}$) hour fire doors or their approved labeled equivalent complying with SEC. B-701.3.

SEC. MB-720.0 S HEATING SYSTEM REQUIREMENTS
REFUSE VAULTS

(1) Refuse Vault Enclosures. A vault for receiving combustible refuse from an exhaust system shall be constructed of not less than three (3) hour fireresistive assemblies.

(2) Openings to Boiler Rooms. The opening between a vault and a boiler room shall not exceed nine (9) square feet in area and shall be located at least eight (8) feet from the firing door of the boiler, and the bottom of the opening shall be not less than six (6) inches above the boiler room floor. All openings shall be equipped with approved automatic fire doors of not less than one and one-half ($1\frac{1}{2}$) hour fireresistance rating complying with SEC. B-705.9.

(3) Location. When located within a building, a refuse vault shall extend above the roof or shall be directly vented to the outer air with ducts complying with SEC. MB-717.0.

(4) Fire Protection. A vault for combustible refuse which exceeds three hundred and sixty (360) cubic feet in volume shall be protected by an automatic sprinkler or other approved automatic fire-extinguishing system.

SEC. MB-720.0 T HEATING SYSTEM REQUIREMENTS
BLOWER AND EXHAUST SYSTEMS

(1) Ducts for Blower Systems. The ducts for blower and exhaust systems for disposal of dust, stock and vapors from industrial and material processes shall be constructed of metal or other approved noncombustible materials as provided in table next below for transporting non-abrasive and abrasive materials and table below for clearances of ducts carrying flammable vapors and dust from combustible construction. For vapor and dust temperatures in excess of nine hundred (900) degrees F., all ducts shall be lined with approved refractory materials.

THICKNESS OF STEEL SHEET EXHAUST DUCTS IN U.S. STANDARD GAGE

Diameter in inches	Non-abrasive	Abrasive
Less than 9	24	20
9 to 18	22	18
18 to 30	20	16
30 to 36	18	14
More than 36	16	12

CLEARANCE OF EXHAUST DUCTS IN INCHES

Temperature of vapor or dust in degrees F.	3 to 8 inch ducts	Over 8 inch ducts
175 to 600	8	12
600 to 900	18	24
Higher than 900	24	24

(2) Chutes. No room, hallway, attic or other part of a building or structure and no hollow or other concealed space in walls or partitions shall be used as an integral part of a blower or exhaust system handling combustible materials or vapors, unless designed and constructed as required for approved chutes in SEC. MB-720.0-R or approved ducts for flammable vapor systems in SEC. MB-720.0-U.

(3) Location of Fan. The fan for blowing flammable materials or vapors shall comply with the approved rules and shall be located and installed so as to be readily accessible. No fan for blowing flammables shall be located in a fire wall or fire division wall.

(4) Electric Ground. All metal parts of the apparatus used for blower and exhaust system and all shafting in connection therewith shall be electrically grounded as required in Part F, Electrical Code.

SEC. MB-720.0 HEATING SYSTEM REQUIREMENTS

U - FLAMMABLE VAPOR SYSTEMS

(1) Exhaust Outlet. A duct designed to remove flammable vapors from a room of a building or structure under the requirements of SEC. B-800 shall lead as directly as possible to the outside air and the outlets shall be kept not less than ten (10) feet clear from combustible construction or finish.

(2) Location of Ducts. Flammable vapor ducts shall not be incorporated in a wall except to pass directly through it. Such ducts shall never be located in a fire wall or a fire division wall.

(3) Transmission of Power. The motive power for fans located within the room from which flammable vapors are removed shall be transmitted from an outside source through a shaft operating in a bushed shaft hole, unless otherwise approved by the building official.

SEC. MB-720.0 Heating System Requirements

V - DUST, STOCK AND REFUSE CONVEYOR SYSTEMS

(1) Power Transmission. Power for fans located in rooms from which flammable dust is being removed shall be transmitted by means of a shaft passing through a bushed hole, or by a belt, chain or similar driving mechanism which is encased in a metal or other noncombustible dust-tight enclosure, both within and without the room.

(2) Collectors and Separators. Cyclone collectors and separators and their supports shall be constructed of noncombustible materials and shall be located whenever possible on the exterior of the building or structure. In no case shall a collector or separator be located nearer than ten (10) feet to combustible construction or to an unprotected wall or floor opening, unless the collector is provided with a metal vent pipe which extends above the highest part of any roof within a distance of thirty (30) feet.

(3) Discharge Pipes. Discharge pipes shall conform to all the requirements for ducts including clearances required for high heat appliances in SEC. MB-717.0 and SEC. MB-720.0-D1. A delivery pipe from a cyclone collector shall not convey refuse directly into the fire-box of a boiler, furnace, dutch oven, refuse burner, incinerator or other appliance which utilizes induced or forced draft.

(4) Vents for Exhaust Conveyor Systems. An exhaust system shall be vented to the outside of the building either directly by flue, or indirectly through the separator, bin, or vault into which it discharges.

(5) Spark Protection. The outlet of an open air vent shall be protected with an approved metal or other noncombustible screen or by other equally efficient means to prevent the entry of sparks.

(6) Explosion Relief Vents. A safety or explosion relief vent shall be provided on all systems which convey combustible refuse or stock of an explosive nature, in accordance with the requirements of SEC. B-800.

(6a) Screens. When a screen is used in a safety relief vent, it shall be so attached as to permit ready release under emergency pressure.

(6b) Hoods. The relief vent shall be provided with an approved noncombustible cowl or hood, or with a counterbalanced relief valve or cover arranged to prevent the escape of hazardous materials, gases or liquids.

SEC. MB-720.3 CLEARANCE FROM COMBUSTIBLE CONSTRUCTION

(1) Mounting Exceptions for Heat Appliances. When heat appliances are approved for installation on combustible construction, they shall be mounted in accordance with the conditions of the approval and within the limitations of this section.

(1a) Twenty-four Inch Clearance. When medium heat appliances are mounted on legs which provide an open ventilated space of not less than twenty-four (24) inches in height under the base and the appliance is arranged to prevent flame or hot gases from coming into contact with the base, the supporting floor shall be protected with four (4) inches of hollow clay or concrete tile covered with sheet metal of not less than twenty-four (24) U.S. gage. The masonry tile course shall be laid with ends unsealed and joints matched so as to provide through curculation of air.

(1b) Eighteen Inch Clearance. When low heat appliances are mounted on legs which provide an open ventilated space of not less than eighteen (18) inches in height under the base, and one or more metal baffles are furnished between the burners and the floor and the appliance is arranged to prevent flame or hot gases from coming in contact with the base, the supporting floor shall be insulated with not less than one-quarter (1/4) inch asbestos mill board covered with No. 24 U.S. gage steel sheets under the appliances, projecting not less than eighteen (18) inches from the sides of the appliance where fired and where hot products of combustion are removed.

(1c) Eight Inch Clearance. When low heat appliances are mounted on legs which provide an open ventilated space of eight (8) inches in height under the base, and the appliance is arranged to prevent flame or hot gases from coming into contact with the base, the supporting floor shall be protected with not less than three-eighth (3/8) inch asbestos mill board covered with not less than No. 24 U.S. gage sheet metal; and said protection shall project at least six (6) inches beyond all sides of the appliance and eighteen (18) inches therefrom on firing sides and where hot products of combustion are removed.

(1d) Four Inch Clearance. When low heat appliances are mounted on legs which provide an open ventilated space of not less than four (4) inches in height under the base, and the appliance is so arranged as to prevent the flame or hot gases from coming in contact with the base, the supporting floor shall be protected with four (4) inches of hollow clay or concrete tile covered with sheet metal of not less than No. 24 U.S. gage. The masonry tile course shall be laid as provided in item (1a) above.

(Continued)

SEC. MB-720.3 CLEARANCE FROM COMBUSTIBLE CONSTRUCTION (Continued)

Mounting Exceptions for Heat Appliances (Continued)

(1e) Double Tile Base Protection. When low heat appliances are not mounted on legs, the supporting floor shall be protected with two (2) courses of four (4) inch hollow clay or concrete tile covered with a three-sixteenth (3/16) inch steel plate. The tile courses shall be laid at right angles to each other with the ends unsealed and joints matched in such manner as to provide a free circulation of air through the hollow masonry. On the firing side or where hot products of combustion are removed, the mounting and protection shall extend not less than eighteen (18) inches from the side of the appliance.

(1f) Water-Cooled Base. A low heat boiler with a water-cooled base, which has a grate area of less than three (3) square feet or one in which the combustion chamber is located not less than twelve (12) inches above the floor, may rest directly on a sheet metal base of not less than No. 14 U. S. gage steel without heat insulation on combustible construction.

(Continued)

SEC. MB-720.3 CLEARANCE FROM COMBUSTIBLE CONSTRUCTION (Continued)

(2) Mounting Exceptions for House Heating Appliances. Boilers and furnaces used for heating buildings and structures including low pressure steam and hot water boilers, warm air furnaces and floor mounted direct-fired unit heaters shall be installed in accordance with accepted engineering practice within the limitations of this Code governing fire protection and fire safety. Mounting of such heating equipment shall conform with SEC. MB-720.2 for low heat appliances except as follows:

(2a) Four Inch Clearance. When heating boilers and furnaces that are mounted on legs which provide an open ventilated space of not less than four (4) inches in height under the base, the floor shall be protected with not less than one-quarter ($\frac{1}{4}$) inch mill board covered with sheet metal of not less than No. 24 U. S. gage which shall extend not less than six (6) inches beyond the appliances and not less than eighteen (18) inches where ashes are removed;

(2b) Tile Masonry Mounting. When heating boilers and furnaces are not mounted on legs, the floor shall be protected with hollow clay or concrete tile masonry not less than four (4) inches in thickness complying with SEC. MB-720.3 (1d) extending not less than eighteen (18) inches for ash removal;

(2c) Water Base Type. All floor insulation herein required may be omitted under heating boilers of the water-cooled base type when the water jacket extends under all of the ash pit and fire box or under the entire fire chamber when there is no ash pit.

(2d) Mechanical Warm Air Furnaces. All floor insulation herein required may be omitted under mechanical warm air furnaces when the fire chamber provides a completely ventilated air space of not less than eighteen (18) inches in height beneath the firing chamber and at least one (1) metal baffle is provided between firing chamber and floor.

(2e) One-and two-family Dwellings. The mounting and clearances herein defined may be modified for heating installations in one- and two-family dwellings as required under the specific provisions in this Code for gas boilers, warm air furnaces, floor furnaces, unit and space heaters.

(Continued)

SEC. MB-720.3 CLEARANCE FROM COMBUSTIBLE CONSTRUCTION (Continued)

(3) Mounting Exceptions for Restaurant Appliances. Floor mounted restaurant type cooking appliances including ranges, ovens, boilers and similar heating appliances designed for use in hotel and restaurant kitchens shall conform to SEC. MB-720.0-A for low heat appliances except as follows:

(3a) Eighteen Inch Clearance. When restaurant type appliances are mounted on legs which provide an open ventilated space of not less than eighteen (18) inches in height under the base or which have no burners, oven or broiler within eighteen (18) inches of the floor, no special floor protection shall be required provided there is at least one (1) metal baffle between burners and floor;

(3b) Eight Inch Clearance. When restaurant type appliances are mounted on legs which provide an open ventilated space of not less than eight (8) inches in height under the base, the floor shall be protected as provided in SEC. MB-720.3(1c).

(3c) Four Inch Clearances. When restaurant type appliances are mounted on legs which provide an open ventilated space of not less than four (4) inches in height under the base, the floor shall be protected as required in SEC. MB-720.3(1d).

(3d) Double Tile Mounting. When restaurant type appliances are not mounted on legs, the floor under the appliance shall be protected with a double tile base as required in SEC. MB 720.3(1e).

(4) Mounting Exceptions for Domestic Appliances. Domestic type floor mounted heating and cooking appliances including stoves, ranges, space heaters, steam and hot water radiators and water heaters, shall conform to SEC. MB-720.0-A for low heat appliances except as follows:

(4a) Eighteen Inch Clearance. When domestic heating and cooking appliances are mounted on legs which provide an open ventilated space not less than eighteen (18) inches in height under the base or which have no burners, oven or broiler within eighteen (18) inches of the floor, no special floor protection shall be required provided there is at least one (1) metal baffle between the burners and the floor;

(4b) Four Inch Clearance. When domestic heating and cooking appliances are mounted on legs which provide an open ventilated space not less than four (4) inches in height under the base, the floor shall be protected with sheet metal of not less than No. 24 U.S. gage or other approved noncombustible material. When solid fuel-fired, the protection shall extend not less than eighteen (18) inches on sides where ashes are removed;

(4c) Tile Masonry Mounting. When domestic heating and cooking appliances are not mounted on legs, the floor shall be protected as required in SEC. MB-720.3(1d).

(Continued)

SEC. MB-720.3 - CLEARANCE FROM COMBUSTIBLE CONSTRUCTION (Continued)

Side and Top Clearances

(5) Clearances shall be provided from wood and other combustible construction in walls, ceilings and partitions adjacent to heating appliances and equipment as follows:

(5a) Low Heat Appliances. A low heat appliance shall be installed to provide a clearance from combustible material of not less than eighteen (18) inches at the top, sides and rear and of not less than four (4) feet at the front;

(5b) Medium Heat Appliances. A medium heat appliance shall be installed to provide a clearance from combustible material of not less than three (3) feet at the sides and rear, of not less than four (4) feet at the top, and of not less than eight feet at the front or sides where hot products of combustion are removed;

(5c) High Heat Appliances. A high heat appliance shall be installed to provide a clearance from combustible material of not less than ten (10) feet at the sides and rear, of not less that fifteen (15) feet at the top, and of not less than thirty (30) feet at the front or sides where hot products of combustion are removed.

(Continued)

SEC. MB-720.3 CLEARANCE FROM COMBUSTIBLE CONSTRUCTION (cont'd)

(6) Clearance Exceptions. The building official may approve the installation of heating appliances with lesser clearances than specified in paragraph (5) within the limitations herein provided; and such variations shall be cited in the conditions of approval together with the reasons therefor. Heating appliances labeled by approved testing agencies which are approved for installation with lesser requirements than herein provided may be installed in accordance with the conditions of such approvals.

(6a) Clearance Variations. House heating appliances, domestic type ranges and space heaters may be installed with modified clearances as herein specified from combustible materials;

	Clearance in inches			
	Top	Side and Rear	Front	Smoke pipe
Heating boilers and furnaces when water or masonry jacketed.....	6	6	4g	1g
When jacketed with 1/2 asbestos cement.....	9	6	4g	1g
Mechanical warm air with 250°F. temperature limit control.....	6	6	4g	1g
Domestic ranges and stoves.....	36	1g	36	1g
Ranges and stove with fire clay lining.....	24	1g	24	1g
Space heaters.....	36	1g	36	1g
Water heaters.....	12	12	12	1g

(6b) Gas-Fired Equipment. The front clearance for boilers and furnaces which are gas-fired may be reduced to eighteen (1g) inches. Gas-fired ranges and steam or hot water radiators may be reduced to six (6) inch front, side and rear clearances. Vent pipes for gas-fired appliances shall conform to SEC. MB-716.

(Continued)

SEC. MB-720.3 CLEARANCE FROM COMBUSTIBLE CONSTRUCTION (con't)

(6) Clearance Exceptions (con't)

(6c) Fire Protection. The clearances from combustible materials or construction for all types of heating appliances, systems, pipes, flues, and vents which contain hot gases may be decreased from those required elsewhere in this Code when the exposed construction is protected with noncombustible materials to afford the fire-resistances specified in table below, or the equivalent protection is secured by an approval arrangement of plates and baffles.

REDUCED WALL AND CEILING CLEARANCES

Fire resistance of protected construction	Fraction of specified clearances Top	Sides and rear
1/3 hour.	seven-eights	five-eights
1/2 hour.	three-quarters	one-half
3/4 hour.	five-eights	three-eights
1-hour	one-half	one-quarter

(6d) Masonry Enclosures. When appliances of low or medium heat capacity are insulated on the exterior with approved masonry, the clearances from combustible materials or construction may be reduced to two-thirds (2/3) of the specified clearances.

SEC. MB-722.0 PRESSURE VESSELS

(1) Rules covering pressure vessels, fired and unfired. New Jersey Department of Labor and Industry, Mechanical Inspection Bureau.

SEC. MB-731.0 FIRE PROTECTION REQUIREMENTS

(1) Accepted Engineering Practice.

	NFPA
Portable Fire Extinguishers, Installation, Maintenance and Use	10-66
Foam Extinguishing Systems	11-63
Carbon Dioxide Extinguishing Systems	12-66
Sprinkler Systems, Installation	13-66
Sprinkler Systems, Care, Maintenance	13A-58
Automatic Sprinkler Ordinance	13L-37
Standpipe and Hose Systems, Installation	14-63
Water Spray Systems for Fire Protection	15-62
Foam-Water Sprinkler and Spray Systems	16-62
Centrifugal Fire Pumps, Installation	20-66
Steam Fire Pumps (National Standard) Operation and Maintenance of	21-63
Water Tanks for Private Fire Protection	22-65
Fire Department Connections for Sprinkler and Standpipe Systems	23-65
Outside Protection (Yard Piping)	24-66
Dry Chemical Extinguishing Systems	17-58
Wetting Agents	18-66
Supervision of Valves Controlling Water Supplies for Fire Protection	26-58
Indicator Posts (Private Protection Service)	29B-63
Fire Hydrants for Private Service	29C-55
Fire Hydrants, Uniform Marking	291-35
Water Charges for Private Fire Protection	292M-61
Inerting for Fire & Explosion Prevention	69-56
Central Station Protective Signaling Systems	71-66
Proprietary, Auxiliary and Local Protective Signaling Systems)	72A-64; 72B-65 and
Remote Station Protective Signaling Systems)	72C-64 and 72D-65
Municipal Fire Alarm Systems	73-64
Lightning Code	78-65
Fire Hose Couplings, Screw Threads and Gaskets	194-63
Fire Hose	196-60
Fire Hose, Care of	198-58
Aircraft Rescue and Firefighting Standard Operating Procedures	402-65

(2) Miscellaneous Accepted Engineering Practice

Accoustical Units, Prefabricated Sound Absorbing Materials	SS-S-00118-63
Lightning Code for Protection of Persons and Buildings (NOTE: Covers ASA-C-5.1 and ASA-C-5.2 and ASA-C-5.3)	ASA-C-5.1-65

SEC. MB-731.4 ACCEPTANCE TESTS

(1) Standpipe Tests. Upon completion of a standpipe installation and at least every five (5) years thereafter, every standpipe fire line shall be tested for static pressure and flow, including the top and bottom outlets in the presence of the administrative official authorized to witness such test.

(1a) Pressure Test. The test shall demonstrate that the system will sustain a hydrostatic pressure of not less than one hundred (100) pounds per square inch at the topmost hose outlet, and not less than three hundred (300) pounds per square inch at the fire department connection, or at the lowest pump supply connection to the risers. In buildings not exceeding three (3) stories nor more than forty (40) feet in height, the test pressures may be reduced to not more than twenty-five (25) percent in excess of the normal operating pressure.

(1b) Periodic Check Tests. The periodic tests shall demonstrate the suitability of the system for fire department use.

(1c) Temporary Construction Standpipes. The feed mains, risers, interconnections and branch lines of temporary standpipes required under the provisions of SEC. B-900 in structures under erection shall be maintained water-tight when work is not being done on the system.

(2) Sprinkler Tests.

(2a) Wet Pipe Systems. Automatic wet pipe systems shall be subjected to a hydrostatic pressure test for two (2) hours duration of not less than two hundred (200) pounds per square inch in every part of the installation exclusive of water supply tanks; except that in buildings of not more than three (3) stories nor more than forty (40) feet in height, the test pressure need not be more than fifty (50) pounds per square inch in excess of the normal pressure carried in the system or in excess of the pressure necessary to operate the highest sprinklers in nonautomatic systems.

(2b) Automatic Dry Pipe Systems. Automatic dry pipe systems shall be tested to forty (40) pounds per square inch air pressure for twenty-four (24) hours duration with a maximum permissible pressure loss of two (2) pounds per square inch.

(2c) Pressure Tanks. Pressure tanks shall be tested to a pressure of one and one-half (1½) times the working pressure.

(3) Fire Alarm Tests. Upon completion of a fire alarm system, the installation shall be subjected to a test to demonstrate its efficiency of operation. All connections and wiring, with signal devices disconnected, shall develop an insulation resistance of not less than one (1) megohm.

SEC. MB-731.5 MAINTENANCE

(1) Maintenance of Standpipes.
(1a) Tank Supplies. All supply tanks shall be maintained at proper water level and air pressure.
(1b) Valves. Valves at hose stations shall be examined for tightness and valves at automatic sources of supply shall be kept open.
(1c) Hose. Fire hose shall be maintained in good condition and properly arranged on the hose racks. When required, the gaskets shall be replaced in hose valve couplings and nozzles.

(2) Maintenance of Sprinklers.
(2a) Open Valves. The supply valve shall be kept open and the sprinkler system shall be maintained in service at all times. After alterations, repairs, or emergencies, special inspections shall be made to insure that valves are properly serviced in the open position and the system in operating condition.
(2b) Corrosion. Piping and heads shall be protected from corrosion and unwarranted loading and free from mechanical injury.
(2c) Supervisory Service. Where central station supervisory service or fire department connection is maintained, immediate notification shall be given to the administrative official before operating any supply valve or disturbing the system in any manner.
(2d) Dry Pipe Systems. All water supplies and the air pressure in dry pipe systems and pressure tanks shall be maintained in accordance with the requirements of the system.
(2e) Fire Pumps. Fire pumps shall be operated weekly until water is discharged freely from the relief valve.
(2f) Spare Heads. A sprinkler wrench and not less than six (6) spare sprinkler heads shall be available on the premises in a readily accessible and plainly identified place to replace fused or damaged equipment.

(3) Maintenance of Fire Alarms.
(3a) Vacated Premises. Fire alarm systems shall be maintained in operating condition at all times, except when the building is vacated for periods of more than one (1) week; and the system shall be tested upon restoration to use.
(3b) Notice of Defective System. When the fire alarm system becomes inoperative, the owner or his designated representative in charge shall notify all occupants and shall take immediate steps to restore proper working conditions. While out of order, all fire alarm stations shall be clearly tagged to indicate the system is not working.
(3c) Notice to Fire Official. If the operating current of any fire alarm system is disconnected for emergency reasons, the responsible person in charge shall notify the administrative official in advance of such disconnection, stating the reasons therefor.
(3d) Spare Parts. When break-glass type fire alarm boxes are employed, at least one (1) extra glass shall be maintained on the premises for each twenty (20) stations of the system.

SEC. MB-731.7 PERIODIC INSPECTIONS AND TESTS.

(1) Periodic Standpipe Tests.

(1a) Flow Tests. In buildings and structures exceeding seven (7) stories or eighty-five (85) feet in height, flow tests shall be made at intervals of not more than two (2) years with at least fifty (50) pounds pressure at the topmost hose outlet, with one hose stream flowing.

(1b) Fire Pumps. Fire pumps shall be operated at least once in ninety (90) days to insure that the equipment is in good operating condition. Records of these tests shall be maintained by the certified operator and shall be submitted to the fire official when requested for his inspection and approval.

(2) Periodic Automatic Sprinkler Tests

(2a) Periodic Check. All automatic sprinkler systems shall be inspected to observe whether all rooms and spaces are equipped with required sprinklers and that all sprinklers are unobstructed by storage of the contents or by the erection of partitions or other structural features which prevent free operation of the system.

(2b) Fire Pump Test. Fire pumps shall be tested every two (2) years to rated capacity.

(2c) Free Flow. The test pipe at the top of the system, shall be operated at each inspection to determine that there is free flow of water at good pressure; and the drains at the base of risers shall be opened and observed for volume of water flow.

(2d) Supervisory Service. When testing systems which are connected through a central supervisory station or directly to the fire department, notification shall be given to the administrative officials before the tests are made.

(3) Periodic Open Sprinkler Tests. All exterior and interior water curtains or other open sprinkler equipment shall be inspected at least once each year and exterior systems shall be tested during warm weather.

(4) Periodic Interior Fire Alarm Tests.

(4a) Monthly Tests. All interior fire alarm signal systems and sending stations shall be tested monthly by the person in charge to insure normal operating conditions. The use of the system for fire drill purposes under the provisions of SEC. B- 732.0 shall be accepted as a test of those parts of the system actually used in the drill procedure. All sending devices shall be reset or rewound when required after each use.

(4b) Test Records. A complete written record of the monthly tests shall be kept by the person in charge and shall be available for inspection by or be filed with the administrative official if required by him. The monthly test may be held concurrently with the required practice fire drill.

SEC. MB-733.0 STANDPIPE FIRE LINES

(1) Standpipe Protection. Standpipe fire lines shall be protected from freezing and mechanical and fire damage.

(2) Standpipe Construction.

(2a) Height. Standpipe fire lines shall extend from the lowest to the topmost story of the building or part of building which they serve and shall be installed progressively with the erection of the building as required in SEC. B-900.

(2b) Interconnections. When more than one standpipe is required in a building they shall be interconnected at their bases by pipes of size equal to that of the largest riser so as to permit water from any source to supply all risers.

(2c) Hose Connections. Subject to the provisions of SEC. B-735.0 standpipes shall be equipped in every story with two and one-half ($2\frac{1}{2}$) inch hose connections and valves located not more than five (5) feet above the floor level.

(3) Hose. Except as provided in SEC. B-735.0 and item (4) below, standpipes located inside of buildings and structures shall have not less than one hundred and twenty-five (125) feet of two and one-half ($2\frac{1}{2}$) inch diameter hose equipped with couplings conforming to the municipal fire department's standard at each outlet complying with SEC. B-733.6 and hung in an approved rack or cabinet.

(4) Hose Exception. In residential buildings and structures (use groups L-1 and L-2) institutional buildings (use group H-2) and in business buildings (use group F), designed for office use, when approved by the administrative official, one and one-half ($1\frac{1}{2}$) inch hose with three-eights (3/8) inch nozzle may be permitted when installed with a reducer coupling from the two and one-half ($2\frac{1}{2}$) inch standpipe outlet.

(5) Fire Department Connection.

(5a) Standpipe Feeder. The pipe connecting the siamese to the standpipe shall be at least four (4) inches in diameter, but not less than the size of the interconnecting feed lines. When the automatic supply is from a city main or a yard hydrant system, a two and one-half ($2\frac{1}{2}$) inch valved and threaded hose outlet shall be provided to enable the system to be drained.

(5b) Hose Threads. All hose threads in the fire department connection shall be uniform with that used by the municipal fire department.

(continued)

SEC. MB-733.0 STANDPIPE FIRE LINES (continued)

(6) Standpipe Water Supplies. The source of water supply to standpipes shall be adequate to maintain a flow of two hundred (200) gallons per minute with not less than fifty (50) pounds per square inch pressure at the topmost outlet of the building or structure and shall conform to the minimum requirements of this section.

(6a) Public Water Standpipe Supply. When supplied by a street main, the acceptable flow shall be not less than five hundred (500) gallons per minute from a hydrant within two hundred (200) feet of the building under the minimum pressures herein specified.

(6b) Gravity Tank Standpipe Supply. When supplied by a gravity tank, the tank shall be so located that the bottom shall be not less than twenty-five (25) feet above the topmost outlet. The tank shall have a capacity of not less than five thousand (5000) gallons; and if jointly used for house supply and sprinkler systems it shall be arranged to provide a reserve supply of not less than five thousand (5000) gallons at all times for the standpipe fire line and such additional capacity to provide for yard hydrants when required.

(6c) Pressure Tank Standpipe Supply. When supplied by a pressure tank, the tank shall be located in the top story or on the roof of the building or structures and shall have an air pressure and water capacity to supply not less than forty-five hundred (4500) gallons and such additional capacity to provide for yard hydrants when required.

(6d) Fire Pump Standpipe Supply. When supplied by an automatic fire pump, the combined pump capacity shall be not less than five hundred (500) gallons per minute for a four (4) inch standpipe; seven hundred and fifty (750) gallons per minute for a six (6) inch standpipe or for two (2) four (4) inch standpipes; and not less than one thousand (1000) gallons per minute for an eight (8) inch standpipe; or for two (2) six (6) inch standpipes. When pumps are not supplied from the street main, the source shall furnish sufficient water for full operation of the standpipe for not less than one (1) hour.

SEC. MB-733.3 HORIZONTAL FIRE LINES

(1) Construction of Horizontal Fire Lines

(1a) Size. The horizontal fire lines shall be constructed of two and one-half (2 1/2) inch pipe supported on the interior walls of the building or attached to interior columns or girders of noncombustible construction.

(1b) Water Supply. Adequate water supply shall be provided to service not less than two (2) hose connections, but in no case less than a two (2) inch service tap connected to a public water supply main.

(1c) Hose. Approved hose valves, hose and nozzles shall be provided at intervals not exceeding one hundred and twenty-five (125) feet.

(1d) Fire Department Connection. On buildings which are less than ten thousand (10,000) square feet in area, no siamese fire department connection shall be required.

SEC. MB-733.9 EXISTING STANDPIPES

(1) Minimum Requirements. The following minimum requirements shall apply to all existing standpipe installations.

(1a) Water Supply. There shall be a reserve of fifteen hundred (1500) gallons of water in the gravity tank for exclusive use of the standpipe.

(1b) Gravity Tank. The gravity tank shall be fed by direct city water connection at a rate of not less than sixty-five (65) gallons per minute or by booster pump of equal capacity; and the bottom of the tank shall be located not less than twenty (20) feet above the topmost hose outlet.

(1c) Fire Department Connection. Existing siamese hose connections shall be maintained in a manner satisfactory to the fire official.

SEC. MB-736.0 AUTOMATIC SPRINKLER SYSTEMS

(1) The requirements of this section shall apply to all sprinkler equipment specified by the provisions of this code. All such systems shall be designed, constructed and maintained in accordance with accepted engineering standards and within the limitations of the approved devices of the Underwriters' Laboratories, Inc.. and other recognized testing agencies.

(2) Combustible Contents. All buildings and structures used for the manufacture, sale or storage of highly combustible materials and products in use groups A, B, C, and D shall be equipped with an approved automatic sprinkler system when more than three (3) stories or forty (40) feet in height and more than ten thousand (10,000) square feet of fireproof (type 1-A or 1-B) construction; when more than three (3) stories or forty (40) feet in height and seven thousand five hundred (7,500) square feet in area of protected, noncombustible (type 2-A) construction; when more than two (2) stories or thirty (30) feet in height and six thousand (6,000) square feet in area of protected noncombustible (type 2-B) or heavy mill (type 3-A) construction; when more than one (1) story in height and three thousand (3,000) square feet in area of unprotected noncombustible (type 2-C) or ordinary (type 3-C) or protected frame (type 4-A) construction; and-in-every-usable or occupiable cellar or story with ceiling located less than six (6) feet above grade and more than three thousand (3,000) square feet in area.

(3) Number of Risers. In each fire area there shall be at least one (1) riser of adequate size to furnish all the heads therein contained in one (1) story.

(4) Prohibited Connections. No auxiliary connection shall be made to sprinkler risers for sill cock, house service, standpipe or other hose outlet purpose.

(5) Mechanical Protection. Risers shall be protected from mechanical injury and shall not be located close to windows.

(6) Protection From Freezing. All discharge, heating or filling pipes where exposed to the weather shall be protected from freezing and the water in all sprinkler tanks subject to freezing shall be provided with internal heating equipment or approved frostproof enclosures.

(7) Protection from Corrosion. Wherever necessary, sprinkler pipes and hangers shall be protected against corrosion from moisture and the heads shall be covered with an approved chemically treated coating for protection from chemical fumes when required by the administrative official.

(8) Drainage of Discharge. Provision shall be made for discharge of the overflow of water on every floor of sprinklered buildings designed for industrial and storage uses to comply with Part E of this code.

(continued)

SEC. MB-736.0 AUTOMATIC SPRINKLER SYSTEMS (Continued)

(9) Sprinkler Water Supplies. Automatic sprinkler systems shall have at least one (1) approved automatic source of water supply meeting the following requirements:

(9a) Public Water Sprinkler Supply. Direct connections to public water supplies shall be capable of supplying water at not less than fifteen (15) pounds per square inch pressure at the topmost sprinkler head.

(9b) Sprinkler Gravity Tank. Gravity tanks shall be capable of supplying twenty-five (25) percent of the number of sprinkler heads in the maximum protected fire area for a period of twenty (20) minutes but in no case shall the capacity of any one (1) tank be less than five thousand (5000) gallons.

(9c) Sprinkler Pressure Tank. Pressure tanks shall be capable of supplying twelve and one-half (12 1/2) percent of the number of sprinkler heads in the maximum protected fire area; but in no case shall the capacity be less than three thousand (3000) gallons of water for a wet pipe system, nor less than five thousand (5000) gallons for a dry pipe system; nor shall any single tank have a capacity of more than six thousand (6000) gallons. The tank shall be maintained two-thirds (2/3) full of water under a pressure of seventy-five (75) pounds per square inch at all times.

(9d) Sprinkler Fire Pump. Automatic fire pumps shall be of an approved type with a supply capacity of at least five hundred (500) gallons per minute. The pumps shall be adequate to supply fifty (50) percent of the sprinkler heads in the maximum protected fire area and shall be located in a room enclosed with two (2) hour fireresistive construction.

(9e) Combined Water Supply. When the sprinklers and standpipes are supplied from one (1) tank, it shall comply with the provisions of section MB-733.0 and the standpipe supply shall be drawn from the top portion of the tank.

(9f) Partial Sprinkler Systems. Where approved by the administrative official, partial systems serviced from the building water supplies may be used in isolated hazardous locations and to protect unenclosed exitways in existing buildings as provided in section B-405.2 b.

(9g) Sprinkler Head Discharge. In determining the required water supplies, standard one-half (1/2) inch sprinkler heads shall be assumed to have an average discharge of twenty (20) gallons per minute and the discharge of larger heads shall be computed proportionately to the area of their orifices.

(10) Fire Department Connection. Fire department connections shall comply with the provisions of SEC. B-733.8 and SEC. B-739 of the code and item (5) of SEC MB-733.0 of the manual.

SEC. MB-736.1k. EXISTING SPRINKLERS

(1) Voluntary Protection. Existing sprinkler systems not required by this code which have been installed voluntarily need not conform to the provisions of this section except that the siamese hose connection shall be maintained as directed by the fire official.

(2) Communicating Buildings. When a completely sprinklered building communicates with another not so equipped, the communicating openings shall be provided with an opening protective on both sides of the wall having a combined fireresistance rating not less than required in Table B-203 of fire grading of use groups of SEC. MB.-705.2, for fire walls or fire division walls.

(3) Water Supply. The service supply of existing systems shall be of sufficient size to operate the largest number of sprinklers in one (1) fire area except that the administrative official may accept systems in buildings of low fire hazard when the supply is adequate to furnish at least ten (10) sprinkler heads, and the supply line is at least one and one-half ($1\frac{1}{2}$) inches in diameter.

SEC. MB-740.0. INTERIOR FIRE ALARMS

(1) Non-Coded Systems. Non-coded systems shall be required in residential, institutional, mercantile and business buildings and in all factory buildings not exceeding five (5) stories in height, nor more than five thousand (5000) square feet in area with an occupancy load of not more than fifty (50) above the first story.

(2) Coded Systems. Coded systems shall be required in all other buildings specified in SEC. MB-740 installed in accordance with the approved rules.

(3) Station Location. At least one (1) sending station shall be located in each story in an accessible position in a natural path of escape or exitway.

(3a) Length of Travel. All stations shall be located so that no point on any floor of the building is more than one hundred and fifty (150) feet distant from a station.

SEC. MB-800.0 SCOPE

(1) Accepted Engineering Practice. Except as specifically required in this Code and where more restrictive provisions of the State Statutes govern, compliance with the following standards shall be deemed to meet the requirements for special uses and occupancies:

	NFPA
Flammable and Combustible Liquids Code	30-66
Self-Service Gasoline Stations	30E-63
Oil Burning Equipment, Installation	31-65
Dry Cleaning Plants	32-64
Spray Finishing Using Flammable Materials	33-66
Dip Tanks Containing Flammable or Combustible Liquids	34-66
Organic Coatings, Manufacture of	35-64
Cellulose Nitrate Motion Picture Film	40-62
Pyroxylin Plastics in Factories, Storage, Handling and Use	42-62
Pyroxylin Plastics in Warehouses and Retail Stores	43-62
Combustible Fibres, Storage and Handling	44-53
Lumber Storage Yards, Retail and Wholesale	47-61
Magnesium, Storage, Handling and Processing	48-61
Welding and Cutting, Gas Systems for	51-64
Flammable Anesthetics Code	56-65
Liquified Petroleum Gases, Storage and Handling	58-65
Liquified Petroleum Gases at Utility Gas Plants	59-63
Pulverized Fuel Systems, Installation and Operation of	60-61
Starch Factories, Prevention of Dust Explosion in	61A-62
Terminal Grain Elevators, Prevention of Dust Explosions	61B-59
Flour and Feed Mills, Allied Grain Storage Elevators, Prevention of Dust Explosions in	61C-62
Sugar and Cocoa, Pulverizing, Dust Hazards	62-59
Industrial Plants, Fundamental Practices for Prevention of Dust Explosions in	63-64
Country Grain Elevators, Prevention of Dust Ignitions in	64-59
Aluminum Processing and Finishing	65-63
Explosion Venting Guide	68-54
Fur Storage, Fumigation and Cleaning	81-57
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SEC. MB-800.2 EXPLOSION HAZARDS

A - VOLATILE FLAMMABLES

(1) Inside Process and Storage. Quantities of flammable liquids greater than 10 gallons of Class I, 20 gallons of Class II and 55 gallons of Class III flammable shall be prohibited in basements except that steel or iron tanks installed in connection with oil burning equipment shall not exceed 275 gallons individual capacity or 550 gallons aggregate capacity and except that quantities greater than herein stated may be stored in an approved vault.

(1a) One Day Limit. Unless otherwise approved by the fire official, inside storage in process rooms as required in items (1c) and (1d) of this section shall be limited to one (1) days supply in approved sealed containers of not more than five (5) gallons or in approved steel barrels or drums of not more than fifty five (55) gallons capacity.

(1b) Handling. Discharge or filling operations shall be by pump through an approved system of securely attached and continuous piping or hose lines. In processes requiring the use of open vats or mixing tanks, an approved mechanical ventilating system shall be provided to remove the vapors or to reduce the vapor mixture to within twenty (20) per cent of the lower explosive limit.

(1c) Container and Cabinet Storage. Where less than 10 gallons of Class I, 20 gallons of Class II and 55 gallons of Class III flammables are used or stored, sealed containers, safety cans or metal cabinets shall be used provided individual containers for Class I and II do not exceed five (5) gallons. Where sprinklers are provided, these quantities may be doubled.

(1d) Inside Enclosure under 275 Gallons. In other than fireproof buildings and incombustible one story buildings, all process, storage and mixing rooms for quantities greater than specified in item (1) above shall be enclosed in one (1) hour fireresistive walls and ceilings and vented in accordance with SEC. MB-801.8 but the total quantity shall not exceed 275 gallons.

(1e) Inside Enclosures over 275 Gallons. Process, storage and mixing rooms shall be enclosed in walls, floors and ceiling of not less than two (2) hours fireresistive construction with incombustible door sills not less than six (6) inches high and all openings protected with one and one-half (1 1/2) hour opening protectives vented as required in SEC. MB-801.8. Floors shall be waterproofed and drained.

(1f) Fire Protection. First aid fire appliances and automatic sprinklers or other extinguishing equipment shall be provided in accordance with SEC. B-700 of the approved rules. Provision shall be made to prevent leaking flammable vapors, from being exposed to open flames, fire or sparks. Where rooms are open to underside of roofs and sprinklers are provided, the ceiling protection above may be omitted.

(2) Main Storage. Main storage systems of volatile flammable liquids shall be constructed and installed in accordance with the approved rules. Such systems may be either: outside underground, outside aboveground, inside underground, outside storage house, or inside storage room.

(3) Outside Underground System. Outside tanks shall be buried underground with the top of the tanks not less than two (2) feet below grade or with a reinforced concrete or other approved structural cover not less than four (4) inches thick under a twelve (12) inch earth cover. The maximum capacity of such tanks shall be limited by their location in respect to adjacent buildings as provided in the following table.

(Continued)

SEC. MB-800.2 EXPLOSION HAZARDS

A. VOLATILE FLAMMABLES (Continued)

TABLE A
CAPACITY OF OUTSIDE UNDERGROUND TANKS
FOR VOLATILE FLAMMABLE LIQUIDS AT ATMOSPHERIC PRESSURE

LOCATION (HORIZONTAL DISTANCE) Fire Exposure in Feet, Top of Tank May be Above Basement Floor Level	Quantity of Storage Gallons for Class I, II and III under 100° F. Flash Point	Class III Above 100° F Flash Point
10	2,000	50,000
20	5,000	75,000
25	15,000	100,000
30	20,000	150,000
40	50,000	200,000
50	Unlimited	Unlimited

(4) Outside Aboveground System. Aboveground tanks shall be located only outside fire district No. 1; and the arrangement, capacity, location, drainage, construction and exposures shall be subject to special approvals of the building official and the fire official; but in no case shall the fire separation be less than that specified in the following tables B and C, as appropriate.

TABLE B
CAPACITY OF OUTSIDE ABOVEGROUND TANKS FOR
CLASS I, II, AND III VOLATILE FLAMMABLE LIQUIDS

Below 100°F. Flash Point

Maximum Tank Capacity in Gallons	Distance in feet of dike walls from nearest building or lot line
10,000	20
15,000	30
30,000	50
50,000	75
100,000	100
200,000	150

TABLE C
CAPACITY OF OUTSIDE ABOVEGROUND TANKS FOR
CLASS III VOLATILE FLAMMABLE LIQUIDS
Above 100°F. Flash Point

Maximum Tank Capacity in gallons	Distance in feet from nearest building or lot line to toe of dike
3,000	10
15,000	20
30,000	30
50,000	50
100,000	75
200,000	100

(Continued)

SEC. MB - 800.2 EXPLOSION HAZARDS

A - VOLATILE FLAMMABLES (Continued)

(5) Dikes. Dike capacity shall be equal to one and one-tenth times (1 1/10) the capacity of tanks surrounded and 1 1/2 times capacity if tanks contain materials subject to foaming or boiling. The height of the dike should not exceed one-quarter (1/4) of the height of the tank with a minimum height of not less than three feet. Individual tanks of fifty thousand (50,000) gallons individual capacity may be grouped, but not more than 500,000 gallons capacity shall be contained in one diked area. Any two tanks should be separated by a distance at least equal to 1/2 the greatest dimension of the smaller but in no case less than 3 feet. The minimum distance between tanks in adjacent groups shall be 25 feet. Tanks located within 25 feet of each other shall be considered as one tank or group.

(5a) When the capacity of an aboveground storage tank for volatile flammable liquids exceeds 3,000 gallons capacity, such tank shall be protected by a dike of approved construction.

(5b) When such tanks are located outside of fire district No. 2, the building official may permit an increase in table capacity in excess of that for which diking is required by item (5a) of the section up to but not exceeding 15,000 gallons of tank capacity.

(5c) Where, in the opinion of the building official, a consideration of the origin and spread of fire and probable damage to life or property, or both, may be involved, he may require diking protection for such tanks of any lesser capacity below that prescribed in item (5a) above.

(6) Inside Underground System. Inside underground tanks shall be located not less than two (2) feet below the level of the lowest cellar floor of the building in which located or any other building within a radius of ten (10) feet of the tank. In no case shall such tanks be located under the sidewalk or beyond the building line. It shall be unlawful to cover any tanks from sight until after inspection and test and written approval of the building official.

(7) Outside Storage Building. All outside storage buildings shall be fire-resistive or noncombustible construction and cut off from any usage area. Noncombustible construction may be used only when detached at least forty (40) feet. Fireresistive buildings may be cut off by standard fire walls. No opening shall be permitted in the enclosure walls within ten (10) feet of adjoining property lines or with a fire exposure of less than ten (10) feet to any other building or structure.

SEC. MB-800.2 EXPLOSION HAZARDS.

B INTERIOR FUEL OIL STORAGE TANKS

(1) Auxiliary Tanks. Small storage or auxiliary tanks of not more than two hundred and seventy-five (275) gallons capacity may be installed above ground in the lowest story of a building, when mounted on substantial noncombustible supports and located at least seven (7) feet from any boiler, furnace, stove or other exposed flame. Not more than two (2) such tanks shall be connected to any one burner; nor shall more than two (2) tanks of two hundred and seventy-five (275) gallons capacity each be installed in any one building unless protected as provided for large tanks.

(2) Large Tanks. Tanks of more than two hundred and seventy-five (275) gallons capacity located within a building shall be installed on the lowest floor and shall be protected with an approved reinforced concrete or masonry jacket not less than four (4) inches thick; or such tank may be buried with the top not less than two (2) feet below the floor level or shall be covered with an approved reinforced concrete slab not less than four (4) inches thick.

(3) Underground Tanks. Storage tanks of more than five thousand (5000) gallons buried in the ground shall be constructed of tank-steel plates not less than one-quarter ($\frac{1}{4}$) inch in thickness; and shall be located not less than three (3) feet from any foundation wall or footing.

(4) Maximum Storage. The aggregate total capacity of all individual storage tanks located within a building or other structure shall not exceed twenty-thousand (20,000) gallons.

SEC. MB-800.2 EXPLOSION HAZARDS.

C EXTERIOR FUEL OIL STORAGE TANKS

(1) Oil storage tanks which are located outside a building or other structure may be erected under or above ground and shall comply with all the pertinent requirements of SEC. MB-720.0-L, SEC. MB-720.0-M and SEC. MB-800.2-B.

(2) Underground Tanks. When necessitated by ground water pressure, such tanks shall be anchored to a foundation of sufficient weight to prevent floating.

(3) Aboveground Tanks. An aboveground storage tank located outside a building shall be located not less than one and one-quarter (1¼) tank diameters, but in no case less than ten (10) feet from interior lot lines or from the nearest building thereto, or from any other tank.

(4) Electric Ground. All exterior storage tanks above ground of more than ten thousand (10,000) gallons capacity shall be electrically grounded to comply with Part F of this code.

(5) Location. The capacity of individual tanks shall be determined by the location in respect to property lines and buildings as specified in table below:

Maximum tank capacity in gallons	Distance from lot lines or nearest building in feet
3,000	10
15,000	20
30,000	30
50,000	50
100,000	75
200,000	100

(6) Protecting Dikes

(6a) When the capacity of any aboveground fuel oil tank located in a fire district exceeds ten thousand (10,000) gallons capacity, such tank shall be protected by an embankment or dike of approved construction and enclosing a volume not less than one and one-tenth (1 1/10) times the capacity of the tank. The height of the embankment or dike should not exceed one-quarter (¼) of the height of the tank with a minimum height of not less than three feet.

(6b) When fuel oil tanks are located outside of any fire district, the building official may permit an increase in tank capacity in excess of that for which diking protection is required by item (6a) of this section up to but not exceeding fifty thousand (50,000) gallons of tank capacity.

(6c) Where, in the opinion of the building official, a consideration of the origin and spread of fire and probable injury to life or property, or both, may be involved, he may require diking protection for fuel oil tanks of any lesser capacity below that prescribed in item (6a) above.

SEC. MB-800.2 EXPLOSION HAZARDS.

D LIQUEFIED PETROLUEM GASES

(1) General. The design, construction, location, installation and operation of facilities and equipment for storing, handling, transporting and utilizing liquefied petroleum gases shall be subject to approval and be in accordance with the latest revision of the rules and regulations governing the Storing, Handling, Transportation and Utilization of Liquefied Petroleum Gases as promulgated by the Department of Law and Public Safety, Division of State Police, Trenton, New Jersey.

(2) Approval. Plans and specifications for the installation of any vessel, equipment or system for liquefied petroleum gases in any factory, mill, workshop or place where goods are manufactured, printery, newspaper plants, public utility generating station, mine or quarry must be approved by the Bureau of Engineering and Safety of the Department of Labor and Industry, in accordance with the laws of 1950 chapter 139. For installations other than the above and which are in excess of 2000 gallons water capacity per container for liquefied petroleum gas, approval of the Superintendent, Division of State Police shall be required.

SEC. MB-800.2 EXPLOSION HAZARDS

E. PYROXYLIN PLASTICS

(1) General. The provisions of this section shall control all buildings, structures and parts thereof used in the storage, handling or fabrication of pyroxylin plastic whether in raw material, process, finished product or scrap.

(2) Exceptions. The provisions of this section shall not apply to the manufacture, use or storage of nitro-cellulose film or to the incidental storage of articles manufactured from pyroxylin plastics such as buttons, buckles, handles, toilet articles and toys offered for sale in mercantile buildings.

(3) Restrictions. No permit for the storage or manufacture of pyroxylin plastics, except as specified in item (2) above shall be issued for a building, or structure hereafter erected, altered or used which is occupied or located:

(3a) Within fifty (50) feet of the nearest wall of a school, theatre or other place of public assembly;

(3b) As a residential building, use groups L-1, L-2, or L-3;

(3c) Where paints, varnishes or lacquers are manufactured, stored or kept for sale; or where matches, resin, turpentine, oils, hemp, cotton or any explosives are stored or kept for sale;

(3d) Where drygoods, garments or other materials of a highly flammable nature are manufactured in any portion of the building above that used for nitrocellulose products;

(3e) In quantities exceeding one hundred (100) pounds in any tenant factory building (use group B) in which more than five (5) people are employed or likely to congregate at any one time.

(4) Inside Storage. All pyroxylin raw material and products intended for use in further manufacture shall be stored as herein provided;

(4a) Cabinets. Quantities of more than twenty-five (25) pounds and not more than five hundred (500) pounds shall be stored in approved cabinets constructed of incombustible materials but in no case shall the total quantity of storage be more than one thousand (1000) pounds in any one workroom or space enclosed in floors, walls and ceilings of not less than two (2) hour fireresistance.

(4b) Vaults. Quantities of more than five hundred (500) pounds and not more than ten thousand (10,000) pounds shall be stored in vaults enclosed in floors, walls and ceilings of not less than four (4) hour fireresistance. The interior storage volume of the vault shall be not more than fifteen hundred (1500) cubic feet and the vault shall be constructed vapor and gas-tight in accordance with the approved rules, with one and one-half (1½) hour vapor-tight fire doors on each side of the door opening. The vault shall be drained and provided with scuppers.

(4c) Tote Boxes and Scrap Containers. During manufacture, pyroxylin materials and products not stored in finished stock rooms, cabinets or vaults shall be kept in approved tote boxes. Scrap and other refuse material shall be collected in approved incombustible containers in quantities not greater than three hundred and fifty (350) pounds and removed at frequent intervals as directed by the fire official.

(continued)

SEC. MB-800.2 EXPLOSION HAZARDS

E PYROXYLIN PLASTICS (continued)
Inside Storage

(4d) Ventilation. Each separate compartment in storage vaults shall be vented directly to the outer air through flues complying with the requirements of SEC. B-700 for low temperature chimneys, or exterior metal smokestacks, or as otherwise provided in the approved rules. The vent shall discharge not less than four (4) feet above the roof of the building or on a street, court or other open space not less than fifty (50) feet distant from any other opening in adjoining walls which are not in the same plans, nor nearer than twenty-five (25) feet vertically or horizontally to an exterior exit stairway or fire escape.

(5) Isolated Storage Buildings. Pyroxylin products in quantities greater than permitted for interior storage shall be housed in isolated storage buildings. Such buildings shall be used for no purpose other than packing, receiving, shipping and storage of pyroxylin plastics unless otherwise approved by the building official.

(5a) Capacity. The maximum storage in any fire area enclosed in construction of four (4) hour fireresistance shall not be greater than one hundred thousand (100,000) pounds. The total storage capacity of the building and its separation from lot lines and other buildings on the same lot shall be limited as provided in the following table. When equipped with an approved automatic sprinkler system complying with the provisions of SEC. B-700, the exposure distance may be decreased fifty (50) per cent. Such systems shall be equipped with not less than one automatic sprinkler head for each thirty-two (32) square feet of protected area.

EXPOSURE DISTANCE FOR PYROXYLIN STORAGE BUILDINGS

MAXIMUM QUANTITY STORED Pounds	DISTANCE FROM LOT LINE OR OTHER BUILDING Feet
1,000	40
2,000	50
3,000	60
4,000	70
5,000	80
10,000	100
20,000	125
30,000	150
40,000	160
50,000	180
75,000	200
100,000	225
150,000	250
300,000	300

(6) Fire Protection.

(6a) Heating Equipment. All radiators, heating coils, piping and heating apparatus shall be protected with approved incombustible mesh to maintain a clearance of six (6) inches of all pyroxylin products from such equipment. All piping and risers within six (6) feet of the floor shall be insulated with approved covering unless protected with approved wire guards. (cont'

SEC. MB-800.2 EXPLOSION HAZARDS

E PYROXYLIN PLASTICS (continued)
Fire Protection (continued)

(6b) Lighting Control. All lighting shall comply with the provisions of SEC. B-801.3 and shall be controlled from panel boards located outside of storage compartments and vaults.
(6c) Standpipes. First aid standpipes shall be provided for each five thousand (5000) square feet of floor area equipped with one and one-half (1½) inch hose complying with SEC. B-700.
(6d) Automatic Sprinklers. All manufacturing and storage spaces and vaults shall be protected with an approved automatic sprinkler system complying with SEC. B-700 supplemented by fire pails in accordance with the approved rules.
(6e) Special Protection. Special chemical extinguishers and other first aid fire appliances shall be provided around motors and other electrical equipment in accordance with the approved rules.

SEC. MB - 800.2 EXPLOSION HAZARDS

F - USE AND STORAGE OF FLAMMABLE FILM

(1) Permit Required. No permit for the handling, use, storage, or recovery of flammable film shall be issued for any building located as specified in item (3) of SEC. MB-800.2-E; except that those restrictions shall not apply to the screening and projection rooms of theatres and other places of amusement or instruction. It shall be unlawful to store, stock, or use any nitrocellulose or other flammable film for commercial or educational purposes in quantities of more than two thousand (2000) feet in length or more than ten (10) pounds in weight without the approval and permit of the fire official.

(2) Storage. Other than motion picture projection and rewind rooms, or as herein specifically required, all rooms in which flammable film is stored or handled shall be enclosed in not less than two (2) hour fireresistive construction complying with the provisions of SEC. B-700. All film, except when in process or use, shall be kept in approved closed containers.
(2a) Cabinets. Flammable film in amounts of twenty-five (25) to one thousand (1000) pounds shall be stored in approved incombustible cabinets constructed and vented in accordance with the approved rules. No one cabinet shall contain more than three hundred seventy-five (375) pounds. All cabinets with a capacity of more than seventy-five (75) pounds shall be equipped with not less than one (1) automatic sprinkler head.
(2b) Vaults. Flammable film in amounts greater than one thousand (1000) pounds shall be kept in vaults constructed as provided in SEC. MB-800.2-E; except that the interior storage volume shall not exceed seven hundred fifty (750) cubic feet.
(2c) Rooms. Unexposed film may be stored in the original approved shipping cases complying with the rules of the Interstate Commerce Commission and the fire official, in rooms equipped with an approved one source sprinkler system complying with the provisions of SEC. B-700.
(2d) Ventilation. Storage rooms shall be ventilated as specified in item (4d) of SEC. MB-800.2-E with the vents arranged to open automatically in the event of fire in accordance with the approved rules.
(2e) Lighting. Artificial illumination shall comply with SEC. B-801.3 except that arc or other approved forms of lights may be used in film studios.
(2f) Heating. All heating equipment and installations shall conform to the requirements of item (6a) of SEC. MB-800.2-E. The duct system of warm air heating and air-conditioning systems shall comply with part D of this Code, and shall be protected with automatic fire dampers to cut off all rooms in which film is handled from all other rooms and spaces in the building. The heating of film vaults shall be automatically controlled to a temperature of not more than seventy (70) degrees Fahrenheit.
(2g) Fire Protection. Approved automatic sprinkler systems shall be provided in all buildings and structures and parts thereof in which flammable film is stored or handled in amounts of more than fifty (50) pounds and as specifically required in this section and in the approved rules, except in projection booths and rewind rooms conforming to the requirements of items (3) and (4) of this section. First aid fire extinguishing and auxiliary firefighting equipment shall be provided in accordance with SEC. B-700 and the approved rules adopted thereunder.

(Continued)

SEC. MB-800.2 EXPLOSION HAZARDS

F - USE AND STORAGE OF FLAMMABLE FILM (Continued)

(3) Projection Rooms. Every room for the use and operation of motion picture projectors hereafter installed as an integral part of a building shall be enclosed in walls, floor and ceiling of incombustible materials as herein provided.
(3a) Construction of Projection Rooms. The size of the room shall be adequate to accommodate the apparatus and equipment and permit manual operation, but in no case less than forty-eight (48) square feet in area and seven (7) feet in height for one projector and twenty-four (24) square feet for each additional machine. The enclosure shall be constructed smoke and vapor tight of not less than three-quarter (3/4) hour fireresistance. Observation and projector openings shall in no case exceed twelve (12) inches in any dimension and shall be equipped with approved automatic metal shutters capable of manual operation from the outside.
(3b) Exits from Projection Rooms. At least two (2) exits shall be provided equipped with self-closing fire doors, opening outwardly, not less than two and one-half (2 1/2) feet by six (6) feet in size, unless otherwise approved by the building official.
(3c) Ventilation of Projection Rooms. Ventilation shall be provided by an approved mechanical system of ventilation, exhausting either directly to the outdoors or through an incombustible flue, which shall be used for no other purposes. The exhaust capacity shall be not less than fifteen (15) nor more than fifty (50) cubic feet per minute for each arc lamp, plus two-hundred (200) cubic feet per minute for the volume of the room. The ventilation system may be extended to serve rewind rooms associated therewith, but shall not be connected in any way with ventilating or air conditioning systems serving other portions of the building. All ventilating flues shall be constructed and installed to comply with part D of this Code. All fresh air intakes other than direct supply from open air shall be protected with fire shutters arranged to operate automatically with the port shutters.
(3d) Lighting Control. Provision shall be made for control of the auditorium lighting and the emergency lighting systems of theatres from inside of the booth and from at least one other convenient point in the building as required in item (9) of SEC. MB-802.
(3e) Electrical Equipment. Separate compartments of similar construction to the projection booth shall be provided for storage batteries and motor generators, respectively. Ventilation shall be provided for such compartments, that for the motor compartment being independent of any other system. The duct from such compartments leading to outdoors shall be constructed of approved acidresisting incombustible material.
(3f) Film Capacity. The film storage capacity of each projection or rewind room shall be not more than one hundred twenty-five (125) pounds.

(4) Rewind and Auxiliary Rooms. Rewinding of film shall be done in the booth in accordance with the approved rules or in a special ventilated rewind room not less than eighty (80) square feet in area constructed as provided in this section for the projection room. Special auxiliary rooms may be provided for film storage of not more than one hundred twenty-five (125) pounds capacity; but the total storage capacity of projection, rewind and auxiliary rooms shall be not more than two hundred and fifty (250) pounds.
(Continued)

SEC. MB-800.2 EXPLOSION HAZARDS

F - USE AND STORAGE OF FLAMMABLE FILM (Continued)

(5) Trial Exhibition Rooms. Trial exhibition rooms shall provide a seating capacity of not more than one hundred (100) persons, with not less than two (2) approved exits complying with SEC. B-400. Such rooms shall be enclosed in three-quarter (3/4) hour fireresistive partitions with self-closing fire doors at the openings. All seats shall be permanently fixed in position and the arrangement shall comply with the requirements of item (4) of SEC. MB-802.0.

(6) Temporary Motion Picture Installations. Permits for portable and temporary booth construction for incidental amusement and educational purposes shall be secured from the fire official in accordance with the approved rules.

(7) Motion Picture Studios.

(7a) Construction. All buildings designed or used as motion picture studios shall be protected with an approved two-source automatic sprinkler system complying with the provisions of SEC. B-700 except that the building official may exempt rooms designed for housing electrical equipment from this requirement when constructed of fireproof (type 1-A or 1-B) construction.

(7b) Special Rooms. Rooms and spaces used as carpenter and repair shops, dressing rooms, costume and property stage rooms shall be enclosed in floors, walls and ceilings of not less than two (2) hour fireresistive construction.

(7c) Trim and Finish. All permanently attached acoustic, insulating and light reflecting materials and other finish on walls and ceilings shall comply wth the requirements of SEC. B-700 for flameresistive materials. All other temporary fabric and materials suspended from ceilings or against walls and partitions or included in stage sets or used in photographing scenes shall be of slow-burning materials meeting the requirements of SEC. B-700.

(7d) Film Storage. All film shall be stored as required in item (2) of this section and no surplus film shall be kept on the studio stage except loaded magazines in the cameras and sound recording apparatus. All extra loaded magazines shall be stored in a separate magazine room enclosed in two (2) hour fireresistive construction.

(8) Film Laboratories. No film laboratories shall be conducted in other than fireproof (type 1-A) buildings or structures equipped throughout with an approved automatic sprinkler system and complying with the approved rules.

(9) Film Exchanges. All film exchanges and depots shall be housed in buildings and structures of fireproof (type 1-A) construction equipped throughout with an approved automatic sprinkler system. All flammable film other than that in process of receipt, delivery or distribution shall be stored in vaults complying with the requirements of item (2b) of this section.

SEC. MB-800.2 EXPLOSION HAZARDS

G USE AND STORAGE OF COMBUSTIBLE FIBERS

(1) General. The provisions of this section shall apply to all buildings and structures involving the storage or use of finely divided combustible vegetable or animal fibers, thin sheets or flakes of materials with a flash fire hazard, including among others cotton, excelsior, hemp, sisal, jute, kapok and paper and cloth in the form of scraps and clippings in excess of one thousand (1,000) pounds.

(2) Construction of Storage Rooms. No single storage room or space shall be more than five thousand (5,000) square feet in area or more than fifty thousand (50,000) cubic feet in volume. Rooms or spaces which are less than five thousand (5,000) cubic feet in volume shall be enclosed with floors and partitions of two (2) hours fireresistance; and if more than five thousand (5,000) cubic feet in volume, with construction of three (3) hours fireresistance; and all openings shall be protected as required in Sec. MB-700.

(3) Floor Loads. The floors of all buildings designed for the storage of combustible fibers shall not be loaded in excess of one-half ($\frac{1}{2}$) the safe load capacity of the floor, nor shall such materials be piled to exceed two-thirds (2/3) of the clear story height.

(4) Fire Protection. Fire extinguishing equipment shall be provided complying with the requirements of Sec. B-700.

(5) Stables. Stables in which hay is stored may be of frame (type 4) construction when not more than thirty (30) feet in height and five thousand (5,000) square feet in area and located not less than thirty (30) feet from adjoining buildings or interior lot lines. The portion of the building housing horses shall be separated from all hay storage by three-quarter (3/4) hour fireresistive construction. Such buildings shall be exempt from the requirement for automatic sprinkler protection.

(6) Rutgers Farm Building Standard

SEC. MB-800.2 EXPLOSION HAZARDS

H. COMBUSTIBLE DUSTS, GRAIN PROCESSING AND STORAGE.

(1) General. The provisions of this section shall apply to all buildings in which materials producing flammable dusts and particles which are readily ignitable and subject to explosion hazards are stored or handled; including among others grain bleachers and elevators, malt houses, flour, feed or starch mills, wood flour manufacturing, and manufacture and storage of pulverized fuel and similar uses.

(2) Construction.

(2a) Buildings. All such buildings and structures, unless herein otherwise specifically provided, shall be of fireproof (type 1) or incombustible construction (type 2) within the height and area limits of high hazard uses (use group A) of Table B-301.

(2b) Grinding Rooms. Every room or space for grinding or other operations of a continuous nature producing flammable dust shall be enclosed with floors and walls of not less than two (2) hour fireresistance when the area is not more than three thousand (3000) square feet and of not less than four (4) hour fire-resistance when the area is greater than three thousand (3000) square feet.

(2c) Conveyors. All conveyors, chutes, piping and similar equipment passing through the enclosures of such rooms or spaces shall be constructed dirt and vapor-tight of approved incombustible materials.

(3) Explosion Relief. Means for explosion relief shall be provided as specified in SEC. MB-801.8, or such spaces shall be equipped with the equivalent mechanical ventilation complying with Part D of this Code.

(4) Grain Elevators. Grain elevators, malt houses and buildings for similar uses shall not be located within thirty (30) feet of interior lot lines or structures on the same lot.

(5) Coal Pockets. Coal pockets located less than thirty (30) feet from interior lot lines or structures on the same lot shall be constructed of not less than protected incombustible (type 2A) construction; and when more than thirty (30) feet from interior lot lines, of heavy timber construction provided such structures are not more than thirty-five (35) feet in height.

SEC. MB-800.2 EXPLOSION HAZARDS

I. PAINT SPRAYING AND SPRAY BOOTHS

(1) General. The provisions of this section shall apply to the construction, installation and use of buildings and structures or parts thereof for the spraying of flammable paints, varnishes and lacquers or other flammable materials, mixtures or compounds used for painting, varnishing, staining or similar purposes and shall comply with the rules and regulations of the Bureau of Engineering and Safety of the Department of Labor and Industry for occupanices under its jurisdiction.

(2) Location of Spraying Processes. All such processes shall be conducted in a spraying space, spray booth, spray room or isolated in a detached building or as otherwise approved by the building official in accordance with the approved rules.

(3) Construction

(3a) Spray Spaces. Where not required to be isolated by fireresistive partitions the spray space shall be ventilated with an approved exhaust system to prevent the accumulation of mist or vapors. Incombustible spray curtains shall be provided to restrict the spread of fire in accordance with the approved rules.

(3b) Spray booths. All spray booths shall be constructed of approved incombustible materials and shall be equipped with approved mechanical ventilating systems.

(3c) Spray Rooms. All spray rooms shall be enclosed in partitions of not less than three-quarter (3/4) hour fireresistance. Floors shall be waterproofed and drained in an approved manner. Floor drains to the building drainage system or public sewer shall be prohibited.

(3d) Storage Rooms. Spraying materials in quantities of not more than twenty (20) gallons may be stored in approved cabinets ventilated at top and bottom; when more than twenty (20) gallons and not more than one hundred (100) gallons, they may be stored in approved double-walled incombustible cabinets vented directly to the outer air; and all spraying materials in quantities of more than one hundred (100) gallons shall be stored in an enclosure of not less than one (1) hour fireresistance or in a separate exterior storage building. In no case shall such storage be in quantities of more than two hundred and seventy-five (275) gallons; except that in buildings in which pyroxylin products are manufactured, stored or kept, the amount of storage shall be not more than twenty-five (25) gallons.

(continued)

SEC. MB-800.2 EXPLOSION HAZARDS.

I. PAINT SPRAYING AND SPRAY BOOTHS (continued)

(4) Ventilation of Spraying Processes. The venting system shall comply with the provisions of SEC. MB-801.8 and shall be adequate to exhaust all vapors, fumes and residues of spraying material directly to the outer air. Fresh air shall be admitted to the spraying spaces in an amount equal to the capacity of the fan or fans in such manner as to avoid short circuiting the path of air in the working space and to provide air movement with a velocity of not less than 125 FPM face velocity or one hundred (100) feet per minute in the breathing cone of the operator. All ducts, and vents shall be constructed and installed to comply with SEC. MB-700 and Part D of this code. Mechanical exhaust equipment unless of approved explosion-proof motors with non-ferrous blade fans shall be located outside of spray spaces.

(5) Electric Equipment. Artificial lighting and electric equipment shall comply with SEC. MB-801.3.

(6) Fire Protection. Sprinkler heads shall be provided in all spray, dip and immersing spaces and storage rooms and shall be installed in accordance with the approved rules. Where buildings containing spray areas are not equipped with an approved automatic sprinkler system, the sprinkler heads in booths and other spray areas and storage rooms may be supplied from the building water supply when approved by the building official.

SEC. MB-800.2 EXPLOSION HAZARDS

J DRY-CLEANING AND DYEING ESTABLISHMENTS

(1) General. Before any dry-cleaning plant is established or an existing plant is remodeled or altered, complete drawings shall be filed showing to scale the relative location of the dry-cleaning area, the boiler-room, finishing department, solvent storage tanks, pumps, washers, drying tumblers, extractors, filter traps, stills, piping and all other equipment involving the use of flammable liquid solvents. All dry-cleaning by immersion and agitation shall be carried on in closed machines installed and operated in accordance with the approved rules.

(2) Classification. For the purposes of this Code, all dry-cleaning and dry-dyeing establishments shall be classified as herein specified.

(2a) High Hazard. All such establishments shall be classified as "high hazard" which employ gasoline or other solvents having a flash point below one hundred (100) degrees Fahrenheit (closed cup test) in quantities of more than three (3) gallons or more than sixty (60) gallons of flammable solvents with a flash point between one-hundred (100) and one hundred forty (140) degrees Fahrenheit (closed cup test).

(2b) Moderate Hazard. All such establishments employing less than three (3) gallons of volatile flammables with a flash point of less than one hundred (100) degrees Fahrenheit or less than sixty (60) gallons of solvent with a flash point between one hundred (100) and one hundred forty (140) degrees Fahrenheit (closed cup) shall be classified as moderate hazard.

(2c) Low Hazard. All such establishments using solvents of other than volatile flammable liquids or solvents with a flash point more than one hundred forty (140) degrees Fahrenheit in cleaning and dyeing operations, shall be classified as low hazard.

(3) Construction of Dry-Cleaning Plants.

(3a) High Hazard. High hazard dry-cleaning plants as herein defined shall be located in buildings or structures of fireproof (types 1A) construction, not more than one (1) story in height with solid floors and roofs and without openings other than required for exit and ventilation purposes. No such building shall be used for any other purpose.

(3b) Moderate Hazard. Moderate hazard dry-cleaning plants as herein defined may be located in buildings or structures of any type of construction other than frame (type 4) buildings subject to the fire district limitations of SEC. B-300 and the height and area limitations for use group A of TABLE B-301. The room or space in which such operations are conducted shall be enclosed in not less than two (2) hour fireresistive construction with not less than two (2) exits from each dry-cleaning or dry dyeing room or space.

(3c) Low Hazard. Low hazard dry-cleaning plants shall not be restricted as to type of building within the height and area limitations for use group E of TABLE B-301 except that such uses shall not be located in basements nor in a building used for public assembly (use group F) or institutional use (use group H).

(3d) Roof Construction of Dry Cleaning Plants. The roof over high hazard dry-cleaning plants shall be flat without attic or concealed spaces and shall be provided with a pivot-type skylight or other approved vent complying with SEC. MB-801.8, arranged to release outwardly under explosion pressures.

(continued)

SEC. MB-800.2 EXPLOSION HAZARDS

J DRY-CLEANING AND DYEING ESTABLISHMENTS
Construction of Dry-Cleaning Plants (Continued)

(3e) Floor Construction of Dry-Cleaning Plants. The floor finish in high hazard dry-cleaning plants shall be constructed of water-resistant, incombustible materials with non-sparking, surface elevated above the adjoining grade and with door sills not less than ten (10) inches in height. There shall be no openings, vaults or pits below the floor.
(3f) Exterior Walls of Dry-Cleaning Plants. Exterior walls of high hazard dry-cleaning plants having an exposure of less than thirty (30) feet shall be of solid masonry without openings, but in no case shall more than two (2) sides of the building be enclosed in blank walls. Opening protectives of exterior doors and windows shall be not less than three-quarter (3/4) hour fireresistive construction, and the windows shall be pressure-releasing to comply with SEC. MB-801.8.
(3g) Basements of Dry-Cleaning Plants. The basements of all buildings in which high or moderate hazard dry-cleaning establishments are conducted shall be completely separated from the superstructure with unpierced floor construction of not less than two (2) hours fireresistance. The access to such basements shall be from the exterior only.

(4) Boiler Room Separation. Boiler rooms and heating equipment for high hazard dry-cleaning plants shall be separated from drying-rooms, dry-cleaning and dry-dyeing rooms with unpierced walls of not less than four (4) hours fireresistance and in moderate hazard establishments with solid walls of not less than two (2) hours fireresistance; or such boiler rooms shall be located in a separate building.

(5) Ventilation. All rooms and spaces in high hazard dry-cleaning plants shall be provided with a mechanical system of ventilation capable of twenty (20) changes of air per hour. Mechanical systems of ventilation in moderate hazard plants shall have sufficient capacity to insure ten (10) complete and continuous changes of air per hour. Satisfactory mechanical or natural ventilation shall be provided in low hazard plants by means of fans, pipes and ducts to ventilate drying tumblers, drying cabinets and similar equipment directly to the outer air.

(6) Solvent Storage. All volatile flammable solvents with a flash point under one hundred (100) degrees Fahrenheit shall be stored underground in accordance with the provisions of SEC. MB-800.2-A. Interior above ground storage shall be permitted for solvents with a flash point above one hundred (100) degrees Fahrenheit (closed cup test) provided the aggregate quantity of such solvent in use in the system and in storage is not more than five hundred fifty (550) gallons and the capacity of any individual tank is not more than two hundred seventy-five (275) gallons.

(7) Electric Wiring and Equipment. All electrical equipment and wiring shall conform to the requirements of PART F of this code for hazardous locations; and the cylinders and shells of all washing machines, drying tumblers, drying cabinets, extractors and all above ground storage containers shall be grounded as therein required.

SEC. MB-801.8 EXPLOSION RELIEF SYSTEMS

(1) Area of Vents. The aggregate clear vent relief area shall be based on one (1) square foot of area for each ten (10) gallons or fraction thereof up to five hundred fifty (550) gallons and thereafter shall be based on the type of construction of the building and shall not be less than the following except as noted in paragraph (3) below:

Vent ratios expressed as unit area of vent in sq. ft. to volume of occupied space in cu. ft.

	CLASS I and CLASS II FLAMMABLE	CLASS III FLAMMABLE AND GRAIN DUSTS
Heavy Structural Frames of Reinforced Concrete	1:60	1:80
Light Structural Frames and Ordinary Construction	1:40	1:65
Light Wood Frame Construction	1:30	1:50

(2) Automatic Release. Open air construction, open windows, scored glass, top hinged or clipped sash, or light noncombustible wall or roof panels arranged to open under internal pressure shall have not less than fifty (50) per cent of the opening arranged for automatic release.

(3) For buildings and other structures under the jurisdiction of the Department of Labor and Industry and requiring explosion relieving systems, such explosion relief system shall conform to the Rules and Regulations of that Department.

SEC. MB-802.0 SPECIFIC REQUIREMENTS

A. FUR STORAGE

(1) Vaults

(1a) Vaults shall be located above any anticipated flood level.

(1b) Vaults shall not be located where contents may be subject to damage by sewer back-up.

(1c) Vault walls shall be 8 inch reinforced concrete, 12 inch brick or 12 inch plain concrete construction.

(1d) Vault floors and ceilings shall be of the following construction:

(a) Floors shall be of 8 inch reinforced concrete. When vaults are built on the ground a 6 inch plain concrete floor will be acceptable.

(b) Ceilings shall be of 8 inch reinforced concrete.

(c) Between superimposed vaults a 4 inch reinforced concrete slab having at least 2 hours fire resistance will be acceptable.

(1e) Walls, floors and ceilings shall be thoroughly bonded together.

(1f) Vaults shall be on the ground or supported from the ground by protected steel or reinforced concrete frameworks - fire resistance classification of not less than 4 hours; or by brick bearing walls not less than 12 inches thick for 12 1/2 feet below vaults and not less than 4 inch additional thickness for each 25 feet thereafter; or by reinforced concrete bearing walls not less than two-thirds of the required thickness for bearing walls of brick.

(1g) Supporting walls or frameworks shall be of adequate strength to carry weight of vault structures and contents, together with any building loads they will be called upon to bear.

(1h) Vaults shall be structurally independent of non-fire-resistive buildings; if connected in any manner, the connections shall be so made that in event of collapse of the buildings, the stability and fire-resistive qualities of the vaults shall not be endangered.

(1i) Interior structural supports within vaults, if any, shall be reinforced concrete or metal protected as required for fireproof construction (type 1).

(1j) All entrance openings into vault area shall be protected by an insulated vault door, having a 4-hour fire resistance.

(a) Such doors shall open outward and shall be equipped with ready means of opening from inside vault.

(b) The use of time locks on any entrance door to vault area shall be prohibited.

(1k) Walls, floors, and roofs shall be effectively waterproofed. If any building floor is used as the vault roof, it shall be thoroughly waterproofed or a separate slab roof may be required.

(1l) Provision shall be made to prevent entrance of water at doors or other floor level openings. Raised or sloping sills and large drains in building floors outside vaults are recommended.

(1m) Vaults shall be so designed and constructed as to eliminate condensation on the ceilings or elsewhere in the vaults.

(1n) Vaults so located that water may collect from upper floors or from any water or automatic sprinkler piping shall be provided with adequate drainage facilities, so arranged as to prevent stoppage by fallen coats.

(Continued)

SEC. MB-802.0 SPECIFIC REQUIREMENTS

A. FUR STORAGE (Continued)

(1o) Vaults exceeding 15,000 cu. ft. in size shall be subdivided into sections of not over 15,000 cu. ft. by fire and smoke proof partitions of not less than 2-hour fire-resistance adequately reinforced for structural stability.

(a) No openings shall be permitted in the fire and smoke proof partitions separating individual vaults or sections in storage area.

(b) Only one door opening from vault corridor to each individual vault or section shall be permitted.

(1) This door opening shall be protected by a fire and smoke-tight swing-type Class B fire door.

(2) This door shall open outward and shall be equipped with ready means of opening from inside vault.

(1p) All vaults shall be protected as outlined in the following items:

(a) Vaults exceeding 2,000 cu. ft. in volume shall be protected as outlined in both items (1) and (2):

(1) An approved system of automatic sprinklers or an approved automatic inert gas fire extinguishing system.

(2) An approved smoke detector system.

(b) Vaults not exceeding 2,000 cu. ft. in volume should be equipped with approved automatic systems as outlined in paragraph (a) above when in the judgement of the building official such protection is necessary.

(1q) Openings in vault walls, floors or ceiling shall be eliminated wherever practical. Required openings for doors, vents and ducts shall be protected by approved automatic fire doors, fire shutters, or fire dampers.

(1r) Automatic fire door, fire shutter and fire damper protection shall be designed to operate upon actuation of the smoke detection system.

(1s) Vaults shall be adequately lighted by electricity. Only motors essential to operation shall be permitted in vaults. All motors so permitted shall be of a totally enclosed type.

(a) Wiring shall be installed in accordance with part F of this code.

(b) All wiring shall be in conduit.

(c) Pendant cords shall not be used inside vault.

(d) All light bulbs shall be protected against direct contact by substantial protective globes.

(e) Wall outlets (plug-in receptacles) shall not be permitted in vaults.

(f) All lights and other electrical equipment in vaults shall be controlled by master switches with pilot lights located outside the vaults.

(1t) Refrigeration systems, if used, shall conform to Part D of this code.

(a) The refrigeration units, including compressors and motors, shall not be located within vaults unless they are of self-contained type designed for permanent installation.

(b) All refrigerating systems, and air circulating fans, shall be connected with smoke detection systems so as to be cut off automatically upon actuation of the detection system.

(c) Refrigeration coils shall be so located or drained as to prevent condensation from dripping or running onto the vault contents.

(Continued)

SEC. MB-802.0 SPECIFIC REQUIREMENTS

A. FUR STORAGE (Continued)

Vaults (Continued)

(1u) Fumigants shall be only those types classified as non-flammable.

(1v) Pipes other than those serving the vault itself shall not be allowed.

(1w) Racks:

(a) Garments within fur vaults shall be stored so as to make possible easy access to all parts of the vaults for fire fighting or inspection purposes.

(b) Unbroken storage areas in fur vaults shall not exceed 24 ft. in length and space for two (2) coats or 5 ft. in width.

(c) Main aisles shall be at least 3 feet in width measured between garment rails.

Side aisles branching from main aisle shall be at least 2 feet wide between garment rails.

(d) Vertical clearances in fur vaults between floor and bottom row of coats, between top of coats on a lower rack and bottom of coats on a higher rack and above top rack shall be at least 12 inches.

(e) All racks and catwalks used in vaults shall be of non-combustible material on non-combustible supports.

(f) Vault contents shall be stored at least 12 inches below the level of sprinkler heads or alarm devices.

(2) Vault Operation

(2a) Garments shall be inspected upon receipt and articles such as matches, etc., which might cause a fire removed from pockets.

(2b) Smoking shall not be permitted in or around vaults at any time and "No Smoking" signs shall be posted conspicuously.

(2c) Garments shall not be hung within 18 inches of electric lights.

(2d) All lights shall be turned out when vaults are not occupied.

(a) Extension cords shall not be used in the vaults at any time.

(2e) Rubbish shall not be allowed to accumulate.

(2f) Racks shall not be overcrowded and aisles shall be kept clear.

(2g) Employees shall be instructed in the location and operation of all fire extinguishing and alarm equipment.

(2h) Unauthorized persons shall not be permitted to enter vaults.

(2i) Signs shall be posted conspicuously designating the procedure to be followed in case of fire or necessity for police or emergency assistance.

(2j) All records maintained in connection with storage of the contents shall be kept in a fire resistive safe of 2-hour, or longer, rating located outside of vault.

(2k) If at any time it is necessary for contents to be stored on floor they should be skidded at least 4 inches above the floor level.

(2l) When vault is equipped with an automatic inert gas extinguishing system to protect the contents, an oxygen mask approved by U. S. Bureau of Mines shall be provided at the entrance with adequate instructions for use.

(2m) Flammable containers and covers over garments stored inside vaults shall not be permitted.

(2n) Identifying tags on garments should be of waterproof material printed and written with waterproof ink.

(Continued)

SEC. MB-802.0 SPECIFIC REQUIREMENTS

A - FUR STORAGE (Continued)

(3) Building Construction

(3a) All walls, roofs and structural members shall be of noncombustible fire-resistive materials and assembly.

(a) All metal supporting members shall be protected as required for fireproof construction (type 1).

(b) All floors and roofs shall have at least a three-hour fire resistance rating.

(3b) All floor construction and assemblies shall be reasonably watertight.

(3c) All parts of structure shall be of sufficient strength to support live loads which might actually be imposed, but in no case shall the design be for less than 125 lbs. per sq. ft.

(3d) (a) Construction of walls shall be as provided under masonry requirement in manual.

(b) Enclosure, panel spandrel and apron walls of solid masonry, supported on the skeleton frame and anchored thereto, shall be not less than 8 inches thick for unsupported height not exceeding 12 ft. Hollow block, brick or hollow tile walls, or brick faced hollow units shall be not less than 12 inches thick.

(3e) All exposed openings in exterior walls shall be protected in accordance with SEC. B-700.

(3f) All floor openings shall be enclosed by fire-resistive shaft walls and approved vertical shaft fire doors (Class B) in accordance with SEC. B-700.

(3g) Undivided floor area in any story shall not exceed 15,000 sq. ft. when building is equipped with approved automatic sprinklers or 10,000 sq. ft. if building is non-sprinklered.

(3h) Provisions shall be made for the discharge of water from every floor and for adequate drainage from courts or other spaces receiving such discharges in accordance with the requirements of this Code.

(3i) Skylights and roof structures shall comply with SEC. B-700.

(3j) Interior Division and Partition Walls.

(a) Fire walls shall be of solid brick masonry or of reinforced concrete, and partition, chute, shaft and stair and elevator enclosure walls shall be of masonry, reinforced concrete or non-combustible materials having a fire-resistance rating of not less than 2 hours.

(b) Approved Class A fire doors shall be provided for all fire wall openings, installed in accordance with SEC. B-700.

(c) Approved Class C fire doors shall be provided for lobbies, corridors and elevator hall enclosures and major partitions, installed in accordance with SEC. B-700.

(Continued)

SEC. MB-802.0 SPECIFIC REQUIREMENTS

A. FUR STORAGE (Continued)

(4) Building Hazards and Operation.

(4a) Heating and Refrigerating Equipment shall conform with SEC. B-700 and Part D of this Code.

(4b) Electrical equipment shall conform with Part F of this Code.

(4c) Management and Supervision:

(a) Arrangements shall be made to permit ready access by public fire and police departments or to such other assistance as may be summoned to cope with fire or other emergency.

(b) Public fire and police department officials shall be informed regarding operation of automatic alarm and fire extinguishing devices.

(c) No smoking rules shall be enforced in all locations except in properly designated areas. "No Smoking" signs shall be conspicuously posted.

(d) All regularly employed personnel shall be instructed regarding procedure in case of fire or other emergency.

(e) Premises shall be maintained free of unnecessary waste and other combustible materials which might contribute toward the start or spread of a fire.

(f) Fire protection and control devices and equipment shall be maintained in good operating condition.

(g) All heat and service equipment and the building itself shall be maintained in a proper state of repair.

(h) Adequate aisle space and proper piling and arrangement of stored contents shall be maintained.

(i) Hazardous materials shall not be stored within the building.

(4d) Flammable or explosive solvents or explosive dusts should not be used in the cleaning or glazing of furs, but if flammable solvents are used they shall be kept in approved containers and used and stored only in the minimum amount necessary for "spotting". Flammable or explosive fumigants shall not be utilized.

(5) Protection of Building.

(5a) An approved automatic sprinkler system, in accordance with SEC. B-700 shall be provided if building is over 2 stories in height and exceeds 10,000 sq. ft. in area.

(5b) Approved standpipe and hose installations, in accordance with SEC. B-700 with outlets at each stair enclosure, shall be provided for buildings in excess of 4 stories or 55 ft. in height.

(5c) A standard installation of approved fire extinguishers shall be provided, installed in accordance with SEC. B-700

(5d) Building shall be located within jurisdiction of organized public fire department and with adequate public fire hydrants available.

SEC. MB-802.0 SPECIFIC REQUIREMENTS

B. PRIVATE GARAGES AND AIRPLANE HANGARS

(1) General. Private garages and airplane hangars when accessory to a dwelling shall comply with the requirements of this section.

(2) Construction

(2a) Fire District No. 1. Within the limits of fire district No. 1 such buildings may be erected of incombustible construction not exceeding one (1) story or twenty (20) feet in height and twelve hundred fifty (1250) square feet in area when located five (5) feet from interior lot lines and not less than five (5) feet from any other building on the lot.

(2b) Fire District No. 2. Within the limits of fire district No. 2, such buildings may be erected of incombustible (type 2C) or three-quarter (3/4) hour protected combustible construction (type 4A) not exceeding one (1) story or twenty (20) feet in height and twelve hundred fifty (1250) square feet in area when located five (5) feet from interior lot lines and not less than five (5) feet from any other building on the lot.

(2c) Outside Fire Limits. Outside the fire limits, such buildings may be erected of frame construction (type 4B) not exceeding one (1) story or twenty (20) feet in height and twelve hundred fifty (1250) square feet in area when located not less than three (3) feet from interior lot lines.

(3) Fire Separation. Private garages located beneath a one-or two-family dwelling or attached thereto shall have a fire-separation of not less than three-quarter (3/4) hour fireresistance, and beneath a multi-family dwelling of not less than one and one half (1-1/2) hour fireresistance of noncombustible construction. The walls, partitions, floors and ceilings of such separation shall be continuous and unpierced by openings; except that in one- and two-family dwellings a door opening equipped with an approved self-closing fire door and having its sill raised not less than eight (8) inches above the garage floor shall not be prohibited.

(4) Egress. Where living quarters are located above a private garage, required egress facilities shall not pass through the garage.

SEC. MB-802.0 SPECIFIC REQUIREMENTS

C. PUBLIC GARAGES AND AIRPLANE HANGARS

(1) Construction. All public garages and public airplane hangars hereafter erected shall conform to the height and area limitations of Table B-301 for storage buildings, moderate hazard (group B-1) except as herein specifically provided.

(1a) Special Height Limitations. Public garage buildings of incombustible construction (type 2A) shall be limited to three (3) stories in height, incombustible construction (type 2B) to two (2) stories in height, incombustible construction (type 2c) and ordinary construction (type 3c) to one (1) story in height.

(1b) Proximity to Lot Lines. Public airplane hangars which are located within fifty (50) feet of interior lot lines or with less than fifty (50) feet exposure to other buildings shall be of fireproof construction (types 1A or 1B).

(1c) Basements. The first floor construction of public garages and public hangars with basements shall be constructed to provide not less than two (2) hour fire-resistance and shall be water and vapor proof. The access to such basements shall be from the outside only.

(1d) Mixed Occupancy. No public garage or airplane hangar shall be located within or attached to a building occupied for any other use, unless separated from such other use by walls or floors of not less than three (3) hour fireresistance. Such fire separation shall be continuous and unpierced by openings; except that door openings equipped with self-closing fire doors leading to salesrooms or offices that are operated in connection with such garages or hangars shall not be prohibited.

(1e) Roof Storage of Motor Vehicle and Airplanes. No storage garage shall be located on the roof of a building of other than fireproof construction, (type 1A); and such structure shall be provided with a parapet wall four (4) feet in height and a continuous wheel guard twelve (12) inches in height, located three (3) feet from the parapet. The use of roofs for airplane storage and landing shall be subject to the approval of the Civil Aeronautics Authority.

(1f) Floor Construction and Drainage. Floors of public garages and airplane hangars shall be graded to drain through oil separators or traps to avoid accumulation of explosive vapors in building drains or sewers as provided in Part E - plumbing code. The floor finish shall be of concrete or other approved non-absorbent, incombustible material.

(2) Ventilation. All public garages and airplane hangars shall be provided with mechanical ventilation adequate to prevent the accumulation of explosive vapors in accordance with the approved rules.

(2a) Below Grade. Basement and cellar garages shall be equipped with mechanical ventilation adequate to provide six (6) air changes per hour which shall be operated at all times during occupancy of the building.

(2b) Above Grade. Every room or space above grade shall be provided with openings to the outer air, with area of opening not less than two (2) per cent of the floor area; or shall be equipped with the equivalent mechanical ventilation.

(continued)

SEC. MB-802.0 SPECIFIC REQUIREMENTS

C. PUBLIC GARAGES AND AIRPLANE HANGARS (continued)

(2c) Pits. No pits shall be installed in floors below the first, and pits in first and upper stories shall be ventilated to provide four (4) air changes per hour.

(3) Special Hazards. Any process conducted in conjunction with public garages or hangars involving volatile inflammable solvents shall be segregated or located in a detached building or structure; except that the storage and handling of gasoline and other flammable volatiles shall comply with the provisions of SEC. MB-800.2-A. The quantity of flammable liquids stored or handled in public hangars other than in underground storage and in the tanks of the planes shall not be more than five (5) gallons in approved safety cans.

(4) Heating and Protection of Equipment. Radiation and heating coils and pipes located within six (6) inches of the floor shall be protected with wire mesh shields of adequate strength; and with asbestos or other insulation on top of the equipment when located in partitions or near combustible racks or woodwork in accordance with the approved rules.

(5) Boiler Rooms of Public Garages and Airplane Hangars. All heat generating plants other than approved direct fired unit heaters shall be located in separate buildings or shall be separately enclosed within the structure with solid, water and vaportight masonry. All rooms housing boilers, stoves or other heating apparatus shall be cut-off from all other parts of the building with four (4) hour fireresistive construction with entrance from outside only, and no openings through the fire separation other than those necessary for heating pipes or ducts.

SEC. MB-802.C SPECIFIC REQUIREMENTS

D. MOTOR VEHICLE SERVICE STATIONS

(1) Construction. Subject to the fire district limitations of SEC. MB-300 all buildings and structures used for the storage and sale of motor fuel oils shall be of fireproof (type 1) incombustible (type 2) or masonry enclosed (type 3) construction and shall be not more than one (1) story in height. Such buildings shall be subject to the height and area limitations for moderate hazard storage uses (use group B-1) except as may be herein specifically required.

(2) Exterior Walls. Exterior walls when located five (5) feet or less from interior lot lines or with a fire exposure of five (5) feet or less shall be constructed of not less than one and one-half ($1\frac{1}{2}$) hour fireresistance and may have protected openings of equivalent fireresistance. When such walls are located more than five (5) and less than ten (10) feet from interior lot lines or other buildings, they shall be constructed of not less than three-quarter (3/4) hour fireresistance; and when located more than ten (10) feet from the lot lines, they may be constructed of unprotected incombustible walls.

(2a) Opening Protectives. All permissible openings in walls with a fire exposure of less than twenty (20) feet shall be protected with fire windows and fire doors complying with the requirements of SEC. B-700.

(2b) Basements. Motor vehicle service stations shall have no cellars or basements.

(3) Gasoline Storage. All flammable, volatile liquid storage tanks shall be installed below ground and vented as specified in SEC. MB-801.8 and SEC. MB-800.2-A. Not more than five (5) gallons of gasoline may be stored or used above ground except in approved safety cans.

(4) Location of Pumps. No gasoline pumps or other mechanical equipment shall be installed so as to permit servicing of motor vehicles standing on a public street or highway within fire limit No. 1. The canopies and supports over pumps and service equipment when located less than twenty (20) feet from interior lot lines or from any other structure shall be constructed entirely of approved incombustible materials.

SEC. MB-802.0 SPECIFIC REQUIREMENTS

E. MOTOR VEHICLE REPAIR SHOPS

(1) General. All buildings and structures designed and used for repairing and servicing motor vehicles, motor boats, airplanes or other motor driven means of transportation shall be subject to the limitations of TABLE B-301 and TABLE B-705 for high hazard uses (use groups A). Such buildings shall be used solely for that purpose or in connection with a public garage or public hangar when segregated therefrom by the required fire separation defined in table for fire grading of use groups, TABLE B-203.

(2) Enclosure Walls. Exterior walls when located five (5) feet or less from interior lot lines or with an exposure of five (5) feet or less to other buildings shall be constructed of two (2) hour fireresistance and may have protected openings of equivalent resistance. When such walls are located less than thirty (30) feet and more than five (5) feet from interior lot lines or s ructures and the area is not more than seventy-five hundred (7500) square feet the walls shall be constructed of three-quarter (3/4) hour fireresistance and may have wall openings protected with fire windows and fire doors complying with SEC. B-700. When the area is greater than seventy-five hundred (7500) square feet, all exterior walls shall be constructed of not less than two (2) hour fireresistance with all opening protectives of not less than one and one-half (1½) hour fireresistive rating.

(3) Handling of Flammable Volatiles
(3a) All flammable volatiles shall be regulated as provided in SEC. B-805 and SEC. MB-800.2-A and no motor vehicle containing volatile, flammable oil shall be received into a motor vehicle repair shop unless the building is of three-quarter (3/4) hour protected (type 2B) or better construction.

(3b) All volatile, flammable oils removed from the fuel tanks of motor vehicles shall be emptied directly into approved safety cans or an approved storage system.

(4) Ventilation. All rooms and spaces used for motor vehicle repair shop purposes shall be provided with an approved system of mechanical ventilation meeting the requirements of this section of the code and PART D.

(5) Fire Prevention. The building offic'al, in his discretion, may require all open gas flames, torches, welding apparatus, battery chargers or other equipment creating an open flame or spark to be located in a separate enclosure of not less than two (2) hour fireresistance in which no flammable liquids or highly combustible materials are used or stored.

SEC. MB-802.0 SPECIFIC REQUIREMENTS

E. MOTOR VEHICLE REPAIR SHOPS

(1) General. All buildings and structures designed and used for repairing and servicing motor vehicles, motor boats, airplanes or other motor driven means of transportation shall be subject to the limitations of TABLE B-301 and TABLE B-705 for high hazard uses (use groups A). Such buildings shall be used solely for that purpose or in connection with a public garage or public hangar when segregated therefrom by the required fire separation defined in table for fire grading of use groups, TABLE B-203.

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(3b) All volatile, flammable oils removed from the fuel tanks of motor vehicles shall be emptied directly into approved safety cans or an approved storage system.

(4) Ventilation. All rooms and spaces used for motor vehicle repair shop purposes shall be provided with an approved system of mechanical ventilation meeting the requirements of this section of the code and PART D.

(5) Fire Prevention. The building offic'al, in his discretion, may require all open gas flames, torches, welding apparatus, battery chargers or other equipment creating an open flame or spark to be located in a separate enclosure of not less than two (2) hour fireresistance in which no flammable liquids or highly combustible materials are used or stored.

SEC. MB-802.0 SPECIFIC REQUIREMENTS

F. DRYING ROOMS

(1) A drying room or dry kiln installed within a building shall be constructed entirely of approved noncombustible materials or assemblies of such materials with the required fireresistance rating based on the fire hazard of the contents and the process as regulated by the approved rules or as required in SEC. MB-800.2 for special uses.

(2) Piping Clearance. All overhead heating pipes shall have a clearance of not less than two (2) inches from combustible contents of the dryer.

(3) Insulation. When the operating temperature of the dryer is one hundred and seventy-five (175) degrees F. or more, metal enclosures shall be insulated from adjacent combustible materials by not less than twelve (12) inches of air space, or the metal walls shall be lined with one quarter (¼) inch asbestos mill board or other approved equal insulation.

(4) Fire Protection. Drying rooms designed for high hazard materials and processes, including dry cleaning and other special uses provided for in SEC. MB-800.2, shall be protected by approved automatic sprinkler or fog systems, manually controlled steam smothering systems, or other approved fire-extinguishing equipment conforming to the provisions of SEC. B-700.

SEC. MB-802.0 SPECIFIC REQUIREMENTS
G. PIER AND WHARF PROTECTION

(1) Fire Area of Piers. All piers and wharves shall be subdivided into maximum areas of fifty thousand (50,000) square feet by fire walls complying with the provisions of SEC. B-705.2 The fire walls shall be located at horizontal intervals of not more than three hundred (300) feet and shall extend two (2) feet above the roof and below the low water level when the substructure is of wood or other combustible construction.

SEC. MB-802.0 SPECIFIC REQUIREMENTS

H. PLACES OF PUBLIC ASSEMBLY

(1) General. Insofar as applicable the provisions of this section shall apply to all places of public assembly and all parts of buildings and structures classified in the assembly use groups (use groups F1, F2, F3 and F4).

(2) Restrictions.

(2a) High Hazard Uses. No place of public assembly shall be permitted in a building classified in the high hazard use group (use group A).

(2b) Superimposed Theatres. No addition or extension shall be erected over the stage section of a theatre, nor shall a second theatre be erected above another.

(2c) Frame Construction. No theatre with stage, fly gallery and rigging loft shall be permitted in a building of frame construction (type 4).

(2d) Location. All buildings used for assembly purposes shall front on at least one (1) street in which the main entrance and exit shall be located with a capacity of not less than one-third (1/3) of the total required width of building exits.

(2e) Interior Trim and Finish. No combustible material shall be used to cover the walls or ceilings except when rendered flameresistive by approved treatment so as to neither ignite or actively support combustion nor develop toxic or noxious gases when exposed to heat or flame in accordance with the provisions of SEC. B-702 or as herein provided. All trim and finish in exitways shall be incombustible complying with the provisions of SEC. B-707. All mouldings and decorations around the proscenium openings shall be constructed entirely of incombustible material. Temporary wall coverings of slow-burning materials may be used six (6) feet or more above the level of the auditorium floor when applied solidly to incombustible wall or ceiling surfaces. When furring is required, the space between the furring shall be solidly filled with incombustible materials.

(3) Exit Requirements of Places of Public Assembly.

(3a) Types. The required exits from every tier or floor shall consist of grade exits, interior or exterior stairways or horizontal exits which provide direct access to a street, an exit court, or unobstructed passageway, hallway or lobby leading to a street or open public space. The number, location and construction of all exitways shall comply with the requirements of SEC. B-400 except as herein specifically provided.

(3b) Number of Stairways in Auditoriums. Each tier above the main floor of a theatre or other auditorium shall be provided with at least two (2) interior enclosed stairways which shall be located on opposite sides of the structure; except that enclosures shall not be required for stairs serving the first balcony only. Such stairways shall discharge to a lobby on the main floor. Exit stairways serving galleries above the balcony shall lead directly to the street as provided in item (3a) above.

(3c) Emergency Exits from Main Floor of Auditoriums. In addition to the main floor entrance and exit, emergency exits shall be provided on both sides of the auditorium which lead directly to a street, or through a passageway to the street independent of other exits, or to an exit court as herein defined.

(continued)

SEC. MB-802.0 SPECIFIC REQUIREMENTS

H. PLACES OF PUBLIC ASSEMBLY (continued)
Exit Requirements of Places of Public Assembly (continued)

(3d) Emergency Exits from Balconies and Galleries. Emergency exits shall be provided from both sides of each balcony and gallery with direct egress to the street, or to an independent passageway, or to an exit court. There shall be no communication from any portion of the building to the emergency exit stairways except from the tier for which the stairway is exclusively intended.
(3e) Exit Courts. All exit courts shall be not less than six (6) feet wide for the first six hundred (600) persons to be accomodated or fraction thereof and shall be increased one (1) foot in width for each additional two hundred and fifty (250) persons. Such courts shall extend sufficiently in length to include the side and rear emergency exits from the auditorium.
(3f) Hardware. All required exits shall be equipped with self-releasing panic-proof latches or bolts of an approved type complying with SEC. B-400.
(3g) Width of Exit Doors. The maximum width of single exit doors shall be forty-two (42) inches and the minimum width of double doorways shall be sixty (60) inches.
(3h) Exit Lights. All exit doors shall be marked with illuminated signs complying with SEC. B-400 which shall be kept lighted at all times during occupancy of the building.

(4) Seatings in Places of Public Assembly.
(4a) Fixed Seats. In all places of assembly except churches, stadiums and reviewing stands, individual seats shall be provided not less than twenty (20) inches in width with separating arms, arranged in rows not less than thirty-two (32) inches apart back to back, measured horizontally.
(4b) Number of Seats. Aisles shall be provided so that not more than seven (7) seats intervene between any seat and on aisle, except that the number of seats in a row shall not be limited when self-raising seats are provided which leave an unobstructed passage between rows of seats of not less than eighteen (18) inches in width leading to side aisles in which exit doorways are located at not more than five (5) feet intervals to the exit corridor or exit court.
(4c) Box Seats. In boxes or loges with level floors, the seats need not be fastened when not more than fourteen (14) in number.

(5) Aisles.
(5a) Longitudinal Aisles. The width of longitudinal aisles at right angles to rows of seats and with seats on both sides of the aisle shall be not less than thirty-six (36) inches, increasing one-quarter (¼) inch for every foot of length of aisle from its beginning to an exit door, or to a cross-aisle or between cross-aisles. The width of longitudinal aisles with banks of seats on one side only shall be not less than thirty (30) inches, increasing one-quarter (¼) inch for each foot of length.
(5b) Cross-Aisles. The width of cross-aisle, shall be not less than the widest aisle which they connect or the width of exit which they serve, but no cross-aisle shall be less than forty-two (42) inches wide, or when bordering on means of entrance shall be not less than forty-eight (48) inches wide.
(5c) Gradient. Aisles shall not exceed a gradient of one (1) foot in eight (8) feet.

(continued)

SEC. MB-802.0 SPECIFIC REQUIREMENTS

H. PLACES OF PUBLIC ASSEMBLY (continued)
Aisles (continued)

(5d) Balcony Steps. Steps may be provided in balconies and galleries only, and such steps shall extend the full width of the aisle with treads and risers complying with SEC. B-415.3 which shall be illuminated with floor lights.
(5e) Railings. Approved metal or other combustible railings shall be provided on balconies and galleries as herein prescribed:
At the facia of boxes, balconies and galleries not less than thirty (30) inches in height; and not less than thirty-six (36) inches in height at the top of steps;
Along cross-aisles not less than twenty-six (26) inches in height except where the backs of the seats along the front of the aisle project twenty-four (24) inches or more above the floor of the aisle.
Where seatings are arranged in successive tiers, and the height of rise between platforms exceeds eighteen (18) inches, not less than thirty (30) inches in height along the entire row of seats at the edge of the platform.

(6) Foyers.
(6a) Capacity. In every place of public assembly for theatrical use with stage and scenery loft, a foyer or lobby shall be provided with a net floor area exclusive of stairs or landings of not less than one and one-half (1½) square feet for each occupant having access thereto. The use of foyers and lobbies and other available spaces for harboring occupants until seats become available shall not encroach upon the clear floor area herein prescribed or upon the required clear width of front exits.
(6b) Egress. When the foyer is not directly connected to the public street through the main lobby, an unobstructed corridor or passage shall be provided which leads to and equals in minimum width the required width of main entrances and exits.
(6c) Gradient. The rear foyer shall be at the same level as the back of the auditorium and the exits leading therefrom shall not have a steeper gradient than one (1) foot in eight (8).
(6d) Construction. The partitions separating the foyer from the auditorium and all other adjoining rooms and spaces shall be constructed of not less than two (2) hour fireresistance.
(6e) Waiting Spaces. Waiting spaces for harboring occupants shall be located only on the first or auditorium floor and shall be separated from required exitways by approved railings not less than forty-two (42) inches in height. Separate exits in addition to the required theatre exits, shall be provided from the waiting space based on an occupancy of one (1) person for each three (3) square feet of waiting space area.

(7) Stage Construction.
(7a) Stage Enclosure Walls. Every stage hereafter erected or altered for theatrical performances which is equipped with portable or fixed scenery, lights and mechanical appliances, shall be enclosed on all sides with solid walls of four (4) hour fireresistance, extending continuously from foundation to at least four (4) feet above the roof. There shall be no window opening in such walls within five (5) feet of an interior lot line; and all window openings shall be protected with three-quarter (3/4) hour fire windows.
(continued)

SEC. MB-802.0 SPECIFIC REQUIREMENTS

H. PLACES OF PUBLIC ASSEMBLY (continued)
Stage Construction (continued)

(7b) Floor Construction. All that portion of the stage, except that used for the working of scenery, traps, and other mechanical apparatus for the presentation of a scene, and the roof over the stage shall be not less than three (3) hour fireresistive construction. All openings through the stage floor shall be equipped with tight-fitting, solid wood trap doors not less than three (3) inches in thickness.
(7c) Rigging Loft. The rigging loft, fly galleries and pin rails shall be constructed of approved incombustible materials.
(7d) Footlights and Stage Electrical Equipment. Footlights and border-lights shall be installed in troughs constructed of incombustible materials. All electrical equipment shall conform with the requirements Part F and the switchboard shall be so located as to be accessible at all times and shall be fully protected from falling objects and from the storage or placing of stage equipment against it.
(7e) Exterior Doors. All door openings to the outer air shall be protected with approved self-closing fire doors. All such exterior openings which are located on the stage for exit or loading and unloading purposes shall be constructed with vestibules to prevent air draughts into the auditorium.
(7f) Proscenium Wall. There shall be no other openings in the wall separating the stage from the auditorium, except one (1) proscenium opening; two (2) doorways at the stage level, one (1) on each side thereof; and, where necessary, one (1) doorway to the musicians' pit from the space below the stage floor. Such doorways shall not exceed twenty-one (21) square feet in area and shall be protected with an automatic fire door on one side. The combined door assembly shall have a fireresistive rating of three (3) hours.
(7g) Proscenium Curtain. The proscenium opening shall be protected with a curtain so designed and constructed that it will withstand a one-half ($\frac{1}{2}$) hour fire test without the passage of flame, at a temperature of not less than seventeen hundred (1700) degrees Fahrenheit, and an air pressure of not less than ten (10) pounds per square foot normal to its surface in accordance with the provisions of SEC. B-702. Such curtain shall be equipped with an automatic heat activated device to descend instantly and safely and to completely close the proscenium opening under a rise of temperature at a rate of not more than twenty (20) degrees Fahrenheit per minute; and shall be smoke tight. Such curtain shall also be equipped with auxiliary operating devices to permit prompt and immediate manual closing of the opening.
(7h) Scenery. All combustible materials used in sets and scenery shall be rendered flameresistive in accordance with the provisions of SEC. B-703.
(7i) Stage Ventilation. Metal or other approved incombustible ventilators, equipped with moveable shutters or sash shall be provided over the stage, constructed to open automatically and instantly by approved heat-activated devices, with an aggregate clear area of opening of not less than one-eighth (1/8) the area of the stage. Supplemental means shall be provided for manual operation of the ventilator.

(Continued)

SEC. MB-802.0 SPECIFIC REQUIREMENTS

H. PLACES OF PUBLIC ASSEMBLY (continued)
Dressing and Appurtenant Rooms.

(8) Dressing and Appurtenant Rooms.
(8a) Construction. Dressing rooms, scene docks, property rooms, workshops and store rooms and all compartments appurtenant to the stage shall be of fireproof construction and shall be separated from the stage and all other parts of the building by walls of not less than three (3) hour fire-resistance. No such rooms shall be placed immediately over or under the operating stage area.
(8b) Opening Protectives. No openings other than the necessary doorway at stage level shall connect such rooms with the stage and such openings shall be protected with one and one-half (1½) hour self-closing fire doors.
(8c) Interior Trim. All shelving and closets in dressing rooms, property rooms or storage rooms shall be constructed of incombustible materials complying with the provisions of SEC. B-700.
(8d) Dressing Room and Stage Exits. Each tier of dressing rooms shall be provided with at least two (2) means of egress, one of which shall lead directly to an exit corridor, exit court or street. Exit stairways from dressing and storage rooms may be unenclosed in the stage area behind the proscenium wall. At least one approved exit shall be provided from each side of the stage and from each side of the space under the stage, and from each fly gallery and from the gridiron to a street, exit court or passageway to a street. An iron ladder shall be provided from the gridiron to scuttle in the stage roof.

(9) Lighting.
(9a) Exitways. During occupancy all exitways in places of assembly shall be lighted to comply with the requirements of SEC. B-400.
(9b) Auditoriums. Aisles in auditoriums shall be provided with general illumination of not less than one-tenth (1/10) foot candles at the front row of seats and not less than two-tenths (2/10) foot candles at the last row of seats and the illumination shall be maintained throughout the showing of motion pictures, projections or theatricals.
(9c) Other Places of Public Assembly. All areas and portions of buildings used as places of public assembly other than theatres shall be lighted by electric light to provide a general illumination of not less than one (1) foot candle.
(9d) Control. The lighting of exitways, aisles and auditoriums shall be controlled from a location inaccessible to unauthorized persons. Supplementary control shall be provided as specified in SEC. MB-800.2F in the motion picture projecting room.
(9e) Emergency Lighting. In all buildings and structures used for public assembly purposes, all public exitways shall be lighted by means of electricity so arranged and controlled that the interruption of service on any other circuit inside the building or structure will not result in interruption of the required lighting. Emergency lighting shall comply with the requirements of SEC. B-400.

(Continued)

SEC. MB-802.0 SPECIFIC REQUIREMENTS

H. PLACES OF PUBLIC ASSEMBLY (continued)
Fire Protection and Fire Fighting Equipment.

(10) Fire Protection and Fire Fighting Equipment. Every theatre classified in the F-1 use group shall be equipped with fire extinguishing equipment complying with the requirements of SEC. B-700 as herein specified.

(10a) Sprinkler System. Approved automatic sprinkler systems complying with the provisions of SEC. B-700 shall be provided to protect all parts of the building except the auditorium, foyers and lobbies or in the immediate vicinity of automatic equipment or over dynamos and electrical equipment. Such protection shall be provided over the stage, under the gridiron, under all fly galleries, in dressing rooms and over the proscenium opening on the stage side; under the stage, in all basements, cellars, work rooms, store rooms and property rooms; and in toilet rooms, lounge rooms and smoking rooms.

(10b) Standpipes. Standpipe fire lines not less than four (4) inches in diameter complying with the provisions of SEC. B-733.0 shall be provided with outlets and hose attachments one on each side of the auditorium in each tier; one in each mezzanine; one in each tier of dressing rooms; and protecting each property room, store room and workroom.

(10c) First Aid Standpipes. First aid standpipes complying with the provisions of SEC. B-735.0 shall be provided on each side of the stage. Such standpipes shall be not less than two and one-half (2½) inches in diameter.

(10d) Hose outlets. A sufficient quantity of hose shall be provided equipped with regulation fire department couplings, nozzle and hose spanner, to reach all areas as specified in SEC. MB-733.0.

(10e) First Aid Hand Equipment. Approved portable fire extinguishers shall be provided and shall be located two (2) on each tier on floor of the stage, one (1) in the motion picture projecting room, one in each dressing room; and one in each work, utility and storage room. Fire axes and fire hooks shall also be provided as directed by the fire official; and all fire extinguishers and fire tools shall be securely mounted on walls in plain view and readily accessible.

SEC. MB-802.0 SPECIFIC REQUIREMENTS

I. OTHER PLACES OF PUBLIC ASSEMBLY

(1) General. Other places of public assembly including auditoriums, armories, bowling alleys, broadcasting studios, chapels, churches, community houses, dance halls, gymnasiums, lecture halls, museums, nightclubs, rinks, roof gardens and similar uses shall comply with the general exit requirements of SEC. B-400 and the applicable requirements of items (3), (4), (5) and (6) of SEC. MB-802.0-H. Such places which are equipped with a stage, movable scenery, scenery loft and dressing rooms shall comply with all the requirements herein specified.

(2) Aisles with Fixed Seats. All rows of seats shall be individually fixed or fixed in rigid units between longitudinal aisles complying with item (5) of SEC. MB-802.0-H and SEC. B-400. Where permitted, continuous fixed benches shall comply with the provisions of item (9) of SEC. MB-802.0-K.

(3) Aisles Without Fixed Seats. Tables and chairs in all rooms and spaces for public assembly shall provide convenient access by unobstructed aisles not less than thirty-six (36) inches wide which lead to required exitways complying with SEC. B-400.

(4) Kitchen and Service Pantries. Where kitchen and service pantries are provided, they shall be separately enclosed in partitions, floors and ceiling of not less than two (2) hour fireresistance and no required exitway shall pass through such areas.

(5) Bowling Alleys. All flammable, volatile liquids shall be stored and handled as required in SEC. B-805 and the finishing rooms shall be separately enclosed in two (2) hour fireresistive construction with floor finish of concrete or other incombustible, non-absorbent material. Such room shall not be located in the basement or cellar unless the building is of fireproof or protected incombustible construction.

(6) Skating Rinks. No skating rinks shall be located above or below the floor nearest grade.

SEC. MB-802.0 SPECIFIC REQUIREMENTS

J. AMUSEMENT PARKS

(1) Construction. All buildings and enclosed structures shall be constructed to conform to the requirements of this code governing the particular use and occupancy involved and in compliance with the fire district limitations of SEC. B-300, except as may be herein specifically required.

(1a) Amusement Devices. The maximum height of any amusement device in which passengers are transported shall not exceed: in fireproof construction one hundred (100) feet, in unprotected steel eighty (80) feet and in frame construction forty (40) feet.

(1b) Amusement Park Buildings. All amusement park buildings over one (1) story in height and one (1) story buildings over fifteen hundred (1500) square feet in area shall have walls, floors, roofs, and supports constructed of three-quarter (3/4) hour fireresistive construction or better.

(1c) Proximity to Lot Lines. All structures located within twenty (20) feet of lot lines or within twenty (20) feet of other structures on the same lot shall be of protected incombustible (type 2B) or better construction.

(2) Walkways and Ramps. Walkways and ramps shall be erected with a slope not greater than one (1) in ten (10) except when approved non-slip surfaces are provided the grade may be increased to a maximum of one (1) in eight (8).

(3) Elevating and Conveying Equipment. All devices and equipments for transporting persons shall comply with the requirements of Part C of this Code.

(4) Tests. All amusement devices used by the public which embrace hazardous features shall be installed and operated as directed by the building official and shall not be placed in service until acceptance tests have been made and the installation has been approved by him.

(5) Fire Protection. In addition to the fire-extinguishing and fire-fighting equipment required by the use and occupancy of each building and structure under the provisions of this code every amusement and exhibition park when required by the building or fire official shall be provided with a system of fire hydrants and fire lines with the required water supply in accordance with the provisions of SEC. B-700 and the approved rules adopted thereunder.

SEC. MB-802.0 SPECIFIC REQUIREMENTS

K. STADIUMS AND GRANDSTANDS

(1) All outdoor stadiums and grandstands shall be constructed as herein required and in accordance with the approved rules.

(2) Accessibility to Public Ways. All such places of outdoor assembly shall have at all times ample and unrestricted access to public ways of approach from at least two points, remote from each other. An available park, field or open space approved as an area of refuge may be used in lieu of one means of access to a public way.

(3) Occupancy Load of Grandstands. The occupancy load of a grandstand or other structure for outdoor assembly shall be computed on the basis of the number of fixed seats plus an allowance of one (1) individual for each six (6) square feet of floor or ground area used for standing space or movable seats. Such spaces shall not include the area of required exitways; nor shall any aisle or other space used as an exitway be used for standing room or seats. The occupancy load shall not exceed the capacity of exitways as required herein or by the provisions of SEC. B-400.

(4) Location of Grandstands.

(4a) Street Frontage. Every stadium or grandstand shall have one or more frontages on streets, highways or other open public spaces, not less than thirty (30) feet in width leading to a street as follows:

Occupancy Load	Street Frontage
1,000 or less	1 street
1,001 — 5,000	2 streets
5,001 — 10,000	3 streets
Over 10,000	4 streets

(4b) Fire Separation. No wood frame grandstand construction shall be located nearer than twenty (20) feet to an interior lot line or other frame structure unless provided with a protected exterior of not less than three-quarter (3/4) hour fireresistance or separated from adjacent units of frame construction with a two (2) hour fire wall.

(5) Type of Construction.

(5a) Frame Construction. No frame grandstand unit or similar structure shall be more than ten thousand (10,000) square feet in area, nor more than twenty (20) feet in height to the highest level of seat platforms nor more than two hundred (200) feet in length; except that when fire-retardant lumber is used, complying with SEC. B-700, the allowable area and length may be increased one hundred (100) per cent. Not more than three such units shall be constructed in any one group provided with the fire separations herein required. When more than one (1) such group is erected, they shall be separated by a wall of two (2) hours fireresistance when the fire separation is less than fifty (50) feet.

(5b) Non combustible Construction. All grandstand structures, two (2) or more tiers in height shall be of noncombustible (type 2-C) or heavy timber mill (type 3-A) construction or better.

(Continued)

SEC. MB-802.0 SPECIFIC REQUIREMENTS

K. STADIUMS AND GRANDSTANDS (Continued)

(6) Design. All grandstand and similar structures shall be designed for a wind load of not less than thirty (30) pounds per square foot on the vertical projection in all directions; and for the live loads and swaying loads specified in SEC. B-600.

(7) Means of Egress from Grandstands. All means of egress shall comply with the requirements and occupancy loads of SEC. B-400 for places of public assembly.

(7a) Location of Exits. The distance between exits in the grandstand shall not exceed one hundred (100) feet, except that only one exit shall be required when the length of a cross aisle does not exceed fifty (50) feet.

(7b) Number of Exits. Every stairway, ramp, or vomitory shall lead directly to an exterior exit or to a horizontal exit passageway leading to a field or other open space, or to an exit gateway to the street. The number of exit gateways shall be as follows:

Occupancy Load	Number of Exits
1,000	2
3,000	3
Each additional 3,000	1 additional

(7c) Exit Signs. Illuminated exit and directional signs shall be provided complying with SEC. B-400.

(8) Aisles.

(8a) Width of Aisles. Aisles shall be not less than twenty-four (24) inches in width when serving not more than sixty (60) individuals and not less than thirty-six inches in width when serving more than sixty (60) individuals. When aisles are divided by a column or other obstruction, a minimum width of twenty-two (22) inches shall be left on each side.

(8b) Steps. When the entrance to an aisle is located above the ground level, a ramp or stairway shall be provided complying with SEC. B-400 not less than the width of the aisle. When the gradient of ramps exceeds one (1) in ten (10), steps may be provided to overcome the difference in level. When the rise of seating platforms is more than eleven (11) inches, an intermediate step shall be provided with equal risers; and when more than eighteen (18) inches, two (2) intermediate steps shall be provided with equal risers.

(8c) Rails. Every ramp, stairway, deck and tier shall have an approved protective railing or guard not less than three (3) feet six (6) inches high on all open sides when three (3) feet or more above grade level or above any other level occupied by the public. Front railings of grandstands when the foot rest is more than two (2) feet above the ground shall be not less than thirty-three (33) inches high.

(8d) Strength of Rails. Railings or guards shall be designed to comply with SEC. B-600.

(8e) Spaces Underneath Seats. Spaces underneath grandstand seats shall be kept free of all combustible and flammable materials and shall not be occupied or used for other than exitways; except that when enclosed in not less than three-quarter (3/4) hour fire resistive construction, the building official may approve the use of such spaces for other purposes that do not endanger the safety of the public.

(Continued)

SEC. MB-802.0 SPECIFIC REQUIREMENTS

K. STADIUMS AND GRANDSTANDS (Continued)

(9) Seats
(9a) Number of Seats. No seat shall have more than sixteen (16) seats between it and the nearest aisle nor shall the distance back to back of seats with back rests be less than thirty (30) inches, nor less than twenty-two (22) inches for bleacher type seats.
(9b) Width of Seats. The minimum width of fixed seats with arms shall be twenty (20) inches; and without divisions between seats, a minimum width of eighteen (18) inches shall be provided for each person. No portable chairs or seats shall be permitted except in boxes or loges in which one chair may be installed for each five (5) square feet of floor area and not more than a total of sixteen (16) seats in a box.
(9c) Ceiling Clearance. The clear height below ceilings in any exitway shall be not less than eight (8) feet and below trusses, beams, girders and all other framing over occupiable spaces not less than six and two-thirds (6 2/3) feet.

(10) Temporary Stadiums of Combustible Construction. Temporary and portable stadiums and grandstands of combustible construction and such permanent structures outside the fire limits shall not exceed twenty (20) feet in height above the grade, and the frames, stringers, and sleepers shall be rigidly secured and anchored with through bolts, ring connectors, rivets, leg screws or other approved connectors to resist all stresses and prevent displacement during occupancy. The occupancy load of each structure shall be not more than one thousand (1000).

(11) Parking Spaces. Parking spaces shall be located not less than twenty (20) feet from grandstand structures, unless provided with a fire division of not less than two (2) hours fireresistance on the side facing the parking.

(12) Fire Protection in Places of Outdoor Assembly
(12a) Electrical Installations. Except as otherwise provided by law, ordinance or regulation, electrical installations shall conform to the requirements of Part F of this code.

The electrical system shall be installed, maintained and operated in a safe and workmanlike manner. If portable, it shall be inspected daily when in use by a qualified person representing the owner and any defects found shall be corrected before the public is admitted to the show or performance involved.

The electrical system and equipment shall be isolated from the public by proper elevation or guarding, and all electrical fuses and switches shall be enclosed in approved enclosures. Cables on the ground in areas traversed by the public shall be placed in trenches or protected by approved covers.
(12b) Storage and Handling of Flammable Liquids and Gases. Storage and handling of flammable liquids or gases shall be in accordance with recognized, safe practices. No storage or handling of flammable liquids or gases shall be permitted at any location at which it would jeopardize egress from the structure. Refueling of equipment with flammable liquids shall be permitted only with safety containers of approved type.

(Continued)

SEC. MB-802.0 SPECIFIC REQUIREMENTS

K. STADIUMS AND GRANDSTANDS (Continued)

Fire Protection in Places of Outdoor Assembly. (continued)

(12c) Police and Fire Detail. Police and fire details, if deemed necessary in any place of outdoor assembly, shall be determined by the appropriate administrative official.

(12d) Fire Extinguishing Equipment

Fire extinguishing equipment of approved types shall be furnished by the person operating, conducting, or promoting any place of outdoor assembly in such amount and in such locations as may be directed by the fire official. Such fire extinguishing equipment shall be maintained in good working order and shall be operated by employees of such places of outdoor assembly who shall be properly trained for the purpose, and who shall be required to exhibit their skill on order of the fire official. This equipment shall be maintained in such locations as may be directed by the fire official, who may also direct the installation of such additional fire extinguishing equipment if he deems it essential.

One or more methods of fire alarm and emergency communication shall be arranged by agreement between the owner and the fire official.

(13) Sanitation. Sanitary facilities shall be provided as required by Part E of this Code.

(14) Migrant Labor

(14a) When provisions must be made to shelter migrant labor, there shall be compliance with the requirements of the migrant labor housing code of the New Jersey Department of Labor and Industry.

SEC. MB-802.0 SPECIFIC REQUIREMENTS

L PORTABLE GRANDSTANDS

(1) Portable grandstands shall conform to the requirements of SEC. MB-802.0-K and to the following special requirements.

(2) Portable grandstands shall be self-contained, having within themselves all necessary parts to withstand and restrain all forces which might reasonable be developed during human occupancy. They shall be so designed and manufactured that if any structural members essential to the strength and stability of the structure have been omitted during erection, the presence of unused connection fittings will make the omissions self-evident. The workmanship shall be of such quality as to produce in construction the strength required by the design.

(3) Portable grandstands shall be provided with base plates, sills, floor runners, or sleepers, of such area that the total live and dead load shall not exceed 55 pounds per square inch on base plates, sills, floor runners, or sleepers. When portable grandstands rest directly on earth of such character as to be incapable of supporting the load without appreciable settlement, and sills of suitable material, having sufficient area to prevent undue or dangerous settlement, shall be installed under base plates, runners, or sleepers. All bearing surfaces shall be in contact.

(4) A-frames, or other supports, and seat stringers for portable grandstands shall be secured to prevent accidental displacement during occupancy.

(5) Field connections to wood members shall be by means of rivets, bolts, approved connectors, friction or other devices, or lag screws. The use of nails, lagscrews and woodscrews is permissible for holding wood parts together, except that these shall not be used for demountable joinings, nor shall these be used where their loosening or splitting of surrounding wood would jeopardize the structure or its occupants. Members in tension shall be connected at each end by means of not less than 2 bolts, rivets or lag screws, or by approved connectors, or other approved devices. Adequate provision shall be made to prevent the splitting or shearing of wood at such connections.

SEC. MB-802.0 SPECIFIC REQUIREMENTS

M TENTS

(1) Location and Permits

(1a) Outside of fire districts temporary tents may be erected for a period not to exceed thirty (30) days for religious, education or recreational purposes. A special permit shall be secured from the building official for all such installations.

(1b) No tent or tents shall be erected to cover more than 75 per cent of the premises; nor shall any tent be erected closer than 10 feet to other structures or interior lot lines except as hereinafter provided. Stake lines of adjacent tents shall be sufficiently distant from each other to provide an area to be used as a means of emergency egress.

(1c) Concession or other tents not occupied by the public need not be separated from each other and may be erected less than 10 feet from other structures only if the building official deems such closer spacing safe from hazard to the public.

(1d) Tents, each not exceeding 1,200 square feet in ground area, located on fair grounds or similar open spaces need not be separated from each other, provided safety precautions meeting the approval of the building official are taken.

(2) Structural Requirements

(2a) All supporting members shall be of sufficient size and strength to support the structure.

(2b) Tents shall be adequately guyed, supported and braced to withstand a wind pressure or suction of 10 pounds per square foot. The poles and their supporting guys, stays, stakes, fastenings, etc. shall be of sufficient strength and attached so as to resist wind pressure of 20 pounds per square foot of projected area of the tent. Tent poles shall be stayed with wire ropes; fibre rope shall be used only for mooring to stakes.

(3) Flame Resistance

(3a) All tents occupied for assembly, or in which animals are stabled, or those located within that portion of the premises used by the public; and all tents in places of outdoor assembly in or about which any devices using fuels are operated, and all tarpaulins and decorative materials in connection with any of these, shall meet the requirements for resistance to fire prescribed in the Federal Specification for Fire, Water and Weather Resistant Cotton Duck, CCC-D-746 except that decorative materials for indoor use need not be subjected to accelerated weathering. Safety nets shall be exempt from the above requirements for resistance to fire.

(3b) The building official shall make field tests in accordance with approved methods or (2) require a certificate or other evidence of approval by a laboratory of recognized standing or (3) he may accept the report of tests made by other administrative officials or a recognized testing laboratory as evidence that the tents, tarpaulins and decorations have the required resistance to fire.

(Continued)

SEC. MB-802.0 SPECIFIC REQUIREMENTS

M TENTS (Continued)

(4) Means of Egress

(4a) Exits. Not less than twenty-two (22) inches exit width shall be provided for each five hundred (500) square feet of public space enclosed, with a minimum width of exitway of forty-four (44) inches and the line of travel to an exit not to exceed 150 feet.

(4b) Aisles and passageways. Aisles and passageways shall conform to the requirements of SEC. MB-802.0-K. All exitways shall be maintained free and unobstructed at all times during occupancy of the tent.

(5) Fire Protection

(5a) Tents shall conform to the general requirements of SEC. B-700 and to the following special requirements.

(5b) The ground enclosed by any tent used in connection with a place of outdoor assembly, and for a reasonable distance but not less than 10 feet outside of such structure or structures, shall be cleared of all flammable material or vegetation which will carry fire. This work shall be accomplished to the satisfaction of the fire official prior to the erection of such structure or structures. The premises shall be kept free from such flammable materials during the period for which the premises are used by the public.

(5c) No hay, straw, shavings or similar combustible materials other than that necessary for the current feeding and care of animals shall be permitted within any tent used for public assembly except that sawdust and shavings may be used if kept damp.

(5d) No smoking, fireworks, or unapproved open flame of any kind shall be permitted in any tent while occupied by the public. "No smoking" signs shall be conspicuously posted in any tent open to the public.

(5e) Tents shall not be used for the display of motion pictures unless safety film is used.

SEC. MB-802.0 SPECIFIC REQUIREMENTS

N. DRIVE-IN MOTION PICTURE THEATRES

(1) The location of drive-in motion picture theatres shall be approved by the municipal or state authority having jurisdiction over highways and streets.

(2) Arrangement of Lanes. Separate entrance and exit lanes shall be provided not less than twelve (12) feet in width, with not less than forty (40) feet intervals between access lanes. The parking space for each car shall be not less than nine (9) feet by twenty (20) feet in area, and so arranged to provide continuous lanes of travel.

(3) Projection Booth. The projection booth shall comply with SEC. MB-802.C-F and shall be supported on a structure of type 2-C or other approved noncombustible construction. No motor vehicle shall be permitted to park within twenty (20) feet of the projection booth or room.

(4) Screen Tower. The screen tower shall be designed by utilizing the allowable fibre stresses and wind loads specified in SEC. MB-600.

(5) Toilet Facilities. Separate toilet facilities shall be provided for each sex as required in Part E of this code.

(6) Fire Protection. Sufficient approved portable fire extinguishers shall be provided in readily accessible locations, plainly and visibly identified by signs at distances of not more than one hundred and fifty (150) feet so as to be available to every motor vehicle as directed by the fire official. The fire extinguishers shall be mounted on posts or platforms protected from mechanical injury with substantial guards as approved by the building official.

SEC. MB-802.0 SPECIFIC REQUIREMENTS

0. PARKING LOTS

(1) Curb Cuts. Parking lots shall be arranged to afford ready means of entrance and exit at sidewalk level; and special permits shall be secured for curb cuts from the building official.

(2) Lanes and Parking Spaces. Access lanes shall be provided for each row of cars not less than twelve (12) feet in width; and the parking space shall be not less than eight (8) feet by eighteen (18) feet in area for each motor vehicle.

(3) Parking Lot Offices. The construction of parking lot offices shall comply with the fire district limitations of SEC. MB-300.

(4) Protection of Adjoining Property. A substantial bumper of masonry, steel or heavy timber shall be placed near all interior lot lines to protect structures and property abutting the parking lot.

(5) Surface and Drainage. Parking lots shall be graded with rolled or compacted cinders, gravel or other approved nonabsorbent materials to prevent raising of dust and shall be maintained to prevent drainage into adjoining property or the sidewalk.

(6) Electric Illumination. Electric light wiring shall be provided on approved standards to furnish adequate illumination of driveways and lanes as required by the municipal authorities for street lighting, but in no case shall such illumination be less than one-tenth (1/10) of one (1) watt per square foot of parking area.

SEC. MB-802.0 SPECIFIC REQUIREMENTS

P. TRAILER CAMPS

(1) Lots and parcels of land designed for the temporary or permanent parking of two (2) or more motor vehicles used for human habitation may be located outside the fire limits; and shall be of adequate area to provide parking spaces, access lanes and accessory buildings as herein specified. All such structures shall comply with the applicable requirements of this Code and the rules and regulations of the health official.

(2) Enclosures of Trailer Camps. Trailer camps shall be enclosed with an approved fence or planted hedge, five (5) feet in height with no openings to adjoining property other than the required entrances and exits to streets or public spaces.

(3) Motor Vehicle Unit Spaces. The minimum available space for each trailer car shall be not less than twenty (20) feet by forty (40) feet in area and shall be located not less than twenty (20) feet from the street lot lines and alley lines and not less than five (5) feet from interior lot lines.

(4) Travel Lanes. Travel lanes not less than twenty (20) feet in width which provide easy access to all parking spaces shall be constructed with a hard, dustless road surface which affords ready means of entrance and exit to the street.

(5) Washing and Drainage Facilities. Community wash racks shall be provided with approved, impervious flooring surface; and all wash tables, driveways and lanes shall be drained to catch basins and to the public sewer system to comply with Part E of this Code.

(6) Water Supply. An approved water supply system shall be installed with adequate water taps available to all motor vehicles to supply running water for all sanitary and washing fixtures, drinking and domestic purposes as specified in Part E of this code, and with provisions of applicable local and state health regulations and laws.

(7) Sewer System and Sanitary Fixtures. Faucets for community water supply shall be installed in accessible locations at distances of not more than one hundred (100) feet from each trailer unit. Sufficient sanitary fixtures consisting of water closets, urinals, showers or baths shall be provided in accordance with the fixture requirements of Part E of this Code. In addition, not less than one (1) laundry tub and slop sink shall be installed for each unit of ten (10) motor vehicles. The sewer system shall be connected to the public sewer system or other approved disposal plant.

(8) Electric Illumination. Electric light wiring shall be provided in approved standards to serve all units in accordance with the approved rules; and the driveways and lanes shall be lighted as required by the municipal authorities for street lighting.

(continued)

SEC. MB-802.0 SPECIFIC REQUIREMENTS

P. TRAILER CAMPS (continued)

(9) Accessory Buildings. Office buildings, structures housing sanitary equipment garages and repair shops shall be constructed to meet all requirements of this Code. Repair shops for motor vehicles shall be located not less than twenty (20) feet from trailer units or any building. No trailer car shall be permanently supported on fixed foundations, unless the entire structure is made to conform to the requirements of this Code for buildings and structures of the specified use group.

(10) Housekeeping. Sufficient corrosion-resistive metal or other noncombustible containers with tight fitting covers shall be provided for waste and rubbish. All waste and rubbish shall be disposed of daily by burning in an approved incinerator or as directed by the health official.

SEC. MB-802.0 SPECIFIC REQUIREMENTS

Q MOTELS

(1) All buildings and accessory structures used as motels shall comply with the requirements and limitations of this Code for the occupancy and use for which they are designed and as herein specifically required.

(2) Garages. Garages when attached to motel residential buildings shall have the interior faces of all walls, when not of approved masonry construction, and the ceilings protected to afford three-quarter (3/4) hour fireresistance, and all connecting openings shall be protected with approved three-quarter (3/4) hour fire doors of their equivalent complying with SEC. B-700 or with one and three-quarter (1 3/4) inch solid core wood doors. Roofed-over passageways may be used to connect garages to dwellings if protected with three-quarter (3/4) hour fireresistive construction.

(3) Required Exitways. All exitways in buildings more than one (1) story in height shall be constructed of three-quarter (3/4) hour fireresistance and all stories above the first shall have at least two (2) means of egress complying with SEC. B-400. All exits from residential quarters shall lead to open spaces not less than twenty (20) feet in width which provide direct exit to public streets or highways.

(4) Driveways and Parking Spaces. The arrangement and capacity of driveways, lanes and parking spaces shall comply with the requirements specified for parking lots and trailer camps in SEC. MB-802.0-O and SEC. MB-802.0-P.

(5) Water Supply and Sanitary Facilities. Fresh water supply for drinking and domestic purposes and all sanitary facilities shall comply with the provisions of Part E of this code and with provisions of applicable local and state health regulations and laws.

SEC. MB-802.0 SPECIFIC REQUIREMENTS

R RADIO AND TELEVISON TOWERS

(1) Subject to the structural provisions of SEC. B-600 for wind loads and the requirements of SEC. B-700. governing the fireresistance of buildings for the support of roof structures, all radio and television towers shall be designed and constructed as herein provided.

(2) Location and Access. The towers shall be so located and equipped with step bolts and ladders as to be readily accessible for inspection purposes. No guy wires or other accessories shall cross or encroach upon any street or other public space, or over any electric power lines, or encroach upon any other privately owned property without written consent of the owner.

(3) Construction. All radio towers shall be constructed of steel or other approved corrosion-resistive noncombustible materials. Steel members shall be not less than one-eight (1/8) inch thick if galvanized nor less than three-sixteenths (3/16) inch thick if painted to comply with SEC. B-600. Within the limitations of SEC. B-300 for fire districts and the provisions of SEC. B-700 isolated radio towers may be constructed of lumber sizes qualifying for mill type construction when not more than one hundred (100) feet in height.

(4) Loads. The structure shall be securely braced and anchored to resist a wind of not less than thirty (30) pounds per square foot on the net area of both sides of latticed construction and on the projected area of the antennae plus the wind on ice-covered sections in localities where subject to freezing temperatures. Where subject to winds of unusual velocity, the loads shall be increased accordingly. Due allowance shall be made for effect of shape of individual elements and contour of the tower as provided in SEC. B-600 in computing wind loads.

(4a) Dead Load. Antennae and towers shall be designed for the dead load plus ice load in regions where ice formation is likely to occur.

(4b) Uplift. Adequate foundations and anchorage shall be provided to resist two (2) times the calculated wind uplift.

(4c) Electrical Requirements. Radio towers shall be grounded to comply with the requirements of PART F of this code and the approved rules with a copper conductor of not less than No. 8 U.S. gage or its equivalent; or shall be grounded through a resistance coil in the radio circuit.

SEC. MB-802.0 SPECIFIC REQUIREMENTS

S RADIO AND TELEVISION ANTENNAE

(1) No Permit Required. Antennae structures for private radio or television reception not more than twenty (20) feet in height may be erected and maintained on the roof of any building without a building permit. No such structure, however, shall be erected so as to injure the roof covering and when removed from the roof, the roof covering shall be repaired to maintain weather and water tightness. The installation shall in no case be erected nearer to the lot line than the total height of the antennae structure nor shall such structure be installed near electric power lines nor shall it encroach upon any street or other public space.

(2) Permits Required. The approval of the building official shall be secured for all antennae structured more than twenty (20) feet in height. The application shall be accompanied by detailed drawings of the structure and methods of anchorage. All connections to the roof structure must be properly flashed to maintain water tightness. The design and materials of construction shall comply with the requirements of item (3) of SEC. MB-802.0-R for character, quality, and minimum dimensions.

(3) Electric Grounding. All wiring shall comply with the requirements of PART F of this code and the antennae shall be grounded either by direct copper ground or through a resistance coil in the circuit.

SEC. MB-802.0 SPECIFIC REQUIREMENTS

T. OTHER SPECIAL USES AND OCCUPANCIES

(1) Explosives, Fireworks, Military Pyrotechnics, Nitrocellulose. The manufacture, storage, handling and use of explosives, fireworks, military pyrotechnics, and nitrocellulose shall be subject to the governing provisions of the state laws and the rules and regulations of the Department of Labor and Industry. Approval of plans and specifications for uses and occupancies listed above shall be required from the Department of Labor and Industry before any further action is taken by the building official.

(2) Paint Finishing Systems, Ovens. The installation of paint finishing systems or curing ovens shall be subject to the same requirements specified in item (1) above.

(3) Other specific installations, operations, equipment, devices, and safeguards for special hazards and processes shall conform to the Rules and Regulations or standards of the Department of Labor and Industry.

A. Example of special items may include, but be not limited to, the following:

Cryogenic storage
Mines
Quarries
Flour Mills
Transformer vaults
Excavations
Shoring
Milling rooms, etc.

U. RULES FOR THE CONSTRUCTION OF ONE AND TWO FAMILY DWELLINGS - Standard Building Code of New Jersey.

V. RUTGERS FARM BUILDING STANDARD

HOW TO DESIGN A POLE-TYPE BUILDING AWPI-1965

(1) This Standard includes regulations for the design and construction of all farm buildings, including permanent pole-type buildings, and expendable structures such as plastic film greenhouses, air-inflated structures, cold or hot frames and shelters for shade or protection against wind or precipitation.

SEC. MB-804.0 EXISTING USES

(1) Existing Use Prohibited. No existing building of frame (type 4) construction which is more than two (2) stories in height or more than five thousand (5000) square feet in area; or of nonfireproof (type 3) construction which is more than four (4) stories in height shall be continued in use for the manufacture of pyroxylinplastics or similar materials of high hazard and explosive characteristics.

(2) Places of Assembly. No existing building or structure or part thereof shall be altered or converted into a place of assembly unless it complies with all provisions of this Code applicable to places of public assembly hereafter erected.

(2a) Existing Use Altered. When an existing building or structure heretofore used as a place of public assembly is altered and the cost of such alteration is more than fifty (50) per cent of the assessed valuation of the building, all provisions of this Code relating to new places of public assembly shall be in compliance. When the cost of such alteration is less than fifty (50) per cent of the assessed valuation of the building, such alterations shall comply as nearly as is practicable with the provisions of this code with special reference to the arrangement and construction of seats, aisles, passageways, stage and appurtenant rooms, fire fighting and extinguishing equipment and the adequacy of exits.

(2b) Increase in Occupancy Load. Whenever the occupancy load of an existing place of public assembly is increased beyond the approved capacity of its exitways, such building or part thereof shall be made to comply with the requirements for a new building hereafter erected for such public assembly use.

SEC. MB-900.0 SCOPE

(1) Accepted Engineering Practice. Except as otherwise provided in the code or herein after in this manual all requirements establishing proper safeguards during demolition and construction shall be governed by the following standard of accepted engineering practice.

New Jersey Department of Labor and Industry - Construction Safety Code - November 15, 1963

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PART C

ELEVATORS, MOTOR STAIRWAYS, AND CONVEYOR EQUIPMENT

SEC. MC-102.0 STANDARDS. Except as otherwise provided in this code or hereafter in this Manual, all requirements controlling the design and installation of the elevators, motor stairways (Escalators), motor driven platforms, dumbwaiters and conveyor equipment and devices shall be governed by, but not limited to, the following provisions of the American Standards Association:

Safety Code for Elevators, Dumbwaiters, and Escalators, ASA A 17.1-1965*
Safety Code for Conveyors, Cableways and Related Equipment, ASA B 20.1-1957;

and, by rules and regulations issued by the New Jersey State Department of Labor and Industry; the ASME Unfired Pressure Vessels Code; and, Automotive Lifts, U. S. Dept. of Commerce, CS-142-1962.

*VARIATIONS: Exceptions to the Safety Code for Elevators, Dumbwaiters, and Escalators, ASA A 17.1-1965, are hereinafter set forth and identified by specific rule numbers with mandatory requirements therefor based on New Jersey Statutes and other provisions of the Standard Building Code of New Jersey in each instance to wit:

ASA A 17.1-1965 RULE NUMBER	REQUIRED STANDARDS
100.1 Enclosures of Hoistways	In industrial buildings more than two (2) stories in height, all elevator shafts shall be enclosed in walls of fire-proof or fire-resisting material, which shall run from the foundations to and through the roof as required by NJRS 34:6-4. In one and two story buildings, all shafts shall be in conformity with the requirements of SEC. B-705.5
100.3 Flooring over Hoistways of Power Elevators	Grating Beneath Sheaves. Immediately under the sheaves at the top of every elevator shaft in industrial buildings there shall be provided and securely fastened to the shaft a substantial grating of iron or steel having not more than one and one-half (1½) inches space between any two (2) members, except at the spaces necessary to be provided for cables to pass through. NJRS 34:6-31.
100.4 Venting of Hoistways	Not Extending to Roof. A shaft that does not extend into the top story of the building shall be enclosed with top construction of the same strength and fire resistance as the floors of the building or structure in which it occurs, but in no case less than that of the fire resistance rating of the shaft enclosure. Such shafts shall be provided with non-combustible vents for the relief of smoke and gases in the event of fire, with an area not less than ten (10) percent of the shaft area except where approved thermostatically controlled exhaust ventilation is provided. SEC. B-705.5c. Extending to Roof. All shafts that extend to the roof of the building shall be covered at the top with a skylight of not less than three-fourths (3/4) of the area of the shaftway, constructed in accordance with the requirements of SEC. B-710.2 and ventilated as required in SEC. B-500. SEC. B-705.5d. Alternate Shaft Ventilation. The skylight herein required may be replaced by a window of equivalent area in the side of the shaft, provided the sill of such window is not less than two (2) feet above the adjoining roof and is equipped with an automatic vent opening, does not face on an exterior lot line or within ten (10) feet thereof, and is not located within twenty (20) feet of an opening in adjacent walls. SEC. B-705.5e.

(Continued on next page)

103. Location and Guarding of Counterweights for Power Elevators

Counterweights Screened. In industrial buildings when counterweights run in the same shaft as the car, they shall be protected with a substantial screen of iron which shall extend from the top grating in the shaft to a point at least five (5) feet below the grating, and with a like screen which shall extend from the bottom of the shaft upward for at least ten (10) feet. NJRS 34:6-30.

107.1 Clearances for Electric Elevators

Clearance for Cars and Counterweights. In industrial buildings there shall be not less than three (3) feet clearance between the top of each counterweight and the under side of overhead beams when the car is resting on the bumpers. A clear space of not less than three (3) feet must be provided between the bottom of the shaft and the lowest point of the under side of the car floor when the car is at its lowest landing and between the top of crosshead of the car and the under side of the overhead grating when the car is at its top landing. NJRS 34:6-32.

108.1 Clearances Between Cars, Counterweights and Hoistway Enclosures

Floor Saddles. In industrial buildings there shall be not more than one and one-quarter (1¼) inches space between the floor of the car and the floor saddles and where the saddles project in the shaft, the same shall be properly beveled or protected on the under side. The under side of the car must be of incombustible materials. NJRS 34:6-27.

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PART D

AIR CONDITIONING, MECHANICAL VENTILATION AND REFRIGERATION

SEC. MD-102.0 SAFETY STANDARDS. Except as otherwise provided in the code or hereafter in the Manual, all requirements of construction, installation and maintenance of refrigerating systems, mechanical ventilating, air-conditioning, warm air heating, air cooling and ventilating equipment and devices shall be governed by the provisions of the National Board of Fire Underwriters' publications – NFPA-90A-1966; NFPA-90B-1965 and NFPA-91-1961, Blower and Exhaust Systems for Dust, Stock, and Vapor Removal or Conveying; the American Standards Association Pamphlet ASA-B-9.1-64, the Safety Code for Mechanical Refrigeration; and ASHRAE Guide and Data Books Fundamentals and Equipment ASHRAE 1963, and Applications ASHRAE 1962.

SEC. MD-205.P LOCAL EXHAUST SYSTEMS. State Department of Labor and Industry, Rules and Regulations Governing Local Exhaust Systems in Industry 5-28-51.

SEC. MD-502.0 OPERATION PERSONNEL. Licensed Personnel Required, State Department of Labor and Industry.

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PART F

ELECTRICAL EQUIPMENT AND WIRING

SEC. MF-102.0 SAFETY STANDARDS. The construction, installation and maintenance requirements for electric equipment and wiring shall be governed by the provisions of the following American Engineering Standards:

A. S. A. National Electrical Code – C 1 – 1965

National Electric Safety Codes:

Safety Rules for Installation and Maintenance of Electrical Supply Stations – C 2.1 – 1947

Safety Rules for Installation and Maintenance of Electrical Supply and Communication Lines – C 2.2 – 1960

Safety Rules for Installation and Maintenance of Electric Utilization Equipment – C 2.3 – 1947

Safety Rules for Operation of Electric Equipment and Lines – C 2.4 – 1947

Safety Rules Radio Installation – C 2.5 – 1947

Code for Protection against Lightning:

Protection of Persons – C 5.1 – 1965

Protection of Buildings and Miscellaneous Properties – C 5.2 – 1959)
) Consolidated with ASA-C 5.1 – 1965
Protection of Structures containing Flammable Liquids and Gases – C 5.3 – 1959)

Grounding and Bonding Equipment, Safety Standard for – ASA-C 33.8 – 1957

SEC. MF-103.0 EXISTING LAWS. Electrical construction done under applications or permits provided for in this part of the code shall be such as to conform with the precautions to be taken in the proximity of high voltage lines for the prevention of accidents as provided in NJRS 34:6-47.1 et seq., and as may be from time to time amended.

ACCREDITED AUTHORITATIVE AGENCIES

ACCREDITED AUTHORITATIVE AGENCIES

AA – ALUMINUM ASSOCIATION
420 Lexington Avenue, New York, N. Y. 10017

AAMA – ARCHITECTURAL ALUMINUM MANUFACTURERS ASSOCIATION
35 East Wacker Drive, Chicago, Illinois 60601

ACI – AMERICAN CONCRETE INSTITUTE
P. O. Box 4754, Redford Station, 22400 West Seven Mile Road, Detroit, Michigan 48219

ACPA – ASBESTOS CEMENT PRODUCTS ASSOCIATION
509 Madison Avenue, New York 22, N. Y.

AFMF – ASSOCIATED FACTORY MUTUAL FIRE INSURANCE CO.
1151 Boston-Providence Turnpike, Norwood, Mass.

AGA – AMERICAN GAS ASSOCIATION
605 – 3rd Avenue, New York, N. Y.

AIA – AMERICAN INSURANCE ASSOCIATION
110 William Street, New York, N. Y. 10038

AIA – AMERICAN INSTITUTE OF ARCHITECTS
1741 New York Avenue, N. W., Washington, D. C. 20006

AIEE – AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS
33 West 39th Street, New York, N. Y. 10018

AISC – AMERICAN INSTITUTE OF STEEL CONSTRUCTION, INC.
101 Park Avenue, New York, N. Y. 10017

AISI – AMERICAN IRON AND STEEL INSTITUTE
150 East 42nd Street, New York, N. Y. 10017

AITC – AMERICAN INSTITUTE OF TIMBER CONSTRUCTION
1750 K Street, N. W., Washington, D. C. 20006

AMA – ACCOUSTICAL MATERIALS ASSOCIATION
335 East 45th Street, New York 17, N. Y.

APA – AMERICAN PLYWOOD ASSOCIATION
1119 A Street, Tacoma, Washington 98401

API – AMERICAN PETROLEUM INSTITUTE
1271 Avenue of Americas, New York 16, N. Y.

APHA – AMERICAN PUBLIC HEALTH ASSOCIATION
1790 Broadway, New York 17, N. Y.

ASA – AMERICAN STANDARDS ASSOCIATION, INC.
10 East 40th Street, New York, N. Y. 10016

ASCE – AMERICAN SOCIETY OF CIVIL ENGINEERS
345 East 47th Street, New York, N. Y. 10017

ASHRAE – AMER. SOC. HEATING, REFRIG. & AIR CONDITIONING ENGRS., INC.
345 East 47th Street, New York, N. Y. 10017

ASME – AMERICAN SOCIETY MECHANICAL ENGINEERS
345 East 47th Street, New York, N. Y. 10017

ASSE – AMERICAN SOCIETY SANITARY ENGINEERING
City Hall, Waterbury, Connecticut

ASTM – AMERICAN SOCIETY FOR TESTING MATERIALS
1916 Race Street, Philadelphia 2, Pennsylvania

AWPA – AMERICAN WOOD PRESERVERS ASSOCIATION
111 W. Washington Street, Chicago 2, Illinois

AWS – AMERICAN WELDING SOCIETY
33 West 39th Street, New York 18, N. Y.

CRSI – CONCRETE REINFORCING STEEL INSTITUTE
228 North LaSalle Street, Chicago, Illinois 60601

CS – COMMERCIAL STANDARDS (U. S. DEPT. OF COMMERCE)
Superintendent of Documents, Government Printing Office, Washington 25, D. C.

DFPA – DOUGLAS FIR PLYWOOD ASSOCIATION
Tacoma Building, Tacoma 2, Washington

FML – FACTORY MUTUAL LABORATORIES (ASSOCIATED FACTORY MUTUAL FIRE INS. COS.)
184 High Street, Boston, Massachusetts

FPL – FOREST PRODUCTS LABORATORY
Madison, Wisconsin 53705

FS – FEDERAL SPECIFICATIONS
Superintendent of Documents, Government Printing Office, Washington 25, D. C.

FSS – FEDERAL SUPPLY SERVICE
General Services Administration, Standardization Division, Washington, D. C.

GA – GYPSUM ASSOCIATION
201 North Wells Street, Chicago, Illinois 60606

HHFA – HOUSING AND HOME FINANCE AGENCY
Division of Standards, Bldg. Codes and Materials, Washington 25, D. C.

IBI – INSULATION BOARD INSTITUTE
111 West Washington Street, Chicago, Illinois 60602

IES – ILLUMINATING ENGINEERS SOCIETY
1860 Broadway, New York, N. Y. 10023

MIL – MILITARY SPECIFICATIONS
Com. General, Air Material Command, Wright Patterson Base, Dayton, Ohio

MLMA – METAL LATH MANUFACTURERS ASSOCIATION
Engineers Building, Cleveland, Ohio 44114

NAHB – NATIONAL ASSOCIATION HOME BUILDERS
1625 L Street, N. W., Washington, D. C. 20036

NBBI – NATIONAL BOARD BOILER AND PRESSURE VESSEL INSPECTORS
1004 Brunson Building, Columbus 15, Ohio

NBS – NATIONAL BUREAU OF STANDARDS (Dept. of Commerce)
Superintendent of Documents, Government Printing Office, Washington 25, D. C.

NEMA – NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
155 East 44th Street, New York, N. Y. 10017

NEMI – NATIONAL ELEVATOR MFG. INDUSTRY
101 Park Avenue, New York 17, N. Y.

NFPA – NATIONAL FIRE PROTECTION ASSOCIATION
60 Batterymarch Street, Boston, Massachusetts 02110

N-FPA – NATIONAL FOREST PRODUCTS ASSOCIATION
101 Park Avenue, New York, N. Y. 10017

NMWA – NATIONAL MINERAL WOOL ASSOCIATION
1270 Sixth Avenue, New York 20, N. Y.

NSPE – NATIONAL SOCIETY PROFESSIONAL ENGINEERS
1121 – 15th Street, N. W., Washington, D. C. 20005

PCA – PORTLAND CEMENT ASSOCIATION
33 West Grand Avenue, Chicago 10, Illinois, Research and Development, 5240 Harrison Street, Skokie, Illinois

PCCC – PLUMBING CODE COORDINATING COMMITTEE
U. S. Dept. of Commerce, Housing & Home Finance Agency, Washington 25, D. C.

PHS – PUBLIC HEALTH SERVICE
Federal Security Agency, Washington 25, D. C.

PI – PERLITE INSTITUTE
45 West 45th Street, New York, N. Y. 10036

RSBA – RAIL STEEL BAR ASSOCIATION
38 South Dearborn Street, Chicago, Illinois 60603

SCPI – STRUCTURAL CLAY PRODUCTS INSTITUTE
1520 – 18th Street, N. W., Washington, D. C. 20036

SJI	–	STEEL JOIST INSTITUTE 1346 Connecticut Avenue, N. W., Washington, D. C. 20006
SPR	–	SIMPLIFIED PRACTICE RECOMMENDATIONS (U. S. Dept. of Commerce) Supt. of Documents, Gov't. Printing Office, Washington 25, D. C.
TCA	–	TILE COUNCIL OF AMERICA 800 – 2nd Avenue, New York, N. Y. 10017
ULI	–	UNDERWRITERS' LABORATORIES, INC. 207 East Ohio Street, Chicago, Illinois 60062
USDC	–	UNITED STATES DEPARTMENT OF COMMERCE Construction Division, Washington 25, D. C.
USFS	–	UNITED STATES FOREST SERVICE Madison, Wisconsin 53705
USSI	–	UNITED STATES STANDARDS INSTITUTE (Formerly: AMERICAN STANDARDS ASSOCIATION, INC. 10 East 40th Street, New York, N. Y. 10016
VI	–	VERMICULITE INSTITUTE 208 South LaSalle Street, Chicago, Illinois 60604
WRI	–	WIRE REINFORCEMENT INSTITUTE National Press Building, 5034 Wisconsin Avenue, N. W., Washington, D. C. 20016

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