ANDREW M. CUOMO GOVERNOR ROSSANA ROSADO SECRETARY OF STATE



2020 Fire Code of New York State

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STATE FIRE PREVENTION AND BUILDING CODE COUNCIL

Rossana Rosado Chair – Secretary of State, New York State Department of State

Designee - Matthew W. Tebo, Esq.

Francis J. Nerney, Jr. State Fire Administrator, Office of Fire Prevention and Control

Designee - Paul Martin

RuthAnne Visnauskas Commissioner, Division of Housing and Community Renewal

Designee - Michael Weber Designee - Joseph Palozzola

Roberta Reardon Commissioner, New York State Department of Labor

Designee - Vincent R. Rapacciuolo

Honorable Bill de Blasio Mayor, City of New York

Designee - Keith Wen, NYC Department of Buildings

Honorable Michael R. Sabatino, Jr. Councilmember, City of Yonkers

Claudia K. Braymer, Esq. County Board of Supervisors, Warren County

David A. Seeley Supervisor, Town of Irondequoit
Timothy DeRuyscher, P.E. FSFPE Professional Engineer Representative

Patrick Dolan Trade Union Representative, Steamfitters Union, 638
Shawn Hamlin, R.A. Registered Architect Representative, Hamlin Design Group
Robert Hughes Code Enforcement Representative, Village of Pleasantville

Dominic Marinelli Persons with Disabilities Representative, United Spinal Association

Joseph J. Toomey Fire Service Representative, Albany Fire Department William W. Tuyn Builders Representative, Forbes Capretto Homes

DEPARTMENT OF STATE

Rossana Rosado Secretary of State

Brendan Hughes Executive Deputy Secretary of State

James W. Leary, Esq. Assistant Executive Deputy Secretary of State
Mark P. Pattison Deputy Secretary of State for Local Government

Matthew W. Tebo, Esq. Deputy Secretary of State for Agency Transformation and External Affairs

John R. Addario, P.E. Director of the Division of Building Standards and Codes

Brian Tollisen, P.E. Deputy Director of the Division of Building Standards and Codes

Gerard A. Hathaway, R.A.

Kevin Duerr-Clark, P.E.

Francis "Nick" McAndrew, P.E.

Joseph Hill, R.A.

Assistant Director for Technical Support

Assistant Director for Educational Services

Assistant Director for Code Administration

Jeffrey M. Hinderliter, P.E. Professional Engineer Emma Gonzalez-Laders, R.A., LEED AP Senior Architect

Daniel Carroll Code Compliance Specialist I

Janet Miller Program Aide

Joseph P. Ball, Esq. Supervising Attorney Panagiota K. Hyde, Esq. Senior Attorney

IN MEMORIAM

John H. Flanagan Code Enforcement Representative, Code Council Member (2003–2017)

Honorable Judith Kennedy Mayor, City of Newburgh, Code Council Member (2013–2018)

Brendan Fitzgerald Executive Deputy Secretary of State (2016–2018)

PREFACE

Introduction

The Fire Code of New York State (FCNYS) establishes minimum requirements for fire prevention and fire protection systems using prescriptive and performance-related provisions. It is founded on broad-based principles that make possible the use of new materials and new system designs. This 2020 edition is a derivative work of the 2018 edition of the International Fire Code® (IFC®) published by the International Code Council® (ICC®).

Intention

This code is founded on principles intended to establish provisions consistent with the scope of a fire code that adequately protects public health, safety and welfare; provisions that do not unnecessarily increase construction costs; provisions that do not restrict the use of new materials, products or methods of construction; and provisions that do not give preferential treatment to particular types or classes of materials, products or methods of construction.

Letter Designations in Front of Section Numbers

The bracketed letter designations for the party responsible for portions of this code are as follows:

- [A] = Administrative Code Development Committee;
- [BE] = IBC—Egress Code Development Committee;
- [BF] = IBC—Fire Safety Code Development Committee;
- [BG] = IBC—General Code Development Committee;
- [BS] = IBC—Structural Code Development Committee;
- [EB] = International Existing Building Code Development Committee;
- [FG] = International Fuel Gas Code Development Committee;
- [M] = International Mechanical Code Development Committee; and
- [P] = International Plumbing Code Development Committee.

New York State Code Development

[NY] = New York State Department of State

Marginal Markings

Solid vertical lines in the margins within the body of the code indicate a technical change from the requirements of the 2015 edition of the I-Codes®. Deletion indicators in the form of an arrow (➡) are provided in the margin where an entire section, paragraph, exception or table has been deleted or an item in a list of items or a table has been deleted.

A single asterisk [*] placed in the margin indicates that text or a table has been relocated within the code. A double asterisk [**] placed in the margin indicates that the text or table immediately following it has been relocated there from elsewhere in the code. The following table indicates such relocations in the 2020 edition of the *Fire Code of New York State*.

2015 LOCATION	2020 LOCATION
606.12.1 and 606.12.1.1	605.1.1 and 605.1.2
806.2	807.4.1
904.12.5	906.4
908.3–908.7	916
605.11	1204
604	1203
608	1206.2
3104.5–3104.22	3107
5003.2.2.1, Item 6	5005.1.12

Italicized Terms

Words and terms defined in Chapter 2, Definitions, are italicized where they appear in code text and the Chapter 2 definition applies. Where such words and terms are not italicized, common-use definitions apply. The words and terms selected have code-specific definitions that the user should read carefully to facilitate better understanding of the code.

EFFECTIVE USE OF THE FIRE CODE OF NEW YORK STATE

The Fire Code of New York State (FCNYS) is a code that regulates minimum fire safety requirements for new and existing buildings, facilities, storage and processes. The FCNYS addresses fire prevention, fire protection, life safety and safe storage and use of hazardous materials in new and existing buildings, facilities and processes. The FCNYS provides a total approach of controlling hazards in all buildings and sites, regardless of the hazard being indoors or outdoors.

The FCNYS is a design document. For example, before one constructs a building, the site must be provided with an adequate water supply for fire-fighting operations and a means of building access for emergency responders in the event of a medical emergency, fire or natural or technological disaster. Depending on the building's occupancy and uses, the FCNYS regulates the various hazards that may be housed within the building, including refrigeration systems, application of flammable finishes, fueling of motor vehicles, high-piled combustible storage and the storage and use of hazardous materials. The FCNYS sets forth minimum requirements for these and other hazards and contains requirements for maintaining the life safety of building occupants, the protection of emergency responders, and to limit the damage to a building and its contents as the result of a fire, explosion or unauthorized hazardous material discharge.

As described, the FCNYS has many types of requirements for buildings and facilities. The applicability of these requirements varies. An understanding of the applicability of requirements, is necessary. Generally, the construction and design provisions only apply to new buildings or existing buildings and occupancies as addressed by Chapter 11. The administrative, maintenance and operational requirements are applicable to all buildings and facilities whether new or existing

Arrangement and Format of the 2020 FCNYS

Before applying the requirements of the FCNYS, it is beneficial to understand its arrangement and format. The FCNYS, like other codes published by the International Code Council, is arranged and organized to follow sequential steps that generally occur during a plan review or inspection. This edition of the FCNYS is organized into seven parts as illustrated in the tables below. Each part represents a broad subject matter and includes the chapters that logically fit under the subject matter of each part. It is also foreseeable that additional chapters will need to be added in the future as regulations for new processes or operations are developed. Accordingly, this organization was designed to accommodate such future chapters by providing reserved (unused) chapters in several of the parts. This will allow the subject matter parts to be conveniently and logically expanded without requiring a major renumbering of the FCNYS chapters.

ORGANIZATION OF THE FCNYS			
Parts and Chapters	Subject Matter		
Part I—Chapters 1 and 2	Administrative and definitions		
Part II—Chapters 3 and 4	General safety provisions		
Part III—Chapters 5 through 12	Building and equipment design features		
Part III—Chapters 13 through 19	Reserved for future use		
Part IV—Chapters 20 through 40	Special occupancies and operations		
Part IV—Chapters 41 through 49; 52	Reserved for future use		
Part V—Chapters 50, 51 and 53 through 67	Hazardous materials		
Part V—Chapters 68 through 79	Reserved for future use		
Part VI—Chapter 80	Referenced standards		
Part VII—Appendices A through N	Adoptable and informational appendices		

The FCNYS requirements for fire-resistive construction, interior finish, fire protection systems, means of egress and construction safeguards are directly correlated to the chapters containing parallel requirements in the IBC, as follows:

FCNYS Chapter	Subject
7	Fire and smoke protection features
8	Interior finish, decorative materials and furnishings
9	Fire protection and life safety systems
10	Means of egress
33	Fire safety during construction and demolition

The following is a chapter-by-chapter synopsis of the scope and intent of the provisions of the *Fire Code of New York State*:

PART I-ADMINISTRATIVE

Chapter 1 Scope and Administration. This chapter contains provisions for the application, enforcement and administration of subsequent requirements of the code. In addition to establishing the scope of the code, Chapter 1 identifies which buildings and structures come under its purview.

Chapter 2 Definitions. All terms that are defined in the code are listed alphabetically in Chapter 2. While a defined term may be used in one chapter or another, the meaning provided in Chapter 2 is applicable throughout the code.

Where understanding of a term's definition is especially key to or necessary for understanding of a particular code provision, the term is shown in *italics* wherever it appears in the code. This is true only for those terms that have a meaning that is unique to the code. In other words, the generally understood meaning of a term or phrase might not be sufficient or consistent with the meaning prescribed by the code; therefore, it is essential that the code-defined meaning be known.

Guidance regarding tense, gender and plurality of defined terms as well as guidance regarding terms not defined in this code are also provided.

PART II-GENERAL SAFETY PROVISIONS

Chapter 3 General Requirements. The open burning, ignition source, vacant building, miscellaneous storage, roof gardens and landscaped roofs, outdoor pallet storage and hazards to fire fighters requirements and precautions, among other general regulations contained in this chapter, are intended to improve premises safety for everyone, including construction workers, tenants, operations and maintenance personnel, and emergency response personnel. As with other chapters of the *Fire Code of New York State*, Section 302 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 4 Emergency Planning and Preparedness. This chapter addresses the human contribution to life safety in buildings when a fire or other emergency occurs. The requirements for continuous training and scheduled fire, evacuation and lockdown drills can be as important as the required periodic inspections and maintenance of built-in fire protection features. The level of preparation by the occupants also improves the emergency responders' abilities during an emergency. The *Building Code of New York State* (BCNYS) focuses on built-in fire protection features, such as automatic sprinkler systems, fire-resistance-rated construction and properly designed egress systems, whereas this chapter fully addresses the human element. As with other chapters of the *Fire Code of New York State*, Section 402 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

PART III-BUILDING AND EQUIPMENT DESIGN FEATURES

Chapter 5 Fire Service Features. The requirements of this chapter apply to all buildings and occupancies and pertain to access roads; access to building openings and roofs; premises identification; key boxes; fire protection water supplies; fire command centers; fire department access to equipment and emergency responder radio coverage in buildings. As with other chapters of the *Fire Code of New York State*, Section 502 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 6 Building Services and Systems. This chapter focuses on building systems and services as they relate to potential safety hazards and when and how they should be installed. This chapter brings together all building system- and service-related issues for convenience and provides a more systematic view of buildings. The following building services and systems are addressed: fuel-fired appliances (Section 603), electrical equipment, wiring and hazards (Section 604), mechanical refrigeration (Section 605), elevator operation, maintenance and fire service keys (Section 606), commercial kitchen hoods (Section 607), commercial kitchen cooking oil storage (Section 608) and hyperbaric facilities (Section 609). As with other chapters of the *Fire Code of New York State*, Section 602 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents. Note that building systems focused on energy systems and components are addressed by Chapter 12.

Chapter 7 Fire and Smoke Protection Features. The maintenance of assemblies required to be fire-resistance rated is a key component in a passive fire protection philosophy. Chapter 7 sets forth requirements to maintain required fire-resistance ratings of building elements and limit fire spread. Section 701 addresses the basics of what construction elements such as fire barriers and smoke barriers need to be maintained as well as defining the owner's responsibility. The rest of the chapter, Sections 703 through 706, deals with various fire and smoke protection features that must also be maintained. These features include penetrations, joint protection, door and window openings and duct and air transfer opening protection. As with other chapters of the *Fire Code of New York State*, Section 702 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 8 Interior Finish, Decorative Materials and Furnishings. The overall purpose of Chapter 8 is to regulate interior finishes, decorative materials and furnishings in new and existing buildings so that they do not significantly add to or create fire hazards within buildings. The provisions tend to focus on occupancies with specific risk characteristics, such as vulnerability of occupants, density of occupants, lack of familiarity with the building and societal expectations of importance. This chapter is consistent with Chapter 8 of the *Building Code of New York State*, which regulates the interior finishes of new buildings. As with other chapters of the *Fire Code of New York State*, Section 802 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 9 Fire Protection and Life Safety Systems. Chapter 9 prescribes the minimum requirements for active systems of fire protection equipment to perform the functions of detecting a fire, alerting the occupants or fire department of a fire emergency, controlling smoke and controlling or extinguishing the fire. There are provisions relating to gas detection and associated alarms. Mass notification systems are also addressed. Generally, the requirements are based on the occupancy, the height and the area of the building, because these are the factors that most affect fire-fighting capabilities and the relative hazard of a specific building or portion thereof. This chapter parallels and is substantially duplicated in Chapter 9 of the *Building Code of New York State*; however, this chapter also contains periodic testing criteria that are not contained in the IBC. In addition, the special fire protection system requirements based on use and occupancy found in Chapter 4 of the BCNYS are duplicated in Chapter 9 of the FCNYS as a user convenience. As with other chapters of the *Fire Code of New York State*, Section 902 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 10 Means of Egress. The general criteria set forth in Chapter 10 regulating the design of the means of egress are established as the primary method for protection of people in buildings by allowing timely relocation or evacuation of building occupants. Both prescriptive and performance language is utilized in this chapter to provide for a basic approach in the determination of a safe exiting system for all occupancies. It addresses all portions of the egress system (i.e., exit access, exits and exit discharge) and includes design requirements as well as provisions regulating

individual components. The requirements detail the size, arrangement, number and protection of means of egress components. Functional and operational characteristics also are specified for the components that will permit their safe use without special knowledge or effort. The means of egress protection requirements work in coordination with other sections of the code, such as protection of vertical openings (see Chapter 7), interior finish (see Chapter 8), fire suppression and detection systems (see Chapter 9) and numerous others, all having an impact on life safety. Sections 1002 through 1030 duplicate text from Chapter 10 of the BCNYS; however, the FCNYS contains an additional Section 1031 on maintenance of the means of egress system in existing buildings.

Chapter 11 Construction Requirements for Existing Buildings. Chapter 11 applies to existing buildings, as described in the scope provision, and intends to provide a minimum degree of fire and life safety to persons occupying existing buildings by providing for alterations to such buildings that do not comply with the minimum requirements of the *Building Code of New York State*. As with other chapters of the *Fire Code of New York State*, Section 1102 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 12 Energy Systems. Chapter 12 was added to address the current energy systems found in the FCNYS. It introduces a wide range of systems that generate and store energy in, on and adjacent to buildings and facilities. The expansion of such energy systems is related to meeting today's energy, environmental and economic challenges. Ensuring appropriate criteria to address the safety of such systems in building and fire codes is an important part of protecting the public at large, building occupants and emergency responders. Previously, requirements for energy systems, such as standby power systems, PV systems and stationary battery systems, were scattered about in various locations in Chapter 6, which addresses building services and systems. However, with the addition of fuel cells and capacitor energy storage systems to the FCNYS, a chapter dedicated to such related issues needed to be created. This chapter provides an appropriate location for the addition of future energy systems.

Chapters 13 through 19. Reserved for future use.

PART IV-SPECIAL OCCUPANCIES AND OPERATIONS

Chapter 20 Aviation Facilities. Chapter 20 specifies minimum requirements for the fire-safe operation of airports, heliports and helistops. The principal nonflight operational hazards associated with aviation involve fuel, facilities and operations. Therefore, safe use of flammable and combustible liquids during fueling and maintenance operations is emphasized. Availability of portable Class B:C-rated fire extinguishers for prompt control or suppression of incipient fires is required. As with other chapters of the *Fire Code of New York State*, Section 2002 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 21 Dry Cleaning. The provisions of Chapter 21 are intended to reduce hazards associated with use of flammable and combustible dry cleaning solvents. These materials, like all volatile organic chemicals, generate significant quantities of static electricity and are thus readily ignitable. Many flammable and nonflammable dry cleaning solvents also possess health hazards when involved in a fire. As with other chapters of the *Fire Code of New York State*, Section 2102 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 22 Combustible Dust-producing Operations. The requirements of Chapter 22 seek to reduce the likelihood of dust explosions by managing the hazards of ignitable suspensions of combustible dusts associated with a variety of operations including woodworking, mining, food processing, agricultural commodity storage and handling and pharmaceutical manufacturing, among others. Ignition source control and good housekeeping practices in occupancies containing dust producing operations are emphasized. As with other chapters of the *Fire Code of New York State*, Section 2202 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 23 Motor Fuel-dispensing Facilities and Repair Garages. This chapter provides provisions that regulate the storage and dispensing of both liquid and gaseous motor fuels at public and private automotive, marine and aircraft motor fuel-dispensing facilities, fleet vehicle motor fuel-dispensing facilities and repair garages. As with other chapters of the *Fire Code of New York State*, Section 2302 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 24 Flammable Finishes. Chapter 24 requirements govern operations where flammable or combustible finishes are applied by spraying, dipping, powder coating or flow-coating processes. As with all operations involving flammable or combustible liquids and combustible dusts or vapors, controlling ignition sources and methods of reducing or controlling flammable vapors or combustible dusts at or near these operations are emphasized. As with other chapters of the *Fire Code of New York State*, Section 2402 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 25 Fruit and Crop Ripening. Chapter 25 provides guidance that is intended to reduce the likelihood of explosions resulting from improper use or handling of ethylene gas used for cropripening and coloring processes. This is accomplished by regulating ethylene gas generation; storage and distribution systems and controlling ignition sources. Design and construction of facilities for this use are regulated by the *Building Code of New York State* to reduce the impact of potential accidents on people and buildings.

Chapter 26 Fumigation and Insecticidal Fogging. This chapter regulates fumigation and insecticidal fogging operations which use toxic pesticide chemicals to kill insects, rodents and other vermin. Fumigants and insecticidal fogging agents pose little hazard if properly applied; however, the inherent toxicity of all these agents and the potential flammability of some makes special precautions necessary when they are used. Requirements of this chapter are intended to protect both the public and fire fighters from hazards associated with these products. As with other chapters of the *Fire Code of New York State*, Section 2602 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 27 Semiconductor Fabrication Facilities. The requirements of this chapter are intended to control hazards associated with the manufacture of electrical circuit boards or microchips, commonly called semiconductors. Though the finished product possesses no unusual hazards, materials commonly associated with semiconductor manufacturing are often quite hazardous and include flammable liquids, pyrophoric and flammable gases, toxic substances and corrosives. The requirements of this chapter are concerned with both life safety and property protection. However, the fire code official should recognize that the risk of extraordinary property damages is far more common than the risk of personal injuries from fire. As with other chapters of the *Fire Code of New York State*, Section 2702 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 28 Lumber Yards and Agro-industrial, Solid Biomass and Woodworking Facilities. Provisions of this chapter are intended to prevent fires and explosions, facilitate fire control and reduce exposures to and from facilities storing, selling or processing wood and forest products, including sawdust, wood chips, shavings, bark mulch, shorts, finished planks, sheets, posts, poles, timber and raw logs and the hazard they represent once ignited. Also included are solid biomass feedstock and raw products associated with agro-industrial facilities, the outdoor storage of pallets and manufacturing and recycling facilities. This chapter requires active and passive fire protection features to reduce on- and off-site exposures, limit fire size and development and facilitate fire fighting by employees and the fire service. As with other chapters of the *Fire Code of New York State*, Section 2802 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 29 Manufacture of Organic Coatings. This chapter regulates materials and processes associated with the manufacture of paints as well as bituminous, asphaltic and other diverse compounds formulated to protect buildings, machines and objects from the effects of weather, corrosion and hostile environmental exposures. Paint for decorative, architectural and industrial uses comprises the bulk of organic coating production. Painting and processes related to the manufacture of nonflammable and noncombustible or water-based products are exempt from the provisions of this chapter. The application of organic coatings is covered by Chapter 24. Elimination of ignition sources, maintenance of fire protection equipment and isolation or segregation of hazard-ous operations are emphasized. As with other chapters of the *Fire Code of New York State*, Section 2902 contains a term that is defined in Chapter 2 and is applicable to the chapter contents.

Chapter 30 Industrial Ovens. This chapter addresses the fuel supply, ventilation, emergency shutdown equipment, fire protection and the operation and maintenance of industrial ovens, which are sometimes referred to as industrial heat enclosures or industrial furnaces. Compliance with this chapter is intended to reduce the likelihood of fires involving industrial ovens which are usually the result of the fuel in use or volatile vapors given off by the materials being heated or to manage the impact if a fire should occur. As with other chapters of the *Fire Code of New York State*, Section 3002 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 31 Tents, Temporary Special Event Structures and Other Membrane Structures. The requirements in this chapter are intended to protect temporary as well as permanent tents and air-supported and other membrane structures and temporary special event structures from fire and similar hazards by regulating structure location and access, anchorage, egress, heat-producing equipment, hazardous materials and operations, combustible vegetation, ignition sources, waste accumulation and requiring regular inspections and certifying continued compliance with fire safety regulations. This chapter also addresses outdoor assembly events, which are not limited to those events where tents or other membrane structures are used but are regulated due to the number of people, density of those people and hazards associated with large outdoor events related to egress, fire hazards from cooking and other related concerns. As with other chapters of the *Fire Code of New York State*, Section 3102 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 32 High-piled Combustible Storage. This chapter provides guidance for reasonable protection of life from hazards associated with the storage of combustible materials in closely packed piles or on pallets, in racks or on shelves where the top of storage is greater than 12 feet in height. It provides requirements for identifying various classes of commodities; general fire and life safety features including storage arrangements, smoke and heat venting, and fire department access; and housekeeping and maintenance requirements. The chapter attempts to define the potential fire severity and, in turn, determine fire and life safety protection measures needed to control, and in some cases suppress, a potential fire. This chapter does not cover miscellaneous combustible materials storage regulated in Section 315. As with other chapters of the *Fire Code of New York State*, Section 3202 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 33 Fire Safety during Construction and Demolition. Chapter 33 outlines general fire safety precautions for all structures and all occupancies during construction and demolition operations. In general, these requirements seek to maintain required levels of fire protection, limit fire spread, establish the appropriate operation of equipment and promote prompt response to fire emergencies. Features regulated include fire protection systems, fire fighter access to the site and building, means of egress, hazardous materials storage and use and temporary heating equipment and other ignition sources. This chapter correlates with Chapter 33 of the BCNYS.

Chapter 34 Tire Rebuilding and Tire Storage. The requirements of Chapter 34 are intended to prevent or control fires and explosions associated with the remanufacture and storage of tires and tire byproducts. Additionally, the requirements are intended to minimize the impact of indoor and outdoor tire storage fires by regulating pile volume and location, segregating the various operations, providing for fire department access and a water supply and controlling ignition sources.

Chapter 35 Welding and Other Hot Work. This chapter covers requirements for safety in welding and other types of hot work by reducing the potential for fire ignitions that usually result in large losses. Several different types of hot work would fall under the requirements found in Chapter 35, including both gas and electric arc methods and any open-torch operations. Many of the activities of this chapter focus on the actions of the occupants. As with other chapters of the *Fire Code of New York State*, Section 3502 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 36 Marinas. Chapter 36 addresses the fire protection and prevention requirements for marinas. It was developed in response to the complications encountered by a number of fire departments responsible for the protection of marinas as well as fire loss history in marinas that lacked fire protection. Compliance with this chapter intends to establish safe practices in marina areas, provide an identification method for mooring spaces in the marina, and provide fire fighters with safe operational areas and fire protection methods to extend hose lines in a safe manner. As with other chapters of the *Fire Code of New York State*, Section 3602 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 37 Combustible Fibers. Chapter 37 establishes the requirements for storage and handling of combustible fibers, including animal, vegetable and synthetic fibers, whether woven into textiles, baled, packaged or loose. Operations involving combustible fibers are typically associated with salvage, paper milling, recycling, cloth manufacturing, carpet and textile mills and agricultural operations, among others. The primary hazard associated with these operations is the abundance of materials and their ready ignitability. As with other chapters of the *Fire Code of New York State*, Section 3702 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 38 Higher Education Laboratories. Chapter 38 is a new chapter addressing the unique needs of laboratories in higher education academic institutions. The advancement of technologies, science, medicine and our knowledge of the world often relies on having vibrant and successful academic institutions. These academic institutions often have chemistry, biology, medical, engineering and other laboratories where hazardous materials are used. The chapter addresses both new and existing buildings and new and existing laboratories. Applying the general hazardous material provisions has been difficult because of the ways these laboratories operate. Often there are many small laboratories that use very small quantities of hazardous materials that individually do not exceed the MAQs. However, in aggregate the quantities will exceed the MAQs and could result in the need for a Group H occupancy classification. It is believed that the lower density of hazardous materials often mitigates the overall risk. Therefore, this lower density along with a package of additional requirements (including the concept of laboratory suites with fire-resistance-rated separations) renders a Group H occupancy classification not necessary. This chapter also addresses the use of certain materials typically prohibited for existing buildings where located in buildings not protected throughout with a sprinkler system. These allowances come with certain safety measures such as the use of storage cabinets and fume hoods.

Chapter 39 Processing and Extraction Facilities. Chapter 39 is a new chapter focused on the processing and extraction of oils and fats from various plants. This process includes the extraction by use of solvent, desolventizing of the raw material and production of the miscella, and distillation of the solvent from the miscella and solvent recovery. The processes used are not necessarily typical hazardous material processes and often the systems and equipment associated with such processes are not listed. Due to the typical lack of listings, the systems and equipment need specific approvals for each installation. This chapter provides the tools to appropriately enforce the FCNYS to meet the unique needs of industry while providing the appropriate level of safety. This chapter has provisions for a technical report prepared by a registered design professional. This chapter also requires site inspections to make sure equipment and systems are installed as designed and approved.

Chapter 40 Sugarhouse Alternative Activity Provisions. This chapter contains the general requirements for when alternative activities, (such as tours, product sampling, or pancake breakfasts) are conducted in sugarhouses. Section 4002 contains a list of terms that are defined and are applicable to the chapter contents.

Chapters 41 through 49. Reserved for future use.

PART V-HAZARDOUS MATERIALS

Chapter 50 Hazardous Materials—General Provisions. This chapter contains the general requirements for all hazardous chemicals in all occupancies. Hazardous chemicals are defined as those that pose an unreasonable risk to the health and safety of operating or emergency personnel, the public and the environment if not properly controlled during handling, storage, manufacture, processing, packaging, use, disposal or transportation. The general provisions of this chapter are intended to be companion provisions with the specific requirements of Chapters 51 through 67 regarding a given hazardous material. As with other chapters of the *Fire Code of New York State*, Section 5002 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 51 Aerosols. Chapter 51 addresses the prevention, control and extinguishment of fires and explosions in facilities where retail aerosol products are displayed or stored. It is concerned with both life safety and property protection from a fire; however, historically, aerosol product fires have caused property loss more frequently than loss of life. Requirements for storing aerosol products are dependent on the level of aerosol product, level of sprinkler protection, type of storage condition and quantity of aerosol products. As with other chapters of the *Fire Code of New York State*, Section 5102 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 52. Reserved for future use.

Chapter 53 Compressed Gases. This chapter regulates the storage, use and handling of all flammable and nonflammable compressed gases, such as those that are used in medical facilities, air separation plants, industrial plants, agricultural equipment facilities and similar occupancies. Standards for the design, construction and marking of compressed gas cylinders and pressure vessels are referenced. Compressed gases used in welding and cutting, cryogenic liquids and liquefied petroleum gases are also regulated under Chapters 35, 55 and 61, respectively. Compressed gases that are classified as hazardous materials are also regulated in Chapter 50, which includes general requirements. As with other chapters of the *Fire Code of New York State*, Section 5302 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 54 Corrosive Materials. Chapter 54 addresses the hazards of corrosive materials that have a destructive effect on living tissues. Although corrosive gases exist, most corrosive materials are solid or liquid and classified as either acids or bases (alkalis). These materials may pose a wide range of hazards other than corrosivity, such as combustibility, reactivity or oxidizing hazards, and must conform to the requirements of this code with respect to all known hazards. The focus of this chapter is on materials whose primary hazard is corrosivity; that is, the ability to destroy or irreparably damage living tissue on contact. As with other chapters of the *Fire Code of New York State*, Section 5402 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 55 Cryogenic Fluids. This chapter regulates the hazards associated with the storage, use and handling of cryogenic fluids through regulation of such things as pressure relief mechanisms and proper container storage. These hazards are in addition to the code requirements that address the other hazards of cryogenic fluids such as flammability and toxicity. These other characteristics are dealt with in Chapter 50 and other chapters, such as Chapter 58 dealing with flammable gases. Cryogens are hazardous because they are held at extremely low temperatures and high pressures. Many cryogenic fluids, however, are actually inert gases and would not be regulated elsewhere in this code. Cryogens are used for many applications but specifically have had widespread use in the biomedical field and in space programs. As with other chapters of the *Fire Code of New York State*, Section 5502 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 56 Explosives and Fireworks. This chapter prescribes minimum requirements for the safe manufacture, storage, handling and use of explosives, ammunition and blasting agents for commercial and industrial occupancies. These provisions are intended to protect the general public, emergency responders and individuals who handle explosives. Chapter 56 also regulates the manufacturing, retail sale, display and wholesale distribution of fireworks, establishing the requirements for obtaining approval to manufacture, store, sell, discharge or conduct a public display, and references national standards for regulations governing manufacture, storage and public displays. As with other chapters of the *Fire Code of New York State*, Section 5602 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 57 Flammable and Combustible Liquids. The requirements of this chapter are intended to reduce the likelihood of fires involving the storage, handling, use or transportation of flammable and combustible liquids. Adherence to these practices may also limit damage in the event of an accidental fire involving these materials. These liquids are used for fuel, lubricants, cleaners, solvents, medicine and even drinking. The danger associated with flammable and combustible liquids is that the vapors from these liquids, when combined with air in their flammable range, will burn or explode at temperatures near normal living and working environment. The protection provided by this code is to prevent the flammable and combustible liquids from being ignited. As with other chapters of the *Fire Code of New York State*, Section 5702 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 58 Flammable Gases and Flammable Cryogenic Fluids. Chapter 58 sets requirements for the storage and use of flammable gases. For safety purposes, there is a limit on the quantities of flammable gas allowed per control area. Exceeding these limitations increases the possibility of damage to both property and individuals. The principal hazard posed by flammable gas is its ready ignitability, or even explosivity, when mixed with air in the proper proportions. Consequently, occupancies storing or handling large quantities of flammable gas are classified as Group H-2 (high hazard) by the *Building Code of New York State*. As with other chapters of the *Fire Code of New York State*, Section 5802 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 59 Flammable Solids. This chapter addresses general requirements for storage and handling of flammable solids, especially magnesium; however, it is important to note that several other solid materials, primarily metals including, but not limited to, titanium, zirconium, hafnium, calcium, zinc, sodium, lithium, potassium, sodium/potassium alloys, uranium, thorium and plutonium, can be explosion hazards under the right conditions. Some of these metals are almost exclusively laboratory materials but because of where they are used, fire service personnel must be trained to handle emergency situations. Because uranium, thorium and plutonium are also radioactive materials, they present still more specialized problems for fire service personnel. As with other chapters of the *Fire Code of New York State*, Section 5902 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 60 Highly Toxic and Toxic Materials. The main purpose of this chapter is to protect occupants, emergency responders and those in the immediate area of the building and facility from short-term, acute hazards associated with a release or general exposure to toxic and highly toxic materials. This chapter deals with all three states of toxic and highly toxic materials: solids, liquids and gases. This code does not address long-term exposure effects of these materials, which are addressed by agencies such as the Environmental Protection Agency (EPA) and Occupational Safety and Health Administration (OSHA). As with other chapters of the *Fire Code of New York State*, Section 6002 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 61 Liquefied Petroleum Gases. Chapter 61 establishes requirements for the safe handling, storing and use of LP-gas to reduce the possibility of damage to containers, accidental releases of LP-gas and exposure of flammable concentrations of LP-gas to ignition sources. LP-gas (notably propane) is well known as a camping fuel for cooking, lighting, heating and refrigerating and also remains a popular standby fuel supply for auxiliary generators as well as being widely used as an alternative motor vehicle fuel. Its characteristic as a clean-burning fuel has resulted in the addition of propane dispensers to service stations throughout the country. As with other chapters of the *Fire Code of New York State*, Section 6102 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 62 Organic Peroxides. This chapter addresses the hazards associated with the storage, handling and use of organic peroxides and intends to manage the fire and oxidation hazards of organic peroxides by preventing their uncontrolled release. These chemicals possess the characteristics of flammable or combustible liquids and are also strong oxidizers. This unusual combination of properties requires special storage and handling precautions to prevent uncontrolled release, contamination, hazardous chemical reactions, fires or explosions. The requirements of this chapter pertain to industrial applications in which significant quantities of organic peroxides are stored or used; however, smaller quantities of organic peroxides still pose a significant hazard and, therefore, must be stored and used in accordance with the applicable provisions of this chapter and Chapter 50. As with other chapters of the *Fire Code of New York State*, Section 6202 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 63 Oxidizers, Oxidizing Gases and Oxidizing Cryogenic Fluids. Chapter 63 addresses the hazards associated with solid, liquid, gaseous and cryogenic fluid oxidizing materials, including oxygen in home use, and establishes criteria for their safe storage and protection in indoor and outdoor storage facilities, minimizing the potential for uncontrolled releases and contact with fuel sources. Although oxidizers themselves do not burn, they pose unique fire hazards because of their ability to support combustion by breaking down and giving off oxygen. As with other chapters of the *Fire Code of New York State*, Section 6302 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 64 Pyrophoric Materials. This chapter regulates the hazards associated with pyrophoric materials, which are capable of spontaneously igniting in the air at or below a temperature of 130°F (54°C). Many pyrophoric materials also pose severe flammability or reactivity hazards. This chapter addresses only the hazards associated with pyrophoric materials. Materials that pose multiple hazards must conform to the requirements of the code with respect to all hazards. As with other chapters of the *Fire Code of New York State*, Section 6402 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 65 Pyroxylin (Cellulose Nitrate) Plastics. This chapter addresses the significant hazards associated with pyroxylin (cellulose nitrate) plastics, which are the most dangerous and unstable of all plastic compounds. The chemically bound oxygen in their structure permits them to burn vigorously in the absence of atmospheric oxygen at a rate 15 times greater than comparable common combustibles. Strict compliance with the provisions of this chapter, along with proper housekeeping and storage arrangements, helps to reduce the hazards associated with pyroxylin (cellulose nitrate) plastics in a fire or other emergencies.

Chapter 66 Unstable (Reactive) Materials. This chapter addresses the hazards of unstable (reactive) liquid and solid materials as well as unstable (reactive) compressed gases. In addition to their unstable reactivity, these materials may pose other hazards, such as toxicity, corrosivity, explosivity, flammability or oxidizing potential. This chapter, however, intends to address those materials whose primary hazard is unstable reactivity. Materials that pose multiple hazards must conform to the requirements of the code with respect to all hazards. Strict compliance with the provisions of this chapter, along with proper housekeeping and storage arrangements, help reduce the exposure hazards associated with unstable (reactive) materials in a fire or other emergency. As with other chapters of the *Fire Code of New York State*, Section 6602 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapter 67 Water-reactive Solids and Liquids. This chapter addresses the hazards associated with water-reactive materials that are solid or liquid at normal temperatures and pressures. In addition to their water reactivity, these materials may pose a wide range of other hazards, such as toxicity, flammability, corrosiveness or oxidizing potential. This chapter addresses only those materials whose primary hazard is water reactivity. Materials that pose multiple hazards must conform to the requirements of the code with respect to all hazards. Strict compliance with the requirements of this chapter, along with proper housekeeping and storage arrangements, helps to reduce the exposure hazards associated with water-reactive materials in a fire or other emergency. As with other chapters of the *Fire Code of New York State*, Section 6702 contains a list of terms that are defined in Chapter 2 and are applicable to the chapter contents.

Chapters 68 through 79. Reserved for future use.

PART VI-REFERENCED STANDARDS

Chapter 80 Referenced Standards. This code contains several references to standards that are used to regulate materials and methods of construction. Chapter 80 contains a comprehensive list of all standards that are referenced in this code. The standards are part of the code to the extent of the reference to the standard. Compliance with the referenced standard is necessary for compliance with this code. By providing specifically adopted standards, the construction and installation requirements necessary for compliance with this code can be readily determined. The basis for code compliance is, therefore, established and available on an equal basis to the building official, contractor, designer and owner.

Chapter 80 is organized in a manner that makes it easy to locate specific standards. It lists all of the referenced standards alphabetically by acronym of the promulgating agency of the standard. Each agency's standards are then listed in either alphabetical or numeric order based upon the standard identification. The list also contains the title of the standard; the edition (date) of the standard referenced; any addenda; and the section or sections of this code that reference the standard.

PART VII-APPENDICES

Appendix A Reserved.

Appendix B Fire-flow Requirements for Buildings. This appendix is informative and not part of the code. This appendix provides a tool for the use of jurisdictions in establishing a policy for determining fire-flow requirements in accordance with Section 507.3. The determination of required fire flow is not an exact science, but having some level of information provides a consistent way of choosing the appropriate fire flow for buildings throughout a jurisdiction. The primary tool used in this appendix is a table that presents fire flow based on construction type and building area based on the correlation of the Insurance Services Office (ISO) method and the construction types used in the *Building Code of New York State*. Note that the provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

Appendix C Fire Hydrant Locations and Distribution. This appendix is informative and not part of the code. This appendix focuses on the location and spacing of fire hydrants, which is important to the success of fire-fighting operations. The difficulty with determining the spacing of fire hydrants is that every situation is unique and has unique challenges. Finding one methodology for determining hydrant spacing is difficult. This particular appendix gives one methodology based on the required fire flow that fire departments can work with to set a policy for hydrant distribution around new buildings and facilities in conjunction with Section 507.5. Note that the provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

Appendix D Fire Apparatus Access Roads. This appendix contains more detailed elements for use with the basic access requirements found in Section 503, which gives some minimum criteria, such as a maximum length of 150 feet and a minimum width of 20 feet, but in many cases does not state specific criteria. This appendix, like Appendices B and C, is a tool for jurisdictions looking for guidance in establishing access requirements and includes criteria for multiple-family residential developments, large one- and two-family subdivisions, specific examples for various types of turnarounds for fire department apparatus and parking regulatory signage.

Appendix E Hazard Categories. This appendix is informative and not part of the code. This appendix contains guidance for designers, engineers, architects, building officials, plans reviewers and inspectors in the classifying of hazardous materials so that proposed designs can be evaluated intelligently and accurately. The descriptive materials and explanations of hazardous materials and how to report and evaluate them on a Material Safety Data Sheet (MSDS) are intended to be instructional as well as informative.

Appendix F Hazard Ranking. This appendix is informative and not part of the code. The information in this appendix is intended to be a companion to the specific requirements of Chapters 51 through 67, which regulate the storage, handling and use of all hazardous materials classified as either physical or health hazards. These materials pose diverse hazards, including instability, reactivity, flammability, oxidizing potential or toxicity; therefore, identifying them by hazard ranking is essential. This appendix lists the various hazardous materials categories that are defined in this code, along with the NFPA 704 hazard ranking for each. Note that the provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

Appendix G Cryogenic Fluids—Weight and Volume Equivalents. This appendix is informative and not part of the code. This appendix gives the fire code official and design professional a ready reference tool for the conversion of the liquid weight and volume of cryogenic fluid to their corresponding volume of gas and vice versa and is a companion to the provisions of Chapter 55 of this code.

Appendix H Hazardous Materials Management Plan (HMMP) and Hazardous Materials Inventory Statement (HMIS) Instructions. This appendix is informative and not part of the code. This appendix is intended to assist businesses in establishing a Hazardous Materials Management Plan (HMMP) and Hazardous Materials Inventory Statement (HMIS) based on the classification and quantities of materials that would be found on-site, in storage or in use. The sample forms and available Safety Data Sheets (SDS) provide the basis for the evaluations. It is also a companion to FCNYS Sections 407.5 and 407.6, which provide the requirement that the HMIS and HMMP be submitted when required by the fire code official. Note that the provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

Appendix I Fire Protection Systems—Noncompliant Conditions. This appendix is informative and not part of the code. The purpose of this appendix, which was developed by the ICC Hazard Abatement in Existing Buildings Committee, is to provide the fire code official with a list of conditions that are readily identifiable by the inspector during the course of an inspection utilizing the *International Fire Code*. The specific conditions identified in this appendix are primarily derived from applicable NFPA standards and pose a hazard to the proper operation of the respective systems. While these do not represent all of the conditions that pose a hazard or otherwise may impair the proper operation of fire protection systems, their identification in this adoptable appendix will provide a more direct path for enforcement by the fire code official. Note that the provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

Appendix J Building Information Sign. This appendix is informative and not part of the code. This appendix provides design, installation and maintenance requirements for a Building Information Sign (BIS), a fire service tool to be utilized in the crucial, initial response of fire fighters to a structure fire. The BIS placard is designed to be utilized within the initial response time frame of an incident to assist fire fighters in their tactical size-up of a situation as soon as possible after arrival on the scene of a fire emergency. The BIS design is in the shape of a fire service Maltese Cross and includes five spaces (the four wings plus the centerpiece of the cross symbol) in which information is placed about the tactical considerations of construction type and hourly rating, fire protection systems, occupancy type, content hazards and special features that could affect tactical decisions and operations. Note that the provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

Appendix K Reserved.

Appendix L Requirements for Fire Fighter Air Replenishment Systems. This appendix is informative and not part of the code. This appendix provides for the design, installation and maintenance of permanently installed fire fighter breathing air systems in buildings designated by the jurisdiction. Breathing air is critical for fire-fighting operations. Historically, fire departments have

supplied air bottles by means of a "bottle brigade," whereby fire fighters manually transport air bottles up stairways, which is an extraordinarily fire fighter-intensive process and takes fire fighters away from their primary mission of rescue and fire fighting. Technology now exists to address the issue using in-building air supply systems. Fire fighter breathing air systems were introduced in the late 1980s and are now required in a number of communities throughout the United States. The system has been called a "standpipe for air" and consists of stainless steel, high-pressure piping that is supplied by on-site air storage or fire department air supply units. Air filling stations are then strategically located throughout the building allowing fire fighters to refill breathing air cylinders inside the fire building, negating the required "bottle brigade," and making more fire fighters available for search, rescue and fire suppression operations. Note that the provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

Appendix M Reserved.

Appendix N Indoor Trade Shows and Exhibitions. This appendix is informative and not part of the code. This appendix was created to address the hazards that are associated with larger, more complex trade shows and exhibitions. Although many of these requirements are already included in various locations in this code, some of the more important items, such as requirements for covered booths and multiple-story booths, are not. The intent is to have the requirements covering these events in a single location. The provisions are essentially a series of pointers to other locations within this code. This assists those organizing exhibitions and individual exhibitors unfamiliar with the fire code. The appendix can be adopted by jurisdictions looking for specific regulations on this subject or used as a guide where it is not. Note that the provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

Part	I—Administrative1	312	Vehicle Impact Protection	53
		313	Fueled Equipment	53
	APTER 1 SCOPE AND ADMINISTRATION1	314	Indoor Displays	53
Secti	on	315	General Storage	54
101	Title, Scope and Purpose	316	Hazards to Fire Fighters	55
102	Applicability1	317	Rooftop Gardens and Landscaped Roofs	56
103	Administration and Enforcement	318	Laundry Carts	57
104	Materials, Equipment, and Methods	319	Mobile Food Preparation Vehicles	57
	of Construction	320	Live Fire Training Facilities	58
105	Building Permits, Construction Inspections, Stop Work Orders, Certificates of			
	Occupancy, and Operating Permits	CHA	PTER 4 EMERGENCY PLANNING	- 0
106	Submittal Documents 6	C4:	AND PREPAREDNESS	37
107	Maintenance of Equipment and Systems	Secti		5 0
108	Unsafe Structures and Equipment	401	General	
109	Emergency Measures	402	Definitions	
110	Service Utilities	403	Emergency Preparedness Requirements	
111	Temporary Structures	404	Fire Safety, Evacuation and Lockdown Plans	
112	Fire Department Notification	405	Emergency Evacuation Drills	
113	Inspection of Solid Fuel-Burning Heating	406	Employee Training and Response Procedures Hazard Communication	
	Appliances, Chimneys and Flues 8	407	Hazard Communication	08
СНА	APTER 2 DEFINITIONS	Part	III—Building and Equipment Design Features	69
Secti		CILA	PTER 5 FIRE SERVICE FEATURES	4 0
201	General	Secti		OS
202	General Definitions		General	4 0
202	General Bernindons	501 502		
Part	II—General Safety Provisions	503	Definitions	
		504	Fire Apparatus Access Roads	
CHA	APTER 3 GENERAL REQUIREMENTS47		Access to Building Openings and Roofs	
Secti	on	505 506		
301	General	507	Key Boxes	
302	Definitions	508	Fire Protection Water Supplies Fire Command Center	
303	Asphalt Kettles			12
304	Combustible Waste Material	509	Fire Protection and Utility Equipment Identification and Access	73
305	Ignition Sources	510	Emergency Responder Radio Coverage	
306	Motion Picture Projection Rooms and Film 48	511	Emergency Vehicle Access	
307	Open Burning, Recreational Fires			
	and Portable Outdoor Fireplaces	CHA	PTER 6 BUILDING SERVICES	
308	Open Flames		AND SYSTEMS	77
309	Powered Industrial Trucks and Equipment 51	Secti	on	
310	Smoking	601	General	
311	Vacant Premises	602	Definitions	77

Standpipe Systems 112	603	Fuel-fired Appliances77	904	Alternative Automatic
Portable Fire Extinguishers 115 and Fire Service Keys 84 907 Fire Alarm and Detection Systems 117 and Fire Service Keys 84 907 Fire Alarm and Detection Systems 117	604	Electrical Equipment, Wiring and Hazards 80		Fire-extinguishing Systems 109
Time	605	Mechanical Refrigeration81	905	Standpipe Systems
507 Commercial Kitchen Hoods. 85 908 Emergency Alarm Systems 129	606	Elevator Operation, Maintenance	906	Portable Fire Extinguishers
608 Commercial Kitchen Cooking Oil Storage 86 909 Smoke Control Systems 129 609 Hyperbaric Facilities 86 910 Smoke and Heat Removal 136 CHAPTER 7 FIRE AND SMOKE PROTECTION FEATURES 87 912 Fire Department Connections 138 CENITOR 912 Fire Protection Based on Special Detailed 139 701 General 87 913 Fire Pumps 139 702 Delinitions 87 915 Carbon Monoxide Detection 143 703 Penetrations 87 916 Gas Detection Systems 147 704 Joints and Voids 87 917 Mass Notification Systems 148 705 Door and Window Openings 88 88 149 706 Duct and Air Transfer Openings 88 88 80 707 Concealed Spaces 88 88 80 No Politicins 149 CHAPTER 8 INTERIOR FINISH, DECORATIVE MATERIALS AND FURNISHINGS 89 10		and Fire Service Keys	907	Fire Alarm and Detection Systems 117
Section	607	Commercial Kitchen Hoods	908	Emergency Alarm Systems
Section	608	Commercial Kitchen Cooking Oil Storage86	909	Smoke Control Systems
CHAPTER 7 FIRE AND SMOKE PROTECTION FEATURES 912 Fire Department Connections 138 Proportion Features 139 Proportion Features 139 Proportion Fire Protection Based on Special Detailed Requirements of Use and Occupancy 140 Fire Protection Based on Special Detailed Requirements of Use and Occupancy 140 Fire Protection Based on Special Detailed Requirements of Use and Occupancy 140 Fire Protection Based on Special Detailed Requirements of Use and Occupancy 140 Fire Protection Based on Special Detailed Requirements of Use and Occupancy 140 Fire Protection Based on Special Detailed Requirements of Use and Occupancy 140 Fire Protection Based on Special Detailed Requirements of Use and Occupancy 140 Fire Protection Based on Special Detailed Requirements of Use and Occupancy 140 Fire Protection Based on Special Detailed Requirements of Use and Occupancy 140 Fire Protection Based on Special Detailed Requirements of Use and Occupancy 140 Fire Protection Based on Special Detailed Requirements of Use and Occupant Use and Occupant Use and Occupant Use and Occupant Use And Special Detailed Requirements of Use and Occupant Use And Special Detailed Requirements of Use and Occupant Use And Special Detailed Requirements of Use and Occupant Use And Special Detailed Requirements of Use and Occupant Use And Special Detailed Requirements of Use and Occupant Use And And Special Detailed Requirements of Use and Occupant Use And And Special Detailed Requirements of Use and Occupant Use And Special Detailed Requirements of Use and Occupant Use And Special Detailed Requirements of Use and Occupant Use And Special Detailed Interior Floor Finish Interior Floor Finish Interior Floor Finish Interior Floor Floor Finish Interior Floor Floor Floor Floor Floor F	609	Hyperbaric Facilities	910	Smoke and Heat Removal
Section			911	Explosion Control
Section	CHA		912	Fire Department Connections
The control of the		PROTECTION FEATURES 87	913	Fire Pumps
Total Definitions Section S	Secti	on	914	Fire Protection Based on Special Detailed
703 Penetrations 87 916 Gas Detection Systems 147	701	General		
148 705 Door and Window Openings 88 88 706 Duct and Air Transfer Openings 88 88 88 88 89 707 Concealed Spaces 88 88 89 1001 Administration 149	702	Definitions	915	Carbon Monoxide Detection
Top Door and Window Openings 88 88 88 88 88 88 88	703	Penetrations	916	Gas Detection Systems
706 Duct and Air Transfer Openings 88 CHAPTER 10 MEANS OF EGRESS. 149 707 Concealed Spaces. 88 Section 1001 Administration 149 CHAPTER 8 INTERIOR FINISH, DECORATIVE MATERIALS AND FURNISHINGS. 1002 Definitions 149 801 General 89 1004 Occupant Load 150 802 Definitions 89 1006 Mumbers of Egress Sizing 152 802 Definitions 89 1006 Numbers of Egress Sizing 153 803 Interior Wall and Ceiling Finish in Existing Buildings 89 1006 Means of Egress Illumination 156 804 Interior Wall and Ceiling Trim and Interior Floor Finish in New and Existing Buildings 1010 Doors, Gates and Turnstiles 168 805 Upholstered Furniture and Mattresses in New and Existing Buildings 91 1011 Stairways 168 806 Natural Decorative Vegetation in New and Existing Buildings 95 1015 Guards 173 807 Decorative Materials and Artificial Decorative Materials in New and E	704	Joints and Voids	917	Mass Notification Systems
No. Duct aid Air Trainster Openings 88 707 Concealed Spaces 88 1001 Administration 149	705	Door and Window Openings		
1001 Administration 149	706	Duct and Air Transfer Openings		
CHAPTER 8	707	Concealed Spaces		
DECORATIVE MATERIALS 1003 General Means of Egress 149			1001	
Section	CHA		1002	Definitions
Section			1003	_
100	a .:		1004	Occupant Load
802 Definitions 89 1007 Exit and Exit Access Doorway Configuration 156 803 Interior Wall and Ceiling Finish in Existing Buildings 1008 Means of Egress Illumination 156 804 Interior Wall and Ceiling Trim and Interior Floor Finish in New and Existing Buildings 1010 Doors, Gates and Turnstiles 160 805 Upholstered Furniture and Mattresses in New and Existing Buildings 91 1011 Stairways 172 806 Natural Decorative Vegetation in New and Existing Buildings 95 1015 Guards 175 807 Decorative Materials and Artificial Decorative Vegetation in New and Existing Buildings 95 1015 Guards 175 808 Furnishings Other than Upholstered Furniture and Mattresses or Decorative Materials in New and Existing Buildings 95 1016 Exit Access Travel Distance 177 808 Furniture and Mattresses or Decorative Materials in New and Existing Buildings 97 1019 Exit Access Stairways and Ramps 179 CHAPTER 9 FIRE PROTECTION AND LIFE SAFETY SYSTEMS 199 1022 Exits 181 Section 101 <td></td> <td></td> <td>1005</td> <td>Means of Egress Sizing</td>			1005	Means of Egress Sizing
803 Interior Wall and Ceiling Finish in Existing Buildings 1008 Means of Egress Illumination 156 804 Interior Wall and Ceiling Trim and Interior Floor Finish in New and Existing Buildings 1010 Doors, Gates and Turnstiles 160 805 Upholstered Furniture and Mattresses in New and Existing Buildings 91 1011 Stairways 172 806 Natural Decorative Vegetation in New and Existing Buildings 92 1013 Exit Signs 173 807 Decorative Materials and Artificial Decorative Vegetation in New and Existing Buildings 95 1015 Guards 177 808 Furnishings Other than Upholstered Furniture and Mattresses or Decorative Materials in New and Existing Buildings 95 1017 Exit Access Travel Distance 177 808 Furniture and Mattresses or Decorative Materials in New and Existing Buildings 97 1019 Exit Access Stairways and Ramps 179 CHAPTER 9 FIRE PROTECTION AND LIFE SAFETY SYSTEMS 99 1022 Exits 22 Exit Section 10 General 99 1024 Exit Passageways 181 90			1006	Numbers of Exits and Exit Access Doorways 153
in Existing Buildings	802		1007	Exit and Exit Access Doorway Configuration 156
Interior Wall and Ceiling Trim and	803		1008	Means of Egress Illumination 156
Interior Floor Finish in New and Existing Buildings			1009	Accessible Means of Egress 157
Existing Buildings	804		1010	Doors, Gates and Turnstiles 160
805 Upholstered Furniture and Mattresses in New and Existing Buildings. 1012 Ramps. 172 806 Natural Decorative Vegetation in New and Existing Buildings. 1014 Handrails. 174 807 Decorative Materials and Artificial Decorative Vegetation in New and Existing Buildings. 1016 Exit Access. 177 808 Furnishings Other than Upholstered Furniture and Mattresses or Decorative Materials in New and Existing Buildings. 1018 Aisles. 178 1020 Corridors. 179 1020 Corridors. 179 1021 Egress Balconies. 181 1022 Exits 181 103 Interior Exit Stairways and Ramps. 183 104 Exit Passageways. 183 105 Definitions. 101 1025 Luminous Egress Path Markings. 184			1011	Stairways
New and Existing Buildings. 92 1013 Exit Signs 173 806 Natural Decorative Vegetation in New and Existing Buildings 1014 Handrails. 174 807 Decorative Materials and Artificial Decorative Vegetation in New and Existing Buildings 1016 Exit Access 177 808 Furnishings Other than Upholstered Furniture and Mattresses or Decorative Materials in New and Existing Buildings. 1018 Aisles 178 CHAPTER 9 FIRE PROTECTION AND LIFE SAFETY SYSTEMS. 1021 Egress Balconies 181 Section 1023 Interior Exit Stairways and Ramps 181 901 General 99 1024 Exit Passageways 183 902 Definitions 101 1025 Luminous Egress Path Markings 184	805		1012	Ramps
Existing Buildings			1013	Exit Signs
B07 Decorative Materials and Artificial Decorative Vegetation in New and Existing Buildings . 95 808 Furnishings Other than Upholstered Furniture and Mattresses or Decorative Materials in New and Existing Buildings . 97 CHAPTER 9 FIRE PROTECTION AND LIFE SAFETY SYSTEMS . 99 1020 Exit Access Travel Distance . 177 1018 Aisles . 1018 Aisles . 178 1020 Corridors . 179 1020 Corridors . 179 1021 Egress Balconies . 181 LIFE SAFETY SYSTEMS . 99 1022 Exits . 181 Section . 1023 Interior Exit Stairways and Ramps . 181 901 General . 99 1024 Exit Passageways . 183 902 Definitions . 101 1025 Luminous Egress Path Markings . 184	806	Natural Decorative Vegetation in New and	1014	Handrails
Vegetation in New and Existing Buildings		Existing Buildings95	1015	Guards
808 Furnishings Other than Upholstered	807		1016	Exit Access
Furniture and Mattresses or Decorative Materials in New and Existing Buildings. 97 1019 Exit Access Stairways and Ramps 179 CHAPTER 9 FIRE PROTECTION AND LIFE SAFETY SYSTEMS. 1021 Egress Balconies 181 Section 1023 Interior Exit Stairways and Ramps 181 901 General 99 1024 Exit Passageways 183 902 Definitions 101 1025 Luminous Egress Path Markings 184		Vegetation in New and Existing Buildings 95	1017	Exit Access Travel Distance
Materials in New and Existing Buildings. .97 1019 Exit Access Stairways and Ramps .179 1020 Corridors .179 CHAPTER 9 FIRE PROTECTION AND 1021 Egress Balconies .181 LIFE SAFETY SYSTEMS .99 1022 Exits .181 Section 1023 Interior Exit Stairways and Ramps .181 901 General .99 1024 Exit Passageways .183 902 Definitions .101 1025 Luminous Egress Path Markings .184	808	<u> </u>	1018	Aisles
1020 Corridors 179			1019	Exit Access Stairways and Ramps 179
LIFE SAFETY SYSTEMS. 99 1022 Exits 181 Section 1023 Interior Exit Stairways and Ramps 181 901 General 99 1024 Exit Passageways 183 902 Definitions 101 1025 Luminous Egress Path Markings 184		Materials in New and Existing Buildings 97	1020	
LIFE SAFETY SYSTEMS. 99 1022 Exits 181 Section 1023 Interior Exit Stairways and Ramps 181 901 General 99 1024 Exit Passageways 183 902 Definitions 101 1025 Luminous Egress Path Markings 184	СНА	PTER 9 FIRE PROTECTION AND	1021	
Section 1023 Interior Exit Stairways and Ramps 181 901 General 99 1024 Exit Passageways 183 902 Definitions 101 1025 Luminous Egress Path Markings 184			1022	_
901 General	Secti	on	1023	
902 Definitions	901	General		
	902	Definitions		
ZOU TIMOTHAM SPITIMED STOWNS CONTROLLED TO THE TOTAL STATE OF THE CONTROLLED TO THE STATE OF THE CONTROLLED TO THE CONTROLLED THE CONTROLLED TO THE CONTROLLED TO THE CONTROLLED TO THE CONTROLL	903	Automatic Sprinkler Systems	1026	

1027	Exterior Exit Stairways and Ramps 186	2103	Classifications
1028	Exit Discharge	2104	General Requirements
1029	Assembly	2105	Operating Requirements
1030	Emergency Escape and Rescue	2106	Spotting and Pretreating
1031	Maintenance of the Means of Egress 196	2107	Dry Cleaning Systems
		2108	Fire Protection
CHA	PTER 11 CONSTRUCTION		
	REQUIREMENTS FOR EXISTING BUILDINGS199	СНАР	TER 22 COMBUSTIBLE DUST- PRODUCING OPERATIONS 249
Section		Section	
1101	General		General
1102	Definitions		Definition
1103	Fire Safety Requirements for	2202	Precautions
	Existing Buildings	2203	Additional Requirements
1104	Means of Egress for Existing Buildings 205	2204	Additional requirements
1105	Construction Requirements for	СНАР	TER 23 MOTOR FUEL-DISPENSING
1106	Existing Group I-2		FACILITIES AND REPAIR
1106	Requirements for Outdoor Operations 214		GARAGES251
СНА	PTER 12 ENERGY SYSTEMS215	Section	
Section			General
1201	General	2302	Definitions
1201	Definitions		Location of Dispensing Devices
1202	Emergency and Standby Power Systems	2304	Dispensing Operations
1203	Solar Photovoltaic Power Systems	2305	Operational Requirements
1204	Stationary Fuel Cell Power Systems	2306	Flammable and Combustible Liquid Motor
1206	Electrical Energy Storage Systems	2207	Fuel-dispensing Facilities
1200	Electrical Energy Storage Systems	2307	Fuel-dispensing Facilities
CHA	PTERS 13 through 19 RESERVED235	2308	Compressed Natural Gas Motor
			Fuel-dispensing Facilities
Part 1	V—Special Occupancies and Operations 237	2309	Hydrogen Motor Fuel-dispensing and Generation Facilities
CHA	PTER 20 AVIATION FACILITIES237	2310	Marine Motor Fuel-dispensing Facilities 262
Section	on	2311	Repair Garages
2001	General		
2002	Definitions	CHAF	TER 24 FLAMMABLE FINISHES 267
2003	General Precautions	Section	n
2004	Aircraft Maintenance	2401	General
2005	Portable Fire Extinguishers	2402	Definitions
2006	Aircraft Fueling	2403	Protection of Operations
2007	Helistops and Heliports	2404	Spray Finishing
		2405	Dipping Operations
CHA	PTER 21 DRY CLEANING	2406	Powder Coating
Section		2407	Electrostatic Apparatus
2101	General	2408	Organic Peroxides and
2102	Definitions		Dual-component Coatings 276

2409	Indoor Manufacturing of Reinforced Plastics	2807	Storage of Wood Chips and Hogged Material Associated with Timber and Lumber
2410	Floor Surfacing and Finishing Operations 277	2000	Production Facilities
CHA! Section	PTER 25 FRUIT AND CROP RIPENING 279 on	2808	Storage and Processing of Wood Chips, Hogged Material, Fines, Compost, Solid Biomass Feedstock and Raw Product Associated with Yard Waste,
2501	General		Agro-industrial and Recycling Facilities 294
2502	Definitions	2809	Exterior Storage of Finished
2503	Ethylene Gas		Lumber and Solid Biofuel Products 295
2504	Sources of Ignition	2810	Outdoor Storage of Pallets at Pallet Manufacturing
2505	Combustible Waste		and Recycling Facilities 295
2506	Ethylene Generators	СНАІ	PTER 29 MANUFACTURE OF
2507	Warning Signs	011111	ORGANIC COATINGS 297
		Sectio	on
CHA	PTER 26 FUMIGATION AND	2901	General
	INSECTICIDAL FOGGING281	2902	Definition
Section		2903	General Precautions
2601	General	2904	Electrical Equipment and Protection 297
2602	Definitions	2905	Process Structures
2603	Fire Safety Requirements	2906	Process Mills and Kettles 298
		2007	Process Piping
		2907	
CHA	PTER 27 SEMICONDUCTOR	2907	Raw Materials in Process Areas 299
CHA	PTER 27 SEMICONDUCTOR FABRICATION FACILITIES 283		
CHA! Section	FABRICATION FACILITIES 283	2908 2909	Raw Materials in Process Areas
	FABRICATION FACILITIES 283	2908 2909 CHAI	Raw Materials in Process Areas299Raw Materials and Finished Products299PTER 30 INDUSTRIAL OVENS301
Section	FABRICATION FACILITIES 283	2908 2909 CHAI Sectio	Raw Materials in Process Areas
Section 2701	FABRICATION FACILITIES 283 on General	2908 2909 CHAI Sectio 3001	Raw Materials in Process Areas
Section 2701 2702	FABRICATION FACILITIES 283 on General	2908 2909 CHAI Sectio 3001 3002	Raw Materials in Process Areas
Section 2701 2702 2703	FABRICATION FACILITIES 283 on 283 Definitions 283 General Safety Provisions 283 Storage 287	2908 2909 CHAI Sectio 3001 3002 3003	Raw Materials in Process Areas 299 Raw Materials and Finished Products 299 PTER 30 INDUSTRIAL OVENS 301 on 301 Definitions 301 Location 301
Section 2701 2702 2703 2704	FABRICATION FACILITIES 283 on	2908 2909 CHAI Sectio 3001 3002	Raw Materials in Process Areas 299 Raw Materials and Finished Products 299 PTER 30 INDUSTRIAL OVENS 301 on 301 Definitions 301 Location 301 Fuel Piping 301
Section 2701 2702 2703 2704 2705	FABRICATION FACILITIES 283 on 283 Definitions 283 General Safety Provisions 283 Storage 287	2908 2909 CHAI Sectio 3001 3002 3003 3004 3005	Raw Materials in Process Areas 299 Raw Materials and Finished Products 299 PTER 30 INDUSTRIAL OVENS 301 on 301 General 301 Definitions 301 Location 301 Fuel Piping 301 Interlocks 301
Section 2701 2702 2703 2704 2705	FABRICATION FACILITIES 283 on 283 General 283 Definitions 283 General Safety Provisions 283 Storage 287 Use and Handling 288	2908 2909 CHAI Sectio 3001 3002 3003 3004 3005 3006	Raw Materials in Process Areas 299 Raw Materials and Finished Products 299 PTER 30 INDUSTRIAL OVENS 301 on 301 Definitions 301 Location 301 Fuel Piping 301
Section 2701 2702 2703 2704 2705	FABRICATION FACILITIES 283 on 283 General 283 Definitions 283 General Safety Provisions 283 Storage 287 Use and Handling 288 PTER 28 LUMBER YARDS AND AGRO-INDUSTRIAL, SOLID BIOMASS AND	2908 2909 CHAI Sectio 3001 3002 3003 3004 3005 3006	Raw Materials in Process Areas 299 Raw Materials and Finished Products 299 PTER 30 INDUSTRIAL OVENS 301 on 301 General 301 Definitions 301 Location 301 Fuel Piping 301 Interlocks 301 Fire Protection 301
Section 2701 2702 2703 2704 2705 CHA	FABRICATION FACILITIES 283 on 283 General 283 General Safety Provisions 283 Storage 287 Use and Handling 288 PTER 28 LUMBER YARDS AND AGRO-INDUSTRIAL, SOLID BIOMASS AND WOODWORKING FACILITIES 293	2908 2909 CHAI Sectio 3001 3002 3003 3004 3005 3006 3007	Raw Materials in Process Areas 299 Raw Materials and Finished Products 299 PTER 30 INDUSTRIAL OVENS 301 on 301 General 301 Definitions 301 Location 301 Fuel Piping 301 Interlocks 301 Fire Protection 301 Operation and Maintenance 301 PTER 31 TENTS, TEMPORARY SPECIAL
Section 2701 2702 2703 2704 2705	FABRICATION FACILITIES 283 on 283 General 283 General Safety Provisions 283 Storage 287 Use and Handling 288 PTER 28 LUMBER YARDS AND AGRO-INDUSTRIAL, SOLID BIOMASS AND WOODWORKING FACILITIES 293	2908 2909 CHAI Sectio 3001 3002 3003 3004 3005 3006 3007	Raw Materials in Process Areas 299 Raw Materials and Finished Products 299 PTER 30 INDUSTRIAL OVENS 301 on 301 General 301 Definitions 301 Location 301 Fuel Piping 301 Interlocks 301 Fire Protection 301 Operation and Maintenance 301 PTER 31 TENTS, TEMPORARY SPECIAL EVENT STRUCTURES AND OTHER
Section 2701 2702 2703 2704 2705 CHA	FABRICATION FACILITIES 283 on 283 General 283 General Safety Provisions 283 Storage 287 Use and Handling 288 PTER 28 LUMBER YARDS AND AGRO-INDUSTRIAL, SOLID BIOMASS AND WOODWORKING FACILITIES 293	2908 2909 CHAI Sectio 3001 3002 3003 3004 3005 3006 3007 CHAI	Raw Materials in Process Areas 299 Raw Materials and Finished Products 299 PTER 30 INDUSTRIAL OVENS 301 on 301 General 301 Definitions 301 Location 301 Fuel Piping 301 Interlocks 301 Fire Protection 301 Operation and Maintenance 301 PTER 31 TENTS, TEMPORARY SPECIAL EVENT STRUCTURES AND OTHER MEMBRANE STRUCTURES 303
Section 2701 2702 2703 2704 2705 CHA	FABRICATION FACILITIES 283 on 283 General 283 Definitions 283 General Safety Provisions 283 Storage 287 Use and Handling 288 PTER 28 LUMBER YARDS AND AGRO-INDUSTRIAL, SOLID BIOMASS AND WOODWORKING FACILITIES On 293	2908 2909 CHAI Sectio 3001 3002 3003 3004 3005 3006 3007 CHAI	Raw Materials in Process Areas 299 Raw Materials and Finished Products 299 PTER 30 INDUSTRIAL OVENS 301 on 301 General 301 Definitions 301 Location 301 Fuel Piping 301 Interlocks 301 Fire Protection 301 Operation and Maintenance 301 PTER 31 TENTS, TEMPORARY SPECIAL EVENT STRUCTURES AND OTHER MEMBRANE STRUCTURES 303 on 303
Section 2701 2702 2703 2704 2705 CHAN	FABRICATION FACILITIES 283 on 283 General 283 General Safety Provisions 283 Storage 287 Use and Handling 288 PTER 28 LUMBER YARDS AND AGRO-INDUSTRIAL, SOLID BIOMASS AND WOODWORKING FACILITIES On 293 On 293	2908 2909 CHAI Sectio 3001 3002 3003 3004 3005 3006 3007 CHAI	Raw Materials in Process Areas 299 Raw Materials and Finished Products 299 PTER 30 INDUSTRIAL OVENS 301 on 301 General 301 Definitions 301 Location 301 Fuel Piping 301 Interlocks 301 Fire Protection 301 Operation and Maintenance 301 PTER 31 TENTS, TEMPORARY SPECIAL EVENT STRUCTURES AND OTHER MEMBRANE STRUCTURES 303 on 303 General 303
Section 2701 2702 2703 2704 2705 CHAD	FABRICATION FACILITIES 283 on 283 General 283 Definitions 283 General Safety Provisions 283 Storage 287 Use and Handling 288 PTER 28 LUMBER YARDS AND AGRO-INDUSTRIAL, SOLID BIOMASS AND WOODWORKING FACILITIES 293 on 293 Definitions 293	2908 2909 CHAI Sectio 3001 3002 3003 3004 3005 3006 3007 CHAI	Raw Materials in Process Areas 299 Raw Materials and Finished Products 299 PTER 30 INDUSTRIAL OVENS 301 on 301 General 301 Definitions 301 Location 301 Fuel Piping 301 Interlocks 301 Fire Protection 301 Operation and Maintenance 301 PTER 31 TENTS, TEMPORARY SPECIAL EVENT STRUCTURES AND OTHER MEMBRANE STRUCTURES 303 on 303 General 303 Definitions 303
Section 2701 2702 2703 2704 2705 CHAN Section 2801 2802 2803	FABRICATION FACILITIES 283 on 283 General 283 Definitions 283 General Safety Provisions 283 Storage 287 Use and Handling 288 PTER 28 LUMBER YARDS AND AGRO-INDUSTRIAL, SOLID BIOMASS AND WOODWORKING FACILITIES On 293 Definitions 293 General 293 General Requirements 293 Fire Protection 293	2908 2909 CHAI Sectio 3001 3002 3003 3004 3005 3006 3007 CHAI Sectio 3101 3102 3103	Raw Materials in Process Areas 299 Raw Materials and Finished Products 299 PTER 30 INDUSTRIAL OVENS 301 on 301 General 301 Definitions 301 Location 301 Fuel Piping 301 Interlocks 301 Fire Protection 301 Operation and Maintenance 301 PTER 31 TENTS, TEMPORARY SPECIAL EVENT STRUCTURES AND OTHER MEMBRANE STRUCTURES 303 on 303 General 303 Definitions 303 Temporary Tents and Membrane Structures 303
Section 2701 2702 2703 2704 2705 CHAN Section 2801 2802 2803 2804	FABRICATION FACILITIES 283 on 283 General 283 General Safety Provisions 283 Storage 287 Use and Handling 288 PTER 28 LUMBER YARDS AND AGRO-INDUSTRIAL, SOLID BIOMASS AND WOODWORKING FACILITIES On 293 Definitions 293 General 293 General Requirements 293	2908 2909 CHAI Sectio 3001 3002 3003 3004 3005 3006 3007 CHAI	Raw Materials in Process Areas 299 Raw Materials and Finished Products 299 PTER 30 INDUSTRIAL OVENS 301 on 301 General 301 Definitions 301 Location 301 Fuel Piping 301 Interlocks 301 Fire Protection 301 Operation and Maintenance 301 PTER 31 TENTS, TEMPORARY SPECIAL EVENT STRUCTURES AND OTHER MEMBRANE STRUCTURES 303 on 303 General 303 Definitions 303

3106	Outdoor Assembly Events	3406	Fire Department Access	334
3107	Operational Requirements308	3407	Fencing	334
~		3408	Fire Protection	334
CHA	PTER 32 HIGH-PILED COMBUSTIBLE STORAGE311	3409	Indoor Storage Arrangement	334
Castio			-	
Sectio		CHA	PTER 35 WELDING AND	
3201 3202	General 311 Definitions 311		OTHER HOT WORK	335
3202	Commodity Classification	Section	on	
3203	Designation of High-piled Storage Areas 323	3501	General	335
3205	Housekeeping and Maintenance	3502	Definitions	335
3206	General Fire Protection and	3503	General Requirements	335
	Life Safety Features	3504	Fire Safety Requirements	335
3207	Solid-piled and Shelf Storage	3505	Gas Welding and Cutting	
3208	Rack Storage	3506	Electric Arc Hot Work	
3209	Automated Storage	3507	Calcium Carbide Systems	
3210	Specialty Storage	3508	Acetylene Generators	
CHAI	PTER 33 FIRE SAFETY DURING	3509	Piping Manifolds and Hose Systems for	551
	CONSTRUCTION AND	3309	Fuel Gases and Oxygen	337
	DEMOLITION	3510	Hot Work on Flammable and	
Sectio	on	2210	Combustible Liquid Storage Tanks	338
3301	General			
3302	Definitions	CHA	PTER 36 MARINAS	339
3303	Temporary Heating Equipment329	Section	on	
3304	Precautions Against Fire	3601	Scope	339
3305	Flammable and Combustible Liquids 330	3602	Definitions	339
3306	Flammable Gases	3603	General Precautions	339
3307	Explosive Materials	3604	Fire Protection Equipment	339
3308	Owner's Responsibility for Fire Protection 330	3605	Marine Motor Fuel-dispensing Facilities	340
3309	Fire Reporting			
3310	Access for Fire Fighting	CHA	PTER 37 COMBUSTIBLE FIBERS	341
3311	Means of Egress	Section	on	
3312	Water Supply for Fire Protection	3701	General	341
3313	Standpipes	3702	Definitions	341
3314	Automatic Sprinkler System	3703	General Precautions	341
3315	Portable Fire Extinguishers	3704	Loose Fiber Storage	341
3316	Motorized Construction Equipment	3705	Baled Storage	342
3317	Safeguarding Roofing Operations			
3317	Suregulating Rooming Operations	CHA	PTER 38 HIGHER EDUCATION	
CHA	PTER 34 TIRE REBUILDING		LABORATORIES	343
	AND TIRE STORAGE333	Section	on	
Sectio	on	3801	General	343
3401	General	3802	Definitions	343
3402	Definitions	3803	General Safety Provisions	343
3403	Tire Rebuilding	3804	Laboratory Suite Construction	
3404	Precautions Against Fire	3805	Nonsprinklered Laboratories	
3405	Outdoor Storage	3806	Existing Sprinklered Laboratories	

CHAPTER 39 PROCESSING AND EXTRACTION	CHAPTER 53 COMPRESSED GASES 391
FACILITITES347	Section
Section 247	5301 General
3901 General	5302 Definitions
3902 Definitions	5303 General Requirements
3903 Processing and Extraction	5304 Storage of Compressed Gases
3904 Systems and Equipment	5305 Use and Handling of Compressed Gases 395
3905 Safety Systems	5306 Medical Gases
CHAPTER 40 SUGARHOUSE ALTERNATIVE	5307 Compressed Gases Not Otherwise Regulated 396
ACTIVITY PROVISIONS349	
Section	CHAPTER 54 CORROSIVE MATERIALS 399
4001 General	Section
4002 Definitions	5401 General
4003 General Fire Protection and	5402 Definition
Life Safety Features	5403 General Requirements
4004 Toilet Facilities	5404 Storage
4005 Accessibility	5405 Use
CHAPTERS 41 through 49 RESERVED355	CHAPTER 55 CRYOGENIC FLUIDS 401
CHAILING IT MICOUGH 15 RESERVED	Section
Part V—Hazardous Materials357	5501 General
	5502 Definitions
CHAPTER 50 HAZARDOUS MATERIALS—	5503 General Requirements
GENERAL PROVISIONS 357 Section	5504 Storage
5001 General	5505 Use and Handling
5002 Definitions	
5003 General Requirements	CHAPTER 56 EXPLOSIVES
5004 Storage	AND FIREWORKS
5005 Use, Dispensing and Handling	Section 407
5005 Csc, Dispensing and Handling	5601 General
CHAPTER 51 AEROSOLS383	5602 Definitions
Section	5603 Record Keeping and Reporting
5101 General	5604 Explosive Materials Storage and Handling 411
5102 Definitions	5605 Manufacture, Assembly and Testing of Explosives, Explosive Materials and
5103 Classification of Aerosol Products	Fireworks
5104 Inside Storage of Aerosol Products 383	5606 Small Arms Ammunition and Small
5105 Outside Storage	Arms Ammunition Components
5106 Retail Display	5607 Blasting
5107 Manufacturing Facilities	5608 Fireworks Display
	5609 Temporary Storage of Consumer Fireworks 423
CHAPTER 52 RESERVED	5610 Sparkling Devices

CHA	PTER 57 FLAMMABLE AND	6103 Installation of Equipment	485
	COMBUSTIBLE LIQUIDS 427	6104 Location of LP-gas Containers	486
Section	on	6105 Prohibited Use of LP-gas	486
5701	General	6106 Dispensing and Overfilling	486
5702	Definitions	6107 Safety Precautions and Devices	486
5703	General Requirements	6108 Fire Protection	486
5704	Storage	6109 Storage of Portable LP-gas Containers	
5705	Dispensing, Use, Mixing and Handling 452	Awaiting Use or Resale	487
5706	Special Operations	6110 LP-gas Containers Not in Service	489
5707	Reserved	6111 Parking and Garaging of LP-gas Tank Vehicles	489
CHA	PTER 58 FLAMMABLE GASES		
	AND FLAMMABLE	CHAPTER 62 ORGANIC PEROXIDES	491
G .:	CRYOGENIC FLUIDS469	Section	
Section		6201 General	491
5801	General	6202 Definition	491
5802	Definitions	6203 General Requirements	491
5803	General Requirements	6204 Storage	491
5804	Storage	6205 Use	493
5805	Use		
5806	Flammable Cryogenic Fluids	CHAPTER 63 OXIDIZERS, OXIDIZING	
5807	Metal Hydride Storage Systems 471	GASES AND OXIDIZING	405
5808	Hydrogen Fuel Gas Rooms	CRYOGENIC FLUIDS Section	495
CILA	PTER 59 FLAMMABLE SOLIDS475	6301 General	405
		6302 Definitions.	
Section 5901	on General	6303 General Requirements.	
5902	Definitions	6304 Storage	
5903	General Requirements	6305 Use	
5904	Storage	6306 Liquid Oxygen in Home Health Care	
5905	Use	2000 Elquid Oxygen in Home Heatin Care	
5906	Magnesium	CHAPTER 64 PYROPHORIC MATERIAL	S 499
CITA		Section	
CHA	PTER 60 HIGHLY TOXIC AND TOXIC MATERIALS477	6401 General	499
Section		6402 Definition	
6001	General	6403 General Requirements	
6002	Definitions	6404 Storage	
6003	Highly Toxic and Toxic Solids and Liquids 477	6405 Use	
6004	Highly Toxic and Toxic Compressed Gases 478	0.00	
6004	Ozone Gas Generators	CHAPTER 65 PYROXYLIN (CELLULOSI NITRATE) PLASTICS	
СНА	PTER 61 LIQUEFIED	Section	
	PETROLEUM GASES485	6501 General	501
Section	on	6502 Definitions	501
6101	General	6503 General Requirements	501
6102	Definitions	6504 Storage and Handling	501

CHAPTER 66 UNSTABLE (REACTIVE) MATERIALS 503	APPENDIX D FIRE APPARATUS ACCESS ROADS
Section	Section
6601 General	D101 General
6602 Definition	D102 Required Access
6603 General Requirements503	D103 Minimum Specifications
6604 Storage	D104 Commercial and Industrial Developments 534
6605 Use	D105 Aerial Fire Apparatus Access Roads
301	D106 Multiple-family Residential Developments 534
CHAPTER 67 WATER-REACTIVE	D107 One- or Two-family Residential Developments 535 D108 Referenced Standards 535
SOLIDS AND LIQUIDS505	D106 Referenced Standards
Section	APPENDIX E HAZARD CATEGORIES 537
6701 General	Section
6702 Definition	E101 General
6703 General Requirements	E102 Hazard Categories
6704 Storage	E103 Evaluation of Hazards
6705 Use	E104 Referenced Standards
	E104 Referenced Standards
CHAPTERS 68 through 79 RESERVED507	APPENDIX F HAZARD RANKING543
	Section
Part VI—Referenced Standards	F101 General
	F102 Referenced Standard
CHAPTER 80 REFERENCED STANDARDS 509	1 102 Referenced Standard
	APPENDIX G CRYOGENIC FLUIDS—
Part VII—Appendices	WEIGHT AND VOLUME
APPENDIX A RESERVED525	EQUIVALENTS545
APPENDIA A RESERVED525	Section
APPENDIX B FIRE-FLOW REQUIREMENTS	G101 General
FOR BUILDINGS	
Section	APPENDIX H HAZARDOUS MATERIALS
B101 General	MANAGEMENT PLAN (HMMP)
B102 Definitions	AND HAZARDOUS MATERIALS INVENTORY STATEMENT (HMIS)
B103 Modifications	INSTRUCTIONS
B104 Fire-flow Calculation Area	Section
B105 Fire-flow Requirements for Buildings 527	H101 HMMP
B106 Referenced Standards	H102 HMIS
APPENDIX C FIRE HYDRANT LOCATIONS	H103 Emergency Plan
AND DISTRIBUTION531	H104 Referenced Standard548
Section	APPENDIX I FIRE PROTECTION
C101 General	SYSTEMS—NONCOMPLIANT
C102 Number of Fire Hydrants531	CONDITIONS555
C103 Fire Hydrant Spacing531	Section
C104 Consideration of Existing Fire Hydrants532	I101 Noncompliant Conditions
C105 Referenced Standard	I102 Referenced Standards

APPE	NDIX J	BUILDING INFORMATION SIGN	557
Sectio	n		
J101	General		557
J102	Reference	ed Standards	559
APPE	NDIX K	RESERVED	561
APPE	NDIX L	REQUIREMENTS FOR FIRE FIGHTER AIR REPLENISHMENT SYSTEMS .	563
Sectio	n		
L101	General		563
L102	Definition	ns	563
L103	Permits.		563
L104	Design ar	nd Installation	563
L105	Acceptan	ce Tests	565
L106	Inspectio	n, Testing and Maintenance	565
L107	Reference	ed Standards	565
APPE	NDIX M	RESERVED	567
APPE	NDIX N	INDOOR TRADE SHOWS AND EXHIBITIONS	569
Sectio			
N101	General		569
N102	Definition	ns	569
N103	Public Sa	fety for Events	569
N104	Interior F	inish and Decorative Materials	570
N105	Multiple-	level Booths	570
N106	Covered	Booths	570
N107	Display a	nd Storage of Hazardous	
		bustible Materials	
N108		Egress	
N109	Reference	ed Standards	571
INIDE	v		573