



**TABLE OF CONTENTS**

508 Mixed Use and Occupancy . . . . . 139  
 509 Incidental Uses . . . . . 141  
 510 Special Provisions . . . . . 142

**CHAPTER 6 TYPES OF CONSTRUCTION . . . . 145**

Section  
 601 General . . . . . 145  
 602 Construction Classification . . . . . 145  
 603 Combustible Material in Types I and II  
 Construction . . . . . 147

**CHAPTER 7 FIRE AND SMOKE PROTECTION  
 FEATURES . . . . . 151**

Section  
 701 General . . . . . 151  
 702 Definitions . . . . . 151  
 703 Fire-Resistance Ratings and Fire Tests . . . . . 151  
 704 Fire-Resistance Rating of Structural  
 Members . . . . . 153  
 705 Exterior Walls . . . . . 154  
 706 Fire Walls . . . . . 160  
 707 Fire Barriers . . . . . 162  
 708 Fire Partitions . . . . . 164  
 709 Smoke Barriers . . . . . 165  
 710 Smoke Partitions . . . . . 166  
 711 Floor and Roof Assemblies . . . . . 166  
 712 Vertical Openings . . . . . 167  
 713 Shaft Enclosures . . . . . 168  
 714 Penetrations . . . . . 171  
 715 Fire-Resistant Joint Systems . . . . . 174  
 716 Opening Protectives . . . . . 175  
 717 Ducts and Air Transfer Openings . . . . . 181  
 718 Concealed Spaces . . . . . 185  
 719 Fire-Resistance Requirements for Plaster . . . . . 187  
 720 Thermal- and Sound-Insulating Materials . . . . . 188  
 721 Prescriptive Fire Resistance . . . . . 189  
 722 Calculated Fire Resistance . . . . . 212

**CHAPTER 8 INTERIOR FINISHES . . . . . 241**

Section  
 801 General . . . . . 241  
 802 Definitions . . . . . 241  
 803 Wall and Ceiling Finishes . . . . . 241  
 804 Interior Floor Finish . . . . . 244  
 805 Combustible Materials in Types I and II  
 Construction . . . . . 244

806 Decorative Materials and Trim . . . . . 244  
 807 Insulation . . . . . 245  
 808 Acoustical Ceiling Systems . . . . . 245

**CHAPTER 9 FIRE PROTECTION SYSTEMS . . . 247**

Section  
 901 General . . . . . 247  
 902 Definitions . . . . . 248  
 903 Automatic Sprinkler Systems . . . . . 248  
 904 Alternative Automatic Fire-Extinguishing  
 Systems . . . . . 256  
 905 Standpipe Systems . . . . . 258  
 906 Portable Fire Extinguishers . . . . . 260  
 907 Fire Alarm and Detection Systems . . . . . 262  
 908 Emergency Alarm Systems . . . . . 274  
 909 Smoke Control Systems . . . . . 275  
 910 Smoke and Heat Removal . . . . . 285  
 911 Fire Command Center . . . . . 286  
 912 Fire Department Connections . . . . . 287  
 913 Fire Pumps . . . . . 288  
 914 Emergency Responder Safety Features . . . . . 289  
 915 Carbon Monoxide Detection . . . . . 289  
 916 Emergency Responder Radio Coverage . . . . . 290

**CHAPTER 10 MEANS OF EGRESS . . . . . 291**

Section  
 1001 Administration . . . . . 291  
 1002 Definitions . . . . . 291  
 1003 General Means of Egress . . . . . 292  
 1004 Occupant Load . . . . . 293  
 1005 Means of Egress Sizing . . . . . 294  
 1006 Number of Exits and Exit Access Doorways . . . . . 295  
 1007 Exit and Exit Access Doorway  
 Configuration . . . . . 299  
 1008 Means of Egress Illumination . . . . . 299  
 1009 Accessible Means of Egress . . . . . 301  
 1010 Doors, Gates and Turnstiles . . . . . 304  
 1011 Stairways . . . . . 313  
 1012 Ramps . . . . . 316  
 1013 Exit Signs . . . . . 317  
 1014 Handrails . . . . . 318  
 1015 Guards . . . . . 320  
 1016 Exit Access . . . . . 321  
 1017 Exit Access Travel Distance . . . . . 322  
 1018 Aisles . . . . . 323

1019 Exit Access Stairways and Ramps . . . . . 323  
 1020 Corridors . . . . . 324  
 1021 Egress Balconies . . . . . 326  
 1022 Exits . . . . . 326  
 1023 Interior Exit Stairways and Ramps . . . . . 326  
 1024 Exit Passageways . . . . . 328  
 1025 Luminous Egress Path Markings . . . . . 330  
 1026 Horizontal Exits . . . . . 331  
 1027 Exterior Exit Stairways and Ramps . . . . . 332  
 1028 Exit Discharge . . . . . 333  
 1029 Assembly . . . . . 334  
 1030 Emergency Escape and Rescue . . . . . 340

**CHAPTER 11 ACCESSIBILITY . . . . . 343**

Section  
 1101 General . . . . . 343  
 1102 Definitions . . . . . 343  
 1103 Scoping Requirements . . . . . 344  
 1104 Accessible Route . . . . . 344  
 1105 Accessible Entrances . . . . . 346  
 1106 Parking and Passenger Loading Facilities . . . . . 346  
 1107 Dwelling Units, Sleeping Units and Transient Lodging Facilities . . . . . 347  
 1108 Special Occupancies . . . . . 351  
 1109 Other Features and Facilities . . . . . 353  
 1110 Recreational Facilities . . . . . 357  
 1111 Signage . . . . . 359  
 1112 Telephones . . . . . 360  
 1113 Bus Stops . . . . . 361  
 1114 Transportation Facilities and Stations . . . . . 361  
 1115 Airports . . . . . 362

**CHAPTER 12 INTERIOR ENVIRONMENT . . . . . 363**

Section  
 1201 General . . . . . 363  
 1202 Definitions . . . . . 363  
 1203 Ventilation . . . . . 363  
 1204 Temperature Control . . . . . 367  
 1205 Lighting . . . . . 367  
 1206 Yards or Courts . . . . . 367  
 1207 Sound Transmission . . . . . 368  
 1208 Interior Space Dimensions . . . . . 369  
 1209 Access to Unoccupied Spaces . . . . . 369  
 1210 Toilet and Bathroom Requirements . . . . . 369

**CHAPTER 13 ENERGY EFFICIENCY . . . . . 371**

Section  
 1301 General . . . . . 371

**CHAPTER 14 EXTERIOR WALLS . . . . . 373**

Section  
 1401 General . . . . . 373  
 1402 Definitions . . . . . 373  
 1403 Performance Requirements . . . . . 373  
 1404 Materials . . . . . 374  
 1405 Installation of Wall Coverings . . . . . 375  
 1406 Combustible Materials on the Exterior Side of Exterior Walls . . . . . 380  
 1407 Metal Composite Materials (MCM) . . . . . 381  
 1408 Exterior Insulation and Finish Systems (EIFS) . . . . . 384  
 1409 High-Pressure Decorative Exterior-Grade Compact Laminates (HPL) . . . . . 384  
 1410 Plastic Composite Decking . . . . . 385

**CHAPTER 15 ROOF ASSEMBLIES AND ROOFTOP STRUCTURES . . . . . 387**

Section  
 1501 General . . . . . 387  
 1502 Definitions . . . . . 387  
 1503 Weather Protection . . . . . 387  
 1504 Performance Requirements . . . . . 388  
 1505 Fire Classification . . . . . 389  
 1506 Materials . . . . . 390  
 1507 Requirements for Roof Coverings . . . . . 390  
 1508 Roof Insulation . . . . . 402  
 1509 Radiant Barriers Installed Above Deck . . . . . 402  
 1510 Rooftop Structures . . . . . 402  
 1511 Reroofing . . . . . 405  
 1512 Photovoltaic Panels and Modules . . . . . 405

**CHAPTER 16 STRUCTURAL DESIGN . . . . . 407**

Section  
 1601 General . . . . . 407  
 1602 Definitions and Notations . . . . . 407  
 1603 Construction Documents . . . . . 408  
 1604 General Design Requirements . . . . . 409  
 1605 Load Combinations . . . . . 412  
 1606 Dead Loads . . . . . 413  
 1607 Live Loads . . . . . 414

**TABLE OF CONTENTS**

1608 Snow Loads ..... 420  
 1609 Wind Loads ..... 420  
 1610 Soil Lateral Loads. .... 433  
 1611 Rain Loads ..... 434  
 1612 Flood Loads ..... 440  
 1613 Earthquake Loads..... 441  
 1614 Atmospheric Ice Loads..... 455  
 1615 Structural Integrity ..... 455

**CHAPTER 17 SPECIAL INSPECTIONS AND TESTS..... 459**

Section  
 1701 General ..... 459  
 1702 Definitions ..... 459  
 1703 Approvals ..... 459  
 1704 Special Inspections and Tests, Contractor Responsibility and Structural Observation. .... 461  
 1705 Required Special Inspections and Tests ..... 465  
 1706 Design Strengths of Materials ..... 473  
 1707 Alternative Test Procedure ..... 473  
 1708 In-Situ Load Tests ..... 473  
 1709 Preconstruction Load Tests ..... 474

**CHAPTER 18 SOILS AND FOUNDATIONS..... 477**

Section  
 1801 General ..... 477  
 1802 Definitions ..... 477  
 1803 Geotechnical Investigations ..... 477  
 1804 Excavation, Grading and Fill ..... 479  
 1805 Dampproofing and Waterproofing ..... 480  
 1806 Presumptive Load-Bearing Values of Soils .... 482  
 1807 Foundation Walls, Retaining Walls and Embedded Posts and Poles ..... 482  
 1808 Foundations ..... 488  
 1809 Shallow Foundations ..... 491  
 1810 Deep Foundations. .... 493  
 1811 Methane Reduction Measures ..... 505

**CHAPTER 19 CONCRETE ..... 507**

Section  
 1901 General ..... 507  
 1902 Definitions ..... 507  
 1903 Specifications for Tests and Materials ..... 507  
 1904 Durability Requirements ..... 507  
 1905 Modifications to ACI 318. .... 508

1906 Structural Plain Concrete..... 511  
 1907 Minimum Slab Provisions ..... 511  
 1908 Shotcrete..... 511

**CHAPTER 20 ALUMINUM..... 513**

Section  
 2001 General..... 513  
 2002 Materials..... 513

**CHAPTER 21 MASONRY ..... 515**

Section  
 2101 General..... 515  
 2102 Definitions and Notations ..... 515  
 2103 Masonry Construction Materials ..... 516  
 2104 Construction ..... 517  
 2105 Quality Assurance ..... 517  
 2106 Seismic Design..... 517  
 2107 Allowable Stress Design ..... 517  
 2108 Strength Design of Masonry ..... 517  
 2109 Empirical Design of Masonry ..... 518  
 2110 Glass Unit Masonry ..... 520  
 2111 Masonry Fireplaces ..... 520  
 2112 Masonry Heaters ..... 522  
 2113 Masonry Chimneys ..... 523  
 2114 Emission Standards ..... 527

**CHAPTER 22 STEEL ..... 529**

Section  
 2201 General..... 529  
 2202 Definitions ..... 529  
 2203 Identification and Protection of Steel for Structural Purposes ..... 529  
 2204 Connections ..... 529  
 2205 Structural Steel..... 529  
 2206 Composite Structural Steel and Concrete Structures ..... 530  
 2207 Steel Joists ..... 530  
 2208 Steel Cable Structures ..... 531  
 2209 Steel Storage Racks ..... 531  
 2210 Cold-Formed Steel ..... 531  
 2211 Cold-Formed Steel Light-Frame Construction..... 531

**CHAPTER 23 WOOD..... 533**

Section  
 2301 General..... 533

2302 Definitions . . . . . 533  
 2303 Minimum Standards and Quality . . . . . 533  
 2304 General Construction Requirements. . . . . 537  
 2305 General Design Requirements for Lateral Force-Resisting Systems . . . . . 548  
 2306 Allowable Stress Design. . . . . 550  
 2307 Load and Resistance Factor Design . . . . . 551  
 2308 Conventional Light-Frame Construction . . . . . 551  
 2309 Wood Frame Construction Manual . . . . . 601

**CHAPTER 24 GLASS AND GLAZING . . . . . 603**

Section  
 2401 General . . . . . 603  
 2402 Definitions . . . . . 603  
 2403 General Requirements for Glass. . . . . 603  
 2404 Wind, Snow, Seismic and Dead Loads on Glass . . . . . 603  
 2405 Sloped Glazing and Skylights . . . . . 605  
 2406 Safety Glazing . . . . . 606  
 2407 Glass in Handrails and Guards . . . . . 608  
 2408 Glazing in Athletic Facilities . . . . . 608  
 2409 Glass in Walkways, Elevator Hoistways and Elevator Cars . . . . . 609

**CHAPTER 25 GYPSUM BOARD, GYPSUM PANEL PRODUCTS AND PLASTER . . . . . 611**

Section  
 2501 General . . . . . 611  
 2502 Definitions . . . . . 611  
 2503 Inspection . . . . . 611  
 2504 Vertical and Horizontal Assemblies. . . . . 611  
 2505 Shear Wall Construction. . . . . 611  
 2506 Gypsum Board and Gypsum Panel Product Materials. . . . . 611  
 2507 Lathing and Plastering . . . . . 612  
 2508 Gypsum Construction. . . . . 612  
 2509 Showers and Water Closets . . . . . 614  
 2510 Lathing and Furring for Cement Plaster (Stucco). . . . . 614  
 2511 Interior Plaster . . . . . 615  
 2512 Exterior Plaster . . . . . 615  
 2513 Exposed Aggregate Plaster. . . . . 616  
 2514 Reinforced Gypsum Concrete . . . . . 616

**CHAPTER 26 PLASTIC . . . . . 617**

Section  
 2601 General . . . . . 617  
 2602 Definitions . . . . . 617  
 2603 Foam Plastic Insulation . . . . . 617  
 2604 Interior Finish and Trim . . . . . 622  
 2605 Plastic Veneer . . . . . 623  
 2606 Light-Transmitting Plastics . . . . . 623  
 2607 Light-Transmitting Plastic Wall Panels . . . . . 624  
 2608 Light-Transmitting Plastic Glazing . . . . . 625  
 2609 Light-Transmitting Plastic Roof Panels. . . . . 625  
 2610 Light-Transmitting Plastic Skylight Glazing . . . . . 626  
 2611 Light-Transmitting Plastic Interior Signs . . . . . 626  
 2612 Plastic Composites . . . . . 627  
 2613 Fiber-Reinforced Polymer . . . . . 627  
 2614 Reflective Plastic Core Insulation . . . . . 628

**CHAPTER 27 ELECTRICAL . . . . . 629**

Section  
 2701 General . . . . . 629  
 2702 Emergency and Legally Required Standby Power Systems . . . . . 629

**CHAPTER 28 MECHANICAL SYSTEMS. . . . . 631**

Section  
 2801 General . . . . . 631

**CHAPTER 29 PLUMBING SYSTEMS. . . . . 633**

Section  
 2901 General . . . . . 633  
 2902 Minimum Plumbing Facilities . . . . . 633

**CHAPTER 30 ELEVATORS AND CONVEYING SYSTEMS . . . . . 639**

Section  
 3001 Purpose . . . . . 639  
 3002 Scope . . . . . 639  
 3003 Codes . . . . . 639  
 3004 Definitions . . . . . 640  
 3005 Authority To Disconnect Utilities, Take Conveyances Out of Service and Investigate Accidents . . . . . 641  
 3006 Installation and Alteration Permits . . . . . 641  
 3007 Plans and Specifications. . . . . 642  
 3008 Required Installation Inspections. . . . . 642  
 3009 Certificates of Inspection and Operation . . . . . 642

**TABLE OF CONTENTS**

3010 Requirements for Operation and Maintenance . . . . . 642

3011 Retroactive Requirements for Existing Installations. . . . . 643

3012 Retroactive Requirements for Existing Material Lifts. . . . . 645

3013 Requirements for New Material Lifts. . . . . 646

3014 Emergency Service for Elevators in Existing Buildings - Phase I Recall . . . . . 646

3015 Emergency Service for Elevators in Existing Buildings - Phase II High Rise In-Car Operation . . . . . 647

3016 New Installations - Construction Standards . . . . . 648

3017 New Installations - General Emergency Operation Requirements. . . . . 651

3018 New Installations - Phase I Recall Requirements . . . . . 652

3019 New Installations - Phase II In-Car Operation Requirements (ASME A17.1, 2.27.8) . . . . . 652

3020 New Installations - Construction of Hoistways, Machine Rooms and Control Rooms . . . . . 652

3021 New Installations - Floors . . . . . 654

3022 Equipment in Hoistways, Machine Rooms and Control Rooms (ASME A17.1 Section 2.8). . . . . 654

3023 Pits (ASME A17.1, 2.2.2) . . . . . 656

3024 Shutoff Valve (ASME A17.1, 3.19.4.1). . . . . 657

3025 Guard at Ceiling Intersection (ASME A17.1, 6.1.3.3.11). . . . . 658

3026 Test Reports . . . . . 658

3027 Acceptance Inspections and Tests . . . . . 658

3028 Periodic Inspections and Tests . . . . . 658

3029 Requirements for Maintenance Control Program and Remote Monitoring . . . . . 662

**CHAPTER 31 SPECIAL CONSTRUCTION . . . . . 665**

Section

3101 General . . . . . 665

3102 Membrane Structures . . . . . 665

3103 Temporary Structures . . . . . 666

3104 Pedestrian Walkways and Tunnels. . . . . 666

3105 Awnings and Canopies . . . . . 668

3106 Marquees . . . . . 670

3107 Signs . . . . . 670

3108 Telecommunication and Broadcast Towers . . . . . 673

3109 Swimming Pools, Spas and Hot Tubs . . . . . 673

3110 Automatic Vehicular Gates . . . . . 673

3111 Photovoltaic Panels and Modules. . . . . 673

**CHAPTER 32 ENCROACHMENTS INTO THE PUBLIC RIGHT-OF-WAY . . . . . 675**

Section

3201 General. . . . . 675

**CHAPTER 33 SAFEGUARDS DURING CONSTRUCTION . . . . . 677**

Section

3301 General. . . . . 677

3302 Construction Safeguards . . . . . 677

3303 Demolition . . . . . 677

3304 Site Work . . . . . 678

3305 Sanitary . . . . . 678

3306 Protection of Pedestrians . . . . . 678

3307 Protection of Adjoining Property. . . . . 680

3308 Temporary Use of Streets, Alleys and Public Property . . . . . 680

3309 Fire Extinguishers . . . . . 680

3310 Means of Egress. . . . . 680

3311 Standpipes . . . . . 680

3312 Automatic Sprinkler System . . . . . 681

3313 Water Supply for Fire Protection. . . . . 681

3314 Construction Material Management. . . . . 681

**CHAPTER 34 RESERVED. . . . . 683**

**CHAPTER 35 REFERENCED STANDARDS . . . . . 685**

**INDEX. . . . . 709**