

This is a preview of "ICC IRC-2006". Click here to purchase the full version from the ANSI store.

A Member of the International Code Family®



INTERNATIONAL RESIDENTIAL CODE®

FOR ONE- AND TWO-FAMILY DWELLINGS

2006

This is a preview of "ICC IRC-2006". [Click here to purchase the full version from the ANSI store.](#)



INTERNATIONAL RESIDENTIAL CODE[®]

FOR ONE- AND TWO-FAMILY DWELLINGS

2006

2006 International Residential Code® for One- and Two-family Dwellings

First Printing: February 2006

ISBN-13: 978-1-58001-253-9 (soft-cover)
ISBN-10: 1-58001-253-1 (soft-cover)
ISBN-13: 978-1-58001-252-2 (loose-leaf)
ISBN-10: 1-58001-252-3 (loose-leaf)
ISBN-13: 978-1-58001-303-1 (e-document)
ISBN-10: 1-58001-303-1 (e-document)

COPYRIGHT © 2006
by
INTERNATIONAL CODE COUNCIL, INC.

ALL RIGHTS RESERVED. This 2006 *International Residential Code® for One- and Two-family Dwellings* is a copyrighted work owned by the International Code Council, Inc. Without advance written permission from the copyright owner, no part of this book may be reproduced, distributed, or transmitted in any form or by any means, including, without limitation, electronic, optical or mechanical means (by way of example and not limitation, photocopying, or recording by or in an information storage retrieval system). For information on permission to copy material exceeding fair use, please contact: Publications, 4051 West Flossmoor Road, Country Club Hills, IL 60478-5795. Phone 1-888-ICC-SAFE (422-7233).

Trademarks: "International Code Council," the "International Code Council" logo and the "International Residential Code" are trademarks of the International Code Council, Inc.

PRINTED IN THE U.S.A.

PREFACE

Introduction

Internationally, code officials recognize the need for a modern, up-to-date residential code addressing the design and construction of one- and two-family dwellings and townhouses. The *International Residential Code*®, in this 2006 edition, is designed to meet these needs through model code regulations that safeguard the public health and safety in all communities, large and small.

This comprehensive, stand-alone residential code establishes minimum regulations for one- and two-family dwellings and townhouses using prescriptive provisions. It is founded on broad-based principles that make possible the use of new materials and new building designs. This 2006 edition is fully compatible with all the *International Codes*® (I-Codes®) published by the International Code Council® (ICC)®, including the *International Building Code*®, *ICC Electrical Code*®, *International Energy Conservation Code*®, *International Existing Building Code*®, *International Fire Code*®, *International Fuel Gas Code*®, *International Mechanical Code*®, *ICC Performance Code*®, *International Plumbing Code*®, *International Private Sewage Disposal Code*®, *International Property Maintenance Code*®, *International Wildland-Urban Interface Code*™ and *International Zoning Code*®.

The *International Residential Code* provisions provide many benefits, among which is the model code development process that offers an international forum for residential construction professionals to discuss prescriptive code requirements. This forum provides an excellent arena to debate proposed revisions. This model code also encourages international consistency in the application of provisions.

Development

The first edition of the *International Residential Code* (2000) was the culmination of an effort initiated in 1996 by the ICC and consisting of representatives from the three statutory members of the International Code Council at the time, including: Building Officials and Code Administrators International, Inc. (BOCA), International Conference of Building Officials (ICBO) and Southern Building Code Congress International (SBCCI) and representatives from the National Association of Home Builders (NAHB). The intent was to draft a stand-alone residential code consistent with and inclusive of the scope of the existing model codes. Technical content of the 1998 *International One- and Two-Family Dwelling Code* and the latest model codes promulgated by BOCA, ICBO, SBCCI and ICC was used as the basis for the development, followed by public hearings in 1998 and 1999 to consider proposed changes. This 2006 edition represents the code as originally issued, with changes reflected in the 2003 edition, and further changes developed through the ICC Code Development Process through 2005. Residential electrical provisions are based on the 2005 *National Electrical Code*® (NFPA-70). A new edition such as this is promulgated every three years.

Fuel gas provisions have been included through an agreement with the American Gas Association (AGA). Electrical provisions have been included through an agreement with the National Fire Protection Association (NFPA).

This code is founded on principles intended to establish provisions consistent with the scope of a residential 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.

Adoption

The *International Residential Code* is available for adoption and use by jurisdictions internationally. Its use within a governmental jurisdiction is intended to be accomplished through adoption by reference in accordance with proceedings establishing the jurisdiction's laws. At the time of adoption, jurisdictions should insert the appropriate information in provisions requiring specific local information, such as the name of the adopting jurisdiction. These locations are shown in bracketed words in small capital letters in the code and in the sample ordinance. The sample adoption ordinance on page v addresses several key elements of a code adoption ordinance, including the information required for insertion into the code text.

Maintenance

The *International Residential Code* is kept up to date through the review of proposed changes submitted by code enforcing officials, industry representatives, design professionals and other interested parties. Proposed changes are carefully considered through an open code development process in which all interested and affected parties may participate.

The contents of this work are subject to change both through the Code Development Cycles and the governmental body that enacts the code into law. For more information regarding the code development process, contact the Code and Standard Development Department of the International Code Council.

PREFACE

The maintenance process for the fuel gas provisions is based upon the process used to maintain the *International Fuel Gas Code*, in conjunction with the American Gas Association. The maintenance process for the electrical provisions is undertaken by the National Fire Protection Association.

While the development procedure of the *International Residential Code* assures the highest degree of care, ICC and the founding members of ICC and its members and those participating in the development of this code do not accept any liability resulting from compliance or noncompliance with the provisions because ICC and its founding members do not have the power or authority to police or enforce compliance with the contents of this code. Only the governmental body that enacts the code into law has such authority.

Marginal Markings

Solid vertical lines in the margins within the body of the code indicate a technical change from the requirements of the 2003 edition. 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.

ORDINANCE

The *International Codes* are designed and promulgated to be adopted by reference by ordinance. Jurisdictions wishing to adopt the 2006 *International Residential Code* as an enforceable regulation governing one- and two-family dwellings and townhouses should ensure that certain factual information is included in the adopting ordinance at the time adoption is being considered by the appropriate governmental body. The following sample adoption ordinance addresses several key elements of a code adoption ordinance, including the information required for insertion into the code text.

SAMPLE ORDINANCE FOR ADOPTION OF THE *INTERNATIONAL RESIDENTIAL CODE*

ORDINANCE NO. _____

An ordinance of the [JURISDICTION] adopting the 2006 edition of the *International Residential Code*, regulating and governing the construction, alteration, movement, enlargement, replacement, repair, equipment, location, removal and demolition of detached one and two family dwellings and multiple single family dwellings (townhouses) not more than three stories in height with separate means of egress in the [JURISDICTION]; providing for the issuance of permits and collection of fees therefor; repealing Ordinance No. _____ of the [JURISDICTION] and all other ordinances and parts of the ordinances in conflict therewith.

The [GOVERNING BODY] of the [JURISDICTION] does ordain as follows:

Section 1. That a certain document, three (3) copies of which are on file in the office of the [TITLE OF JURISDICTION'S KEEPER OF RECORDS] of [NAME OF JURISDICTION], being marked and designated as the *International Residential Code*, 2006 edition, including Appendix Chapters [FILL IN THE APPENDIX CHAPTERS BEING ADOPTED] (see *International Residential Code* Section R102.5, 2006 edition), as published by the International Code Council, be and is hereby adopted as the Residential Code of the [JURISDICTION], in the State of [STATE NAME] for regulating and governing the construction, alteration, movement, enlargement, replacement, repair, equipment, location, removal and demolition of detached one and two family dwellings and multiple single family dwellings (townhouses) not more than three stories in height with separate means of egress as herein provided; providing for the issuance of permits and collection of fees therefor; and each and all of the regulations, provisions, penalties, conditions and terms of said Residential Code on file in the office of the [JURISDICTION] are hereby referred to, adopted, and made a part hereof, as if fully set out in this ordinance, with the additions, insertions, deletions and changes, if any, prescribed in Section 2 of this ordinance.

Section 2. The following sections are hereby revised:

Section R101.1. Insert: [NAME OF JURISDICTION]

Table R301.2 (1) Insert: [APPROPRIATE DESIGN CRITERIA]

Section P2603.6.1 Insert: [NUMBER OF INCHES IN TWO LOCATIONS]

Section P3103.1 Insert: [NUMBER OF INCHES IN TWO LOCATIONS]

Section 3. That Ordinance No. _____ of [JURISDICTION] entitled [FILL IN HERE THE COMPLETE TITLE OF THE ORDINANCE OR ORDINANCES IN EFFECT AT THE PRESENT TIME SO THAT THEY WILL BE REPEALED BY DEFINITE MENTION] and all other ordinances or parts of ordinances in conflict herewith are hereby repealed.

Section 4. That if any section, subsection, sentence, clause or phrase of this ordinance is, for any reason, held to be unconstitutional, such decision shall not affect the validity of the remaining portions of this ordinance. The [GOVERNING BODY] hereby declares that it would have passed this ordinance, and each section, subsection, clause or phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses and phrases be declared unconstitutional.

Section 5. That nothing in this ordinance or in the Residential Code hereby adopted shall be construed to affect any suit or proceeding impending in any court, or any rights acquired, or liability incurred, or any cause or causes of action acquired or existing, under any act or ordinance hereby repealed as cited in Section 3 of this ordinance; nor shall any just or legal right or remedy of any character be lost, impaired or affected by this ordinance.

Section 6. That the [JURISDICTION'S KEEPER OF RECORDS] is hereby ordered and directed to cause this ordinance to be published. (An additional provision may be required to direct the number of times the ordinance is to be published and to specify that it is to be in a newspaper in general circulation. Posting may also be required.)

Section 7. That this ordinance and the rules, regulations, provisions, requirements, orders and matters established and adopted hereby shall take effect and be in full force and effect [TIME PERIOD] from and after the date of its final passage and adoption.

This is a preview of "ICC IRC-2006". [Click here to purchase the full version from the ANSI store.](#)

TABLE OF CONTENTS

| | | | | | |
|--|--|---------|--|--|-----|
| <i>Part I—Administrative</i> | <i>1</i> | R314 | Foam Plastic | 56 | |
| CHAPTER 1 ADMINISTRATION | 1 | R315 | Flame Spread and Smoke Density | 58 | |
| Section | | R316 | Insulation | 58 | |
| R101 | Title, Scope and Purpose | 1 | R317 | Dwelling Unit Separation | 58 |
| R102 | Applicability | 1 | R318 | Moisture Vapor Retarders | 60 |
| R103 | Department of Building Safety | 1 | R319 | Protection Against Decay | 60 |
| R104 | Duties and Powers of the Building Official | 1 | R320 | Protection Against Subterranean Termites | 61 |
| R105 | Permits | 3 | R321 | Site Address | 62 |
| R106 | Construction Documents | 4 | R322 | Accessibility | 62 |
| R107 | Temporary Structures and Uses | 5 | R323 | Elevators and Platform Lifts | 62 |
| R108 | Fees | 5 | R324 | Flood-resistant Construction | 62 |
| R109 | Inspections | 6 | CHAPTER 4 FOUNDATIONS | 67 | |
| R110 | Certificate of Occupancy | 6 | Section | | |
| R111 | Service Utilities | 7 | R401 | General | 67 |
| R112 | Board of Appeals | 7 | R402 | Materials | 67 |
| R113 | Violations | 8 | R403 | Footings | 68 |
| R114 | Stop Work Order | 8 | R404 | Foundation and Retaining Walls | 78 |
| <i>Part II—Definitions</i> | <i>9</i> | R405 | Foundation Drainage | 88 | |
| CHAPTER 2 DEFINITIONS | 9 | R406 | Foundation Waterproofing and Dampproofing | 90 | |
| Section | | R407 | Columns | 93 | |
| R201 | General | 9 | R408 | Under-floor Space | 93 |
| R202 | Definitions | 9 | CHAPTER 5 FLOORS | 97 | |
| <i>Part III—Building Planning and Construction</i> | <i>23</i> | Section | | | |
| CHAPTER 3 BUILDING PLANNING | 23 | R501 | General | 97 | |
| Section | | R502 | Wood Floor Framing | 97 | |
| R301 | Design Criteria | 23 | R503 | Floor Sheathing | 106 |
| R302 | Exterior Wall Location | 47 | R504 | Pressure Preservatively Treated-wood Floors (On Ground) | 108 |
| R303 | Light, Ventilation and Heating | 47 | R505 | Steel Floor Framing | 108 |
| R304 | Minimum Room Areas | 48 | R506 | Concrete Floors (On Ground) | 121 |
| R305 | Ceiling Height | 48 | CHAPTER 6 WALL CONSTRUCTION | 123 | |
| R306 | Sanitation | 49 | Section | | |
| R307 | Toilet, Bath and Shower Spaces | 49 | R601 | General | 123 |
| R308 | Glazing | 50 | R602 | Wood Wall Framing | 123 |
| R309 | Garages and Carports | 52 | R603 | Steel Wall Framing | 143 |
| R310 | Emergency Escape and Rescue Openings | 52 | R604 | Wood Structural Panels | 180 |
| R311 | Means of Egress | 53 | R605 | Particleboard | 180 |
| R312 | Guards | 55 | R606 | General Masonry Construction | 180 |
| R313 | Smoke Alarms | 55 | R607 | Unit Masonry | 188 |

TABLE OF CONTENTS

R608 Multiple Wythe Masonry 188
 R609 Grouted Masonry 190
 R610 Glass Unit Masonry 191
 R611 Insulating Concrete Form Wall Construction . . 193
 R612 Conventionally Formed Concrete
 Wall Construction 224
 R613 Exterior Windows and Glass Doors 224

CHAPTER 7 WALL COVERING 229

Section

R701 General 229
 R702 Interior Covering 229
 R703 Exterior Covering 232

**CHAPTER 8 ROOF-CEILING
 CONSTRUCTION 243**

Section

R801 General 243
 R802 Wood Roof Framing 243
 R803 Roof Sheathing 268
 R804 Steel Roof Framing 268
 R805 Ceiling Finishes 286
 R806 Roof Ventilation 286
 R807 Attic Access 287
 R808 Insulation Clearance 287

CHAPTER 9 ROOF ASSEMBLIES 289

Section

R901 General 289
 R902 Roof Classification 289
 R903 Weather Protection 289
 R904 Materials 289
 R905 Requirements for Roof Coverings 291
 R906 Roof Insulation 298
 R907 Reroofing 299

CHAPTER 10 CHIMNEYS AND FIREPLACES . . 301

Section

R1001 Masonry Fireplaces 301
 R1002 Masonry Heaters 305
 R1003 Masonry Chimneys 305
 R1004 Factory-built Fireplaces 309
 R1005 Factory-built Chimneys 309
 R 1006 Exterior Air Supply 310

Part IV—Energy Conservation 311

CHAPTER 11 ENERGY EFFICIENCY 311

Section

N1101 General 311
 N1102 Building Thermal Envelope 318
 N1103 Systems 321

Part V—Mechanical 323

**CHAPTER 12 MECHANICAL
 ADMINISTRATION 323**

Section

M1201 General 323
 M1202 Existing Mechanical Systems 323

**CHAPTER 13 GENERAL MECHANICAL SYSTEM
 REQUIREMENTS 325**

Section

M1301 General 325
 M1302 Approval 325
 M1303 Labeling of Appliances 325
 M1304 Type of Fuel 325
 M1305 Appliance Access 325
 M1306 Clearances from Combustible Construction . . 326
 M1307 Appliance Installation 329
 M1308 Mechanical Systems Installation 329

**CHAPTER 14 HEATING AND COOLING
 EQUIPMENT 331**

Section

M1401 General 331
 M1402 Central Furnaces 331
 M1403 Heat Pump Equipment 331
 M1404 Refrigeration Cooling Equipment 331
 M1405 Baseboard Convectors 331
 M1406 Radiant Heating Systems 331
 M1407 Duct Heaters 332
 M1408 Vented Floor Furnaces 332
 M1409 Vented Wall Furnaces 332
 M1410 Vented Room Heaters 333
 M1411 Heating and Cooling Equipment 333
 M1412 Absorption Cooling Equipment 334
 M1413 Evaporative Cooling Equipment 334
 M1414 Fireplace Stoves 334
 M1415 Masonry Heaters 334

| | | | |
|--|------------|--|------------|
| CHAPTER 15 EXHAUST SYSTEMS | 335 | CHAPTER 21 HYDRONIC PIPING | 355 |
| Section | | Section | |
| M1501 General | 335 | M2101 Hydronic Piping Systems Installation | 355 |
| M1502 Clothes Dryer Exhaust | 335 | M2102 Baseboard Convectors | 355 |
| M1503 Range Hoods | 335 | M2103 Floor Heating Systems | 355 |
| M1504 Installation of Microwave Ovens | 335 | M2104 Low Temperature Piping | 355 |
| M1505 Overhead Exhaust Hoods | 336 | M2105 Ground Source Heat Pump System | |
| M1506 Exhaust Ducts | 336 | Loop Piping | 357 |
| M1507 Mechanical Ventilation | 336 | | |
| CHAPTER 16 DUCT SYSTEMS | 337 | CHAPTER 22 SPECIAL PIPING AND STORAGE | |
| Section | | SYSTEMS | 359 |
| M1601 Duct Construction | 337 | Section | |
| M1602 Return Air | 339 | M2201 Oil Tanks | 359 |
| | | M2202 Oil Piping, Fitting and Connections | 359 |
| CHAPTER 17 COMBUSTION AIR | 341 | M2203 Installation | 359 |
| Section | | M2204 Oil Pumps and Valves | 360 |
| M1701 General | 341 | | |
| M1702 All Air from Inside the Building | 341 | CHAPTER 23 SOLAR SYSTEMS | 361 |
| M1703 All Air from Outdoors | 341 | Section | |
| | | M2301 Solar Energy Systems | 361 |
| CHAPTER 18 CHIMNEYS AND VENTS | 347 | | |
| Section | | <i>Part VI—Fuel Gas</i> | 363 |
| M1801 General | 347 | | |
| M1802 Vent Components | 347 | CHAPTER 24 FUEL GAS | 363 |
| M1803 Chimney and Vent Connectors | 348 | Section | |
| M1804 Vents | 349 | G2401 General | 363 |
| M1805 Masonry and Factory-built Chimneys | 349 | G2402 General | 363 |
| | | G2403 General Definitions | 363 |
| CHAPTER 19 SPECIAL FUEL-BURNING | | G2404 General | 369 |
| EQUIPMENT | 351 | G2405 Structural Safety | 369 |
| Section | | G2406 Appliance Location | 369 |
| M1901 Ranges and Ovens | 351 | G2407 Combustion, Ventilation and Dilution Air ... | 370 |
| M1902 Sauna Heaters | 351 | G2408 Installation | 374 |
| M1903 Stationary Fuel Cell Power Plants | 351 | G2409 Clearance Reduction | 374 |
| M1904 Gaseous Hydrogen Systems | 351 | G2410 Electrical | 376 |
| | | G2411 Electrical Bonding | 377 |
| CHAPTER 20 BOILERS AND | | G2412 General | 377 |
| WATER HEATERS | 353 | G2413 Pipe Sizing | 378 |
| Section | | G2414 Piping Materials | 379 |
| M2001 Boilers | 353 | G2415 Piping System Installation | 389 |
| M2002 Operating and Safety Controls | 353 | G2416 Piping Bends and Changes in Direction | 391 |
| M2003 Expansion Tanks | 353 | G2417 Inspection, Testing and Purging | 391 |
| M2004 Water Heaters Used for Space Heating | 353 | G2418 Piping Support | 392 |
| M2005 Water Heaters | 353 | G2419 Drips and Sloped Piping | 392 |
| M2006 Pool Heaters | 354 | G2420 Gas-shutoff Valves | 393 |
| | | G2421 Flow Controls | 393 |

TABLE OF CONTENTS

G2422 Appliance Connections 394
 G2423 CNG Gas-dispensing Systems 394
 G2424 Piping Support Intervals 394
 G2425 General 395
 G2426 Vents 396
 G2427 Venting of Equipment 396
 G2428 Sizing of Category I Appliance Venting Systems 406
 G2429 Direct-vent, Integral Vent, Mechanical Vent and Ventilation/Exhaust Hood Venting 417
 G2430 Factory-built Chimneys 417
 G2431 General 418
 G2432 Decorative Appliances for Installation in Fireplaces 418
 G2433 Log Lighters 418
 G2434 Vented Gas Fireplaces (Decorative Fireplaces) 418
 G2435 Vented Gas Fireplace Heaters 418
 G2436 Vented Wall Furnaces 418
 G2437 Floor Furnaces 418
 G2438 Clothes Dryers 419
 G2439 Clothes Dryer Exhaust 419
 G2440 Sauna Heaters 419
 G2441 Pool and Spa Heaters 420
 G2442 Forced-air Warm-air Furnaces 420
 G2443 Conversion Burners 421
 G2444 Unit Heaters 421
 G2445 Unvented Room Heaters 421
 G2446 Vented Room Heaters 421
 G2447 Cooking Appliances 422
 G2448 Water Heaters 422
 G2449 Air Conditioning Equipment 422
 G2450 Illuminating Appliances 422
 G2451 Infrared Radiant Heaters 422
 G2452 Boilers 422
 G2453 Chimney Damper Opening Area 423

Part VII—Plumbing 425

CHAPTER 25 PLUMBING ADMINISTRATION 425

Section
 P2501 General 425
 P2502 Existing Plumbing Systems 425
 P2503 Inspection and Tests 425

CHAPTER 26 GENERAL PLUMBING REQUIREMENTS 427

Section
 P2601 General 427
 P2602 Individual Water Supply and Sewage Disposal 427
 P2603 Structural and Piping Protection 427
 P2604 Trenching and Backfilling 428
 P2605 Support 428
 P2606 Waterproofing of Openings 428
 P2607 Workmanship 428
 P2608 Materials Evaluation and Listing 428

CHAPTER 27 PLUMBING FIXTURES 431

Section
 P2701 Fixtures, Faucets and Fixture Fittings 431
 P2702 Fixture Accessories 431
 P2703 Tail Pieces 431
 P2704 Access to Connections 431
 P2705 Installation 431
 P2706 Waste Receptors 431
 P2707 Directional Fittings 433
 P2708 Showers 433
 P2709 Shower Receptors 433
 P2710 Shower Walls 434
 P2711 Lavatories 434
 P2712 Water Closets 434
 P2713 Bathtubs 434
 P2714 Sinks 435
 P2715 Laundry Tubs 435
 P2716 Food Waste Grinder 435
 P2717 Dishwashing Machines 435
 P2718 Clothes Washing Machine 435
 P2719 Floor Drains 435
 P2720 Whirlpool Bathtubs 435
 P2721 Bidet Installations 435
 P2722 Fixture Fitting 436
 P2723 Macerating Toilet Systems 436
 P2724 Speciality Temperature Control Devices and Valves 436

CHAPTER 28 WATER HEATERS 437

Section
 P2801 General 437
 P2802 Water Heaters Used for Space Heating 437
 P2803 Relief Valves 437

CHAPTER 29 WATER SUPPLY AND DISTRIBUTION..... 439

Section

P2901 General 439

P2902 Protection of Potable Water Supply 439

P2903 Water-supply System 441

P2904 Materials, Joints and Connections 447

P2905 Changes in Direction 451

P2906 Support 451

P2907 Drinking Water Treatment Units..... 451

CHAPTER 30 SANITARY DRAINAGE..... 453

Section

P3001 General 453

P3002 Materials..... 453

P3003 Joints and Connections 453

P3004 Determining Drainage Fixture Units 458

P3005 Drainage System 458

P3006 Sizing of Drain Pipe Offsets 461

P3007 Sumps and Ejectors 461

P3008 Backwater Valves..... 461

CHAPTER 31 VENTS 463

Section

P3101 Vent Systems 463

P3102 Vent Stacks and Stack Vents 463

P3103 Vent Terminals 463

P3104 Vent Connections and Grades 463

P3105 Fixture Vents 464

P3106 Individual Vent..... 464

P3107 Common Vent..... 464

P3108 Wet Venting 464

P3109 Waste Stack Vent 465

P3110 Circuit Venting 465

P3111 Combination Waste and Vent System..... 465

P3112 Island Fixture Venting 466

P3113 Vent Pipe Sizing..... 466

P3114 Air Admittance Valves..... 466

CHAPTER 32 TRAPS 469

Section

P3201 Fixture Traps 469

Part VIII—Electrical 471

CHAPTER 33 GENERAL REQUIREMENTS 471

Section

E3301 General 471

E3302 Building Structure Protection 471

E3303 Inspection and Approval 471

E3304 General Equipment Requirements 471

E3305 Equipment Location and Clearances 472

E3306 Electrical Conductors and Connections 474

E3307 Conductor and Terminal Identification..... 474

CHAPTER 34 ELECTRICAL DEFINITIONS 477

Section

E3401 General 477

CHAPTER 35 SERVICES..... 481

Section

E3501 General Services 481

E3502 Service Size and Rating 481

E3503 Service, Feeder and Grounding Electrode Conductor Sizing..... 482

E3504 Overhead Service-drop and Service Conductor Installation 483

E3505 Service-entrance Conductors..... 485

E3506 Service Equipment—General 485

E3507 System Grounding 485

E3508 Grounding Electrode System 486

E3509 Bonding 487

E3510 Grounding Electrode Conductors 488

E3511 Grounding Electrode Conductor Connection to the Grounding Electrodes 488

CHAPTER 36 BRANCH CIRCUIT AND FEEDER REQUIREMENTS 491

Section

E3601 General 491

E3602 Branch Circuit Ratings 491

E3603 Required Branch Circuits 492

E3604 Feeder Requirements..... 493

E3605 Conductor Sizing and Overcurrent Protection 494

E3606 Panelboards 497

TABLE OF CONTENTS

CHAPTER 37 WIRING METHODS..... 499

Section

E3701 General Requirements 499
 E3702 Above-ground Installation Requirements 499
 E3703 Underground Installation Requirements..... 502

CHAPTER 38 POWER AND LIGHTING DISTRIBUTION..... 505

Section

E3801 Receptacle Outlets 505
 E3802 Ground-fault and Arc-fault Circuit-interrupter Protection 507
 E3803 Lighting Outlets 508
 E3804 General Installation Requirements 508
 E3805 Boxes, Conduit Bodies and Fittings 519
 E3806 Installation of Boxes, Conduit Bodies and Fittings..... 521
 E3807 Cabinets and Panelboards 523
 E3808 Grounding..... 524
 E3809 Flexible Cords 526

CHAPTER 39 DEVICES AND LUMINAIRES 527

Section

E3901 Switches 527
 E3902 Receptacles..... 528
 E3903 Fixtures..... 528
 E3904 Luminaire Installation 530
 E3905 Track Lighting 530

CHAPTER 40 APPLIANCE INSTALLATION 533

Section

E4001 General 533

CHAPTER 41 SWIMMING POOLS..... 535

Section

E4101 General 535
 E4102 Wiring Methods for Pools, Spas, Hot Tubs and Hydromassage Bathtubs 535
 E4103 Equipment Location and Clearances 537
 E4104 Bonding 538
 E4105 Grounding..... 540
 E4106 Equipment Installation..... 541
 E4107 Storable Swimming Pools 543
 E4108 Spas and Hot Tubs 544
 E4109 Hydromassage Bathtubs 544

CHAPTER 42 CLASS 2 REMOTE-CONTROL, SIGNALING AND POWER-LIMITED CIRCUITS..... 545

Section

E4201 General 545
 E4202 Power Sources 545
 E4203 Wiring Methods 545
 E4204 Installation Requirements 545

Part IX—Referenced Standards 547

CHAPTER 43 REFERENCED STANDARDS 547

APPENDIX A SIZING AND CAPACITIES OF GAS PIPING..... 567

APPENDIX B SIZING OF VENTING SYSTEMS SERVING APPLIANCES EQUIPPED WITH DRAFT HOODS, CATEGORY I APPLIANCES, AND APPLIANCES LISTED FOR USE WITH TYPE B VENTS 579

APPENDIX C EXIT TERMINALS OF MECHANICAL DRAFT AND DIRECT-VENT VENTING SYSTEMS 589

APPENDIX D RECOMMENDED PROCEDURE FOR SAFETY INSPECTION OF AN EXISTING APPLIANCE INSTALLATION 591

APPENDIX E MANUFACTURED HOUSING USED AS DWELLINGS 593

Section

AE101 Scope 593
 AE102 Application to Existing Manufactured Homes and Building Service Equipment 593
 AE201 Definitions 594
 AE301 Permits 594
 AE302 Application for Permit..... 594
 AE303 Permits Issuance..... 595
 AE304 Fees..... 595
 AE305 Inspections 596
 AE306 Special Inspections 597
 AE307 Utility Service 597
 AE401 Occupancy Classification 597
 AE402 Location on Property 597
 AE501 Design..... 597

| | | | |
|--|------------|--|------------|
| AE502 Foundation Systems | 598 | APPENDIX I PRIVATE SEWAGE DISPOSAL . . . | 615 |
| AE503 Skirting and Perimeter Enclosures | 598 | Section | |
| AE504 Structural Additions | 598 | AI101 General | 615 |
| AE505 Building Service Equipment | 598 | APPENDIX J EXISTING BUILDINGS AND | |
| AE506 Exits | 599 | STRUCTURES | 617 |
| AE507 Occupancy, Fire Safety and Energy | | Section | |
| Conservation Standards | 599 | AJ101 Purpose and Intent | 617 |
| AE600 Special Requirements for | | AJ102 Compliance | 617 |
| Foundation Systems | 599 | AJ103 Preliminary Meeting | 617 |
| AE601 Footings and Foundations | 599 | AJ104 Evaluation of an Existing Building | 617 |
| AE602 Pier Construction | 599 | AJ105 Permit | 618 |
| AE603 Height of Piers | 599 | AJ201 Definitions | 618 |
| AE604 Anchorage Installations | 599 | AJ301 Repairs | 618 |
| AE605 Ties, Materials and Installation | 600 | AJ401 Renovations | 619 |
| AE606 Referenced Standards | 600 | AJ501 Alterations | 619 |
| APPENDIX F RADON CONTROL METHODS . . . | 601 | AJ601 Reconstruction | 620 |
| Section | | APPENDIX K SOUND TRANSMISSION | 621 |
| AF101 Scope | 601 | Section | |
| AF102 Definitions | 601 | AK101 General | 621 |
| AF103 Requirements | 601 | AK102 Air-borne Sound | 621 |
| APPENDIX G SWIMMING POOLS, SPAS AND | | AK103 Structural-borne Sound | 621 |
| HOT TUBS | 609 | AK104 Referenced Standards | 621 |
| Section | | APPENDIX L PERMIT FEES | 623 |
| AG101 General | 609 | APPENDIX M HOME DAY CARE— | |
| AG102 Definitions | 609 | R-3 OCCUPANCY | 625 |
| AG103 Swimming Pools | 609 | AM101 General | 625 |
| AG104 Spas and Hot Tubs | 609 | AM102 Definitions | 625 |
| AG105 Barrier Requirements | 609 | AM103 Means of Egress | 625 |
| AG106 Entrapment Protection for Swimming Pool and | | AM104 Smoke Detection | 625 |
| Spa Suction Outlets | 610 | APPENDIX N VENTING METHODS | 627 |
| AG107 Abbreviations | 611 | APPENDIX O GRAY WATER RECYCLING | |
| AG108 Standards | 611 | SYSTEMS | 635 |
| APPENDIX H PATIO COVERS | 613 | AO101 General | 635 |
| Section | | AO102 Systems for Flushing Water Closets | |
| AH101 General | 613 | and Urinals | 635 |
| AH102 Definition | 613 | AO103 Subsurface Landscape | |
| AH103 Permitted Uses | 613 | Irrigation Systems | 637 |
| AH104 Design Loads | 613 | | |
| AH105 Light and Ventilation/Emergency Egress | 613 | | |
| AH106 Footings | 613 | | |
| AH107 Special Provisions for Aluminum Screen | | | |
| Enclosures in Hurricane-prone Regions | 613 | | |

TABLE OF CONTENTS

APPENDIX P SPRINKLING..... 641

**APPENDIX Q ICC INTERNATIONAL
RESIDENTIAL CODE ELECTRICAL
PROVISIONS/NATIONAL
ELECTRICAL CODE CROSS-
REFERENCE 643**

INDEX..... 657

Part I — Administrative

CHAPTER 1 ADMINISTRATION

SECTION R101 TITLE, SCOPE AND PURPOSE

R101.1 Title. These provisions shall be known as the *Residential Code for One- and Two-family Dwellings* of [NAME OF JURISDICTION], and shall be cited as such and will be referred to herein as “this code.”

R101.2 Scope. The provisions of the *International Residential Code for One- and Two-family Dwellings* shall apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, removal and demolition of detached one- and two-family dwellings and townhouses not more than three stories above-grade in height with a separate means of egress and their accessory structures.

R101.3 Purpose. The purpose of this code is to provide minimum requirements to safeguard the public safety, health and general welfare through affordability, structural strength, means of egress facilities, stability, sanitation, light and ventilation, energy conservation and safety to life and property from fire and other hazards attributed to the built environment.

SECTION R102 APPLICABILITY

R102.1 General. Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable.

R102.2 Other laws. The provisions of this code shall not be deemed to nullify any provisions of local, state or federal law.

R102.3 Application of references. References to chapter or section numbers, or to provisions not specifically identified by number, shall be construed to refer to such chapter, section or provision of this code.

R102.4 Referenced codes and standards. The codes and standards referenced in this code shall be considered part of the requirements of this code to the prescribed extent of each such reference. Where differences occur between provisions of this code and referenced codes and standards, the provisions of this code shall apply.

Exception: Where enforcement of a code provision would violate the conditions of the listing of the equipment or appliance, the conditions of the listing and manufacturer’s instructions shall apply.

R102.5 Appendices. Provisions in the appendices shall not apply unless specifically referenced in the adopting ordinance.

R102.6 Partial invalidity. In the event any part or provision of this code is held to be illegal or void, this shall not have the effect of making void or illegal any of the other parts or provisions.

R102.7 Existing structures. The legal occupancy of any structure existing on the date of adoption of this code shall be permitted to continue without change, except as is specifically covered in this code, the *International Property Maintenance Code* or the *International Fire Code*, or as is deemed necessary by the building official for the general safety and welfare of the occupants and the public.

R102.7.1 Additions, alterations or repairs. Additions, alterations or repairs to any structure shall conform to the requirements for a new structure without requiring the existing structure to comply with all of the requirements of this code, unless otherwise stated. Additions, alterations or repairs shall not cause an existing structure to become unsafe or adversely affect the performance of the building.

SECTION R103 DEPARTMENT OF BUILDING SAFETY

R103.1 Creation of enforcement agency. The department of building safety is hereby created and the official in charge thereof shall be known as the building official.

R103.2 Appointment. The building official shall be appointed by the chief appointing authority of the jurisdiction.

R103.3 Deputies. In accordance with the prescribed procedures of this jurisdiction and with the concurrence of the appointing authority, the building official shall have the authority to appoint a deputy building official, the related technical officers, inspectors, plan examiners and other employees. Such employees shall have powers as delegated by the building official.

SECTION R104 DUTIES AND POWERS OF THE BUILDING OFFICIAL

R104.1 General. The building official is hereby authorized and directed to enforce the provisions of this code. The building official shall have the authority to render interpretations of this code and to adopt policies and procedures in order to clarify the application of its provisions. Such interpretations, policies and procedures shall be in conformance with the intent and purpose of this code. Such policies and procedures shall not

have the effect of waiving requirements specifically provided for in this code.

R104.2 Applications and permits. The building official shall receive applications, review construction documents and issue permits for the erection and alteration of buildings and structures, inspect the premises for which such permits have been issued and enforce compliance with the provisions of this code.

R104.3 Notices and orders. The building official shall issue all necessary notices or orders to ensure compliance with this code.

R104.4 Inspections. The building official is authorized to make all of the required inspections, or the building official shall have the authority to accept reports of inspection by approved agencies or individuals. Reports of such inspections shall be in writing and be certified by a responsible officer of such approved agency or by the responsible individual. The building official is authorized to engage such expert opinion as deemed necessary to report upon unusual technical issues that arise, subject to the approval of the appointing authority.

R104.5 Identification. The building official shall carry proper identification when inspecting structures or premises in the performance of duties under this code.

R104.6 Right of entry. Where it is necessary to make an inspection to enforce the provisions of this code, or where the building official has reasonable cause to believe that there exists in a structure or upon a premises a condition which is contrary to or in violation of this code which makes the structure or premises unsafe, dangerous or hazardous, the building official or designee is authorized to enter the structure or premises at reasonable times to inspect or to perform the duties imposed by this code, provided that if such structure or premises be occupied that credentials be presented to the occupant and entry requested. If such structure or premises be unoccupied, the building official shall first make a reasonable effort to locate the owner or other person having charge or control of the structure or premises and request entry. If entry is refused, the building official shall have recourse to the remedies provided by law to secure entry.

R104.7 Department records. The building official shall keep official records of applications received, permits and certificates issued, fees collected, reports of inspections, and notices and orders issued. Such records shall be retained in the official records for the period required for the retention of public records.

R104.8 Liability. The building official, member of the board of appeals or employee charged with the enforcement of this code, while acting for the jurisdiction in good faith and without malice in the discharge of the duties required by this code or other pertinent law or ordinance, shall not thereby be rendered liable personally and is hereby relieved from personal liability for any damage accruing to persons or property as a result of any act or by reason of an act or omission in the discharge of official duties. Any suit instituted against an officer or employee because of an act performed by that officer or employee in the lawful discharge of duties and under the provi-

sions of this code shall be defended by legal representative of the jurisdiction until the final termination of the proceedings. The building official or any subordinate shall not be liable for cost in any action, suit or proceeding that is instituted in pursuance of the provisions of this code.

R104.9 Approved materials and equipment. Materials, equipment and devices approved by the building official shall be constructed and installed in accordance with such approval.

R104.9.1 Used materials and equipment. Used materials, equipment and devices shall not be reused unless approved by the building official.

R104.10 Modifications. Wherever there are practical difficulties involved in carrying out the provisions of this code, the building official shall have the authority to grant modifications for individual cases, provided the building official shall first find that special individual reason makes the strict letter of this code impractical and the modification is in compliance with the intent and purpose of this code and that such modification does not lessen health, life and fire safety requirements or structural. The details of action granting modifications shall be recorded and entered in the files of the department of building safety.

R104.10.1 Areas prone to flooding. The building official shall not grant modifications to any provision related to areas prone to flooding as established by Table R301.2(1) without the granting of a variance to such provisions by the board of appeals.

R104.11 Alternative materials, design and methods of construction and equipment. The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been approved. An alternative material, design or method of construction shall be approved where the building official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code. Compliance with the specific performance-based provisions of the *International Codes* in lieu of specific requirements of this code shall also be permitted as an alternate.

R104.11.1 Tests. Whenever there is insufficient evidence of compliance with the provisions of this code, or evidence that a material or method does not conform to the requirements of this code, or in order to substantiate claims for alternative materials or methods, the building official shall have the authority to require tests as evidence of compliance to be made at no expense to the jurisdiction. Test methods shall be as specified in this code or by other recognized test standards. In the absence of recognized and accepted test methods, the building official shall approve the testing procedures. Tests shall be performed by an approved agency. Reports of such tests shall be retained by the building official for the period required for retention of public records.

SECTION R105 PERMITS

R105.1 Required. Any owner or authorized agent who intends to construct, enlarge, alter, repair, move, demolish or change the occupancy of a building or structure, or to erect, install, enlarge, alter, repair, remove, convert or replace any electrical, gas, mechanical or plumbing system, the installation of which is regulated by this code, or to cause any such work to be done, shall first make application to the building official and obtain the required permit.

R105.2 Work exempt from permit. Permits shall not be required for the following. Exemption from permit requirements of this code shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code or any other laws or ordinances of this jurisdiction.

Building:

1. One-story detached accessory structures used as tool and storage sheds, playhouses and similar uses, provided the floor area does not exceed 120 square feet (11.15 m²).
2. Fences not over 6 feet (1829 mm) high.
3. Retaining walls that are not over 4 feet (1219 mm) in height measured from the bottom of the footing to the top of the wall, unless supporting a surcharge.
4. Water tanks supported directly upon grade if the capacity does not exceed 5,000 gallons (18 927 L) and the ratio of height to diameter or width does not exceed 2 to 1.
5. Sidewalks and driveways.
6. Painting, papering, tiling, carpeting, cabinets, counter tops and similar finish work.
7. Prefabricated swimming pools that are less than 24 inches (610 mm) deep.
8. Swings and other playground equipment.
9. Window awnings supported by an exterior wall which do not project more than 54 inches (1372 mm) from the exterior wall and do not require additional support.

Electrical:

Repairs and maintenance: A permit shall not be required for minor repair work, including the replacement of lamps or the connection of approved portable electrical equipment to approved permanently installed receptacles.

Gas:

1. Portable heating, cooking or clothes drying appliances.
2. Replacement of any minor part that does not alter approval of equipment or make such equipment unsafe.
3. Portable-fuel-cell appliances that are not connected to a fixed piping system and are not interconnected to a power grid.

Mechanical:

1. Portable heating appliances.
2. Portable ventilation appliances.
3. Portable cooling units.

4. Steam, hot or chilled water piping within any heating or cooling equipment regulated by this code.
5. Replacement of any minor part that does not alter approval of equipment or make such equipment unsafe.
6. Portable evaporative coolers.
7. Self-contained refrigeration systems containing 10 pounds (4.54 kg) or less of refrigerant or that are actuated by motors of 1 horsepower (746 W) or less.
8. Portable-fuel-cell appliances that are not connected to a fixed piping system and are not interconnected to a power grid.

The stopping of leaks in drains, water, soil, waste or vent pipe; provided, however, that if any concealed trap, drainpipe, water, soil, waste or vent pipe becomes defective and it becomes necessary to remove and replace the same with new material, such work shall be considered as new work and a permit shall be obtained and inspection made as provided in this code.

The clearing of stoppages or the repairing of leaks in pipes, valves or fixtures, and the removal and reinstallation of water closets, provided such repairs do not involve or require the replacement or rearrangement of valves, pipes or fixtures.

R105.2.1 Emergency repairs. Where equipment replacements and repairs must be performed in an emergency situation, the permit application shall be submitted within the next working business day to the building official.

R105.2.2 Repairs. Application or notice to the building official is not required for ordinary repairs to structures, replacement of lamps or the connection of approved portable electrical equipment to approved permanently installed receptacles. Such repairs shall not include the cutting away of any wall, partition or portion thereof, the removal or cutting of any structural beam or load-bearing support, or the removal or change of any required means of egress, or rearrangement of parts of a structure affecting the egress requirements; nor shall ordinary repairs include addition to, alteration of, replacement or relocation of any water supply, sewer, drainage, drain leader, gas, soil, waste, vent or similar piping, electric wiring or mechanical or other work affecting public health or general safety.

R105.2.3 Public service agencies. A permit shall not be required for the installation, alteration or repair of generation, transmission, distribution, metering or other related equipment that is under the ownership and control of public service agencies by established right.

R105.3 Application for permit. To obtain a permit, the applicant shall first file an application therefor in writing on a form furnished by the department of building safety for that purpose. Such application shall:

1. Identify and describe the work to be covered by the permit for which application is made.
2. Describe the land on which the proposed work is to be done by legal description, street address or similar description that will readily identify and definitely locate the proposed building or work.

3. Indicate the use and occupancy for which the proposed work is intended.
4. Be accompanied by construction documents and other information as required in Section R106.1.
5. State the valuation of the proposed work.
6. Be signed by the applicant or the applicant's authorized agent.
7. Give such other data and information as required by the building official.

R105.3.1 Action on application. The building official shall examine or cause to be examined applications for permits and amendments thereto within a reasonable time after filing. If the application or the construction documents do not conform to the requirements of pertinent laws, the building official shall reject such application in writing, stating the reasons therefor. If the building official is satisfied that the proposed work conforms to the requirements of this code and laws and ordinances applicable thereto, the building official shall issue a permit therefor as soon as practicable.

R105.3.1.1 Determination of substantially improved or substantially damaged existing buildings in flood hazard areas. For applications for reconstruction, rehabilitation, addition or other improvement of existing buildings or structures located in an area prone to flooding as established by Table R301.2(1), the building official shall examine or cause to be examined the construction documents and shall prepare a finding with regard to the value of the proposed work. For buildings that have sustained damage of any origin, the value of the proposed work shall include the cost to repair the building or structure to its predamage condition. If the building official finds that the value of proposed work equals or exceeds 50 percent of the market value of the building or structure before the damage has occurred or the improvement is started, the finding shall be provided to the board of appeals for a determination of substantial improvement or substantial damage. Applications determined by the board of appeals to constitute substantial improvement or substantial damage shall meet the requirements of Section R324.

R105.3.2 Time limitation of application. An application for a permit for any proposed work shall be deemed to have been abandoned 180 days after the date of filing unless such application has been pursued in good faith or a permit has been issued; except that the building official is authorized to grant one or more extensions of time for additional periods not exceeding 180 days each. The extension shall be requested in writing and justifiable cause demonstrated.

R105.4 Validity of permit. The issuance or granting of a permit shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of this code or of any other ordinance of the jurisdiction. Permits presuming to give authority to violate or cancel the provisions of this code or other ordinances of the jurisdiction shall not be valid. The issuance of a permit based on construction documents and other data shall not prevent the building official from requiring the

correction of errors in the construction documents and other data. The building official is also authorized to prevent occupancy or use of a structure where in violation of this code or of any other ordinances of this jurisdiction.

R105.5 Expiration. Every permit issued shall become invalid unless the work authorized by such permit is commenced within 180 days after its issuance, or if the work authorized by such permit is suspended or abandoned for a period of 180 days after the time the work is commenced. The building official is authorized to grant, in writing, one or more extensions of time, for periods not more than 180 days each. The extension shall be requested in writing and justifiable cause demonstrated.

R105.6 Suspension or revocation. The building official is authorized to suspend or revoke a permit issued under the provisions of this code wherever the permit is issued in error or on the basis of incorrect, inaccurate or incomplete information, or in violation of any ordinance or regulation or any of the provisions of this code.

R105.7 Placement of permit. The building permit or copy thereof shall be kept on the site of the work until the completion of the project.

R105.8 Responsibility. It shall be the duty of every person who performs work for the installation or repair of building, structure, electrical, gas, mechanical or plumbing systems, for which this code is applicable, to comply with this code.

SECTION R106 CONSTRUCTION DOCUMENTS

R106.1 Submittal documents. Construction documents, special inspection and structural observation programs and other data shall be submitted in one or more sets with each application for a permit. The construction documents shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed. Where special conditions exist, the building official is authorized to require additional construction documents to be prepared by a registered design professional.

Exception: The building official is authorized to waive the submission of construction documents and other data not required to be prepared by a registered design professional if it is found that the nature of the work applied for is such that reviewing of construction documents is not necessary to obtain compliance with this code.

R106.1.1 Information on construction documents. Construction documents shall be drawn upon suitable material. Electronic media documents are permitted to be submitted when approved by the building official. Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to the provisions of this code and relevant laws, ordinances, rules and regulations, as determined by the building official.

R106.1.2 Manufacturer's installation instructions. Manufacturer's installation instructions, as required by this

code, shall be available on the job site at the time of inspection.

R106.1.3 Information for construction in flood hazard areas. For buildings and structures located in whole or in part in flood hazard areas as established by Table R301.2(1), construction documents shall include:

1. Delineation of flood hazard areas, floodway boundaries and flood zones and the design flood elevation, as appropriate;
2. The elevation of the proposed lowest floor, including basement; in areas of shallow flooding (AO zones), the height of the proposed lowest floor, including basement, above the highest adjacent grade; and
3. The elevation of the bottom of the lowest horizontal structural member in coastal high hazard areas (V Zone); and
4. If design flood elevations are not included on the community's Flood Insurance Rate Map (FIRM), the building official and the applicant shall obtain and reasonably utilize any design flood elevation and floodway data available from other sources.

R106.2 Site plan. The construction documents submitted with the application for permit shall be accompanied by a site plan showing the size and location of new construction and existing structures on the site and distances from lot lines. In the case of demolition, the site plan shall show construction to be demolished and the location and size of existing structures and construction that are to remain on the site or plot.

R106.3 Examination of documents. The building official shall examine or cause to be examined construction documents for code compliance.

R106.3.1 Approval of construction documents. When the building official issues a permit, the construction documents shall be approved, in writing or by a stamp which states "APPROVED PLANS PER IRC SECTION R106.3.1." One set of construction documents so reviewed shall be retained by the building official. The other set shall be returned to the applicant, shall be kept at the site of work and shall be open to inspection by the building official or his or her authorized representative.

R106.3.2 Previous approvals. This code shall not require changes in the construction documents, construction or designated occupancy of a structure for which a lawful permit has been heretofore issued or otherwise lawfully authorized, and the construction of which has been pursued in good faith within 180 days after the effective date of this code and has not been abandoned.

R106.3.3 Phased approval. The building official is authorized to issue a permit for the construction of foundations or any other part of a building or structure before the construction documents for the whole building or structure have been submitted, provided that adequate information and detailed statements have been filed complying with pertinent requirements of this code. The holder of such permit for the foundation or other parts of a building or structure shall proceed at

the holder's own risk with the building operation and without assurance that a permit for the entire structure will be granted.

R106.4 Amended construction documents. Work shall be installed in accordance with the approved construction documents, and any changes made during construction that are not in compliance with the approved construction documents shall be resubmitted for approval as an amended set of construction documents.

R106.5 Retention of construction documents. One set of approved construction documents shall be retained by the building official for a period of not less than 180 days from date of completion of the permitted work, or as required by state or local laws.

SECTION R107 TEMPORARY STRUCTURES AND USES

R107.1 General. The building official is authorized to issue a permit for temporary structures and temporary uses. Such permits shall be limited as to time of service, but shall not be permitted for more than 180 days. The building official is authorized to grant extensions for demonstrated cause.

R107.2 Conformance. Temporary structures and uses shall conform to the structural strength, fire safety, means of egress, light, ventilation and sanitary requirements of this code as necessary to ensure the public health, safety and general welfare.

R107.3 Temporary power. The building official is authorized to give permission to temporarily supply and use power in part of an electric installation before such installation has been fully completed and the final certificate of completion has been issued. The part covered by the temporary certificate shall comply with the requirements specified for temporary lighting, heat or power in the ICC *Electrical Code*.

R107.4 Termination of approval. The building official is authorized to terminate such permit for a temporary structure or use and to order the temporary structure or use to be discontinued.

SECTION R108 FEES

R108.1 Payment of fees. A permit shall not be valid until the fees prescribed by law have been paid. Nor shall an amendment to a permit be released until the additional fee, if any, has been paid.

R108.2 Schedule of permit fees. On buildings, structures, electrical, gas, mechanical and plumbing systems or alterations requiring a permit, a fee for each permit shall be paid as required, in accordance with the schedule as established by the applicable governing authority.

R108.3 Building permit valuations. Building permit valuation shall include total value of the work for which a permit is being issued, such as electrical, gas, mechanical, plumbing equipment and other permanent systems, including materials and labor.

R108.4 Related fees. The payment of the fee for the construction, alteration, removal or demolition for work done in con-

nection with or concurrently with the work authorized by a building permit shall not relieve the applicant or holder of the permit from the payment of other fees that are prescribed by law.

R108.5 Refunds. The building official is authorized to establish a refund policy.

SECTION R109 INSPECTIONS

R109.1 Types of inspections. For onsite construction, from time to time the building official, upon notification from the permit holder or his agent, shall make or cause to be made any necessary inspections and shall either approve that portion of the construction as completed or shall notify the permit holder or his or her agent wherein the same fails to comply with this code.

R109.1.1 Foundation inspection. Inspection of the foundation shall be made after poles or piers are set or trenches or basement areas are excavated and any required forms erected and any required reinforcing steel is in place and supported prior to the placing of concrete. The foundation inspection shall include excavations for thickened slabs intended for the support of bearing walls, partitions, structural supports, or equipment and special requirements for wood foundations.

R109.1.2 Plumbing, mechanical, gas and electrical systems inspection. Rough inspection of plumbing, mechanical, gas and electrical systems shall be made prior to covering or concealment, before fixtures or appliances are set or installed, and prior to framing inspection.

Exception: Back-filling of ground-source heat pump loop systems tested in accordance with Section M2105.1 prior to inspection shall be permitted.

R109.1.3 Floodplain inspections. For construction in areas prone to flooding as established by Table R301.2(1), upon placement of the lowest floor, including basement, and prior to further vertical construction, the building official shall require submission of documentation, prepared and sealed by a registered design professional, of the elevation of the lowest floor, including basement, required in Section R324.

R109.1.4 Frame and masonry inspection. Inspection of framing and masonry construction shall be made after the roof, masonry, all framing, firestopping, draftstopping and bracing are in place and after the plumbing, mechanical and electrical rough inspections are approved.

R109.1.5 Other inspections. In addition to the called inspections above, the building official may make or require any other inspections to ascertain compliance with this code and other laws enforced by the building official.

R109.1.5.1 Fire-resistance-rated construction inspection. Where fire-resistance-rated construction is required between dwelling units or due to location on property, the building official shall require an inspection of such construction after all lathing and/or wallboard is

in place, but before any plaster is applied, or before wall-board joints and fasteners are taped and finished.

R109.1.5.2 Reinforced masonry, insulating concrete form (ICF) and conventionally formed concrete wall inspection. Reinforced masonry walls, insulating concrete form (ICF) walls and conventionally formed concrete walls located in Seismic Design Categories D₀, D₁, D₂, and E shall be inspected after plumbing, mechanical, and electrical systems embedded within the walls, and reinforcing steel are in place and prior to placement of grout or concrete. Inspection shall verify the correct size, location, spacing, and lapping of reinforcing. For masonry walls, inspection shall also verify that the location of grout cleanouts and size of grout spaces comply with the requirements of this code.

R109.1.6 Final inspection. Final inspection shall be made after the permitted work is complete and prior to occupancy.

R109.2 Inspection agencies. The building official is authorized to accept reports of approved agencies, provided such agencies satisfy the requirements as to qualifications and reliability.

R109.3 Inspection requests. It shall be the duty of the permit holder or their agent to notify the building official that such work is ready for inspection. It shall be the duty of the person requesting any inspections required by this code to provide access to and means for inspection of such work.

R109.4 Approval required. Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the building official. The building official upon notification, shall make the requested inspections and shall either indicate the portion of the construction that is satisfactory as completed, or shall notify the permit holder or an agent of the permit holder wherein the same fails to comply with this code. Any portions that do not comply shall be corrected and such portion shall not be covered or concealed until authorized by the building official.

SECTION R110 CERTIFICATE OF OCCUPANCY

R110.1 Use and occupancy. No building or structure shall be used or occupied, and no change in the existing occupancy classification of a building or structure or portion thereof shall be made until the building official has issued a certificate of occupancy therefor as provided herein. Issuance of a certificate of occupancy shall not be construed as an approval of a violation of the provisions of this code or of other ordinances of the jurisdiction. Certificates presuming to give authority to violate or cancel the provisions of this code or other ordinances of the jurisdiction shall not be valid.

Exceptions:

1. Certificates of occupancy are not required for work exempt from permits under Section R105.2.
2. Accessory buildings or structures.

R110.2 Change in use. Changes in the character or use of an existing structure shall not be made except as specified in Sections 3406 and 3407 of the *International Building Code*.

R110.3 Certificate issued. After the building official inspects the building or structure and finds no violations of the provisions of this code or other laws that are enforced by the department of building safety, the building official shall issue a certificate of occupancy which shall contain the following:

1. The building permit number.
2. The address of the structure.
3. The name and address of the owner.
4. A description of that portion of the structure for which the certificate is issued.
5. A statement that the described portion of the structure has been inspected for compliance with the requirements of this code.
6. The name of the building official.
7. The edition of the code under which the permit was issued.
8. If an automatic sprinkler system is provided and whether the sprinkler system is required.
9. Any special stipulations and conditions of the building permit.

R110.4 Temporary occupancy. The building official is authorized to issue a temporary certificate of occupancy before the completion of the entire work covered by the permit, provided that such portion or portions shall be occupied safely. The building official shall set a time period during which the temporary certificate of occupancy is valid.

R110.5 Revocation. The building official shall, in writing, suspend or revoke a certificate of occupancy issued under the provisions of this code wherever the certificate is issued in error, or on the basis of incorrect information supplied, or where it is determined that the building or structure or portion thereof is in violation of any ordinance or regulation or any of the provisions of this code.

SECTION R111 SERVICE UTILITIES

R111.1 Connection of service utilities. No person shall make connections from a utility, source of energy, fuel or power to any building or system that is regulated by this code for which a permit is required, until approved by the building official.

R111.2 Temporary connection. The building official shall have the authority to authorize and approve the temporary connection of the building or system to the utility, source of energy, fuel or power.

R111.3 Authority to disconnect service utilities. The building official shall have the authority to authorize disconnection of utility service to the building, structure or system regulated by this code and the referenced codes and standards set forth in Section R102.4 in case of emergency where necessary to eliminate an immediate hazard to life or property or when such utility connection has been made without the approval required by Section R111.1 or R111.2. The building official shall notify the serving utility and whenever possible the owner and occupant of the building, structure or service system of the decision to

disconnect prior to taking such action if not notified prior to disconnection. The owner or occupant of the building, structure or service system shall be notified in writing as soon as practical thereafter.

SECTION R112 BOARD OF APPEALS

R112.1 General. In order to hear and decide appeals of orders, decisions or determinations made by the building official relative to the application and interpretation of this code, there shall be and is hereby created a board of appeals. The building official shall be an ex officio member of said board but shall have no vote on any matter before the board. The board of appeals shall be appointed by the governing body and shall hold office at its pleasure. The board shall adopt rules of procedure for conducting its business, and shall render all decisions and findings in writing to the appellant with a duplicate copy to the building official.

R112.2 Limitations on authority. An application for appeal shall be based on a claim that the true intent of this code or the rules legally adopted thereunder have been incorrectly interpreted, the provisions of this code do not fully apply, or an equally good or better form of construction is proposed. The board shall have no authority to waive requirements of this code.

R112.2.1 Determination of substantial improvement in areas prone to flooding. When the building official provides a finding required in Section R105.3.1.1, the board of appeals shall determine whether the value of the proposed work constitutes a substantial improvement. A substantial improvement means any repair, reconstruction, rehabilitation, addition or improvement of a building or structure, the cost of which equals or exceeds 50 percent of the market value of the building or structure before the improvement or repair is started. If the building or structure has sustained substantial damage, all repairs are considered substantial improvement regardless of the actual repair work performed. The term does not include:

1. Improvements of a building or structure required to correct existing health, sanitary or safety code violations identified by the building official and which are the minimum necessary to assure safe living conditions; or
2. Any alteration of an historic building or structure, provided that the alteration will not preclude the continued designation as an historic building or structure. For the purpose of this exclusion, an historic building is:
 - 2.1. Listed or preliminarily determined to be eligible for listing in the National Register of Historic Places; or
 - 2.2. Determined by the Secretary of the U.S. Department of Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined to qualify as an historic district; or

2.3. Designated as historic under a state or local historic preservation program that is approved by the Department of Interior.

R112.2.2 Criteria for issuance of a variance for areas prone to flooding. A variance shall only be issued upon:

1. A showing of good and sufficient cause that the unique characteristics of the size, configuration or topography of the site render the elevation standards in Section R324 inappropriate.
2. A determination that failure to grant the variance would result in exceptional hardship by rendering the lot undevelopable.
3. A determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, nor create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances.
4. A determination that the variance is the minimum necessary to afford relief, considering the flood hazard.
5. Submission to the applicant of written notice specifying the difference between the design flood elevation and the elevation to which the building is to be built, stating that the cost of flood insurance will be commensurate with the increased risk resulting from the reduced floor elevation, and stating that construction below the design flood elevation increases risks to life and property.

R112.3 Qualifications. The board of appeals shall consist of members who are qualified by experience and training to pass on matters pertaining to building construction and are not employees of the jurisdiction.

R112.4 Administration. The building official shall take immediate action in accordance with the decision of the board.

SECTION R113 VIOLATIONS

R113.1 Unlawful acts. It shall be unlawful for any person, firm or corporation to erect, construct, alter, extend, repair, move, remove, demolish or occupy any building, structure or equipment regulated by this code, or cause same to be done, in conflict with or in violation of any of the provisions of this code.

R113.2 Notice of violation. The building official is authorized to serve a notice of violation or order on the person responsible for the erection, construction, alteration, extension, repair, moving, removal, demolition or occupancy of a building or structure in violation of the provisions of this code, or in violation of a detail statement or a plan approved thereunder, or in violation of a permit or certificate issued under the provisions of this code. Such order shall direct the discontinuance of the illegal action or condition and the abatement of the violation.

R113.3 Prosecution of violation. If the notice of violation is not complied with in the time prescribed by such notice, the building official is authorized to request the legal counsel of the

jurisdiction to institute the appropriate proceeding at law or in equity to restrain, correct or abate such violation, or to require the removal or termination of the unlawful occupancy of the building or structure in violation of the provisions of this code or of the order or direction made pursuant thereto.

R113.4 Violation penalties. Any person who violates a provision of this code or fails to comply with any of the requirements thereof or who erects, constructs, alters or repairs a building or structure in violation of the approved construction documents or directive of the building official, or of a permit or certificate issued under the provisions of this code, shall be subject to penalties as prescribed by law.

SECTION R114 STOP WORK ORDER

R114.1 Notice to owner. Upon notice from the building official that work on any building or structure is being prosecuted contrary to the provisions of this code or in an unsafe and dangerous manner, such work shall be immediately stopped. The stop work order shall be in writing and shall be given to the owner of the property involved, or to the owner's agent or to the person doing the work and shall state the conditions under which work will be permitted to resume.

R114.2 Unlawful continuance. Any person who shall continue any work in or about the structure after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be subject to penalties as prescribed by law.

Part II — Definitions

CHAPTER 2 DEFINITIONS

SECTION R201 GENERAL

R201.1 Scope. Unless otherwise expressly stated, the following words and terms shall, for the purposes of this code, have the meanings indicated in this chapter.

R201.2 Interchangeability. Words used in the present tense include the future; words in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.

R201.3 Terms defined in other codes. Where terms are not defined in this code such terms shall have meanings ascribed to them as in other code publications of the International Code Council.

R201.4 Terms not defined. Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies.

SECTION R202 DEFINITIONS

ACCESSIBLE. Signifies access that requires the removal of an access panel or similar removable obstruction.

ACCESSIBLE, READILY. Signifies access without the necessity for removing a panel or similar obstruction.

ACCESSORY STRUCTURE. A structure not greater than 3,000 square feet (279 m²) in floor area, and not over two stories in height, the use of which is customarily accessory to and incidental to that of the dwelling(s) and which is located on the same lot.

ADDITION. An extension or increase in floor area or height of a building or structure.

AIR ADMITTANCE VALVE. A one-way valve designed to allow air into the plumbing drainage system when a negative pressure develops in the piping. This device shall close by gravity and seal the terminal under conditions of zero differential pressure (no flow conditions) and under positive internal pressure.

AIR BREAK (DRAINAGE SYSTEM). An arrangement in which a discharge pipe from a fixture, appliance or device drains indirectly into a receptor below the flood-level rim of the receptor, and above the trap seal.

AIR CIRCULATION, FORCED. A means of providing space conditioning utilizing movement of air through ducts or plenums by mechanical means.

AIR-CONDITIONING SYSTEM. A system that consists of heat exchangers, blowers, filters, supply, exhaust and return-air systems, and shall include any apparatus installed in connection therewith.

AIR GAP, DRAINAGE SYSTEM. The unobstructed vertical distance through free atmosphere between the outlet of a waste pipe and the flood-level rim of the fixture or receptor into which it is discharging.

AIR GAP, WATER-DISTRIBUTION SYSTEM. The unobstructed vertical distance through free atmosphere between the lowest opening from a water supply discharge to the flood-level rim of a plumbing fixture.

ALTERATION. Any construction or renovation to an existing structure other than repair or addition that requires a permit. Also, a change in a mechanical system that involves an extension, addition or change to the arrangement, type or purpose of the original installation that requires a permit.

ANCHORS. See "Supports."

ANTISIPHON. A term applied to valves or mechanical devices that eliminate siphonage.

APPLIANCE. A device or apparatus that is manufactured and designed to utilize energy and for which this code provides specific requirements.

APPROVED. Acceptable to the building official.

APPROVED AGENCY. An established and recognized agency regularly engaged in conducting tests or furnishing inspection services, when such agency has been approved by the building official.

ASPECT RATIO. The ratio of the height to width (h/w) of a shear wall. The shear wall height is the maximum clear height from top of foundation or diaphragm to bottom of diaphragm framing above and the shear wall width is the sheathed dimension in the direction of applied force on the shear wall.

ATTIC. The unfinished space between the ceiling joists of the top story and the roof rafters.

BACKFLOW, DRAINAGE. A reversal of flow in the drainage system.

BACKFLOW PREVENTER. A device or means to prevent backflow.

BACKFLOW PREVENTER, REDUCED-PRESSURE-ZONE TYPE. A backflow-prevention device consisting of two independently acting check valves, internally force loaded to a normally closed position and separated by an intermediate chamber (or zone) in which there is an automatic relief means of venting to atmosphere internally loaded to a normally open