Appendix A. References and Online Resources

FEMA publications and forms may be obtained at no cost. These and other materials may also be available online at **http://www.fema.gov/library/lib06.htm**.

Online versions of FEMA forms are available at **http://www.fema.gov/library/frms.htm**.

Hardcopy publications and forms may be ordered from:

Federal Emergency Management Agency
P.O. Box 2012
Jessup, Maryland 20794-2012
Toll free: 1-800-480-2520

APA PAS #473, *Subdivision Design in Flood Hazard Areas*. Washington, DC: American Planning Association, 1997.

ASCE 7-98, *Minimum Design Loads for Buildings and Other Structures*. Reston, Virginia: American Society of Civil Engineers, 1998.

ASCE 24-98, *Flood Resistant Design and Construction*. Reston, Virginia: American Society of Civil Engineers, 1998.

ASFPM and Federal Interagency Floodplain Management Task Force, *Addressing Your Community's Flood Problems: A Guide for Elected Officials*. Madison, Wisconsin: Association of State Floodplain Managers, Inc., 1996.

FEMA, *44 CFR, Part 59-60, National Flood Insurance Program*. Washington, DC: Federal Emergency Management Agency, 1990.

FEMA Federal Insurance Administration, *Code Compatibility Report*. Washington, DC: Federal Emergency Management Agency, 1992.

FEMA EMI IS-9, *Managing Floodplain Development Through the NFIP* (independent study course). Emmitsburg, Maryland: Federal Emergency Management Agency, Emergency Management Institute, 2000.

FEMA FIA-12, *Appeals, Revisions, and Amendments to NFIP Maps: A Guide for Community Officials*. Washington, DC: Federal Emergency Management Agency, Federal Insurance Administration, 1993.

FEMA FIA-15A, *CRS Application*. Washington, DC: Federal Emergency Management Agency, Federal Insurance Administration, 1999.

FEMA 55, *Coastal Construction Manual*. Washington, DC: Federal Emergency Management Agency, 2000.

FEMA 85, *Manufactured Home Installation in Flood Hazard Areas*. Washington, DC: Federal Emergency Management Agency, 1985.

FEMA 213, *Answers to Questions About Substantially Damaged Buildings*. Washington, DC: Federal Emergency Management Agency, 1991.

FEMA 259, *Engineering Principles and Practices for Retrofitting Flood Prone Residential Buildings*. Washington, DC: Federal Emergency Management Agency, 1995.

FEMA 265, *Managing Floodplain Development in Approximate Zone A Areas: A Guide for Obtaining and Developing Base (100-Year) Flood Elevations*. Washington, DC: Federal Emergency Management Agency, 1995. Available online at **www.fema.gov/mit/zonea_mn.pdf**.

FEMA 301, *Interim Guidance for State and Local Officials: Increased Cost of Compliance Coverage*. Washington, DC: Federal Emergency Management Agency, 1997. Available online at **www.fema.gov/ mit/icc00.htm**.

FEMA 311, *Guidance on Estimating Substantial Damage Using the NFIP Residential Substantial Damage Estimator*. Washington, DC: Federal Emergency Management Agency, 1998.

FEMA 312, *Homeowner's Guide to Retrofitting: Six Ways to Protect Your House from Flooding*. Washington, DC: Federal Emergency Management Agency, 1998.

FEMA 348, *Protecting Building Utilities From Flood Damage: Principles and Practices for the Design and Construction of Flood Resistant Building Utility Systems*. Washington, DC: Federal Emergency Management Agency, 1999.

FEMA. (1996) *Floodproofing Certificate* (FEMA Form 81-65). [Online]. Available: **http://www.fema.gov/nfip/ff81-65.pdf** [1999, December 30].

FEMA. (1999) *Elevation Certificate* (FEMA Form 81-31). [Online]. Available: **http://www.fema.gov/library/elvcert.pdf** [1999, December 30].

FEMA. (various dates) *NFIP Technical Bulletin Series*. Washington, DC: National Flood Insurance Program. [Online]. Available: **http://www.fema.gov/mit/techbul.htm**.

FEMA FIA-TB #0: *User's Guide to Technical Bulletins*. 1999.

FEMA FIA-TB #1: *Openings in Foundation Walls for Buildings Located in Special Flood Hazard Areas*. 1993.

FEMA FIA-TB #2: *Flood-Resistant Material Requirements for Buildings Located in Special Flood Hazard Areas*. 1993.

FEMA FIA-TB #3: *Non-Residential Floodproofing – Requirements and Certification for Buildings Located in Special Flood Hazard Areas*. 1993.

FEMA FIA-TB #4: *Elevator Installation for Buildings Located in Special Flood Hazard Areas*. 1993.

FEMA FIA-TB #5: *Free of Obstruction Requirements for Buildings Located in Coastal High Hazard Areas*. 1993.

FEMA FIA-TB #6: *Below Grade Parking Requirements for Buildings Located in Special Flood Hazard Areas*. 1993.

FEMA FIA-TB #7: *Wet Floodproofing Requirements for Structures Located in Special Flood Hazard Areas*. 1993.

FEMA FIA-TB #8: *Corrosion Protection for Metal Connectors in Coastal Areas for Structures Located in Special Flood Hazard Areas*. 1996.

FEMA FIA-TB #9: *Design and Construction Guidance for Breakaway Walls Below Elevated Coastal Buildings*. 1999.

IBC 2000, *2000 International Building Code®*. Falls Church, Virginia: International Code Council, Inc., 2000.

IFGC 2000, *2000 International Fuel Gas Code®*. Falls Church, Virginia: International Code Council, Inc., 2000.

IMC 2000, *2000 International Mechanical Code®*. Falls Church, Virginia: International Code Council, Inc., 1999.

IPC 2000, *2000 International Plumbing Code®*. Falls Church, Virginia: International Code Council, Inc., 2000.

IPSDC 2000, *2000 International Private Sewage Disposal Code®*. Falls Church, Virginia: International Code Council, Inc., 2000.

IRC 2000, *2000 International Residential Code™*. Falls Church, Virginia: International Code Council, Inc., 2000.

National Evaluation Service, Inc., *Evaluation Plan for Determination of Flood-Resistance of Building Elements*. April 2000.

Appendix B. Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IBC®

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IBC®.

NFIP Regulations	IBC® 2000 and Appendix G
Sec. 59.1 Definitions	
BASE FLOOD. Base flood means the flood having a one percent chance of being equaled or exceeded in any given year.	**BASE FLOOD.** The flood having a 1 percent chance of being equaled or exceeded in any given year. **BASE FLOOD ELEVATION.** The elevation of the base flood, including wave height, relative to the National Geodetic Vertical Datum (NGVD), North American Vertical Datum (NAVD) or other datum specified on the flood insurance rate map (FIRM).
BASEMENT. Any area of the building having its floor subgrade (below ground level) on all sides.	**BASEMENT.** The portion of a building having its floor subgrade (below ground level) on all sides.
[Not defined in the NFIP regulations.]	**DESIGN FLOOD.** The flood associated with the greater of the following two areas: 1. Area with a floodplain subject to a 1 percent or greater chance of flooding in any year, or 2. Area designated as a flood hazard area on a community's flood hazard map, or otherwise legally designated.
[Not defined in the NFIP regulations.]	**DESIGN FLOOD ELEVATION.** The elevation of the "design flood," including wave height, relative to the datum specified on the community's legally designated flood hazard map.
DEVELOPMENT. Any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials.	**101.2 Scope** **105.1 Permits required** **105.2 Work exempt from permit** **Appendix G. DEVELOPMENT.** Any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, temporary or permanent storage of materials, mining, dredging, filling, grading, paving, excavations, operations and other land disturbing activities.
See **FLOODPROOFING.**	**DRY FLOODPROOFING.** A combination of design modifications that result in a building or structure, including the attendant utility and sanitary facilities, being watertight with walls substantially impermeable to the passage of water and with structural components having the capacity to resist loads as identified in ASCE 7.
EXISTING CONSTRUCTION (EXISTING STRUCTURES). For the purposes of determining rates, structures for which the "start of construction" commenced before the effective date of the FIRM or before January 1, 1975, for FIRMs effective before that date. "Existing construction" may also be referred to as "existing structures."	**EXISTING CONSTRUCTION.** Any buildings and structures for which the "start of construction" commenced before the effective date of the community's first floodplain management code, ordinance or standard. "Existing construction" may also be referred to as "existing structures." **EXISTING STRUCTURES.** See "Existing construction."
FLOOD or FLOODING. (a) A general and temporary condition of partial or complete inundation of normally dry land areas from. (1) The overflow of inland or tidal waters. (2) The unusual and rapid accumulation or runoff of surface waters from any source.	**FLOOD or FLOODING.** A general and temporary condition of partial or complete inundation of normally dry land from: 1. The overflow of inland or tidal waters. 2. The unusual and rapid accumulation or runoff of surface waters from any source.

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IBC®.

NFIP Regulations	IBC® 2000 and Appendix G
[Not defined in the NFIP regulations.]	**FLOOD DAMAGE RESISTANT MATERIALS.** Any construction material capable of withstanding direct and prolonged contact with floodwaters without sustaining any damage that requires more than cosmetic repair.
[Not defined in the NFIP regulations.]	**FLOOD HAZARD AREA.** The greater of the following two areas: 1. The area within a floodplain subject to a 1 percent or greater chance of flooding in any year. 2. The area designated as a flood hazard area on a community's flood hazard map, or otherwise legally designated. **FLOOD HAZARD AREA SUBJECT TO HIGH VELOCITY WAVE ACTION.** Area within the flood hazard area which is subject to high velocity wave action, and shown on a Flood Insurance Rate Map or other flood hazard map as Zone V, VO, or V1-30.
FLOOD INSURANCE RATE MAP (FIRM). An official map of a community, on which the Administrator has delineated both the special hazard areas and the risk premium zones applicable to the community.	**FLOOD INSURANCE RATE MAP (FIRM).** An official map of a community on which the Federal Emergency Management Agency has delineated both the special flood hazard areas and the risk premium zones applicable to the community.
FLOOD INSURANCE STUDY (see FLOOD ELEVATION STUDY). An examination, evaluation and determination of flood hazards and, if appropriate, corresponding water surface elevations, or an examination, evaluation and determination of mudslide (i.e., mudflow) and/or flood-related erosion hazards.	**FLOOD INSURANCE STUDY.** The official report provided by the Federal Emergency Management Agency containing the Flood Insurance Rate Map, the Flood Boundary and Floodway Map (FBFM), the water surface elevation of the base flood and supporting technical data.
FLOODWAY – See **REGULATORY FLOODWAY.**	**FLOODWAY.** The channel of the river, creek, or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.
FUNCTIONALLY DEPENDENT USE. A use which cannot perform its intended purpose unless it is located or carried out in close proximity to water. The term includes only docking facilities, port facilities that are necessary for the loading and unloading of cargo or passengers, and ship building and ship repair facilities, but does not include long-term storage or related manufacturing facilities.	**Appendix G. FUNCTIONALLY DEPENDENT FACILITY.** A facility which cannot be used for its intended purpose unless it is located or carried out in close proximity to water, such as a docking or port facility necessary for the loading or unloading of cargo or passengers, shipbuilding, or ship repair. The term does not include long-term storage, manufacture, sales, or service facilities.
HISTORIC STRUCTURE. (a) Listed individually in the National Register of Historic Places (a listing maintained by the Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register; (b) Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district;	**HISTORIC BUILDINGS.** Buildings which are listed in or eligible for listing in the National Register of Historic Places, or designated as historic under an appropriate state or local law. See Section 3405.

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IBC®.

NFIP Regulations	IBC® 2000 and Appendix G
HISTORIC STRUCTURE, continued: (c) Individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of the Interior; or (d) Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either. (1) By an approved state program as determined by the Secretary of the Interior or (2) Directly by the Secretary of the Interior in states without approved programs.	
LOWEST FLOOR. The lowest floor of the lowest enclosed area (including basement). An unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access or storage in an area other than a basement area is not considered a building's lowest floor; provided, that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of Sec. 60.3.	**LOWEST FLOOR.** The floor of the lowest enclosed area, including basement, but excluding any unfinished or flood resistant enclosure, useable solely for vehicle parking, building access, or limited storage provided that such enclosure is not built so as to render the structure in violation of this section.
MANUFACTURED HOME. A structure, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when attached to the required utilities. The term "manufactured home" does not include a "recreational vehicle."	**Appendix G. MANUFACTURED HOME.** A structure that is transportable in one or more sections, built on a permanent chassis, designed for use with or without a permanent foundation when attached to the required utilities, and constructed to the Federal Mobile Home Construction and Safety Standards and rules and regulations promulgated by the U.S. Department of Housing and Urban Development. The term also includes mobile homes, park trailers, travel trailers, and similar transportable structures that are placed on a site for 180 consecutive days or longer.
MANUFACTURED HOME PARK OR SUBDIVISION. A parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.	**Appendix G. MANUFACTURED HOME PARK OR SUBDIVISION.** A parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.
RECREATIONAL VEHICLE. A vehicle which is. (a) built on a single chassis; (b) 400 square feet or less when measured at the largest horizontal projection; (c) designed to be self-propelled or permanently towable by a light duty truck; and (d) designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use.	**Appendix G. RECREATIONAL VEHICLE.** A vehicle that is built on a single chassis, 400 square feet or less when measured at the largest horizontal projection, designed to be self-propelled or permanently towable by a light duty truck, and designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use. A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions.

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IBC®.

NFIP Regulations	IBC® 2000 and Appendix G
REGULATORY FLOODWAY. The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.	See **FLOODWAY.**
REMEDY A VIOLATION. to bring the structure or other development into compliance with State or local flood plain management regulations, or, if this is not possible, to reduce the impacts of its noncompliance. Ways that impacts may be reduced include protecting the structure or other affected development from flood damages, implementing the enforcement provisions of the ordinance or otherwise deterring future similar violations, or reducing Federal financial exposure with regard to the structure or other development.	**113 Violations** **Appendix G101.4 VIOLATIONS.** Any violation of a provision of this appendix, or failure to comply with a permit or variance issued pursuant to this appendix or any requirement of this appendix, shall be handled in accordance with Section 113.
SPECIAL HAZARD AREA. Area of special flood hazard is the land in the flood plain within a community subject to a one percent or greater chance of flooding in any given year. The area may be designated as Zone A on the FHBM. After detailed ratemaking has been completed in preparation for publication of the flood insurance rate map, Zone A usually is refined into Zones A, AO, AH, A1-30, AE, A99, AR, AR/A1-30, AR/AE, AR/AO, AR/AH, AR/A, VO, or V1-30, VE, or V. For purposes of these regulations, the term "special flood hazard area (SFHA)" is synonymous in meaning with the phrase "area of special flood hazard."	**SPECIAL FLOOD HAZARD AREA.** The land area subject to flood hazards and shown on a Flood Insurance Rate Map or other flood hazard map as Zone A, AE, A1-30, A99, AR, AO, AH, V, VO, VE, or V1-30.
START OF CONSTRUCTION. Construction (for other than new construction or substantial improvements under the Coastal Barrier Resources Act (Pub. L. 97-348)), includes substantial improvement, and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, rehabilitation, addition placement, or other improvement was within 180 days of the permit date. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory	**START OF CONSTRUCTION.** The date of permit issuance for new construction and substantial improvements to existing structures, provided the actual start of construction, repair, reconstruction, rehabilitation, addition placement, or other improvement is within 180 days after the date of issuance. The actual start of construction means the first placement of permanent construction of a building (including a manufactured home) on a site, such as the pouring of a slab or footings, installation of pilings or construction of columns. Permanent construction does not include land preparation (such as clearing, excavation, grading, or filling), or the installation of streets or walkways, or excavation for a basement, footings, piers or foundations, or the erection of temporary forms, or the installation of accessory buildings such as garages or sheds not occupied as dwelling units or not part of the main building. For a substantial improvement, the actual "start of construction" means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IBC®.

NFIP Regulations	IBC® 2000 and Appendix G
START OF CONSTRUCTION, continued: units or not part of the main structure. For a substantial improvement, the actual start of construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.	
STRUCTURE. For flood plain management purposes, a walled and roofed building, including a gas or liquid storage tank, that is principally above ground, as well as a manufactured home. "Structure" for insurance coverage purposes, means a walled and roofed building, other than a gas or liquid storage tank, that is principally above ground and affixed to a permanent site, as well as a manufactured home on a permanent foundation. For the latter purpose, the term includes a building while in the course of construction, alteration or repair, but does not include building materials or supplies intended for use in such construction, alteration or repair, unless such materials or supplies are within an enclosed building on the premises.	**102.1 Scope** **105.2 Work exempt from a permit**
SUBSTANTIAL DAMAGE. Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.	**SUBSTANTIAL DAMAGE.** Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.
SUBSTANTIAL IMPROVEMENT. Any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the "start of construction" of the improvement. This term includes structures which have incurred "substantial damage", regardless of the actual repair work performed. The term does not, however, include either. (1) Any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions or (2) Any alteration of a "historic structure", provided that the alteration will not preclude the structure's continued designation as a "historic structure."	**SUBSTANTIAL IMPROVEMENT.** 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 structure before the improvement or repair is started. If the structure has sustained substantial damage, any repairs are considered substantial improvement regardless of the actual repair work performed. The term does not, however, include either: (1) Any project for improvement of a building required to correct existing health, sanitary or safety code violations identified by the building official and that are the minimum necessary to assure safe living conditions. (2) Any alteration of a historic structure provided that the alteration will not preclude the structure's continued designation as a historic structure.

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IBC®.

NFIP Regulations		IBC® 2000 and Appendix G
VARIANCE. A grant of relief by a community from the terms of a flood plain management regulation.		**104.10 Modifications** **104.11 Alternative materials, design and methods of construction and equipment.** [In flood hazard areas, modifications require a formal variance.] **Appendix G. VARIANCE.** A grant of relief from the requirements of this section which permits construction in a manner otherwise prohibited by this section where specific enforcement would result in unnecessary hardship.
VIOLATION. The failure of a structure or other development to be fully compliant with the community's flood plain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required in Sec. 60.3(b)(5), (c)(4), (c)(10), (d)(3), (e)(2), (e)(4), or (e)(5) is presumed to be in violation until such time as that documentation is provided.		**113 Violations** **Appendix G. VIOLATION.** A development that is not fully compliant with this appendix or Section 1612 , as applicable
59.22 [This section outlines actions to be taken by communities to be eligible for the National Flood Insurance Program, including application procedures, documentation requirements, and a commitment to fulfill certain functions and responsibilities.]		
1	(a)(9)(iii) Maintain for public inspection and furnish upon request certificates of elevation and certificates of floodproofing.	**104.7 Department Records** **Appendix G103.8 Records.** The building official shall maintain a permanent record of all permits issued in flood hazard areas, including copies of inspection reports and certifications required in Section 1612.
2	(b)(1) Appoint the agency or official with the responsibility, authority, and means to implement the commitments, including certain reporting requirements.	**103 Department of Building Safety** **104 Duties and Powers of the Building Official** **Appendix G104.3 Validity of permit.** The issuance of a permit under this appendix shall not be construed to be a permit for, or approval of, any violation of this appendix or any other ordinance of the jurisdiction. The issuance of a permit based on submitted documents and information shall not prevent the building official from requiring the correction of errors. The building official is authorized to prevent occupancy or use of a structure or site which is in violation of this appendix or other ordinances of this jurisdiction. **Appendix G104.4 Expiration.** A permit shall become invalid if the proposed development is not commenced within 180 days after its issuance, or if the work authorized is suspended or abandoned for a period of 180 days after the work commences. Extensions shall be requested in writing and justifiable cause demonstrated. The building official is authorized to grant, in writing, one or more extensions of time, for periods not more than 180 days each. **Appendix G104.5 Suspension or revocation.** The building official is authorized to suspend or revoke a permit issued under this appendix wherever the permit is issued in error or on the basis of incorrect, inaccurate or incomplete information, or in violation of any ordinance or code of this jurisdiction.

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IBC®.

NFIP Regulations		IBC® 2000 and Appendix G
Sec. 60.2 Minimum compliance with flood plain management criteria. [Sections (a) through (c) pertain to meeting specific criteria set forth herein, as a function of the type of flood-related hazard and the level of detail provided on the flood hazard map prepared by FEMA. Section (e) provides for coordination with State Coordinating Agencies with respect to submission of regulations for participation in the NFIP; Section (f) addresses the community function to submit reports periodically, when requested; and Section (g) directs communities to assure that their comprehensive plans are consistent with floodplain management objectives.]		
3	(h) The community shall adopt and enforce floodplain management regulations based on data provided by the Administrator. Without prior approval of the Administrator, the community shall not adopt and enforce floodplain management regulations based upon modified data reflecting natural or man-made changes.	**1612.3 Establishment of flood hazard areas.** To establish flood hazard areas, the governing body shall adopt a flood hazard map and supporting data. The flood hazard map shall include, at a minimum, areas of special flood hazard as identified by the Federal Emergency Management Agency in an engineering report entitled "The Flood Insurance Study for [INSERT NAME OF JURISDICTION]," dated [INSERT DATE OF ISSUANCE], as amended or revised with the accompanying Flood Insurance Rate Map (FIRM) and Flood Boundary and Floodway Map (FBFM) and related supporting data along with any revisions thereto. The adopted flood hazard map and supporting data are hereby adopted by reference and declared to be part of this section. **Appendix G102.2 Establishment of flood hazard areas.** Flood hazard areas are established in Section 1612.3 of the International Building Code, adopted by the governing body on _____.
Sec. 60.3 Floodplain management criteria for flood-prone areas. (a) When the Administrator has not defined the special flood hazard areas within a community, has not provided water surface elevation data, and has not provided sufficient data to identify the floodway or coastal high hazard area, but the community has indicated the presence of such hazards by submitting an application to participate in the Program, the community shall:		
4 **continued on next page**	(1) Require permits for all proposed construction or other development, including the placement of manufactured homes, to determine whether such development is proposed within flood hazard areas;	**101.2 Scope** **105.2 Work exempt from permit** **105.2.3 Repairs** **1612.1 General (Flood Loads)**. Within flood hazard areas as established in Section 1612.3, all new construction of buildings, structures and portions of buildings and structures, including substantial improvements and restoration of substantial damage to buildings and structures, shall be designed and constructed to resist the effects of flood hazards and flood loads. **3402.1 Existing buildings or structures**. **Exception.** For buildings and structures in flood hazard areas established in Section 1612.3, any additions, alterations or repairs that constitutes substantial improvement of the existing structure, as defined in Section 1612.2, shall comply with the flood design requirements for new construction and all aspects of the existing structure shall be brought into compliance with the requirements for new construction for flood design.

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IBC®.

NFIP Regulations		IBC® 2000 and Appendix G
4 **continued from previous page**		**Appendix G101.1 Purpose.** The purpose of this appendix is to promote the public health, safety, and general welfare and to minimize public and private losses due to flood conditions in specific flood hazard areas through the establishment of comprehensive regulations for management of flood hazard areas, designed to: 1. Prevent unnecessary disruption of commerce, access, and public service during times of flooding; 2. Manage the alteration of natural floodplains, stream channels, and shorelines; 3. Manage filling, grading, dredging, and other development which may increase flood damage or erosion potential; 4. Prevent or regulate the construction of flood barriers which will divert flood waters or which can increase flood hazards; and 5. Contribute to improved construction techniques in the floodplain. **Appendix G102.1 General (Applicability).** This appendix, in conjunction with the International Building Code, provides minimum requirements for development located in flood hazard areas, including the subdivision of land, installation of utilities, placement and replacement of manufactured homes, new construction and repair, reconstruction, rehabilitation, or additions to new construction, and substantial improvement of existing buildings and structures, including restoration after damage. **Appendix G103.1 Permit applications.** The building official shall review all permit applications to determine whether proposed development sites will be reasonably safe from flooding. If a proposed development site is in a flood hazard area, all site development activities, including grading, filling, utility installation, and drainage modification, and all new construction and substantial improvements (including the placement of prefabricated buildings and manufactured homes) shall be designed and constructed with methods, practices, and materials that minimize flood damage and that are in accordance with this code and the ASCE 24. **Appendix G104.1 Required.** Any person, owner or authorized agent who intends to conduct any development in a flood hazard area shall first make application to the building official and shall obtain the required permit.
5	(2) Review proposed development to assure that all necessary permits have been received from other governmental agencies from which approval is required by Federal or State law, including section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334;	**105.3.1 Action on application** **Appendix G103.2 Other permits.** It shall be the responsibility of the building official to assure that approval of a proposed development shall not be given until proof that necessary permits have been granted by federal or state agencies having jurisdiction over such development.
6 **continued on next page**	(3) Review all permit applications to determine whether proposed building sites will be reasonably safe from flooding. If a proposed building site is in a flood-prone area, all new construction and substantial improvements shall	**801.1.3 Applicability.** For buildings in flood hazard areas as established in Section 1612.3, interior finishes, trim, and decorative materials that extend below the design flood elevation shall be flood-damage-resistant materials. **1403.7 Flood resistance.** For buildings in flood hazard areas as established in Section 1612.3, exterior walls extending below the design flood elevation shall be resistant to water damage. Wood shall be pressure preservatively treated in accordance with AWPA C1, C2, C3, C4, C9, C15, C18, C22, C24, C28, P1 and P2, or decay-resistant heartwood of redwood, black locust, or cedar.

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IBC®.

NFIP Regulations		IBC® 2000 and Appendix G
6 **continued from previous page**	(i) be designed (or modified) and adequately anchored to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, (ii) be constructed with materials resistant to flood damage, (iii) be constructed by methods and practices that minimize flood damages, and (iv) be constructed with electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.	**1603.1.6 Flood load.** For buildings located in flood hazard areas as established in Section 1612.3, the following information, referenced to the datum on the community's flood insurance rate map (FIRM), shall be shown, regardless of whether flood loads govern the design of the building: (1) In flood hazard areas not subject to high-velocity wave action, the elevation of proposed lowest floor, including basement. (2) In flood hazard areas not subject to high-velocity wave action, the elevation to which any nonresidential building will be dry floodproofed. (3) In flood hazard areas subject to high velocity wave action, the proposed elevation of the lowest horizontal structural member of the lowest floor, including basement. **1605.2.2 Other loads**. Where F, H, P or T are to be considered in design, each applicable load shall be added to the above combinations in accordance with Section 2.3.2 of ASCE 7. Where F_a is to be considered in design, the load combinations of Section 2.3.3 of ASCE 7 shall be used. **1605.3.1.2 Other loads**. Where F, H, P or T are to be considered in design, the load combinations of Section 2.4.1 of ASCE 7 shall be used. Where F_a is to be considered in design, the load combinations of Section 2.4.2 of ASCE 7 shall be used. **1612.4 Design and construction**. The design and construction of buildings and structures located in flood hazard areas, including flood hazard areas subject to high velocity wave action, shall be designed and constructed in accordance with ASCE 24. **1801.1 Scope (Soils and Foundations).** The provisions of this chapter shall apply to building and foundation systems in those areas not subject to scour or water pressure by wind and wave action. Buildings and foundations subject to such scour or water pressure loads shall be designed in accordance with Chapter 16. **3001.2 Referenced standards**. Except as otherwise provided for in this code, the design, construction, installation, alteration, repair and maintenance of elevators and conveying systems and their components shall conform to ASME A17.1, ASME A90.1, ASME B20.1 and ALI B 153.1, and ASCE 24 for construction in flood hazard areas as established in Section 1612.3. **3102.7 Engineering design.** The structure shall be designed and constructed to sustain dead loads, loads due to tension or inflation, live loads including wind, snow, flood, and seismic loads and in accordance with Chapter 16. **3402.1 Existing buildings or structures. Exception.** SEE BLOCK 4 **Appendix G101.1 Purpose (Flood Resistant Construction).** SEE BLOCK 4 **Appendix G101.2 Objectives.** The objectives of this appendix are to protect human life, minimize the expenditure of public money for flood control projects, minimize the need for rescue and relief efforts associated with flooding, minimize prolonged business interruption, minimize damage to public facilities and utilities, help maintain a stable tax base by providing for the sound use and development of flood-prone areas, contribute to improved construction techniques in the floodplain, and ensure that potential owners and occupants are notified that property is within flood hazard areas.
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Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IBC®.

NFIP Regulations		IBC® 2000 and Appendix G
6 **continued from previous page**		**Appendix G101.3 Scope.** The provisions of this appendix shall apply to all proposed development in a flood hazard area established in Section 1612 of this code. **Appendix G104.2 Application for permit.** The applicant shall file an application in writing on a form furnished by the building official. Such application shall: 1. Identify and describe the development to be covered by the permit. 2. Describe the land on which the proposed development is to conducted by legal description, street address or similar description that will readily identify and definitely locate the site. 3. Include a site plan showing the delineation of flood hazard areas, floodway boundaries, flood zones, design flood elevations, ground elevations, proposed fill and excavation, and drainage patterns and facilities. 4. Indicate the use and occupancy for which the proposed development is intended. 5. Be accompanied by construction documents, grading and filling plans, and other information deemed appropriate by the building official. 6. State the valuation of the proposed work. 7. Be signed by the applicant or the applicant's authorized agent. **Appendix G401.5 Storm drainage.** Storm drainage shall be designed to convey the flow of surface waters so as to minimize or eliminate damage to persons or property. **Appendix G401.6 Streets and sidewalks**. Streets and sidewalks shall be designed to minimize potential for increasing or aggravating flood levels.
7	(4) Review subdivision proposals and other proposed new development, including manufactured home parks or subdivisions, to determine whether such proposals will be reasonably safe from flooding. If a subdivision proposal or other proposed new development is in a flood-prone area, any such proposals shall be reviewed to assure that: (i) all such proposals are consistent with the need to minimize flood damage within the flood-prone area, (ii) all public utilities and facilities, such as sewer, gas, electrical, and water systems are located and constructed to minimize or eliminate flood damage, and (iii) adequate drainage is provided to reduce exposure to flood hazards;	**Appendix G301.1 General (Subdivisions).** Any subdivision proposal, including proposals for manufactured home parks and subdivisions, or other proposed new development in a flood hazard area shall be reviewed to assure that: 1. All such proposals are consistent with the need to minimize flood damage, and 2. All public utilities and facilities, such as sewer, gas, electric, and water systems are located and constructed to minimize or eliminate flood damage, and 3. Adequate drainage is provided to reduce exposure to flood hazards. **Appendix G301.2 Subdivision requirements.** The following requirements shall apply in the case of any proposed subdivision, including proposals for manufactured home parks and subdivisions, any portion of which lies within a flood hazard area: 1. The flood hazard area, including floodways and areas subject to high velocity wave action, as appropriate, shall be delineated on tentative and final subdivision plats; 2. Design flood elevations shall be shown on tentative and final subdivision plats; 3. Residential building lots shall be provided with adequate buildable area outside the floodway; and 4. The design criteria for utilities and facilities set forth in this appendix and appropriate International Codes shall be met. **Appendix G401.5 Storm drainage.** SEE BLOCK 6

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IBC®.

	NFIP Regulations	IBC® 2000 and Appendix G
8	(5) Require within flood-prone areas new and replacement water supply systems to be designed to minimize or eliminate infiltration of flood waters into the systems; and	**Appendix G401.4 Water facilities.** All new or replacement water facilities shall be designed in accordance with the provisions of Chapter 8, ASCE 24 to minimize or eliminate infiltration of flood waters into the systems.
9	(6) Require within flood-prone areas (i) new and replacement sanitary sewage systems to be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters and (ii) onsite waste disposal systems to be located to avoid impairment to them or contamination from them during flooding.	**Appendix G401.3 Sewer facilities.** All new or replaced sanitary sewer facilities, private sewer treatment plants (including all pumping stations and collector systems) and onsite waste disposal systems, shall be designed in accordance with Chapter 8, ASCE 24 to minimize or eliminate infiltration of flood waters into the facilities and discharge from the facilities into flood waters, or impairment of the facilities and systems.
(b) When the Administrator has designated areas of special flood hazards (A zones) by the publication of a community's FHBM or FIRM, but has neither produced water surface elevation data nor identified a floodway or coastal high hazard area, the community shall:		
10	(1) Require permits for all proposed construction and other developments including the placement of manufactured homes, within Zone A on the community's FHBM or FIRM; (2) Require the application of the standards in paragraphs (a) (2), (3), (4), (5) and (6) of this section to development within Zone A on the community's FHBM or FIRM;	[Prior provisions cumulative]
11	(3) Require that all new subdivision proposals and other proposed developments (including proposals for manufactured home parks and subdivisions)greater than 50 lots or 5 acres, whichever is the lesser, include within such proposals base flood elevation data;	**Appendix G103.3 Determination of design flood elevations**. If design flood elevations are not specified, the building official is authorized to require the applicant to: 1. Obtain, review and reasonably utilize data available from a federal, state or other source, or 2. Determine the design flood elevation in accordance with accepted hydrologic and hydraulic engineering techniques. Such analyses shall be undertaken by a professional engineer licensed in this state who shall certify that the technical methods used reflect currently accepted engineering practice. Studies, analyses, and computations shall be submitted in sufficient detail to allow thorough review and approval by the building official. The accuracy of data submitted for such determination shall be the responsibility of the applicant.

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IBC®.

	NFIP Regulations	IBC® 2000 and Appendix G
12	(4) Obtain, review and reasonably utilize any base flood elevation and floodway data available from a Federal, State, or other source, including data developed pursuant to paragraph (b)(3) of this section, as criteria for requiring that new construction, substantial improvements, or other development in Zone A on the community's FHBM or FIRM meet the standards in paragraphs (c)(2), (c)(3), (c)(5), (c)(6), (c)(12), (c)(14), (d)(2) and (d)(3) of this section;	**1612.3 Establishment of flood hazard areas.** SEE BLOCK 3 **Appendix G103.3 Determination of design flood elevations**. SEE BLOCK 11
13	(5) Where base flood elevation data are utilized, within Zone A on the community's FHBM or FIRM. (i) Obtain the elevation (in relation to mean sea level) of the lowest floor (including basement) of all new and substantially improved structures, and (ii) Obtain, if the structure has been floodproofed in accordance with paragraph (c)(3)(ii) of this section, the elevation (in relation to mean sea level) to which the structure was floodproofed, and (iii) Maintain a record of all such information with the official designated by the community under Sec. 59.22 (a)(9)(iii);	**104.7 Department records** **109.3.3 Lowest floor elevation.** The elevation certification required in Section 1612.5 shall be submitted to the code official. **1612.5 Flood hazard certificates.** The following certifications shall be submitted to the building official. 1. For construction in flood hazard areas not subject to high velocity wave action: 1.1 As part of the lowest floor elevation inspection required in Section 109.3.3, certification of the elevation of the lowest floor, including basement. 1.2 For fully enclosed areas below the design flood elevation where provisions to allow for the automatic entry and exit of floodwaters do not meet the minimum requirements in Section 2.6.1.1, ASCE 24, certification by a registered design professional that the design will provide for equalization of hydrostatic flood forces in accordance with Section 2.6.1.2, ASCE 24. 1.3 For dry floodproofed nonresidential buildings, certification by a registered design professional that the dry flood proofing is constructed in accordance with the design.
14	(6) Notify, in riverine situations, adjacent communities and the State Coordinating Office prior to any alteration or relocation of a watercourse, and submit copies of such notifications to the Administrator;	**Appendix G103.6 Watercourse alteration**. Prior to issuing a permit for any alteration or relocation of any watercourse, the building official shall require the applicant to provide notification of the proposal to the appropriate authorities of all affected adjacent government jurisdictions, as well as appropriate state agencies. A copy of the notification shall be maintained in the permit records and submitted to FEMA.
15	(7) Assure that the flood carrying capacity within the altered or relocated portion of any watercourse is maintained;	**Appendix G103.6.1 Engineering analysis**. The building official shall require submission of an engineering analysis which demonstrates that the flood carrying capacity of the altered or relocated portion of the watercourse will not be decreased. Such watercourses shall be maintained in a manner which preserves the channel's flood carrying capacity.

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IBC®.

	NFIP Regulations	IBC® 2000 and Appendix G
16	(8) Require that all manufactured homes to be placed within Zone A on a community's FHBM or FIRM shall be installed using methods and practices which minimize flood damage. For the purposes of this requirement, manufactured homes must be elevated and anchored to resist flotation, collapse, or lateral movement. Methods of anchoring may include, but are not to be limited to, use of over-the-top or frame ties to ground anchors. This requirement is in addition to applicable State and local anchoring requirements for resisting wind forces.	**Appendix G501.1 Elevation (Manufactured Homes).** All new and replacement manufactured homes to be placed or substantially improved in a flood hazard area shall be elevated such that the lowest floor of the manufactured home is elevated to or above the design flood elevation. **Appendix G501.2 Foundations.** All new and replacement manufactured homes, including substantial improvement of existing manufactured homes, shall be placed on a permanent, reinforced foundation that is designed in accordance with Section 1612 of the building code. **Appendix G501.3 Anchoring.** All new and replacement manufactured homes to be placed or substantially improved in a flood hazard area shall be installed using methods and practices which minimize flood damage. Manufactured homes shall be securely anchored to an adequately anchored foundation system to resist flotation, collapse, and lateral movement. Methods of anchoring are authorized to include, but are not to be limited to, use of over-the-top or frame ties to ground anchors. This requirement is in addition to applicable State and local anchoring requirements for resisting wind forces.
(c) When the Administrator has provided a notice of final flood elevations for one or more special flood hazard areas on the community's FIRM and, if appropriate, has designated other special flood hazard areas without base flood elevations on the community's FIRM, but has not identified a regulatory floodway or coastal high hazard area, the community shall.		
17	(1) Require the standards of paragraph (b) of this section within all A1-30 zones, AE zones, A zones, AH zones, and AO zones, on the community's FIRM;	[Prior provisions cumulative]
18	(2) Require that all new construction and substantial improvements of residential structures within Zones A1-30, AE and AH zones on the community's FIRM have the lowest floor (including basement) elevated to or above the base flood level, unless the community is granted an exception by the Administrator for the allowance of basements in accordance with Sec. 60.6 (b) or (c);	**1603.1.6 Flood load.** SEE BLOCK 6 **1612.4 Design and construction.** SEE BLOCK 6 **1806.1.2.1 Flood hazard areas.** For buildings and structures in flood hazard areas as established in Section 1612.3, the finished ground level of an underfloor space such as a crawl space shall be equal to or higher than the outside finished ground level. **3402.1 Existing buildings or structures. Exception.** SEE BLOCK 4
19	(3) Require that all new construction and substantial improvements of non-residential structures within Zones A1-30, AE and AH zones on the community's FIRM: (i) have the lowest floor (including basement) elevated to or above the base flood level or, (ii) together with attendant utility and sanitary facilities, be designed so that below the base flood level the structure is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy;	**1612.4 Design and construction.** SEE BLOCK 6 **3402.1 Existing buildings or structures. Exception.** SEE BLOCK 4

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IBC®.

	NFIP Regulations	IBC® 2000 and Appendix G
20	(4) Provide that where a non-residential structure is intended to be made watertight below the base flood level, (i) a registered professional engineer or architect shall develop and/or review structural design, specifications, and plans for the construction, and shall certify that the design and methods of construction are in accordance with accepted standards of practice for meeting the applicable provisions of paragraph (c)(3)(ii) or (c)(8)(ii) of this section, and (ii) a record of such certificates which includes the specific elevation (in relation to mean sea level) to which such structures are floodproofed shall be maintained with the official designated by the community under Sec. 59.22(a)(9)(iii);	**104.7 Department records.** **1612.5.1 Flood hazard certificates.** [Flood hazard areas not subject to high velocity wave action] SEE BLOCK 13 **Appendix G103.8 Records.** SEE BLOCK 1
21	(5) Require, for all new construction and substantial improvements, that fully enclosed areas below the lowest floor that are usable solely for parking of vehicles, building access or storage in an area other than a basement and which are subject to flooding shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or meet or exceed the following minimum criteria. A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided. The bottom of all openings shall be no higher than one foot above grade. Openings may be equipped with screens, louvers, valves, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.	**1202.3.2 Under-floor ventilation. Exception:** 1. For buildings in flood hazard areas as established in Section 1612.3, the opening requirements of ASCE 24 are authorized to be satisfied by ventilation openings that are designed and installed in accordance with ASCE 24. **1612.4 Design and construction.** SEE BLOCK 6 **1612.5.1 Flood hazard certificates.** [Flood hazard areas not subject to high velocity wave action] SEE BLOCK 13

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IBC®.

	NFIP Regulations	IBC® 2000 and Appendix G
22	(6) Require that manufactured homes that are placed or substantially improved within Zones A1-30, AH, and AE on the community's FIRM on sites (i) Outside of a manufactured home park or subdivision,(ii) In a new manufactured home park or subdivision, (iii) In an expansion to an existing manufactured home park or subdivision, or (iv) In an existing manufactured home park or subdivision on which a manufactured home has incurred "substantial damage" as the result of a flood, be elevated on a permanent foundation such that the lowest floor of the manufactured home is elevated to or above the base flood elevation and be securely anchored to an adequately anchored foundation system to resist floatation collapse and lateral movement.	**Appendix G. Section 501 Manufactured Homes.** SEE BLOCK 16
23	(7) Require within any AO zone on the community's FIRM that all new construction and substantial improvements of residential structures have the lowest floor (including basement) elevated above the highest adjacent grade at least as high as the depth number specified in feet on the community's FIRM (at least two feet if no depth number is specified);	**1612.4 Design and construction.** SEE BLOCK 6
24	(8) Require within any AO zone on the community's FIRM that all new construction and substantial improvements of nonresidential structures (i) have the lowest floor (including basement) elevated above the highest adjacent grade at least as high as the depth number specified in feet on the community's FIRM (at least two feet if no depth number is specified), or (ii) together with attendant utility and sanitary facilities be completely floodproofed to that level to meet the floodproofing standard specified in Sec. 60.3(c)(3)(ii);	**1603.1.6 Flood load.** SEE BLOCK 6 **1612.4 Design and construction.** SEE BLOCK 6 **1806.1.2.1 Flood hazard areas.** SEE BLOCK 18 **3402.1 Existing buildings or structures. Exception.** SEE BLOCK 4
25	(9) Require within any A99 zones on a community's FIRM the standards of paragraphs (a)(1) through (a)(4)(i) and (b)(5) through (b)(9) of this section;	**1603.1.6 Flood load.** SEE BLOCK 6 **1612.4 Design and construction.** SEE BLOCK 6 **1806.1.2.1 Flood hazard areas.** SEE BLOCK 18 **3402.1 Existing buildings or structures. Exception.** SEE BLOCK 4

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IBC®.

	NFIP Regulations	IBC® 2000 and Appendix G
26	(10) Require until a regulatory floodway is designated, that no new construction, substantial improvements, or other development (including fill) shall be permitted within Zones A1-30 and AE on the community's FIRM, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the community.	**Appendix G103.4 Activities in riverine flood hazard areas.** In riverine situations, until a regulatory floodway is designated, the building official shall not permit any new construction, substantial improvement or other development, including fill, unless the applicant demonstrates that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the design flood elevation more than one foot at any point within the community.
27	(11) Require within Zones AH and AO, adequate drainage paths around structures on slopes, to guide floodwaters around and away from proposed structures.	**Appendix G401.5 Storm drainage.** SEE BLOCK 6
28	(12) Require that manufactured homes to be placed or substantially improved on sites in an existing manufactured home park or subdivision within Zones A-1-30, AH, and AE on the community's FIRM that are not subject to the provisions of paragraph (c)(6) of this section be elevated so that either (i) The lowest floor of the manufactured home is at or above the base flood elevation, or (ii) The manufactured home chassis is supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than 36 inches in height above grade and be securely anchored to an adequately anchored foundation system to resist floatation, collapse, and lateral movement.	**Appendix G Section 501 Manufactured Homes.** SEE BLOCK 16
29	(13) Notwithstanding any other provisions of Sec. 60.3, a community may approve certain development in Zones Al-30, AE, and AH, on the community's FIRM which increase the water surface elevation of the base flood by more than one foot, provided that the community first applies for a conditional FIRM revision, fulfills the requirements for such a revision as established under the provisions of Sec. 65.12, and receives the approval of the Administrator.	**Appendix G103.5 Floodway encroachment.** Prior to issuing a permit for any floodway encroachment, including fill, new construction, substantial improvements and other development or land disturbing activity, the building official shall require submission of a certification, along with supporting technical data, that demonstrates that such development will not cause any increase of the level of the base flood. **Appendix G103.5.1 Floodway revision.** A floodway encroachment that increases the level of the base flood is authorized if the applicant has applied for a conditional FIRM revision and has received the approval of FEMA.

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IBC®.

	NFIP Regulations	IBC® 2000 and Appendix G
30	(14) Require that recreational vehicles placed on sites within Zones A1-30, AH, and AE on the community's FIRM either(i) Be on the site for fewer than 180 consecutive days, (ii) Be fully licensed and ready for highway use, or (iii) Meet the permit requirements of paragraph (b)(1) of this section and the elevation and anchoring requirements for "manufactured homes" in paragraph (c)(6) of this section. A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions.	**Appendix G601.1 Placement prohibited (Recreational Vehicles).** The placement of recreational vehicles shall not be authorized in flood hazard areas subject to high velocity wave action and in floodways. **Appendix G601.2 Temporary placement.** Recreational vehicles in flood hazard areas shall be fully licensed and ready for highway use, and shall be placed on a site for less than 180 consecutive days. **Appendix G601.3 Permanent placement.** Recreational vehicles that are not fully licensed and ready for highway use, or that are to be placed on a site for more than 180 consecutive days shall meet the requirements of Section G501 for manufactured homes.
(d) When the Administrator has provided a notice of final base flood elevations within Zones A1-30 and/or AE on the community's FIRM and, if appropriate, has designated AO zones, AH zones, A99 zones, and A zones on the community's FIRM, and has provided data from which the community shall designate its regulatory floodway, the community shall:		
31	(1) Meet the requirements of paragraphs (c) (1) through (14) of this section;	[Prior provisions cumulative]
32	(2) Select and adopt a regulatory floodway based on the principle that the area chosen for the regulatory floodway must be designed to carry the waters of the base flood, without increasing the water surface elevation of that flood more than one foot at any point;	**1612.3 Establishment of flood hazard areas.** SEE BLOCK 3 **Appendix G103.4 Activities in riverine flood hazard areas.** SEE BLOCK 26
33	(3) Prohibit encroachments, including fill, new construction, substantial improvements, and other development within the adopted regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge;	**Appendix G103.5 Floodway encroachment.** SEE BLOCK 29 **Appendix G103.5.1 Floodway revision.** SEE BLOCK 29 **Appendix G401.1 Development in floodways.** Development or land disturbing activity shall not be authorized in the floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment will not result in any increase in the level of the base flood.
34	(4) Notwithstanding any other provisions of Sec. 60.3, a community may permit encroachments within the adopted regulatory floodway that would result in an increase in base flood elevations, provided that the community first applies for a conditional FIRM and floodway revision, fulfills the requirements for such revisions as established under the provisions of Sec. 65.12, and receives the approval of the Administrator.	**Appendix G103.5.1 Floodway revision.** SEE BLOCK 29

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NFIP Regulations		IBC® 2000 and Appendix G
(e) When the Administrator has provided a notice of final base flood elevations within Zones A1-30 and/or AE on the community's FIRM and, if appropriate, has designated AH zones, AO zones, A99 zones, and A zones on the community's FIRM, and has identified on the community's FIRM coastal high hazard areas by designating Zones V1-30, VE, and/or V, the community shall.		
35	(1) Meet the requirements of paragraphs (c)(1) through (14) of this section;	[Prior provisions cumulative]
36	(2) Within Zones V1-30, VE, and V on a community's FIRM, (i) obtain the elevation (in relation to mean sea level) of the bottom of the lowest structural member of the lowest floor (excluding pilings and columns) of all new and substantially improved structures, and whether or not such structures contain a basement, and (ii) maintain a record of all such information with the official designated by the community under Sec. 59.22(a)(9)(iii);	**104.7 Department records** **1603.1.6 Flood load.** SEE BLOCK 6 **1612.1 General (Flood Loads).** SEE BLOCK 4 **1612.5 Flood hazard certificates.** The following certifications shall be submitted to the building official. 2. For construction in flood hazard areas subject to high velocity wave action: 2.1 As part of the lowest floor elevation inspection required in Section 109.3.3, a certification of the elevation of the lowest horizontal structural member. 2.2 A certificate prepared by a registered design professional that the building is designed in accordance with ASCE 24, including that the pile or column foundation and building or structure to be attached thereto is designed to be anchored to resist flotation, collapse and lateral movement due to the effects of wind and flood loads acting simultaneously on all building components, and other load requirements of Chapter 16. 2.3 For breakaway walls designed to resist a nominal load of less that 10 psf (0.48 kN/m^2) or more than 20 psf (0.96 kN/m^2), a certificate prepared by a registered design professional that the breakaway wall is designed in accordance with ASCE 24. **Appendix G103.8 Records.** SEE BLOCK 1 **Appendix G. Section 501 Manufactured Homes.** SEE BLOCK 16
37	(3) Provide that all new construction within Zones V1-30, VE, and V on the community's FIRM is located landward of the reach of mean high tide;	**Appendix G401.2 Flood hazard areas subject to high velocity wave action.** 1. Development or land disturbing activity shall only be authorized landward of the reach of mean high tide. 2. The use of fill for structural support of buildings is prohibited.
38 **continued on next page**	(4) Provide that all new construction and substantial improvements in Zones V1-30 and VE, and also Zone V if base flood elevation data is available, on the community's FIRM, are elevated on pilings and columns so that (i) the bottom of the lowest horizontal structural member of the lowest floor (excluding the pilings or columns) is elevated to or above the base flood level; and	**109.3.3 Lowest floor elevation**. SEE BLOCK 13 **1603.1.6 Flood load.** SEE BLOCK 6 **1605.2.2 Other loads.** SEE BLOCK 6 **1605.3.1.2 Other loads.** SEE BLOCK 6 **1612.4 Design and construction.** SEE BLOCK 6 **1612.5.2 Flood hazard certificates.** [Flood hazard areas subject to high velocity wave action] SEE BLOCK 36

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NFIP Regulations		IBC® 2000 and Appendix G
38 **continued from previous page**	(ii) the pile or column foundation and structure attached thereto is anchored to resist flotation, collapse and lateral movement due to the effects of wind and water loads acting simultaneously on all building components. Water loading values used shall be those associated with the base flood. Wind loading values used shall be those required by applicable State or local building standards. A registered professional engineer or architect shall develop or review the structural design, specifications and plans for the construction, and shall certify that the design and methods of construction to be used are in accordance with accepted standards of practice for meeting the provisions of paragraphs (e)(4)(i) and (ii) of this section.	
39 **continued on next page**	(5) Provide that all new construction and substantial improvements within Zones V1-30, VE, and V on the community's FIRM have the space below the lowest floor either free of obstruction or constructed with non-supporting breakaway walls, open wood lattice-work, or insect screening intended to collapse under wind and water loads without causing collapse, displacement, or other structural damage to the elevated portion of the building or supporting foundation system. For the purposes of this section, a breakaway wall shall have a design safe loading resistance of not less than 10 and no more than 20 pounds per square foot. Use of breakaway walls which exceed a design safe loading resistance of 20 pounds per square foot (either by design or when so required by local or State codes) may be permitted only if a registered professional engineer or architect certifies that the designs proposed meet the following conditions: (i) Breakaway wall collapse shall result from a water load less than that which would occur during the base flood; and,	**1612.4 Design and construction.** The design and construction of buildings and structures located in flood hazard areas, including flood hazard areas subject to high velocity wave action, shall be designed and constructed in accordance with ASCE 24. **1612.5.2 Flood hazard certificates.** [Flood hazard areas subject to high velocity wave action] SEE BLOCK 36

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IBC®.

	NFIP Regulations	IBC® 2000 and Appendix G
39 **continued from previous page**	(ii) The elevated portion of the building and supporting foundation system shall not be subject to collapse, displacement, or other structural damage due to the effects of wind and water loads acting simultaneously on all building components (structural and non-structural). Water loading values used shall be those associated with the base flood. Wind loading values used shall be those required by applicable State or local building standards. Such enclosed space shall be useable solely for parking of vehicles, building access, or storage.	
40	(6) Prohibit the use of fill for structural support of buildings within Zones V1-30, VE, and V on the community's FIRM;	**Appendix G401.2 Flood hazard areas subject to high velocity wave action.** SEE BLOCK 37
41	(7) Prohibit man-made alteration of sand dunes and mangrove stands within Zones V1-30, VE, and V on the community's FIRM which would increase potential flood damage.	**Appendix G103.7 Alterations in coastal areas.** Prior to issuing a permit for any alteration of sand dunes and mangrove stands in flood hazard areas subject to high velocity wave action, the building official shall require submission of an engineering analysis which demonstrates that the proposed alteration will not increase the potential for flood damage.
42	(8) Require that manufactured homes placed or substantially improved within Zones V1-30, V, and VE on the community's FIRM on sites (i) Outside of a manufactured home park or subdivision, (ii) In a new manufactured home park or subdivision, (iii) In an expansion to an existing manufactured home park or subdivision, or (iv) In an existing manufactured home park or subdivision on which a manufactured home has incurred “substantial damage” as the result of a flood, meet the standards of paragraphs (e)(2) through (7) of this section and that manufactured homes placed or substantially improved on other sites in an existing manufactured home park or subdivision within Zones VI-30, V, and VE on the community's FIRM meet the requirements of paragraph (c)(12) of this section.	**Appendix G. Section 501. Manufactured Homes.** SEE BLOCK 16

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IBC®.

	NFIP Regulations	IBC® 2000 and Appendix G
43	(9) Require that recreational vehicles placed on sites within Zones V1-30, V, and VE on the community's FIRM either (i) Be on the site for fewer than 180 consecutive days, (ii) Be fully licensed and ready for highway use, or (iii) Meet the requirements in paragraphs (b)(1) and (e) (2) through (7) of this section. A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions.	**Appendix G. Section 601. Recreational Vehicles.** SEE BLOCK 30
Sec. 60.6 Variance and exceptions		
44	(a) The Administrator does not set forth absolute criteria for granting variances from the criteria set forth in Secs. 60.3, 60.4, and 60.5. The issuance of a variance is for flood plain management purposes only. Insurance premium rates are determined by statute according to actuarial risk and will not be modified by the granting of a variance. The community, after examining the applicant's hardships, shall approve or disapprove a request. While the granting of variances generally is limited to a lot size less than one-half acre (as set forth in paragraph (a)(2) of this section), deviations from that limitation may occur. However, as the lot size increases beyond one-half acre, the technical justification required for issuing a variance increases. The Administrator may review a community's findings justifying the granting of variances, and if that review indicates a pattern inconsistent with the objectives of sound flood plain management, the Administrator may take appropriate action under Sec. 59.24(b) of this subchapter.	**Appendix G105.1 General (Variances).** The board of appeals established pursuant to Section 112 shall hear and decide requests for variances. The board of appeals shall base its determination on technical justifications, and has the right to attach such conditions to variances as it deems necessary to further the purposes and objectives of this appendix and Section 1612. **Appendix G105.6 Considerations.** In reviewing applications for variances, the board of appeals shall consider all technical evaluations, all relevant factors, all other portions of this appendix, and the following: 1. The danger that materials and debris may be swept onto other lands resulting in further injury or damage; 2. The danger to life and property due to flooding or erosion damage; 3. The susceptibility of the proposed development, including contents, to flood damage and the effect of such damage on current and future owners; 4. The importance of the services provided by the proposed development to the community; 5. The availability of alternate locations for the proposed development that are not subject to flooding or erosion; 6. The compatibility of the proposed development with existing and anticipated development; 7. The relationship of the proposed development to the comprehensive plan and floodplain management program for that area; 8. The safety of access to the property in times of flood for ordinary and emergency vehicles; 9. The expected heights, velocity, duration, rate of rise, and debris and sediment transport of the flood waters and the effects of wave action, if applicable, expected at the site, and; 10. The costs of providing governmental services during and after flood conditions including maintenance and repair of public utilities and facilities such as sewer, gas, electrical, and water systems, streets and bridges.

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IBC®.

	NFIP Regulations	IBC® 2000 and Appendix G
45	Variances may be issued for the repair or rehabilitation of historic structures upon a determination that the proposed repair or rehabilitation will not preclude the structure's continued designation as a historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure.	**Appendix G105.3 Historic structures.** A variance is authorized to be issued for the repair or rehabilitation of a historic structure upon a determination that the proposed repair or rehabilitation will not preclude the structure's continued designation as a historic structure, and the variance is the minimum necessary to preserve the historic character and design of the structure.
46	Procedures for the granting of variances by a community are as follows. (1) Variances shall not be issued by a community within any designated regulatory floodway if any increase in flood levels during the base flood discharge would result;	**Appendix G105.5 Restrictions.** The board of appeals shall not issue a variance for any proposed development in a floodway if any increase in flood levels would result during the base flood discharge.
47	(2) Variances may be issued by a community for new construction and substantial improvements to be erected on a lot of one-half acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, in conformance with the procedures of paragraphs (a) (3), (4), (5) and (6) of this section;	**Appendix G105.1 General (Variances).** SEE BLOCK 44 **Appendix G105.6 Considerations.** SEE BLOCK 44
48	(6) Variances shall only be issued by a community upon (i) a showing of good and sufficient cause, (ii) a determination that failure to grant the variance would result in exceptional hardship to the applicant, and (iii) a determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances;	**Appendix G105.7 Conditions for issuance.** Variances shall only be issued by the board of appeals upon: 1. A technical showing of good and sufficient cause that the unique characteristics of the size, configuration, or topography of the site renders the elevation standards inappropriate; and 2. A determination that failure to grant the variance would result in exceptional hardship by rendering the lot undevelopable; and 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; and 4. A determination that the variance is the minimum necessary, considering the flood hazard, to afford relief; and 5. Notification to the applicant in writing over the signature of the building official that the issuance of a variance to construct a structure below the base flood level will result in increased premium rates for flood insurance up to amounts as high as $25 for $100 of insurance coverage, and that such construction below the base flood level increases risks to life and property.
49	(4) Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief;	**Appendix G105.7 Conditions for issuance.** BLOCK 48

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IBC®.

	NFIP Regulations	IBC® 2000 and Appendix G
50	(5) A community shall notify the applicant in writing over the signature of a community official that (i) the issuance of a variance to construct a structure below the base flood level will result in increased premium rates for flood insurance up to amounts as high as $25 for $100 of insurance coverage and (ii) such construction below the base flood level increases risks to life and property. Such notification shall be maintained with a record of all variance actions as required in paragraph (a)(6) of this section; and	**Appendix G105.7 Conditions for issuance.** SEE BLOCK 48
51	(6) A community shall (i) maintain a record of all variance actions, including justification for their issuance, and (ii) report such variances issued in its annual or biennial report submitted to the Administrator.	**Appendix G105.2 Records.** The building official shall maintain a permanent record of all variance actions, including justification for their issuance.
52	(7) Variances may be issued by a community for new construction and substantial improvements and for other development necessary for the conduct of a functionally dependent use provided that (i) the criteria of paragraphs (a)(1) through (a)(4) of this section are met, and (ii) the structure or other development is protected by methods that minimize flood damages during the base flood and create no additional threats to public safety.	**Appendix G105.4 Functionally dependant facilities.** A variance is authorized to be issued for the construction or substantial improvement of a functionally dependant facility provided the criteria in Section 1612.1 are met and the variance is the minimum necessary to allow the construction or substantial improvement, and that all due consideration has been given to methods and materials that minimize flood damages during the design flood and create no additional threats to public safety.

Appendix C. Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IRC™

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IRC™.

NFIP Regulations	IRC™ 2000
Sec. 59.1 Definitions	
BASE FLOOD. Base flood means the flood having a one percent chance of being equaled or exceeded in any given year.	**R301.2.4 Floodplain construction.** SEE BLOCK 3 **Table R301.2(1) Climatic and Geographic Design Criteria. Flood Hazards.** SEE BLOCK 3 **R327.1.3 Establishing the design flood elevation.** SEE BLOCK 12
BASEMENT. Any area of the building having its floor subgrade (below ground level) on all sides.	**R327.1.4 Lowest floor.** SEE BLOCK 28 **R327.2.1 [Flood hazard areas (including A Zones)] Elevation requirements.** SEE BLOCK 18 **R327.3.1 [Coastal flood hazard areas (including V Zones)] Elevation requirements.** SEE BLOCK 36 **R408.5 [Under-Floor Space] Finished grade.** SEE BLOCK 18
DEVELOPMENT. Any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials.	**R101.2 Scope.** **R105.1 Permits required.** **R105.2 Work exempt from permit.** **R105.3.1.1 Substantially improved or substantially damaged existing buildings and structures**. SEE BLOCK 4
EXISTING CONSTRUCTION (EXISTING STRUCTURES). For the purposes of determining rates, structures for which the "start of construction" commenced before the effective date of the FIRM or before January 1, 1975, for FIRMs effective before that date. "Existing construction" may also be referred to as "existing structures."	**BUILDING, EXISTING** in Chapter 2.
FLOOD OR FLOODING. (a) A general and temporary condition of partial or complete inundation of normally dry land areas from. (1) The overflow of inland or tidal waters. (2) The unusual and rapid accumulation or runoff of surface waters from any source.	[General usage throughout.]
FLOOD INSURANCE RATE MAP (FIRM). An official map of a community, on which the Administrator has delineated both the special hazard areas and the risk premium zones applicable to the community.	**R301.2.4 Floodplain construction. Exception.** SEE BLOCK 3 **Table R301.2(1) Climatic and Geographic Design Criteria. Flood Hazards.** SEE BLOCK 3
FLOODWAY – See **REGULATORY FLOODWAY.**	**R301.2.4 Floodplain construction. Exception.** SEE BLOCK 3 **Table R301.2(1) Climatic and Geographic Design Criteria. Flood Hazards.** SEE BLOCK 3
HIGHEST ADJACENT GRADE. The highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.	**R327.2.1 [Flood hazard areas (including A Zones)] Elevation requirements.** SEE BLOCK 18

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IRC™.

NFIP Regulations	IRC™ 2000
HISTORIC STRUCTURE. (a) Listed individually in the National Register of Historic Places (a listing maintained by the Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register; (b) Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district; (c) Individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of the Interior; or (d) Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either. (1) By an approved state program as determined by the Secretary of the Interior or (2) Directly by the Secretary of the Interior in states without approved programs.	[Not explicitly defined; refer to definition in IBC®.]
LOWEST FLOOR. The lowest floor of the lowest enclosed area (including basement). An unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access or storage in an area other than a basement area is not considered a building's lowest floor; provided, that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of Sec. 60.3.	**R309.5 [Garages and Carports] Flood hazard areas.** SEE BLOCK 21 **R327.1.4 Lowest floor.** SEE BLOCK 18
MANUFACTURED HOME. A structure, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when attached to the required utilities. The term "manufactured home" does not include a "recreational vehicle."	**Chapter 2, MANUFACTURED HOME.** **Appendix E Manufactured Housing Used as Dwellings.**
MANUFACTURED HOME PARK OR SUBDIVISION. A parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.	[Subdivision of land not addressed in IRC™; see IBC® Appendix G.]

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IRC™.

NFIP Regulations	IRC™ 2000
RECREATIONAL VEHICLE. A vehicle which is. (a) built on a single chassis; (b) 400 square feet or less when measured at the largest horizontal projection; (c) designed to be self-propelled or permanently towable by a light duty truck; and (d) designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use.	**R107 Temporary structures and uses.**
REGULATORY FLOODWAY. The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.	See **FLOODWAY.**
REMEDY A VIOLATION. to bring the structure or other development into compliance with State or local flood plain management regulations, or, if this is not possible, to reduce the impacts of its noncompliance. Ways that impacts may be reduced include protecting the structure or other affected development from flood damages, implementing the enforcement provisions of the ordinance or otherwise deterring future similar violations, or reducing Federal financial exposure with regard to the structure or other development.	**R113 Violations.**
STRUCTURE. For flood plain management purposes, a walled and roofed building, including a gas or liquid storage tank, that is principally above ground, as well as a manufactured home. "Structure" for insurance coverage purposes, means a walled and roofed building, other than a gas or liquid storage tank, that is principally above ground and affixed to a permanent site, as well as a manufactured home on a permanent foundation. For the latter purpose, the term includes a building while in the course of construction, alteration or repair, but does not include building materials or supplies intended for use in such construction, alteration or repair, unless such materials or supplies are within an enclosed building on the premises.	**R102.1 Scope.** **R105.2 Work exempt from permit.** **Appendix E Manufactured Housing Used as Dwellings.**
SUBSTANTIAL DAMAGE. Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.	**R105.3.1.1 Substantially improved or substantially damaged existing buildings and structures.** SEE BLOCK 4

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IRC™.

NFIP Regulations		IRC™ 2000
SUBSTANTIAL IMPROVEMENT. Any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the "start of construction" of the improvement. This term includes structures which have incurred "substantial damage", regardless of the actual repair work performed. The term does not, however, include either. (1) Any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions or (2) Any alteration of a "historic structure", provided that the alteration will not preclude the structure's continued designation as a "historic structure."		**R102.7.1 [Existing structures] Additions, alterations or repairs.** **R105.3.1.1 Substantially improved or substantially damaged existing buildings and structures.** SEE BLOCK 4 **R108.3 Building permit valuations.**
VARIANCE. A grant of relief by a community from the terms of a flood plain management regulation.		**R104.10.1 [Modifications] Areas prone to flooding.** BLOCK 44 **R112.2.2 Criteria for issuance of a variance for flood hazard areas.** SEE BLOCK 47
VIOLATION. The failure of a structure or other development to be fully compliant with the community's flood plain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required in Sec. 60.3(b)(5), (c)(4), (c)(10), (d)(3), (e)(2), (e)(4), or (e)(5) is presumed to be in violation until such time as that documentation is provided.		**R113 Violations.**
Sec. 59.22 [This section outlines actions to be taken by communities to be eligible for the Program, including application procedures, documentation requirements, and a commitment to fulfill certain functions and responsibilities.]		
1	(a)(9)(iii) Maintain for public inspection and furnish upon request certificates of elevation and certificates of floodproofing.	**R104.7 Department records.**
2	(b)(1) Appoint the agency or official with the responsibility, authority, and means to implement the commitments, including certain reporting requirements.	**R103 Department of Building Safety.** **R104 Duties and Powers of Code Official.**

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IRC™.

NFIP Regulations		IRC™ 2000
Sec. 60.2 Minimum compliance with flood plain management criteria. [Sections (a) through (c) pertain to meeting specific criteria set forth herein, as a function of the type of flood-related hazard and the level of detail provided on the flood hazard map prepared by FEMA. Section (e) provides for coordination with State Coordinating Agencies with respect to submission of regulations for participation in the NFIP; Section (f) addresses the community function to submit reports periodically, when requested; and Section (g) directs communities to assure that their comprehensive plans are consistent with floodplain management objectives.]		
3	(h) The community shall adopt and enforce floodplain management regulations based on data provided by the Administrator. Without prior approval of the Administrator, the community shall not adopt and enforce floodplain management regulations based upon modified data reflecting natural or man-made changes.	**R301.2.4 Floodplain construction.** Buildings and structures constructed in flood hazard areas (including A or V Zones) as established in Table R301.2(1) shall be designed and constructed in accordance with Section R327. **Exception:** buildings in floodways that are designated on the Flood Insurance Rate Maps (FIRM) or the Flood Boundary and Floodway Maps (FBFM) that are provided by the National Flood Insurance Program shall not be approved under this section; the provisions of the *International Building Code* shall apply. **Table R301.2(1) Climatic and Geographic Design Criteria. Flood Hazards.** The jurisdiction shall fill in this part of the table with (a) the date of the jurisdiction's entry into the National Flood Insurance Program (date of adoption of the first code or ordinance for management of flood hazard areas), (b) the dates(s) of the currently effective FIRM and FBFM, or other flood hazard map adopted by the community, as may be amended. **R327.1 General.** All buildings and structures erected in areas prone to flooding as identified in Table R301.2(1) and classified as either flood hazard areas (including A Zones) or coastal high hazard areas (including V-Zones) shall be constructed and elevated as required by the provisions contained in this section. **Exception:** All buildings and structures erected in identified floodways as established in Table R301.2(1) shall be designed and constructed as stipulated in the *International Building Code*.
Sec. 60.3 Floodplain management criteria for flood-prone areas. (a) When the Administrator has not defined the special flood hazard areas within a community, has not provided water surface elevation data, and has not provided sufficient data to identify the floodway or coastal high hazard area, but the community has indicated the presence of such hazards by submitting an application to participate in the Program, the community shall:		
4 **continued on next page**	(1) Require permits for all proposed construction or other development, including the placement of manufactured homes, to determine whether such development is proposed within flood hazard areas;	**R101.2 Scope.** **R105.2 Work exempt from permit.** **R105.3.1.1 Substantially improved or substantially damaged existing buildings and structures.** 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, 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 R327.

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IRC™.

NFIP Regulations		IRC™ 2000
4 **continued from previous page**		**R106.1.3 Information for construction in areas prone to flooding.** For buildings and structures 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 finished grade; and 3. If design flood elevations are not included on the community's Flood Insurance Rate Map (FIRM), the code official and the applicant shall obtain and reasonably utilize any design flood elevation and floodway data available from other sources. **R301.2.4 Floodplain construction.** SEE BLOCK 3 **Table R301.2(1) Climatic and Geographic Design Criteria. Flood Hazards.**. SEE BLOCK 3 **R327.2 Flood hazard areas (including A Zones).** All areas that have been determined to be prone to flooding but not subject to high velocity wave action shall be designated as flood hazard areas. All buildings and structures erected in flood hazard areas shall be designed and constructed in accordance with Sections R327.2.1 through R327.2.3. **Appendix E Manufactured Housing, Section AE101 Scope. Exception:** In addition to these provisions, new and replacement manufactured homes to be located in flood hazard areas as established by Table R301.2(1) of the *International Residential Code* shall meet the applicable requirements of Section R327 of the *International Residential Code.* **Appendix J Existing Buildings and Structures, Section AJ102.5 Flood hazard areas.** Work performed in existing buildings located in a flood hazard area as established by Table 301.2(1) shall be subject to the provisions of R105.3.1.1. [NOTE: See Errata for the 2000 IRC™]
5	(2) Review proposed development to assure that all necessary permits have been received from other governmental agencies from which approval is required by Federal or State law, including section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334;	**R105.3.1 (Permits) Action on application.**
6 **continued on next page**	(3) Review all permit applications to determine whether proposed building sites will be reasonably safe from flooding. If a proposed building site is in a flood-prone area, all new construction and substantial improvements shall	**R105.3.1.1 Substantially improved or substantially damaged existing buildings** SEE BLOCK 4 **R301.1 Design.** Buildings and structures, and all parts thereof, shall be constructed to support safely all loads, including dead loads, live loads, roof loads, flood loads, snow loads, wind loads and seismic loads as prescribed in this code. **R301.2.4 Floodplain construction.** SEE BLOCK 3 **R327.1 [Flood Resistant Construction] General. Exception.** [Refer to IBC® for floodway construction.) SEE BLOCK 3

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IRC™.

NFIP Regulations		IRC™ 2000
6 **continued from previous page**	(i) be designed (or modified) and adequately anchored to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, (ii) be constructed with materials resistant to flood damage, (iii) be constructed by methods and practices that minimize flood damages, and (iv) be constructed with electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.	**R327.1.1 Structural systems.** All structural systems of all buildings and structures shall be designed, connected and anchored to resist flotation, collapse or permanent lateral movement due to structural loads and stresses from flooding equal to the design flood elevation. **R327.1.2 Flood-resistant construction.** All buildings and structures erected in areas prone to flooding shall be constructed by methods and practices that minimize flood damage. **R327.1.5 Protection of mechanical and electrical systems.** New and replacement electrical equipment, heating, ventilating, air conditioning, plumbing connections, and other service equipment shall be located at or above the design flood elevation. Electrical wiring and outlets, switches, junction boxes and panels shall be elevated to or above the design flood elevation unless they conform to the provisions of the electrical part of this code for location of such items in wet locations. Duct systems shall not be installed below the design flood elevation. **R327.1.7 Flood-resistant materials.** Building materials used below the design flood elevation shall comply with the following: 1. All wood, including floor sheathing, shall be pressure preservatively treated in accordance with AWPA C1, C2, C3, C4, C9, C15, C18, C22, C23, C24, C28, P1, P2 and P3 or decay-resistant heartwood or redwood, black locust, or cedars. 2. Materials and installation methods used for flooring and interior and exterior walls shall conform to the provisions of FEMA/FIA-TB-B2. **R327.2.3 Foundation design and construction.** Foundation walls for all buildings and structures erected in flood hazard areas shall meet the requirements of Chapter 4. **Exception:** Unless designed in accordance with Section 404. 1. The unsupported height of 6 inches (152 mm) plain masonry walls shall be no greater than 3 feet (914 mm). 2. The unsupported height of 8 inches (203 mm) plain masonry walls shall be no greater than 4 feet (1219 mm). 3. The unsupported height of 8 inches (203 mm) reinforced masonry walls shall be no greater than 8 feet (2438 mm). For the purpose of this exception, unsupported height is the distance from the finished grade to the under-floor space and the top of the wall. **R401.1 [Foundations] General. Exceptions:** (2) In addition to the provisions of this chapter, the design and construction of foundations in areas prone to flooding as established by Table R301.2(1) shall meet the provisions of Section R327. **G2404.7 (301.11) Flood hazard.** For structures located in special flood hazard areas, the appliance, equipment and system installations regulated by this code shall comply with the flood-resistant construction requirements of this code. **Appendix E Manufactured Housing, Section AE502.3 Footings and foundations.** Piers and bearing walls shall be supported on masonry or concrete foundations or piles or other approved foundation systems which shall be of sufficient capacity to support all loads.

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IRC™.

	NFIP Regulations	IRC™ 2000
7	(4) Review subdivision proposals and other proposed new development, including manufactured home parks or subdivisions, to determine whether such proposals will be reasonably safe from flooding. If a subdivision proposal or other proposed new development is in a flood-prone area, any such proposals shall be reviewed to assure that: (i) all such proposals are consistent with the need to minimize flood damage within the flood- prone area, (ii) all public utilities and facilities, such as sewer, gas, electrical, and water systems are located and constructed to minimize or eliminate flood damage, and (iii) adequate drainage is provided to reduce exposure to flood hazards;	[Subdivision of land not addressed in IRC™; see IBC® Appendix G.] **R327.1.6 Protection of water supply and sanitary sewage systems.** New and replacement water supply systems shall be designed to minimize infiltration of flood waters into the systems in accordance with the plumbing provisions of this code. New and replacement sanitary sewage systems shall be designed to minimize infiltration of floodwaters into systems and discharges from systems into floodwaters in accordance with the plumbing provisions of this code and Chapter 3 of the *International Private Sewage Disposal Code*.
8	(5) Require within flood-prone areas new and replacement water supply systems to be designed to minimize or eliminate infiltration of flood waters into the systems; and	**R327.1.6 Protection of water supply and sanitary sewage systems.** SEE BLOCK 7
9	(6) Require within flood-prone areas (i) new and replacement sanitary sewage systems to be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters and (ii) onsite waste disposal systems to be located to avoid impairment to them or contamination from them during flooding.	**R327.1.6 Protection of water supply and sanitary sewage systems.** SEE BLOCK 7

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IRC™.

	NFIP Regulations	IRC™ 2000
(b) When the Administrator has designated areas of special flood hazards (A zones) by the publication of a community's FHBM or FIRM, but has neither produced water surface elevation data nor identified a floodway or coastal high hazard area, the community shall:		
10	(1) Require permits for all proposed construction and other developments including the placement of manufactured homes, within Zone A on the community's FHBM or FIRM; (2) Require the application of the standards in paragraphs (a) (2), (3), (4), (5) and (6) of this section to development within Zone A on the community's FHBM or FIRM;	[Prior provisions cumulative.]
11	(3) Require that all new subdivision proposals and other proposed developments (including proposals for manufactured home parks and subdivisions)greater than 50 lots or 5 acres, whichever is the lesser, include within such proposals base flood elevation data;	[Subdivision of land not addressed in IRC™; see IBC® Appendix G.]
12	(4) Obtain, review and reasonably utilize any base flood elevation and floodway data available from a Federal, State, or other source, including data developed pursuant to paragraph (b)(3) of this section, as criteria for requiring that new construction, substantial improvements, or other development in Zone A on the community's FHBM or FIRM meet the standards in paragraphs (c)(2), (c)(3), (c)(5), (c)(6), (c)(12), (c)(14), (d)(2) and (d)(3) of this section;	**R106.1.3(3) Information for construction in areas prone to flooding.** SEE BLOCK 4 **R327.1.3 Establishing the design flood elevation.** The design flood elevation shall be used to define areas prone to flooding, and shall describe, at a minimum, the base flood elevation at the depth of peak elevation of flooding (including wave height) which has a 1 percent (100-year flood) or greater chance of being equaled or exceeded in any given year.
13	(5) Where base flood elevation data are utilized, within Zone A on the community's FHBM or FIRM: (i) Obtain the elevation (in relation to mean sea level) of the lowest floor (including basement) of all new and substantially improved structures, and (ii) Obtain, if the structure has been floodproofed in accordance with paragraph (c)(3)(ii) of this section, the elevation (in relation to mean sea level) to which the structure was floodproofed, and (iii) Maintain a record of all such information with the official designated by the community under Sec. 59.22 (a)(9)(iii);	**R104.7 Department records** **R109.1.3 Floodplain inspections.** For construction permitted in areas prone to flooding as established by Table 301.2(1), upon placement of the lowest floor, including basement, and prior to further vertical construction, the building official shall require submission of a certification, prepared by a registered professional engineer or land surveyor, of the elevation of the lowest floor, including basement, required in Section R327. **R327.1.9 As-built elevation certifications.** A licensed land surveyor or registered design professional shall certify that the building or structure is in compliance with the elevation requirements of Section R327.2 or R327.3. [NFIP requirement 60.3(b)(5)(ii) applies to non-residential construction; see IBC®.]

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IRC™.

NFIP Regulations		IRC™ 2000
14	(6) Notify, in riverine situations, adjacent communities and the State Coordinating Office prior to any alteration or relocation of a watercourse, and submit copies of such notifications to the Administrator;	[Not addressed in IRC™, see IBC® Appendix G.]
15	(7) Assure that the flood carrying capacity within the altered or relocated portion of any watercourse is maintained;	[Not addressed in IRC™, see IBC® Appendix G.]
16	(8) Require that all manufactured homes to be placed within Zone A on a community's FHBM or FIRM shall be installed using methods and practices which minimize flood damage. For the purposes of this requirement, manufactured homes must be elevated and anchored to resist flotation, collapse, or lateral movement. Methods of anchoring may include, but are not to be limited to, use of over-the-top or frame ties to ground anchors. This requirement is in addition to applicable State and local anchoring requirements for resisting wind forces.	**R327.1.8 Manufactured housing.** New or replacement manufactured housing shall be elevated in accordance with Section R327.2 and the anchor and tie-down requirements of Sections AE604 and AE605 of Appendix E shall apply. The foundation and anchorage of manufactured housing to be located in identified flood ways as established in Table R301.2(1) shall be designed and constructed in accordance with the applicable provisions in the *International Building Code.* **Appendix E Manufactured Housing, Section AE101 Exception** SEE BLOCK 4
(c) When the Administrator has provided a notice of final flood elevations for one or more special flood hazard areas on the community's FIRM and, if appropriate, has designated other special flood hazard areas without base flood elevations on the community's FIRM, but has not identified a regulatory floodway or coastal high hazard area, the community shall:		
17	(1) Require the standards of paragraph (b) of this section within all A1-30 zones, AE zones, A zones, AH zones, and AO zones, on the community's FIRM;	[Prior provisions cumulative.]
18 **continued on next page**	(2) Require that all new construction and substantial improvements of residential structures within Zones A1-30, AE and AH zones on the community's FIRM have the lowest floor (including basement) elevated to or above the base flood level, unless the community is granted an exception by the Administrator for the allowance of basements in accordance with Sec. 60.6 (b) or (c);	**R105.3.1.1 Substantially improved or substantially damaged existing buildings.** SEE BLOCK 4 **R327.2.1 [Flood hazard areas (including A Zones)] Elevation requirements.** 1. Buildings and structures shall have the lowest floors elevated to or above the design flood elevation. 2. In areas of shallow flooding (AO Zones), buildings and structures shall have the lowest floor (including basement) elevated at least as high above the highest adjacent grade as the depth number specified in feet (mm) on the FIRM, or at least 2 feet (51 mm) if a depth number is not specified. 3. Basement floors that are below grade on all sides shall be elevated to or above the design flood elevation. **Exception:** Enclosed areas below the design flood elevation, including basements whose floors are not below grade on all sides, shall meet the requirements of Section R327.2.2.

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IRC™.

	NFIP Regulations	IRC™ 2000
18 **continued from previous page**		**R327.1.4 Lowest floor.** The lowest floor shall be the floor of the lowest enclosed area, including basement, but excluding any unfinished flood-resistant enclosure that is useable solely for vehicle parking, building access or limited storage provided that such enclosure is not built so as to render the building or structure in violation of this section. **R408.5 (Under-Floor Space) Finished grade.** . . . where there is evidence that the surface water does not readily drain from the building site, the grade in the under-floor space shall be as high as the outside finished grade, unless an approved drainage system is provided. **Appendix J Existing Buildings and Structures, Section AJ102.5 Flood hazard areas.** SEE BLOCK 4
19	(3) Require that all new construction and substantial improvements of non-residential structures within Zones A1-30, AE and AH zones on the community's firm: (i) have the lowest floor (including basement) elevated to or above the base flood level or, (ii) together with attendant utility and sanitary facilities, be designed so that below the base flood level the structure is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy;	[NFIP requirement 60.3(c)(3) applies to non-residential construction, see IBC®.]
20	(4) Provide that where a non-residential structure is intended to be made watertight below the base flood level, (i) A registered professional engineer or architect shall develop and/or review structural design, specifications, and plans for the construction, and shall certify that the design and methods of construction are in accordance with accepted standards of practice for meeting the applicable provisions of paragraph (c)(3)(ii) or (c)(8)(ii) of this section, and (ii) A record of such certificates which includes the specific elevation (in relation to mean sea level) to which such structures are floodproofed shall be maintained with the official designated by the community under Sec. 59.22(a)(9)(iii);	[NFIP requirement 60.3(c)(4) applies to non-residential construction, see IBC®.]

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IRC™.

	NFIP Regulations	IRC™ 2000
21	(5) Require, for all new construction and substantial improvements, that fully enclosed areas below the lowest floor that are usable solely for parking of vehicles, building access or storage in an area other than a basement and which are subject to flooding shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or meet or exceed the following minimum criteria: A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided. The bottom of all openings shall be no higher than one foot above grade. Openings may be equipped with screens, louvers, valves, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.	**R105.3.1.1 Substantially improved or substantially damaged existing buildings.** SEE BLOCK 4 **R309.5 [Garages] Flood hazard areas.** For buildings located in flood hazard areas as established by Table 301.2(1), garage floors shall be: 1. Elevated to or above the design flood elevation as determined in Section R327; or 2. Located below the design flood elevated provided they are at or above grade on all sides, are used solely for parking, building access, or storage, meet the requirements of Section R327, and are otherwise constructed in accordance with this code. **R327.2.2 Enclosed area below design flood elevation.** Enclosed areas, including crawl spaces, that are below the design flood elevation shall: 1. Be used solely for parking of vehicles, building access or storage. 2. Be provided with flood openings which shall meet the following criteria: 2.1. There shall be a minimum of two openings on different sides of each enclosed area; if a building has more than one enclosed area below the design flood elevation, each area shall have openings on exterior walls. 2.2. The total net area of all openings shall be at least 1 square inch for each square foot (275 mm for each square meter) of enclosed area. 2.3. The bottom of each opening shall be 1 foot (305 mm) or less above the adjacent ground level. 2.4. Openings shall be at least 3 inches (76 mm) in diameter. 2.5. Any louvers, screens or other opening covers shall allow the automatic flow of floodwaters into and out of the enclosed area. 2.6. Openings installed in doors and windows that meet requirements 2.1 through 2.5, are acceptable; however, doors and windows without installed openings do not meet the requirements of this section. **R408.6 [Under-Floor Space] Flood resistance.** For buildings located in areas prone to flooding as established in Table R301.2(1), the walls enclosing the underfloor space shall be provided with flood openings in accordance with Section R327.2.2.

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IRC™.

	NFIP Regulations	IRC™ 2000
22	(6) Require that manufactured homes that are placed or substantially improved within Zones A1-30, AH, and AE on the community's FIRM on sites (i) Outside of a manufactured home park or subdivision,(ii) In a new manufactured home park or subdivision, (iii) In an expansion to an existing manufactured home park or subdivision, or (iv) In an existing manufactured home park or subdivision on which a manufactured home has incurred "substantial damage" as the result of a flood, be elevated on a permanent foundation such that the lowest floor of the manufactured home is elevated to or above the base flood elevation and be securely anchored to an adequately anchored foundation system to resist floatation collapse and lateral movement.	**R105.3.1.1 Substantially improved or substantially damaged existing buildings.** SEE BLOCK 4 **R327.1.8 Manufactured housing.** SEE BLOCK 16 **Appendix E Manufactured Housing, Section AE101, Exception** SEE BLOCK 4
23	(7) Require within any AO zone on the community's FIRM that all new construction and substantial improvements of residential structures have the lowest floor (including basement) elevated above the highest adjacent grade at least as high as the depth number specified in feet on the community's FIRM (at least two feet if no depth number is specified);	**R105.3.1.1 Substantially improved or substantially damaged existing buildings.** SEE BLOCK 4 **R327.2.1 [Flood hazard areas (including A Zones)] Elevation requirements.** SEE BLOCK 18
24	(8) Require within any AO zone on the community's FIRM that all new construction and substantial improvements of nonresidential structures (i) have the lowest floor (including basement) elevated above the highest adjacent grade at least as high as the depth number specified in feet on the community's FIRM (at least two feet if no depth number is specified), or (ii) together with attendant utility and sanitary facilities be completely floodproofed to that level to meet the floodproofing standard specified in Sec. 60.3(c)(3)(ii);	[NFIP requirement 60.3(c)(8) applies to non-residential construction, see IBC®.]
25	(9) Require within any A99 zones on a community's FIRM the standards of paragraphs (a)(1) through (a)(4)(i) and (b)(5) through (b)(9) of this section;	**R105.3.1.1 Substantially improved or substantially damaged existing buildings.** SEE BLOCK 4 **R327.2.1 [Flood hazard areas (including A Zones)] Elevation requirements.** SEE BLOCK 18

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IRC™.

NFIP Regulations		IRC™ 2000
26	(10) Require until a regulatory floodway is designated, that no new construction, substantial improvements, or other development (including fill) shall be permitted within Zones A1-30 and AE on the community's FIRM, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the community.	**R106.1.3 Information for construction in areas prone to flooding.** SEE BLOCK 4
27	(11) Require within Zones AH and AO, adequate drainage paths around structures on slopes, to guide floodwaters around and away from proposed structures.	**R401.3 [Foundations] Drainage.** Surface drainage shall be diverted to a storm sewer connection or other approved point of collection so as to not create a hazard. Lots shall be graded so as to drain surface water away from foundation walls.
28	(12) Require that manufactured homes to be placed or substantially improved on sites in an existing manufactured home park or subdivision within Zones A-1-30, AH, and AE on the community's FIRM that are not subject to the provisions of paragraph (c)(6) of this section be elevated so that either (i) The lowest floor of the manufactured home is at or above the base flood elevation, or (ii) The manufactured home chassis is supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than 36 inches in height above grade and be securely anchored to an adequately anchored foundation system to resist floatation, collapse, and lateral movement.	**R105.3.1.1 Substantially improved or substantially damaged existing buildings.** SEE BLOCK 4 **R327.1.8 Manufactured housing.** SEE BLOCK 16 **Appendix E Manufactured Housing, Section AE101.1 General. Exception.** SEE BLOCK 4
29	(13) Notwithstanding any other provisions of Sec. 60.3, a community may approve certain development in Zones Al-30, AE, and AH, on the community's FIRM which increase the water surface elevation of the base flood by more than one foot, provided that the community first applies for a conditional FIRM revision, fulfills the requirements for such a revision as established under the provisions of Sec. 65.12, and receives the approval of the Administrator.	[Not addressed in IRC™, see IBC® Appendix G.]

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IRC™.

NFIP Regulations		IRC™ 2000
30	(14) Require that recreational vehicles placed on sites within Zones A1-30, AH, and AE on the community's FIRM either (I) Be on the site for fewer than 180 consecutive days, (ii) Be fully licensed and ready for highway use, or (iii) Meet the permit requirements of paragraph (b)(1) of this section and the elevation and anchoring requirements for "manufactured homes" in paragraph (c)(6) of this section. A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions.	**R107 Temporary structures.**
(d) When the Administrator has provided a notice of final base flood elevations within Zones A1-30 and/or AE on the community's FIRM and, if appropriate, has designated AO zones, AH zones, A99 zones, and A zones on the community's FIRM, and has provided data from which the community shall designate its regulatory floodway, the community shall:		
31	(1) Meet the requirements of paragraphs (c) (1) through (14) of this section;	[Prior provisions cumulative.]
32	(2) Select and adopt a regulatory floodway based on the principle that the area chosen for the regulatory floodway must be designed to carry the waters of the base flood, without increasing the water surface elevation of that flood more than one foot at any point;	**Table R301.2(1) Climatic and Geographic Design Criteria. Flood Hazards.** SEE BLOCK 3
33	(3) Prohibit encroachments, including fill, new construction, substantial improvements, and other development within the adopted regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge;	**R106.1.3 Information for construction in areas prone to flooding.** SEE BLOCK 4 **R301.2.4 Floodplain construction. Exception.** SEE BLOCK 3

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IRC™.

	NFIP Regulations	IRC™ 2000
34	(4) Notwithstanding any other provisions of Sec. 60.3, a community may permit encroachments within the adopted regulatory floodway that would result in an increase in base flood elevations, provided that the community first applies for a conditional FIRM and floodway revision, fulfills the requirements for such revisions as established under the provisions of Sec. 65.12, and receives the approval of the Administrator.	[IRC™ not applicable to floodway construction; refer to IBC®.]
(e) When the Administrator has provided a notice of final base flood elevations within Zones A1-30 and/or AE on the community's FIRM and, if appropriate, has designated AH zones, AO zones, A99 zones, and A zones on the community's FIRM, and has identified on the community's FIRM coastal high hazard areas by designating Zones V1-30, VE, and/or V, the community shall:		
35	(1) Meet the requirements of paragraphs (c)(1) through (14) of this section;	[Prior provisions cumulative.]
36	(2) Within Zones V1-30, VE, and V on a community's FIRM, (i) obtain the elevation (in relation to mean sea level) of the bottom of the lowest structural member of the lowest floor (excluding pilings and columns) of all new and substantially improved structures, and whether or not such structures contain a basement, and (ii) maintain a record of all such information with the official designated by the community under Sec. 59.22(a)(9)(iii);	**R104.7 Department records.** **R105.3.1.1 Substantially improved or substantially damaged existing buildings.** SEE BLOCK 4 **R106.1.3 Information for construction in areas prone to flooding.** SEE BLOCK 13 **R109.1.3 Floodplain inspections.** SEE BLOCK 13 **R327.1.9 As-built elevation certifications.** SEE BLOCK 13 **R327.3 Coastal high hazard areas (including V Zones).** Areas that have been determined to be subject to wave heights in excess of 3 feet (914 mm) or subject to high velocity wave action or wave-induced erosion shall be designated as coastal high hazard areas. All buildings and structures erected in coastal high hazard areas shall be designated and constructed in accordance with Sections R327.3.1 through R327.3.5. **R327.3.1 [Coastal flood hazard areas (including V Zones)] Elevation requirements.** 1. All buildings and structures erected within coastal high hazard areas shall be elevated so that the lowest portion of all structural members supporting the lowest floor, with the exception of mat or raft foundations, piling, pile caps, columns, grade beams and bracing, is located at or above the design flood elevation. 2. Basement floors that are below grade on all sides are prohibited. 3. The use of fill for structural support is prohibited. 4. The placement of fill beneath buildings and structures is prohibited. **Exception:** Walls and partitions enclosing areas below the design flood elevation shall meet the requirements of Sections R327.3.3 and R327.3.4.
37	(3) Provide that all new construction within Zones V1-30, VE, and V on the community's FIRM is located landward of the reach of mean high tide;	[See IBC® Appendix G.]

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IRC™.

	NFIP Regulations	IRC™ 2000
38	(4) Provide that all new construction and substantial improvements in Zones V1-30 and VE, and also Zone V if base flood elevation data is available, on the community's FIRM, are elevated on pilings and columns so that (i) the bottom of the lowest horizontal structural member of the lowest floor (excluding the pilings or columns) is elevated to or above the base flood level; and (ii) the pile or column foundation and structure attached thereto is anchored to resist flotation, collapse and lateral movement due to the effects of wind and water loads acting simultaneously on all building components. Water loading values used shall be those associated with the base flood. Wind loading values used shall be those required by applicable State or local building standards. A registered professional engineer or architect shall develop or review the structural design, specifications and plans for the construction, and shall certify that the design and methods of construction to be used are in accordance with accepted standards of practice for meeting the provisions of paragraphs (e)(4)(I) and (ii) of this section.	**R105.3.1.1 Substantially improved or substantially damaged existing buildings.** SEE BLOCK 4 **R327.3.1 [Coastal high hazard areas (including V Zones)] Elevation requirements.** SEE BLOCK 36 **R327.3.2 Foundations.** All buildings and structures erected in coastal high hazard areas shall be supported on pilings or columns and shall be adequately anchored to such pilings or columns. Piling shall have adequate soil penetrations to resist the combined wave and wind loads (lateral and uplift). Water loading values used shall be those associated with the design flood. Wind loading values shall be those required by this code. Pile embedment shall include consideration of decreased resistance capacity caused by scour of soil strata surrounding the piling. Pile systems design and installation shall be certified in accordance with Section R327.3.5. Mat, raft or other foundations that support columns shall not be permitted where soil investigations that are required in accordance with Section R401.4 indicate that soil material under the mat, raft or other foundation is subject to scour or erosion from wave-velocity flow conditions. **R327.3.5 Design certificate.** A registered design professional shall certify that the design and methods of construction to be used meet the applicable criteria of this section.
39 **continued on next page**	(5) Provide that all new construction and substantial improvements within Zones V1-30, VE, and V on the community's FIRM have the space below the lowest floor either free of obstruction or constructed with non-supporting breakaway walls, open wood lattice-work, or insect screening intended to collapse under wind and water loads without causing collapse, displacement, or other structural damage to the elevated portion of the building or supporting foundation system. For the purposes of this section, a breakaway wall shall	**R105.3.1.1 Substantially improved or substantially damaged existing buildings.** SEE BLOCK 4 **R327.3.3 Walls below design flood elevation.** Walls and partitions are permitted below the elevated floor, provided that such walls and partitions are not part of the structural support of the building or structure and: 1. Are constructed with insect screening or open lattice. 2. Designed to break away or collapse without causing collapse, displacement or other structural damage to the elevated portion of the building or supporting foundation system. Such walls, framing and connections shall have a design safe loading resistance of not less than10 pounds per square foot (0.48 kN/m^2) and no more than 20 pounds per square foot (0.96 kN/m^2); or 3. Where wind loading values of this code exceed 20 pounds per square foot (0.96 kN/m^2), a registered design professional shall certify the following:

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IRC™.

	NFIP Regulations	IRC™ 2000
39 **continued from previous page**	have a design safe loading resistance of not less than 10 and no more than 20 pounds per square foot. Use of breakaway walls which exceed a design safe loading resistance of 20 pounds per square foot (either by design or when so required by local or State codes) may be permitted only if a registered professional engineer or architect certifies that the designs proposed meet the following conditions: (i) Breakaway wall collapse shall result from a water load less than that which would occur during the base flood; and, (ii) The elevated portion of the building and supporting foundation system shall not be subject to collapse, displacement, or other structural damage due to the effects of wind and water loads acting simultaneously on all building components (structural and non-structural). Water loading values used shall be those associated with the base flood. Wind loading values used shall be those required by applicable State or local building standards. Such enclosed space shall be useable solely for parking of vehicles, building access, or storage.	3.1 Collapse of walls and partitions below the design flood elevation shall result from a water load less than that which would occur during the design flood. 3.2. The elevated portion of the building and supporting foundation system shall not be subject to collapse, displacement, or other structural damage due to the effects of wind and flood loads acting simultaneously on all building components (structural and nonstructural). Water loading values used shall be those associated with the design flood. Wind loading values used shall be those required by this code. **R327.3.4 Enclosed areas below design flood elevation.** Enclosed areas below the design flood elevation shall be used solely for parking of vehicles, building access or storage.
40	(6) Prohibit the use of fill for structural support of buildings within Zones V1-30, VE, and V on the community's FIRM;	**R327.3.1(3) and (4) [Coastal flood hazard areas (including V zones)] Elevation requirements.** SEE BLOCK 36
41	(7) Prohibit man-made alteration of sand dunes and mangrove stands within Zones V1-30, VE, and V on the community's FIRM which would increase potential flood damage.	[See IBC® Appendix G.]

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IRC™.

NFIP Regulations		IRC™ 2000
42	(8) Require that manufactured homes placed or substantially improved within Zones V1-30, V, and VE on the community's FIRM on sites (i) Outside of a manufactured home park or subdivision, (ii) In a new manufactured home park or subdivision, (iii) In an expansion to an existing manufactured home park or subdivision, or (iv) In an existing manufactured home park or subdivision on which a manufactured home has incurred "substantial damage" as the result of a flood, meet the standards of paragraphs (e)(2) through (7) of this section and that manufactured homes placed or substantially improved on other sites in an existing manufactured home park or subdivision within Zones VI-30, V, and VE on the community's FIRM meet the requirements of paragraph (c)(12) of this section.	**R327.1.8 Manufactured housing.** SEE BLOCK 16 **Appendix E Manufactured Housing AE101, Exception.** SEE BLOCK 4
43	(9) Require that recreational vehicles placed on sites within Zones V1-30, V, and VE on the community's FIRM either (i) Be on the site for fewer than 180 consecutive days, (ii) Be fully licensed and ready for highway use, or(iii) Meet the requirements in paragraphs (b)(1) and (e) (2) through (7) of this section. A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions.	**R107 Temporary structures.**
Sec. 60.6 Variance and exceptions		
44 **continued on next page**	(a) The Administrator does not set forth absolute criteria for granting variances from the criteria set forth in Secs. 60.3, 60.4, and 60.5. The issuance of a variance is for flood plain management purposes only. Insurance premium rates are determined by statute according to actuarial risk and will not be modified by the granting of a variance. The community, after examining the applicant's hardships, shall approve or disapprove a request.	**R104.10.1 [Modifications] Areas prone to flooding.** The building official shall not grant modifications to any provision related to flood hazard areas as established by Table R301.2(1) without the granting of a variance to such provisions by the board of appeals.

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IRC™.

NFIP Regulations		IRC™ 2000
44 **continued from previous page**	While the granting of variances generally is limited to a lot size less than one-half acre (as set forth in paragraph (a)(2) of this section), deviations from that limitation may occur. However, as the lot size increases beyond one-half acre, the technical justification required for issuing a variance increases. The Administrator may review a community's findings justifying the granting of variances, and if that review indicates a pattern inconsistent with the objectives of sound flood plain management, the Administrator may take appropriate action under Sec. 59.24(b) of this subchapter.	
45	Variances may be issued for the repair or rehabilitation of historic structures upon a determination that the proposed repair or rehabilitation will not preclude the structure's continued designation as a historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure.	**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 a historic building or structure provided that the alteration will not preclude the continued designation as a historic building or structure.
46	Procedures for the granting of variances by a community are as follows: (1) Variances shall not be issued by a community within any designated regulatory floodway if any increase in flood levels during the base flood discharge would result;	**R301.2.4 Floodplain construction. Exception.** [Floodway approvals not allowed, refer to IBC®.] SEE BLOCK 3

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IRC™.

	NFIP Regulations	IRC™ 2000
47	(2) Variances may be issued by a community for new construction and substantial improvements to be erected on a lot of one-half acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, in conformance with the procedures of paragraphs (a) (3), (4), (5) and (6) of this section;	**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 of Section 327 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 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.
48	(3) Variances shall only be issued by a community upon (i) a showing of good and sufficient cause, (ii) a determination that failure to grant the variance would result in exceptional hardship to the applicant, and (iii) a determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances;	**R112.2.2(2)** and **(3) Criteria for issuance of a variance for areas prone to flooding.** SEE BLOCK 47
49	(4) Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief;	**R112.2.2(4) Criteria for issuance of a variance for areas prone to flooding.** SEE BLOCK 47

Crosswalk of the NFIP Regulations to the Flood Resistance Provisions of the IRC™.

	NFIP Regulations	IRC™ 2000
50	(4) A community shall notify the applicant in writing over the signature of a community official that (i) the issuance of a variance to construct a structure below the base flood level will result in increased premium rates for flood insurance up to amounts as high as $25 for $100 of insurance coverage and (ii) such construction below the base flood level increases risks to life and property. Such notification shall be maintained with a record of all variance actions as required in paragraph (a)(6) of this section; and	**R104.7 Department Records.** **R112.2.2(5) Criteria for issuance of a variance for areas prone to flooding.** SEE BLOCK 47
51	(6) A community shall (i) maintain a record of all variance actions, including justification for their issuance, and (ii) report such variances issued in its annual or biennial report submitted to the Administrator.	**R104.7 Department Records.** **R112.1 [Board of Appeals] General.**
52	(7) Variances may be issued by a community for new construction and substantial improvements and for other development necessary for the conduct of a functionally dependent use provided that (i) the criteria of paragraphs (a)(1) through (a)(4) of this section are met, and (ii) the structure or other development is protected by methods that minimize flood damages during the base flood and create no additional threats to public safety.	[Functionally dependent uses are non-residential uses; refer to IBC®.]

Appendix D. FEMA's Regional Offices and NFIP State Coordinators

FEMA's Regional Offices

FEMA HEADQUARTERS
Office of the Associate Director for Mitigation
500 C Street, S.W.
Washington, DC 20472
(202) 646-4622

REGION I – CT, MA, ME, NH, RI, VT
Mitigation Division
442 J. W. McCormick POCH
Boston, MA 02109-4595
(617) 223-9561

REGION II – NJ, NY, PR, VI
Mitigation Division
26 Federal Plaza, Room 1337
New York, NY 10278-0002
(212) 225-7200

REGION III – DE, DC, MD, PA, VA, WV
Mitigation Division
615 Chestnut Street, Sixth Floor
Philadelphia, PA 19106
(215) 931-5502

REGION IV – AL, FL, GA, KY, MS, NC, SC, TN
Mitigation Division
3003 Chamblee-Tucker Road, Rm 270
Atlanta, GA 30341
(770) 220-5400

REGION V – IL, IN, MI, MN, OH, WI
Mitigation Division
536 S. Clark Street, 6th Floor
Chicago, IL 60605-1521
(312) 408-5200

REGION VI – AR, LA, NM, OK, TX
Mitigation Division
Federal Regional Center
800 North Loop 288
Denton, TX 76201-3698
(940) 898-5165

REGION VII – IA, KS, MO, NE
Mitigation Division
2323 Grand Boulevard
Kansas City, MO 64108-2760
(816) 283-7002

REGION VIII – CO, MT, ND, SD, UT, WY
Mitigation Division
Denver Federal Center
Building 710, Box 25267
Denver, CO 80225-0267
(303) 235-4830

REGION IX – AZ, CA, GU, HI, NV
Mitigation Division
Presidio of San Francisco
Building 105
San Francisco, CA 94129-1250
(415) 923-7175

REGION X – AK, ID, OR, WA
Mitigation Division
Federal Regional Center
130 228th Street, SW.
Bothell, WA 98021-9796
(425) 487-4678

NFIP State Coordinators

ALABAMA
Alabama Emergency Management Agency
NFIP State Coordinator
5898 Country Road
P.O. Drawer 2160
Clanton, AL 35046-2160
Phone (205) 280-2241 ▪ *fax* (205) 280-2493

ALASKA
Alaska Department of Community & Economic Development
NFIP State Coordinator
550 W. 7th Avenue, Suite 1770
Anchorage, AK 99501-3510
(907) 269-4567 ▪ *fax* (907) 269-4539

ARIZONA
Arizona Department of Water Resources
NFIP State Coordinator
500 N. Third Street, 2nd Floor
Phoenix, AZ 85004-3903
(602) 417-2445, ext. 7200
fax (602) 417-2423

ARKANSAS
Arkansas Soil & Water Conservation Commission
NFIP State Coordinator
101 E. Capitol, Suite 350
Little Rock, AR 72201
(501) 682-3907 ▪ *fax* (501) 682-3991

CALIFORNIA
California Department of Water Resources
NFIP State Coordinator
1416 9th Street, Room 1623
Sacramento, CA 95814
(916) 653-8089 ▪ *fax* (916) 653-3639

COLORADO
Colorado Water Conservation Board
NFIP State Coordinator
721 State Centennial Building
1313 Sherman
Denver, CO 80203
(303) 866-3441 ▪ *fax* (303) 866-4474

CONNECTICUT
Connecticut Department of Environmental Protection
NFIP State Coordinator
Water Resources Division
79 Elm Street
Hartford, CT 06106-5127
(860) 424-3706 ▪ *fax* (860) 424-4075

DELAWARE
Delaware Division of Soil and Water
NFIP State Coordinator
89 Kings Highway
Dover, DE 19901
(302) 739-4411 ▪ *fax* (302) 739-6724

DISTRICT OF COLUMBIA
District of Columbia Environmental Health Administration
NFIP State Coordinator
Watershed Protection Division
2100 Martin Luther King Avenue, SE
Room 307
Washington, DC 20020
(202) 645-6059, ext. 3052
fax (202) 645-6063

FLORIDA
Florida Department of Community Affairs
NFIP State Coordinator
2555 Shumard Oak Boulevard
Tallahassee, FL 32399-2100
(850) 413-9959 ▪ *fax* (850) 410-1582

GEORGIA
Georgia Department of Natural Resources
NFIP State Coordinator
7 Martin Luther King, Jr., Drive
Suite 440
Atlanta, GA 30334
(404) 656-3094 ▪ *fax* (404) 657-8535

HAWAII
Hawaii Department of Land and Natural Resources
NFIP State Coordinator
1151 Punchbowl Street, Room 221
Honolulu, HI 96813
(808) 587-0248 ▪ *fax* (808) 587-0283

IDAHO
Idaho Department of Water Resources
NFIP State Coordinator
1301 N. Orchard
Boise, ID 83706
(208) 327-7993 ▪ *fax* (208) 327-7866

ILLINOIS
Illinois Department of Natural Resources
Office of Water Resources
NFIP State Coordinator
524 S. 2nd Street
Springfield, IL 62701-1787
(217) 782-4435 ▪ *fax* (217) 524-1454

INDIANA
Indiana Division of Water
NFIP State Coordinator
402 W. Washington Street, Room W264
Indianapolis, IN 46204
(317) 232-4164 ▪ *fax* (317) 233-4579

IOWA
Iowa Department of Natural Resources
NFIP State Coordinator
Wallace State Office Building
Des Moines, IA 50319
(515) 281-8942 ▪ *fax* (515) 281-8895

KANSAS
Kansas Department of Agriculture
Division of Water Resources
NFIP State Coordinator
901 S. Kansas Avenue, 2nd Floor
Topeka, KS 66612-1283
(785) 296-8083 ▪ *fax* (785) 296-1176

KENTUCKY
Kentucky Division of Water
NFIP State Coordinator
14 Reilly Road
Frankfort, KY 40601
(502) 564-3410 ▪ *fax* (502) 564-9003

LOUISIANA
Louisiana Department of Transportation & Development
Floodplain Management Section
NFIP State Coordinator
8900 Jimmy Wedell Street, Room 201
Baton Rouge, LA 70807
(225) 274-4354 ▪ *fax* (225) 379-1857

MAINE
Maine State Planning Office
NFIP State Coordinator
38 State House Station
Augusta, ME 04333-0038
(207) 287-8063 ▪ *fax* (207) 287-6489

MARYLAND
Maryland Department of Environment – TARSA
NFIP State Coordinator
2500 Broening Highway
Baltimore, MD 21224
(410) 631-4164 ▪ *fax* (410) 631-3873

MASSACHUSETTS
Massachusetts Division of Emergency Management
Flood Hazard Management Program
NFIP State Coordinator
100 Cambridge Street
Boston, MA 02202
(617) 727-3267, ext. 514
fax (617) 727-9402

MICHIGAN
Michigan Department of Environmental Quality
NFIP State Coordinator
116 W. Allegan
Lansing, MI 48933
(517) 335-3182 ▪ *fax* (517) 373-9965

MINNESOTA
Minnesota Department of Natural Resources
NFIP State Coordinator
500 Lafayette Road
St. Paul, MN 55155-4032
(651) 296-0440 ▪ *fax* (651) 296-0445

MISSISSIPPI
Mississippi Emergency Management Agency
NFIP State Coordinator
P.O. Box 4501
Jackson, MS 39296-4501
(601) 960-9973 ▪ *fax* (601) 360-0942

MISSOURI
Missouri Emergency Management Agency
NFIP State Coordinator
P.O. Box 116
Jefferson City, MO 65102
(573) 526-9141 ▪ *fax* 573-526-9198

MONTANA
Montana Dam Safety Program
NFIP State Coordinator
48 N. Last Chance Gulch
Helena, MT 59620-1601
(406) 444-6654 ▪ *fax* (406) 444-0533

NEBRASKA
Nebraska Natural Resources Commission
NFIP State Coordinator
301 Centennial Mall South
Lincoln, NE 68509-4876
(402) 471-3936 ▪ *fax* (402) 471-3132

NEVADA
Nevada Division of Water Planning
Flood Management Program
NFIP State Coordinator
1550 E. College Parkway, Suite 142
Carson City, NV 89704
(775) 687-3600, ext. 23
fax (775) 687-1288

NEW HAMPSHIRE
New Hampshire Office of State Planning
NFIP State Coordinator
107 Pleasant Street
Concord, NH 03301
(603) 271-2231 ▪ *fax* (603) 225-7341

NEW JERSEY
New Jersey Department of Environmental Protection
Flood Plain Management Section
NFIP State Coordinator
P.O. Box 419
Trenton, NJ 08625
(609) 292-2296 ▪ *fax* (609) 984-1908

NEW MEXICO
New Mexico Emergency Management Center
Emergency Management Planning & Coordination
NFIP State Coordinator
P.O. Box 1628
Santa Fe, NM 87504-1628
(505) 476-9681 ▪ *fax* (505) 471-5922

NEW YORK
New York State Department of Environmental Conservation
NFIP State Coordinator
50 Wolf Road, Room 388
Albany, NY 12233-3507
(518) 457-0833 ▪ *fax* (518) 485-7786

NORTH CAROLINA
North Carolina Division of Emergency Management
NFIP State Coordinator
116 W. Jones
Raleigh, NC 27603-1335
(919) 733-3359 ▪ *fax* (919) 733-5408

NORTH DAKOTA
North Dakota State Water Commission
NFIP State Coordinator
900 East Boulevard Avenue
Bismarck, ND 58505-0850
(701) 328-4898 ▪ *fax* (701) 328-3747

OHIO
Ohio Department of Natural Resources
Division of Water
NFIP State Coordinator
1939 Fountain Square
Columbus, OH 43224
(614) 265-6750 ▪ *fax* (614) 447-9503

OKLAHOMA
Oklahoma Water Resources Board
NFIP State Coordinator
3800 N. Classen Boulevard
Oklahoma City, OK 73118
(405) 530-8800 ▪ *fax* (405) 530-8900

OREGON
Oregon Department of Land Conservation & Development
NFIP State Coordinator
635 Capitol Street, NE, Suite 200
Salem, OR 97301-2540
(503) 373-0050, ext. 255
fax (503) 378-6033

PENNSYLVANIA
Pennsylvania Department of Community and Economic Development
Floodplain Management Division
NFIP State Coordinator
313 Forum Building
Harrisburg, PA 17120
(717) 720-7445 ▪ *fax* (717) 234-4560

PUERTO RICO
Puerto Rico Planning Board
NFIP Coordinator
Minillas Government Center
P.O. Box 41119
San Juan, PR 00940-9985
(787) 727-4444 ▪ *fax* (787) 724-3270

RHODE ISLAND
Rhode Island Emergency Management Agency, MURI
NFIP State Coordinator
645 New London Avenue
Cranston, RI 02920
(401) 874-6616 ▪ *fax* (401) 789-4670

SOUTH CAROLINA
South Carolina Department of Natural Resources
NFIP State Coordinator
2221 Devine Street, Suite 222
Columbia, SC 29205
(803) 734-9120 ▪ *fax* (803) 734-9200

SOUTH DAKOTA
South Dakota Division of Emergency Management
NFIP State Coordinator
500 E. Capitol
Pierre, SD 57501-5070
(605) 773-3239 ▪ *fax* (605) 773-3580

TENNESSEE
Tennessee Department of Economic & Community Development
NFIP State Coordinator
320 Sixth Avenue N, 6th Floor
Nashville, TN 37243-0405
(615) 741-2211 ▪ *fax* (615) 741-5070

TEXAS
Texas Natural Resource Conservation Commission
NFIP State Coordinator
P.O. Box 13087-MC 160
Austin, TX 78711-3087
(512) 239-6135 ▪ *fax* (512) 239-4770

U.S. VIRGIN ISLANDS
Virgin Islands Department of Planning & Natural Resources
NFIP Coordinator
Fosters Plaza
396-1 Anna's Retreat
St. Thomas, VI 00802
(340) 774-3320 ▪ *fax* (340) 774-5706

UTAH
Utah Division of Comprehensive Emergency Management
NFIP State Coordinator
State Office Building, #1110
Salt Lake City, UT 84114
(801) 538-3750 ▪ *fax* (801) 538-3770

VERMONT
Vermont Department of Environmental Conservation
NFIP State Coordinator
103 S. Main Street, Building 10N
Waterbury, VT 05671-0408
(802) 241-3770 ▪ *fax* (802) 241-3287

VIRGINIA
Virginia Department of Conservation
NFIP State Coordinator
203 Governor Street, Suite 206
Richmond, VA 23219
(804) 371-6135 ▪ *fax* (804) 371-2630

WASHINGTON
Washington Department of Ecology
Land Resources Program
NFIP State Coordinator
P.O. Box 47600
Olympia, WA 98504-7600
(360) 407-6796 ▪ *fax* (360) 407-6904

WEST VIRGINIA
West Virginia Office of Emergency Services
NFIP State Coordinator
1900 Kanawha Boulevard, Room EB-80
Charleston, WV 25305-0360
(304) 558-5380 ▪ *fax* (304) 344-4538

WISCONSIN
Wisconsin Department of Natural Resources
NFIP State Coordinator
101 S. Webster
Madison, WI 53707
(608) 266-8037 ▪ *fax* (608) 264-9200

WYOMING
Wyoming Emergency Management Agency
NFIP State Coordinator
5500 Bishop Boulevard
Cheyenne, WY 82009-3320
(307) 777-4918 ▪ *fax* (307) 635-6017

Appendix E. Sample Plan Review and Inspection Checklists

SAMPLE

Application #: _____

Applicant: _____

Plan Review Checklist

FLOOD HAZARD AREA APPLICATION REVIEW – A ZONES

Terms: FHA = Flood Hazard Area; DFE = Design Flood Elevation

Reviewer's Initials and Date of Review	Review Steps *NOTE: For variance requests, use this form to document efforts to achieve the greatest degree of compliance.*
	Is proposed development consistent with zoning? ❒ NO, has a zoning amendment been requested? ❒ YES, proceed with review.
FIRM Panel # and date _____ FLOODWAY Panel # and date _____ DFE _____	Check FIRM, floodplain/floodway boundaries, base flood elevations, and map revisions or LOMRs issued by FEMA. Is proposal in the floodplain and/or floodway? ❒ NO, sign and date this form and put in file. ❒ YES, must meet the flood resistant provisions of the code. ❒ YES, FLOODWAY. All residential structures (including Manufactured Housing units) in floodways to comply with IBC®. ❒ YES, FLOODWAY. Require engineer's "no rise" certification and supporting hydraulic data in file before continuing review. ❒ YES, in FHA without DFEs. Check other sources, use estimating methods, or require applicant to determine. ❒ YES, in FHA, but applicant has elevation data that shows natural site elevation above DFE. Advise applicant to obtain LOMA and submit copy. ❒ YES, in "Coastal A Zone"; refer to V Zone Checklist if V Zone requirements are to be applied. ❒ YES, in 500-year floodplain. Floodplain review not required.
	Site plan shows nature of development proposal, location, dimensions, wetlands, floodplain/floodway boundaries, and ground elevations. ❒ YES, continue review. ❒ NO, return to applicant to revise application and site plan.
	Can the proposed development be modified to avoid floodplain? ❒ YES. Explain flood hazards to applicant and make recommendations to minimize flood hazards and damage. ❒ NO, but can impacts be further minimized? Can fill be minimized? Buildings moved to higher ground?
	Has the applicant obtained and provided copies of all necessary State and federal permits, e.g., wetlands? ❒ NO, advise applicant which agencies to contact. ❒ YES, require copies in file.
	Will a watercourse be altered? ❒ NO. Continue review. ❒ YES. Applicant to provide copies of notices to adjacent communities, federal agencies, and the NFIP State Coordinator. ❒ YES. Engineer's analysis required to show same flood carrying capacity; method of maintenance specified.
	Is fill proposed? Will fill be compacted? Side-slopes are no steeper than 2:1? Protected from erosion? ❒ NO fill. Continue review. ❒ YES, fill used to elevate building will be compacted, sloped, and stabilized. ❒ YES, but not for building elevation. Purpose: _____

SAMPLE

Application #: _____

Plan Review Checklist

FLOOD HAZARD AREA APPLICATION REVIEW – A ZONES

Initials and Date	Review Steps
	Is the application for improvement or addition to an existing building? ❒ NO. A new structure is proposed, continue review. ❒ YES, but building is documented in file as a "historic structure" and proposed work will not change historic designation. Encourage flood resistance. ❒ YES. Costs of work are documented and compared to market value. ❒ If costs equal or exceed 50% of market value of structure, provide finding to Board of Appeals for determination of Substantial Improvement. ❒ Proposed work is not a Substantial Improvement. Flood hazard review not required.
	Are new structures proposed to be elevated (new residential or non-residential buildings, tanks, manufactured homes)? Give applicant a blank Elevation Certificate. ❒ NO. STOP! A permit cannot be issued for non-elevated residential buildings. ❒ NO. Non-residential may be floodproofed (see certification requirements) ❒ YES, on fill. Basements in fill are not allowed. ❒ YES, on piers, pilings, or columns. ❒ YES, on solid foundation walls (see about Enclosures below DFE).
	Check the following for Manufactured Housing units: ❒ Are flood hazards avoided as much as possible? ❒ In Floodway, refer to IBC® for foundation design. ❒ Foundation is reinforced (dry-stack block NOT allowed). ❒ Ground anchors and tie-downs shown on plans? ❒ Elevated above the DFE?
	Check the following for utility support systems: ❒ Electrical, mechanical, plumbing, heating/air conditioning components elevated? ❒ Septic designed to minimize inflow/discharge under flood conditions? ❒ On-site water supply designed to minimize inflow under flood conditions? ❒ Above-ground tanks are anchored/elevated? ❒ Below-ground tanks are designed to resist flotation?
	If new, non-residential structure is not elevated, will it be floodproofed? ❒ YES, non-residential building will be floodproofed to not less than 1' above DFE, and Floodproofing Certification of design is in file. ❒ YES, agricultural building to be wet floodproofed. ❒ NO. Permit shall not be approved.
	Enclosed areas below DFE (stairwells, sheds, garages, storage areas, crawl spaces)? ❒ NO. Continue review. ❒ YES, number, size, and location of vents shown on plan. ❒ YES, plan shows acceptable use (parking, limited storage, and access). ❒ YES, flood resistant materials specified. ❒ YES, utilities, if any, are all elevated above DFE.
	❒ Record permit in log of floodplain permits. ❒ Make sure that all necessary documents are in the file. ❒ Issue Permit and transfer file to Inspections.

PERMIT APPLICATION REVIEW COMPLETED BY: _____ DATE: _____

❒ ISSUE PERMIT approved by: _____

❒ DENY PERMIT approved by: _____

SAMPLE

Permit #: _____

Date: _____

Applicant: _____

Inspection Checklist

FLOOD HAZARD AREA INSPECTIONS – A ZONES

Inspector's Initials and Date of Inspection	Inspection Steps
	Before site inspection: ❒ REVIEW permit file before going in the field. ❒ ASK permit reviewer questions to understand requirements. ❒ Are other State and federal permits in the file?
	Measure stake out distances from waterway or landmark. Is development in the right place? Is fill correct distance from waterway or landmark? ❒ NO. Take enforcement action to correct problems. ❒ YES. Check fill compaction and side slopes. No basements in fill.
	Elevation of lowest floor checked during framing or foundation inspection after lowest floor is in place. Elevations checked and acceptable? ❒ YES. ❒ NO! Take enforcement action to correct problems.
	For enclosures below DFE (including crawl spaces): Are flood damage resistant materials used? Does use of enclosure appear to be limited to crawl space, parking, building access, or limited storage? Are flood openings no more than 12" above grade? Are there enough flood openings, are they on at least two sides, and do they allow automatic entry/exit of floodwater? ❒ YES. ❒ Building does not have enclosures below DFE. ❒ NO! Take enforcement action to correct problems.
	Other Notes Based on Inspection:
	Issue Occupancy Certificate only if final inspection shows compliance with floodplain requirements.

FINAL INSPECTION COMPLETED BY: _____ DATE: _____

SAMPLE

Application #: _____

Applicant: _____

Plan Review Checklist

FLOOD HAZARD AREA APPLICATION REVIEW – V ZONES

Terms: FHA = Flood Hazard Area; DFE = Design Flood Elevation

Reviewer's Initials and Date of Review	Review Steps *NOTE: For variance requests, use this form to document efforts to achieve the greatest degree of compliance.*
	Is proposed development consistent with zoning? ❒ NO, has a zoning amendment been requested? ❒ YES, proceed with review.
	Is proposal in Coastal Barrier Resources Area (CoBRA) or Otherwise Protected Area? ❒ NO, continue review. ❒ YES, advise applicant that flood insurance is not available, document to file, continue review (must comply with flood provisions).
FIRM Panel # and date _____ DFE _____	Check FIRM, floodplain and zone boundaries, base flood elevations, and map revisions or LOMRs issued by FEMA. Is proposal in the Coastal Flood Hazard Area subject to high velocity wave action (V Zone)? ❒ NO, not in Flood Hazard Area; sign and date this form and put in file. ❒ NO, in "Coastal A Zone" (apply V Zone requirements if specified in ordinance). ❒ NO, in riverine A Zone. Use A Zone checklist. ❒ YES, in V Zone, must meet flood resistant provisions of the code.
	Site plan shows development proposal, location, dimensions, wetlands, FHA / V Zone boundaries, DFE, and ground elevations (NGVD or other datum on FIRM). ❒ YES, continue review. ❒ NO, return to applicant to revise application and site plan.
	Can the proposed development be modified to avoid FHA / V Zone? ❒ YES. Explain flood hazards to applicant and make recommendations to minimize flood hazards and damage. ❒ NO. Can floodplain impacts be further minimized? Maximize setback from the water? Buildings moved to higher elevation?
	Has the applicant obtained and provided copies of all necessary State and federal permits, e.g., wetlands, coastal zone consistency? ❒ NO, advise applicant which agencies to contact. ❒ YES, require copies in file.
	Will a dune be altered? ❒ NO, continue review. ❒ YES. Require State coastal zone approval before continuing.
	Is a pool proposed? ❒ NO. Continue review. ❒ YES, not attached to the building; continue review. ❒ YES, attached to the building. Applicant to redesign. Do not continue review.

SAMPLE

Application #: _____

Plan Review Checklist

FLOOD HAZARD AREA APPLICATION REVIEW – V ZONES

Initials and Date	Review Steps
	Is the application for improvement or addition to an existing building? ❒ NO. A new structure is proposed, continue review. ❒ YES, but building is documented in file as a "historic structure" and proposed work will not change historic designation. Encourage flood resistance. ❒ YES. Costs of improvements are documented and compared to market value. ❒ If costs of proposed addition equal or exceed 50% of market value of structure, provide finding to Board of Appeals for determination of Substantial Improvement. ❒ Proposed work is not a Substantial Improvement. Flood hazard review not required.
	Are new buildings proposed to be elevated? Give applicant a blank Elevation Certificate. ❒ NO. STOP! A permit cannot be issued for non-elevated buildings. ❒ YES, on piers, pilings, or columns. ❒ YES, on parallel shear walls (parallel to expected direction of flow?). ❒ YES, design certification submitted?
	Check the following for utility support systems: ❒ Electrical, mechanical, plumbing, heating/air conditioning components elevated? ❒ Septic designed to minimize inflow/discharge under flood conditions? ❒ On-site water supply designed to minimize inflow under flood conditions? ❒ Above-ground tanks are anchored/elevated? ❒ Below-ground tanks are designed to resist flotation?
	Enclosed area below DFE proposed (stairwells, sheds, garages, storage areas)? ❒ NO. Continue review. ❒ YES, enclosed by insect screening or lattice. Continue review. ❒ YES, applicant has provided certification of breakaway wall design. ❒ YES, design not certified. Advise applicant to obtain certification of breakaway wall design from registered design professional. ❒ YES, flood resistant materials will be used. ❒ YES, utilities <u>not</u> penetrating or attached to breakaway walls.
	❒ Record permit in log of floodplain permits. ❒ Make sure that all necessary documents are in the file. ❒ Issue Permit and transfer file to Inspections.

PERMIT APPLICATION REVIEW COMPLETED BY: _____ DATE: _____

❒ ISSUE PERMIT approved by: _____

❒ DENY PERMIT approved by: _____

SAMPLE

Permit #: _____

Date: _____

Applicant: _____

Inspection Checklist

FLOOD HAZARD AREA INSPECTIONS – V ZONES

Inspector's Initials and Date of Inspection	Inspection Steps
	Before site inspection: ❒ REVIEW permit file before going in the field. ❒ ASK permit reviewer questions to understand requirements. ❒ Are other State and federal permits in the file?
	Measure distances from water or landmark. Is development in the right place? ❒ NO. Take enforcement action to correct problems. ❒ YES. Continue inspection.
	Elevation of lowest floor checked during framing or foundation inspection after lowest floor is in place. Elevations checked and acceptable? ❒ YES. ❒ NO! Take enforcement action to correct problems.
	For enclosures below DFE: Are walls insect screening or lattice? Are walls breakaway? Are flood damage resistant materials used? Does use of enclosure appear to be limited to parking, building access, or limited storage? ❒ YES. ❒ Building does not have enclosures. ❒ NO! Take enforcement action to correct problems.
	Other Notes Based on Inspection:
	Issue Occupancy Certificate only if final inspection shows compliance with floodplain requirements.

FINAL INSPECTION COMPLETED BY: _____ DATE: _____