

# Comparing National Flood Insurance Program Requirements to 2021 International Codes / American Society of Civil Engineers Standard ASCE 24-14

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This checklist guides floodplain managers, building officials, and designers as they compare the requirements of the National Flood Insurance Program (NFIP) to the [flood provisions of the 2021 edition of the International Codes \(I-Codes\)](#) and the American Society of Civil Engineers (ASCE) reference standard [ASCE 24-14, Flood Resistant Design and Construction](#).

## Purpose of this Checklist

This checklist guides floodplain managers, building officials, and designers as they compare the requirements of the NFIP to the flood provisions of the [2021 edition](#) of the International Codes® (I-Codes®). The I-Codes that contain flood provisions and reference a standard produced by the American Society of Civil Engineers (ASCE), ASCE 24-14, Flood Resistant Design and Construction, are:

- International Building Code® (IBC®)
- International Residential Code® (IRC®)
- International Existing Building Code® (IEBC®)

The trade-specific I-Codes that contain flood provisions are typically adopted either separate from the above I-Codes or by reference in the IBC:

- International Mechanical Code® (IMC®)
- International Plumbing Code® (IPC®)
- International Fuel Gas Code® (IFGC®)



The International Association of Plumbing and Mechanical Officials (IAPMO) also publishes model trade-specific codes that include flood provisions:

- Uniform Mechanical Code® (UMC®)
- Uniform Plumbing Code® (UPC®)

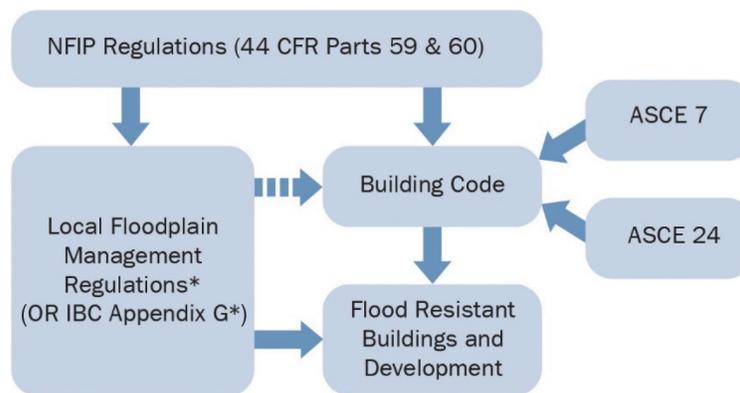
This checklist is based on the standard checklist used by FEMA and state, local, tribal, and territorial governments to review local floodplain management regulations and ordinances to determine whether such regulations and ordinances are complete for the purpose of participating in the National Flood Insurance Program. The pertinent Code of Federal Regulations(44 CFR) references include: [44 CFR Part 60](#) (criteria for land management and use) and [44 CFR Section 59.1](#) (definitions).

## Floodplain Management and Building Codes

Many state, local, tribal, and territorial governments adopt and enforce building codes. With the inclusion of provisions that generally meet or exceed the National Flood Insurance Program requirements for buildings <sup>1</sup> in the I-Codes, governments that enforce the 2012 and later I-Codes have two coordinated tools to regulate development in flood hazard areas:

1. Building codes that govern the design and construction of buildings and structures
2. Either separate, but coordinated, local floodplain management regulations or IBC Appendix G

These tools are designed to work together to result in buildings and structures, and all other development, that are resistant to flood loads and flood damage (Figure 1).



\* NFIP-consistent administrative provisions, community-specific adoption of Flood Insurance Studies and maps, and technical requirements for development outside the scope of the building code (and higher standards, in some communities).

**Figure 1. Relationship of NFIP regulations to building code flood provisions**

<sup>1</sup> States and communities that use the 2021 IBC should be aware that FEMA determined Section 3114, Public use restroom buildings in flood hazard areas, is not consistent with the minimum requirements of the NFIP.

FEMA's model code-coordinated ordinances are described in [Reducing Flood Losses Through the International Codes®: Coordinating Building Codes and Floodplain Management Regulations \(5th edition\)](#). Send a request to [FEMA-BuildingScienceHelp@fema.dhs.gov](mailto:FEMA-BuildingScienceHelp@fema.dhs.gov) to obtain a model code-coordinated ordinance.

## Considerations When Relying on I-Codes to Satisfy NFIP Requirements

State, local, tribal, and territorial governments that intend to rely on the flood provisions of the I-Codes to satisfy the requirements for participating in the NFIP must determine that their versions of the code meet or exceed the NFIP requirements. Of particular note, care must be taken to ensure the following:

- Buildings, structures, and facilities that a state may specify are exempt from the requirements of the code, and work that the code explicitly exempts from the requirement to obtain a permit (see IBC Section 105.2 and IRC Section R105.2), are still required to be regulated in accordance with the NFIP when located in flood hazard areas. For example, many states exempt agricultural structures from building codes.
  - Buildings, structures, and facilities exempt from the requirements of the code must be addressed by local regulations or by amending IBC Appendix G when it is used.
  - One way to effectively address this requirement is to specify in local regulations or in IBC Appendix G that buildings and structures in flood hazard areas that are exempt from the code must comply with ASCE 24.
- Amendments, whether adopted by states or communities, must not weaken the flood provisions of the model codes.
- If Chapter 1 of IBC or Chapter 1 of IRC are not adopted, then the administrative provisions related to flood hazard areas contained in the chapter(s) not adopted must be incorporated in locally adopted administrative provisions or by ensuring that all necessary administrative provisions are contained in IBC Appendix G.
- If IBC Appendix G is not adopted, requirements comparable to those in Appendix G must be adopted in local floodplain management regulations.
- Work on existing buildings and structures must be regulated, including “repair, alteration, change of occupancy, addition to and relocation of existing buildings” (IEBC Section 101.2 Scope).
  - IBC Section 101.4.7 effectively adopts the IEBC by reference.
  - The IRC applies to the construction of new dwellings as well as work on existing dwellings, including “alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, removal and demolition” (IRC Section R101.2 Scope).

## Approaches for Relying on the I-Codes to Participate in the NFIP

With the understanding that the above-listed items must be examined, there are three different approaches a community may consider to rely on the flood provisions of the I-Codes to meet the requirements for participation in the NFIP:

1. Adopt the IBC (without Appendix G), IRC, and IEBC and adopt code-coordinated companion floodplain management regulations.
2. Adopt the IBC with Appendix G, IRC, and IEBC. Some states do not authorize communities to use Appendix G, while others make it optional.
3. Adopt one or more of the I-Codes and continue to use NFIP-compliant, locally adopted, “stand-alone” floodplain management regulations, allowing the “more restrictive prevails” concept to apply. The caution is that having two regulatory instruments govern the same activities can result in conflicting provisions and perpetuate confusion. States should determine whether this is acceptable, especially those states that specify that only the building code governs the design and construction of buildings, which may effectively void building requirements in local floodplain management regulations. Communities with higher regulatory standards for buildings, especially communities that participate in the NFIP Community Rating System, should determine whether a conflict between the requirements of the building codes would effectively void locally adopted higher standards. In general, FEMA discourages allowing known conflicts to remain unresolved because it could result in regulations that are unenforceable.

## Relationship Between the I-Codes and ASCE 24

ASCE 24 is a consensus standard that has been referenced by the I-Codes since 2000. ASCE 24-14 is incorporated by reference in the 2021 I-Codes. FEMA prepared “[Highlights of ASCE 24-14](#)” to summarize the flood provisions. ASCE 24 can be purchased from the [ASCE website](#); it is not available in view-only form.

The IBC flood design requirements for new construction are primarily in Section 1612, Flood Loads. Rather than provide specific design and construction requirements, IBC Section 1612.2 references ASCE 24 where detailed requirements are specified.

The IRC flood design requirements for one- and two-family dwellings are primarily in Section R322, Flood-Resistant Construction. The IRC requires dwellings in floodways to comply with ASCE 24. Design professionals may use ASCE 24 as an alternative to the specific IRC provisions for dwellings in all flood hazard areas.

Specific sections of the IEBC apply in flood hazard areas. When work constitutes substantial improvement or repair of substantial damage, the work shall comply with the flood design requirements for new construction and all aspects of existing buildings shall be brought into compliance with the requirements for new construction in IBC Section 1612 or IRC Section R322, as applicable.

Administrative provisions are found in IBC Chapter 1 (and IBC Appendix G, if adopted), IEBC Chapter 1, IRC Chapter 1, and locally adopted floodplain management regulations (especially if IBC Appendix G is not adopted). Administrative provisions include such matters as duties and powers of the building official or floodplain administrator, determination of substantial improvement and substantial damage, adoption of maps and studies, variances, contents of site plans and construction documents, inspections, identification of flood hazard areas and flood elevations, and evaluations related to encroachment in floodways and flood hazard areas with base flood elevations (BFEs) but without floodways. ASCE 24 does not contain administrative provisions.

IBC Appendix G or the local floodplain management regulations will specify requirements for development that is not within the scope of the codes, including subdivisions, site improvements, manufactured homes, recreational vehicles, tanks, other building work, temporary structures and storage, and utility and miscellaneous structures.

# Provisions in the I-Codes and ASCE 24 that Exceed NFIP Requirements

Revisions of ASCE 24 are developed by a balanced committee that includes design professionals, building industry representatives, manufacturers, government officials, and academic representatives. The committee is not required to mimic NFIP requirements for buildings and structures. Over time, the committee has incorporated a number of provisions that exceed the NFIP requirements. Many provisions are more detailed and specific than NFIP requirements, while some exceed the minimum NFIP requirements to achieve the desired building performance when exposed to flooding. The committee takes care not to reduce the requirements below the NFIP minimums.

A description of the differences between the NFIP and the I-Codes and ASCE 24 is included in Chapter 3 of the 5th edition of [Reducing Flood Losses Through the International Codes®: Coordinating Building Codes and Floodplain Management Regulations](#).

## Other Information Sources

FEMA developed several resource documents which are available on the Building Science Building Code [web](#) page.

- Flood Resistant Provisions of the 2021, 2018, 2015, and 2012 International Codes (excerpts of the flood provisions) and checklists that identify, for each NFIP requirement, sections of the codes and ASCE 24 that contain equivalent requirements.
- Highlights of ASCE 24-14 and ASCE 24-05, Flood Resistant Design and Construction.
- Flood Resistant Provisions of the 2018, 2015, and 2012 Uniform Codes by the International Association of Plumbing and Mechanical Officials (IAPMO).
- Reducing Flood Losses Through the International Codes®: Coordinating Building Codes and Floodplain Management Regulations. The 5th edition of this publication includes descriptions of several differences between I-Code provisions and NFIP requirements (Chapter 3) and a series of questions to help states and communities coordinate local floodplain management regulations with the I-Codes (Chapter 4). In addition, model ordinances specifically written to coordinate with the I-Codes are available.
- FEMA Fact Sheet: Building Code Requirements That Exceed or Are More Specific Than the National Flood Insurance Program.
- FEMA Fact Sheet: Significant Building Code Requirements That Exceed or Are More Specific Than the National Flood Insurance Program.

## Comparison Checklists

This checklist has two parts. Table 1 (starting on the next page) is a comparison of requirements and Table 2 (page 20) is a comparison of definitions.

## Checklist

### Checklist: Comparison of Requirements in Table 1

- The first column of the checklist shows the item number for each NFIP requirement. Item numbers are used for cross-referencing requirements.
- The second and third columns of the checklist show short statements of the NFIP requirements, with the specific citations (for complete provisions, refer to the actual language in 44 CFR Parts 59 and 60).
- The fourth column of the checklist shows the I-Code sections that address the NFIP requirements.
- The fifth column of the checklist shows the provisions of ASCE 24-14 that address the NFIP requirements for buildings and structures. Table 1: Checklist Comparing the NFIP Requirements, Flood Provisions in the 2021 I-Codes, and ASCE 24-14

**Table 2: Checklist Comparing the NFIP Requirements, Flood Provisions in the 2021 I-Codes, and ASCE 24-14**

Item No.	44 CFR Citation Section Number	Description of National Flood Insurance Program Requirement	2021 I-Codes Section Number and Notes	ASCE 24-14 Section Number and Notes
1	59.22(a)(2)	Citation of Statutory Authorization.	In state authorizing/adoption or community's adopting ordinance	Does not include administrative provisions
2	59.22(a)(1)	Purpose section citing health, safety, and welfare reasons for adoption.	IBC: 101.3 IBC-G: G101.2 IRC: R101.3 IEBC: 101.3	Does not include administrative provisions
3	59.1	Definitions	Refer to Table 2 Checklist: Comparing the Definitions in this Fact Sheet	Refer to Table 2 Checklist: Comparing the Definitions in this Fact Sheet

Item No.	44 CFR Citation Section Number	Description of National Flood Insurance Program Requirement	2021 I-Codes Section Number and Notes	ASCE 24-14 Section Number and Notes
4	60.2(h)	Adopt or reference correct Flood Insurance Rate Map (FIRM) (and where applicable, Flood Boundary Floodway Map) and date.	IBC: 1612.3 IRC: Table R301.2 Note: Both reference revisions of Flood Insurance Studies (FISs) and FIRMs; this provision does not override individual state limitations on “auto-adoption” of maps	Does not include administrative provisions
5	60.2(h)	Adopt or reference correct Flood Insurance Study and date.	IBC: 1612.3 IBC-G: G103.2 IRC: Table R301.2	Does not include administrative provisions
6	60.2(e)	Adequate enforcement provisions including a violations/penalty section specifying community actions to assure compliance.	IBC: 114 IBC-G: G101.4 IRC: R113	Does not include administrative provisions
7	60.1(b)	Abrogation and Greater Restriction section (provide that floodplain management regulations take precedence over any less restrictive conflicting local laws, ordinances, or codes).	In community’s adopting ordinance	Does not include administrative provisions
8	60.1(b)	Disclaimer of Liability (Degree of flood protection required by the ordinance is considered reasonable but does not imply total flood protection.)	In community’s adopting ordinance	Does not include administrative provisions
9	60.1(b)	Severability section. (If any section, provision, or portion of the ordinance is deemed unconstitutional or invalid by a court, the remainder of the ordinance shall be effective.)	In community’s adopting ordinance	Does not include administrative provisions

Item No.	44 CFR Citation Section Number	Description of National Flood Insurance Program Requirement	2021 I-Codes Section Number and Notes	ASCE 24-14 Section Number and Notes
10	59.22(b)(1)	Framework for administering the ordinance (e.g., permit system, establish office for administering the ordinance, recordkeeping)	IBC: Chapter 1 IBC-G: G104, G105 IRC: Chapter 1, R104 IEBC: Chapter 1, 104	Does not include administrative provisions
11	59.22(b)	Designate title of community Floodplain Administrator	IBC: 104.1 IBC-G: G101.5 IRC: R104.1 In community's adopting ordinance	Does not include administrative provisions
12	65.3	Requirement to submit new technical data: within 6 months, notify FEMA of changes in the BFE by submitting technical or scientific data so insurance and floodplain management can be based on current data.	IBC-G: G104.10 In community's adopting ordinance	Does not include administrative provisions
13	60.6(a)	Variance section with evaluation criteria and insurance notice.	IBC: 104.10.1 IBC-G: G106 IRC: R104.10.1 IEBC: 104.10.1	Does not include administrative provisions
14	59.22(3)	These items are needed for adopted ordinance: <ul style="list-style-type: none"> <li>• Signature of Appropriate Official and Certification</li> <li>• Date ordinance adopted</li> <li>• Effective Date</li> <li>• Ordinance Number</li> </ul>	In community's adopting ordinance	Does not include administrative provisions

Item No.	44 CFR Citation Section Number	Description of National Flood Insurance Program Requirement	2021 I-Codes Section Number and Notes	ASCE 24-14 Section Number and Notes
	60.3(a)	When no Special Flood Hazard Areas (SFHAs) have been identified, no water surface elevation data have been provided, and floodways and coastal high hazards areas have not been identified and the community applies for participation in the National Flood Insurance Program, the Section 60.3(a) provisions listed in Items 15 through 20 below are required.		
15	60.3(a)(1)	Require permits for all proposed construction or other development, including placement of manufactured homes.	IBC: 101.2, 105.1, 105.2 IBC-G: G101.3, G103.1, G105.1 IRC: R101.2, R102.7, R105.1, R105.2, R105.3.1.1, R106.1.4, R301.2.4, R322 IEBC: 101.2, 105.1	Does not include administrative provisions
16	60.3(a)(2)	Assure that all other state and federal permits are obtained.	IBC: 102.2 IBC-G: G104.2 IRC: R102.2 IEBC: 102.2	Does not include administrative provisions
17a	60.3(a)(3)	Review permits to assure that sites are reasonably safe from flooding and require performance for new construction and substantial improvements in flood-prone areas (see items 17b-17e):	IBC: 107.2.6, 1612, 1804.5 IBC-G: G101.2, G101.3, G105.2 IRC: R106.1.4, R301.1, R301.2.4, R322 IEBC: 401.3, 405.2.6, 502.3, 503.2, 507.3, 701.2, 701.3, 1103.3, 1201.4, 1301.3.3, 1402.6 (all by reference to 1612 and R322)	Does not include administrative provisions

Item No.	44 CFR Citation Section Number	Description of National Flood Insurance Program Requirement	2021 I-Codes Section Number and Notes	ASCE 24-14 Section Number and Notes
17b	60.3(a)(3)(i)	(a) Anchoring (including manufactured homes) to prevent floatation, collapse, or lateral movement	IBC: 1603.1, 1605.1, 1605.2, 1612.1, 1612.4 (ASCE 24) IBC-G: G109.2, G111.1, G112, G113, G114.2 IRC: R301.1, R301.2.4, R322.1.2, R322.1.9, R322.2.4, R322.3.3 IEBC: by reference to 1612 and R322 (see sections listed above in Item 17a)	1.5.1, 1.5.3, 1.5.5, 1.6, 2.4, 2.5, 4.5.1, 4.5, 6.2.2, 7.1, 7.4, 7.5, Chapter 9
17c	60.3(a)(3)(ii)	(b) Use of flood-resistant materials	IBC: 802.4, 1402.6, 1612.2 (ASCE 24) IBC-G: G114.5 IRC: R322.1.8 IEBC: by reference to 1612 and R322 (see sections listed above in Item 17a)	1.5.1, Chapter 5, 6.2, 6.3, 7.5, 8.1, 9.1
17d	60.3(a)(3)(iii)	(c) Construction methods/practices that minimize flood damage.	IBC: 1612.1, 1612.2 (ASCE 24) IBC-G: Appendix G IRC: R322.1.3 IEBC: by reference to 1612 and R322 (see sections listed above in Item 17a)	ASCE 24 as a whole
17e	60.3(a)(3)(iv)	(d) Electrical, heating, ventilation, plumbing, air conditioning equipment, and other service facilities designed and/or located to prevent water entry or accumulation.	IBC: 1612.2 (ASCE 24), 2702.1.8, 3001.3; also see IMC, IPC, IFGC IBC-G: G109.4, G111.1, G114.6 IRC: R322.1.6, R322.2.4, R322.3.5(1), R322.3.10, M1301.1.1, M1401.5, M1601.4.10, M1701.2, M2001.4, M2201.6, G2404.7, P2601.3, P2705.1(7), P3001.3, P3101.5 IEBC: by reference to 1612 and R322 (see sections listed above in Item 17a)	4.6.1, Chapter 7

Item No.	44 CFR Citation Section Number	Description of National Flood Insurance Program Requirement	2021 I-Codes Section Number and Notes	ASCE 24-14 Section Number and Notes
18a	60.3(a)(4)(i)	Review subdivision proposals and development proposals to assure that: (a) Such proposals minimize flood damage.	IBC-G: G105.2, G107 (subdivisions)	Not within the scope of ASCE 24
18b	60.3(a)(4)(ii)	(b) Public utilities and facilities are located and constructed so as to minimize flood damage.	IBC-G: G107.1 (subdivisions), G108 (site improvement)	Chapter 7
18c	60.3(a)(4)(iii)	(c) Adequate drainage is provided.	IBC: 1804.4 IBC-G: G107.1 (subdivisions), G108.5 (site improvement) IRC: R401.3	1.4.2, 4.5.4
19	60.3(a)(5) and (6)	Require new and replacement water supply and sanitary sewer systems to be designed to minimize or eliminate infiltration.	IBC-G: G107.1 (subdivisions), G108.3 and G108.4 (site improvement) IRC: R322.1.7, P2602.2 See also International Private Sewage Disposal Code (IPSDC)	7.3
20	60.3(a)(6)(ii)	Require on-site waste disposal systems be located to avoid impairment or contamination.	IBC-G: G107.1 (subdivisions), G108.3 (site improvement) IRC: R322.1.7 See also International Private Sewage Disposal Code (IPSDC)	7.3.4

Item No.	44 CFR Citation Section Number	Description of National Flood Insurance Program Requirement	2021 I-Codes Section Number and Notes	ASCE 24-14 Section Number and Notes
	60.3(b)	When SFHAs are identified by the publication of a community's Flood Hazard Boundary Map or Flood Insurance Rate Map but water surface elevation data have not been provided or a floodway or coastal high hazard area has not been identified. all the above ordinance provisions for Section 60.3(a) and the Section 60.3(b) provisions listed in Items 21 through 27 are required.		
21	60.3(b)(1)	Require permits for all proposed construction and other development within SFHAs on the FIRM.	IBC: 101.2, 105.1, 1612.1 IBC-G: G101.3, G103.1, G105.1 IRC: R101.2, R105.1, R301.2.4, R322.1 IEBC: 101.2	Does not include administrative provisions
22	60.3(b)(3)	Require BFE data for subdivision proposals or other developments greater than 50 lots or 5 acres.	IBC-G: G105.2, G107.2 (subdivisions regardless of size)	Does not include administrative provisions

Item No.	44 CFR Citation Section Number	Description of National Flood Insurance Program Requirement	2021 I-Codes Section Number and Notes	ASCE 24-14 Section Number and Notes
23	60.3(b)(4)	In A Zones, in the absence of FEMA Base Flood Elevation (BFE) data and floodway data, obtain, review and reasonably utilize BFE and floodway data available from available from a federal, state, or other source as criteria for requiring new construction, substantial improvements, or other development in Zone A as the basis for elevating residential structures to or above base flood level, for floodproofing or elevating nonresidential structures to or above base flood level, and for prohibiting encroachments in floodways.	IBC: 1612.3.1 IBC-G: G104.3 IRC: R106.1.4(4), R322.1.4.1	Does not include administrative provisions
24	60.3(b)(5)	Where BFE data are utilized, obtain and maintain records of lowest floor and floodproofing elevations for new construction and substantial improvements	IBC: 104.7, 110.3.3, 110.3.12.1, 1612.4(1.1), (1.3), and (2.1) IBC-G : G104.8 IRC: R104.7, R109.1.3, R322.1.10 IEBC: 104.7, 109.3.3, 109.3.10	Does not include administrative provisions
25	60.3(b)(6)	In riverine areas, notify neighboring communities of watercourse alterations or relocations.	IBC-G: G104.6	Does not include administrative provisions
26	60.3(b)(7)	Maintain flood-carrying capacity of altered or relocated watercourse.	IBC-G: G104.6.1	Does not include administrative provisions
27	60.3(b)(8)	Require all manufactured homes to be elevated and anchored to resist flotation, collapse, or lateral movement.	IBC-G: G109 IRC: R322.1.9	Permanent foundations are structures that may be subject to ASCE 24

Item No.	44 CFR Citation Section Number	Description of National Flood Insurance Program Requirement	2021 I-Codes Section Number and Notes	ASCE 24-14 Section Number and Notes
	60.3(c)	When final flood elevations, but no floodways or coastal high hazard areas have been provided on a community's Flood Insurance Rate Map, all the above ordinance provisions for Sections 60.3(a) and 60.3(b) and the Section 60.3(c) provisions listed in Items 28 through 38 are required.		
28	60.3(c)(2)	Require all new and substantially improved <u>residential</u> structures within A1-30, AE, and AH Zones have their lowest floor (including basement) elevated to or above the BFE.	IBC: 104.2.1, 1612.2 (ASCE 24), 1805.1.2.1 IRC: R105.1, R105.3.1.1, R301.2.4, R322.1.5, R322.2.1, R408.7 IEBC: 104.2.1, by reference to 1612 and R322 (see sections listed in Item 17a)	1.5.2, 2.3 (specification of flood depth in ordinance/code)
29	60.3(c)(7)	In AO Zones, require that new and substantially improved <u>residential</u> structures have their lowest floor (including basement) at or above the highest adjacent grade at least as high as the FIRM's depth number	Same as for Item 28	Same as for Item 28
30	60.3(c)(3)	Require that new and substantially improved <u>nonresidential</u> structures within A1-30, AE, and AH Zones have their lowest floor elevated or floodproofed to or above the BFE.	IBC: 104.2.1, 1612.2 (ASCE 24) IEBC: 104.2.1, by reference to 1612 and R322 (see sections listed in Item 17a)	1.5.2, 2.3, Section 6 (specification of flood depth in ordinance/code)
31	60.3(c)(8)	In AO Zones, require new and substantially improved <u>nonresidential</u> structures have their lowest floor elevated or completely floodproofed above the highest adjacent grade to at least as high as the depth number on the FIRM.	Same as for Item 30	Same as for Item 30

Item No.	44 CFR Citation Section Number	Description of National Flood Insurance Program Requirement	2021 I-Codes Section Number and Notes	ASCE 24-14 Section Number and Notes
32	60.3(c)(4)	Require that, for floodproofed nonresidential structures, a registered professional/architect certify that the design and methods of construction meet requirements at paragraph (c)(3)(ii) or (c)(8)(ii).	IBC: 1612.4(1.3) IEBC: by reference to 1612	Does not include administrative provisions
33	60.3(c)(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 have permanent openings designed to allow the entry and exit of flood waters in accordance with specifications of this Section.	IBC: 1612.2 (ASCE 24) IBC-G: G109.5, G113.1, G114.4 IRC: R322.2.2, R322.2.2.1, R322.3.6 (breakaway walls), R408.7 IEBC: 104.2.1, by reference to 1612 and R322 (see sections listed in Item 17a)	1.5.2, 2.7
34	60.3(c)(10)	Within Zones A1-30 and AE without a designated floodway, new development shall not be permitted unless it is demonstrated that the cumulative effect of all past and projected development will not increase the BFE by more than 1 foot.	IBC: 1612.3.2, 1804.5(4) IBC-G: G104.4 IRC: R106.1.4, R322.1.4.2	2.2
35	60.3(c)(11)	In Zones AO and AH, require drainage paths around structures on slopes to guide water away from structures.	IBC: 1804.4 IBC-G: G107.1, G108.5 IRC: R401.3	Not within the scope of ASCE 24

Item No.	44 CFR Citation Section Number	Description of National Flood Insurance Program Requirement	2021 I-Codes Section Number and Notes	ASCE 24-14 Section Number and Notes
36	60.3(c)(6)	<p>Require that manufactured homes placed or substantially improved within A1-30, AH, and AE Zones that meet one of the following location criteria, be elevated such that the lowest floor is at or above the BFE and be securely anchored:</p> <ul style="list-style-type: none"> <li>i. outside a manufactured home park or subdivision;</li> <li>ii. in a new manufactured home park or subdivision;</li> <li>iii. in an expansion to an existing manufactured home park or subdivision; or</li> <li>iv. on a site in an existing park which a manufactured home has incurred substantial damage as a result of flood.</li> </ul>	<p>IBC-G: G109            IRC: R322.1.9, Appendix AE101.2</p>	<p>If a foundation for a manufactured unit is subject to ASCE 24, it is subject to same elevation, foundation, and enclosure requirements as any residential/Category II structure</p>
37	60.3(c)(12)	<p>In A1-30, AH, and AE Zones, require that manufactured homes to be placed or substantially improved in an <u>existing</u> manufactured home park be elevated so that:</p> <ul style="list-style-type: none"> <li>i. the lowest floor is at or above the BFE <u>or</u></li> <li>ii. the chassis is supported by reinforced piers no less than 36 inches above grade and securely anchored.</li> </ul>	<p>IBC-G: G109 (36-inch option not provided)            IRC: R322.1.9 (36-inch option not provided; per ASCE 24 if in floodway), Appendix AE101.2</p>	<p>If a foundation for a manufactured home unit is subject to ASCE 24, it is subject to same elevation, foundation, and enclosure requirements as any residential/Category II structure</p>

Item No.	44 CFR Citation Section Number	Description of National Flood Insurance Program Requirement	2021 I-Codes Section Number and Notes	ASCE 24-14 Section Number and Notes
38	60.3(c)(14)	In A1-30, AH, and AE Zones, all recreational vehicles to be placed on a site must be elevated and anchored <u>or</u> be on the site for less than 180 consecutive days <u>or</u> be fully licensed and highway ready.	IBC-G: G110 (not authorized in floodways)	Not within the scope of ASCE 24
	<b>60.3(d)</b>	<b>When final flood elevations and floodway delineations have been provided on a community's Flood Insurance Rate Map, then all the above ordinance provisions for Sections 60.3(a), 60.3(b), and 60.3(c) and the Section 60.3(d) provisions in Item 39 are required.</b>		
39	60.3(d)(3)	In a regulatory floodway, prohibit any encroachment that would cause any increase in the base flood level unless hydrologic and hydraulic analyses prove that the proposed encroachment would not increase flood levels during the base flood discharge.	IBC: 1612.2 (ASCE 24), 1804.5(2), Appendix J101.2 (grading) IBC-G: G104, G108.1, G112.2 (fences), G112.5 (swimming pools), G112.8 (roads and watercourse crossings) IRC: R301.2.4 (per ASCE 24), R322.1 (per ASCE 24)	2.2

Item No.	44 CFR Citation Section Number	Description of National Flood Insurance Program Requirement	2021 I-Codes Section Number and Notes	ASCE 24-14 Section Number and Notes
	60.3(e)	When final flood elevations and coastal high hazard areas have been provided on a community's Flood Insurance Rate Map, then all the above ordinance provisions for Sections 60.3(a), 60.3(b), and 60.3(c) and the Section 60.3(e) provisions listed in Items 40 through 44 are required. NOTE: If a community has both floodways and coastal high hazard areas, it must meet the requirements of both Sections 60.3(d) and (e).		
40	60.3(e)(2)	In V1-30, VE, and V Zones, obtain and maintain the elevation of the bottom of the lowest <i>horizontal</i> structural member of the lowest floor of all new and substantially improved structures.	IBC: 104.7, 110.3.3, 110.3.12.1, 1612.4(2.1) IRC: R104.7, R109.1.3, R109.1.6.1, R322.1.10 IEBC: 109.3.3, 109.3.10, by reference to 1612 and R322 (see sections listed in Item 17a)	Does not include administrative provisions
41a	60.3(e)(4)	In V1-30, VE, and V Zones, require that all new construction and substantial improvements: (a) Are elevated on pilings/columns so that the bottom of the lowest horizontal structural member is at or above the BFE and the piles/column foundation/structure are anchored to resist flotation, collapse and lateral movement due to the effects of wind and water loads acting simultaneously.	IBC: 104.2.1, 1612.2 (ASCE 24) IRC: R322.3.2, R322.3.3 IEBC: 104.2.1, by reference to 1612 and R322 (see sections listed in Item 17a)	1.5.2, 1.5.3, 1.6, 4.2, 4.4, 4.5, Chapter 9

Item No.	44 CFR Citation Section Number	Description of National Flood Insurance Program Requirement	2021 I-Codes Section Number and Notes	ASCE 24-14 Section Number and Notes
41b	60.3(e)(4)	(b) A registered professional engineer/architect shall develop/ review structural design, specifications, and plans, and shall certify that the design and methods of construction meet elevation and anchoring requirements at paragraphs (e)(4)(i) and (ii).	IBC: 1612.4(2.2) IRC: R322.3.3, R322.3.9 IEBC: by reference to 1612 and R322 (see sections listed in Item 17a)	Does not include administrative provisions
41c	60.3(e)(5)	(c) Have the space below the lowest floor either free of obstruction or constructed with non-supporting breakaway walls. Such enclosed space shall be useable solely for parking, building access, or storage.	IBC: 1612.2 (ASCE 24), 1612.4(2.3), 1804.5(3) IBC-G: G109.5 IRC: R322.3.2, R322.3.3, R322.3.4, R322.3.5, R322.3.6, R322.3.7, R322.3.8 IEBC: by reference to 1612 and R322 (see sections listed in Item 17a)	4.5.1, 4.5.4, 4.6
41d	60.3(e)(3)	(d) All new construction is landward of the reach of mean high tide.	IBC: 1612.2 (ASCE 24) IBC-G: G108.2 IRC: R322.3.1(1)	4.3(1)
41e	60.3(e)(6)	(e) Prohibit use of fill for structural support.	IBC: 1612.2 (ASCE 24) IBC-G: G108.2 IRC: R322.3.2(4) IEBC: by reference to 1612 and R322 (see sections listed in Item 17a)	4.5.4
41f	60.3(e)(7)	(f) Prohibit alteration of sand dunes and mangrove stands which would increase potential flood damage.	IBC: 1612.2 (ASCE 24) IBC-G: G104.7 IRC: R322.3.1(2)	4.3(3), 4.5.4

Item No.	44 CFR Citation Section Number	Description of National Flood Insurance Program Requirement	2021 I-Codes Section Number and Notes	ASCE 24-14 Section Number and Notes
42	60.3(e)(8)	<p>Require that manufactured homes placed or substantially improved within V1-30, VE, and V Zones that meet one of the following location criteria, meet the V Zone standards in paragraphs (e)(2) through (e)(7):</p> <ul style="list-style-type: none"> <li>i. outside a manufactured home park or subdivision;</li> <li>ii. in a new manufactured home park or subdivision;</li> <li>iii. in an expansion to an existing manufactured home park or subdivision; or</li> <li>iv. on a site in an existing park which a manufactured home has incurred substantial damage as a result of flood.</li> </ul>	<p>IBC-G: G109            IRC: R322.1.9, Appendix AE101.2</p>	<p>If a foundation for a manufactured home unit is subject to ASCE 24, it is subject to same elevation, foundation, and enclosure requirements as any residential/Flood Design Class 2 structure</p>
43	60.3(e)(8)(iv); 60.3(c)(12)	<p>In V1-30, VE, and V Zones, require that manufactured homes to be placed or substantially improved in an existing manufactured home park be elevated so that:</p> <ul style="list-style-type: none"> <li>i. the lowest floor is at or above the BFE, or</li> <li>ii. the chassis is supported by reinforced piers no less than 36 inches above grade and securely anchored.</li> </ul>	<p>IBC-G: G109 (36-inch option not provided)            IRC: R322.1.9 (36-inch option not provided)</p>	<p>If a foundation for a manufactured home unit is subject to ASCE 24, it is subject to same elevation, foundation, and enclosure requirements as any residential/Category II structure</p>

Item No.	44 CFR Citation Section Number	Description of National Flood Insurance Program Requirement	2021 I-Codes Section Number and Notes	ASCE 24-14 Section Number and Notes
44	60.3(e)(9)	<p>In V1-30, VE, and V Zones, require that manufactured homes to be placed or substantially improved in an existing manufactured home park be elevated so that:</p> <ul style="list-style-type: none"> <li>i. the lowest floor is at or above the BFE, or</li> <li>ii. the chassis is supported by reinforced piers no less than 36 inches above grade and securely anchored.</li> </ul>	IBC-G: G110.1 (not permitted in Zone V)	Recreational vehicles are not within the scope of ASCE 24

## Checklist

### Checklist: Comparison of Definitions in Table 2

- The first column of the checklist shows terms that are pertinent to regulating flood hazard areas.
- The second column of the checklist shows a yes or no answer to indicate whether the definition of each term is in the Code of Federal Regulations, Section 59.1, which defines terms used in 44 CFR Section 60.3.
- The third, fourth, and fifth columns show where the term is defined in the I-Codes.
- The sixth column contains relevant notes.

Section 201.3 of the International Building Code states that terms not defined in the IBC may be defined in the IFGC, IFC, IMC, or IPC, and IBC Section 201.4 states that terms not defined “shall have ordinarily accepted meanings such as the context implies.”

IBC Section 202 provides definitions, including definitions previously included in IBC Section 1612.2.

The International Residential Code “defines” many terms where they are used, rather than include separate definitions in Section R202.

Also, IRC Section R201.3 specifies that terms not defined in IRC have meaning in other codes (i.e., IBC); and IRC Section R201.4 repeats that terms not defined in IRC or other codes “shall have ordinarily accepted meanings such as the context implies.”

The IEBC Section 202 defines addition, alteration, change of occupancy, and repair; some of those terms (and others) are used in the definition of substantial improvement.

**Table 3: Checklist Comparing National Flood Insurance Program definitions, 2021 I-Codes, and ASCE 24-14**

Definitions Pertinent to Flood Hazard Areas	In 44 CFR Section 59.1	IBC/ASCE 24 Section Number <sup>2</sup>	IRC Section Number	IEBC Section Number <sup>3</sup>	Notes
500-Year Flood Elevation	No	ASCE 1.2	Not applicable	Not defined	See “Critical Facility”
Addition	No	202	R202	202	—
Alteration	No	202	R202	202	IEBC has requirements for Alteration levels 1, 2, and 3
Attendant utilities and equipment	No	ASCE 1.2	Not defined	Not defined	—

<sup>2</sup> ASCE 24-14 definitions are in Section 1.2 (shown “ASCE 1.2”); this table does not show all definitions in ASCE 24-14.

<sup>3</sup> The IEBC refers generally to IBC for flood resistant provisions for compliance; thus, this checklist includes only definitions used to make that reference.

Definitions Pertinent to Flood Hazard Areas	In 44 CFR Section 59.1	IBC/ASCE 24 Section Number <sup>2</sup>	IRC Section Number	IEBC Section Number <sup>3</sup>	Notes
Base flood	Yes	202; ASCE 1.2	R322.1.4	Not defined	—
Base flood elevation (BFE)	No	202; ASCE 1.2	R322.1.4	Not defined	The design flood elevation (DFE) equals the BFE if the FIS and FIRM are used
Basement	Yes	202; ASCE 1.2	R322.2.1(3)	Not defined	IBC Section 202 has two definitions for basement; one is specifically for flood loads and is limited in application to Section 1612 IRC usage conveys definition
Breakaway wall	Yes	ASCE 1.2	R322.3.5	Not defined	—
Change of occupancy	No	202	R202	202	—
Coastal A zone (CAZ)	No	202; ASCE 1.2	R322.2, R322.3	Not defined	—
Coastal high hazard area	Yes	202; ASCE 1.2	R322.3	Not defined	—
Critical facility (and essential facility)	No	ASCE Table 1-1	Not applicable	Not defined	ASCE 24 requires Flood Design Class 4 buildings and structures to be elevated or protected to or above BFE plus freeboard or the 500-year flood elevation, whichever is higher
Design flood	No	202; ASCE 1.2	R322.1.4	Not defined	—
Design flood elevation (DFE)	No	202; ASCE 1.2	R322.1.4	Not defined	The DFE equals the BFE if the FIS and FIRM are used
Development	Yes	App G102	Not applicable	Not applicable	—
Dry floodproofing (see floodproofing)	No See note	202; ASCE 1.2	Not applicable	Not defined	The definition of “dry floodproofing” (IBC and ASCE 24) is equivalent to NFIP definition of “floodproofing”

Definitions Pertinent to Flood Hazard Areas	In 44 CFR Section 59.1	IBC/ASCE 24 Section Number <sup>2</sup>	IRC Section Number	IEBC Section Number <sup>3</sup>	Notes
Existing construction	Yes	See note	Not defined	See note	IBC and IEBC define existing structure/building as a building/structure “erected prior to the date of adoption of the appropriate code, or one for which a legal building permit has been issued” (definition does not specify a date)
Existing manufactured home park or subdivision	Yes	See note	See note	Not applicable	IBC Appendix G and IRC treat all manufactured homes the same, regardless of location (I-Codes do not have the 36-inch option)
Expansion to an existing manufactured home park or subdivision	Yes	See note	See note	Not applicable	IBC Appendix G and IRC treat all manufactured homes the same, regardless of location (I-Codes do not have the 36-inch option)
Existing structure (see existing construction)	No	202; ASCE 1.2	Not defined	202	—
Flood or flooding	Yes	202; ASCE 1.2	See note	Not defined	IRC does not use the term “flood” as a noun
Flood damage-resistant materials	No	202; ASCE 1.2	R322.1.8	Not defined	—
Flood Design Class	No	ASCE 1.2	Not defined	Not defined	—
Flood hazard area	No	202; ASCE 1.2	R106.1.4, Table R301.2	202	IBC (synonymous with SFHA if the DFE equals the BFE)
Flood Hazard Boundary Map (FHBM)	Yes	See note	See note	See Note	If applicable, through adoption of maps
Flood Insurance Rate Map (FIRM)	Yes	202; ASCE 1.2	Table R301.2	Not defined	—
Flood Insurance Study (FIS)	Yes See note	202; ASCE 1.2 See note	Table R301.2	Not defined	Section 59.1 defines “Flood elevation study” and Flood Insurance Study is equivalent ASCE 24 defines “Flood hazard study”

Definitions Pertinent to Flood Hazard Areas	In 44 CFR Section 59.1	IBC/ASCE 24 Section Number <sup>2</sup>	IRC Section Number	IEBC Section Number <sup>3</sup>	Notes
Floodproofing (see dry floodproofing)	Yes See note	202; ASCE 1.2	Not applicable	Not defined	The definition of “dry floodproofing” (IBC and ASCE 24) is equivalent to NFIP definition of “floodproofing”
Floodway	Yes	202; ASCE 1.2	R301.2.4, R322.1 See note	Not defined	IRC requires dwellings in floodways to comply with ASCE 24
Freeboard	Yes See note	See note	See note	Not defined	As used in NFIP regulations, this term is related to protection level of levees.  IBC and ASCE 24 do not use the term, although additional height above minimum is built into the elevation tables.  IRC does not use the term; BFE plus 1 foot required in all flood hazard areas.
Functionally dependent use	Yes See note	App G102; ASCE 1.2	Not applicable	Not defined	Section 59.1 defines “functionally dependent use”  IRC scope includes only 1- and 2-family dwellings and certain townhomes
Highest adjacent grade	Yes	ASCE 1.2	R322.2.1(2)	Not defined	—
Historic structure	Yes	202; ASCE 1.2 See note	R105.3.1.1	1201.4 See note	IBC and IEBC definition of “historic building” includes some buildings not within NFIP definition. I-Codes exempt only those historic buildings meeting the NFIP definition from substantial improvement/substantial damage requirements.
Limit of moderate wave action	No	202; ASCE 1.2	R322.2, R322.3	Not defined	—
Lowest floor	Yes	202	R322.1.5	Not defined	—
Manufactured home	Yes	App G102	R202, R322.1.9	Not applicable	—

Definitions Pertinent to Flood Hazard Areas	In 44 CFR Section 59.1	IBC/ASCE 24 Section Number <sup>2</sup>	IRC Section Number	IEBC Section Number <sup>3</sup>	Notes
Manufactured home park or subdivision	Yes	App G102	See note	Not applicable	IBC Appendix G and IRC treat all manufactured homes the same, regardless of location (does not have the NFIP “36-inch option” for manufactured home parks and subdivisions that were established before communities joined the NFIP)
Mudslide (mud flood, mudflow)	Yes	ASCE 1.2	See note	Not defined	I-Code flood provisions apply in flood hazard areas on adopted maps; FEMA has not delineated mudslide areas
New construction	Yes	See note ASCE 1.2	See note	Not defined	Any building not already constructed
New manufactured home park	Yes	See note	See note	Not applicable	IBC Appendix G and IRC treat all manufactured homes the same, regardless of location (I-Codes do not have the 36-inch option)
Nonresidential	No	ASCE 1.2	Not applicable	Not defined	—
Prolonged contact with floodwaters	No	ASCE 1.2	See note	Not defined	IRC R322.1.8 refers to NFIP Technical Bulletin 2, Flood Damage-Resistant Materials Requirements
Recreational vehicle	Yes	App G102	Not applicable	Not applicable	IBC Appendix G definition expands on Section 59.1 definition
Repair	No	202	R202	202	—
Residential	No	ASCE 1.2	Not defined	Not defined	—
Special flood hazard area	Yes	202; ASCE 1.2	Table R301.2	Not defined	—
Start of construction	Yes	ASCE 1.2	Not defined	Not defined	The premise of the codes is that work on an existing building shall not alter any aspect of the building that was required to comply with the requirements at the time it was built
Structure	Yes	202; ASCE 1.2	R202	Not defined	Definition in Section 59.1 for floodplain management and flood insurance purposes, whereas IBC has a generic definition

Definitions Pertinent to Flood Hazard Areas	In 44 CFR Section 59.1	IBC/ASCE 24 Section Number <sup>2</sup>	IRC Section Number	IEBC Section Number <sup>3</sup>	Notes
Substantial Damage	Yes	202; ASCE 1.2	R105.3.1.1	202	—
Substantial improvement	Yes	202; ASCE 1.2	R105.3.1.1	202	—
Variance	Yes	App G102	See note	Not defined	Used in R104.10.1
Violation	Yes	114; App G102	R113	113	—