

Update to the NFIP Technical Bulletins

What are the NFIP Technical Bulletins

FEMA is governed by the National Flood Insurance Act of 1968. As part of administering the National Flood Insurance Program (NFIP), Technical Bulletins provide non-statutory guidance for complying with the minimum NFIP floodplain management requirements pertaining to building performance. Since 1993, eleven bulletins covering a range of topics have been released and updated. State and local officials use the bulletins to interpret and enforce building codes and NFIP regulations. They are also helpful to design professionals, builders, and homeowners.

How are the NFIP Technical Bulletins changing?

The bulletins are changing to modernize and streamline their content and presentation. The updated bulletins will:

- Incorporate relevant information from the latest consensus codes.
- Provide updated guidance and best practices observed from post-disaster assessments.
- Update known issues based on input from a wide range of stakeholders.

These changes are intended to improve the usability, credibility and content of the bulletins while presenting them in a streamlined format.

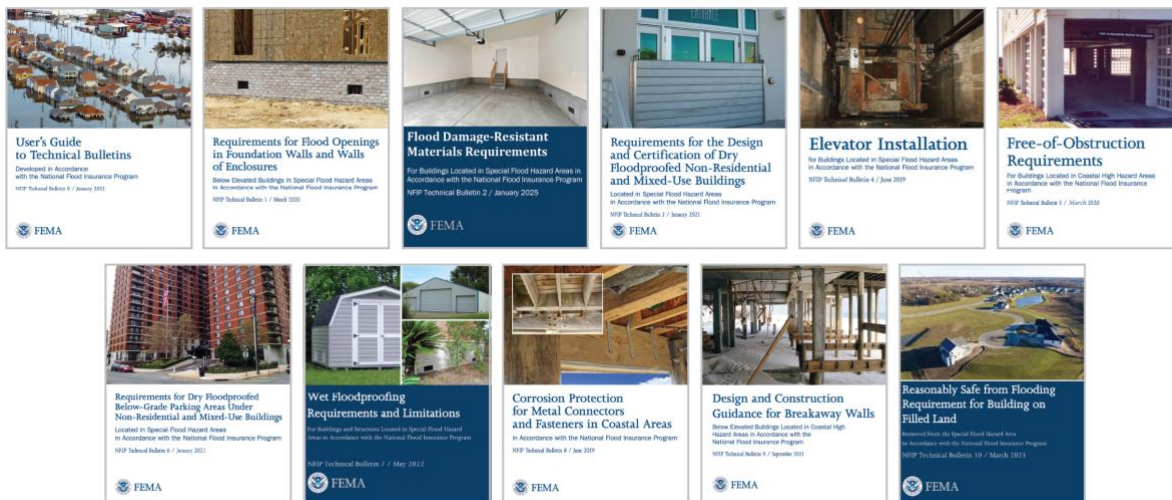


Figure 1. Technical Bulletin Covers



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Updated tables to compare codes and standards to the NFIP regulations, figures, photos and references are included in each bulletin. The International Codes and American Society of Civil Engineers Standards are currently being used as the base codes and standards. Incorporating information and references from the most recent consensus codes and standards keep the bulletins current and aligned with the latest concepts and advances in building science.

The bulletins are revised with input from numerous government and non-government partners. These include NFIP state coordinators, community floodplain management officials, state floodplain managers, subject matter experts and industry partners.

The following bulletins have been updated since 2018:

Technical Bulletin 0, *User's Guide to Technical Bulletins (2021)*

Technical Bulletin 0 describes the purpose and intended use of the Technical Bulletin series, includes common concepts and terms, lists useful resources and contains a subject index.

New features in Technical Bulletin 0 include:

- A section on how to use the bulletin.
- A crosswalk between the NFIP regulations and bulletins.
- A compilation of key terms, useful resources, and supplemental information from succeeding bulletins.
- Discussion on four key concepts and requirements for structures: Special Flood Hazard Areas, lowest floor/enclosure/basement, Substantial Improvement/Substantial Damage and coastal waves.

Technical Bulletin 1, *Requirements for Flood Openings in Foundation Walls and Walls of Enclosures Below Elevated Buildings in Special Flood Hazard Areas (2020)*

Technical Bulletin 1 provides guidance on the NFIP requirements for flood openings in exterior walls and walls of enclosures below elevated buildings. Flood openings equalize flood forces by allowing the entry and exit of floodwaters. The bulletin describes and illustrates two options for satisfying the requirements referred to as engineered openings and non-engineered openings. The bulletin covers requirements and guidance.

Updates to Technical Bulletin 1 include:

- Clarification on unusual configurations such as sloping sites, multiple enclosed areas, large enclosed areas and sites with shallow flooding.
- Guidance on above-grade enclosed areas and two-level enclosures.
- Expanded discussion on completing the NFIP Elevation Certificate and the documentation required for certification of engineered openings.

Technical Bulletin 2, Flood Damage-Resistant Materials Requirements for Buildings Located in Special Flood Hazard Areas in Accordance with the National Flood Insurance Program (2025)

Technical Bulletin 2 provides guidance on the NFIP regulations concerning the required use of flood-damage-resistant construction materials for building components below the Base Flood Elevation in Special Flood Hazard Areas (both A and V zones).

Updates to Technical Bulletin 2 include:

- A brief description of the processes used to identify whether materials are flood damage-resistant, including new ASTM International standards available to assist in the determination.
- Material classifications simplified to rate materials as acceptable or unacceptable for flood damage-resistance.
- The one large flood damage-resistant materials table in the previous TB2 (2008) and been streamlined and reorganized into two tables – one for structural materials and the other for finish materials – to allow users to locate and assess materials more quickly.

Technical Bulletin 3, Requirements for the Design and Certification of Dry Floodproofed Non-Residential and Mixed-Use Buildings Located in Special Flood Hazard Areas (2021)

Technical Bulletin 3 provides guidance on the NFIP requirements for the design and certification of dry floodproofing of non-residential and non-residential portions of mixed-use buildings.

Updates to Technical Bulletin 3 include:

- Discussion of the factors and planning considerations that influence the decision-making process when determining the feasibility of dry floodproofing a building.
- Step by step discussion regarding dry floodproofing design requirements.
- An example seepage calculation illustrating how to determine if the structure can be considered as “substantially impermeable.”
- Instructions for completing the NFIP Floodproofing Certificate.

Technical Bulletin 4, Elevator Installation for Buildings Located in Special Flood Hazard Areas (2019)

Technical Bulletin 4 provides guidance on the NFIP requirements for elevator machinery and equipment that serve buildings and provides guidance on the installation of elevators in special flood hazard areas. Elevator types and their associated equipment are described, along with practical methods to protect elevators and elevator shafts from flood damage.

Updates to Technical Bulletin 4 include:

- Expanded discussion on the primary types of elevators and other conveyance mechanisms used in residential and commercial buildings, including hydraulic elevators and traction elevators, pneumatic elevators, chair lifts and platform lifts.
- Clarification of the definition of “basement” as it relates to the construction of elevator pits.
- Tables summarizing elevator system components, their physical locations, and recommended flood protection techniques.

Technical Bulletin 5, *Free-of-Obstruction Requirements for Buildings Located in Coastal High Hazard Areas (2020)*

Technical Bulletin 5 provides guidance on the NFIP free-of-obstruction requirements in Coastal High Hazard Areas (Zone V), as well as general construction methods that minimize flood damage potential in Zone V. Technical Bulletin 5 describes methods for avoiding potential building and site obstructions that could divert or obstruct floodwater and waves below elevated buildings, which could impose additional flood loads on foundation systems or adjacent buildings.

Updates to Technical Bulletin 5 include:

- Clarification of the requirements for design certification in Zone V.
- Revised guidance on below-BFE building elements.
- Guidance on enclosed areas below elevated buildings, including louvers/lattice, above-grade enclosures, and two-level enclosures.
- Revised guidance on site development practices such as accessory storage structures, the use of fill, swimming pools and spas, erosion control structures and others.
- Guidance on detached garages.

Technical Bulletin 6, *Requirements for Dry Floodproofed Below-Grade Parking Areas Under Non-Residential and Mixed-Use Buildings Located in Special Flood Hazard Areas (2021)*

Technical Bulletin 6 provides guidance on the NFIP requirements for the design and certification of dry floodproofed below-grade parking areas.

Updates to Technical Bulletin 6 include:

- Identification of issues specific to dry floodproofing below-grade parking areas.
- References to Technical Bulletin 3 for extensive guidance on design requirements.

- Updated discussion on design considerations such as protecting points of entry, managing internal flow of seepage, and equalization of flood loads vertically in multi-level below grade parking areas.

Technical Bulletin 7, Wet Floodproofing Requirements and Limitations for Buildings and Structures Located in Special Flood Hazard Areas (2022)

Technical Bulletin 7 provides guidance on the NFIP requirements for the design and construction of wet floodproofed buildings and structures. Technical Bulletin 7 describes limitations on the use of wet floodproofing and how to evaluate the feasibility of using wet floodproofing measures for historic structures, agricultural structures, and functionally dependent uses.

Updates to Technical Bulletin 7 include:

- Updated to be consistent with the requirements of [FEMA Policy #104-008-03](#), *Floodplain Management Requirements for Agricultural Structures and Accessory Structures*, and *FEMA P-2140, Floodplain Management Bulletin, Floodplain Management Requirements for Agricultural Structures and Accessory Structures*.
- Expanded discussion on best practices and measures to reduce flood damage when NFIP compliance is not required.
- Clarification of when wet floodproofing measures that require human intervention can be used.

Technical Bulletin 8, Corrosion Protection for Metal Connectors and Fasteners in Coastal Areas (2019)

Technical Bulletin 8 provides guidance on the NFIP requirement for maintaining load paths in buildings subject to high humidity and airborne salts. The importance of connectors and fasteners with proper corrosion protection in coastal areas is emphasized.

Updates to Technical Bulletin 8 includes:

- How to select appropriate connector and fastener material based on intended location on the building.
- How preservative treated wood can impact corrosion protection and an explanation of wood product identification tags.
- Expanded descriptions of connector and fastener materials, corrosion protection coatings and maintenance, including inspection and scheduled replacement.
- Guidance for the selection of connectors and fasteners with various corrosion resistant materials and treatments and how combining dissimilar metals can cause premature corrosion.

Technical Bulletin 9, Design and Construction Guidance for Breakaway Walls (2021)

Technical Bulletin 9 provides guidance on the NFIP requirements concerning the design and construction of breakaway walls beneath elevated buildings in Coastal High Hazard Areas (Zones V, VE, and V1-30).

Updates to Technical Bulletin 9 include:

- Updated prescriptive, simplified and performance-based design methods for breakaway walls.
- Updated terminology (ultimate load versus allowable load) to align with the current state-of-the-practice in wind design based on ASCE 7, Minimum Design Loads for Buildings and Other Structures, while still maintaining consistency with 44 CFR 60.3(e)(5).
- Expanded guidance on partial height breakaway walls.

Technical Bulletin 10, Reasonably Safe from Flooding Requirement for Building on Filled Land Removed from the Special Flood Hazard Area (2023)

This Technical Bulletin provides guidance on the NFIP requirements related to determining that buildings constructed on filled land will be reasonably safe from flooding during the occurrence of the base flood. Guidance is provided for the placement of fill and the parameters for the design and construction of buildings on filled land that has been removed from the Special Flood Hazard Area (SFHA) through the flood map revision process managed by FEMA.

Updates to Technical Bulletin 10 include:

- The title has been updated to *Reasonably Safe from Flooding Requirement for Building on Filled Land Removed From the Special Flood Hazard Area in Accordance with the National Flood Insurance Program*. The title on the 2001 version is *Ensuring That Structures Built on Fill In or Near Special Flood Hazard Areas Are Reasonably Safe From Flooding in Accordance with the National Flood Insurance Program*.
- The intent of TB 10 and when it is appropriate to use TB 10 has been clarified.
- Increased emphasis on documentation needed for a local official to make the “reasonably safe from flooding” determination.
- Additional best practices are provided.
- Grouped and reorganization of the content discussing the Technical Approaches to Seepage Analysis in Section 9.

Access the current Technical Bulletins and stay updated by visiting our website at www.fema.gov/nfip-technical-bulletins.