

Permits and Inspections

4.1 Introduction

This chapter describes the coastal-specific building permit process. In addition to this chapter, the Appendix includes series of resources and checklists that were assembled from processes currently in use around the United States. These processes represent some of the best practices that have successfully guided hazard-resistant design and construction, but this is not meant to imply that they are the only methods of achieving hazard-resistant construction.

To assist in conducting effective and efficient building-permit application reviews, sample organizational structures and a permit-processing flowchart are included. The methods described will assist those working toward the development of an initial building department program or those attempting to improve upon an existing program. Examples of tools and techniques are listed in the Appendix to this guide. No one example is meant to serve as a single solution, nor should it be expected to do so. FEMA is aware that no two jurisdictions will have identical regulatory responsibilities and that the implementation of some processes presented may be the responsibility of one or more officials.

The numerous, complex, and potentially conflicting Federal, state, and local laws, regulations, and ordinances that impact the building permit process can be overwhelming. To successfully interpret and understand the pertinent regulations, this guide presents important regulatory facts, management tools, and organizational techniques to assist in developing or modifying a local permit-processing program.

Establishing effective methods for building application submittals, reviews, and approvals in coastal areas is critical for developing a consistent, thorough, and systematic approach to the processing of these requests. A successful method can be beneficial because it can: (1) ensure that every permit application is properly reviewed and considered; and (2) assist in the development of a rational and efficient way to perform reviews that promote the health, safety, and welfare of the public. The key to how smoothly the coastal development review process flows depends upon how a building department is organized and how well its staff functions. Community members, home builders, and property purchasers must all rely upon the process.

A disorganized system can lead to poorly sited, designed, or constructed buildings. Poor construction typically results in losses that could have been prevented. Community action (taken through a building department) can advance preventive action by rigorously enforcing building codes and other important requirements. These actions can significantly decrease the building damages resulting from coastal storm events. Although it is impossible for property and structures to be completely spared from damages resulting from all high-wind and flooding events, proactive steps can significantly reduce the impact of such devastating storms.

4.2 Coastal Building Official/ Floodplain Administrator's Responsibilities

Whether the local coastal community has appointed a building official and a floodplain administrator or manager (or these roles have been combined into one), it is vital to understand these roles and responsibilities and their respective importance. Any community that adopts a Flood Damage Prevention Ordinance (FDPO) has legally agreed to regulate all significant development activity within the SFHA. In return, property owners may become eligible to apply for Federal flood insurance, disaster assistance, and federally backed loans.

The risk of damage to lives, buildings, and structures is especially acute in coastal areas. Tropical storms, nor'easters, and hurricanes produce sustained high winds, wind-driven rains, wave surges, flooding, and severe erosion. Because these fierce storm events pound coastal areas, coastal buildings and structures must be constructed so that they remain serviceable during and after such events.

Coastal construction requires special design considerations and, at times, is based on a particular design event. Building foundations must be constructed to resist flood forces, even when erosion and scour occur. A continuous load path must exist within the structural system to carry all vertical and lateral loads through the foundation and into the ground. The building envelope (which comprises all building surfaces that separate the enclosed floor space from the elements) must resist significant damage and ensure the least amount of penetration by wind, rain, and debris. Floodwater must be prevented from entering occupiable building areas by elevating the structure to a height greater than the expected flood level. Building accessibility and usefulness must be preserved. Special utility connections must either remain intact or be easily restored. Any enclosures constructed below the BFE or DFE must not damage the building's foundation, utility connections, or any elevated building assembly (or part thereof) in the event those enclosures fail.

4.2.1 Enforcement of Regulations

The primary role of the local building official and floodplain administrator is to enforce local regulations. With respect to the NFIP, the lowest floor (including the basements) of all new coastal construction, or all substantial improvements made to that construction, must be located at or above the BFE (or DFE, in some communities). This means that the lowest floor elevation for all new or substantially improved homes in SFHAs within the 100-year floodplains must be elevated at or above this elevation.

4.2.2 Records Management

Local officials are responsible for accurate record keeping and the retaining of all development permits. Two documents are used to record this specific activity: (1) the Floodplain Development Permit (FDP), and (2) the Elevation Certificate (EC) or equivalent elevation documentation. Samples of these forms can be found in the Appendix to this guide. These documents are helpful when completing the FEMA-required Biennial Report, which records statistical information about all flood hazard area changes, all floodplain-development activities, and the number of residents and structures within the floodplain (see Section 4.2.2.1). The NFIP requires the local building official (or other authorized designee) to retain copies of the FDP and records of relevant building elevations. An approved FDP is required for each of the following floodplain-development activities:

- Erecting or enlarging a structure
- Siting a manufactured home
- Mining, dredging, filling, grading, or excavating for major landscaping projects
- Building or repairing roads and bridges in flood hazard areas
- Any human-caused changes in the floodplain, including storage

The permit application form, which is obtained from the building official/floodplain administrator, must be completed and submitted for review and approval before beginning the proposed activity. For FDPs, the local floodplain administrator reviews the permit for completeness and ensures that the development activity fully complies with FDPO requirements. After the review, the permit is either denied or approved. A copy of the completed permit is (and must remain) attached to the building permit.

As part of the National Flood Insurance Act of 1968, both FEMA and states are required to conduct Community Assistance Visits (CAV). During these visits, officials will review a community for compliance with the NFIP and will review records as part of assuring compliance with the program. Following the visit, FEMA and the state will note any compliance problems with the community's program and work with that community in order to remedy the deficiencies.

4.2.2.1 Biennial Reports to FEMA

FEMA periodically sends Biennial Report forms to NFIP-participating communities. These forms are to be completed and returned to FEMA. Community updates of previously submitted data help FEMA and the states plan for technical assistance and flood maps. FEMA is particularly interested in the number of permits issued and the variances granted. Accurate record keeping is essential for a community to properly complete its Biennial Reports.

The EC documents the BFE in comparison to the structure's lowest floor (or the lowest horizontal structural member in V Zones). The EC and a copy of the building permits should be kept together. The EC documents that the structure's lowest floor is above the BFE and that the Flood Damage Prevention Ordinance was followed.

It is important that these documents be maintained in one file or can be easily cross-referenced. Additional data that is important to capture or retain includes a copy of the applicable FIRM panel (including the FIRM panel number and effective date) and the date the building was constructed. This will ensure a record of the compliance of the structure if BFEs change on future FIRM updates. This information should also include requested variances (both accepted and denied), noted violations, and records of citations made to property owners for noncompliance.

In many areas, documents are periodically purged as part of a records-management process. Other storage methods should be evaluated to prevent destruction of building documentation. A lack of proper documentation with respect to structures within the SFHA can impact a community's Community Rating System (CRS) score and, ultimately, its NFIP status.

The following is a brief list of documents that should be included in the permit file:

- Permit Application Form, including all attachments and a site plan
- Correspondence relevant to permit approval or denial
- A copy of a FIRMette at the time of application (including FIRM panel number and effective date)
- Engineering designs that may be required for enclosures below the BFE
 - V Zones: Breakaway Wall Certifications
 - A Zones: Engineered Opening Certifications or manufacturer’s documentation
- Engineering calculations for new or substantially improved buildings
- Variances and applicable denial or approval documentation
- Inspection records
- “As-built” lowest-floor or lowest-horizontal-structural-member documentation (for example, EC)
- Certificate of Compliance or Occupancy

4.2.2.2 Record-keeping requirements:

The I-Codes assert the following specific requirements regarding record keeping:

- Section 104.7 of the IBC requires the keeping of all official records “for the period required for retention of public records.”
- The NFIP and IBC Appendix G103.8 require that records related to development in flood hazard areas be maintained permanently and that those records remain available for public inspection and review. In addition to retaining permit files, many communities maintain a separate log of permits issued in flood hazard areas.
- Section R.104.7 of the IRC requires retention of official records of applications, permits, and certificates issued; reports of inspections; and notices and orders issued. Such records are to be kept “for the period required for retention of public records.”

4.2.2.3 Required Documentation

The I-Codes require communities to obtain and retain documentation necessary to determine whether floodplain development activities are compliant with the I-Codes. Requirements include the following:

- Documentation of lowest-floor evaluations (IBC Sections 109.3.3 and 1612.5; Sections R109.1.3 and R324.1.4)

- Documentation of floodproofing (IBC Section 1612.5)
- Documentation of the design of nonstandard flood openings (IBC Section 1612.5)
- In certain circumstances, documentation of breakaway wall design (IBC Section 1612.5; IRC Section R324.3.6)
- Documentation of foundation design, but only in flood hazard areas subject to high-velocity wave action (IBC Section 1612.5, IRC Section R324.3.6)
- Documentation that floodway encroachments will not increase flood levels (IBC Appendix G, Section G103.5). Appendix G applies only if it specifically references this in the local code or ordinance.
- Notifications provided to adjacent communities, the state, and FEMA for watercourse alterations (IBC Appendix G, Section G105.7(5))
- Copies of inspection reports for buildings located in flood hazard areas (IBC Appendix G, Section G103.8; IRC Sections R104.7 and R109.1.3)

NOTE

Many certifications may be required; the following are specific to coastal design and construction projects:

Pile or column certification is required for buildings in SFHAs subject to high-velocity wave action.

Breakaway wall certification is required if design loads are consistent with the values set forth in the code.

Flood opening certification is required if flood openings do not conform to the prescriptive code specifications.

4.2.2.4 Plan Review and Inspection Checklist

Some communities use a checklist during plan review to verify that appropriate flood-resistant provisions have been checked and are acceptable. The sample-plan review checklists in the Appendix to this guide are designed to be transferred to the inspection staff and utilized to document that specific flood-resistant construction details were acceptable. Using a checklist is not an NFIP requirement; however, its use is a sensible way to document plan review and compliance.

4.3 Freeboard

Freeboard (i.e., the additional elevation above the BFE) should be a serious consideration for any community with flooding risks. Incorporating freeboard requirements into a community's regulations can occur either at the state or local level. If the community has adopted ASCE 24-05 as a standard, it should be reviewed in order to make sure that the freeboard requirements within it are followed. Freeboard that exceeds the minimum NFIP requirements can be a valuable tool to the community in maintaining NFIP compliance. Some benefits of freeboard are:

- Lower flood insurance premiums
- Additional protection for events exceeding the predicted 100-year flood event elevation
- Allows for future changes or updates to FIRMs
- Allows for accurate interpretation of flood profiles

- Allows for issues related to surveying benchmarks that may have moved
- Allows for errors in the lowest floor elevation during construction without compromising the BFE
- Allows for changes in water levels due to subsidence or sea level change

Even if a freeboard policy is not instituted, constructing a building to an elevation greater than the BFE will reduce the property owner's flood insurance premium. As of 2009, the IBC will require freeboard. In December 2006, a report titled *Evaluation of the National Flood Insurance Program's Building Standards* was released, which evaluates the benefits of utilizing freeboard. The report is available through FEMA's online library.

4.4 The Pre-development Conference/Pre-application Meeting

There is no substitute for effective communication. Always encourage permit applicants to call or visit building department staff to discuss the development-permit and building-permitting process and requirements before applications are submitted. Such communication establishes an opportunity to ask and answer questions and determine whether a proposal fits that municipality's coastal development guidelines. The processes or modifications shown below may warrant consideration for local programs:

- Inform the applicant if the project will require approval through a planning process. Whenever possible, introduce the applicant to the planning staff. A planning application and fees may be required. Explain how those fees are considered separately from building permit fees. And, if required, inform the applicant how planning approvals must be secured before the applicant is allowed to apply for a building permit.
- Encourage the applicant to discuss the project with the public works department, fire department, and health department (or other relevant agencies) to determine special requirements that may be necessitated by the structure's location within an SFHA. Staff should be prepared to offer suggestions to facilitate the building permit process.
- If there are additional requirements, notify the applicant if the architectural review commission, board of zoning appeals, or planning commission needs to conduct a review of the permit application or drawings. Make known the existence of any Federal, state, regional, or local planning, environmental, and zoning reviews and approvals that may be required before the applicant submits application for a building permit. A flowchart makes the information easier to understand and more likely to be followed. (See Figure 4-1 for a general example of the permitting steps. Modifying the steps may be necessary to make them conform to the local permitting process.)
- Be prepared to answer applicant questions about coastal construction requirements. Keep copies of these regulations available. When possible, assist the applicant in determining where the property is located on the appropriate FIRM map. Verify the flood elevations and explain how this information is incorporated into the DFE. Drawings or illustrations can clearly convey such information. Advise the applicant of the required basic wind speed and explain why this information is critical to the design process.

- To minimize staff time spent answering typical applicant questions, keep an ample supply of informational brochures on permitting requirements available at the permitting counter and post that information on the local Web site. Train your staff to become knowledgeable in these requirements, so that someone is always available to effectively screen walk-in traffic and, if appropriate, provide appropriate guidance to applicants. Also, make a list of outside agencies and department contacts available, complete with names, phone numbers, and e-mail addresses of who should be contacted about particular requirements and procedures.
- When evaluating FIRMs with the client, make clear that the location determination in an SFHA is nearly always based upon the structure location on the map and not on the structure's elevation. The BFE in relation to the actual ground elevation sets the floodplain limits for regulatory purposes. When ground surveys show that a development sits above the BFE, the local official can record the data and issue the permit; then, if the developer or owner wants the property removed from the SFHA designation, a Letter of Map Amendment (LOMA) can be requested. Conversely, if site surveys show that areas considered outside the 100-year floodplain on published maps are, in fact, below the BFE, the local official should require protection of new buildings to the BFE. Although a site may technically be located outside the mapped SFHA, the local official should not ignore the known flood hazard. This may require modifications to the local ordinances in order to make this enforceable.
- It is at this time that many applicants have questions about LOMAs and Letters of Map Revision-Fill (LOMR-F). Explain to the applicant that a LOMA is based upon the elevation of the natural ground of the lowest adjacent grade. A LOMA can be issued for either a structure or a lot, but the advantages and disadvantages of these options should be discussed with the applicant. If fill material will be added, a LOMR-F must be issued. A determination will need to be made for a LOMR-F in order to determine whether the structure will be "reasonably safe from flooding," as directed by the NFIP. These map revisions or amendments are intended to correct problems with FIRMs and not to relinquish the responsibility of the property owner to maintain flood insurance.
- Notify applicants requesting significant improvements that the entire structure must be brought into compliance. Refer the applicant to a professional to evaluate the structure and determine whether it is a substantial improvement. (See Section 3.1.1 for a definition of substantial improvement.)
- Because the permit process can be complex, its successful completion depends heavily upon the availability of the local official to dispense clear and concise explanations. This is also an opportune time to suggest hiring the services of a licensed professional, depending upon the project size and type. In fact, the entire project (or portion thereof) may require the professional services of a licensed surveyor, architect, or engineer. Remember that either a registered surveyor or engineer must always determine and certify the 100-year flood elevation of all development applications for new construction or structural additions located within the SFHA.

NOTE

Recent FEMA programs to reissue Flood Insurance Rate Maps have raised the BFE in some areas. Substantial improvements and repairs require the entire structure to be compliant, while minor improvements and repairs require only that the lowest floor be built to the elevation required for the structure when it was initially constructed. An original Elevation Certificate will be required for this.

4.5 Coastal Construction Permit Application Steps

Once a building permit application is submitted, six general processing steps should be followed:

1. Perform initial application review and collect fees.
2. Route the application to other departments/agencies for review and comments.
3. Collect comments and recommendations regarding approvals or denials.
4. Review the application's ability to meet all technical building requirements.
5. Approve or deny the application.
6. Inform the applicant of any appeal process to pursue (if necessary).

Figure 4-1, Permitting Process Overview, illustrates a generic process designed to provide suggestions on possible process modifications.

4.6 Permit Plan Submittal Requirements

The permit application package must include sufficient plan sheets and support documents to allow a complete staff review and analysis during the initial plan check. Under no circumstances should incomplete submittals ever be accepted. Note application deficiencies in such submittals and return them immediately to the applicant for revisions or resubmission. It is the sole responsibility of the applicant to submit a complete application. Using an initial plan-review checklist is recommended to assist in performing the intake review. (See the Appendix to this guide for a sample intake checklist.) Use of a checklist will identify obvious deficiencies that need correction or will confirm that the application is complete and ready for rigorous review.

NOTE

Many communities attach a blank FEMA Elevation Certificate to the issued permit and clearly indicate when (during the process) it must be completed and submitted.

Plan-submittal requirements and packages can vary with each jurisdiction. Requirements can range from a modest single-page report to a lengthy document. All submittals, however, must address coastal development issues, and it is recommended that they include an EC. (See the Appendix to this guide for examples.)

The following situations or conditions may require that certified documents accompany the permit plan:

- **Floodway Encroachment.** If any part of the proposed project will be located in a designated floodway, the applicant must submit an engineering certificate and documentation (e.g., a No-Impact Certificate) demonstrating that the proposed encroachment would result in no increase in base flood heights.
- **Enclosures below the Lowest Floor.** When an applicant designs an enclosure below the lowest floor (using an alternative to the minimum standard for openings prescribed in NFIP requirements), a registered professional architect or engineer must certify the design. (See ASCE 24-05 and FEMA NFIP Technical Bulletin 1: *Openings in Foundation Walls and Walls of Enclosures* (FIA-TB-1) for information on engineered openings.)

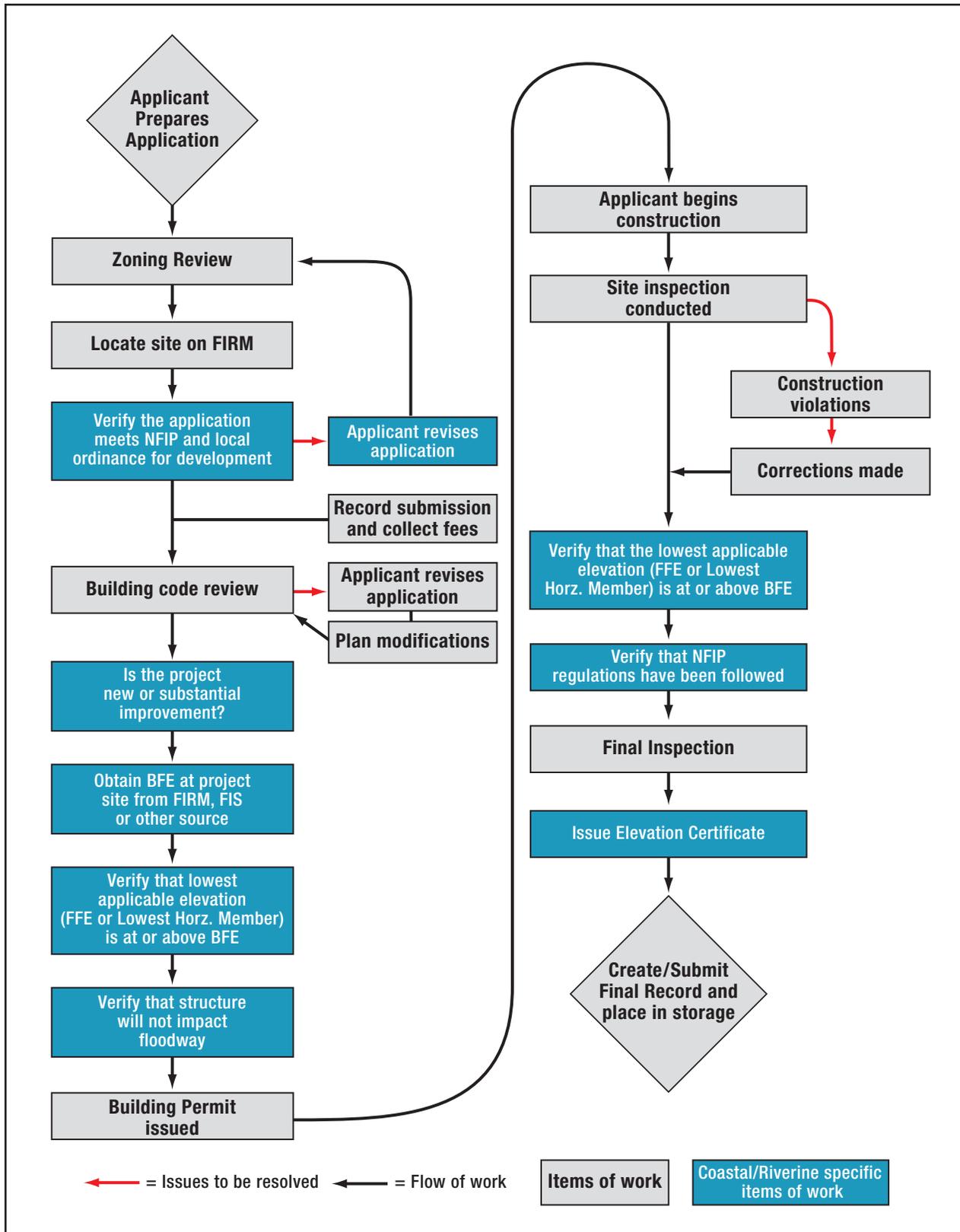


Figure 4-1. Permitting process overview.

- **V Zone Construction.** An applicant proposing to construct a building in a V Zone must supply a statement from a registered professional architect or engineer certifying the design and method of construction of the elevated building and the design of breakaway walls (if the load resistance exceeds 20 pounds per square foot). An as-built certificate is also recommended.

If freeboard has been adopted, verify that the contractor or engineer has submitted plans for a building with the lowest horizontal structural member that is above the DFE.

4.7 Elevation Certificates

Although an Elevation Certificate (EC) is not required to participate in the NFIP, communities are required to maintain records of either the lowest floor elevation or, in V Zones, a record of the lowest horizontal structural member. Communities are encouraged to use the EC, which is required to determine flood insurance rates. ECs are required for a community to participate in the Community Rating System (CRS). After a community's initial date of application, all buildings constructed or substantially improved within the SFHA must have an EC. The lowest floor elevation, or the bottom of the lowest horizontal structural member, is the most significant element in determining whether building construction is compliant with local floodplain management requirements. Certain ground and building elevations are to be surveyed and certified so that building officials can determine the elevation of the lowest floor. A good resource for understanding the certification and documentation of elevations is the *Floodplain Management Bulletin on the Elevation Certificate* (FEMA 467-1).

NOTE

As of January 1, 2007, additional photographs are required with the submittal of an EC. Refer to the FEMA Web site for further direction on what photographs are required for a particular site.

Ideally, elevations are checked when the lowest floor level is set and before further vertical construction takes place. At this point, errors in the elevation can be corrected with minimal cost and delay because the building official's documentation of the "lowest floor" depends partly upon the location of utilities and final site grading. Documentation of the final elevations must be completed and sealed when that work is finished.

The EC (FEMA Form 81-31, February 2006) is available online in the library section of the FEMA Web site (<http://www.fema.gov/business/nfip/elvinst.shtm>). The form has specific instructions and illustrations for the surveyor/engineer and building official. It is expected that a new version of the EC will become available sometime in early 2009.

Surveyor/Engineer. A registered professional who is licensed to perform elevation surveys is required to complete, sign, and affix a professional seal to the documentation of elevations. The documentation must be dated to indicate when the elevations were surveyed because continuing construction or future modifications could alter and/or outdate the information shown. The registered professional is responsible for obtaining and certifying the accuracy of key ground and building elevations.

Using FEMA-provided diagrams, the registered professional determines which building elevations to survey by selecting the building diagram that most closely represents the actual building. If the diagrams do not match the building configuration, the registered professional may need to note this within the comment section to clarify the diagram selected.

When the required elevations have been surveyed, the local official responsible for NFIP compliance then determines which level is the lowest floor and compares its as-built elevation to the DFE. This comparison determines whether the building is compliant with the elevation provisions of the code ordinance or rules governing local NFIP compliance. If the building is not compliant, enforcement action should be initiated immediately.

In determining the lowest floor, two factors should be kept in mind:

- In A Zones, if an enclosed area below an elevated building has flood openings, incorporates flood-resistant materials, and is used only for parking, building access, or storage, then the floor of that area is not considered the lowest floor. If the structure has a basement, the basement will be considered the lowest floor.
- In V Zones, if an enclosed area beneath an elevated building has breakaway walls, flood-resistant materials, and is used only for parking, building access, or storage, then the floor within the enclosure is not considered the lowest floor.

A copy of the documentation of elevations (for example, the FEMA EC) must be kept in the community's permanent permit file. To facilitate their reporting to FEMA and the state, some communities keep a separate log with information recorded for flood hazard area permits. At a later date, if elevation documentation is not in the file, the community will be required to obtain a replacement to verify the proper administration of NFIP requirements.

4.8 Inspections

Even when building permits and construction plans are complete, good inspection and enforcement procedures are important. Building inspectors, code officers, and floodplain management officials must understand the flood-resistant design and construction requirements they are to check. If deviations from the permit conditions are found early during construction, it is easier to work with the owner and builder to achieve compliance through corrective actions.

Using a plan review and inspection checklist can facilitate inspections because the inspector will have a standardized summary of flood-related requirements that are not seen in non-floodplain buildings. A plan review is also helpful when code enforcement and floodplain management are located in different offices or agencies. A checklist also documents the inspection, which can be crucial to maintaining a community's good standing within the NFIP.

The sections below summarize some of the inspections that can be performed to facilitate compliance with flood-resistant provisions of the code or local ordinance. Note that this list uses DFE. If your community does not use freeboard, then BFE is appropriate to use.

4.8.1 Stake-out or Site Inspection

The best time to verify that a building will be located correctly is during a site inspection, when setbacks and distances from the flood source or body of water can be checked. Checking that the lowest floor is properly elevated is easier if an elevation benchmark or reference mark is located nearby. If one of the reference marks shown on the flood hazard map is not close to the site, placement of a temporary onsite reference mark can make it easier to check the elevation when the floor level is set; a registered professional will certify the elevation when the as-built documentation of elevations is completed.

4.8.2 Fill Inspection

When allowed in SFHAs, fill that is placed to structurally support a building should be inspected for compaction. Compaction reports created during the fill placement monitoring should be collected. It is also important to check that the final elevation of the fill is in line with elevation data included on the permit because it will affect the final elevation of the lowest floor.

4.8.3 Footing or Foundation Inspection

For foundations that will create enclosures below otherwise elevated buildings, inspectors should check for the specified number, size, and location of flood openings. The bottom of each opening shall be no greater than 1 foot above grade and should not be confused with under-floor air ventilation openings, which are located just under the floor level. For slab-on-grade buildings, the lowest floor inspection is conducted at this time. For pile-supported structures, embedment depth and pile plumbness should be checked. In all cases, proper connections between the walls and floor/foundation systems should be checked.

4.8.4 Lowest Floor Inspection (Floodplain Inspection)

Under Sections 109.3.3 of the IBC and R109.1.3 of the IRC, the documentation of the lowest-floor elevation is to be submitted to the building official. An important part of administering provisions for flood-resistant construction is ensuring that buildings are elevated properly. This is required when the lowest floor elevation is set and before further vertical construction takes place. An error of 1 or 2 feet in elevation may seem minor; however, correction can be expensive and complicated if that error is discovered once the walls and roof are in place. In addition, Federal flood insurance is very costly for new buildings constructed with their lowest floors located below the BFE. The Lowest Floor Inspection is also a good opportunity to verify that the mechanical and electrical utilities are to be placed above the BFE.

4.8.5 Final Inspection

A final inspection to document compliance with the floodplain management requirements of the local codes and ordinances can be conducted at the same time as the final inspection that precedes the issuance of the occupancy certificate. During that inspection, it is important to:

- Verify that utilities and other building elements are located properly, usually above the DFE. Frequently overlooked items include heating, cooling, and ventilation equipment; electrical outlets; plumbing fixtures; and ductwork that is installed under the floor, usually within a crawl space.

- In A Zones, inspect enclosures below elevated buildings to ensure that the flood openings are correct in number and to confirm their total net open area and placement. If standard air ventilation units are used as flood vents, the closure mechanism must be permanently disabled so that floodwater can automatically enter and exit freely with no human intervention.
- In V Zones, inspect enclosures below elevated buildings to determine that breakaway walls are constructed to freely break away without causing damage to the building's foundation or the elevated portion of the building. To minimize transfer of loads during flood conditions, utility connections shall not be mounted on (or penetrate through) breakaway walls.
- For enclosed areas below the DFE, check that the approved use (e.g., parking, storage, and building access) appears to be consistent with what has been permitted.
- Check that the exterior fill, when permitted, is placed according to approved plans and specifications.
- Verify that flood-resistant materials are used below the DFE. See FEMA NFIP Technical Bulletin 2: *Flood Damage-Resistant Materials Requirements for Buildings Located in Special Flood Hazard Areas* (FIA-TB-2).
- Examine building utilities to determine if they have been elevated or otherwise installed according to plans to resist flood damage. Heat pumps and pad-mounted air conditioning units must also be elevated at or above the DFE.
- Collect the as-built documentation of elevations before the final sign-off.
- If used, complete and sign the plan review and inspection checklist and place all inspection reports in the permit file.

NOTE

Communities are encouraged to consult with either the NFIP State Coordinator or the appropriate FEMA Regional Office prior to issuing variances. A variance should be carefully considered. Even if allowed by a variance, NFIP flood insurance on a building that is only 1 or 2 feet below the BFE may cost two to three times more than a building in which the lowest floor is located at or above the BFE.

4.8.6 Post-Damage Inspections

After a flood, hurricane, or any natural hazard event that causes significant damage, buildings located in SFHAs and other damaged buildings outside of the SFHAs should be inspected. Some communities distribute flyers explaining permit requirements for reconstruction or repairing buildings and how future flood damage can be reduced during the repair process. Most homeowners do not realize that they may need permits to repair and restore damaged buildings if they are located within SFHAs. Damage that may meet the “substantial damage” definition must be addressed in accordance with the applicable provisions of the building code and floodplain management ordinance in effect. (See Section 3.6.)

Many tools are available to communities following natural disasters to evaluate damage levels. Buildings need to be evaluated in order to determine whether they are safe to occupy. The Applied Technology Council has issued *ATC-45 Field Manual: Safety Evaluation of Buildings After Wind Storms and Floods* (2004) which provides a methodology for evaluating buildings following a storm event and making a determination on whether they are safe to occupy. More information can be found regarding ATC-45 on the Applied Technology Council Web site (<http://www.atcouncil.org>).

The determination of substantial damage is another decision that needs to be made following storm events. In 1998, FEMA released the Residential Substantial Damage Estimator (RSDE) software to assist local building officials in evaluating homes based upon the performance of 16 building components during a flooding event and expediting the manner in which a substantial damage assessment is conducted. Information on obtaining a copy of the RSDE software and support manuals can be found on the FEMA Web site <http://www.fema.gov>. The National Flood Mitigation Data Collection Tool (NFMDCT) provides a means for cataloging and tracking the substantial damage within a community or jurisdiction and submitting that data.

4.8.7 Coastal and Floodplain Construction Inspector Certification

As part of the ICC's inspection certification program, the ICC has added a certification designation for a certified coastal and floodplain construction inspector, which was specifically developed in order to aid the process of conducting building inspections for coastal areas. This certification focuses on the following areas:

- General construction provisions (e.g., foundations, siting, shear walls, product approvals, erosion, special inspections, and corrosion control)
- Special high-wind provisions and load path continuity
- SFHAs
- Detached and attached accessory structures
- Government regulations

Additional information on obtaining this certification can be found on the ICC Web site at <http://www.iccsafe.org> in the “Certification and Testing” section.

4.9 Enforcement and Violations

Proper enforcement of floodplain management provisions is a critical part of a community's responsibility under the NFIP. During construction, violations of these provisions must be resolved as soon as they are discovered and before further construction occurs. What may appear to be a minor violation could prove costly when the owner purchases NFIP flood insurance. A community's standing in the NFIP depends upon making a good-faith effort to successfully resolve violations. By allowing any violation to go unresolved, the community may set a precedent, making it more difficult to take future enforcement actions.

Perhaps one of the more persuasive arguments for adopting the I-Codes is that doing so provides an opportunity to consolidate enforcement authority for flood-resistant design and construction provisions. The building department typically has mechanisms in place to aggressively handle code violations, while planning and zoning departments may not.

When the building official and the floodplain manager are located in the same department, care should be taken by the building official and staff to enforce proper permitting requirements on new and improved construction and to verify that ancillary structures on a property are not adversely altering the floodplain. Enforcement of these permits allows local officials to evaluate the potential impacts of such structures and their affect on water flow and drainage within the floodplain.

If a developer or property owner does not comply with the building department's requests for compliance, the permit applicant should first be notified in writing. A notice should be issued on the property if adjustments are not made. The final step in the initial process may include withholding the certificate of occupancy. The following options are available to ensure compliance to the building code and development requirements:

- Fines levied
- Housing Court
- Injunctions against proceeding
- Recordation

It is important that the building official discusses these options with the community's legal counsel before implementing a plan of action. If none of these options yields a positive outcome, the final option is to implement Section 1316 of the National Flood Insurance Act of 1968, as amended. If approved by the FEMA Regional Office, the property will be denied flood insurance. Implementation of Section 1316, however, should be considered only if all other options fail.

4.10 The Variance Process

For purposes of the NFIP, a variance is a grant of relief from the application of the NFIP floodplain management requirements. A variance to the NFIP or local floodplain management requirements allows construction in a manner that is otherwise prohibited and is granted for floodplain management purposes only. A community may issue a variance to allow a building to be constructed in a manner that is at variance to their application of the minimum NFIP provisions via local ordinances; however, NFIP flood insurance will still be rated according to risk and may prove prohibitively expensive.

The primary goals of the flood-resistant provisions of the code are to reduce damage and protect the public health and safety of the entire community. Achieving these goals also results in the creation of disaster-resistant and livable communities. Few variances to the floodplain management provisions can be justified. A variance should not be granted if a proposed activity increases the susceptibility of buildings and people to flooding and flood damage.

As a guiding principle, a variance should pertain to the unique characteristics of the land itself or considerations for historically significant structures. A properly issued variance may be granted for a parcel of land with physical characteristics so unusual that code compliance would create an exceptional hardship for the applicant. A variance should not be granted, however, based upon the personal circumstances of an individual. It is important that the building official maintain records on variance requests along with records of acceptance or denial attached to those requests.

Some variances become necessary because of the presence of historic structures (IBC Section G105.3). If a structure has experienced substantial damage and is unable to be elevated, measures should be taken to mitigate future damage. The building should be repaired using water-resistant materials and, wherever appropriate, utilities should be moved above the DFE to mitigate repetitive losses. Reference guides and materials are available through the FEMA Web site (<http://www.fema.gov>).

4.10.1 Variance Processes as Impacted by the IBC

Section 112 of the IBC requires a board of appeals to hear and decide appeals of orders, decisions, or determinations made by the building official. Specific requirements, considerations, and conditions for issuing variance from floodplain management requirements are found in Appendix G (Section G105) of the IBC.

4.10.2 Variance Processes as Impacted by the IRC

Section R112 requires a board of appeals to hear appeals of orders, decisions, or determinations made by the building official. The board of appeals has specific responsibilities related to flood hazard area development:

- Section R112.2.1. Determination of substantial improvement in areas prone to flooding. Requires that the board of appeals evaluate the building official's finding regarding the value of proposed improvements to existing buildings to determine whether the work constitutes a substantial improvement.
- Section R112.2.2. Criteria for issuance of a variance for areas prone to flooding. Sets forth specific criteria (consistent with minimum NFIP requirements) to be applied during the review and consideration of variances to the minimum flood hazard area criteria.

4.11 Supplemental Information

The Appendix to this guide has sample permits and checklists that will aid in better understanding the process. These samples, with proper modifications, may be used by communities:

- Floodplain Development Permit
- Elevation Certificate
- V Zone Certificate
- Checklist for Permit Review
- Checklist for V Zone Permit Review
- Checklist for V Zone Inspections
- Checklist for A Zone Permit Review
- Checklist for A Zone Inspections