CONSIDERATION OF LIMITED USE OF TEMPORARY FLOOD BARRIERS FOR RESIDENTIAL BUILDINGS AND RESIDENTIAL PORTIONS OF MIXED-USE BUILDINGS

PURPOSE:
This guidance explains how communities can consider proposals from residential property owners who want to use various temporary flood barriers and panels to minimize flood damage, especially repetitive damage from low-level, frequent flooding. Residential buildings include homes, apartment and condominium buildings, and residential portions of mixed-use buildings. Temporary flood barriers used on residential buildings do not satisfy the compliance requirements of the Florida Building Code (FBC) or the National Flood Insurance Program (NFIP) regulations for new construction, substantial improvement, or repair of substantial damage.

Temporary flood barriers are not "dry floodproofing," which is defined in the FBC. In accordance with the FBC and the NFIP regulations, when compliance is required, dry floodproofing measures may be used only for non-residential buildings and non-residential portions of mixed-use buildings.

Can communities issue building permits when owners want to alter or modify residential buildings to retroactively install devices to allow deployment of temporary flood barriers and panels?

Yes, but local officials must carefully review proposals to determine acceptability. Local officials should review the following Advisory Cautions, Recommendations for Permit Applications and Plans, and Notes on Engineering Evaluation, then use the Notes on Using the Decision Guide and the Decision Guide flow chart on page 6.

Is the FBC Existing Building Code adequate for those communities that want to issue permits for temporary flood barriers and panels? Building officials are authorized to interpret the code and answer this question. FBC Existing Building provides for issuance of permits for work that is an "alteration," defined as "any construction or renovation to an existing structure other than a repair or addition." The FBC does not articulate precise provisions for the wide range of work that could be classified as an alteration.

WHEN BUILDING PERMITS ARE REQUIRED: Building owners must apply to their community to obtain building permits when they propose to alter or modify buildings, including alteration or modification to prepare for temporary flood barriers and panels.

WHEN BUILDING PERMITS ARE NOT REQUIRED: Building permits are not required for temporary and emergency measures that do not alter, modify, or anchor to buildings, such as sealants and caulk, sandbags, and plastic sheeting or other barriers. However, owners should be aware that such measures could result in structural damage caused by the build-up of water pressure against walls and doors.

ADVISORY CAUTIONS FOR LOCAL OFFICIALS AND DESIGN PROFESSIONALS:

- **Determine Compliance of Existing and Non-Conforming Buildings[1]:** Local officials should conduct on-site visits to ascertain whether buildings in Special Flood Hazard Areas (SFHA) that were approved by permits with requirements for flood hazard areas remain in compliance with the requirements in effect at the time of the original permit application (or application for substantial improvement or repair of substantial damage). For example, they should check that enclosures under elevated buildings have not been modified, e.g., flood openings not blocked, breakaway walls not altered to inhibit breaking away under flood loads, the areas not converted to uses other than parking, storage, and building access, or originally open areas under elevated buildings enclosed without permits. Building officials may require resolution of conditions that are not in accordance with previously issued permits. [sec. 553.79(21)(c)1, F.S.]

[1] Non-conforming buildings are buildings that do not conform to the current floodplain management requirements in the FBC and local regulations, or the current flood zone or Base Flood Elevations (BFEs) where the buildings are located. They may have been built before communities joined the NFIP or after, when the requirements were different.

- **Construction Type and Materials:** In general, temporary barriers are more likely to be effective for residential buildings constructed built with masonry walls. Common materials used for walls that span wood or metal framing typically do not prevent water from seeping through unless special waterproofing materials are applied. In addition, wood-framed walls are less likely to resist the pressure of water.

- **Water Depth Limits:** FEMA guidance publications that describe using temporary measures for residential buildings strongly recommend that such measures provide protection for not more than 3 feet of water depth. Engineering evaluations should be required to verify that the hydrostatic loads and buoyancy associated with that depth will not cause damage (see page 3 for Notes on Engineering Evaluations and page 4 for Resources for Retrofit Mitigation Measures).

- **Residual Risk – Flood Damage Will Occur When Water Rises Higher:** Owners should be advised by their design professionals that temporary measures will not "protect" against all future flood events. See below for recommended Owner Acknowledgement Form.

- **Residential Buildings in Zone V and Coastal A Zones:** Temporary flood barriers are **not permitted** for buildings built in Zone V after communities joined the NFIP and for residential buildings built in Coastal A Zones after December 31, 2017, the effective date of the 6th Edition FBC (2017). Such measures would violate the requirement that the area under elevated buildings be "free of obstructions." Local officials in communities with land seaward of the Coastal Construction Control Line (CCCL), should determine whether temporary flood barriers would conflict with the requirements of Sec. 3109, FBC. Also see Comparison of CCCL Sec. 3109 and Flood Requirements in FBC (12/2024).

- **Considerations Other than Flood:** Building Departments may have additional requirements to consider, such as emergency escape and rescue openings. They may also review proposals with respect to wind conditions to minimize the possibility of temporary measures contributing to windborne debris.

- **Proposals to Use Emergency Measures:** Use of emergency measures that do not require altering or modifying a building typically do not require permits. However, when asked about those measures (e.g., sandbags, freestanding barriers, inflatable bags), local officials should remind interested owners that keeping water out by using those measures could lead to damage caused by the pressure of water against walls.

RECOMMENDATIONS FOR PERMIT APPLICATIONS AND PLANS:

- **Engineering Evaluation (see page 3):** The evaluation must be signed by the design professional and included in the application.

- **Floor Plan:** Applications should include drawings of the ground level, with all areas labeled and showing all openings, including any location where water could enter (e.g., doorways, windows with low sills, exterior electric outlets, penetrations for utility service, dryer vents, floor drains, elevators, etc.). The application should describe measures proposed for each opening and show the storage location for barriers or any materials and measures that require deployment by the owner. In some circumstances, communities may allow permanently mounted doorway panels (e.g., not facing street) and some vendors sell special doors that seal every time the doors are closed.

- **Descriptions of Proposed Measures:** The descriptions of the proposed measures must be complete and based on the Engineering Evaluation. Commercially-available barriers must be identified by manufacturer and model, and copies of product certifications must be included, if applicable. Barriers that do not have product certifications should be assessed by the owner's design professional as to whether they are acceptable for the intended use. The descriptions must include measures to address seepage (e.g., sealing, sump pumps) and backflow (e.g., check valves) and whether measures are proposed to make walls substantially impermeable.

- **Dry Floodproofing Product Certification:** Some products such as panels and barriers may be certified. Product certification, by itself, is not sufficient to determine whether a product is appropriate in a specific situation. In addition, product certification is not necessary as long as the owner's design professional determines the proposed product(s) or measures are appropriate for the building and the proposed level of protection. See page 4 for Resources for Retrofit Measures to link to the standard ANSI/FM 2510. Note that FEMA and FDEM do not endorse companies, manufacturers, or products.

- **Design Professional Certification:** Certification must specifically address whether the walls, foundations, slabs, and joints between those members of the building will withstand the flood loads associated with the proposed level of protection, assuming the proposed measures function as intended. The design professional should identify the proposed product(s) for the building (manufacturer, model number, size, etc.). When a commercial product is proposed, a copy of the manufacturer's installation and deployment instructions should be included with the permit application. In the absence of instructions, the design professional should prepare instructions, including instructions for deployment by the owner.
- **Owner Instructions:** The application must include a copy of the instructions for deployment and maintenance of all proposed measures. The instructions must be clear and identify each step necessary for timely and proper deployment. In the absence of instructions for commercial products, the design professional must describe the routine maintenance of the products and the steps the owner must take for timely and proper deployment. The design professional must include in the application an estimate the time necessary for deployment of the proposed measures and state their recommendation as to when owners should initiate deployment.
- **Owner Acknowledgement Form:** Local officials should seek advice from legal counsel to prepare a form to be signed by owners and notarized. At a minimum, the following should be included in the form:
    - Description of residual risk, that measures that are not maintained or not correctly deployed may not stop flooding, and that the measures will be overtopped when flood water rises above the height of the temporary barriers.
    - Use of temporary barriers does not make buildings compliant with the flood resistant construction requirements of the Florida Building Code.
    - Use of temporary barriers and measures to minimize intrusion of water into a building can result in building damage caused by water pressure against walls, floors, doors, and other openings.
    - Building permits are required to modify buildings in any way to prepare for the initial installation of measures needed for temporary barriers (e.g., installing mounting brackets, frames, anchors).
    - Owners are responsible for maintenance of temporary barriers and devices or products required for deployment.
    - Owners are responsible for monitoring weather conditions and for deploying temporary barriers and devices or products in accordance with instructions provided by manufacturers or design professionals.
    - Owners should not remain in buildings after deployment of temporary barriers.
    - Community makes no assertions as to the effect of temporary barriers on insurance coverage, premiums, or claims.
    - Owners take full responsibility for installation, deployment, and maintenance of temporary barriers and hold community harmless from any and all damage or bodily injury that may result from same.

NOTES ON ENGINEERING EVALUATION:

Engineering evaluations by registered professional engineers must document their examination of buildings and document the findings, in addition to requirements specified by the Building Official. See Resources for Retrofit Mitigation Measures listed below. Although written for non-residential buildings, NFIP Technical Bulletin 3 should be used as guidance for conducting assessments of existing buildings and evaluating feasibility of temporary barrier measures. In that bulletin, see especially, Sec. 5 Planning Considerations and Sec. 6, Dry Floodproofing Design Process. At a minimum, evaluations must consider:

- Calculated flood loads on walls and floors (including buoyancy), the capacity of the structure to resist those loads, and whether measures are required to address deficiencies (e.g., strengthen walls, anchor to resist buoyancy, etc.)
- Seepage (through walls, along utility penetrations, joints between walls and floors, and other pathways) and backflow (sewer, floor drain) and measures required to address deficiencies
- Human intervention (requires owners to act to deploy and activate in advance of onset of flooding)

- Requirements and instructions for deployment and maintenance

RESOURCES FOR RETROFIT MITIGATION MEASURES:

Whether a particular retrofit measure described in FEMA guidance can be used on a building depends on many factors that should be considered by a design professional.

- **ANSI/FM 2510,** American National Standard for Flood Mitigation Equipment (2020). https://www.fmapprovals.com/-/media/Feature/Approval-Standards/2510ansi-pdf.pdf.
- **FEMA P-312**, Homeowner's Guide to Retrofitting: Six Ways to Protect Your Home from Flooding (2014). https://www.fema.gov/sites/default/files/2020-07/fema_nfip_homeowners-guide-retrofitting_2014.pdf
- **FEMA 551,** Selecting Appropriate Mitigation Measures for Floodprone Structures (2007). https://www.fema.gov/sites/default/files/2020-08/fema_551.pdf.
- **FEMA P-259,** Engineering Principles and Practices for Retrofitting Flood-Prone Residential Structures (2012). https://library.floods.org/cgi-bin/koha/opac-detail.pl?biblionumber=1105&shelfbrowse_itemnumber=785
- **NFIP Technical Bulletin 3:** Requirements for the Design and Certification of Dry Floodproofed Non-Residential and Mixed-Use Buildings.
- **NFIP Technical Bulletins**: https://www.fema.gov/emergency-managers/risk-management/building-science/national-flood-insurance-technical-bulletins.

NOTES FOR USING THE DECISION GUIDE ON PAGE 6:

Note 1. **Date of original permit: Before/After joining the NFIP.** Refers to the date on which the community was accepted to participate in the NFIP. To participate, communities must have adopted compliant regulations that were approved by FEMA. Find the date your community joined in the column "Reg-Emer Date" in FEMA's online records: https://www.fema.gov/flood-insurance/work-with-nfip/community-status-book.

Caution: the terms "pre-FIRM" and "post-FIRM" are insurance terms; FEMA cautions against using them for regulatory purposes.

Note 2. **Not Substantially Improved or repaired after Substantial Damage since date of original permit**. Buildings in SFHAs that were Substantially Improved, or repaired after incurring Substantial Damage, should have been brought into compliance with the requirements in effect at that time. Local officials should verify that those buildings remain in compliance.

Note 3. **Engineering evaluation required.** Buildings must be evaluated to determine whether temporary barriers are feasible (see brief Notes on Engineering Evaluation on page 3).

Note 4. **NOT Substantial Improvement.** The local official must determine whether the proposed temporary barrier measures, combined with any other proposed work to be done at the same time, is NOT Substantial Improvement (as defined in FBC and local FPM ordinance). If the determination is that the measures and other work are Substantial Improvement, then the temporary barrier measures **MUST NOT** be approved.

Note 5. **Would temporary measures violate compliance?** Some NFIP requirements have changed since many Florida communities joined the NFIP in the early 1970s. Determining whether proposed temporary barrier measures violate original compliance requires determining those original requirements. Your community should have copies of all previous ordinances (check with the clerk). It may have taken communities a number of years to bring their ordinances into compliance with notable NFIP changes in the following list. The list also includes changes in flood-resistant construction requirements of the FBC. This is a partial list that does not include ALL changes.

- **August 1986:** NFIP regulations clarified requirements for flood openings in walls of enclosures below elevated buildings in Zone A/AE.

- **September 1985 and August 1989**: Consistent with the definition for Lowest Floor, NFIP regulations clarified use of enclosures below elevated buildings in Zone V (1985) and Zone A (1989) is limited to parking of vehicles, storage, and building access.
- **Freeboard, Local Ordinances, and the FBC:** Many Florida communities adopted minimum elevations higher than the minimum NFIP requirement (at or above the Base Flood Elevation). The 2010 FBC, by reference to ASCE 24, required minimum elevation of BFE plus 1 foot. The 6th edition (2017) added one foot of freeboard to the Residential code, so that lowest floors in Zone A/AE, and the bottom of the lowest horizontal structural member supporting the lowest floor in Zone V and CAZ) must be elevated to or above BFE plus 1 foot.

DISCLAIMER:
This guidance is informational and should not be construed as legal advice. The Florida Division of Emergency Management (FDEM) Office of Floodplain Management (OFM) staff are floodplain management specialists, not licensed building officials, and thus are not authorized by statute to interpret the Florida Building Code.

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https://www.floridadisaster.org/dem/mitigation/floodplain/community-resources/ (under Guidance, Ordinance Amendments, FBC Amendments, and Sample Forms).

Residential Temporary Barrier Decision Guide