

## **Request for Comments on Proposed Revisions and Updates to NFIP Technical Bulletins**

Over the years, the FEMA Mitigation Directorate has developed a series of Technical Bulletins (TBs) to clarify various building science related floodplain management and design requirements of the National Flood Insurance Program (NFIP). There are a total of eleven NFIP TBs that were published between 1993 and 2001, which can be downloaded from the FEMA website (<http://www.fema.gov/fima/techbul.shtm>). We would like the Region's and State's comments on updating existing TBs and comments and suggestions for developing new TBs.

### **Existing Technical Bulletins**

We would like to update several existing TBs. The FEMA Mitigation Directorate has made an initial assessment of the existing TBs and the needs that seem to require attention based on Mitigation Assessments Team and HMTAP technical investigations. These possible changes are outlined below. We would appreciate your feedback on the proposed changes as well as any additional comments for revising these TBs. Also, we would appreciate any ideas for updating the other six TBs.

#### **1. Openings in Foundation Walls (1993)**

Among several issues that need further clarification/guidance, include:

- Requirements for openings
- Application to townhouses
- Lowest Adjacent Grade and other slope issues
- Debris
- Covers (calculation of net area)
- Screening
- Desire to expand the TB to provide good examples (both manufactured openings and design-your-own), as well as calculations of net area. The new FEMA Elevation Certificate can serve as an excellent resource. Ensure that any revised TB is cross-referenced with the Floodplain Management Bulletin on the new Elevation Certificate.

#### **2. Flood-Resistant Materials (1993)**

Based on initial review, four major issues need to be addressed while updating this technical bulletin:

1. Flood-Resistant Materials Testing Standard/Protocol: Based on a review of U.S. Army Corps of Engineers (USACE) publications, internet research, and discussions with USACE and Oak Ridge National Laboratory (ORNL), there is little or no data available to address the issue of what standard or protocol was used by the USACE for their original flood-resistant materials testing, or what standard should be used for current and future flood-resistant materials testing. In 1999, the National Evaluation Service, Inc. (NES), with support from FEMA, convened an advisory committee to develop an evaluation plan for determining the flood resistance of materials entitled *NES Evaluation Protocol for Determination of Flood-Resistance Properties of Building Elements*. This protocol provides guidance for testing to evaluate building elements for the ability to resist the effects of floodwater exposure. It serves as a starting point for manufacturers to determine whether their building products are suitable for use below flood levels.
-

2. Flood-Resistant Materials in Tables 2 and 3: The floor, wall and ceiling materials listed in Tables 2 and 3 need to be brought up to date. Many of the materials listed by the USACE appear to be dated, some obsolete, while many newer materials are not listed.
3. Floodborne Contaminants: None of the ratings in the current technical bulletin address how materials may react to high levels of floodborne contaminants – especially petroleum-based contaminants such as diesel-range organics (DROs) and chlordane which we found in New Orleans following Katrina. Some of materials may become so contaminated that they are no longer salvageable, which could lower their flood-resistance rating.
4. Systems of Materials: We may need to address the issue of systems: This is the concept that some finish materials are OK when placed on a concrete structural floor or wall, but may not be acceptable when placed on a plywood subfloor or wall.

### **3. Free-of-Obstruction Requirements (1993)**

Guidance is needed on compliant construction of swimming pools, concrete pads, and grade beams. Non-structural fill (i.e., fill used for landscaping or other aesthetic purposes) has been discussed and it may be beneficial to provide a discussion of acceptable types of non-structural fill, such as dunes and beach sand; efforts to restore eroded dune and beach volume should not be inadvertently discouraged by this TB. There is some thought that the TB would benefit from a discussion of how to determine whether non-structural fill or other obstructions to floodwaters cause adverse impacts. This information is needed by engineers and community officials when designing and evaluating projects and permits.

### **4. Corrosion Protection for Metal Connectors (1996)**

Updates to TB-2 on Flood Resistant Materials may have an impact on the guidance contained in this TB. It has been suggested that this TB could be improved by augmenting the general requirements with information from actual experience. Post-disaster assessments could be a valuable source of information. Discussion should be added that explains how the use of Oriented Strand Board (OSB) can help reduce the number of connectors needed.

### **5. Design and Construction Guidance for Breakaway Walls (1999)**

This bulletin might be the least prescriptive for the user and seems to be one of the topics that local officials and design professionals would like more help to understand and implement.

## **New Technical Bulletins**

The last several years of damage investigations, discussions with floodplain administrators and building officials, and discussions with many design professionals have suggested that several more TBs could be helpful in further clarifying building science-related floodplain management issues that are misunderstood or about which a substantial number of questions are asked. We would appreciate your feedback on the following TB topics or your suggestions for other possible new TBs.

### **1. Coastal AE Zones**

---

FEMA has long recognized the need for improved construction requirements in Coastal AE Zones (CAZs) because of the damages caused by scour, high-velocity flow, and waves 1.5 feet or greater in height. The pilot CAZ mapping planned for the new Mississippi flood maps provides an impetus for developing a general CAZ TB to bring together all of the relevant guidance. The post-Katrina Recovery Advisory was noted as a good starting point for this TB, to be augmented by content from the FEMA *Coastal Construction Manual* and other documents as appropriate.

## **2. Service Equipment and Utilities**

The initial concept was to develop a new TB to address service equipment and utilities based on FEMA 348 and other publications. The TB could meet a need for enhanced technical guidance in a quick-to-digest form. Guidance related to critical facilities and systems engineering is needed. The new FEMA 543 manual is a useful reference for these areas.

## **3. Fill in V Zones**

The NFIP regulations prohibit use of fill for structural purposes. There is no guidance on non-structural fill, including guidelines on how to determine the effects of such fill or other obstructions on flood hazards.

## **4. V Zone Foundations**

With the introduction of FEMA 550, the issue of chain wall foundations, shear wall foundations, reinforced mats, and other shallow foundations in V Zones is becoming more important. The NFIP regulations call for performance (no flotation, collapse, displacement; consider simultaneous flood and wind forces) but do not require deep foundations, only open ones. A new TB may be needed, including a discussion of scour and erosion.

## **5. Mid- and High-Rise Engineered Structures**

The NFIP regulations are generally viewed as having been written for smaller buildings. For mid- and high-rise structures, exceptions/variances from the regulations are often sought. A new TB could provide guidance on issues unique to these classes of structures, including the following:

- Shear walls (regulations allow them only when perpendicular to shoreline)
- Structural parking slabs (concerns over lowest horizontal structural member definition)

The 1986 version of the *Coastal Construction Manual* had some useful information that could serve as a starting point for this TB. A Code Compatibility Study conducted for the State of Florida in the late 1990s might also be a helpful reference study.

## **6. Manufactured Housing Foundations**

There seems to be a growing consensus that there is a critical need for a TB on this subject. FEMA 85 is nearing completion, and would be helpful in developing this TB.

---