PIMA COUNTY REGIONAL FLOOD CONTROL DISTRICT
TECHNICAL POLICY

POLICY NO.: Technical Policy, TECH-021 **EFFECTIVE DATE: March 3, 2008**
REVISED: November 2, 2015

POLICY TITLE: Use of Flood Damage Resistant Materials Below the RFE

PURPOSE:
To clarify 16.20.020.C.4 of the Ordinance by providing guidelines on the use of flood resistant materials for those portions of structures below the RFE. This policy is also designed to provide a concise list of materials that are acceptable or not for use below the RFE.

BACKGROUND:
Structures may be subject to significant damage if constructed of materials that are not flood resistant, even when subjected to shallow flooding. Ensuring that structures that are not proposed to be elevated to the Regulatory Flood Elevation (RFE) are able to resist damage due to flooding is one of the basic floodplain management principles.

Pursuant to 44 CFR 60.3(a)(3), the District is required to ensure that all new and substantial improvements shall be constructed with materials resistant to flood damage. Section 16.20.020.C.4 of the Floodplain and Erosion Hazard Management Ordinance (Ordinance) allows the District to require submittal of building material specifications and proposed flood proofing measures of any portion of a structure below the Regulatory Flood Elevation (RFE) in order to determine acceptability. However, neither the CFR nor the Ordinance establishes which materials are determined to be flood resistant and, therefore acceptable for use in the floodplain.

FEMA Technical Bulletin 2, Flood Damage-Resistant Materials Requirements (2008), included as Appendix A, provides information and guidance on the use of flood resistant materials and provides comprehensive tables that classify specific materials according to their acceptability at meeting the flood resistant standard. Excerpts from that document are used as the basis for this policy.

POLICY:

I. Applicability

This policy applies primarily to structures with a lowest floor elevation, including an attached garage, below the RFE; however any structure that extends below the RFE is subject to this policy. For the purpose of this policy, the lowest floor is the floor of the lowest enclosed area, whether the floor is unfinished or finished (i.e. bare ground or cement slab or equivalent).

Examples: In the case of a structure elevated on a crawl space foundation, all materials used in the foundation up to the level of the RFE must be flood-resistant. In the case of a structure elevated on pilings, the pilings must be flood resistant. Most elevated structures will involve the use of fill pads, masonry stem walls or concrete/masonry piers, all of which qualify as flood-resistant materials.

II. Pre-Permitting Submittal Requirements

A. Submittal requirements for proposed structures elevated at or above the RFE

Applications for structures that will be elevated at or above the RFE via a fill pad, a stem wall, or concrete/masonry piers do not need to provide any supplemental information. If other materials are proposed,

the applicant shall submit a description of the material and demonstrate that the material is flood damage resistant.

B. Submittal requirements for proposed structures not elevated above the RFE

Applications for structures that will not be elevated at or above the RFE shall contain detailed specifications regarding all of the materials proposed for use below the RFE, including materials that do not provide structural support. The submittal information shall include, at minimum, the following:

1. A note on the site plan stating that all construction (both exterior and interior) below the RFE shall be completed using flood damage resistant materials. The note must include the net square inches of flood openings, if applicable.
2. A list of all materials to be used below the RFE, which shall be referenced on all applicable sheets of the plan set, including the site plan. Be sure to account for the following building components:
    a. Structural wall support (studs, block, etc.)
    b. Exterior wall material
    c. Interior wall finish
    d. Wall insulation
    e. Trim/Finish carpentry
    f. Doors
    g. Flooring, including adhesive
    h. Electrical system
3. A note on all applicable sheets of the plan set stating that all outlets are at or above the RFE.
4. If materials are proposed that are not on the list of acceptable materials found in this policy or FEMA Technical Bulletin 2, the submittal of supporting information that demonstrates that the materials are adequately flood damage resistant is required. "Flood damage resistant material" is defined as any building material capable of withstanding direct contact with floodwaters for at least 72 hours without sustaining damage requiring more than low-cost cosmetic repair (such as painting).
5. Prior to permit issuance, a signed and notarized covenant (prepared by the District) that states that the structure or area that is not elevated to the RFE shall remain non-habitable unless brought into compliance with the rules and regulations for habitable structures or areas.
6. Prior to the release of the final inspection, or electrical inspection, the permittee shall demonstrate that the structure was constructed of flood resistant materials in conformance with the permit by submitting either of the following, subject to verification by the District:
    a. A completed Flood Damage Resistant Materials Certification form (to be provided by the District).
    b. A letter from a licensed contractor or registered civil engineer or architect, on company letterhead that includes the contractor's license number or engineer's seal, stating the height to which flood resistant materials were used on the structure, as well as a statement that the materials used were those listed on the approved site plan, **or**
    c. Receipts for the purchase of the flood resistant materials specified in the permit. The receipt must be clear about the identity of the materials purchased, **or**
    d. If the structure consists solely of masonry or steel construction below the RFE, photographs showing the completed interior and exterior of the structure may be adequate.

    Be sure to account for the building components noted in B.2 above.

III. Post-Permitting Submittal Requirements

The use of flood damage resistant materials shall be verified post construction. This is to ensure that the materials were installed according to design and any changes to the design are acceptable. Verification of the use of flood damage resistant materials must be approved by the District prior to the release of the final inspection or other appropriate inspection. The following sections detail possible methods of verification of the use of flood damage resistant materials.

A. Development Services Department Inspection

If agreed upon by Pima County Development Services Department (DSD), the District may allow DSD building inspectors to inspect for and verify the use of flood damage resistant materials, either as a separate inspection or in the course of other building inspections.

B. Flood Damage Resistant Materials Certification

The contractor for the project may complete a Flood Damage Resistant Materials Certification form. The owner may complete the form if the work was performed by the owner. The District may conduct inspections to verify the accuracy of Flood Damage Resistant Materials Certification forms submitted for approval.

C. District On-site Inspection

At the District's discretion, the District may conduct site inspections to verify the use of flood damage resistant materials.

IV. Construction Materials

As excerpted from FEMA Technical Bulletin 2, the following is provided as guidance for choosing appropriate construction materials below the RFE. It is important to note that materials that are acceptable by themselves may be inappropriate when used together. For example, both vinyl tile and marine grade plywood are acceptable materials by themselves, but vinyl tile cannot be affixed to marine grade plywood. Vinyl tile can be affixed to a concrete floor.

The lists below are intended to cover commonly used materials and are not comprehensive lists of acceptable or unacceptable materials. For materials not covered in this policy, see FEMA Technical Bulletin 2, which is attached as Appendix A. It may also be necessary to review manufacturer's specifications to determine whether a particular product is flood damage-resistant.

A. Acceptable Wall and Door Materials

The following materials are acceptable:

1. Asbestos cement board
2. Cement board/fiber-cement board
3. Brick (face, glazed or common clay)
4. Cast stone (in waterproof mortar)
5. Concrete (precast, cast-in-place, or block)
6. Doors, metal (hollow, wood core, or foam-filled core)
7. Doors, epoxy or fiberglass with wood core
8. Gypsum products:
    a. Non-paper-faced gypsum board or
    b. water-resistant fiber-reinforced gypsum exterior sheathing
9. Insulation, foam or closed-cell types
10. Metals, ferrous
11. Paint, polyester-epoxy or latex (Note: Waterproof paint cannot be used on anything except masonry/concrete surfaces. It cannot be used on wood as it inhibits drying of the wood.)
12. Plywood, Marine Grade, preservative treated, or exterior grade/Exposure 1 (WBP-weather and boil proof)
13. Recycled Plastic Lumber (RPL), except wood-filled
14. Stone, natural or artificial non-absorbent solid or veneer (with waterproof grout)
15. Wood, standard solid structural (2X4s, etc.)
16. Wood, naturally decay-resistant, per standards of American Wood Products Association

17. Wood, pressure treated, 0.40 CCA minimum

B. Unacceptable Wall and Door Materials

There are a number of materials that would seem to be flood resistant that in fact are not. The reasons for this may be that they absorb or retain water, among other reasons. The following materials are NOT acceptable:

1. Chipboard
2. Doors, wood (any type, interior or exterior)
3. Fiberboard, including mineral fiberboard
4. Hardboard (high-density fiberboard)
5. Gypsum products (gypsum board, sheet rock, plaster, sheathing panels (including exterior grade), except as provided in III.A.8)
6. Insulation, batt or blanket types, and all other types except as provided in III.A.9
7. Metals, non-ferrous (aluminum, copper, zinc)
8. Oriented Strand Board (OSB), All types
9. Paperboard
10. Particle board
11. Plaster
12. Plywood, including exterior grade, and all others except as provided in III.A.12
13. Stucco (interior or exterior)
14. Wood, standard finish/trim (baseboards, molding, etc.)

D. Acceptable Flooring Materials

The following materials are acceptable:

1. Cement, latex or bituminous, formed in place
2. Clay tile
3. Concrete, precast, in-situ, or tile
4. Terrazo
5. Tile, ceramic or concrete, with mortar set
6. Vinyl sheets or tiles, with asphaltic adhesives (including vinyl asbestos tile)
7. Wood, naturally decay-resistant, per standards of American Wood Products Association
8. Wood, pressure treated, 0.40 CCA minimum

E. Unacceptable Flooring Materials

There are a number of materials that would seem to be flood resistant that in fact are not. The reasons for this may be that they absorb or retain water, among other reasons. The following materials are NOT acceptable:

1. Asphalt tile
2. Carpeting
3. Chipboard
4. Linoleum
5. Tile, ceramic or concrete, except as provided in Section III.C.5
6. Vinyl sheets or tile, including vinyl asbestos, except as provided in Section III.C.6
7. Wood, except as provided in Section III.C.7-8

APPROVED BY:

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Suzanne Shields, P.E. Date

Director

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