Building Science

Hurricanes and Floods

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Dry...Don’t Die
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Wash, Rinse and Dry
Flood-Tolerant Wall Reconstruction

1. Existing wall assembly gutted from interior, leaving the brick veneer and studwall intact.
2. Weep holes drilled from exterior (vertical mortar joints removed at 16" on-centers). Retrofit weep hole covers inserted into mortar joints to prevent insect/rodent intrusion.
3. Remaining wall assembly power-washed, particularly at bottom of wall where the bulk of the damage occurred.
4. Liquid-applied pan flashing applied to bottom of air cavity and run up and over on to horizontal surface of bottom plate. Run fluid up studs approx. 2" to seal bottom of studs to bottom plate.
5. Wedges made from 1" XPS insulation help hold insulation sheets in place. Align wedges with studs; place one wedge at top of sheet and one at bottom.
6. 2"-thick 2-lb.-density closed-cell foam sprayed in stud bays against new XPS rigid insulation.
7. Paint exposed studs, closed-cell foam (dotted purple line), bottom and top plates with a water-repellent, vapor-open material such as acrylic latex paint.
8. New drywall installed horizontally.
9. Existing brick veneer.
Spray polyurethane foam (SPF), 2” thick closed cell 2lb/ft³ density

Extruded polystyrene (XPS) sheets installed shingle fashion

Weep opening (retrofitted from exterior)

Fluid applied flashing
Extruded polystyrene (XPS) "wedges" - intermittent blocking (approx. 1 1/2” x 4”) holding sheathing in place prior to spray polyurethane foam (SPF) installation

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Extruded polystyrene (XPS) sheets

Spray polyurethane foam (SPF), 3” thick closed cell 2lb/ft³ density

Acrylic latex paint over all surfaces prior to installation of interior gypsum board
Spray polyurethane foam (SPF), 3” thick closed cell 2lb/ft³ density

Drainage mat - filter fabric to interior; ½” thick or greater

Weep opening (retrofitted from exterior)

Fluid applied flashing
Acrylic latex paint over all surfaces prior to installation of interior gypsum board

Spray polyurethane foam (SPF), 3” thick closed cell 2lb/ft³ density

Drainage mat - filter fabric to interior; 1/2” thick or greater
Existing brick ties

Acrylic latex paint over all surfaces prior to installation of interior gypsum board

Spray polyurethane foam (SPF), 3” thick closed cell 2lb/ft³ density

Drainage mat - filter fabric to interior; ½” thick or greater

Fluid applied flashing
Existing brick ties

Seal perimeter of sheathing sleeve

Folded sheathing sleeve

Fluid applied flashing
Liquid-applied flashing applied to bottom of air cavity and run up and over onto horizontal surface of bottom plate. Run fluid up studs.
Strip of gypsum board removed at top after moisture event to facilitate drying

Vapor open paint coating

Strip of gypsum board removed at bottom after moisture event to facilitate drying

Remove baseboard after moisture event
Extruded polystyrene (XPS)

Spray polyurethane foam (SPF), 2" closed cell 2lb/ft³ density

Crown moulding

Gap in gypsum board at top of wall

Acrylic latex paint over all surfaces prior to installation of interior gypsum board

Gap in gypsum board to prevent wicking

Horizontal trim

Spray polyurethane foam (SPF), 2" closed cell 2lb/ft³ density

Removable wainscot (or removable gypsum board)

Gap in gypsum board at bottom of wall
Attic roof escape hatch (egrass skylight)

Strip of gypsum board removed at top after moisture event to facilitate drying

Spray polyurethane foam (SPF), closed cell 2lb/ft³ density
Acrylic latex paint over all surfaces prior to installation of interior gypsum board
Strip of gypsum board removed at bottom after moisture event to facilitate drying
Remove baseboard after moisture event
Acrylic latex paint over all surfaces prior to installation of interior gypsum board.

Strip of gypsum board removed at bottom after moisture event to facilitate drying.

Remove baseboard after moisture event.

Strip of rigid insulation removed after moisture event to facilitate drying.

Continuous polyethylene vapor barrier (all joints overlapped).

Interior grade higher than exterior grade.
Ground slopes away from wall at 5% (6 in. per 10 ft.)

Concrete grade beam

Polyethylene vapor barrier extended under grade beam where it also acts as a capillary break

Granular capillary break and drainage pad (no fines)

Concrete slab

Wide baseboard

Hold gypsum board up from slab 4"

Latex paint or other permeable or vapor semi-permeable interior finish

Non-paper faced gypsum board

Vapor open paint coating

2x2 wood furring

Vapor semi-permeable rigid insulation — expanded polystyrene, extruded polystyrene, fiber-faced isocyanurate

Polymer modified (PM) or standard Portland cement stucco

Masonry wall

Seat in concrete slab

Weep screed

Vapor permeable coating — greater than 10 perms ("latex paint")
Brick veneer/stone veneer

Drained cavity

Exterior rigid insulation - extruded polystyrene, expanded polystyrene, isocyanurate, rock wool, fiberglass

Membrane or trowel-on or spray applied vapor barrier (Class I vapor retarder), air barrier and drainage plane (impermeable)

Concrete block

Vapor open coating

Uninsulated steel frame wall

Non-paper faced gypsum board

Latex paint or vapor semi-permeable textured wall finish

Vapor Profile
Latex paint

Stucco rendering

Concrete block

Rigid insulation (vapor semi-permeable) — unfaced extruded polystyrene, unfaced expanded polystyrene, glass fiber-faced isocyanurate

Vapor open coating

Uninsulated steel frame wall

Non-paper faced gypsum board

Latex paint or vapor semi-permeable textured wall finish

Vapor Profile
Fiber cement siding
1x4 furring
Exterior rigid insulation — extruded polystyrene, expanded polystyrene, isocyanurate, rock wool, fiberglass
Drainage space between exterior rigid insulation and drainage plane
Building paper or house wrap drainage plane
Non-paper faced exterior gypsum sheathing, treated plywood or treated oriented strand board (OSB)
Vapor open coating
Uninsulated wood stud cavity
Non-paper faced gypsum board
Latex paint or vapor semi-permeable textured wall finish

Vapor Profile
Latex paint

Precast concrete

Rigid insulation (vapor semi-permeable) — unfaced extruded polystyrene, unfaced expanded polystyrene, fiber-faced isocyanurate

Vapor open coating

Uninsulated steel frame wall

Non-paper faced gypsum board

Latex paint or vapor semi-permeable textured wall finish

Vapor Profile
Screen

Interior sill

Precast unit

Reflective foil insulation

Gypsum board

Wood furring

Masonry block wall

Primary seat to provide backing for sill nailing flange

Secondary seat to provide backdam for window installation;
Note: Min. 1/2" high

Tiered precast unit

Gypsum board

Wood furring

Vapor semi-permeable rigid insulation

Masonry block wall

Stucco
Metal Cross Bracing

Inset Shear Panel

Tensioning Rods

Plywood Facing of Panel (not shown in its entirety for clarity purposes)