HOMEOWNER GUIDE

Replacement of materials after flooding

AIA HOUSTON DISASTER RECOVERY TASK FORCE

Architects must design Houston's built environment to be resilient to storm surge, flooding, drought, power outages, and wind damage due to increasing frequency and magnitude of major natural disasters. AIA Houston supports the Industry Statement on Resilience: ***aiad8.prod.acquia-sites.com/sites/default/files/2016-08/Res-IndustryStatement-080916.pdf*** and the AIA statement on Climate Change: ***aia.org/resources/77541-where-we-stand-climate-change***

MATERIALS*

After a storm event damaged your home, it is essential to make sure your home is safe, structurally sound, free of wet and damaged materials, and certified to be mold-free before you begin to repair and rebuild with the required building permits. Consider building back better with these replacement materials:

Interior Wall Strategies (see diagram)

- Install detachable mold- and moisture-resistant cladding on the bottom four feet using corrosion-resistant screws
- Raise electrical outlets and equipment above flood line
- Design and build interior walls to vent/breathe so cladding does not need to be removed for wall to dry
- Use mold-resistant non-paper-faced gypsum wallboard

Interior Wall Materials

- Install non-paper-faced gypsum wallboard such as: GP DensArmor Plus, GP DensShield, USG Fiberock Aqua-tough Interior Panels, USG Sheetrock Brand Mold Tough Gypsum Panels
- Use trim material that is rubber or other water-resistant material

Cabinetry

- Elevate cabinets off the floor as high as possible above the flood line
- Build cabinets out of moisture-resistant materials such as marine-grade plywood or metal

Flooring Strategies

- Use non-absorbent materials
- Refer to manufacturers specification for water-resilient installation
- Clean and re-seal tile and grout on an annual basis to maintain its water-resistant properties

Flooring Materials

- Non-absorbent stone: Slate, Granite, Travertine
- Ceramic or Porcelain Tile with waterproof grout
- Sealed Concrete

Doors/Window frames

- Solid core wood door with treated wood frame
- Metal door (hollow, wood or foam-filled core) and metal frame
- Fiberglass door (wood or foam-filled core) and fiberglass frame

Exterior Cladding Strategies

- Use non-absorbent materials
- Design with an air space or drainage plane for water and moisture to drain from wall cavity

Exterior Cladding Materials

- Cement Board / Fiber Cement Board Siding: Hardie Board, GAF WeatherSide
- Ceramic Materials: Brick, Clay Tile
- Stone: Natural or Man-made Manufactured Stone (non-absorbent)
- Concrete: precast or cast-in-place), Concrete Block
- Composite Siding: Recycled Plastic or Resin-Impregnated Lumber: Certainteed Icon Composite Siding, NewTechWood UltraShield Wall Cladding
- Metal Siding: Galvalume, CorTen, Zinc, Aluminum

Air and Vapor Barrier, Waterproofing and Flashing

- Consider insulation values and vapor barrier of majority of existing building when replacing in limited areas
- Sheet Material: Tyvek House Wrap or Building Paper (#15 felt)
- Fluid Applied: Sto Gold Coat or Henry Air-bloc

Sheathing Strategies

- Gypsum-based products should be non-paper-faced gypsum board
- Wood products should be moisture/water resistant

Sheathing Materials

- Gypsum-based: Amercican Gypsum Exterior Gypsum Sheathing, GP Densglass Fiberglass Mat Sheathing, USG Securock Brand Glass-Mat Sheathing
- Wood / Plywood: Marine-grade, Pressure Treated, or Exterior Grade Plywood Sheathing

Insulation

- Consider insulation values and vapor barrier of majority of existing building when replacing in limited areas
- Mineral wool insulation
- Sprayed polyurethane foam (closed cell)

Wall Structure Strategies

- Evaluate structure to ensure it can support any added weight

Wall Structure Materials

- Pressure Treated wood studs
- Galvanized Metal studs
- Fiberglass studs (not widely available in Houston)
- Concrete: Concrete Masonry Units, Insulated concrete forms, AAC- Autoclaved aerated concrete blocks

Floor Structure

- Pressure Treated wood framing
- Concrete Slab
- Insulated concrete forms
- AAC Block (if structural evaluation confirms that it will support)

Roof

- Collect rainwater from roof using barrels, tanks, or swales
- Install gutters to collect and distribute roof water from eaves and scuppers for collection or to move off site

Hardscape: Driveway / Patio / Sidewalk

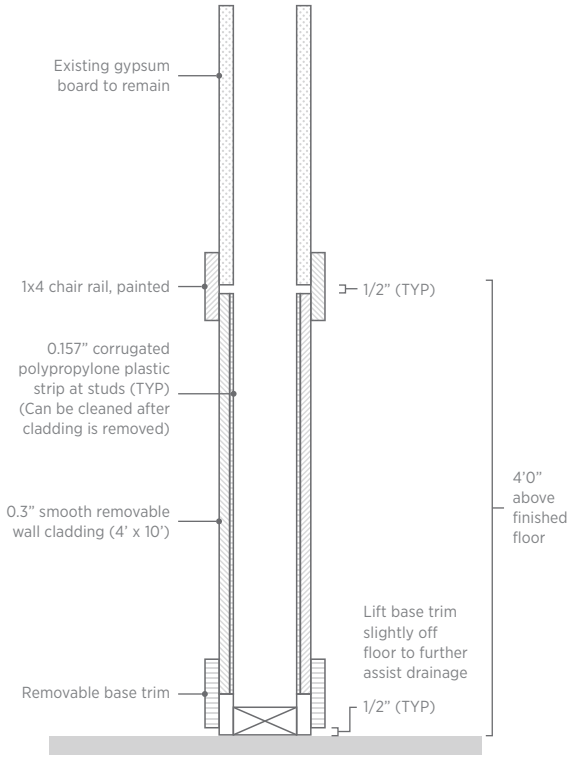
- Collect pavement runoff on site
- Ensure that paved areas do not sheet flow water toward residence
- Replace paved areas with permeable pavements with absorbent subsurface base material
- Excavate and lower paved areas to create additional storm water storage

Softscape: Landscape /Gardens

- Be aware of the drainage patterns around your home. Observe where water drains during a heavy storm; note any obstructions to flow, especially those above the masonry weep holes or finished floor of the residence. Contact a surveyor if you would like a topographic survey to document drainage patterns.
- Ensure that water does not collect below pier and beam structures and that water drains completely after a storm. Over time, collection of water below the residence can cause subsidence and foundation settlement.

*__Note:__ specific products and manufacturers listed for reference; other equivalent products may be available.

INTERIOR WALL STRATEGIES FOR HOMES THAT FLOODED LESS THAN THREE FT



HIRE A QUALIFIED CONTRACTOR

Inform your contractor that you are rebuilding for resilience and want to reduce damage and replacement in the event of a future natural disaster. Ask them follow-up questions to be sure they are familiar with resilient building practices. Contact local contractor associations and the BBB to confirm past references and complaints.

ADDITIONAL RESOURCES

FEMA Technical Bulletin 2
www.fema.gov/media-library-data/20130726-1502-20490-4764/fema_tb_2_rev1.pdf

Building Science Corporation - Rebuilding Houston
www.buildingscience.com/documents/building-science-insights/bsi-101-rebuilding-houston

How to Hire a Contractor
www.consumer.ftc.gov/articles/0242-hiring-contractor
www.sbpusa.org/public/uploads/general/SBP_ContractorFraudChecklist-2017_170310_162735.pdf

Journal of Lightweight Construction - Flood Hardy Wall Construction
www.jlconline.com/how-to/framing/flood-hardy-wall-construction_o