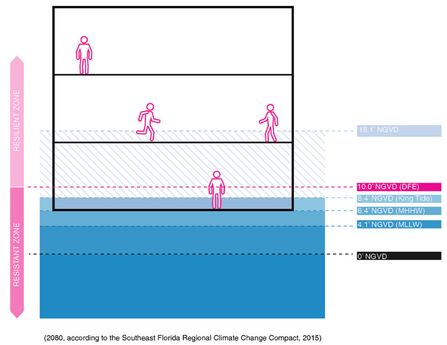
DUVAL STREET | REVITALIZATION & RESILIENCY PLAN

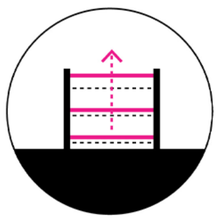
RESILIENCY STRATEGIES FOR HISTORIC BUILDINGS

View of flooding on Duval Street during Hurricane Rita - Key West, Florida. State Archives of Florida, Florida Memory, September 20, 2005, photo by Dale M. McDonald.

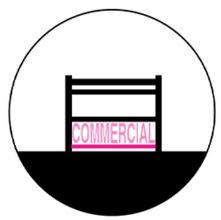
Determined visitors head for Sloppy Joe's Bar while crossing a flooded Duval Street as heavy winds and rain pass over Key West. Key West Citizen via AP, July 6, 2021, photo by Bob O'Neal



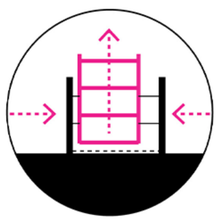
(2080, according to the Southeast Florida Regional Climate Change Compact, 2015)



1A
Internal Raise



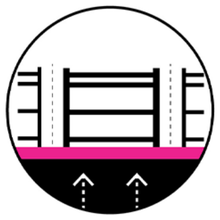
1B
Adaptive Use Approach



1C
Building in a Building

strategy 1: adapt in place

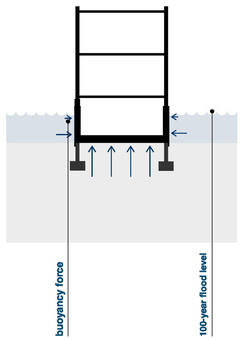
2A
Individual Approach



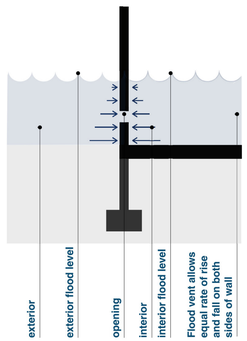
2B
Combined Approach

strategy 2: raise

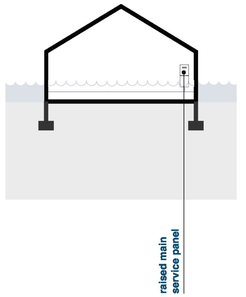
sandbags



dry floodproofing



wet floodproofing



raise utilities

raise structure

Duval Streetfront Conditions

General Building Adaptation Strategies

BACKFLOW PREVENTION
Elevated water levels can cause waste in sanitary sewer lines to back up through drainpipes and flow into homes through toilets and other drains. One solution is to install backflow prevention valves on sewer lines in existing structures. Backflow prevention valves allow flow in only one direction. Waste or stormwater can flow out through the sewer pipe but is also prevented from flowing back into the structure.

DRY FLOODPROOFING
Dry floodproofing involves taking measures to make a building watertight to prevent entry of water into interior spaces. Dry floodproofing measures must be paired to prevent failure. Reinforcing openings and walls to withstand floodwater pressures should be combined with reinforcing or anchoring the building slab to resist flotation from uplift pressures and other buoyancy forces.

MECHANICAL SYSTEMS FLOOD PROTECTION
Mechanical equipment primarily includes heating, ventilation and air conditioning (HVAC) systems. Small amounts of saltwater can quickly corrode mechanical systems, rendering them inoperable. the simplest and most effective ways to protect primary mechanical system components is to elevate them above DFE. In Miami Beach, where buildings occupy most of their lot, mechanical units should likely be relocated to the roof of the building, where there is typically sufficient structural capacity.

WIND MITIGATION
Wind mitigation is the implementation of certain building techniques in order to limit damage caused by intense wind. These building features include opening protection of the doors and windows, appropriate roof deck and roof-to-wall attachment, use of appropriate roof coverings and implementation of secondary water resistance systems.

ADA ACCESSIBILITY FEATURES
The Americans with Disabilities Act (ADA) requires businesses that serve the public to remove barriers from older buildings and to design and build new facilities implementing features that provide access to customers with disabilities. These features include parking, access to the building entrance, route into and through the establishment, access to the store's goods and services, restrooms, cashier stations and egress from the building.

SEEPAGE AND WATERPROOFING
While most building materials appear solid and impenetrable to the naked eye, when sustaining flood loads, water may pass through these materials. Waterproofing techniques render a building envelope more impermeable and reduce the amount of water that can infiltrate. Waterproofing can be applied from either inside or outside a building wall, depending on the type of sealant used. Impermeable membranes can also be used to waterproof foundation walls belowgrade to resist groundwater seepage.

FLOOD RESISTANT BUILDING MATERIALS
Everyday building materials may be susceptible to rot and mold when exposed to flooding. Using flood-resistant materials can reduce the damage and make cleanup easier following a flooding event. Building materials are considered flood-resistant if they can withstand direct contact with flood waters for at least 72 hours without being significantly damaged (damage requiring more than cosmetic or low-cost repairs).

UTILITY & LIFE-SAFETY FLOOD PROTECTION
Unless an electrical system - electric panels, meters, switches, outlets, light fixtures, and the wiring that connects them all together - is specifically designed to be submerged underwater, floodwater can severely damage its various components. Similarly, gas and water meters, unless rated for submersion, can be damaged by flooding. Use flood-rated equipment or relocate above DFE.

WET FLOODPROOFING
Wet floodproofing is a concept that accepts some level of flooding, rather than working to reinforce the structure against floodwater pressures. Strategically designed and placed openings allow floodwaters to automatically enter and exit the enclosed area.

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