



BUOYANT CITY

Historic District Resiliency & Adaptation Guidelines

City of Miami Beach

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Miami Beach | Discussion Draft 2019 1209

Buoyant City | HISTORIC DISTRICT RESILIENCY AND ADAPTATION GUIDELINES

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Client

MIAMIBEACH

Prime Consultant: Architecture | Historic Preservation | Urban Planning

**Shulman +
Associates**

Coastal | Civil | Geotechnical Engineering | Hydrology & Geology | Project Costing

ARUP

Landscape Architecture | Water

dlandstudio
architecture + landscape architecture pllc

Structural Engineering | Local

MCE

Coastal | Civil Engineering | Local



Building Elevation



“ An important cultural value of the historic city rests precisely upon its ability to be in a constant evolution, where forms, space and uses are always adapting to replace obsolescence with functionality. This gives rises to the paradox – or perhaps the oxymoron – of the concept of preserving the ability to change.”

Gustavo F. Araoz, Preserving Heritage Places Under a New Paradigm

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Note: the authors have considered a wide range of factors in writing this report all, some or none of which may occur in combination or conjunction with each other in the foreseeable future. The following represents the authors' views of possible or potential mitigating steps that may be taken in the event of Sea Level Rise, storm events and King Tides in the denoted Study Areas; other scenarios and views should also be considered.

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Terms & Acronyms

100RC	<i>100 Resilient Cities</i> . Funded by The Rockefeller Foundation, 100RC (2013-2019) was dedicated to helping cities around the world, including Miami Beach, become more resilient to the challenges being faced in the 21st century.	Contributing/Non-Contributing	Buildings in Miami Beach historic districts are generally qualified as ‘contributing’ to the district’s sense of time and place and historic development, or ‘non-contributing’.
Act	Short form of The National Flood Insurance Act of 1968 and any amendments to it.	Crawl Space	Crawl spaces are the open areas between the earth and the first-floor structure. They generally have solid foundation walls.
Base Flood	A flood having a 1% chance of being equaled or exceeded in any given year.	Date of Construction	The date that a building permit was issued, provided the actual start of construction work was within 180 days of the permit date.
BFE	Base Flood Elevation: The elevation shown on the Flood Insurance Rate Map that indicates the water surface elevation resulting from a flood that has a 1% chance of occurring in any given year. In coastal areas, BFEs are calculated using 4 components: 1) the storm surge stillwater elevation, 2) the amount of wave setup, 3) the wave height above the storm surge stillwater elevation, and 4) the wave runoff above the storm surge stillwater elevation.	Dry floodproofing	Dry floodproofing is taking measures to lower the potential for flood damage by reducing the frequency of floodwaters that enter a structure.
Basement	Any area of the building, including any sunken room or sunken portion of a room, having its floor below ground level (subgrade) on all sides.	Elevated building	A building with no basement that has its lowest elevated floor raised above ground level by foundation walls, shear walls, posts, piers, pilings or columns.
CAP	<i>Climate Action Plan</i> . A detailed and strategic framework for measuring, planning, and reducing greenhouse gas (GHG) emissions and related climatic impacts.	FAR	<i>Floor Area Ratio</i> . FAR is the ratio of a building’s total gross floor area to the size of the piece of land upon which it is built. The term can also refer to limits imposed on such a ratio through zoning.
CLG	<i>Certified Local Government</i> . The CLG Program was enacted as part of the National Historic Preservation Act Amendments of 1980. The program links three levels of government -- federal, state and local -- into a preservation partnership for the identification, evaluation and protection of historic properties.	FEMA	<i>Federal Emergency Management Agency</i> . FEMA is the federal agency under which the National Flood Insurance Program is administered; part of the U.S. Department of Homeland Security.
COA	<i>Certificate of Appropriateness</i> . A COA is required for work that would change the exterior appearance of a designated historic property. This includes alterations, additions, new construction or demolition.	FFE	<i>Finished Floor Elevation</i> . FFE refers to the top of a structural floor deck or concrete floor slab.
CRO	<i>Chief Resilience Officer</i> . The CRO was created and funded by the Rockefeller Foundation as a major initiative of the 100RC. The CRO is tasked with preparing the given municipality for the environmental, physical and economic impacts of sea level rise. Currently, Miami Beach, Miami-Dade County, Miami and the State of Florida all have CROs.	FHBM	<i>Flood Hazard Boundary Map</i> . Another name for Flood Insurance Rate Map (FIRM).
CRF	<i>City Resilience Framework</i> . The CRF describes the essential systems of a city in terms of four dimensions: Health & Wellbeing; Economy & Society; Infrastructure & Environment; and Leadership & Strategy	FIRM	<i>Flood Insurance Rate Map</i> . FIRM is the official map of a community, on which the Federal Insurance Administration has delineated both the Special Flood Hazard Areas and the risk premium zones applicable to the community. See <i>Post-FIRM Building</i> and <i>Pre-FIRM Building</i>
CHHA	<i>Coastal High Hazard Areas</i> . CHHAs are Special Flood Hazard Areas (SFHAs) along the coasts that have additional hazards due to wind and wave action. These areas are identified on Flood Insurance Rate Maps (FIRMs) as zones V, V1, V30 and VE.	First Floor Construction	First floor construction in Miami Beach is generally wood or concrete framed, or may in some cases comprise a concrete slab on grade.
CRS	<i>Community Rating System</i> . A program under the National Flood Insurance Program (NFIP) that provides a flood insurance premium rate reduction based on a community’s floodplain management activities.	Floodplain	Any land area susceptible to being inundated by floodwaters.
Compact	Short form of Southeast Florida Regional Climate Change Compact.	Floodplain management	Corrective and preventive measures for reducing flood damage, including emergency preparedness plans, flood-control works and floodplain management regulations.
		Floodproofing	Protective measures added to or incorporated in a building that is not elevated above the base flood elevation to prevent or minimize flood damage. See <i>Wet Floodproofing</i> and <i>Dry Floodproofing</i> .
		Foundation type	Foundation systems, the lowest part of any construction, support a building by transferring loads to the earth. In Miami Beach, shallow foundations are typically continuous spread footers below the ground floor construction. Pile foundations transfer loads deeply through long cylindrical piles drilled or pounded into the earth.

Foundation walls	Masonry walls, poured concrete walls or precast concrete walls, regardless of height, that extend above grade and support the weight of a building.
Freeboard	The additional height, usually expressed as a factor of safety in feet, above a flood level for purposes of floodplain management. Freeboard tends to compensate for many unknown factors, such as wave action, blockage of bridge or culvert openings and hydrological effect of urbanization of the watershed, which could contribute to flood heights greater than the heights calculated for a selected frequency flood and floodway conditions. Freeboard minimum equals one (1) foot. Freeboard maximum equals five (5) feet.
GIS	<i>Geographic Information System.</i> GIS is a system designed to capture, store, manipulate, analyze, manage and present geographical data.
Grade elevation	The lowest or highest finished ground level that is immediately adjacent to the walls of the building.
GM&B	<i>Greater Miami and the Beaches.</i> The entity comprising Palm Beach, Broward, Miami-Dade and Monroe Counties, formed for the Compact for purposes of collaboration and regional coordination on resiliency efforts.
Historic building	Any building that is: Listed individually in the National Register of Historic places or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register; or Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary of the Interior to qualify as a registered historic district; or Individually listed in a state inventory of historic places in states with preservation programs that have been approved by the Secretary of the Interior; or Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either by an approved state program as determined by the Secretary of the Interior; or directly by the Secretary of the Interior in states without approved programs.
HPB	<i>Historic Preservation Board.</i> The purpose of the City of Miami Beach HPB is to establish procedures adopted pursuant to the Historic Preservation Ordinance of the City of Miami Beach to organize its practices, procedure and business for the conduct of its hearings; for processing proposals for designation of archeological zones, historic districts and sites; for the processing of applications for Certificates of Appropriateness and/or Certificates to Dig; and for processing of certificates to Transfer of Development Rights.
Increased Cost of Compliance	Coverage for expenses that a property owner must incur, above and beyond the cost to repair the physical damage the structure actually sustained from a flooding event, to comply with mitigation requirements of state or local floodplain management ordinances or laws. Acceptable mitigation measures are elevation, floodproofing, relocation, demolition or any combination thereof.
IPCC	<i>Intergovernmental Panel on Climate Change.</i> The IPCC is an intergovernmental body of the United Nations, dedicated to providing the world with an objective, scientific view of climate change, its natural, political and economic impacts and risks and possible response options.

King Tide	Unusually high tides caused by a mix of gravitational and hydrological processes. A King Tide is the cause of nuisance, or 'sunny-day' flooding and usually occurs during the months of September, October and November on Miami Beach.
LEED	<i>Leadership in Energy and Environmental Design.</i> LEED is an ecology-oriented building certification program run by the U.S. Green Building Council (USGBC). LEED focuses on improving performance across five key areas of environmental and human health: energy efficiency, indoor environmental quality, materials selection, sustainable site development and water savings.
LAG	<i>Lowest Adjacent Grade.</i> LAG is the lowest point of the ground level immediately next to a building.
Lowest Floor	The lowest floor of the lowest enclosed area, including a basement. An unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access or storage in an area other than a basement area, is not considered a building's lowest floor provided that such enclosure is not built so as to render the structure in violation of code.
Masonry Walls	Walls constructed of individual components laid in and bound together with mortar. These components can be brick, stone or concrete block.
MDPL	<i>Miami Design Preservation League.</i> MDPL is a not-for-profit preservation and arts organization founded in 1976 which preserves, protects and promotes the architectural, cultural, social and environmental integrity of Miami Beach and surrounding areas.
Mixed-Use Building	A building that has both residential and non-residential uses.
MHHW	<i>Mean Higher High Water.</i> The average of the higher high water height of each tidal day observed over the National Tidal Datum Epoch.
MLW	<i>Mean Low Water.</i> The average low tide observed in a day.
MLLW	<i>Mean Lower Low Water.</i> The lowest tide observed in a day.
MTL	<i>Mean Tide Level.</i> The average tide height between Mean High Water and Mean Low Water.
Multifamily Building	A residential building that is not a condominium building.
NAVD	<i>North American Vertical Datum of 1988.</i> The vertical control datum used since 1992 by the National Geodetic Survey for vertical control in North America.
NCD	<i>Neighborhood Conservation District.</i> A zoning district category more flexible than a local historic district.
NFIP	<i>National Flood Insurance Program.</i> The FEMA-administered program under which flood-prone areas are identified and flood insurance is made available to the owners of the property in participating communities.

NGVD	<i>National Geodetic Vertical Datum of 1929.</i> The vertical control datum used by the National Geodetic Survey for vertical control in North America. It was superseded by NAVD.
NHPA	<i>National Historic Preservation Act.</i> The 1966 act that established federal processes and institutions for historic preservation in the U.S.
Non-Residential Building	A commercial or mixed-use building where the primary use is commercial or non-habitational.
Participating Community	A community for which FEMA has authorized the sale of flood insurance under the NFIP.
Post-FIRM Building	A building for which construction or substantial improvement occurred after December 31, 1974 or on or after the effective date of an initial FIRM, whichever is later.
Pre-FIRM Building	A building for which construction or substantial improvement occurred on or before December 31, 1974 or before the effective date of an initial FIRM.
RCAP	<i>Regional Climate Action Plan.</i> RCAP is the Compact's guiding tool for coordinated climate action in Southern Florida to reduce greenhouse gas emissions and build climate resilience. The RCAP provides a set of recommendations, guidelines for implementation and shared best practices for local entities to act in congress with the regional agenda.
Raisability	A tool developed by the City of Miami Beach through the Miller Legg Building Raisability Report (2018)
Residential Building	A non-commercial building designed for habitation by one or more families or a mixed-use building that qualifies as a single-family, 2-4 family or other residential building.
Shear Walls	Walls used for structural support but not structurally joined or enclosed at the ends, except by breakaway walls. Shear walls are parallel or nearly parallel, to the flow of the water and can be used in any SFHA.
SFHA	<i>Special Flood Hazard Area.</i> An area having special flood, mudflow or flood-related erosion hazards and shown on a Flood Hazard Boundary Map (FHBM) or a Flood Insurance Rate Map (FIRM).
SFRCCC	<i>Southeast Florida Regional Climate Change Compact.</i> The SFRCCC was executed by Broward, Miami-Dade, Monroe and Palm Beach Counties in January 2010 to coordinate climate mitigation and adaptation activities across county lines.
SHPO	<i>State Historic Preservation Officer.</i> The SHPO is a state governmental function created in 1966 under the Act. Activities of the SHPO include surveying and recognizing historic properties, reviewing nominations for properties to be included in the National Register of Historic Places, reviewing undertakings for the impact on the properties as well as supporting federal organizations, state and local governments and private sector.

Storm Surge	The abnormal rise in seawater level during a tropical storm, measured as the height of the water above the normal predicted tide. While this event poses the largest water threat, it is infrequent and temporary.
Subgrade crawlspace	A crawlspace foundation where the subgrade under-floor area is no more than 5 feet below the top of the next-higher floor and no more than 2 feet below the lowest adjacent grade on all sides.
ULI	<i>Urban Land Institute.</i> ULI is a global network of cross-disciplinary real estate and land use experts.
USACE	<i>United States Army Corps of Engineers.</i> The USACE is a federal agency under the Department of Defense that is one of the world's largest public engineering, design and construction management agencies.
Wet Floodproofing	Permanent or contingent measures applied to a structure and/or its contents that prevent or provide resistance to damage from flooding by allowing floodwater to enter the structure. Wet floodproofing measures minimize damage to a structure and its contents from water that is allowed into a building.
Year of Construction	Year that a building permit was issued.

Sources:
City of Miami Beach Code of Ordinances: library.municode.com/miami_beach/codes/code_of_ordinances
FEMA National Flood Insurance Program: <https://www.fema.gov/national-flood-insurance-program/definitions>
Rockefeller Foundation/100 Resilient Cities: <https://100resilientcities.org>
Southeast Florida Regional Climate Change Compact: <https://southeastfloridaclimatecompact.org>