

Reducing Your Flood Risk

Miami Beach Building Department

Flood Mitigation Industry Association

April 28, 2021

MIAMIBEACH
RISING
ABOVE

Meeting Purpose: Inform, Prepare and Adapt

1. Flood awareness in Miami Beach
2. Learn what the City is doing to reduce your risk
 - FEMA Map and Flood Insurance Update
3. Learn what you can do to reduce to your risk
 - Special focus on private property flood mitigation options
 - Presentation on home elevation



Amy Knowles
Chief Resilience
Officer



Ana Salgueiro, PE
Building Director
Building Official



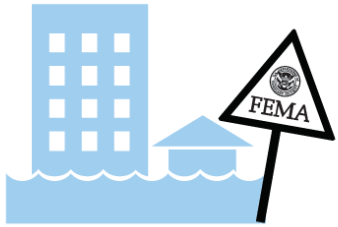
Mohsen Jarahpour
Certified Floodplain
Manager



Roderick Scott
Board Chair, CFM
Flood Mitigation
Industry
Association

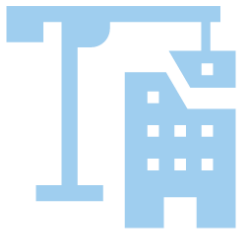
1. Flood Awareness in Miami Beach

WHY SHOULD YOU REDUCE YOUR RISK?



93% OF BUILDINGS

are located in a FEMA special flood hazard area (SFHA).
Protect your property with flood insurance.



64% OF BUILDINGS

were constructed before FEMA Flood Insurance Rate
Maps that require higher construction.

**80% of units carry National Flood Insurance
Program policies, strongly encourage all to
carry**

Miami Beach is highly **vulnerable**
and highly **valuable**

The **Unified Regional Sea Level
Rise Projection** for Southeast
Florida, developed by the
Southeast Florida Climate Change
Compact highlights the need to
**prepare for increased flooding
(NOAA, IPCC)**

BENEFITS OF INVESTING IN FLOOD MITIGATION AND SEA LEVEL RISE ADAPTATION

Learn more at www.mbrisingabove.com



BUSINESS CASE ANALYSIS OF THE STORMWATER PROGRAM IN MIAMI BEACH

\$2B: *Investment is reasonable and conservative based on study assumptions*

3:1 *Private Property ROI (study area)*

4.9-14.1% *City investments in the right-of-way increase property values for each ft of elevation*



BUSINESS CASE FOR RESILIENCE IN SOUTHEAST FLORIDA

9:1 *Community-wide MDC*

5:1 *Building-level MDC*

2. Learn what the City is doing to reduce your risk

1

**BEST AVAILABLE
PLANNING,
SCIENCE AND
ENGINEERING**

2

**GUIDING PLANS
& POLICIES:
PUBLIC + PRIVATE**

3

**IMPLEMENTATION
PROJECTS**

As we plan for flood mitigation and sea level rise, we address broader resilience:

- Safety: Reducing flood risk and avoiding damage
- Aging Infrastructure: W&S, Roads
- Blue-Green Infrastructure
- Urban Tree Canopy
- Aesthetics
- Water Quality, Sustainability and Environmental Resources
- Mobility
- Historic Preservation
- Private Property Adaptation
- Social and Economic Resilience

How City Departments Contribute to Flood Risk Reduction and Sea Level Rise Adaptation



Planning Department

- Comprehensive Plan 2040
- Resilience Ordinances
- Resilience Code
- Buoyant City: Historic District Adaptation Guidelines
- Planning Boards - Sea Level Rise and Resilience Criteria



Building Department

- FEMA Maps
- Reviews and inspections for Compliance for FEMA
- Leads CRS program



Environment & Sustainability

- USACE Back Bay Study Coordination
- Dune Management Plan
- Beach Renourishment
- Hybrid Seawalls
- Host MBRisingAbove
- Climate Change Mitigation

How City Departments Contribute to Flood Risk Reduction and Sea Level Rise Adaptation



Public Works

- Design of stormwater, water and sewer, roads, utilities
- Flood incident response
- Maintenance of Stormwater System
- Public seawalls & private seawall elevation standards



Capital Improvement Projects

- Design and construction



Property Management

- City asset flood proofing



Communications

- Flood awareness messaging
- Neighborhood Engagement



Fire Department Division of Emergency Management

- Coordination of disaster response

STAY SAFE & REPORT FLOODING

BY CALLING
305.673.7625

#MBWORKINGFORYOU



MIAMIBEACH

- Report flooding to the Public Works
 - 305.673.7625
 - flooding@miamibeachfl.gov
- Contact Mohsen Jarahpour, the City's Floodplain Manager for private property-specific concerns for flooding.
 - 305.673.7010
 - floodawareness@miamibeachfl.gov

Preliminary Miami Beach Program Concept Summary*

Goal: Reduce or prevent damage from flooding now and in the future.

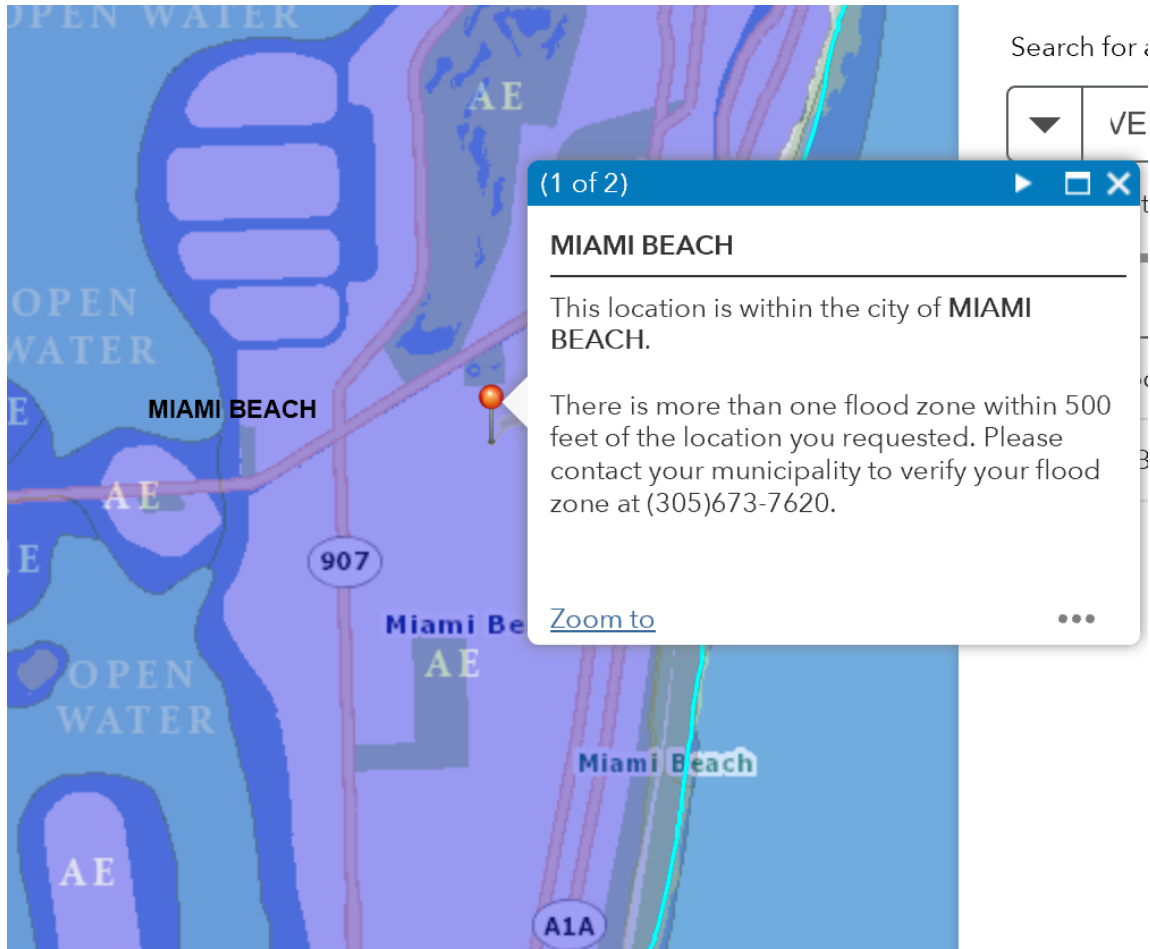
*In development, City Commission approval of funding and Y2 funding and appropriation is required through the FY 21-22 budget process.

- **Nov 2020: Resilience Fund Approved!**
 - **Private Property Adaptation Program in development**
 - Beginning with Assessment
 - **Support property owners** to make flood resilience improvements to their properties through a **50/50 matching grant** between the city and grantee.
 - In future years, reimbursement based, up to **\$20,000** per property
 - Agreement between **property owner and contractor**
 - Special consideration for low to moderate income- no match required



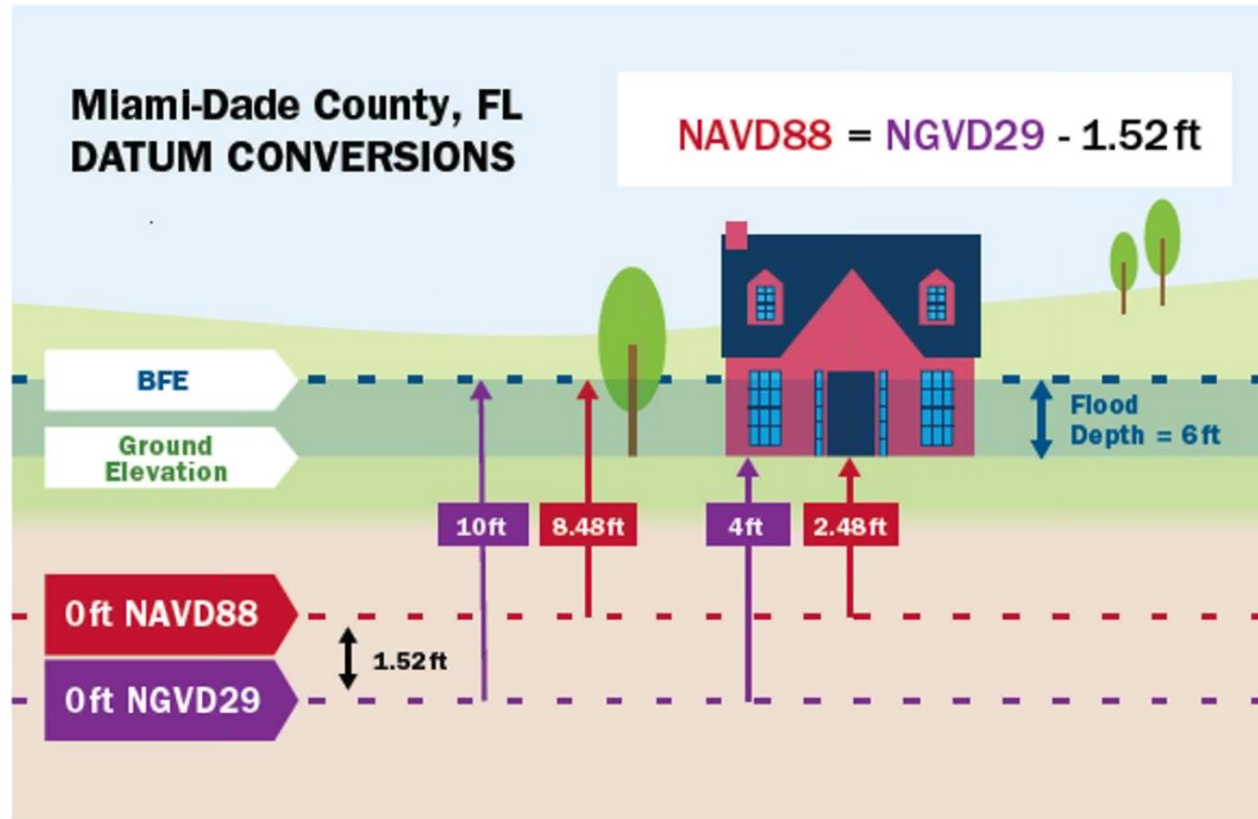
FEMA COMPLIANCE & BUILDING DEPARTMENT ROLE

FEMA FLOOD INSURANCE RATE MAPS (FIRM): UPDATES UNDERWAY



- FEMA's detailed digital flood hazard maps reflect current flood risks for Miami Beach. The maps, also referred to as Flood Insurance Rate Maps (FIRMs), illustrate flood hazards throughout the Miami-Dade County and are used when determining flood insurance policy rates.
- **Current Maps:** View the [Flood Zone Maps](https://mdc.maps.arcgis.com/) using Miami-Dade County's interactive web tool (<https://mdc.maps.arcgis.com/>). Once you navigate to this web tool, enter your address to view the map for your area. For confirmation of your property's official flood zone designation, call 305.673.7610, or call your insurance agent.
- **FEMA is updating the maps for Miami-Dade. Preliminary Maps are subject to change and not yet in effect**
<https://hazards.fema.gov/femaportal/prelimdownload/>

Countywide Datum Conversion



Base Flood Elevation (BFE) =

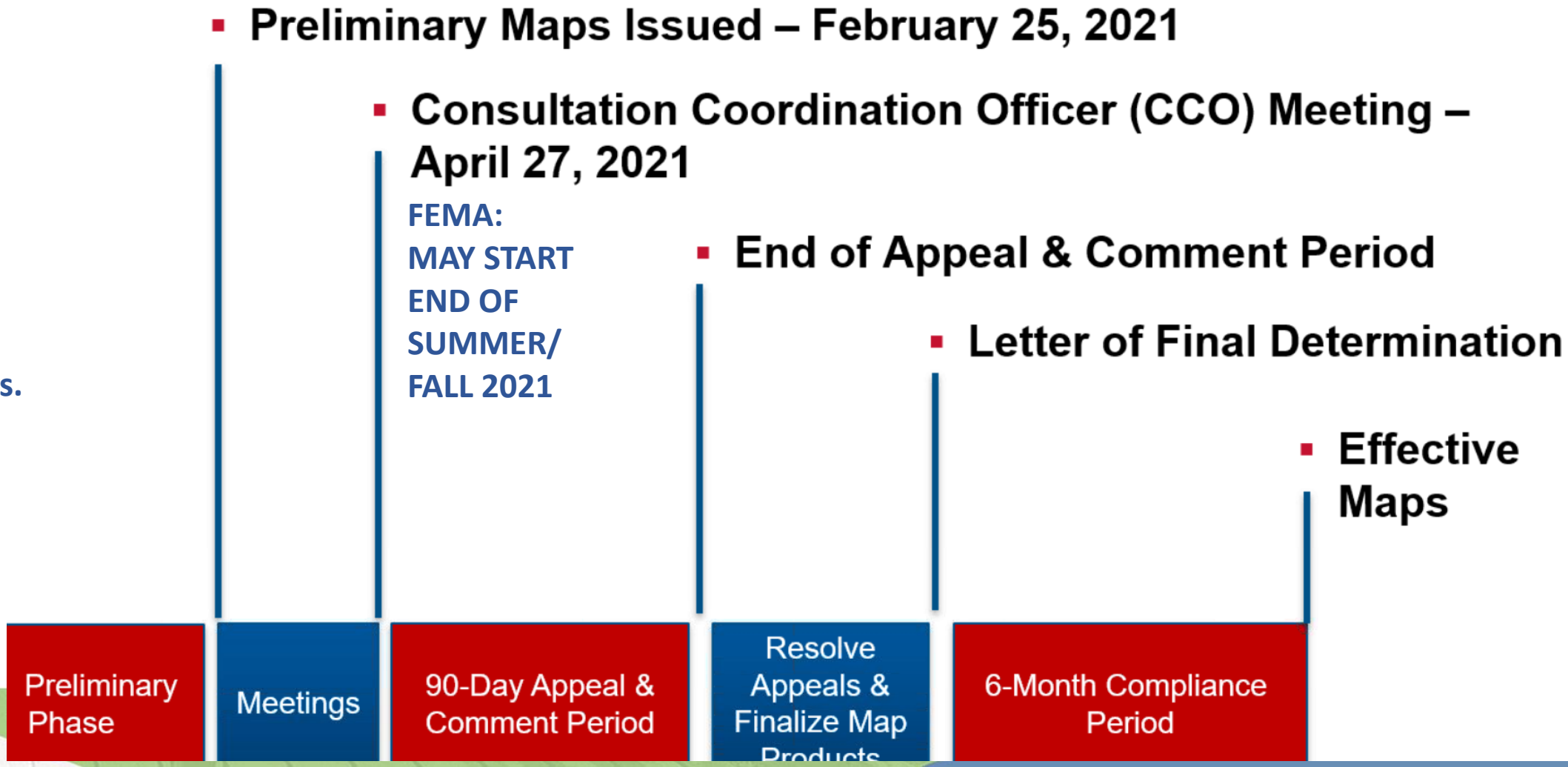
The **elevation** of surface water resulting from a **flood** that has a 1% chance of equaling or exceeding that level in any given year. The **BFE** is shown on the **Flood Insurance Rate Map (FIRM)**

Miami-Dade County Coastal Study: Post Preliminary Processing

FEMA MAP TIMELINE

4/27/21 FEMA
presentation
recording and
presentation slides.

<https://we.tl/t-14BvNgtfpb>



COMMUNITY RATING SYSTEM (CRS)

CRS CLASS 5: 25% discount

SAVINGS: \$8.6 MILLION, \$189 PER POLICY (average)

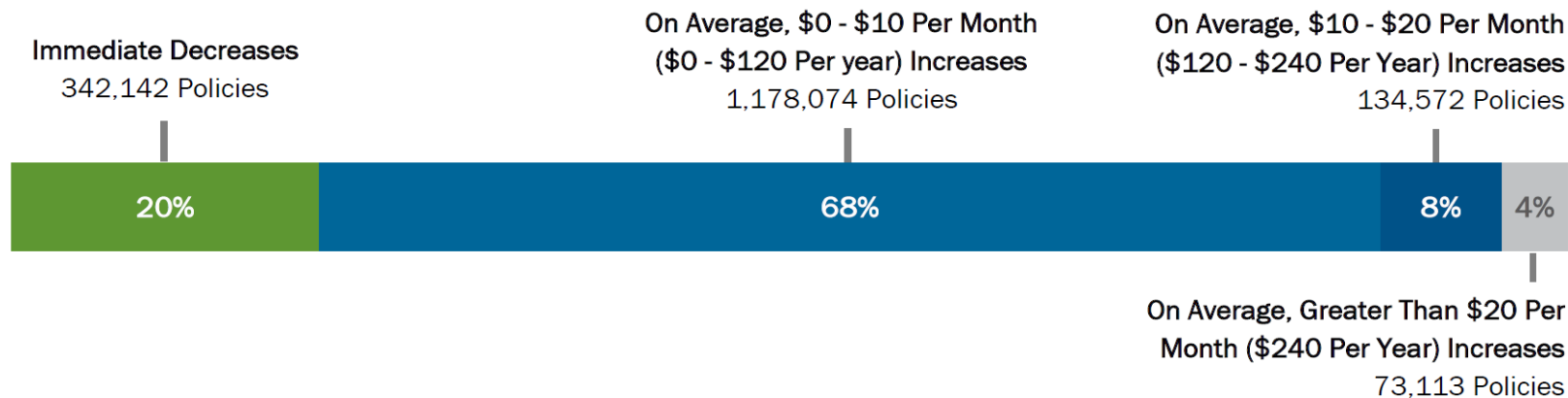
	Policies	Premiums	AVE
Total	45,462	\$ 26,171,654.00	\$ 575.68
Condo	40,069	\$ 9,876,002.00	\$ 246.47
Non-Condo	5,393	\$ 16,295,652.00	\$ 3,021.63

FEMA RISK RATING 2.0: NFIP RATE CHANGES APRIL 2022

Risk Rating 2.0, according to FEMA, “**will fundamentally change the way FEMA rates a property’s flood risk and prices for insurance.** The current rating methodology has not changed since it was first developed in the 1970s. But since then, technology has evolved and so has FEMA’s understanding of flood risk. Additionally, the current rating methodology is heavily dependent on the 1-percent-annual-chance-event, while Risk Rating 2.0 will incorporate a broader range of flood frequencies. FEMA will be pairing state-of-the-art industry technology with the NFIP’s mapping data to establish a new risk-informed rating plan.”

With respect to the costs of flood insurance premiums, FEMA has stated “Risk Rating 2.0 will comply with existing statutory caps on premium increases. Risk Rating 2.0 will prevent significant premium increases by offering a glidepath discount to existing policyholders and new homeowners buying homes from existing policyholders.”

Risk Rating 2.0 in Florida



The specific impact to Miami Beach property owners is not available at this time.

Private Property Resilience Progress – Miami Beach

- **Since 2016:**
- **116** properties **being built** above BFE + 1-5 feet (completed or in progress)
- **198** properties with **elevated equipment**
- **125** properties with **wet flood proofing** improvements
- **46** properties with **dry flood proofing** improvements
- **133** properties with **drainage improvements**





The lowest living floor of the house is elevated 5 feet above base flood elevation (BFE), 13.1 feet NGVD. The photo shows the front of the property and future living area.

BUILDING COMPLIANCE- FLOODPLAIN:

- Perform Plan Reviews and Inspections to comply with Federal Emergency Management Agency (FEMA), Floodplain Management Regulations and Florida Building Code.
- Flood-zone determination.
- Understand your property flood hazard risk by obtaining an elevation certificate
- Coordinate Building Code Effectiveness Grading Schedule (BCEGS) Program of Insurance Services Office (ISO) evaluation and rating review.

3. WHAT CAN YOU DO TO REDUCE YOUR FLOOD RISK?

ASSESSMENT

GOAL

Assess risk and identify solutions

LIVING WITH WATER

GOAL

Improve on-site water retention, drainage and quality

FLOOD MITIGATION

GOAL

Reduce flood risk through building and property retrofits

The Basics

Dry flood proofing

- Keep water out
- Retaining walls
- Watertight walls

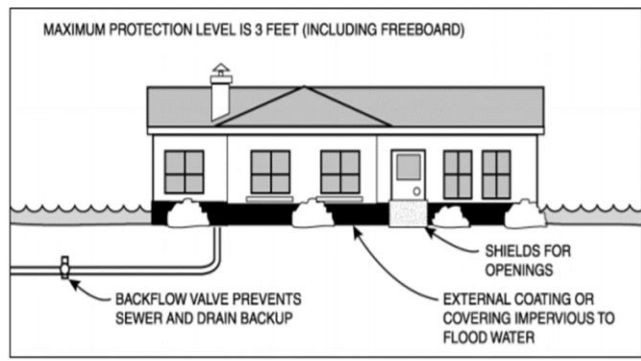
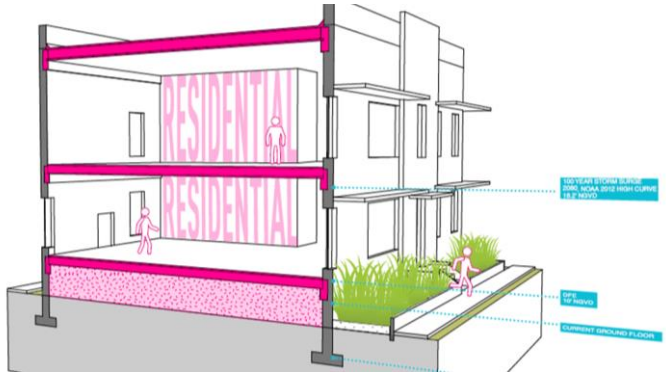
Wet flood proofing

- Let water in but minimize the damage
- Flood vents
- Water resistant materials
- Elevating equipment

Site Mitigation and Green Infrastructure



1. Bioswales
2. Retention areas
3. Rain gardens
4. Cisterns and rain barrels
5. Green Roofs/ Blue roofs
6. Yard/driveway grading
7. Replacing impermeable with permeable materials



FLOOD MITIGATION

1. Elevate
2. Partial elevation
3. Elevate interior first finished floor
4. Wet flood proofing
 - Flood openings in garage to allow water to come and leave
 - Construction materials water resistant
5. Appliance and equipment elevation
6. Dry floodproofing
 - Sealing the structure and elevation of any equipment that is not sealed
7. Flood barriers: flood panels, walls, gates, doors
8. Garage floor/ yard elevation
9. Use water resistant materials

Severe Repetitive Loss Buildings

Miami Beach Total = 74

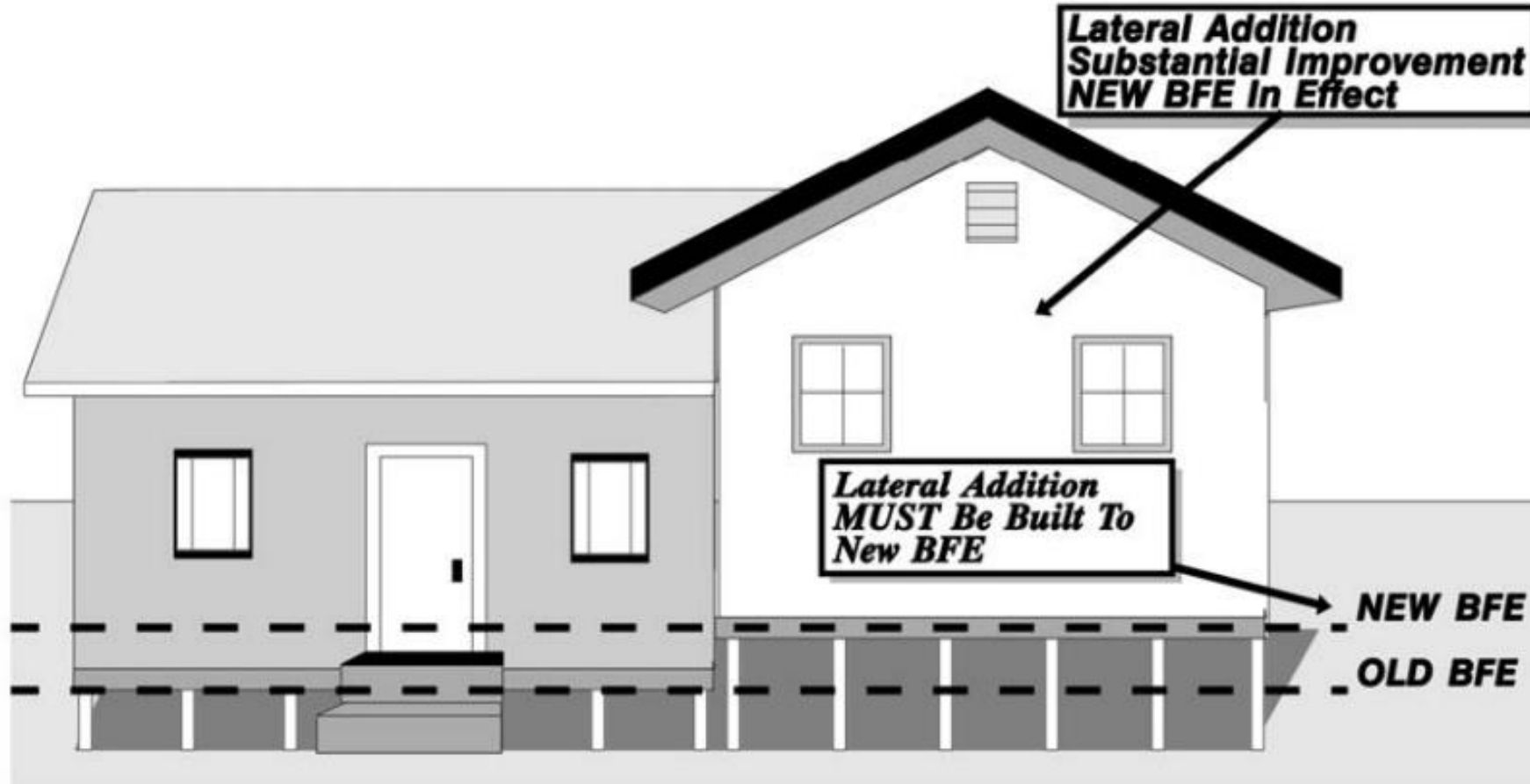
Any building that, within a 10-year period:

1. Is covered under a Standard Flood Insurance Policy made available under this title;
2. Has incurred flood damage for which:
 - a. 4 or more separate claim payments have been made under a Standard Flood Insurance Policy issued pursuant to this title, with the amount of each such claim exceeding \$5,000, and with the cumulative amount of such claims payments exceeding \$20,000; or
 - b. At least 2 separate claims payments have been made under a Standard Flood Insurance Policy, with the cumulative amount of such claim payments exceed the fair market value of the insured building on the day before each loss.

Repetitive Loss Structure: Miami Beach- 74

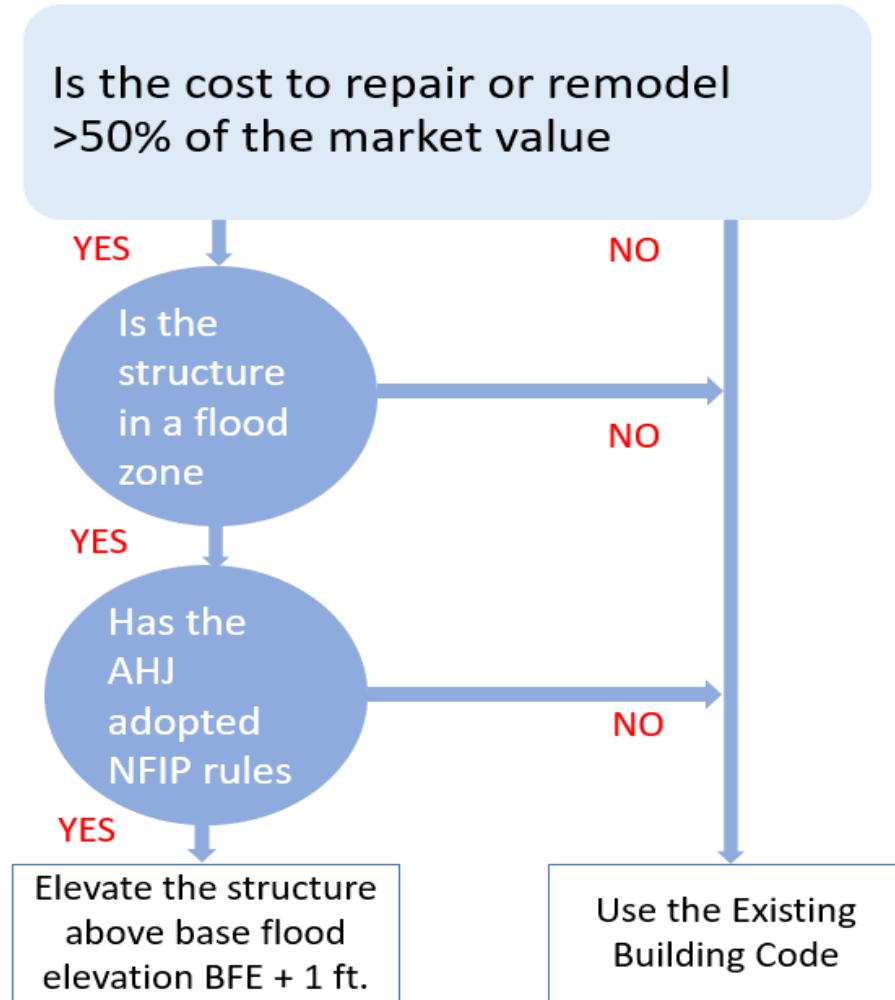
An NFIP-insured structure that has had at least 2 paid flood losses of more than \$1,000 each in any 10-year period since 1978.

PROPERTY OWNER CONSIDERATIONS: PARTIAL ELEVATION



PROPERTY OWNER CONSIDERATIONS: RENOVATION AND THE 50% RULE

The market value used may be: the property appraiser valuation of the structure OR a private appraisal that includes depreciation



When the cost of a building alteration and/or cost of an addition to an existing building exceeds 50% of Building Market Value, the lowest floor and equipment must be elevated a minimum of 1 ft above the Base Flood Elevation

Miami Beach allows and encourages new construction to be one to five feet higher than FEMA Base Flood Elevation (BFE). This provides an option of building higher to reduce risk and to reduce flood insurance.

INFORMATIONAL PRESENTATION ON ELEVATION



**International Association
of Structural Movers**

MIAMI BEACH
RISING
ABOVE



International Association of Structural Movers - IASM

Steps To Elevation – STE

Roderick Scott, CFM

Board Chair

Flood Mitigation Industry Association

ELEVATE

before it's too late!



**International Association
of Structural Movers**

The International Association of Structural Movers (IASM) is the 501c-4 professional organization comprised of member companies involved in projects to elevate and/or relocate buildings for flood hazard mitigation.

(803) 951-9304 | info@iasm.org | iasm.org

COMBATING RISING FLOOD INSURANCE COSTS

Flooding is increasing across the US, requiring communities to examine alternatives to the cycle of repetitive flooding. The cost of the flood recovery cycle is VERY EXPENSIVE, not only monetarily, but everyone involved has lifetime challenges as they navigate

flood recovery. This is now compounded by rapidly rising flood insurance policy rates on all older buildings built before the first flood insurance rate map for the community. Elevation can help offset those rates *dramatically*.

FLOOD INSURANCE PREMIUMS:



4 ft below
BASE FLOOD ELEVATION

\$9,500/yr **\$95,000/10 yrs**



level with
BASE FLOOD ELEVATION

\$1,410/yr **\$14,100/10 yrs**



3 ft above
BASE FLOOD ELEVATION

\$427/yr **\$4,270/10 yrs**

WHY ELEVATE?



ENGAGES **MULTIPLE
CONSTRUCTION
TRADES & LABOR**



ENVIRONMENTALLY
RESPONSIBLE
*the recycling and reuse
of existing buildings
results in a reduction of TONS
of solid waste to landfills*



**SAVES
NATURAL
RESOURCES**
*every 1,000 sq ft of
wood frame building
uses approximately
250 TREES*



**PRESERVES
HISTORIC
BUILDINGS**



**STABILIZES
THE REAL ESTATE MARKET
& PROPERTY VALUES**



**REDUCES
RECOVERY
EXPENDITURES**
*every
\$1 invested
in elevation
saves \$7
in recovery expenditures*



SIGNIFICANTLY REDUCES
• THE RISK OF FLOODING
• FLOOD INSURANCE POLICY RATES



PRESERVES PROPERTY TAX REVENUES
*which support schools & government operations,
infrastructure & public safety, & bonding for public projects*



**REVERSES
THE CYCLE OF FLOODING**



KEEPS THE COMMUNITY TOGETHER
Tearing down homes to create green space not only results in the loss of property taxes critically needed to fund public services and schools, you lose the families that built the community. This option should often be the last alternative.

Elevation has multiple benefits.

STEPS TO ELEVATION

There are three main phases in these flood hazard mitigation elevation/relocation projects: FINANCING, PLANNING / DESIGN AND IMPLEMENTATION.

FINANCING

1 EVALUATE FINANCING OPTIONS

- Are there elevation grants available? Local government will have information.
- If the property has flood insurance, the Initial Cost of Compliance (ICC) is currently a \$30,000 one-time payment to the policy holder if the home is over 50% damaged and there is a claim on the policy.
- **Small Business Administration (SBA)** – If the building is 50% or more damaged by flooding, the SBA allows up to \$200,000 in additional loan funding to elevate.
- **FHA203 K loan/mortgage** – This is a financing package available from any bank. There is a construction loan followed by a conversion into a 30-year mortgage. The total funding available is \$240,000.
- As always, cash or equity financing is the easiest for the contractors and the customer.



PLANNING / DESIGN

2 ELEVATION CERTIFICATE AND OR A LAND SURVEY (if required)

The FEMA elevation certificate is the document that establishes the current elevation and final required elevation of the building and adjacent land. It is also the form that sets the National Flood Insurance Program flood policy rates. A current land survey is required by certain communities so they can evaluate the project designs in relation to the zoning requirements like set-backs and height.

3 ENGINEERED FOUNDATION AND ARCHITECTURAL DESIGNS

The new or additional foundation must be designed in compliance with the American Society of Civil Engineers (ASCE) flood zone construction requirements; ASCE-24 & 7 are the publication numbers. The foundation work on these projects is always more than half of the project costs. In addition to the foundation structural design requirements, we need to consider what the result of the project will look like. Remember, these buildings are now built much more solid than originally and will be around for some time. The owners and the community care about this and if the building is designated historic there may be a pre-permit design review if required by community or federal funding. The site soils determine the design of the foundation, so a soil sample is the best way to go at this point. The soil strata and load bearing capacity will determine if piles or helicals will need to be driven below the new foundation. Some communities and design professionals require this testing.

4 CONTRACTOR ESTIMATES

If it is a grant program job, most states/communities require two to three estimates using the plans generated in step two. If it is a "turn key" job where the GC manages the entire project, the estimate is generated after the design phase in step three. IASM members need to carry workman's compensation, liability and riggers/cargo/care and custody type insurance, because once the building is off its foundation the homeowner's policy no longer covers the building and contents. The community and property owners should have a copy of your coverages.

5 CONTRACT SIGNING AND PERMITS

If the project is grant funded, there is often additional contract documents the GC will need to sign that are approved by the community and, usually, the state. In addition, many communities are now requiring bonding to insure completion of the project. If the project is a private contract, then just your contract is sufficient. Some communities require a beam/crib design be submitted as part of the permitting processes. The permitting authority will review the plans, note any needed plans changes and issue a construction permit.



IMPLEMENTATION

6 UTILITY DISCONNECTS / PREPARE STRUCTURE FOR ELEVATION

Once the permits are in place, portable toilets are on site and any fencing required by local government is installed, any vegetation salvage needs to be accomplished. Then bracing of the building and/or porches, in addition to stair removal, needs to be done. If the building is brick clad, many companies remove the brick and later install siding. If there is a brick edge incorporated in the slab, then the brick facade can be elevated with the building. Utilities preparation is different in every community. Make sure to check with the building department for their requirements. Some communities allow gas shut off and sewer/water disconnect, which is the easiest and least expensive. Other communities require complete capping of some or all utilities with a demolition permit and all new utilities installed. This is a very expensive alternative.

7 STRUCTURE ELEVATION / RELOCATION

- SLAB ON GRADE

The slab on grade has two types of construction and therefore has two types of projects to elevate:

- **STRUCTURAL SLAB ON PILES** (slab and grade beam footings poured at one time)

These foundations typically have piles, usually wood, to support the foundation. Excavation exposes the piles under the foundation and helical or segmented block piles are driven next to the original piles. The grade beams are excavated at the site of lifting cribs. Crib jacks and slab support jacks are installed.

- **NON-STRUCTURAL SLAB** (separate footing and slab)

Sometimes, structural engineers will certify the original foundation is strong enough to support additional vertical walls or piers to set the building back down on. To elevate the building off of the original foundation, all furnishings need to be removed and stored. Carpeted or wood floors need to be removed. The lower four feet of drywall needs to be removed, along with lower kitchen cabinets, bathroom fixtures and cabinets. The entire building must have horizontal boards fastened to the vertical studs and steel lifting beams placed under the horizontal boards on cribs. Crib jacks and/or toe jacks are installed.

- PIER AND BEAM

The cribs and structural steel are delivered to the site and the existing foundation, crawl space or basement is opened up to receive the steel. The cribbing is "bedded" into the ground in predetermined areas according to the new foundation design. Some communities require deeper crib bedding, so double check on their requirements. Next, the lifting steel is inserted under the building/wood frame and the lifting equipment is installed. Lift the building higher than the required height for foundation work. Lift off foundation and roll off to perform the foundation work.

8 FOUNDATION

A. Remove and rebuild the old foundation. Many older buildings have substandard foundation design and construction. These foundations need to be removed completely and a new foundation constructed to the plans design.

OR

B. Add to the old foundation. In some cases, the structural engineer design will allow the reuse of the existing foundation and the new elevated portion to be added.

9 LOWER HOME ONTO NEW / IMPROVED FOUNDATION

The relocated or elevated building is placed onto the new foundation. The building always needs to be strapped down to the new foundation in order to meet the building codes. Some property owners may wish to strap several or all of the vertical studs to improve high wind survivability. An added wind measure is to strap the wall studs to the rafters at the top plate/rafter connection.

10 RECONNECT UTILITIES, BUILD STAIRS / RAMPS

All of the utilities are reconnected and the final stairs, landings and any exterior porches are now built according to the construction plans.

11 FINISH CLEANING, CONCRETE WORK, SOD/GRASS

All final flat work/concrete slabs, walkways and driveways must be completed. The site is cleaned, salvaged vegetation shrubbery is installed, new shrubs installed and sod or grass seed is installed. A final cleaning and the final code inspection is completed to finish the job.



Eleven Steps to Elevation

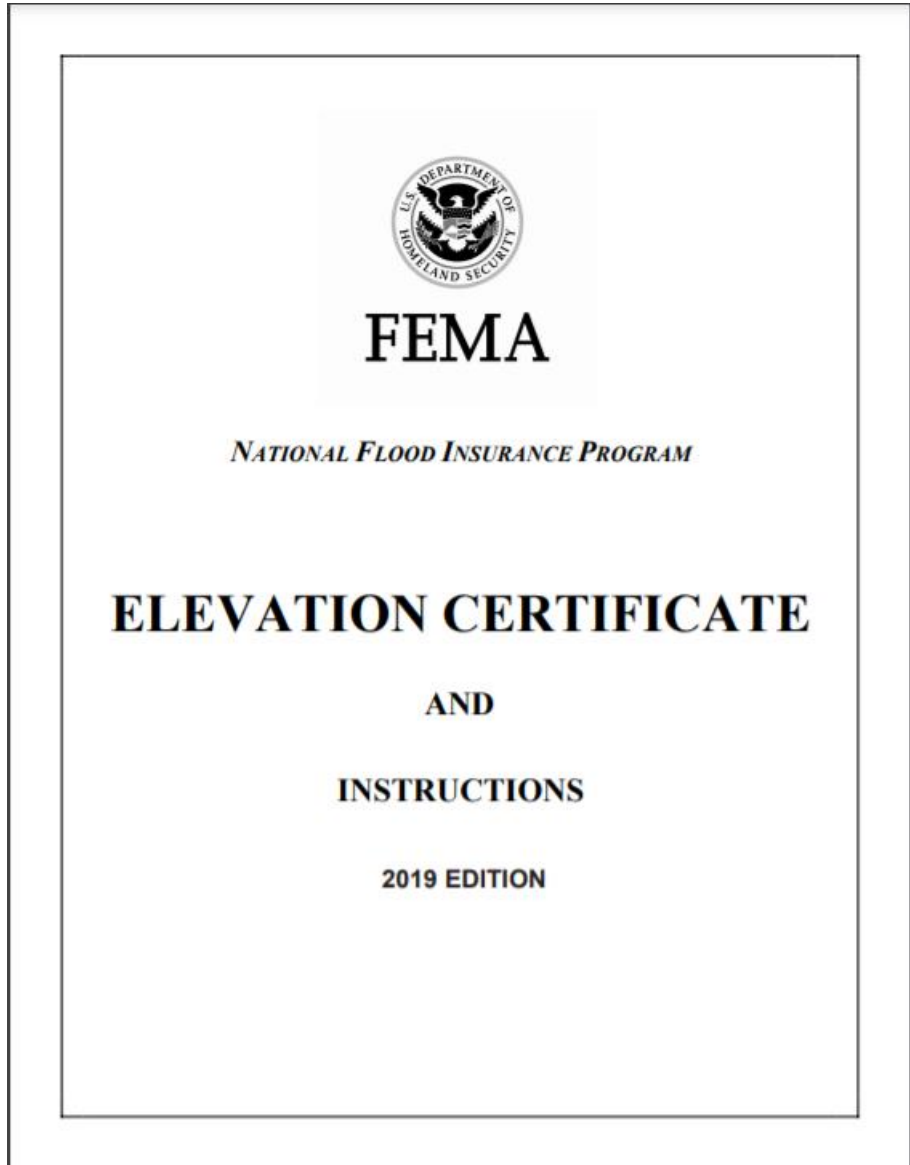
Step 1 - Financing

Financing can be:

- Cash, equity loan,
- FEMA grant
(pre/post disaster)
- HUD CDBG-DR grant
(post disaster)
- NFIP-ICC funds -
\$30,000 only with
flood loss claim
- FHA 203 K
loan/mortgage
- New State Revolving
Loan Program funds



Step 2 – Elevation Certificate



U.S. DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY
National Flood Insurance Program

ELEVATION CERTIFICATE

Important: Read the instructions on pages 1-9.

OMB No. 1680-0008
Expiration Date: July 31, 2015

SECTION A – PROPERTY INFORMATION

A1. Building Owner's Name: DAN MAYSEY

A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. [REDACTED]

A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.): BAYWOOD FIRST ADDITION, LOT 33 & NLY 1/2 LOT 32, P.B. 23, PG. 69

A4. Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.): RESIDENTIAL

A5. Latitude/Longitude: Lat N-27-44-19.6 Long W-82-41-55.6 Horizontal Datum: NAD 1927 NAD 1983

A6. Attach at least 2 photographs of the building if the Certificate is being used to obtain flood insurance.

A7. Building Diagram Number: 1a

A8. For a building with a crawlspace or enclosure(s):
a) Square footage of crawlspace or enclosure(s) 0 sq ft
b) Number of permanent flood openings in the crawlspace or enclosure(s) within 1.0 foot above adjacent grade 0
c) Total net area of flood openings in A8.b 0 sq in
d) Engineered flood openings? Yes No

A9. For a building with an attached garage:
a) Square footage of attached garage 454 sq ft
b) Number of permanent flood openings in the attached garage within 1.0 foot above adjacent grade 0
c) Total net area of flood openings in A9.b 0 sq in
d) Engineered flood openings? Yes No

SECTION B – FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

B1. NFIP Community Name & Community Number: CITY OF GULFPORT 125108

B2. County Name: PINELLAS

B3. State: FLORIDA

B4. Map/Panel Number: 12103C0277

B5. Suffix: G

B6. FIRM Index Date: 8/18/2009

B7. FIRM Panel Effective/Revised Date: 9/3/2003

B8. Flood Zone(s): AE

B9. Base Flood Elevation(s) (Zone AO, use base flood depth): 13'

B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in Item B9.
 FIS Profile FIRM Community Determined Other/Source: _____

B11. Indicate elevation datum used for BFE in Item B9: NGVD 1929 NAVD 1988 Other/Source: _____

B12. Is the building located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA)? Yes No

SECTION C – BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

C1. Building elevations are based on: Construction Drawings* Building Under Construction* Finished Construction

*A new Elevation Certificate will be required when construction of the building is complete.

C2. Elevations – Zones A1-A30, AE, AH, A (with BFE), VE, V1-V30, V (with BFE), AR, AR/A, AR/AE, AR/A1-A30, AR/AH, AR/AO. Complete items C2.a-h below according to the building diagram specified in Item A7. In Puerto Rico only, enter meters.
Benchmark Utilized: PIN CO DISK MENORAH
Indicate elevation datum used for the elevations in items a) through h) below: NGVD 1929 NAVD 1988 Other/Source: _____
Datum used for building elevations must be the same as that used for the BFE.

		Check the measurement used.	
a) Top of bottom floor (including basement, crawlspace, or enclosure floor)	5.7	<input checked="" type="checkbox"/> feet	<input type="checkbox"/> meters
b) Top of the next higher floor	N/A	<input type="checkbox"/> feet	<input type="checkbox"/> meters
c) Bottom of the lowest horizontal structural member (V Zones only)	N/A	<input type="checkbox"/> feet	<input type="checkbox"/> meters
d) Attached garage (top of slab)	4.8	<input checked="" type="checkbox"/> feet	<input type="checkbox"/> meters
e) Lowest elevation of machinery or equipment servicing the building (Describe type of equipment and location in Comments)	5.3	<input checked="" type="checkbox"/> feet	<input type="checkbox"/> meters
f) Lowest adjacent (finished) grade next to building (LAG)	4.7	<input checked="" type="checkbox"/> feet	<input type="checkbox"/> meters
g) Highest adjacent (finished) grade next to building (HAG)	5.3	<input checked="" type="checkbox"/> feet	<input type="checkbox"/> meters
h) Lowest adjacent grade at lowest elevation of deck or stairs, including structural support	N/A	<input type="checkbox"/> feet	<input type="checkbox"/> meters

SECTION D – SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION

This certification is to be signed and sealed by a land surveyor, engineer, or architect authorized by law to certify elevation information. I certify that the information on this Certificate represents my best efforts to interpret the data available. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.

Check here if comments are provided on back of form. Were latitude and longitude in Section A provided by a licensed land surveyor? Yes No

Check here if attachments.

Certifier's Name: LAUREN PENNY, P.S.M. License Number: #4931

Title: LAND SURVEYOR Company Name: L. R. PENNY AND ASSOCIATES, INC.

Address: 10730 102ND AVENUE NORTH City: SEMINOLE State: FL ZIP Code: 33778

Signature: *Lauren Penny* Date: 02/04/2014 Telephone: 727-398-4360

PLACE SEAL HERE

FEMA Form 088-0-33 (7/12) See reverse side for continuation. Replaces all previous editions.

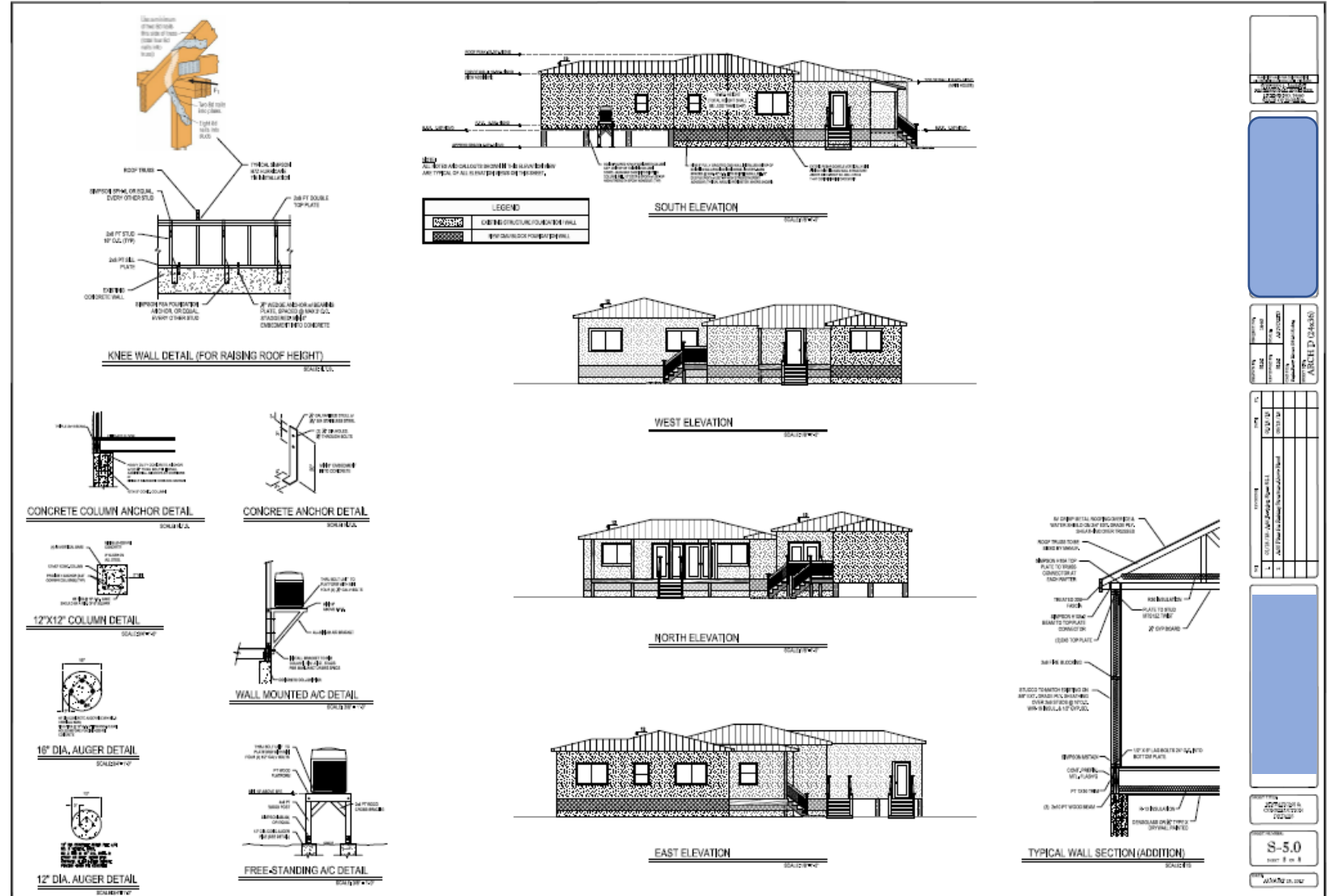
#A8 = Flood venting. If the amount of flood vent coverage is less than the square footage of the crawl space then FEMA measures the first floor at the top of the crawl space

#B9 = Minimum FEMA required elevation of first floor (AE13)

#C2a = Top of building first floor (5.7), so the home is -8ft below BFE

Step 3 – Engineered Foundation and Architectural Designs

- Get cost estimates for plans, experienced designers will already have the close up diagrams on the left
- If the building is part of a historic district or individually recognized historic, a review of preliminary elevations is required for permitting
- If you can re-use your foundation, then do it.
- If you have to go with a new foundation, the project costs more



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PROJECT INFORMATION

PROJECT NO. 8-5.0

DATE 8-11-11

SCALE 1/8" = 1'-0"

Step 4 – Contractor Estimates



This project was a post Hurricane Irma renovation project

Step 5 – Contracts signed and Permits



This project was unique in that the homeowner was renovating and exceeded 50% of value so he had to elevate

Step 6 – Utility Disconnects and Elevation Preparation



Rigging the home for elevation, building the steel interior frame

Step 6 – Utility Disconnects and Elevation Preparation



Rigging the home for elevation, building the steel interior frame

Step 7 – Structure Elevation - 3 main types



Slab Separation - Slab Elevation - Pier and Beam/Basement

Step 8 - Foundation



The old slab and footing stayed on the ground.

The new foundation walls are built up to the elevated home and a grout joint finishes the connection



Step 9 – Lower Home and or Re-attach Home to Foundation



Step 9 – Lower Home and or Re-attach Home to Foundation



Interior wood floor system is built after house is connected to the elevated foundation walls.

Note the abandoned former slab floor



Step 10 – Build Stairs and A/C Platform(s)



Step 11 – Finish Cleaning, Concrete Work, Sod/Grass

- Lower flood risk
- Lower flood insurance costs
- Stabilized value
- The project employed all of the construction trades
- Resilient renovation works



Resources

- www.miamibeachfl.gov city resources & emergency updates
- www.mbrisingabove.com resilience strategy & flood awareness
- <http://www.flash.org/> ideas on how to strengthen your home
- <https://www.floodsmart.gov/> flood insurance information
- <https://www.fema.gov/flood-insurance/work-with-nfip/risk-rating: Risk Rating 2.0: Equity in Action | FEMA.gov>
- <https://hazards.fema.gov/femaportal/prelimdownload/> (FEMA PRELIMINARY MAPS)
- 4/27/21 FEMA presentation recording and presentation slides. <https://we.tl/t-14BvNgtfpb>
- Changes Since Last FIRM (CSLF) Layer. <https://we.tl/t-8bJSZhJtb>

Resources

FEMA - Building Science - Flood Publications

<https://www.fema.gov/emergency-managers/risk-management/building-science/flood>

FEMA Homeowner's Guide to Retrofitting

https://www.fema.gov/sites/default/files/2020-07/fema_homeowners-guide-to-retrofitting_guide.pdf

FEMA – Reducing Flood Risk to Residential Buildings Cannot Be

Elevated https://www.fema.gov/sites/default/files/2020-07/fema_P1037_reducing_flood_risk_residential_buildings_cannot_be_elevated_2015.pdf

FEMA – National Flood Insurance Guide

<https://myportal.miamibeachfl.gov/portal/webclient/index.html#/desktop>

Thank you!

Questions?

Contact:

floodawareness@miamibeachfl.gov