SUSTAINABILITY AND RESILIENCE IN A CHANGING CLIMATE ERA
LEANING INTO CHANGE

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SUSTAINABILITY & RESILIENCE

THIS IS OUR PLANET, IT IS CHANGING.
EITHER WE ADAPT WE OR LOSE.
SUSTAINABILITY & RESILIANCE
SUSTAINABILITY & RESILIENCE

INCREASING FLOOD DISASTER COSTS
SUSTAINABILITY & RESILIENCE

FLOOD COSTS ARE RISING

Flooding

The most expensive flooding disasters have occurred in the Midwest. In 1993, severe flooding caused by persistent rain plagued the Midwest while much of the Southeast experienced a heatwave. Seven federal agencies were involved in the disaster relief effort.
SUSTAINABILITY & RESILIANCE

FLOODING IS INCREASING. THE N.E. IS PROJECTED TO HAVE AN INCREASE IN PERCIPITATION OF OVER 70% ABOVE THE CURRENT AMOUNTS AND OUR OLDER HISTORIC BUILDINGS ARE VULNERABLE.
FLOOD HAZARD MITIGATION

GARDNIER, ME
FLOOD MAP

https://msc.fema.gov/portal
FLOOD HAZARD MITIGATION

IMPORTANT TERMS

• Base Flood Elevation (BFE): The calculated level flood waters will rise during a Base Flood Special Flood Hazard Area (SFHA)

- AE & A1-30 Zones: Have established BFE’s and low impact from waves
- VE & V1-30 Zones: Have established BFE’s and impact from storm induced waves.

Note: Both A and V zones subject to experiencing a 1% annual chance flood event. This translates to a 26% chance of flooding over the life of a 30-year mortgage.

• Freeboard: Elevating a building’s lowest floor above and beyond BFE. This is a built-in safety factor resulting in lower flood insurance premiums. This elevation is required in certain communities with height requirements that vary.
FLOOD HAZARD MITIGATION

NATIONAL FLOOD INSURANCE PROGRAM (NFIP)

When started in the late 1960’s, all buildings built before the first flood map was issued had subsidized rates and now those buildings are but 20% of all policies now. Mortgage = Flood Policy Required
FLOOD HAZARD MITIGATION

NFIP INCREASES BEGINNING 4/2016

• 12%/YR FOR PRIMARY RESIDENTIAL - $2500/YR MAX
• 19%/YR FOR NON PROFITS
• 25%/YR FOR NON-PRIMARY RESIDENCES SEVERE REPETITIVE LOSS, INCOME PRODUCING RESIDENTIAL, COMMERCIAL
FLOOD HAZARD MITIGATION

PRE-FLOOD MAP BUILDINGS POLICY RATES ARE INCREASING
FLOOD HAZARD MITIGATION

HOW DO WE DETERMINE THE ELEVATION OF A BUILDING?
THE ELEVATION CERTIFICATE DOCUMENTS THE ACTUAL HEIGHT OF THE FINISHED FLOOR AND WHEN COMPARED TO THE REQUIRED MINIMUM FLOOD MAP ELEVATION DETERMINES THE FLOOD INSURANCE POLICY RATES.

EVERY PRE-FIRM BUILDING NEEDS ONE NOW TO MAKE SURE THEY ARE NOT BEING OVERCHARGED FOR NFIP POLICY
ELEVATION CERTIFICATE

THIS HOUSE FINISHED FLOOR IS 6FT BELOW THE BFE (A) AND SINCE THE BASEMENT HAS NO FLOOD VENTING (B), THE NFIP WILL SET THE RATE AT .4FT = 12FT BELOW BFE
FLOOD HAZARD MITIGATION

BACKFLOW PREVENTER INSTALLATION
FLOOD HAZARD MITIGATION

ELEVATE UTILITIES EQUIPMENT
FLOOD HAZARD MITIGATION

TYPES OF FLOOD MITIGATION PROJECTS THAT RESULT IN LOWERING FLOOD RISK AND FLOOD POLICY COSTS

EVERY DOLLAR SPENT ON FLOOD MITIGATION = $4 OF DISASTER RECOVERY COSTS

• ACQUISITION/DEMOLITION – NOT AN OPTION FOR PRESERVATION
• RELOCATION – LAST RESORT FOR PRESERVATION
• DRY FLOOD PROOFING (COMMERCIAL ONLY)
• ELEVATION/FLOOD VENTING
ELEVATION
FLOOD HAZARD MITIGATION

LOW ELEVATION WITH FLOOD VENTED ENCLOSURE
FLOOD HAZARD MITIGATION
ELEVATED WITH ENCLOSURE

FLOOD VENT CASE STUDY

ELEVATED AFTER KATRINA 10FT-BUILT ENCLOSURE 1 VENT=$4k/yr AFTER INSTALLING 6 VENTS=$500/yr
FLOOD HAZARD MITIGATION
ELEVATED WITH ENCLOSURE

NON-ENGINEERED

TOTAL FLOOD COVERAGE: 19.48 SQ FT

ENGINEERED

TOTAL FLOOD COVERAGE: 200 SQ FT
FLOOD HAZARD MITIGATION

ELEVATION
DRY FLOOD PROOFING
FLOOD HAZARD MITIGATION

DRY FLOOD PROOFING

• GOAL IS TO KEEP THE BUILDING AS DRY AS POSSIBLE, ALLOWED 4” IN 24HR PERIOD

• MUST BE FLOOD PROOFED TO AT LEAST BFE +1FT “FREE BOARD”

• DESIGN MUST BE CERTIFIED BY ARCHITECT/CIVIL ENGINEER

• CONSTRUCTION MUST BE CERTIFIED BY ARCHITECT/ENGINEER

• MUST BE DEPLOYED ONCE A YEAR

• MUST HAVE EMERGENCY PLAN

• MUST HAVE SUMP PUMP TO ELIMINATE ANY LEAKS WITH POWER THAT WORKS WHEN THE POWER FAILS
FLOOD HAZARD MITIGATION

ENTRANCE CLOSURE
FLOOD HAZARD MITIGATION

ENTRANCE CLOSURE OR BUILDING ENCLOSURE
ILC DOVER – FLEX WALL
FLOOD HAZARD MITIGATION

• FLOOD MITIGATION COSTS VARY BY TYPE, WET/DRY. A LICENSED DESIGN PROFESSIONAL, ARCHITECT/STRUCTURAL ENGINEER NEEDS TO BE ENGAGED TO PROVIDE DESIGN ASSISTANCE AND PLANS FOR PERMITTING. THEN ESTIMATES CAN BE ACQUIRED.

• PROJECT FINANCING CAN BE CASH, GRANTS, EQUITY, HUD 203K, ICC

• POSSIBLE FUTURE FUNDING – MULTI BANK LOW INTEREST LOAN POOLS, REVENUE BONDING, VOUCHERS
FLOOD HAZARD MITIGATION

MITIGATION PROVIDES RESILIENCY AND SUSTAINABILITY IN A HISTORIC ERA OF CLIMATE CHANGE
FLOOD HAZARD MITIGATION

GETTING STARTED

• GET ELEVATION CERTIFICATE AND UNDERSTAND IF THE LOCAL COMMUNITY HAS “FREEBOARD” REQUIREMENT
• GET FOUNDATION DRAWINGS AND ELEVATIONS – DESIGN REVIEW FOR HISTORIC BUILDINGS AND TAX CREDIT APPLICATIONS
• GET ESTIMATES FOR CONSTRUCTION/LIFTING AND LOWERING HOME
• ARRANGE FINANCING & INCOME TAX CREDITS, IF AVAILABLE
• EXECUTE PROJECT
• FINAL ELEVATION/DRY FLOOD PROOFING CERTIFICATE/TAX CREDIT CERTIFICATION
• GET LOWER FLOOD INSURANCE POLICY RATES
FLOOD HAZARD MITIGATION

SCOPE OF WORK SPREAD SHEET

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<th>Task</th>
<th>Party</th>
<th>Quantity</th>
<th>Cost</th>
<th>Total</th>
<th>Actual Quantity</th>
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FLOOD HAZARD MITIGATION

+2 MILLION PRE-FLOOD MAP BUILDINGS WITH AN UNKNOWN NUMBER OF HISTORIC DESIGNATED ONES NEED FLOOD MITIGATION AS THE HISTORIC ERA OF CLIMATE CHANGE CONTINUES AND THE SEA LEVEL RISES
THE FLOOD HAZARD MITIGATION INDUSTRY IS HERE TO ASSIST YOU IN MAKING YOUR COMMUNITY MORE RESILIENT FROM THE COSTLY DAMAGES OF FLOODING AND HELPING TO KEEP FLOOD INSURANCE POLICY RATES REASONABLE IN A TIME OF GREAT CHANGES