# ELEVATE

## *before it's too late!*

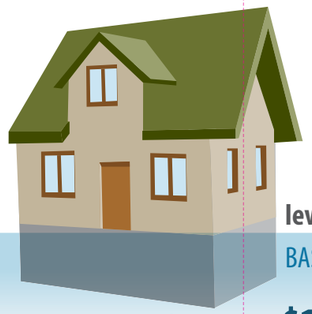
## COMBATING RISING FLOOD INSURANCE COSTS

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.*


**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.

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# 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.

BEFORE

## 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 are 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.

DURING

## 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 façade 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 porting 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.

AFTER