

Variance Request for:

1 Radney Cir Houston TX 77024



Date: March 9, 2023

Presented by: James and Rose Spice (Contracted Buyers)

Presented to: Piney Point Board of Adjustments

Thank you in advance for your consideration,

James & Rose Spice
832-928-3121

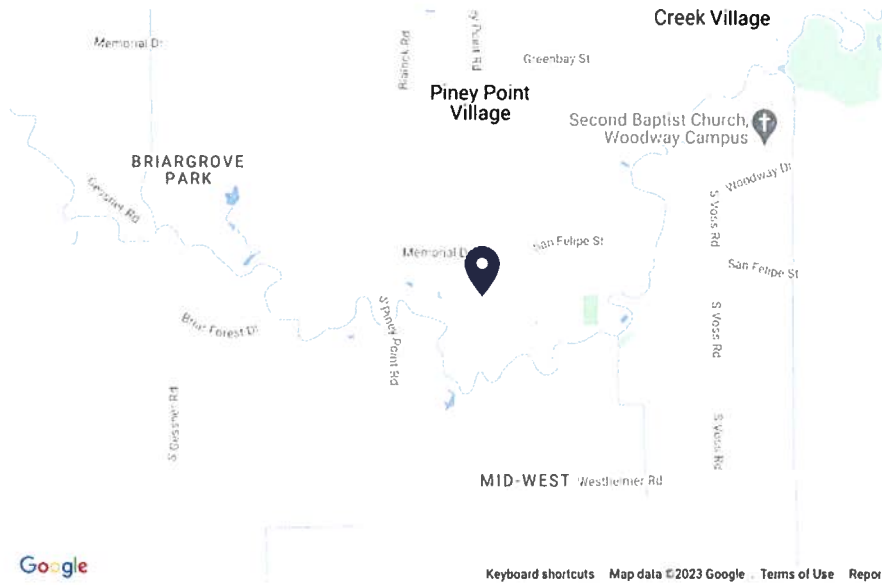
TABLE OF CONTENTS

SITE INFORMATION	3
THE SPICE FAMILY.....	4
VARIANCE REQUEST LETTER TO THE BOARD.....	5-6
HISTORY AND SIGNIFICANCE.....	7
SUFFICIENT CAUSE.....	8-9
UNNECESSARY HARDSHIP.....	10
DEFINITIONS AND CODES.....	11
NEIGHBOR NOTIFICATION LIST & SAMPLE LETTER.....	12-13
EXHIBITS.....	14-54

SITE INFORMATION

LT 2 Radney Circle; City of Piney Point Village, Harris County, Texas.

The site includes 1.76 acres with 6910 square foot one and a half-story brick clad contemporary modern mid-century style single-family residence built in 1968



Map of site location within Piney Point Village

THE SPICE FAMILY

James & Rose Spice contracted with Paula Mischer to purchase 1 Radney Circle as a renovation resale on December 29, 2022. We would like to renovate and retire there with our three children. Kara Spice (21), a sophomore at the University of St. Thomas, Elle Spice (8) and Grey Spice (3).

James & Rose Spice are Houston natives with a seasoned footprint in real estate since 1998.

James Spice, Co-Owner of Spice Solutions, LLC, Co-Owner of Spice Custom Homes, LLC and General Partner of Triumph Lending, LLC.

Rose Spice, Co-Owner of Spice Custom Homes, LLC, General Partner of Triumph Lending, LLC and Realtor Associate at Nan and Company Properties, LLC.

We have been looking for a home in Piney Point for many years but with the rising cost of new construction, it was not feasible to build new. We came across 1 Radney Circle and fell in love with the property 'as is'. The 1.76-acre one story footprint on a cul-de-sac was what we have been searching for.

VARIANCE REQUEST LETTER TO THE BOARD

Piney Point Board of Adjustment
7676 Woodway Drive # 300
Houston TX 77024

Dear Members of the Board:

Currently in option period of contract, we are seeking exemption or variance from Piney Point's municipal code related to Chapter 34 Floods and Chapter 74, Section 212 (b) termination of nonconforming structures.

1 Radney Circle is in a special flood zone hazard area (SFHA) because the undeveloped backyard land is below the 1% annual chance flood elevation. We are requesting a variance to complete a full interior renovation without raising the floor elevation. The variance will permit renovation for the nonconforming structure and keep the existing elevation at **60.8'** when substantial improvement cost equals or exceeds 50% of market value of the structure. All other improvements will be in compliance of code.

- Structure is above the 100-year base flood elevation, 58.3' feet but backyard is below.
- Structure is below the 500-year base flood elevation, 63.0' feet. (*Exhibit H*)



- 50% of market value of structure is \$625,000 (*Exhibit A*)
- Projected renovation budget is \$1,100,000 (*Exhibit B*)

1 Radney Circle has two flood zones (AE & X500). It sits on 1.76 acres with the unbuildable backyard in a flood zone AE due to the creeks that consume the property (*Survey Exhibit F*). The back land leading up to the structure is indicated as the "Lowest Adjacent Grade next to building (LAG)" measured at 55.0' ft triggering the special flood zone hazard area (SFHA) to be in flood zone AE reference Flood Map (*Exhibit G*). The structure, above the 100-year flood base flood elevation includes a 1.1' step down sunken formal living (*Exhibit J*). Built in 1968, it is considered a non-conforming structure because being in a SFHA, it does not meet the BFE for the 500-year today. Excluding historical places, nonconforming structures must meet the requirements of Chapter 34 including substantial improvements and be constructed so that the lowest floor, including basement floor, is one foot higher than the 0.2 percent elevation, a change that was adopted December 2018. The seller started interior demolition in 2017 prior to ordinance change and that is how the house sits today (*Exhibit K*).

The house was built by renowned architect Arthur E. Jones for the Weingarten family, the only residing occupants for nearly 5 decades. The property has received eligibility for listing in the National Register of Historic Places issued by the Texas Historic Commission due to the significance in heritage and architectural style (*Exhibit D, E*). It was designed meticulously for the ravine lot. **FEMA exempts historic structures to the substantial improvement rule.** It will at minimum preserve the integrity and beauty of the architecture. Raising the elevation of the house drastically changes the architectural integrity and therefore lose the National Register of Historic Places eligibility. In addition to the financial hardship of raising the elevation, the

process comes with great risk in foundation damages due to size & unique complexity of design, 8,000+ sf of concrete slab which includes porches & terraces with a double H design. Many companies refused to take on the risk and not without exorbitant costs. If even the slightest mistake is made, you run the risk of causing structural damage to your home. There is a high risk of breaking the slab and compromising the structural integrity of the home. The inability to raise the foundation due to risk factors would result in a demolition of the property and deprive us of the ability to utilize the property to its fullest and best use. Letter of opinion from foundation company enclosed in *Exhibit C*.

Therefore, we are seeking exemption to the definition of substantial improvement and relief from Chapter 34 Flood and Chapter 74 Nonconforming structures to preserve the property's architectural integrity restore a structure that has been in Piney Point since 1968.

HISTORY AND SIGNIFICANCE

1 Radney Cir Houston TX 77024 is a contemporary, modern style home custom designed in 1968 by renowned Houston architect, Arthur E. Jones. Carefully positioned on the 77,010 sq. ft. (per HCAD) ravine lot, the design takes full advantage of the natural setting. The living areas and bedrooms all have large windows, high ceilings, and scenic views that make the outdoor space an integral part of each room.

The structure represents the rare residential architectural design of a renowned Houston architect that has significant history throughout the city. The methodically designed house carefully positioned on the 1.76 acre is a one of kind work of art and cannot be replaced. The structure possesses character as a visible reminder of the development, heritage and cultural diversity of Piney Point Village. Arthur E. Jones's work of this structure is a rare remaining example of his architectural work earning its eligibility in the National Register of Historic Places.

The Body of work created by Arthur E. Jones is substantial and encompasses many iconic landmarks with his most notable work, the Astrodome. Arthur E. Jones was the lead designer of the architectural firm, Hermon Lloyd and W. B Morgan. In 2010, Jones received the prestigious American Institute Design Award for his lifetime contributions to the Houston architectural community.

Arthur E. Jones's renowned work include the Rice Stadium (1949), still Houston's largest stadium; the Straus House (1951), Houston's grandest Contemporary house; Melrose Building (1952), Houston's first modern high-rise office building; The American General Building (1965), the award-winning initial building for Gus Wortham's American General office center on Allen Parkway; The Astrodome (1965), America's first covered stadium; the masterplan and the buildings in Greenway Plaza (1969-1982); Four Allen Center (1984), infamous as the "Enron Building;" and the Galvestonian (1983), the most distinguished modern condominium high rise in Galveston.

The home was originally built for Bernard L. Weingarten and his family. The Weingarten family owned a supermarket chain in the Southern United States until it was acquired by Safeway in 1983. The company had its headquarters in Houston, TX. A Weingarten store was part of history and integral part of Houston's Civil Rights movement. Houston's first sit-in was held Friday, March 4, 1960 at the Weingarten's grocery store lunch counter located at 4110 Almeda Road in Houston, Texas. The significance of the only occupying family, the Weingarten's, who have resided in the home since 1968 is priceless.

Weingarten's family home located at 4000 MacGregor was named the "Weingarten House" and received the City of Houston designation in 2015 as a landmark designation.

The structure is identified with two influential people who have contributed significantly to the historical development of the city, state and nation.

SUFFICIENT CAUSE

Structure:

- Structure is above the 100-year base flood elevation, 58.3' feet.
- The variance to allow renovation without limit on cost would not adversely affect other interests and no oppositions from nearby neighbors
- No additional square footage is being added to the property's existing slab footprint
- 1 Radney Circle is 1.76 acres in size. As the lot size increases beyond the one-half acre, the technical justification required for issuing the variance increases.
- It neighbors two existing structures that were also constructed prior to the flood elevation ordinance change maintaining neighborhood conformity (145 Radney Circle built in 1971, 19 Mott Ln built in 1974).
- The risk of damaging the foundation during the process is significantly greater on larger size slabs such as this at **8,000 sq ft** (inclusive of porches & terraces) and many companies will not take on the risk. The unique complexity in design "Double H" further increases the risk of damages. There is a high risk of damaging the slab and compromising the structural integrity of the home elevating it on concrete blocks. Letter from foundation company provided against raising. (*Exhibit C*)

Historical Designation:

- The property's eligibility in the National Register of Historical Places meets the definition of Historical Structures in the Fema and PPV Ordinance Code. (*Exhibit D*).
- Houston Mod provided a letter of support to preserve the rare remaining example of Arthur E. Jones's work dubbed the Weingarten House. Established in 2003, Houston Mod is a non-profit organization dedicated to promoting knowledge and appreciation of modern architecture in Houston and Texas. Houston Mod advocates the preservation of this cultural legacy and seeks support from its members and the general public in achieving this goal. (*Exhibit E*)
- Communities may exempt historic buildings from NFIP substantial improvement and substantial damage requirements per FEMA. Reference "*This Floodplain Management Bulletin addresses how the National Flood Insurance Program (NFIP) treats historic structures*" (*Exhibit M*)
- The Piney Point ordinance specifies that the definition of "substantial improvements" does *not* include "[a]ny alteration of a 'historic structure,' provided that the alteration will not preclude the structure's continued designation as a 'historic structure'" (Sec. 34-30). That same section defines "historic structure" as a property that is: listed in, or determined **eligible** for listing in, the National Register of Historic Places; designated as a state historic landmark; or, designated as a local historic landmark.
- FEMA publishes that communities may exempt historic buildings from NFIP substantial improvement and substantial damage requirements in either of two ways. First, they can exempt them through their definition of substantial improvement. Second, they can issue variances for historic structures. However, the improvement

must not preclude the structures continued designation as a historic structure and must be the minimum necessary to preserve its historic character.

- Elevation would preclude the structures designation

Flood Insurance, Mitigation, Improvements:

- The property boundary is 1.76 acres of which the majority of structure is in zone X500 and the undeveloped land south of structure is in zone AE. The sunken south wing of the structure will be raised and floated to mimic the rest of the house and further mitigate flood risks
- The back yard primarily in the flood plain due to creek encroachments is un-development land that is unbuildable
- Affordable Insurance policy for flood is attainable by NFIP not elevated with lowest floor level (60.8') annual premium \$1879 annual. *(Exhibit I)* A designated historic structure can obtain the benefit of subsidized flood insurance through the NFIP even if it has been substantially improved or substantially damaged so long as the building maintains its historic designation. The amount of insurance premium charged the historic structure may be considerably less than what the NFIP would charge a new non-elevated structure built at the same level.
- Exterior improvements will consist of new roof, new eco-friendly windows and new doors. Interior renovations include new plumbing, new HVAC, new electrical wiring, new insulation, walls, new flooring, new carpentry and new appliances which collectively exceed 50% cost of market value of the structure. These improvements will preserve the overall beauty of the house for the neighborhood and city. *(Exhibit L)*
- The existing wood shed on east side of house will be removed to make existing structure compliant with the 30' setback. All other new improvements will be within code. *(Exhibit F)*
- Flood mitigation measures to minimize flood damages
 - I. Create positive drainage around the building. In places where ground slope against the building facade is either flat or toward the building, increase the grade immediately adjacent to the façade to achieve positive drainage away from the building.
 - II. Use flood resistant materials below the BFE. When rehabilitating or repairing a damaged historic structure, use flood resistant materials below the BFE to improve the structure's ability to withstand flooding.
- The property was built in 1968, current owner purchased property and began renovation in 2017 prior to the passage of amendments and ordinance changes in Dec. 2018
- Property has been on an off the market in dilapidated state since 2017 with boarded windows & broken glass.
- Completing a substantial improvement will allow the nonconforming structure be restored to a beautiful livable state and preserve the existing structure that has been in Piney Point since 1968 also increasing taxable value for the community.

UNNECESSARY HARDSHIP

- Elevating the property will preclude the structures eligibility as a historic structure drastically changing the architectural integrity, therefore lose the National Register of Historic Places eligibility. It is one of the rare residential works of renowned architect Arthur E. Jones who built works of art such as the Astrodome.
- Elevating the structure will make it the only house in the neighborhood raised on concrete blocks losing neighborhood appeal
- In addition to the financial hardship, we would endure to raise the elevation, the risk of damaging the foundation during the process is significantly greater on larger size slabs such as this at 8,000 sq ft and many companies will not take on the risk. The unique complexity in design “Double H” increases the risk of damages. There is a high risk of damaging the slab and compromising the structural integrity of the home. (*Exhibit C*)
 - Most slabs were constructed to be continuously supported by the ground underneath them and are minimally reinforced. Insufficiently supporting such a slab can result in cracking or catastrophic failures that could potentially injure the occupants.
 - Retrofitting slabs with insufficient thickness or reinforcement can be expensive.
 - If the house is not lifted evenly, the slab could crack during the elevation process.
 - If uneven settlement occurs, the weight of the elevated slab may exceed the capacity of the masonry piers commonly used for elevation projects
 - Although many elevation contractors have experience elevating slab-on-grade houses, concrete has the potential to catastrophically fail and appropriately assessing the strength of the slab may be difficult for most contractors.
- Without a variance, the inability to raise the foundation due to risk factors would result in a demolition of the property and deprive us of the ability to utilize the property to its fullest and best use
- Demolishing the existing structure will disregard a viable salvageable structure diminishing any existing structure value
- Without a variance, it would put a financial hardship as the cost of a new construction with less square footage far exceeds the cost of the existing 6910 sq ft renovation due to rising costs and interest rates. The time to construct new versus renovate is also much more in length.
- The existing home may continue to sit dilapidated in the community for many more years and continue to be a public nuisance.

DEFINITIONS AND CODES

FEMA Definitions

The National Flood Insurance Program (NFIP) defines Historic Structures as:

Historic structure means any structure that is:

1. Listed individually in the National Register of Historic Places or preliminarily determined as meeting the requirements for individual listing on the National Register;
2. Certified or preliminarily determined as contributing to the historical significance of a registered historic district;
3. Individually listed on a state inventory of historic places; or
4. Individually listed on a local inventory of historic places.

Communities may exempt historic buildings from NFIP substantial improvement and substantial damage requirements in either of two ways. First, they can exempt them through their definition of substantial improvement. Second, they can issue variances for historic structures. However, the improvement must not preclude the structures continued designation as a historic structure and must be the minimum necessary to preserve its historic character.

National Flood Insurance Program Requirements

- 59.1 - Definition
- 60.6 - Variances and exceptions
 - (a) - Variances for Historic Structures

<https://www.fema.gov/glossary/historic-structure>

Piney Point Municipal Code: Chapter 34. Sec. 34-30 Definitions

Substantial improvement means any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before "start of construction" of the improvement. This term includes structures which have incurred "substantial damage," regardless of the actual repair work performed. The term does not, however, include either:

- (1) Any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions; or
- (2) Any alteration of a "historic structure," provided that the alteration will not preclude the structure's continued designation as a "historic structure."

Chapter 34, Sec. 34-69 Variance Procedures

(e)Variances may be issued for the reconstruction, rehabilitation or restoration of structures listed on the National Register of Historic Places or the state inventory of historic places, without regard to the procedures set forth in the remainder of this article.

Chapter 34, Sec. 34-101 Permitted uses, standards, and floodplain evaluation criteria

(b)Standards for floodplain permitted uses.

(4) All structures, including accessory structures, additions to existing structures and manufactured homes (excluding enclosures), as defined in [section 34-30](#) of this article, shall be constructed so that the lowest floor, including basement floor, is one foot higher than the 0.2 percent elevation.

NEIGHBOR NOTIFICATION LIST

Neighbor Notification Letters were mailed to the below addresses:

Barazi M. Bassam
2 Radney Cir Houston, TX 77024

Current Owner
145 Radney Rd Houston, TX 77024

Madison T. Woodward
149 Radney Rd Houston, TX 77024

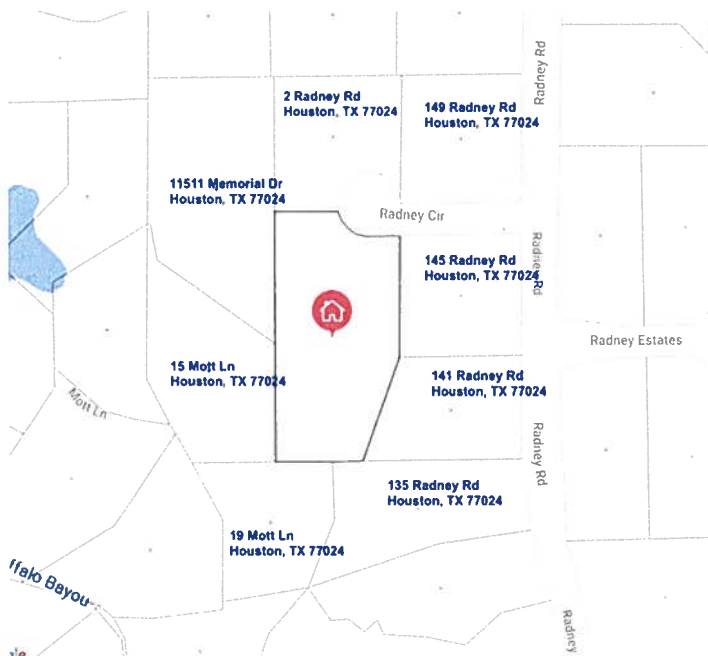
Current Owner
141 Radney Rd Houston, TX 77024

Zack Blailock
135 Radney Rd Houston, TX 77024

Armstrong Gregory / Armstrong Melind...
11511 Memorial Dr Houston, TX 77024

Jackiewicz Katrina & Peacock Nicholas
15 Mott Ln Houston, TX 77024

Anders J David J / Anders Hester
19 Mott Ln Houston, TX 77024



SAMPLE LETTER

James & Rose Spice
1 Radney Cir
Houston TX 77024
(Contracted buyers)

February 15, 2023

Barazi M. Bassam
2 Radney Cir
Houston, TX 77024

Re: 1 Radney Cir Variance from Piney Point Municipal Code Chapter 34: permitted uses, standards, and floodplain evaluation criteria

Dear Barazi,

We are writing to let you know that we will be going before the Piney Point Village Board of Adjustments on March 9, 2023 at 7:00 pm to ask for a variance from floodplain ordinance (Chapter 34): Permitted uses, standards, and floodplain evaluation criteria.

We are requesting a variance to complete a full interior renovation without raising the floor elevation. The house was built in 1968 by renowned architect Arthur E. Jones for the Weingarten family whose family resided in the house for almost 5 decades. We are requesting a variance to allow the renovation and keep the existing elevation at the current 60.8' which is currently below the 500-year flood elevation of 63.0' for the property.

The variance will at minimum preserve the integrity and historic character of the architecture and prevent demolition. Completing a renovation will allow the property to be restored to a livable state and preserve the existing structure that has been in Piney Point since 1968.

If you have any questions or concerns, please contact me at 832-928-3121 or rosehspice@gmail.com. I would be glad to discuss in more detail. An email if you are in favor would be greatly appreciated.

The Board meeting will be at Piney Point Village City Hall located at 7676 Woodway Drive, Suite 300, Houston TX 77063 at 7:00 pm. A detailed packet will be available on the City of Piney Point website at www.cityofpineypoint.com on March 6, 2023

Thank you for your consideration.

James & Rose Spice
832-928-3121

Enclosure: Property Survey

EXHIBITS

EXHIBIT A: Value of Existing Improvement

EXHIBIT B: Estimated Remodel Budget

EXHIBIT C: Foundation Letter not recommending elevation

EXHIBIT D: Letter of eligibility for Listing in the National Register of Historic Places

EXHIBIT E: Letter of support for historical structure from Houston Mod

EXHIBIT F: Survey dated 1/4/2023

EXHIBIT G: Flood Map

EXHIBIT H: Elevation Certificate dated 1/10/2023

EXHIBIT I: Wright Flood Quote with replacement cost

EXHIBIT J: Existing/current floor plan with sunken living room by 1.1 ft

EXHIBIT K: Current Interior Photos (since 2017)

EXHIBIT L: New Remodel Plans

EXHIBIT M: This Floodplain Management Bulletin addresses how the National Flood Insurance Program (NFIP) treats historic structures

EXHIBIT A: Value of Existing Improvement is \$1,250,000 limiting renovations to \$625,000 without elevation

RECONCILIATION	Indicated Value by Sales Comparison Approach \$ 3,750,000		
	Indicated Value by: Sales Comparison Approach \$ 3,750,000	Cost Approach (if developed) \$ 2,500,000	Income Approach (if developed) \$
	THE SALES COMPARISON APPROACH IS GIVEN THE MOST WEIGHT IN THE FINAL VALUE ESTIMATE. THE COST APPROACH IS NOT APPLICABLE. THE INCOME APPROACH IS NOT UTILIZED AS PROPERTIES LIKE THE SUBJECT ARE NOT UTILIZED FOR THEIR INCOME POTENTIAL		
	This appraisal is made <input checked="" type="checkbox"/> "as is." <input type="checkbox"/> subject to completion per plans and specifications on the basis of a hypothetical condition that the improvements have been completed, <input type="checkbox"/> subject to the following repairs or alterations on the basis of a hypothetical condition that the repairs or alterations have been completed, or <input type="checkbox"/> subject to the following required inspection based on the extraordinary assumption that the condition or deficiency does not require alteration or repair. THIS IS AN APPRAISAL REPORT. THE ESTIMATED VALUE OF THE IMPROVEMENTS IS \$1,250,000. *** See Additional Comments ***		
	Based on the defined scope of work, statement of assumptions and limiting conditions, and appraiser's certification, my (our) opinion of the market value, as defined, of the real property that is the subject of this report is		
	\$ 3,750,000, as of 01/16/2023, the effective date of this appraisal.		
	Freddie Mac Form 70D July 2020		
	Page 2 of 6		
	Fannie Mae Form 1004 Desktop July 2020		

HILL AND ASSOCIATES

Page 4

EXHIBIT B: Estimated Remodel Budget

SPICE, JAMES																
<table border="1"> <thead> <tr> <th></th> <th>CURRENT STRUCTURE</th> <th>REHABBED STRUCTURE</th> </tr> </thead> <tbody> <tr> <td>Estimate SQ. FT.</td> <td>6,910</td> <td></td> </tr> <tr> <td>Property Type</td> <td>Single Family</td> <td></td> </tr> <tr> <td># of Bedrooms</td> <td>5</td> <td></td> </tr> <tr> <td># of Bathrooms</td> <td>5.5</td> <td></td> </tr> </tbody> </table>		CURRENT STRUCTURE	REHABBED STRUCTURE	Estimate SQ. FT.	6,910		Property Type	Single Family		# of Bedrooms	5		# of Bathrooms	5.5		<p>How long will the project take in weeks? <input type="text"/></p> <p>Will the project require permits? <input type="text"/></p> <p>How long will the permits take to secure? <input type="text"/></p> <p>Are you adding square footage to this property? <input type="text"/></p> <p>Are you building up or building out? <input type="text"/></p>
	CURRENT STRUCTURE	REHABBED STRUCTURE														
Estimate SQ. FT.	6,910															
Property Type	Single Family															
# of Bedrooms	5															
# of Bathrooms	5.5															

SCOPE OF WORK	LINE ITEM	DESCRIPTION	QUALITY	TOTAL BUDGET
	Roof / Gutters	<i>New Roof</i>	high	\$ 145,000
	Electrical Work	<i>The home will be wired and include high end designer lighting, including chandeliers, sconces and library lights throughout the house to illuminate artwork. The interior will receive recessed lighting and the house will be pre-wired with an alarm system and recessed speakers throughout the main living areas. The garage will receive a 240v outlet for electric car charging</i>		\$ 40,000
	Exterior / Siding	<i>cleanup power wash</i>	high	\$ 5,000
	Windows	<i>energy efficient windows black framed aluminum framed black interior and exterior frame, 19' sliding glass door opening to the patio from family room</i>	custom	\$ 140,000
	Framing	<i>framing, wood, beams, flooring, custom truss</i>	custom	\$ 100,000
	Finish Carpentry	<i>5 or 6 inch baseboards throughout, custom trim detailed trim, custom cabinetry</i>	custom	\$ 90,000
	Sheetrock / Insulation	<i>sheetrock and insulation, spray insulation</i>	Custom/High	\$ 140,000
	Interior Paint	<i>interior walls, doors, trim custom painted cabinets stained white oak vanities</i>	Custom/High	\$ 60,000
	Flooring	<i>wood floors white oak, wet area tile</i>	Custom/High	\$ 80,000
Kitchen	<i>calcutta mirragio quartz, double island, built on site cabinets floor to ceiling, plastered vent hood delta faucets and toletes, delta shower faucets, quartz calcutta countertops, master shower with tub, custom built vanities, accent lights, custom built his/hers closet cabinets</i>	Custom/High	\$ 40,000	
Bathrooms		high	\$ 40,000	
Plumbing Work	<i>new plumbing from underground throughout house new faucets, tankless water heater</i>	high	\$ 25,000	
HVAC Work	<i>new complete HVAC systems ductwork smart thermostats</i>	Custom/High	\$ 44,000	
Kitchen Custom Built Cabinetry	<i>design, fabrication, and installation of custom built kitchen cabinets using high-quality materials, and meeting the client's needs</i>	high	\$ 51,000	
Contingency		10%	\$ 100,000	
- Add -				
- Add -				
- Add -				
Total Construction Cost				\$ 1,100,000

EXHIBIT C: Foundation Letter of Opinion



Email: Masterfoundationrepair@gmail.com

Office: 281-601-2368

**1 Radney Cir
Houston, Tx 77024**

This letter is to inform you that per our site visual inspection, performed on January 26, 2023 And per our professional opinion, the one-story residence's (location mentioned above) foundation repair was evaluated and found certain adjustments need to be made as per 2015 International Residential Code, and per good practice standards.

Elevation readings were taken (ZIP LINE, manometer measurements) and it was found that the deflection tolerance is more than 0.6". Home is off by 2-3" and we recommend installing piers all around home to level and stabilize the home, a total of 115 piers will be needed all around home.

It is our recommendation that home is not to be raised, level and stabilization will be more effective. The process comes with great risk due to the size of the slab that would need to be raised(approximately 8182 sqft). The design of the house is also unique. There is a high risk of breaking the slab and compromising the structural integrity of the home.

Any questions feel free to give us a call.

MD

Michael Delgado

EXHIBIT D: Eligibility for Listing in the National Register of Historic Places

TEXAS HISTORICAL COMMISSION
real places telling real stories

February 7, 2023

Rose Spice
14410 Winding Springs Drive
Cypress, Texas 77429

RE: Weingarten House, 1 Radney Circle, Piney Point, Harris County, Texas

Dear Ms. Spice:

I've reviewed your documentation regarding the above-referenced building at 1 Radney Circle. The Weingarten House was constructed in 1968 by legendary Houston architect Arthur E. Jones for the Bernard L. Weingarten family. The exterior retains a good degree of integrity, and despite removal of interior finishes after Hurricane Harvey, the building is eligible for listing in the National Register of Historic Places under Criterion C in the area of Architecture. We are happy to learn of your commitment to rehabilitating this noteworthy property.

If you have any questions, you may contact me at (512) 463-6013 or greg.smith@thc.texas.gov. Thank you for your interest in the National Register and in preserving Texas' cultural heritage.

Sincerely,



Gregory Smith
National Register Coordinator



EXHIBIT E: Letter of support for historical structure from Houston Mod

January 22, 2023

City of Piney Point Village
7676 Woodway Drive, Suite 300
Houston, Texas 77063

To Whom It May Concern,

Houston Mod is dedicated to promoting knowledge and appreciation of modern architecture and design in Houston and Texas. Our advocacy for the preservation of this cultural legacy includes outstanding examples of residential modernism such as the original home at 1 Radney Circle, and we are pleased to offer this letter of support for its historical value.

Built in 1968 (more than 50 years ago, and thus beyond the accepted minimum threshold for historic status consideration), it is known as the Weingarten House. Commissioned by Bernard and Shirley Weingarten, the designer was Arthur Jones, of one the Houston area's most renowned architects during the midcentury era.

PPV's Ordinance Sec. 34-69 Variance procedures states, "Variances may be issued for the reconstruction, rehabilitation or restoration of structures listed on the National Register of Historic Places or the state inventory of historic places...".

This property would most certainly qualify, satisfying these recognized criteria:

It is a visible reminder of the development, heritage, and cultural diversity of your municipality and this region of the State of Texas.

It is identified with a person (Weingarten) who contributed significantly to the area's cultural and historical development.

It is identified as the work of a person (Jones) whose work has influenced the heritage of the region.

It functions, in excellent and nearly original condition, as one of the best remaining examples of an architectural style in the area.

In the Foreword of the monograph *Constructing Houston's Future: The Architecture of Arthur Evan Jones & Lloyd Morgan Jones*, Sarah Whiting, then Dean of Rice University School of Architecture, wrote, "Jones's 'brave modernism'... offers us a valuable reminder... of Houston's commitment to modernism, to progress."

Sincerely,



Steven F. Curry, FAIA, NCARB
President, Board of Directors
P.O. Box 541353
Houston, TX 77254-1353



BOARD OF DIRECTORS

Steven Curry
President

Russell Howard
Past President

David Lidsky
Vice President

Julia Schafer
Treasurer

Kerry Goelzer
Secretary

Don Browne

David Bucek

Delaney Harns-Finck

Martin Merritt

Roaxana Poskey

Bayardo Seiva

Jason Smith

MASTER MODS

Minnette Boesel

Michael Brichford

Jeff Carowitz

Don Emmite

Stephen Fox

Ben Koush

Karen Lantz

Mike Lewter

Anna Mod

Bary Moore

Malcolm Perry

Monica Savino

Daphne Scarbrough

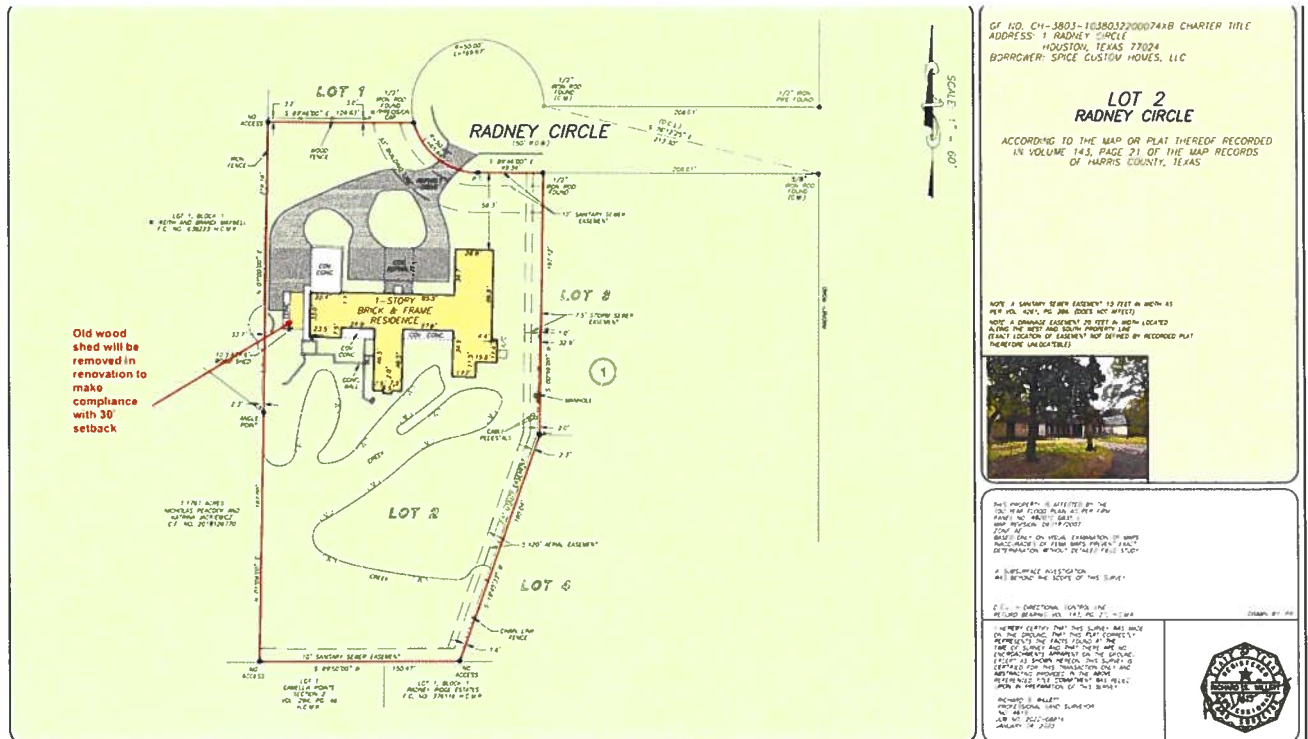
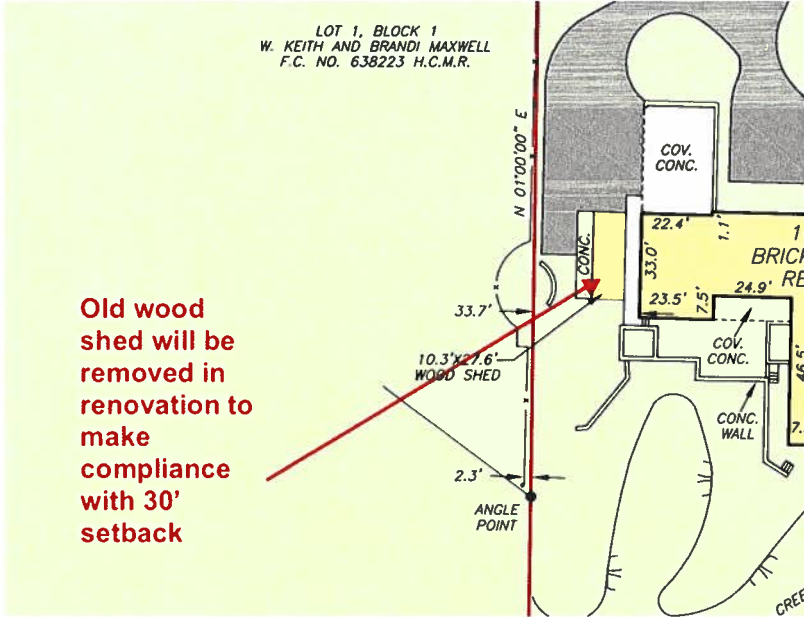
Robert Searcy

Carrie Glassman Shoemaker



Astrodome designed by Arthur E. Jones who also designed I Radney Circle

EXHIBIT F: Survey 1/4/2023. Old wood shed will be removed in renovation to bring structure in compliance with 30' setbacks



				<p>PRECISION SURVEYORS</p> <p>1100 W. BEAUMONT STREET, SUITE 100, HOUSTON, TEXAS 77004</p> <p>TEL: 713.964.1100 FAX: 713.964.1101</p> <p>WWW.PRECISIONSURVEYORS.COM</p> <p>DATE: 1/4/2023</p> <p>BY: [Signature]</p> <p>SCALE: 1" = 60'</p>
--	--	--	--	---

EXHIBIT G: FLOOD MAP

The back yard leading up to the structure & middle wing is in Zone AE.
The majority of structure and front yard is in Zone X500

1 Radney Circle, Piney Point Village, Texas 77024-7317 Harris County

[Listing](#) [Tax](#) [Photos](#) [360 History](#) [Parcel Map](#) [Flood Map](#) [Foreclosure](#) [Property Archive](#) [Attachments](#)

Flood Zone Code: AE
Flood Zone Date: 06/18/2007
Flood Zone Panel: 48201C0835L
Flood Code Description: Zone Ae-An Area Inundated By 100-Year Flooding

Special Flood Hazard Area (SFHA): In Yes (X500,AE,X)
Within 250 Feet of Multiple Flood Zone: PINEY POINT VLG
Flood Community Name: PINEY POINT VLG

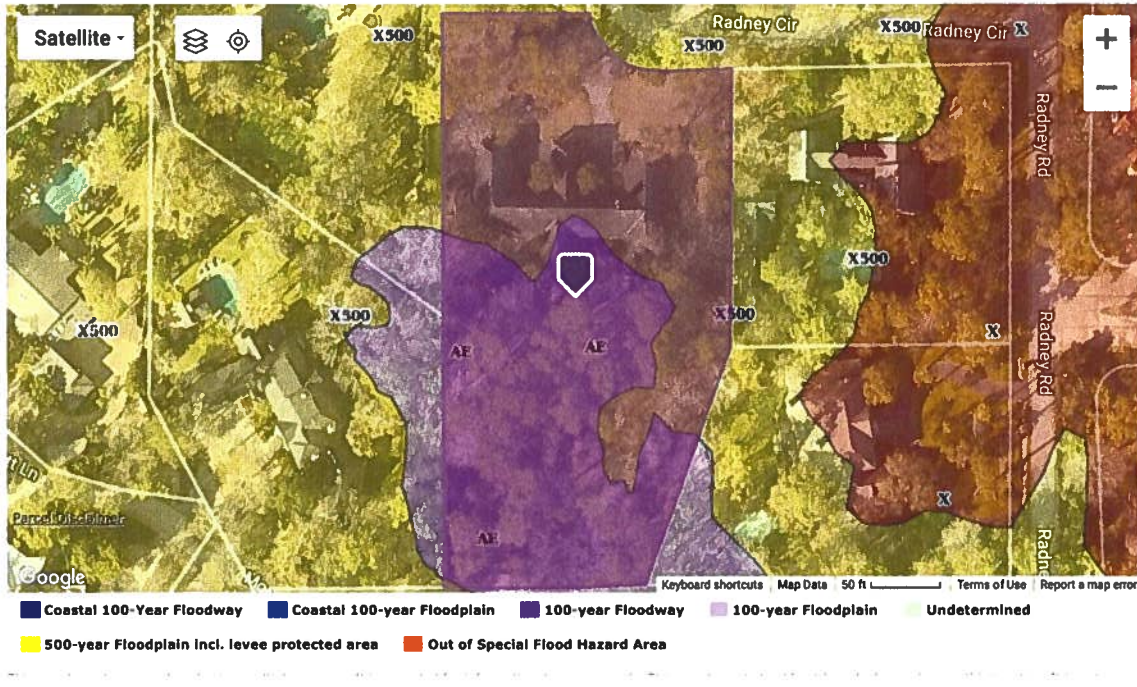


EXHIBIT H: Elevation Certificate dated 1/10/2023 showing two flood zones and BFE

U.S. DEPARTMENT OF HOMELAND SECURITY
Federal Emergency Management Agency
National Flood Insurance Program

OMB No. 1660-0008
Expiration Date: November 30, 2022

ELEVATION CERTIFICATE

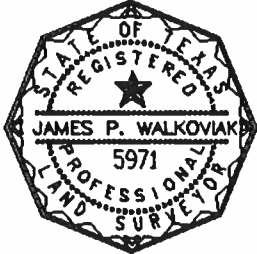
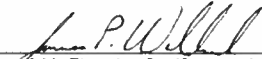
Important: Follow the instructions on pages 1-9.

Copy all pages of this Elevation Certificate and all attachments for (1) community official, (2) insurance agent/company and (3) building owner.

SECTION A – PROPERTY INFORMATION				FOR INSURANCE COMPANY USE		
A1. Building Owner's Name SPICE CUSTOM HOMES, LLC				Policy Number		
A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. 1 RADNEY CIRCLE				Company NAIC Number:		
City HOUSTON		State Texas		ZIP Code 77024		
A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.) LOT 2 OF RADNEY CIRCLE IN HARRIS COUNTY, TEXAS						
A4. Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.) <u>RESIDENTIAL</u>						
A5. Latitude/Longitude: Lat. <u>29.748053°</u> Long. <u>-95.518464°</u> Horizontal Datum: <input type="checkbox"/> NAD 1927 <input checked="" type="checkbox"/> 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 <u>1A</u>						
A8. For a building with a crawlspace or enclosure(s):						
a) Square footage of crawlspace or enclosure(s) <u>N/A</u> sq ft						
b) Number of permanent flood openings in the crawlspace or enclosure(s) within 1.0 foot above adjacent grade <u>N/A</u>						
c) Total net area of flood openings in A8.b <u>N/A</u> sq in						
d) Engineered flood openings? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No						
A9. For a building with an attached garage:						
a) Square footage of attached garage <u>N/A</u> sq ft						
b) Number of permanent flood openings in the attached garage within 1.0 foot above adjacent grade <u>N/A</u>						
c) Total net area of flood openings in A9.b <u>N/A</u> sq in						
d) Engineered flood openings? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No						
SECTION B – FLOOD INSURANCE RATE MAP (FIRM) INFORMATION						
B1. NFIP Community Name & Community Number CITY OF PINEY POINT VILLAGE 480308				B2. County Name HARRIS		B3. State Texas
B4. Map/Panel Number 48201 C 0835	B5. Suffix L	B6. FIRM Index Date 11-15-2019	B7. FIRM Panel Effective/ Revised Date 06-18-2007	B8. Flood Zone(s) <u>AE/X-SHADED</u>	B9. Base Flood Elevation(s) (Zone AO, use Base Flood Depth) 58.3 FEET	
B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in Item B9: <input checked="" type="checkbox"/> FIS Profile <input type="checkbox"/> FIRM <input type="checkbox"/> Community Determined <input type="checkbox"/> Other/Source _____						
B11. Indicate elevation datum used for BFE in Item B9: <input type="checkbox"/> NGVD 1929 <input type="checkbox"/> NAVD 1988 <input checked="" type="checkbox"/> Other/Source: <u>NAVD 88, 2001 ADJ.</u>						
B12. Is the building located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Designation Date: _____ <input type="checkbox"/> CBRS <input type="checkbox"/> OPA						

ELEVATION CERTIFICATE

OMB No. 1660-0008
Expiration Date: November 30, 2022

IMPORTANT: In these spaces, copy the corresponding information from Section A.			FOR INSURANCE COMPANY USE																																	
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. 1 RADNEY CIRCLE			Policy Number:																																	
City HOUSTON	State Texas	ZIP Code 77024	Company NAIC Number																																	
SECTION C – BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)																																				
<p>C1. Building elevations are based on: <input type="checkbox"/> Construction Drawings* <input type="checkbox"/> Building Under Construction* <input checked="" type="checkbox"/> Finished Construction *A new Elevation Certificate will be required when construction of the building is complete.</p> <p>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: <u>PINEY POINT BM 3 EL= 64.81 FT</u> Vertical Datum: <u>NAVD 1988, 2001 ADJUSTMENT</u></p> <p>Indicate elevation datum used for the elevations in items a) through h) below. <input type="checkbox"/> NGVD 1929 <input type="checkbox"/> NAVD 1988 <input checked="" type="checkbox"/> Other/Source: <u>NAVD 1988, 2001 ADJUSTMENT</u></p> <p>Datum used for building elevations must be the same as that used for the BFE. ← Check the measurement used.</p> <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">a) Top of bottom floor (including basement, crawlspace, or enclosure floor)</td> <td style="width: 10%; text-align: right;">60.8</td> <td style="width: 10%;"><input checked="" type="checkbox"/> feet</td> <td style="width: 10%;"><input type="checkbox"/> meters</td> </tr> <tr> <td>b) Top of the next higher floor</td> <td style="text-align: right;">61.9</td> <td><input checked="" type="checkbox"/> feet</td> <td><input type="checkbox"/> meters</td> </tr> <tr> <td>c) Bottom of the lowest horizontal structural member (V Zones only)</td> <td style="text-align: right;">N/A</td> <td><input type="checkbox"/> feet</td> <td><input type="checkbox"/> meters</td> </tr> <tr> <td>d) Attached garage (top of slab)</td> <td style="text-align: right;">N/A</td> <td><input type="checkbox"/> feet</td> <td><input type="checkbox"/> meters</td> </tr> <tr> <td>e) Lowest elevation of machinery or equipment servicing the building (Describe type of equipment and location in Comments)</td> <td style="text-align: right;">61.0</td> <td><input checked="" type="checkbox"/> feet</td> <td><input type="checkbox"/> meters</td> </tr> <tr> <td>f) Lowest adjacent (finished) grade next to building (LAG)</td> <td style="text-align: right;">55.0</td> <td><input checked="" type="checkbox"/> feet</td> <td><input type="checkbox"/> meters</td> </tr> <tr> <td>g) Highest adjacent (finished) grade next to building (HAG)</td> <td style="text-align: right;">60.8</td> <td><input checked="" type="checkbox"/> feet</td> <td><input type="checkbox"/> meters</td> </tr> <tr> <td>h) Lowest adjacent grade at lowest elevation of deck or stairs, including structural support</td> <td style="text-align: right;">N/A</td> <td><input type="checkbox"/> feet</td> <td><input type="checkbox"/> meters</td> </tr> </table>					a) Top of bottom floor (including basement, crawlspace, or enclosure floor)	60.8	<input checked="" type="checkbox"/> feet	<input type="checkbox"/> meters	b) Top of the next higher floor	61.9	<input checked="" 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)	N/A	<input 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)	61.0	<input checked="" type="checkbox"/> feet	<input type="checkbox"/> meters	f) Lowest adjacent (finished) grade next to building (LAG)	55.0	<input checked="" type="checkbox"/> feet	<input type="checkbox"/> meters	g) Highest adjacent (finished) grade next to building (HAG)	60.8	<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
a) Top of bottom floor (including basement, crawlspace, or enclosure floor)	60.8	<input checked="" type="checkbox"/> feet	<input type="checkbox"/> meters																																	
b) Top of the next higher floor	61.9	<input checked="" 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)	N/A	<input 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)	61.0	<input checked="" type="checkbox"/> feet	<input type="checkbox"/> meters																																	
f) Lowest adjacent (finished) grade next to building (LAG)	55.0	<input checked="" type="checkbox"/> feet	<input type="checkbox"/> meters																																	
g) Highest adjacent (finished) grade next to building (HAG)	60.8	<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																																				
<p>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.</p> <p>Were latitude and longitude in Section A provided by a licensed land surveyor? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Check here if attachments.</p>																																				
Certifier's Name JAMES P. WALKOVIK	License Number 5971																																			
Title REGISTERED PROFESSIONAL LAND SURVEYOR																																				
Company Name PRECISION SURVEYORS INC.																																				
Address 950 THREADNEEDLE STREET, SUITE NO. 150																																				
City HOUSTON	State Texas	ZIP Code 77079																																		
Signature 	Date 01-10-2023	Telephone (281) 496-1586	Ext.																																	
Copy all pages of this Elevation Certificate and all attachments for (1) community official, (2) insurance agent/company, and (3) building owner.																																				
Comments (including type of equipment and location, per C2(e), if applicable) THE 500 YEAR BASE FLOOD ELEVATION (DESIGNATED FLOOD ELEVATION (D.F.E.)) = 63.0 FEET. C2 e) AIR CONDITIONER PAD																																				

ELEVATION CERTIFICATE

BUILDING PHOTOGRAPHS

See Instructions for Item A6.

OMB No. 1660-0008
Expiration Date: November 30, 2022

IMPORTANT: In these spaces, copy the corresponding information from Section A.			FOR INSURANCE COMPANY USE
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. 1 RADNEY CIRCLE			Policy Number:
City HOUSTON	State Texas	ZIP Code 77024	Company NAIC Number

If using the Elevation Certificate to obtain NFIP flood insurance, affix at least 2 building photographs below according to the instructions for Item A6. Identify all photographs with date taken, "Front View" and "Rear View", and, if required, "Right Side View" and "Left Side View." When applicable, photographs must show the foundation with representative examples of the flood openings or vents, as indicated in Section A8. If submitting more photographs than will fit on this page, use the Continuation Page.



Photo One

Photo One Caption

FRONT VIEW 01/05/2023

Clear Photo One



Photo Two

Photo Two Caption

REAR VIEW 01/05/2023

Clear Photo Two

ELEVATION CERTIFICATE

BUILDING PHOTOGRAPHS
Continuation Page

OMB No. 1660-0008
Expiration Date: November 30, 2022

IMPORTANT: In these spaces, copy the corresponding information from Section A.			FOR INSURANCE COMPANY USE
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. 1 RADNEY CIRCLE			Policy Number:
City HOUSTON	State Texas	ZIP Code 77024	Company NAIC Number

If submitting more photographs than will fit on the preceding page, affix the additional photographs below. Identify all photographs with: date taken; "Front View" and "Rear View"; and, if required, "Right Side View" and "Left Side View." When applicable, photographs must show the foundation with representative examples of the flood openings or vents, as indicated in Section A8.



Photo Three

Photo Three Caption

SIDE VIEW 01/05/2023

Clear Photo Three



Photo Four

Photo Four Caption

SIDE VIEW 01/05/2023

Clear Photo Four

EXHIBIT I: NFIP Flood Quote with house not elevated

STANDARD FLOOD NON-BINDING QUOTE			
		Wright National Flood Insurance Company A Stock Company PO Box 33003 St. Petersburg, FL, 33733 Office: 800.820.3242 Fax: 800.850.3299	
AGENCY INFORMATION		QUOTE INFORMATION	
Agency Number	138187	Quote Number	42QT5063959299
Agency	TWFG INSURANCE SERVICES INC	Applicant	SPICE, ROSE
	CARLTON KAZUO KON	Current Date	12/06/2022
Address	4500 HIGHWAY 6,	Effective Date	12/06/2022
City, State, Zip	SUGAR LAND, TX 77478-4488	Rating Method	Rating Engine
Phone Number	713.781.2495		
BUILDING INFORMATION			
Property Address	1 RADNEY CIR	Building Replacement Cost	\$1,522,424
City, State, Zip	PINEY POINT VILLAGE, TX 77024-7317	Building Square Footage	6910 sq. ft.
Construction Date	07/01/1968	Occupancy Type	Single Family Home
Primary Residence	Yes	Foundation Type	Slab on Grade
Pre-FIRM	Yes	# of Floors	1
Newly Mapped Discount	No	Elevation Certificate	Yes
Machinery & Equipment	Not Elevated	Lowest Floor Elevation	60.8 feet
Building Flood Proofed	No		
COMMUNITY INFORMATION		COVERAGE/PREMIUM INFORMATION	
Program Type	Flood Regular Policies	Coverage	Limits Deductible
Community	480308 - PINEY POINT VILLAGE, CITY OF	Building	\$250,000 \$5,000
Flood Risk/Rated Zone	AE	Contents	\$50,000 \$5,000
Zone Determination #	DRP00000000014491107	Discount/Surcharge	\$0
Zone Reference #	1433719550	1 Year Premium	\$1,879
IMPORTANT NOTES			
<p>THIS IS NOT AN OFFER FOR INSURANCE. THIS QUOTE IS NON-FIRM AND NON-BINDING AND SUBJECT TO REVIEW AND ADJUSTMENT.</p> <p>Please submit the required documentation listed on your application summary for review and approval. If additional information is required to actuarially rate the risk, you will be contacted.</p>			
FLOOD INSURANCE WAIVER OF AGENT'S RESPONSIBILITY			
<p>I understand that, if I decline this protection, my agent and/or his/her agency will be held harmless and not liable in the event I suffer a flood loss. I have been made aware of the following facts:</p> <ol style="list-style-type: none"> 1. Homeowners insurance does not cover flood damage. 2. Federal disaster assistance is most typically an interest-bearing loan. 3. Flooding can and does occur in low-risk zones nationwide. <p>(Initial next to the following. Sign and date at the bottom.)</p> <p>_____ I reject building and contents coverage for flood protection.</p> <p>_____ I understand that my building coverage is lower than the replacement cost of my structure.</p> <p>Property Owner Signature: _____ Date: _____</p>			

This quote is issued by Wright National Flood Insurance Company 20221206175101

The online application process must be completed. *Please do not submit this form with your payment.*

Carefully review the quote being provided for accuracy. Price and terms associated with this quote are subject to underwriting review and may not be available if FEMA rates change. *Please refer to the policy for complete terms, conditions, and exclusions. Please refer to www.ambest.com for rating, financial size category and additional information on the insurance carrier shown on this quote.*

EXHIBIT J: Existing/current floor plan with sunken living room by 1.1' foot

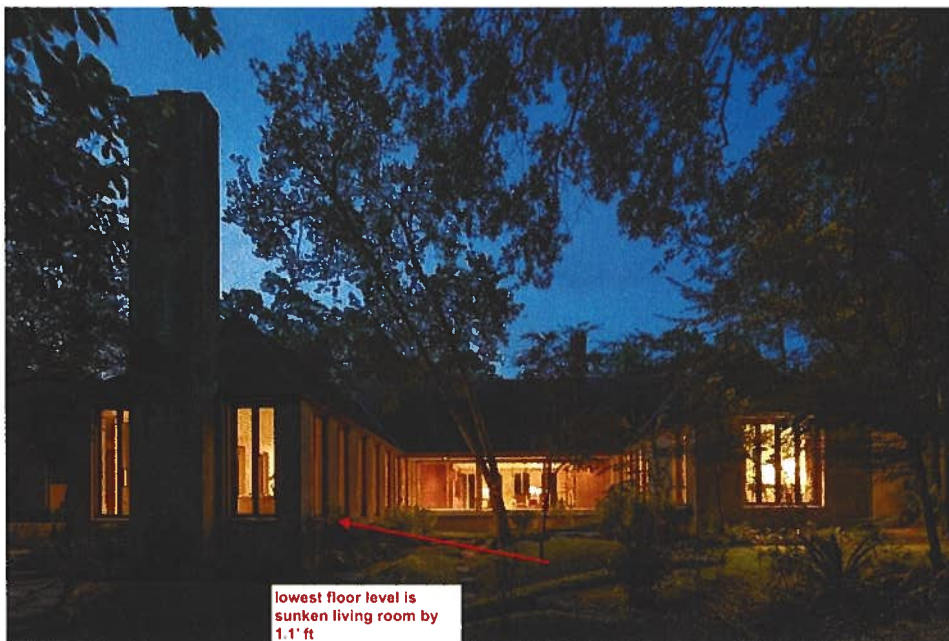
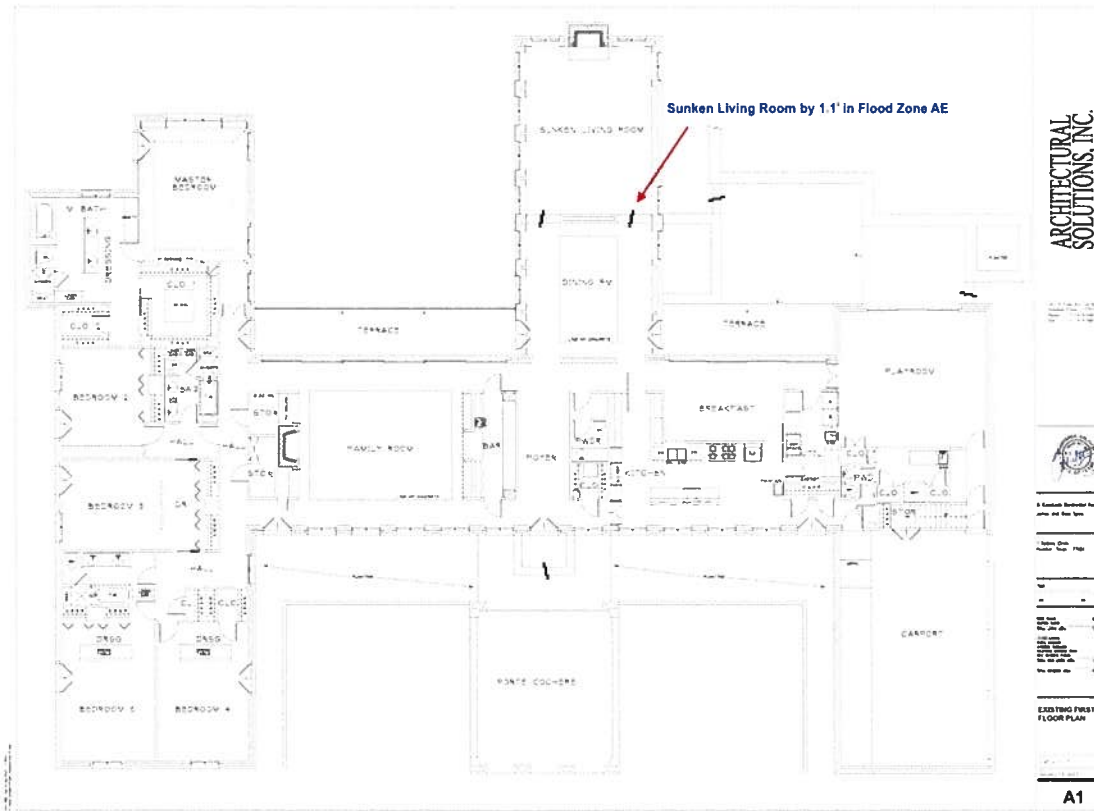


EXHIBIT K: Current Interior Photos (since 2017)

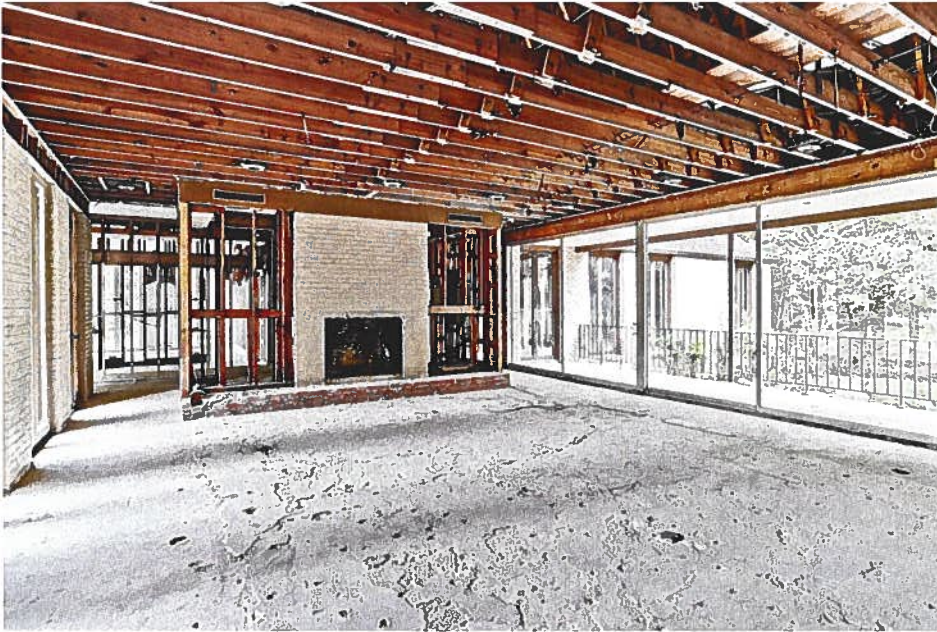




EXHIBIT L: New Remodel Plans

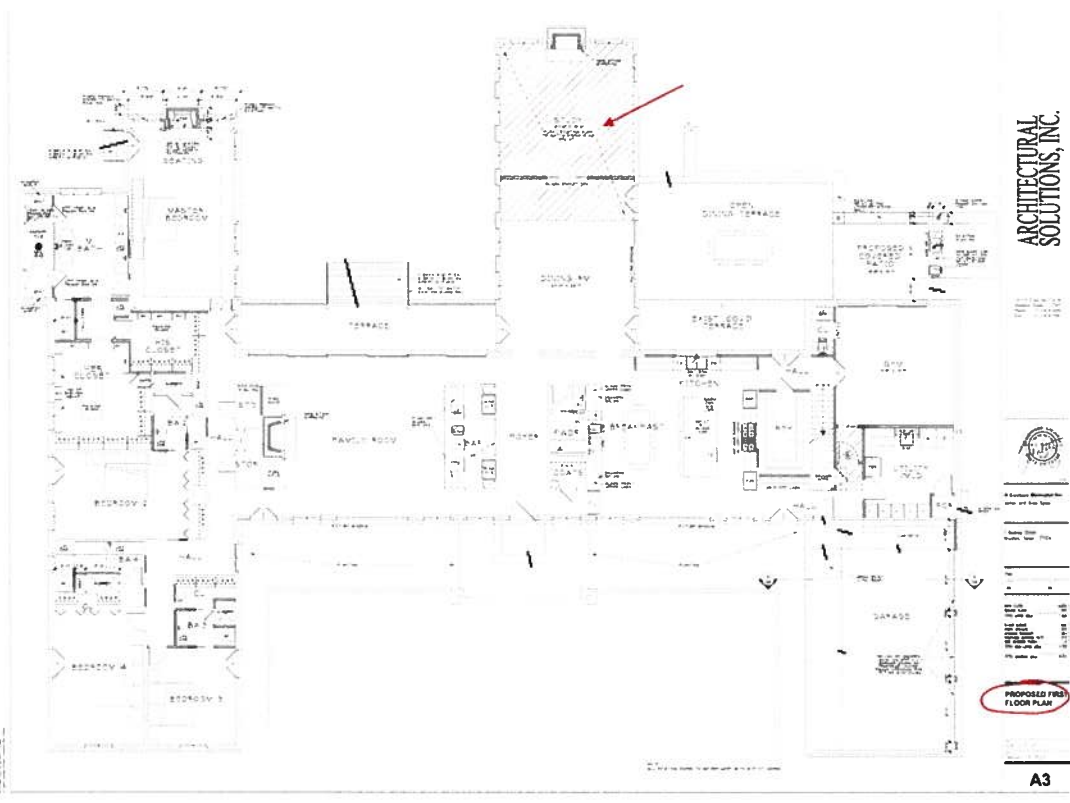
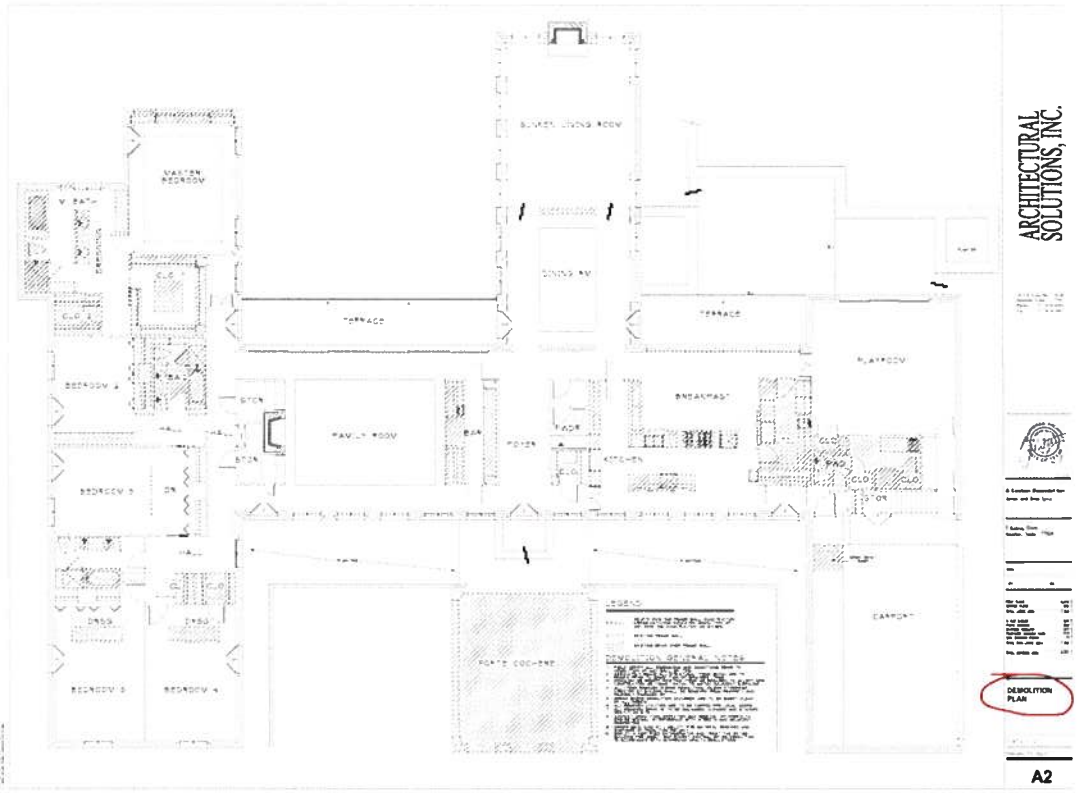


EXHIBIT M: This Floodplain Management Bulletin addresses how the National Flood Insurance Program (NFIP) treats historic structures



National Flood Insurance Program (NFIP)

Floodplain Management Bulletin **Historic Structures**

FEMA P-467-2

May 2008



FEMA



National Flood Insurance Program (NFIP)

Floodplain Management Bulletin
Historic Structures

FEMA P-467-2

May 2008



FEMA

Floodplain Management Bulletin

Historic Structures

This Floodplain Management Bulletin addresses how the National Flood Insurance Program (NFIP) treats historic structures. This bulletin also identifies mitigation measures that can be taken to protect historic structures from floods. The bulletin addresses the following topics:

- Introduction2
- Background on the NFIP2
- The NFIP and Historic Structures3
 - Definition of “Historic Structures”3
 - Floodplain Management Requirements that Provide Relief for Historic Structures4
- Historic Structures in the Floodway5
- New Construction and Non-contributing Structures in Historic Districts6
- Substantial Improvements to Existing Structures in Historic Districts7
- Flood Insurance for Historic Structures8
- Minimizing the Impacts of Flooding on Historic Structures9
 - Protection Measures for Historic Structures9
 - Hazard Mitigation Planning Can Benefit Historic Structures19
- Further Information20
 - State and Local Mitigation Planning “How-To” Guides20
 - Other Mitigation Documents21
- Comments22
- Ordering Information22

Introduction

The National Flood Insurance Program (NFIP) gives special consideration to the unique value of one of our Nation's most significant resources – its historic buildings, landmarks, and sites. It does so in two ways.

First, the NFIP floodplain management regulations provide significant relief to historic structures. Historic structures do not have to meet the floodplain management requirements of the program as long as they maintain their historic structure designation. They do not have to meet the new construction, substantial improvement, or substantial damage requirements of the program. This exclusion from these requirements serves as an incentive for property owners to maintain the historic character of the designated structure (44 CFR §60.3). It may also serve as an incentive for an owner to obtain historic designation of a structure.

Secondly, a designated historic structure can obtain the benefit of subsidized flood insurance through the NFIP even if it has been substantially improved or substantially damaged so long as the building maintains its historic designation. The amount of insurance premium charged the historic structure may be considerably less than what the NFIP would charge a new non-elevated structure built at the same level. Congress requires that the NFIP charge actuarial rates for all new construction and substantially improved structures (National Flood Insurance Act of 1968, 42 U.S.C. 4015).

Although the NFIP provides relief to historic structures from having to comply with NFIP floodplain management requirements for new construction, communities and owners of historic structures should give consideration to mitigation measures that can reduce the impacts of flooding on historic structures located in Special Flood Hazard Areas (44 CFR §60.3). Mitigation measures to minimize future flood damages should be considered when historic structures are rehabilitated or are repaired following a flood or other hazard event. Qualified professionals such as architects, historic architects, and engineers who have experience in flood mitigation techniques can help identify measures that can be taken to minimize the impacts of flooding on a historic structure while maintaining the structure's historic designation.

The purpose of this floodplain management bulletin is to explain how the NFIP defines historic structure and how it gives relief to historic structures from NFIP floodplain management requirements (44 CFR §60.3). This bulletin also provides guidance on mitigation measures that can be taken to minimize the devastating effects of flooding to historic structures.

Background on the NFIP

Congress created the NFIP in 1968 to provide federally supported flood insurance coverage, which generally was not available from private companies. The NFIP is based on a mutual agreement with communities that have been identified as having Special Flood Hazard Areas. The Federal Emergency Management Agency (FEMA) will make flood insurance coverage available in a

community provided that it adopts and enforces floodplain management regulations that meet or exceed the minimum requirements of the NFIP (44 CFR §60.3). This is accomplished through local floodplain management regulations.

The NFIP minimum building and development regulations that communities must adopt require that new and substantially improved and substantially damaged residential buildings be elevated so that the lowest floor is at or above the Base Flood Elevation (BFE) determined for the site. Non-residential buildings have the option of elevation or dry floodproofing to the BFE [44 CFR §60.3(c)(2), (c)(3), and (e)(4)]. Dry floodproofing means making a building watertight, substantially impermeable to floodwaters to the BFE.

Substantial improvement means *“any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the “start of construction” of the improvement. This term includes structures which have incurred substantial damage regardless of the actual repair work performed.”*

Substantial improvement also includes the repair of buildings that have been substantially damaged. Substantial damage means *“damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.”*

In summary, structures that are “substantially improved” and “substantially damaged” must be brought into compliance with the community’s floodplain management requirements [44 CFR §60.3(c)(2), (c)(3), and (e)(4)].

The NFIP and Historic Structures

This section provides information on the NFIP definition of “historic structure” and the floodplain management requirements that will be included in community floodplain management ordinances.

Definition of “Historic Structures”

The definition section of the NFIP [Code of Federal Regulations (CFR) 44 Part 59], defines “historic structure” as *“any structure that is:*

- (1) Listed individually in the National Register of Historic Places (a listing maintained by the Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register; (This includes structures that are determined to be eligible for listing by the Secretary of the Interior as a historic structure. A determination of “eligibility” is a decision by the Department of the Interior that a district, site, building, structure or object meets the National Register criteria for evaluation although the property is not formally listed in the National Register.)*

- (2) *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 to qualify as a registered historic district;*
- (3) *Individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of the Interior; or*
- (4) *Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either:*
 - (a) *By an approved state program as determined by the Secretary of the Interior or*
 - (b) *Directly by the Secretary of the Interior in States without approved programs.”*

This definition was coordinated with the Department of Interior when it was added to the NFIP Regulations in 1989.

The purpose of this definition is to provide NFIP communities with criteria to distinguish between “historic structures” and the other existing buildings which remain subject to NFIP floodplain management requirements (44 CFR §60.3). While it is important to preserve historic structures and other cultural resources, it is also critical to ensure that other existing flood-prone structures are protected from flood damage when they are substantially improved or substantially damaged.

Floodplain Management Requirements that Provide Relief for Historic Structures

The NFIP floodplain management requirements contain two provisions that are intended to provide relief for “historic structures” located in Special Flood Hazard Areas:

- (1) The definition of “substantial improvement” at 44 CFR 59.1 includes the following exclusion for historic structures,

“Any alteration of a “historic structure”, provided that the alteration will not preclude the structure’s continued designation as an “historic structure”. The same exemption also applies to “historic structures” that have been “substantially damaged”.

This provision exempts historic structures from the substantial improvement and substantial damage requirements of the NFIP.

- (2) The other provision of the NFIP floodplain management regulations that provides relief for “historic structures” is the variance criteria at 44 CFR 60.6(a). This provision states:

“Variances may be issued for the repair or rehabilitation of historic structures upon a determination that the proposed repair or rehabilitation will not preclude the structure’s continued designation as a historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure.”

Under the variance criteria, communities can place conditions to make the building more flood resistant and minimize flood damages, but such conditions should not affect the historic

character and design of the building. *See* the section on Minimizing the Impacts of Flooding on Historic Structures for ideas on conditions that could be established to make the building more flood resistant and to minimize flood damages.

Communities have the option of using either provision for addressing the unique needs of “historic structures”. Communities should adopt only one option to address “historic structures.” Some communities have chosen to adopt an ordinance that requires variances for improvements or repairs to “historic structures” and do not exclude such improvements from the substantial improvement definition in their ordinance. Other communities include the “historic structures” exemption as part of their “substantial improvement” definition. In either case, “historic structures” can be excluded from the NFIP elevation and floodproofing requirements. Whether a community exempts a “historic structure” under the substantial improvement definition or through the variance process, the exemption of the “historic structure” from the NFIP floodplain management requirements should be documented and maintained in the community permit files.

However, if plans to substantially improve a “historic structure” or repair a substantially damaged “historic structure” would result in loss of its designation as an “historic structure”, the structure no longer qualifies for the exemption and would be required to meet the NFIP floodplain management regulations (44 CFR §60.3). This determination needs to be made in advance of issuing a permit. This provides an incentive to the property owner to maintain the structure’s historic designation rather than altering the structure in such a way that it loses its designation as a “historic structure”.

Even if a “historic structure” is exempted from the substantial improvement and substantial damage requirements, consideration should be given to mitigation measures that can reduce the impacts of future flooding. There are mitigation measures that can reduce flood damages to historic structures without affecting the structure’s historic designation. *See* the section on Minimizing the Impacts of Flooding on Historic Structures.

Historic buildings may also be subject to the local building codes. Many States and communities use the International Codes as the basis for their buildings codes. The International Codes contain provisions for addressing historic buildings in a manner consistent with the NFIP.

Historic Structures in the Floodway

The NFIP floodplain management requirements could apply to an addition to a “historic structure”, if the structure or addition is located in a floodway. The floodway includes the channel of the river and the adjacent floodplain that must be reserved in an unobstructed condition in order to discharge the base flood without increasing flood levels by more than one foot (44 CFR § 59.1, “regulatory floodway”). All structures and improvements to structures, including additions to “historic structures”, must comply with the floodway encroachment provisions of 44 CFR § 60.3(c)(10) and (d)(3) of the NFIP Regulations.

44 CFR § 60.3(c)(10) applies to rivers and streams where FEMA has established BFEs, but has not provided the community with the data necessary to designate a floodway:

Require until a regulatory floodway is designated, that no new construction, substantial improvements, or other development (including fill) shall be permitted within Zones A1-30 and AE on the community's FIRM [Flood Insurance Rate Map], unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the community.

§ 60.3(d)(3) applies to rivers and streams where FEMA has provided both established BFEs and provided the community with the data necessary to designate a floodway:

Prohibit encroachments, including fill, new construction, substantial improvements, and other development within the adopted regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge.

As an example, an addition, or any portion thereof, to a “historic structure” that expands the square footage of the structure beyond its footprint into the floodway must comply with the regulatory floodway criteria [44 CFR §60.3(c)(10) and (d)(3)]. These additions can obstruct flood flows and increase flood stages. Under 44 CFR § 60.3(d)(3), such an addition would be prohibited if any rise in the flood level would result from the addition. FEMA defines “any” as meaning a zero increase.

New Construction and Non-contributing Structures in Historic Districts

Generally, registered historic districts contain a mix of buildings. In addition to structures that contribute to the historic significance of the district, there will generally be structures in historic districts that have no historical significance and which do not contribute to the historic significance of a registered historic district (called “non-contributing” structures). In addition, there may be sites in these districts that are undeveloped or vacant land. Whole districts cannot be exempt from floodplain management regulations and a blanket variance cannot be issued for all land within these districts. The non-contributing structures and vacant lots in historic districts remain subject to all of the floodplain management requirements that apply to new construction and substantial improvements (44 CFR §60.3).

Some communities have argued that they should be allowed to grant variances for new buildings or for substantial improvements to non-contributing buildings in historic districts. They claim that requiring that the new structures or substantially improved structures be elevated to BFE could be harmful to the historic significance of the district. FEMA maintains that this would be contrary to the purposes of the NFIP and could result in greatly increased flood damages and, in some instance,

even result in loss of life. There are ways to elevate or floodproof new structures and substantially improve non-contributing structures so that they comply with the NFIP regulations, but that are still in harmony with the historic nature of the district. While the NFIP requires protection to the BFE, it does not specify the means (44 CFR §60.3). An architect should be able to design a new building that is both compliant with NFIP floodplain management requirements and compatible with the historic nature of the district. For example, the protection does not have to be achieved by unsightly mounds of dirt or bare pilings or other elevated foundations. The structure could be elevated on pilings or other foundation elements and the lower area then covered by an architecturally pleasing façade that will not impair the aesthetics of a historic district. The foundation could be camouflaged with landscaping, porches, or staircases (*See* the examples in latter sections of this bulletin).

The NFIP was specifically established by Congress to reduce threats to lives and the potential for damages to new construction in flood hazard areas in exchange for providing flood insurance. Exempting new construction from the NFIP elevation requirements in historic districts would be contrary to the National Flood Insurance Act of 1968, as amended, and it would create a significant flood risk to structures and to the health and safety of the population. Potentially thousands of buildings would be placed in harms way, if new or non-contributing structures are not protected.

Substantial Improvements to Existing Structures in Historic Districts

Some property owners have wanted to substantially improve a non-contributing structure in a historic district, so that it can become a contributing structure to the historical significance of the registered historic district. For example, this type of improvement could involve removal of modern additions to the building, replacement of modern siding or roofing materials with historic materials, and other actions to restore the historic nature of the structure. If the improvement is a substantial improvement to a non-contributing structure, the structure still could qualify for relief from the NFIP floodplain management requirements in the following ways (44 CFR §60.3):

- The property owner could apply through their State Historic Preservation Officer or Tribal Historic Preservation Officer for contributing status for the structure as is, prior to any improvements. If the building qualifies as “contributing to the historical significance of a registered historic district”, the community can grant a variance or exclude the improvements from the NFIP substantial improvement requirement depending on which provision the community has adopted [44 CFR §60.3(c)(2), (c)(3), and (e)(4)].
- The property owner could undertake the minimum work necessary to make the building a contributing structure, as long as the work is less than a substantial improvement. Once the structure is designated as “contributing”, any additional improvements including a substantial improvement could qualify for relief from the NFIP floodplain management requirements, so long as those improvements do not interfere with the designation as “contributing to the historical significance of a registered historic district” (44 CFR §60.3).
- If the property owner chooses to undertake a substantial improvement of the building all at once or the owner needs to undertake the substantial improvement in order for the building

to qualify as “contributing to the historical significance of a registered historic district”, the owner should contact the community for guidance on how they might qualify for relief from the NFIP substantial improvement requirement [44 CFR §60.3(c)(2), (c)(3), and (e)(4)]. In this situation, the community would have to issue a variance from the floodplain management ordinance. The community should obtain documentation for assurance that the improvements being proposed would qualify the building for “contributing” status before signing off on permits that would grant them relief under the NFIP. The owner should seek guidance from their State Historic Preservation Officer or Tribal Historic Preservation Officer on proposed improvements and on what documentation is needed to obtain preliminary approval. This information should be shared with the community.

In all cases, the property owner should discuss their proposed plans with the community and seek guidance from the State Historic Preservation Officer or Tribal Historic Preservation Officer before undertaking any improvements to make sure the proposed work would qualify the building for the designation as a contributing structure. For any of the options described above, the community should also encourage the property owner to undertake flood damage reduction measures as part of the improvement, as long as measures do not interfere with its designation as a “historic structure”.

Flood Insurance for Historic Structures

In addition to the relief from the NFIP floodplain management requirements described above, owners of “historic structures” can obtain and maintain flood insurance at subsidized rates. Flood insurance coverage is required for most mortgage loans and for obtaining Federal grants and other financial assistance. The ability to obtain flood insurance coverage is also important to ensuring that historic structures can be repaired and restored after a flood event.

The National Flood Insurance Act of 1968, as amended, requires that FEMA charge actuarial rates reflecting the flood risk to buildings built or substantially improved on or after the effective date of the initial Flood Insurance Rate Map (FIRM) for the community or after December 31, 1974, whichever is later. Actuarial rating assures that the risks associated with buildings in flood prone areas are borne by those located in such areas and not by the taxpayers at large. These buildings are referred to as Post-FIRM. The NFIP flood insurance rates are based on the degree of the flood risk. The flood insurance premium calculations take into account a number of factors including the flood risk zone shown on the FIRM, elevation of the lowest floor above or below the BFE, the type of building, the number of floors, and the existence of a basement or an enclosure. The NFIP floodplain management requirements not only are designed to protect buildings constructed in floodplains from flood damages; they also help keep flood insurance premiums affordable (44 CFR §60.3). Buildings not properly elevated will be charged a much higher flood insurance premium due to the increased flood risk. If substantially improved historic structures were not elevated and made subject to these rates, the annual insurance premiums could be many thousands of dollars a year. Allowing historic structures to continue to be insured at subsidized rates, even when they are substantially improved or substantially damaged, represents a significant financial benefit to these building owners.

Flood insurance at subsidized rates is available whether the “historic structure” is exempt from the NFIP substantial improvement requirement or is granted a variance under the variance provision. “Historic structures” are considered Pre-FIRM under the NFIP and are charged subsidized rates similar to existing structures. As long as a historic structure meets the definition of “historic structure” under the NFIP, it will not be actuarially rated (44 CFR §59.1).

If a “historic structure” is substantially improved such that it loses its historic designation without meeting the elevation requirements of the NFIP, it will be actuarially rated as a Post-FIRM structure. This can be significantly higher than the subsidized rate on a “historic structure.” Thus, the subsidized flood insurance rate on “historic structures” also serves as an incentive to maintain the historic designation of the structure.

Property owners of historic structures are encouraged to purchase NFIP flood insurance. Flood losses are not covered by homeowner’s insurance. Disaster assistance will not take care of all the financial needs, if the historic structure is damaged by flood. Even if disaster assistance is available, it is often in the form of a low-interest loan which has to be repaid, and it is only available if the President formally declares a disaster. Flood insurance compensates for all covered losses and is the best form of financial protection against the devastating effects of floods. Flood insurance policies purchased by individual property owners help them recover from flooding more quickly.

Increased Cost of Compliance (ICC) coverage is not available to a historic structure that is exempt from the floodplain management requirements if a historic structure is substantially damaged (44 CFR §60.3). ICC coverage provides for the payment of a claim for the cost to comply with State or community floodplain management laws or ordinances after a direct physical loss by floods. When a building covered by a State or community declares the building to be substantially or repetitively damaged, ICC will help pay up to \$30,000 for the cost to elevate, floodproof, demolish, or relocate the building. However, if an exemption is granted administratively through the community’s variance process, and conditions are placed in the variance requiring one of the mitigation measures that meet the local floodplain management criteria, ICC will be available if the structure is declared substantially damaged or repetitively damaged.

Minimizing the Impacts of Flooding on Historic Structures

Protection Measures for Historic Structures

The primary damage to historic buildings in a flood disaster is from immersion of building materials in floodwaters and the moving force of floodwaters that can cause structural collapse. Storm and sanitary sewer backup during flooding is also a major cause of flood damage to buildings. In addition, floods may cause a fire due to ruptured utility lines; result in the growth of mold and mildew; and lead to swelling, warping, and disintegration of materials due to prolonged presence of moisture.

Although “historic structures” are exempt from the NFIP floodplain management requirements for new and substantially improved construction, flood mitigation measures should be a consideration to minimize flood damages when rehabilitating a historic structure or repairing a damaged historic structure (44 CFR §60.3).

Rehabilitating or repairing a historic structure provides an opportunity to incorporate measures to reduce future flood damages. In addressing multiple historic structures in a historic district or a single historic structure, one of the first steps to undertake is to assess the flood risk and estimate the amount of potential flood losses. The “how-to” guides described in the Hazard Mitigation Planning Can Benefit Historic Structures section of this Bulletin can help in assessing the flood risk and the potential flood losses to historic structures. The “how-to” guides can also help in identifying, evaluating, and prioritizing possible mitigation measures that reduce flood damages.

Mitigation measures can take a variety of forms from simple low-cost improvements such as elevating utilities and mechanical equipment to structural measures such as elevation, dry floodproofing, or relocating the building to a site outside the Special Flood Hazard Area. Even the more costly measures such as elevation, dry-floodproofing, or relocation can have significant benefits relative to their cost including:

- Reduction of flood damages. The buildings may not sustain flood damages or at least those damages will be significantly less than if no mitigation measures were implemented.
- Reduction in flood insurance premiums. Buildings that are elevated to or above the BFE or relocated out of the floodplain can qualify for flood insurance at actuarial rates that are generally less expensive than even the subsidized flood insurance rates charged to existing structures.
- Long-term preservation of the building. Historic structures that are repeatedly flooded will deteriorate and eventually may have to be demolished unless they are protected from flooding. Mitigation measures can help preserve the building for future generations.

One of the challenges in mitigating the flood risk to a “historic structure” is the need to incorporate mitigation measures in such a way that the structure does not lose its historic designation. When evaluating mitigation measures for historic structures, care should be taken so that new designs and new materials do not obscure existing significant historic features. Retrofitting a historic structure to reduce flood damages can be done that it has minimal impact on the structure’s historic integrity and so that it maintains its historic designation.

A range of mitigation measures may be available for a particular historic structure. By adhering to the *Secretary of the Interior’s Standards for the Treatment of Historic Properties* and by seeking the help of an architect or engineering professional experienced in rehabilitating historic structures, a structure’s original historic setting, scale, and distinctive features can be preserved. You may want to also refer to the *Preservation Briefs* published by the National Park Service, which provide guidance on preserving, rehabilitating, and restoring historic buildings. You may also want to seek guidance from your State Historic Preservation Officer or Tribal Historic Preservation Officer.

There is a variety of relatively simple measures that can be implemented to minimize the effects of flooding. Although these measures are designed to reduce flood damages, they may not eliminate flooding altogether. Many of the techniques described below may have minimal impact on the character-defining design features of the historic structure and some are relatively inexpensive to implement. Several of these will require a design professional and licensed contractor to implement.

- Relocate contents to a safer location. For example, heirlooms and other cultural resources should be located above the BFE. At a minimum, valuable contents should be removed from flood-prone basements.
- Create positive drainage around the building. In places where ground slope against the building facade is either flat or toward the building, increase the grade immediately adjacent to the façade to achieve positive drainage away from the building. In some situations, existing masonry and concrete window wells around basement windows may need to be built up to retain the extra height of the fill.
- Protect mechanical and utility equipment. Elevating mechanical and utility equipment (including electrical, heating, ventilation, plumbing and air conditioning equipment) above the BFE can protect them from flood damage. Guidance for protecting mechanical and utility equipment from flooding can be found in the FEMA publication, *Protecting Building Utilities from Flood Damage, Principles and Practices for the Design and Construction of Flood Resistant Building Utility Systems* (FEMA 348/November 1999).
- Remove modern finished materials from basements or other areas that are floodprone. Often historic structures are constructed from materials that are relatively flood-resistant. For example, basements often had stone or rubble walls and dirt floors. These buildings often were repeatedly flooded with minimal flood damages except to building contents. In more recent years many of these areas have been finished off using modern materials that are less resistant to flood damage and building utilities added. It may be possible to wet-floodproof the building merely by removing these modern materials and restoring these areas to their original configuration.
- Use flood resistant materials below the BFE. When rehabilitating or repairing a damaged historic structure, use flood resistant materials below the BFE to improve the structure's ability to withstand flooding. Guidance for using flood resistant materials can be found in Technical Bulletin 2-93, *Flood-Resistant Materials Requirements for Buildings Located in Special Flood Hazard Area in accordance with the National Flood Insurance Programs*.
- Fill in the basement. For historic structures with basements, a simple solution to minimize flood damage and reduce the potential for structural damage is to abandon the basement, raise any mechanical and utility equipment, and fill in the basement with sand or gravel.
- Wet floodproofing the basement. This measure allows the internal flooding of a basement. Flooding of a structure's interior is intended to counteract hydrostatic pressure on the walls, surfaces, and supports of the structure by equalizing interior and exterior water levels during a flood. Inundation also reduces the danger of buoyancy from hydrostatic uplift forces. Such measures may require alteration of a basement's design and construction, use of flood-

resistant materials, adjustment of the basement's maintenance, relocation of equipment and contents, and emergency preparedness. Guidance for wet floodproofing a basement can be found in Technical Bulletin 7-93 *Wet Floodproofing Requirements for Structures Located in Special Flood Hazard Areas in accordance with the National Flood Insurance Program*.

- Install “mini”-floodwalls to protect openings, such as a window well. For low level flooding, a type of “mini”-floodwall can be used to permanently protect various types of openings. Possible materials for this use include brick, concrete block and poured concrete. They should be supported by and securely tied into a footing so that they will not be undercut by scouring and the soil under these walls should be fairly impervious to control seepage. Some form of sealant may be needed on the outside to control seepage.
- Temporary measures. Where it is not possible to use the above measures to protect a building from flooding, it may be possible to use temporary measures to reduce flood damages. Examples include sand-bagging openings, installing temporary barriers or flood shields in openings, and evacuating building contents to floors above the flood level. In order for this approach to work, one must develop an emergency plan and stock-pile the required materials ahead of time. The amount of flood warning time available for the site is critical and it must be ensured that adequate personnel are available to install the measures. Do not try to keep water out of buildings unless an engineering analysis is conducted to ensure that the walls are strong enough to withstand flood forces (hydrostatic, hydrodynamic, debris, and buoyancy).

Property owners may want to undertake more extensive mitigation measures, if there is a likelihood of significant or more frequent flood damage to the historic structure. These mitigation measures could include elevating, floodproofing, or relocating the structure to a site that is outside of the Special Flood Hazard Area. These mitigation measures are described below.

Elevation

One of the common methods of protecting flood-prone buildings is to elevate the lowest floor of a structure above the BFE (elevation of the one-percent-annual chance flood). Elevation is an effective mitigation measure, if designed and constructed appropriately to withstand flood forces. Although elevation is a practical solution for flooding problems, the flooding conditions and other hazards at the site must be carefully examined so that the most suitable technique and foundation type can be determined. There are two types of elevation to consider: (1) The entire building is lifted and placed on a new elevated foundation (columns, piers, posts, or raised foundation walls such as a crawl space). (2) In situations where it is possible to leave the exterior of the building the same, raise the interior floor of the building above the BFE. This may be an alternative for older stone buildings with high ceilings and elevated window sills.

Essentially, the steps required for elevating a building are largely the same in all cases. A cradle of steel beams is inserted under the structure; jacks are used to raise both the beams and structure to the desired height; a new elevated foundation for the house is constructed; and the structure is then lowered back onto the new foundation and reconnected. At a



Elevation of a historic residence in Mandeville, Louisiana

minimum, the foundation of the elevated structure must be able to withstand the expected loads at a site which may include hydrostatic pressure, hydrodynamic loads from velocity water and wave impacts, debris impact resulting from the flood, and buoyancy. The foundation must also be able to resist undermining by any expected erosion or scour. Therefore, the flooding characteristics and building type and condition will need to be examined to determine which type of foundation will be the most suitable.

While elevating a structure above the BFE will provide the structure the most protection, a less intrusive elevation may be desired or more feasible for a historic structure. Other protection measures, such as elevating utilities and equipment above the BFE, should be considered if elevating a historic structure to the BFE is not practicable.



Elevation of a historic residence in Mandeville, Louisiana

Elevation of a historic structure does not have to be achieved by unsightly pilings or other foundation that would impair the aesthetics of a historic district. The structure could be elevated on pilings or foundation walls and the foundation area could then be covered by an architecturally pleasing facade that is consistent with materials from the historic structure. The lower area can also be camouflaged with landscaping.

Elevation in South Carolina. 113

Calhoun Street is a 125-year old, three-story house that stands in the heart of the downtown historic district of Charleston, South Carolina. Already abandoned for several years by the time Hurricane Hugo struck in 1989, 113 Calhoun Street was in serious danger of collapse by 1997. Instead of demolishing the building, the City of Charleston donated it to the 113 Calhoun Street Foundation, a non-profit partnership formed between the South Carolina Sea Grant Consortium, Clemson University, and the City of Charleston.

Using creative design solutions the 113 Calhoun Street Foundation transformed the derelict building into an educational center. Primary funding for the initial construction was provided by FEMA, while additional support, including the donation of products and services, came from the private sector. It was determined that an elevation above the BFE would not have been appropriate for 113 Calhoun Street. Such an elevation would have raised the building more than 5 feet, which would not have been in keeping with the surrounding streetscape and character of the historic district. Instead, the organization elevated the house only one foot, undertaking a variety of other types of interior and exterior improvements to protect against hazards.

Even though it was elevated to below the BFE, the house is still protected from minor flooding events and suffers less damage in major flooding events. Improvements to the house included the following:

- Placing HVAC ductwork at ceiling level and returns above the BFE.
- Placing electrical, telephone, and computer outlets above the BFE, with no splices or connections below the BFE.



113 Calhoun at inception of project
Photo courtesy of 113 Calhoun Street Foundation.



113 Calhoun today
Photo courtesy of 113 Calhoun Street Foundation.

- Installing interior decorative wainscoting to the BFE. This wainscoting consisted of water-resistant material, and could be removed to dry after a flood event.
- Designing interior structural elements so that a continuous load path was created that minimized weak links in the building's structural system.
- Replacing the building's deteriorated original foundation of unreinforced masonry brick with a new foundation consisting of concrete footings with steel ties. This new system allowed new timbers members to be bolted to the foundation, protecting against the twisting movements and other movements caused by seismic and wind forces. Brick from the original foundation was re-used as a veneer on the new foundation.

Elevation in Belhaven, North Carolina. The Town of Belhaven, North Carolina, along the Pungo River, is subject to repeated flooding. In its last flood event, over 60 percent of the town's buildings were damaged, including most of the buildings in the National Register-listed Belhaven Historic District. In an effort to retain the town's historic and economic link to the waterfront, the decision was made to elevate the 379 buildings in place rather than relocate them to higher ground or demolish and rebuild them.

With assistance from the North Carolina State Historic Preservation Officer, plans were developed for an elevation project that would best preserve the historic character of the district. In the plan, frame buildings were raised onto concrete block foundations faced with brick veneer. Brick buildings were elevated onto



Frame building elevated on concrete block foundation faced with brick veneer. Belhaven, North Carolina.

continuous concrete block foundations, which were also faced with brick veneer. A projecting brick course was used to demarcate where the original house ended and the new foundation began. Additional guidance was drafted for preserving porches, railings, balusters, and steps, and for replacing old materials with appropriate new materials where necessary.

To prepare for the elevation project, large-format archival photographs were taken of each building that would be included in the project. These photographs provided a permanent record of the historic appearance of the district. Due to all these extra planning efforts for preserving its historic properties, the Belhaven Historic District was able to maintain its National Register status.

By the time the next flood struck Belhaven, 32 of the planned 379 houses were elevated. It is estimated that elevation of these 32 properties alone saved the town over \$1.3 million in direct and indirect damages.

Floodproofing

Another alternative is to “floodproof” the building, so that it will not sustain damage or so that damages are minimized. There are two types of floodproofing commonly called “dry-floodproofing” and “wet-floodproofing.” Dry floodproofing means making a building watertight, substantially impermeable to floodwaters. This form of floodproofing requires that the building be properly anchored to resist flotation, collapse, and lateral movement. It also may require the reinforcement of walls to withstand flood forces and impact forces generated by floating debris; the use of membranes and other sealants to reduce seepage of floodwater through walls and wall penetrations; the installation of pumps to control interior water levels; the installation of check valves to prevent entrance of floodwater or sewage flows through utilities; and the location of electrical, mechanical, utility, and other valuable vulnerable equipment and contents above the expected flood level. Dry-floodproofing must be implemented with an appropriate design by a registered professional engineer or architect. Additional guidance on dry floodproofing can be found in Technical Bulletin 3-93 *Non-Residential Floodproofing – Requirements and Certification for Buildings Located in Special Flood Hazard Areas in accordance with the National Flood Insurance Program* and in *Floodproofing Non-Residential Structures* (FEMA 102/May 1986).

Wet-floodproofing allows for the flooding of a structure’s interior to equalize hydrostatic pressure on exterior walls, surfaces, and supports of the structure during a flood. Application of wet-floodproofing as a flood protection technique should be limited to specific situations in A Zones (including A, AE, A1-30, AH, AO, and AR zones).

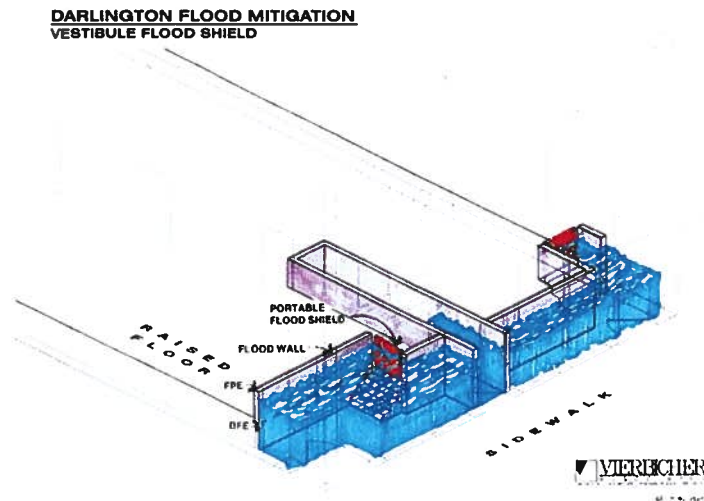
Flooding of a structure’s interior is intended to counteract hydrostatic flood forces on the exterior walls, surfaces, and supports of the structure during a flood. Inundation also reduces the danger of buoyancy from uplift forces. Use of wet floodproofing for historic structures requires careful consideration of protection techniques.

Building materials for the area that is to be wet-floodproofed should be replaced with flood resistant materials. Valuable contents should be relocated to or above the BFE. Light, portable furnishings should be able to be moved quickly and easily before a flood. Utilities and equipment should be elevated to or above the BFE or located on a platform that is above the BFE. Consideration must be given to flood duration, frequency, and depth to determine if wet-floodproofing is a viable option. For example, flood-prone basements may be modified, so that they can be flooded without damage to the building or foundation. Additional guidance on wet floodproofing can be found in Technical Bulletin 7-93 *Wet Floodproofing Requirements for Structures Located in Special Flood Hazard Areas in accordance with the National Flood Insurance Program*.

Floodproofing in Wisconsin. Flooding is an ongoing part of life in the rural riverside town of Darlington, Wisconsin, having caused millions of dollars in property damage over the past decade. Following the devastating damage from the 1993 floods, the town could follow one of the three routes: do nothing and continue to suffer the periodic floods; move the central business district out of the floodplain and upset the local economy and sense of community; or do something innovative.



Restored and retrofitted buildings in Downtown Darlington, Wisconsin



To provide additional protection against floodwater, removable watertight floodgates were incorporated into the buildings

building most vulnerable to flooding, and all utilities were upgraded and raised. All these measures were implemented without altering the exteriors or disrupting the historic integrity of these older buildings.

These mitigation measures resulted in the successful floodproofing of the historic central business district against the 100-year flood event, as well as the revitalization of Darlington's economy.

The successful integration of historic preservation and hazard mitigation earned Darlington a Preservation Achievement Award from the State Historical Society of Wisconsin.

Darlington chose innovation. It found creative solutions to retain the historic charm of its nineteenth century business district, while eliminating the threat of future flood devastation.

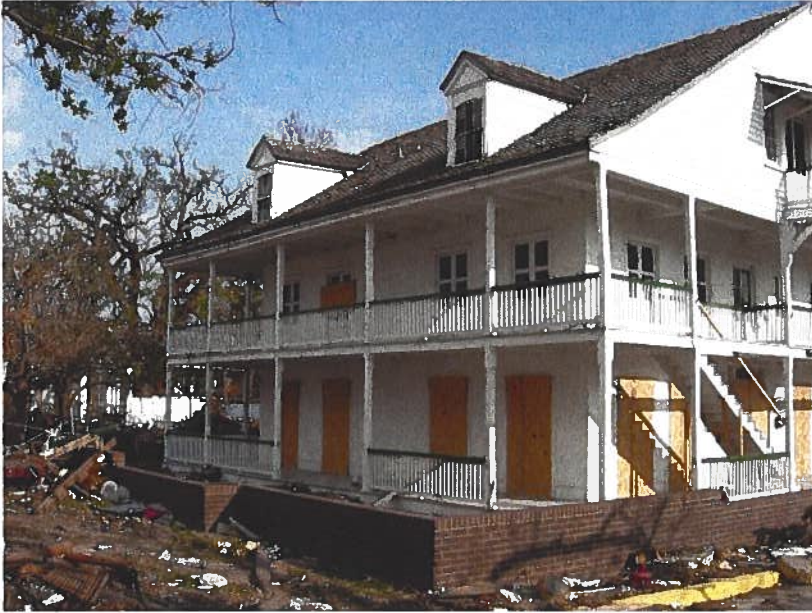
The town took advantage of the very high ceilings common to many of the older buildings in Darlington; their height allowed first floors to be elevated out of flood danger with minimal impact to other historic features. Basements were filled with sand and gravel, floodproofing that portion of the



Floodproofing the vestibule of a storefront

Relocation

Relocation is the mitigation measure that can offer the greatest security from future flooding. Relocation involves moving the entire structure out of the floodplain or it may involve dismantling a structure and rebuilding it elsewhere. It may be possible to relocate a building to a higher part of the same parcel or lot, but often it will be necessary to move the building to another site. In either case, it is the most reliable of all mitigation measures. In addition to relieving the property owner from future anxiety about flooding, this method can offer the opportunity to significantly reduce or



Built by John Holm in 1847, the Magnolia Hotel, badly damaged from Hurricane Camille in 1969, was moved 100 yards north and restored by the City of Biloxi in 1972. As a result, the hotel experienced only minimal flooding during Hurricane Katrina.

even eliminate the need for flood insurance. Relocation may be the best option in cases where the building site is subject to repeat flooding or severe flooding, where flood depths and velocities can have significant impact on the building.

Obviously, moving a structure is a complex operation and will have to be done by a professional with experience in relocating structures. Relocation generally involves raising the building and placing it on a wheeled vehicle, usually a large flatbed trailer. The building is then transported to the new site and lowered onto a new foundation. In general, structures over a crawl space or basement are the easiest to relocate, while structures that are slab-on-grade or multi-story are more difficult. Masonry buildings, buildings with stone or brick veneer, and buildings with chimneys may require extensive bracing to prevent cracking or structural failure. As structures become larger, moving them may become more complicated and more expensive.

Relocation may, in some cases, be an appropriate option for historic structures by moving them out of harm's way. However, historic structures often share important features to the site, such as landscaping, outbuildings, alleyways, orientation, setback from the street, or other historical context. These contributing features often help to define a neighborhood's historic significance. If this option is being considered for a historic structure, consult with a historic preservation professional. The State Historic Preservation Officer or Tribal Historic Preservation Officer can also offer guidance. An example of a historic structure, which was relocated out of harm's way, follows.

Relocation in Fulton, New York. On January 19, 1996, floodwaters of the Schoharie Creek rose nearly 18 feet damaging many properties in the Town of Fulton, in Schoharie County, New York. The Town of Fulton submitted a Hazard Mitigation Grant Program application to FEMA for the acquisition and demolition of 12 properties. In reviewing the Town of Fulton’s application, FEMA initiated consultation under section 106 of the National Historic Preservation Act. As a result, FEMA determined and the New York State Historic Preservation Officer concurred that one of the buildings in the application – known as the “Bruchmann residence” – was eligible for inclusion on the National Register of Historic Places and that its demolition would result in an “adverse effect.” The residence is significant as a notable and substantially intact example of a mid-19th century vernacular design and construction.



Dismantling of Bruchmann residence, May 2000

Based on the “adverse effect” determination, a Memorandum of Agreement (MOA) was negotiated between the State Historic Preservation Officer, FEMA, and the Town of Fulton wherein the town would explore alternatives to demolition. The town implemented an advertising campaign in an attempt to identify a party willing and able to relocate the structure to another site. After more than 2 years, an interested party submitted a statement of interest to the applicant and a deal was struck.

The house was re-erected on its new site in Delaware County.

Hazard Mitigation Planning Can Benefit Historic Structures

Historic properties and cultural resources are valuable, economic assets in communities throughout the United States. For many communities, historic and cultural resources are a catalyst for economic development. Often not considered are the potentially devastating effects that flooding can have on historic properties. When disaster strikes and a community’s historic resources are damaged, the economic and social vitality of the community can be severely impacted. Communities can take steps to minimize the impacts of flooding on the community’s historic resources by integrating historic property and cultural resource protection into hazard mitigation planning.

FEMA has developed a series of mitigation planning “how-to” guides for the purpose of assisting communities, States, and Tribes in developing an effective hazard mitigation plan. These guides have been developed by FEMA to provide an overview of the core elements associated with hazard mitigation planning. The four core elements include – organizing resources, assessing risks, developing a mitigation plan, and implementing the plan and monitoring progress. These “how-to series” include:

- Getting started with the mitigation planning process, including important considerations for how one can organize efforts to develop an effective mitigation plan (FEMA 386-1);
- Identifying hazards and assessing losses to community, State, or Tribe (FEMA 386-2);
- Setting mitigation priorities and goals for community, State, or Tribe, and writing the plan (FEMA 386-3); and
- Implementing the mitigation plan, including project funding and maintaining a dynamic plan that changes to meet new developments (FEMA 386-4).

One particular guide developed specifically to address historic properties and cultural resources is the FEMA publication titled *Integrating Historic Property and Cultural Resource Considerations Into Hazard Mitigation Planning* (FEMA 386-6 / May 2005). This guide should be used in conjunction with the four guides described above. This guide will help communities accomplish the following with respect to historic structures and historic districts:

- Identify and pull together resources for incorporating historic property and cultural resource considerations into a hazard mitigation plan;
- Determine which historic properties and cultural resources are likely to be damaged in a disaster and prioritize them for protection;
- Evaluate potential hazard mitigation actions for historic properties and cultural resources through the use of benefit-cost analysis and other decision-making tools; and
- Develop and implement a hazard mitigation plan that addresses historic properties and cultural resources.

To obtain copies of these publications, refer to Further Information section and Order Information section.

Further Information

State and Local Mitigation Planning “How-To” Guides

Getting Started – building support for mitigation planning, FEMA 386-1, September 2002.

Understanding Your Flood Risk – identifying hazards and estimating losses, FEMA 386-2, August 2001.

Developing the Mitigation Plan – identifying mitigation actions and implementation strategies, FEMA 386-3, April 2003.

Bringing the Plan to Life – implementing the hazard mitigation plan, FEMA 386-4, August 2003.

Integrating Historic Property and Cultural Resource Considerations Into Hazard Mitigation Planning, FEMA 386-6, May 2005.

Other Mitigation Documents

Homeowner's Guide to Retrofitting, Six Ways to Protect Your House from Flooding, FEMA 312, June 1998.

Floodproofing Non-Residential Structures, FEMA 102, May 1986.

Flood-Resistant Materials Requirements for Buildings Located in Special Flood Hazard Areas in Accordance with the National Flood Insurance Program, FEMA Technical Bulletin 2-93, FIA-TB-2. 4/93.

Hurricane Katrina in the Gulf Coast, Mitigation Assessment Team Report, Building Performance Observations, Recommendations, and Technical Guidance, FEMA 549, July 2006. Chapter 6 and Appendix J.

Openings in Foundation Walls for Buildings Located in Special Flood Hazard Areas in accordance with the National Flood Insurance Program, FEMA Technical Bulletin 1-93, FIA-TB-1 4/93.

Non-Residential Floodproofing-Requirements and Certification for Buildings Located in Special Flood Hazard Areas in accordance with the National Flood Insurance Program, FEMA Technical Bulletin 3-93, FIA-TB-3. 4/93.

Protecting Building Utilities From Flood Damage, Principles and Practices for the Design and Construction of Flood Resistant Building Utility Systems, FEMA 348, November 1999.

Recommended Residential Construction for the Gulf Coast, Building on Strong and Safe Foundations, FEMA 550, July 2006.

Repairing Your Flood Home, Federal Emergency Management Agency and the American Red Cross, ARC 4477 or FEMA 234, 1992.

Wet Floodproofing Requirements for Structures Located in Special Flood Hazard Areas in accordance with the National Flood Insurance Program, Technical Bulletin 7-93, FIA-TB-7 12/93.

To obtain a copy of these publications, see the section on Ordering Information. They are also available to view and download from <http://www.fema.gov/library/index.jsp>.

Comments

Any comments on the Floodplain Management Bulletin should be directed to:

DHS/FEMA
Mitigation Directorate
500 C St., SW
Crystal City
Washington, D.C. 20472

Ordering Information

This document can be downloaded from the following website:

<http://www.fema.gov/library/index.jsp>.

Copies of this bulletin and the above listed publications are available from:

FEMA Distribution Facility
P.O. Box 2012
Jessup, MD 20794-2012.

FEMA's Distribution Facility also accepts telephone requests (1-800-480-2520) and facsimile requests (301-362-5335).

This Bulletin represents FEMA's interpretation of a statutory or regulatory requirement. The Bulletin itself does not impose legally enforceable rights and obligations, but sets forth a standard operating procedure or agency practice that FEMA employees follow to be consistent, fair, and equitable in the implementation of the agency's authorities.