Surveying in Floodplains

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Surveying in Floodplains -Agenda

- The National Flood Insurance Program (NFIP)
- FEMA Floodplain Maps and Studies
- Flood Insurance
- Floodplain Regulations
- FEMA Elevation Certificate
- Letters of Map Change
- Resources





Overview of the NFIP





The National Flood Insurance Program (NFIP)

Know Your Risk Floodplain Mapping

Reduce Your Risk Floodplain Regulations Insure Your Risk Flood Insurance





NFIP Participation in New Hampshire

- 219 communities
 (93%) participate
- 17 communities (7%) do not participate





Federal, State, and Local Roles in the NFIP

Federal Role (FEMA)

- Provide flood insurance to all residents in a participating community
- Provides Flood Insurance Rate Maps for participating communities
- Establish minimum development/building standards and guidance
- Monitor compliance







Federal, State, and Local Roles in the NFIP

State Role

- Assists FEMA
- Technical assistance to all stakeholders
- Education and outreach
- Model floodplain regulations
- Assist communities in evaluating compliance of floodplain activities







Federal, State, and Local Roles in the NFIP

Local Role

- Adopt floodplain regulations that include at least minimum NFIP requirements
- Ensure that permits are applied for, for all development in mapped FEMA floodplains
- Ensure floodplain development is built according to approved permits and floodplain regulations
- Take enforcement actions; correct violations
- Keep records of required documentation on file





Where Do Surveyors Fit In?

Elevation data needed for different aspects of the program including:

- Documentation requirements for new construction and Substantially Improved buildings in the floodplain.
- Requests to remove properties from the floodplain (Letters of Map Amendment).
- Flood insurance rating.





Floodplain Mapping





Flood Insurance Rate Maps (FIRM) and Flood Insurance Study (FIS) Report



What are the Maps Used for?

Produced by FEMA for communities in the NFIP. Used by:

- Municipal officials to determine which areas of their community are subject to its floodplain development regulations and the building requirements that apply for development activity in floodplain areas.
- Lenders to determine which properties require flood insurance as a condition of a mortgage or other loan.
- Insurance agents to determine flood insurance rates for properties.

1% Annual Chance Flood

- National standard used by the NFIP for purposes of requiring the purchase of flood insurance and regulating new development
- Also known as the "100-year flood" and the "Base Flood"
- Mapped boundary of the 1% annual chance flood is called the Special Flood Hazard Area (SFHA).





Flood Zones on the Maps

Special Flood Hazard Areas (SFHAs) contain all zones that start with the letter **A** or **V**.

Areas outside of the SFHA are designated as 'Zone X'.



Base Flood Elevation (BFE)

The height to which flood water would be expected to rise in a 1% annual chance flood event.



Vertical Datums on NH Maps

<u>NGVD 1929</u>

- Belknap
- Grafton
- Rockingham (Non-Coastal only)
- Strafford (Non-Coastal only)

NAVD 1988

- Carroll
- Cheshire
- Coos
- Hillsborough
- Merrimack
- Rockingham/Strafford (Coastal portion only)
- Sullivan





The Floodway

- Shown along certain rivers and streams.
- Part of the SFHA where the fastest, most dangerous waters will flow during the 1% annual chance flood.





Specific Special Flood Hazard Area (SFHA) Zones

- **Zone AE**: Include Base Flood Elevations (BFEs), may include a floodway along rivers and streams.
- **Zone A**: Does not include BFEs.
- **Zone AO**: Areas of shallow flooding with a depth between 1 and 3 feet.
- **Zone VE**: Coastal High Hazard Area areas affected by waves higher than 3 feet; include BFEs.

Limit of Moderate Wave Action (LiMWA)

- Boundary of the "Coastal A Zone"
- The inland limit of the area expected to receive 1.5 foot or higher breaking waves during a 1% annual chance flood.
- Special building requirements apply per current State Building Code (2015 IRC and IBC).





Communities with a LiMWA Shown on New Rockingham County FIRMs

- Hampton
- Hampton Falls
- Little Boar's Head Village District
- New Castle
- North Hampton
- Seabrook
- Seabrook Beach Village District
- Rye

What is the Flood Insurance Study (FIS) Report?

A technical report that accompanies the maps that includes:

- Details about the flood analyses used to prepare the maps.
- Important tables and charts that include Base Flood Elevation (BFE) information.



Key Things Shown on the FIRMs/in the FIS Reports

- Special Flood Hazard Area (SFHA) boundaries
- Flood Zones

Flood Zones that are part of the SFHA:

- A: No Base Flood Elevations
- AE: Include Base Flood Elevations
- **AO**: Shallow flooding with a depth included
- VE: Coastal areas with waves higher than 3 feet; with Base Flood Elevations
- X: Areas outside of the Special Flood Hazard Area
- Base Flood Elevations (BFEs)
- Floodway boundaries
- LiMWA/Coastal A Zone for certain coastal communities





Current FEMA Mapping Projects

Visit NHOSI's Current Mapping Projects webpage for more information:

www.nh.gov/osi/planning/programs/ fmp/current-map-projects.htm

NH Flood Mapping Projects

Ammonoosuc-Connecticut Rivers Watershed Discovery Project
Contoocook River Watershed Map Update
Headwaters Connecticut River Watershed Discovery Project
Merrimack River Watershed Map Update
Middle Connecticut River Watershed Map Update
Millers River Watershed Map Update
Nashua River Watershed Map Update
Pemigewasset River Watershed Map Update
Piscataqua-Salmon Falls Watershed Discovery Project
Waits-Connecticut Rivers Watershed Discovery Project
Waits-Connecticut Rivers Watershed Discovery Project
Winnipesaukee River Watershed Map Update

Sullivan

Cheshire

Coos

Carrol

Strafford

Rockingham

Belknap

Merrimack

lillsborough

Grafton

Determining Base Flood Elevations





Determining the Base Flood Elevation (BFE)

- For AE zones, maps only show the BFE rounded to the whole foot (*e.g.*, *142 feet*).
 - For most AE zones you can and should get a more detailed
 BFE using the FIS (e.g. 142.4 vs. 142 ft)
- For VE zones, use the elevation shown on the map.
- Approximate A zones don't have BFEs on the maps or in the FIS report.
- AO zones include a flood depth between 1 and 3 feet, not a flood elevation.





Using the FIS Report to Determine the BFE in AE Zones

Use these parts of the FIS report to get the most precise BFE:

- Summary of Stillwater Elevations Table (lakes, ponds, some coastal areas)
- Flood Profiles (rivers and streams)
- Floodway Data Table (rivers and streams with floodways only usable in certain situations)

Finding the BFE Using the FIS Report: Flood Profiles (For Rivers and Streams – Zone AE)





Finding the BFE Using the FIS Report: Floodway Data Tables (FDTs) (for Rivers and Streams – Zone AE)

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TABLE			FLOODWAY DATA					SUMO		
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Finding the BFE Using the FIS Report: Summary of Stillwater Elevations Table

For Lakes, Ponds, Some Coastal Areas – Zone AE



Determining BFEs in Coastal Areas that are AE Zones

- Some coastal AE zones have wave effects included in the map BFE values that are not reflected in the elevations shown in the Summary of Stillwater Elevations Table.
- Look at the BFE on the FIRM panel; then look up the BFE for the location in the FIS report table – use the higher of the two as the BFE.
- FEMA's Introduction to Coastal Flood Mapping: <u>https://fema.maps.arcgis.com/apps/MapSeries/index.h</u> <u>tml?appid=89d2e393f2c64d7cae07264f4d00c19d</u>

Approximate A Zones

- No BFE developed by FEMA.
- Not cost effective in areas where there is no or little development.





For Zone As, Determine if any BFE Data is Available from Other Sources:

- Federal (USACE, USGS)
- State (DOT, DES, OSI)
- Community
 - All proposals for development either greater than 50 lots or 5 acres include BFE data within such proposals





Where Can You Find the Maps and FIS Reports?





FEMA's Flood Map Service Center

FEMA Flood Map Service Center: Search By Address

Enter an address, place, or coordinates: 🚷



Search Results—Products for MANCHESTER, CITY OF

The flood map for the selected area is number 33011C0377D, effective on 09/25/2009 (?)





Changes to this FIRM 😢

Revisions (0)

Amendments (0) Revalidations (0)

You can choose a new flood map or move the location pin by selecting a different location on the locator map below or by entering a

new location in the search field above. It may take a minute or more during peak hours to generate a dynamic FIRMette.

Go To NFHL Viewer »

Show ALL Products »

https://msc.fema.gov LOCOW





NH Flood Hazards Viewer

DSI New Hampshire Flood Hazards Viewer

Developed by the NH Office of Strategic Initiatives







http://bit.ly/368IBfJ


GRANIT View



granitview.unh.edu





Mapping - Summary

- Key information contained on maps includes:
 - SFHA/Flood zones
 - Floodway boundary
 - Base Flood Elevations (BFEs)
- Get BFE using maps and FIS report for AE zones
- Get map information online using:
 - FEMA Map Service Center (MSC)
 - NH Flood Hazards Viewer
 - Granit View





Questions?





Break Time





Flood Insurance





Flood Insurance: Always a Good Idea!

- Anywhere it can rain, it can flood.
- Homeowners and renters insurance does not typically cover flood damage.
- Just 1 inch of water in an average-sized home can cause more than \$25,000 in damage.







Lender Floodplain Requirements

- Flood Disaster Protection Act of 1973
- Lending institutions cannot make, increase, extend, or renew a loan for a building located in the floodplain without NFIP flood insurance
- It is the responsibility of the lender to:
 - determine if the property is in the Special Flood Hazard Area,
 - document the determination, and
 - ensure the insurance is maintained through the life of the loan.





Risk Rating 2.0

- FEMA is updating the NFIP's insurance rating methodology.
- Will change the way FEMA rates a property's flood risk and prices insurance.
- Changes being made to make insurance rates more fair and actuarially sound.





Risk Rating 2.0: Phase I

- All new policies will be subject to the new rating methodology beginning **October 1, 2021**.
- Existing policyholders eligible for renewal can take advantage of any decreases in their premiums due to the new methodology at that time too.





Risk Rating 2.0: Phase II

• All remaining policies renewing on or after April 1, 2022 will be subject to the new methodology.





What's Changing?

Flood risk will be determined using a combination of factors and data sources rather than just FEMA flood maps.

- Multiple flood types (e.g., heavy rainfall, river overflow, coastal storm surge, etc.) and frequencies.
- Distance to a water source.
- Property characteristics such as first floor elevation, construction and foundation type, and home value.





What's Changing?

Elevation Certificates will not be required to rate policies under, but will remain optional.





What is NOT Changing?

- The changes have no impact on the use of the flood maps for community floodplain management purposes or for lenders determining where the mandatory purchase of flood insurance applies.
- Continued need for Elevation Certificates for asbuilt elevation data required by NFIP communities and for LOMA applications.





How Will Policyholders Be Affected?

In NH, of 7,700 NFIP policies in force, FEMA anticipates that the new system will result in:

- decreased premium costs for 35% of policyholders
- slight increases for 58%
- increases of \$20 per month or more for the remaining 7%.





For More Information

Risk Rating 2.0 webpage:

https://www.fema.gov/flood-insurance/work-withnfip/risk-rating

FEMA's NH fact sheet:

https://www.fema.gov/sites/default/files/documents/ fema_new-hampshire-state-profile_03-2021.pdf





Questions?





Floodplain Regulations





Floodplain Regulations

- Source of the regulations is the Code of Federal Regulations (Chapter 44, Section 60.3).
- State developed model floodplain development ordinances that contain the NFIP minimum requirements.
- Encouraged to adopt regulations that exceed the NFIP minimum requirements.







Building Codes

- State Building Code includes:
 - International Building Code (IBC) 2015
 - International Residential Code (IRC) 2015
- The codes reference the nationally recognized standard produced by the American Society of Civil Engineers, *Flood Resistant Design and Construction* (ASCE 24)
- NH State Building Code references the 2015 IBC and IRC including regulations pertaining to development in special flood hazard areas





Floodplain Administrator

Each of the 219 NFIP communities in NH should have at least one person/ entity responsible for administering the community's floodplain management program:

- Building inspector
- Code enforcement officer
- Planner/Planning & Zoning Administrator
- Select board





When do a Community's Floodplain Regulations apply?

For <u>any development</u> occurring in a Special Flood Hazard Area including but not limited to:

- New construction
- Existing buildings that were
 substantially damaged or that will be
 substantially improved
- Filling
- Grading
- Excavation
- Paving







Local Permitting for Floodplain Development

All proposed <u>development</u> in a Special Flood Hazard Area shall require a local permit.





General Construction Requirements

All development:

- Reasonably safe from flooding.
- Designed (or modified) and adequately anchored to prevent flotation, collapse, and lateral movement.
- Constructed with floodresistant materials.
- Use methods and practices to minimize flood damage.



Flood Damage-Resistant Materials Requirements

for Buildings Located in Special Flood Hazard Areas in accordance with the National Flood Insurance Program

Technical Bulletin 2 / August 2008



Utility, Water & Sewer Requirements

 Utilities should be designed and/or located so as to prevent water from entering or accumulating within the components.





Protecting Building Utility Systems From Flood Damage

Principles and Practices for the Design and Construction of Flood Resistant Building Utility Systems

FEMA P-348, Edition 2 / February 2017



Other Permits

- Applicant: Must secure other required permits and approvals BEFORE a permit for floodplain development is granted.
- Local Floodplain Manager should know applicable Federal and State regulatory programs.







Lowest Floor in A Zones

In Zones A, AE, and AO

 The top of the lowest floor must be elevated to the Base Flood Elevation or higher (if community enforces higher standard).





Non-Residential Structures



- Have the option of:
 - Elevating the Lowest
 Floor at or above the
 Base Flood Elevation

OR

 Floodproofing (making watertight) the walls of the structure up to or above the Base Flood Elevation

Zone VE Lowest Floor

In Coastal High Hazard Areas (Zone VE):

 Buildings must be elevated on pilings/columns with the bottom of lowest horizontal structural member of the lowest floor elevated to the Base Flood Elevation or higher.



NFIP Basement Definition



Any area of a building having its floor below grade on all sides.

Basements for new construction or substantial improvements in a special flood hazard area are prohibited.



Enclosures Below Lowest Floor in A Zones

- Enclosure under the lowest floor <u>must</u>:
 - 1. Be used solely for storage, building access, or parking;
 - 2. Not be below grade on all sides; and
 - 3. Contain the required amount of flood openings
- When all 3 enclosure criteria are met then the location of Lowest Floor changes



Zone VE Enclosures

In Coastal High Hazard Areas (Zone VE):

- The space below the lowest floor must:
 - be free of obstructions; or
 - constructed with nonsupporting breakaway walls, open lattice-work, or insect screening, and be used only for parking, building access, or storage.
- When all criteria are met then the location of Lowest Floor changes.



Flood Openings

- Important requirements for enclosures.
- More details in EC section.





Openings in Foundation Walls and Walls of Enclosures

Below Elevated Buildings in Special Flood Hazard Areas in accordance with the National Flood Insurance Program

Technical Bulletin 1 / August 2008



A Zone Compliant Structure NFIP and State Building Code



V Zone Compliant Structure NFIP and State Building Code





Flood damage-resistant materials required below the BFE or other required elevation.



In Zone V, IRC requires flood openings in breakaway walls (see page 3), prohibits mounting equipment and utilities on or penetrating through breakaway walls, and requires exterior doors at the top of stairways enclosed by breakaway walls.

What is Substantial Improvement/Damage?

Substantial Improvement:

Any reconstruction, rehabilitation, addition of a structure, the cost of which equals or exceeds 50% of the market value of the structure. Includes structures that have incurred substantial damage.

Substantial Damage:

Damage of <u>any origin</u> sustained by a structure where the cost of restoring it to its before-damaged condition would equal or exceed 50% of the market value of the structure before the damage occurred.

Substantial Improvement and Substantial Damage determinations are made by community officials.
Substantial Improvements to Existing Structures with Basements



Figure 1: Basement infill before and after mitigation

Required As-Built Certification

• FEMA Elevation Certificate

- Meets as-built data requirement
- Rates a Flood Insurance Policy
- Supports a FEMA Letter of Map Amendment application
- FEMA Floodproofing Certificate
 - For use on <u>non-residential</u> structures only
 - Used instead of elevation



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Elevation Certificate Checklists

NFIP

New Hampshire's Floodplain Management Program

Fact Sheet #2

Elevation

Certificate

Contact:

NH Floodplain

Management Program (603) 271-2155

Web Site:

www.nh.gov/osi/

planning/programs/fmp/

Elevation Certificate Overview

The National Flood Insurance Program (NFIP) Elevation Certificate is an administrative tool that can be used to provide elevation information for three different purposes. The Elevation Certificate is used to 1) ensure compliance with community floodplain management ordinances, 2) to determine the proper flood insurance premium rate, or 3) to support a request for a FEMA Letter of Map Amendment (LOMA). Below is a brief summary of each of these purposes.

Community Floodplain Management

Communities that participate in the NFIP have adopted and enforce community floodplain regulations. One of the community's requirements is to require and obtain certain elevation data for all new and substantially improved structures located in a Special Flood Hazard Area. Community permitting officials must review this elevation data to ensure floodplain development complies with the regulations (see pages 3 and 4 of this fact sheet for guidance on reviewing an Elevation Certificate).

The second purpose of the Elevation Certificate is for use by insurance companies for flood insurance rating purposes. In general, an

Elevation Certificate is currently not required for older homes, which

are not rated based on the structure's elevation data. Property own-

ers of older structures have the option of having their flood insurance



Flood Insurance

107 Pleasant Street Johnson Hall, 3rd Floor Concord, NH 03301

Phone: 603-271-2155 Fax: 603-271-2615 Web: www.nh.gov/osi

OSI

U.S. DEPARTMENT OF HOMELAND SECURITY Federal Emergency Management Agency National Flood Insurance Program OMB No. 1660-0008 Expiration Date: November 30, 2018

ELEVATION CERTIFICATE Important: Follow the Instructions on pages 1-9.

A1. Building Ow	SECT	ION A - PROPERTY	INFORMATION	FC	OR INSURANCE COMPANY US
0.0	mer's Name	CRS E	EC Checklist	P	blicy Number:
A2. Building Str Box No.	et Address (Incl Either A2 of /	uding Apt., Unit, Sui A3 must be com	te, and/or Bidg. No.) or P npleted, with City, S	O. Route and Castate, and Zip	ompany NAIC Number:
City			State	হ	P Code
A3. Property De	scription (Lot an	d Block Numbers, Ta must be compl	ax Parcel Number, Legal leted with City Sta	Description, etc.)	
A4. Building Use	e (e.g., Residenti	al, Non-Residential,	Addition, Accessory, etc.)	
A5. Latitude/Lon	gitude: Lat.		Long.	Horizontal Datum:	NAD 1927 NAD 1983
A6. Attach at lea	ast 2 photograph	a of the building if th	e Certificate is being use	 d to obtain ficod insurance	
A7. Building Dia	gram Number	Must be full Dia	agram Number (e.g	., "1A" of "1B", not	just "1")
A8. For a buildin If there is (a) Square for	ng with a crawlap no crawlapace, octage of crawls	ace or enclosure(s): or enclosure, or g pace or enclosure(s)	arage, you may leave sq 1	the fields blank or ente	r "0" if that's the correct value
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c) Total net	area of flood op	enings in A8.b	sq in		
d) Engineer	ed flood opening		No		
If there a	ire engineered	flood openings, at	tach the certification fro	om the engineer or the	ICC Evaluation Service
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 b) Number- c) Total net d) Engineer if there a B1. NFIP Comm 14. Map/Panel Number 	of permanent flo- area of flood opening re engineered SEC unity Name & Co 85, Suffix	ed openings in the a enings in A9,b 227 Yes 1 flood openings, att 2TION B - FLOOD ammunity Number B6, FIRM Index Date	ttached garage within 1.0 sq in No tach the certification fro INSURANCE RATE M/ B2. County Ne B37, FIRM Paniel Effective/ Mevised Date	foot above adjacent gra m the engineer or the LP (FIRM) INFORMATI me 88, Flood Zone(s)	de ICC Evaluation Service ON B3. State B9. Base Flood Elevation(s) (Zona AQ, use Base Flood Depth)
 b) Number: c) Total net d) Engineer if there a B1. NFIP Comm 34. Map/Panel Number B10. Indicate th 	of permanent flo- area of flood opening re engineered SEC unity Name & Co 85, Suffix) a source of the F	od openings in the a anings in A9,b arithmetic and a second second arithmetic and a second second arithmetic and a second second arithmetic and a second second second association and a second second second association and a second se	ttached garage within 1.0 sq in No tach the certification fro INSURANCE RATE MA B2. County Na B3. FIRM Paniel Effective/ Mavised Date (RFE) data or base from	foot above adjacent gra m the engineer or the LP (FIRM) INFORMATI me 88, Flood Zona(s)	de ICC Evaluation Service ON B3. State B9. Base Flood Elevizion(s) Flood Depth) Elevizion(s)
 b) Number. c) Total net. d) Engineer If there a B1. NFIP Comm 34. Map/Panel Number B10. Indicate the FIS Pro 	of permanent flo area of flood opening re engineered SEC unity Name & Co 85, Suffix e source of the B	ad openings in the a anings in A9,b at?	ttached garage within 1.0 sq in No tach the certification fro INSURANCE RATE MA B2. County Na B3. FIRM Paniel Effective/ Mavised Date (BFE) data or base floor mined other/Source	foot above adjacent gra m the engineer or the LP (FIRM) INFORMATI me B8, Flood Zona(s) I depth entered in Itam B	de ICC Evaluation Service ON B3. State B9. Base Flood Elevation(s) (Cone AQ, use Base Flood Depth) 8:
 b) Number. c) Total net d) Engineer if there a B1. NFIP Comm B4. Map/Panel Number B10. Indicate the C FIS Pro 	of permanent flo area of flood opening read flood opening read flood opening set set unity Name & Co 85, Suffix 85, Suffix e source of the B Mile [] FIRM []	ad openings in the a anings in A9,b at? Yes : anings in A9,b inder openings, att THON B - FLOOD animunity Number B6, FiRM Index Date B6, FiRM Index Date Community Detar	ttached garage within 1.0 sq in No tach the certification fro INSURANCE RATE M/ B2. County Na B2. County Na B3. FIRM Pariel Effective/ Mavised Date (BFE) data or base floor mined Other/Source	foot above adjacent gra m the engineer or the LP (FIRM) INFORMATI me B8, Flood Zone(e) I depth entered in Itam B	de ICC Evaluation Service ON B3. State B9. Base Flood Elevation(s) (Cone AQ, use Base Flood Depth) S:
 b) Number. c) Total net d) Engineer if there a B1. NFIP Comm B4. Map/Panel Number B10. Indicate the FIS Pro B11. Indicate elements 	of permanent floo area of flood opening re engineered SEC unity Name & Co 85, Suffix 85, Suffix a source of the B source of the M sile _ FIRM [avation datum us	ad openings in the a anings in A9,0 ar7 () Yes () ar7 () Yes () arrow B - FLOOD animunity Number B6, FiRM Index Date B6, FiRM Index Date Community Detar ase Flood Elevation Community Detar	ttached garage within 1.0 sq in No tach the certification fro INSURANCE RATE M/ B2. County Na B2. County Na B3. FIRM Pariel Effective/ Mavised Date (GFE) data or base floor mined Other/Source 390: NGVD 1929	toot above adjacent gra m the engineer or the VP (FIRM) INFORMATI me 88, Flood Zone(e) I depth entered in Itam B	de
 b) Number. c) Total net d) Enginee. if there a B1. NFIP Comm 34. Map/Pane Number B10. Indicate the Fis Pro B11. Indicate eli B12. Is the build 	of permanent floo area of flood opening re engineered SEC unity Name & Co 85, Suffix 85, Suffix a source of the B stile FIRM evation datum ut ling located in a	od openings in A9.b anings in A9.b aring ino	ttached garage within 1.0 sq in No tach the certification fro INSURANCE RATE M/ B2. County Na B2. County Na B2. County Na B3. FIRM Paniel Effective/ Movised Date (9FE) data or base flood mined Other/Source 990 NGVD 1929 Duroos System (CBRS) a	toot above adjacent gra m the engineer or the VP (FIRM) INFORMATI me B8, Flood Zone(s) I depth entered in Item B c NAVD 1985	CC Evaluation Service CN B3. State B9. Base Flood Elevation(s) (20ne A0, use Base Flood Depth) CC Evaluation Service Flood Depth) CC Evaluation Service CC Evaluation Servic
 b) Number. c) Total net d) Enginee. if there a B1. NFIP Comm 34. Map/Panei Number B10. Indicate the FIS Pro B11. Indicate elle B12. Is the build Designatio 	of permanent floo area of flood opening red flood opening set unity Name & Co 85, Suffix) a source of the B source of the B field = FIRM [avation datum us ling located in a ' n Dete:	ad openings in A9.b enings in A9.b enings in A9.b enings.att flood openings.att TTION B - FLOOD mmunity Number B6, FIRM Index. Date Case Flood Elevation Community Deter end for BFE in Item B Coestal Barrier Resc	ttached garage within 1.0 sq in No Lach the certification fro INSURANCE RATE MA B2. County Na B2. County Na B3. FIRM Panisi Effectional Effectional (BFE) data or base floor mined Other/Source B3 NGVD 1928 Duroses System (CBRS) a CBRS OPA	foot above adjacent gra m the engineer or the LP (FIRM) INFORMATI me 68, Flood Zone(e) I depth entered in Itam B C NAVD 1986. Other va or Otherwise Protock	Ge ICC Evaluation Service ON B3. State B9. Base Flood Elevation(s) (Zona AO, use Base Flood Depth) S: //Source: ad Area (OPA)?Yes No
 b) Number. c) Total net d) Engineer if there a B1. NFIP Comm S4. Map/Panei Number B10. Indicate th FIS Pro B11. Indicate eli B12. Is the build Designatio 	of permanent floo area of flood opening ree flood opening SEC unity Name & Co 85, Suffix) a source of the B Alle FIRM evation datum us ling located in a - n Date:	dd openings in A9,b anings in A9,b a7, Yes a7,	ttached garage within 1.0 sq in No Lach the certification fro INSURANCE RATE M/ E2. Courty Ne E32. Courty Ne E32. Courty Ne E32. Courty Ne E32. Courty Ne E33. PIRM Panel E33. PIRM Pan	foot above adjacent gra m the engineer or the LP (FIRM) INFORMATI me 88, Flood Zone(s) I depth entered in Itam B C NAVD 1985 Other va or Otherwise Protocol	Ge ICC Evaluation Service ON B3. State B9. Base Flood Elevation(s) (Zonn AO, upe Base Flood Depth) S: //Source: ad Area (OPA)? Yes No



Manufactured Home Requirements

- Elevated on permanent foundation with lowest floor at or above BFE.
- Be securely anchored.



Protecting Manufactured Homes from Floods and Other Hazards

A Multi-Hazard Foundation and Installation Guide

FEMA P-85, Second Edition / November 2009

🍘 FEMA

Recreational Vehicle Requirements

- Allowed if on-site for fewer than 180 consecutive days, or
- Be fully licensed and ready for highway use
- If not, comply with manufactured home requirements







Floodway Requirements

- No development is allowed within the floodway <u>unless</u>:
 - Engineering analyses show the proposed development would <u>not</u> result in <u>any increase in</u> <u>BFE</u>.





FEMA Resources



National Flood Insurance Program (NFIP) Floodplain Management Requirements

A Study Guide and Desk Reference for Local Officials -

FEMA 480

February 2005







Substantial Improvement/ Substantial Damage Desk Reference

FEMA P-758 / May 2010





FEMA Resources

NFIP Technical Bulletins

• Provide prescriptive guidance for compliance







Questions?





Break Time





FEMA Elevation Certificates





FEMA Elevation Certificate

- Newest version released in 2019
- Expiration date of current form: 11/30/2022







FEMA Elevation Certificate

NFIP Administrative Tool:

- Demonstrates compliance with community regulations
- Used for flood insurance rating of structures
- Supports requests for FEMA map amendment/revision





Elevation Certificate Sections

- Section A Property Information
- Section B FIRM Information
- Section C Building Elevation Information
- Section D Certification
- Section E Building Elevation (no BFE)
- Section F Property Owner Certification
- Section G Community Information





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	Policy Number:
A2.	Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Rou Box No.	ute and Company NAIC Number:
	Box No.	
	City State	ZIP Code
A3.	Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description	ption, etc.)
A4.	Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.)	
A5.	Latitude/Longitude: Lat. Long. H	orizontal Datum: 🔲 NAD 1927 🛛 NAD 1983
A6.	Attach at least 2 photographs of the building if the Certificate is being used to obt	tain flood insurance.
A7.	Building Diagram Number	
A8.	For a building with a crawlspace or enclosure(s):	
	a) Square footage of crawlspace or enclosure(s) si	q ft
	b) Number of permanent flood openings in the crawlspace or enclosure(s) within	1.0 foot above adjacent grade
	c) Total net area of flood openings in A8 b	
	a) Engineered flood openings? U Yes U No	
A9.	For a building with an attached garage:	
	a) Square footage of attached garage sq ft	
	b) Number of permanent flood openings in the attached garage within 1.0 foot at	oove adjacent grade
	c) Total net area of flood openings in A9.b sq in	
	d) Engineered flood openings? 🔄 Yes 🔲 No	

11 Building Diagrams

DIAGRAM 1A	DIAGRAM 2A	DIAGRAM 3		
DIAGRAM 1B All raised-slab-on-grade or slab-on-stem-wall-with-fill single- and multiple-floor buildings (other than split- level), either detached or row type (e.g., townhouses); with or without attached garage.	DIAGRAM 2B All single-and multiple-floor buildings with basement (other than split-level) and high-rise buildings with basement, either detached or row type (e.g., townhouses); with or without attached garage). Distinguishing feature - The bottom floor (basement or under ground	DIAGRAM 4 split-level buildings (other than slab-on-grade), either tached or row type (e.g., townhouses); with or without ached garage.		
Distinguishing Feature – The bottom floor is at or above ground level (grade) on at least 1 side.*	garage) is below ground level (grade) on all sides; most of the height of the walls are below ground level on all sides and the door and area of egress is also below ground level on all sides.*	tinguishing Feature – The bottom floor (basement or derground garage) is below ground level (grade) on all sides.*		
DIAGRAM 5	DIAGRAM 7			
All buildings elevated on piers, posts, piles, columns, or parallel shear walls. No obstructions below the	with a partially or fully enclosed area below the			
elevated floor.	DIAGRAM 8			
Distinguishing Easture East all zones, the area below the DIAGRAM 6 All buildings elevated on piers, posts, piles, columns, or parallel shear walls with full or partial enclosure below the elevated floor.	All buildings elevated on a crawlspace with the floor of the crawlspace at or above grade on at least one side, with or without an attached garage.	DIAGRAM 9 All buildings (other than spiit-level) elevated on a sub- grade crawlspace, with or without attached garage.		
Distinguishing Feature – For all zones, the area below the elevated floor is enclosed, either partially or fully. In A Zones, the partially or fully enclosed area below the elevated floor is with or without openings** present in the walls of the enclosure. Indicate information about enclosure size and openings in Section A – Property Information. NEXT HIGHER FLOOR C2.b C2.c (For V zones only)	Distinguishing Feature – For all zones, the area below the first floor is enclosed by solid or partial perimeter walls. In all A zones, the crawlspace is with or without openings* present in the walls of the crawlspace. Indicate information about crawlspace size and openings in Section A – Property Information.	pround level (grade) on all sides. ¹¹ (If the distance from the crawlepace from the travelepace from the top of the need higher from is more than 3 feet, or the crawlepace from the grade (LAG on all sides, use Diagram 2.)		

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	Policy Number:
A2.	Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and	Company NAIC Number:
	BUA NO.	
_	City State	ZIP Code
A3.	Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.)	
A4.	Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.)	
A5.	Latitude/Longitude: Lat. Long. Horizontal Dat	um: 🔲 NAD 1927 🔲 NAD 1983
A6.	Attach at least 2 photographs of the building if the Certificate is being used to obtain flood ins	urance.
A7.	Building Diagram Number	
49	Eas a kuilding uith a appulances as analogue (a):	
A0.	For a building with a crawispace or enclosure(s):	
_	a) Square tootage of crawlspace or enclosure(s) sq ft	
	b) Number of permanent flood openings in the crawlspace or enclosure(s) within 1.0 foot abo	ve adjacent grade
	c) Total net area of flood openings in A8.b sq in	
	d) Engineered flood openings?	
A9.	For a building with an attached garage:	
	a) Square tootage of attached garage sq it	
	b) Number of permanent flood openings in the attached garage within 1.0 foot above adjacent	t grade
	c) Total net area of flood openings in A9.b sq in	
	d) Engineered flood openings? 🔲 Yes 🔲 No	

Flood Opening Eligibility

Permanent flood opening

 Flood vent or other opening that allows the free passage of water automatically in both directions without human intervention.







FIGURE 2-SMART VENT MODEL 1540-520





Flood Opening Eligibility

Include only the number of permanent flood openings that are <u>no higher than 1.0 foot</u> above the higher of the exterior or interior grade or floor immediately below the opening

If interior grade is used – note in Section D - Comments





Two Types of Flood Openings

Engineered Openings

 Designed and certified by a registered design professional as meeting the performance required by regulations.

Non-Engineered Openings

 Openings used to satisfy the prescriptive requirements. Wide variety of options are available to satisfy these requirements.





Documentation of Engineered Openings for Flood Insurance

- If checking the "Engineered Openings" box on the Elevation Certificate be sure there is documentation that certifies the openings.
- Acceptable documentation:
 - Individual certification by a registered design professional
 - ICC-ES Evaluation Report







ICC-ES Evaluation Report

ICC-ES | (800) 423-6587 | (562) 699-0543 | www.icc-es.org

Most Widely Accepted and Trusted

ESR-2074

Reissued 02/2017 **Revised 10/2018** This report is subject to renewal 02/2019.

DIVISION: 08 00 00—OPENINGS SECTION: 08 95 43-VENTS/FOUNDATION FLOOD VENTS

REPORT HOLDER:

SMART VENT PRODUCTS, INC.

EVALUATION SUBJECT:

SMART VENT® AUTOMATIC FOUNDATION FLOOD VENTS: MODELS #1540-520: #1540-521: #1540-510: #1540-511: #1540-570: #1540-574: #1540-524: #1540-514 FLOOD VENT SEALING KIT #1540-526



ICC Evaluation Service,

"2014 Recipient of Prestigious Western States Seismic Policy Council (WSSPC) Award in Excellence"

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ates Seismic Policy Council

on Report 9-0543 | www.icc-es.org

DIVISION: 08 00 00-OPENINGS

REPORT HOLDER: SMART VENT PRODUCTS, INC.

EVALUATION SUBJECT:

OOD VENT SEALING KIT #1540-526

08 95 43-VENTS/FOUNDATION FLOOD VENTS



rued as representing aesthetics or any other attributes not specifically idorsement of the subject of the report or a recommendation for its use. ice, LLC, express or implied, as to any finding or other matter in th



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ESR-2074

A Subsi

TIC FOUNDATION FLOOD VENTS: MODELS #1540-520; 1540-511: #1540-570: #1540-574: #1540-524: #1540-514

SUSTED

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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 – PROPER	TY INFORMATION		FOR INSURANCE COMPANY USE
A1. Building Owner's Name			Policy Number:
A2. Building Street Address (including Apt., Unit, Se Box No.	uite, and/or Bldg. No.) or P.O.	Route and	Company NAIC Number:
City	State		ZIP Code
		$\mathbf{\nabla}$	
A3. Property Description (Lot and Block Numbers,	Tax Parcel Number, Legal De	escription, etc.)	
A4. Building Use (e.g., Residential, Non-Residentia	al, Addition, Accessory, etc.)		
A5. Latitude/Longitude: Lat.	Long.	Horizontal Datur	n: 🔲 NAD 1927 🔛 NAD 1983
A6. Attach at least 2 photographs of the building if	the Certificate is being used to	o obtain flood insur	ance.
A7. Building Diagram Number			
A8. For a building with a crawlspace or enclosure(s	·):		
 a) Square footage of crawlspace or enclosure(s)	sq ft	
b) Number of permanent flood openings in the	crawlspace or enclosure(s) w	ithin 1.0 foot above	adjacent grade
c) Total net area of flood openings in A8.b	sq in		
d) Engineered flood openings?	No		
A9. For a building with an attached garage:			
a) Square footage of attached garage	sq ft		
b) Number of permanent flood openings in the	attached garage within 1.0 fo	ot above adjacent ç	rade
c) Total net area of flood openings in A9.b	sq in		
d) Engineered flood openings?] No		

Attached Garage











Section B – FIRM Information

	SE	CTION B - FLOOD	INSURA	NCE RATE	MAP (FIRM) INF	ORMATION	
B1. NFIP Community Name & Community Number B2. County Name			B3. State				
							▼
B4. Map/Panel Number	B5. Suffix	B6. FIRM Index Date	B7. FIR Effe Rev	M Panel ctive/ rised Date	B8. Flood Zone(s)	B9. Base Flood E (Zone AO, use	levation(s) ∋ Base Flood Depth)
B10. Indicate the s FIS Profile B11. Indicate eleva B12. Is the building Designation D	ource of the FIRM ation datum u located in a Date:	Base Flood Elevation Community Deter used for BFE in Item B Coastal Barrier Resc	(BFE) da mined [9:] N 9:] N ources Sy CBRS	ata or base fi Other/Sou GVD 1929 stem (CBRS	ood depth entered rce: NAVD 1988) area or Otherwis	in Item B9:	DPA)? 🗌 Yes 🗌 No
FEMA Form 086-0-33	(7/15)	R	teplaces	all previous e	ditions.		Form Page 1 of 6







Section B – FIRM Inform

SECTION B - FLOOD INSURANCE RATE MAP (FIRM) INFO							Zon	e A is	
B1. NFIP Communi	ty Name & C	ommunity Number		B2. County	Name		unav	ailable	
B4. Map/Panel Number	B5. Suffix	B6. FIRM Index Date	B7. FIR Effe Rev	tM Panel active/ vised Date	B8. Flood Zone(s)	B9. Ba: (Zo	se Flood Eleva ne AO, use Ba	ition(s) ase Flood Depti	٦)
B10. Indicate the s FIS Profile B11. Indicate eleva B12. Is the building Designation D	ource of the FIRM of tion datum u located in a Date:	Base Flood Elevation Community Detern sed for BFE in Item B Coastal Barrier Reso	(BFE) da mined [9: 🔲 N urces Sy CBRS	ata or base flo Other/Sou GVD 1929 /stem (CBRS	ood depth entered rce: NAVD 1988 area or Otherwis	in Item E	B9: #/Source: ted Area (OPA)? 🔲 Yes 🔲	No
EMA Form 086-0-33	(7/15)	R	eplaces	all previous e	ditions.	Pr	ovide t	he BFE t	to

the tenth of a foot

"NA" should

be inserted

when a BFE in





Section C – Building Elevation Information

	SECTION C – BUILDING ELEVATION INFORMATION (SURVEY REQ	"NA" should
C1.	Building elevations are based on: Construction Drawings* Building Under Construction	be inserted in
	*A new Elevation Certificate will be required when construction of the building is complete.	all non-
C2.	Elevations – Zones A1–A30, AE, AH, A (with BFE), VE, V1–V30, V (with BFE), AR, AR/A, AR/AE Complete Items C2.a–h below according to the building diagram specified in Item A7. In Puerto F	applicable
	Benchmark Utilized: Vertical Datum:	data fielde
	Indicate elevation datum used for the elevations in items a) through h) below.	uala neius.
	NGVD 1929 NAVD 1988 Other/Source:	
	Datum used for building elevations must be the same as that used for the BFE.	Check the measurement used.
	a) Top of bottom floor (including basement, crawlspace, or enclosure floor)	feet meters
	b) Top of the next higher floor	🔄 feet 🗌 meters
	c) Bottom of the lowest horizontal structural member (V Zones only)	feet meters
	d) Attached garage (top of slab)	feet meters
	e) Lowest elevation of machinery or equipment servicing the building (Describe type of equipment and location in Comments)	feet meters
	f) Lowest adjacent (finished) grade next to building (LAG)	feet meters
	g) Highest adjacent (finished) grade next to building (HAG)	feet meters
	 h) Lowest adjacent grade at lowest elevation of deck or stairs, including structural support 	feet meters



Section D - Certification

SECTION D – SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION

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

were latitude and longitude in Section A provided by a	licensed land surveyor?		Check here if attachments.
Certifier's Name	License Number		
Title			
Company Name			Place
			11000
Address			Seal
			ocar
City	State	ZIP Code	Horo
	×		nere
Signature	Date	Telephone	Ext.
Copy all pages of this Elevation Certificate and all attachn	nents for (1) community o	fficial, (2) insurance a	gent/company, and (3) building owner.
Comments (including type of equipment and location, p	er C2(e), if applicable)		

Section E – Building Elevation Information (No BFE)

SECTION E – BUILDING ELEVATION INFORMATION (SURVEY NOT REQUIRED) FOR ZONE AO AND ZONE A (WITHOUT BFE)

For Zones AO and A (without BFE), complete Items E1-E5. If the Certificate is intended to support a LOMA or LOMR-F request, complete Sections A, B,and C. For Items E1-E4, use natural grade, if available. Check the measurement used. In Puerto Rico only, enter meters.

E1. Provide elevation information for the following and check the appropriate boxes to show whether the elevation is above or below the highest adjacent grade (HAG) and the lowest adjacent grade (LAG).

	 Top of bottom floor (including basement, crawlspace, or enclosure) is 		🔲 feet	meters	above or	below the HAG.
	b) Top of bottom floor (including basement, crawlspace, or enclosure) is		🗌 feet	meters	above or	below the LAG.
E2.	For Building Diagrams 6–9 with permanent flood ope the next higher floor (elevation C2.b in	enings provided in Section	on A Item	s 8 and/or 9 ((see pages 1-2	of Instructions),
	the diagrams) of the building is		🔲 feet	meters	above or	below the HAG.
E3.	Attached garage (top of slab) is		feet	meters	above or	below the HAG.
E4.	Top of platform of machinery and/or equipment servicing the building is		🗌 feet	meters	above or	below the HAG.

E5. Zone AO only: If no flood depth number is available, is the top of the bottom floor elevated in accordance with the community's Yes No Unknown. The local official must certify this information in Section G. floodplain management ordinance?

If purpose of EC is for LOMA, Sections A, B, and C must be completed.





Section F – Property Owner Certification

SECTION F - PROPERTY OWNER (OR OWNER'S REPRESENTATIVE) CERTIFICATION

The property owner or owner's authorized representative who completes Sections A, B, and E for Zone A (without a FEMA-issued or community-issued BFE) or Zone AO must sign here. The statements in Sections A, B, and E are correct to the best of my knowledge.

Property Owner or Owner's Authorized Representative's Name					
Address	City	State	ZIP Code		
		▼			
Signature	Date	Telephone			
Comments					

Section G – Community Info

SECTION G – COMMUNITY INFORMATION (OPTIONAL)		
The local official who is authorized by law or ordinance to administer the community's floodplain management ordinance can complete Sections A, B, C (or E), and G of this Elevation Certificate. Complete the applicable item(s) and sign below. Check the measurement used in Items G8–G10. In Puerto Rico only, enter meters.		
G1. The information in Section C was taken from other documentation that has been signed and sealed by a licensed surveyor, engineer, or architect who is authorized by law to certify elevation information. (Indicate the source and date of the elevation data in the Comments area below.)		
G2. A community official completed Section E for a building located in Zone A (without a FEMA-issued or community-issued BFE) or Zone AO.		
G3. The following information (Items G4–G10) is provided for community floodplain management purposes.		
G4. Permit Number	G5. Date Permit Issued	G6. Date Certificate of Compliance/Occupancy Issued
G7. This permit has been issued for: New Construction Substantial Improvement		
of the building:		feet meters Datum
G9. BFE or (in Zone AO) depth of flooding at the building site:		feet meters Datum
G10. Community's design flood elevation:		
Local Official's Name Title		
Community Name	Telephone	
Signature	Date	
Commonte (includion time of equipment and location, per CO(o), if explicitly (
Comments (including type of equipment and location, per Cz(e), if applicable)		

Quiz

How many flood openings are eligible to be counted in this garage? A. 0

- B. 1
- C. 2









How many flood openings are eligible to be counted in this garage?

- A. 0
- **B.** 1
- C. 2









What is the correct Building Diagram?

Α.

DIAGRAM 7

All buildings elevated on full-story foundation walls with a partially or fully enclosed area below the elevated floor. This includes walkout levels, where at least one side is at or above grade. The principal use of this building is located in the elevated floors of the building.

Distinguishing Feature – For all zones, the area below the elevated floor is enclosed, either partially or fully. In A Zones, the partially or fully enclosed area below the elevated floor is with or without openings* present in the walls of the enclosure. Indicate information about enclosure size and openings in Section A – Property Information.











What is the correct Building Diagram?

B

DIAGRAM 2A

All single- and multiple-floor buildings with basement (other than split-level) and high-rise buildings with basement, either detached or row type (e.g., townhouses); with or without attached garage.

Distinguishing Feature - The bottom floor (basement or underground garage) is below ground level (grade) on all sides.*










What is the correct Building Diagram?

C.

DIAGRAM 1A

All slab-on-grade single- and multiple-floor buildings (other than split-level) and high-rise buildings, either detached or row type (e.g., townhouses); with or without attached garage.

Distinguishing Feature – The bottom floor is at or above ground level (grade) on at least 1 side.*











What is the correct Building Diagram?

B.

DIAGRAM 2A

All single- and multiple-floor buildings with basement (other than split-level) and high-rise buildings with basement, either detached or row type (e.g., townhouses); with or without attached garage.

Distinguishing Feature - The bottom floor (basement or underground garage) is below ground level (grade) on all sides.*











What type of flood opening is this?

- A. Engineered
- B. Non-Engineered









What type of flood opening is this?

- A. Engineered
- **B. Non-Engineered**







How would you measure the net opening of this non-engineered vent?

- A. Measure the entire vent
- B. Measure only the open areas of the vent







How would you measure the net opening of this non-engineered vent?

- A. Measure the entire vent
- B. Measure only the open areas of the vent







- What information should be provided in Section D Comments?
- A. Type and location of machinery/equipment
 that has lowest elevation
- B. Use of interior grade for flood opening

SECTION D – SURVEYO	OR, ENGINEER, OR	ARCHITECT CERTIFIC	CATION
This certification is to be signed and sealed by a land I certify that the information on this Certificate represe statement may be punishable by fine or imprisonment	surveyor, engineer, o ents my best efforts to t under 18 U.S. Code	or architect authorized by interpret the data availat , Section 1001.	law to certify elevation information. le. I understand that any false
Were latitude and longitude in Section A provided by	a licensed land surve	yor? 🔲 Yes 🔲 No	Check here if attachments.
Certifier's Name	License Numbe	r	
Title			
Company Name			Place
Address			Seal
City	State	ZIP Code	Here
Signature	Date	Telephone	Ext.
Copy all pages of this Elevation Certificate and all attach Comments (including type of equipment and location,	ments for (1) communiper C2(e), if applicable	nity official, (2) insurance a	gent/company, and (3) building owner.
		, 	

C. Both





- What information should be provided in Section D Comments?
- A. Type and location of machinery/equipment
 that has lowest elevation
- B. Use of interior grade for flood opening

SECTION D – SURVEYOR, E	ENGINEER, OR ARC	HITECT CERTIFIC	ATION	
This certification is to be signed and sealed by a land surv I certify that the information on this Certificate represents a statement may be punishable by fine or imprisonment und	eyor, engineer, or arcl my best efforts to inter ler 18 U.S. Code, Seci	nitect authorized by la pret the data availab ion 1001.	aw to certify elevatio le. I understand that	n information. any false
Were latitude and longitude in Section A provided by a lice	ensed land surveyor?	Yes No	Check here if	attachments.
Certifier's Name	License Number			
Title			-	
Company Name			P	lace
Address				Seal
City	State	ZIP Code	ŀ	lere
Signature	Date	Telephone	Ext.	
Copy all pages of this Elevation Cartificate and all attachmen	ts for (1) community of	ficial (2) insurance ac	ant/company, and /3) building owner
Commente (including type of equipment and leastion per		licial, (2) Insurance aç	genucompany, and (a) building owner.
Comments (including type of equipment and location, per	C2(e), if applicable)			

C. Both







How many Building Diagrams are there to choose from?

- A. 9
- B. 10
- C. 11



All slab-on-grade single- and multiple-floor buildings (other than split-level) and high-rise buildings, either detached or row type (e.g., townhouses); with or without attached garage.

Distinguishing Feature – The bottom floor is at or above ground level (grade) on at least 1 side.*









How many Building Diagrams are there to choose from?

A. 9

B. 10

C. 11

DIAGRAM 1A

All slab-on-grade single- and multiple-floor buildings (other than split-level) and high-rise buildings, either detached or row type (e.g., townhouses); with or without attached garage.

Distinguishing Feature – The bottom floor is at or above ground level (grade) on at least 1 side.*









Floodplain Management Bulletin Elevation Certificate

May 2004







FEMA 467-1

Education and Training

• Free Online Webinars

www.nh.gov/osi/planning/programs/fmp/training-education.htm

Elevation Certificates

Tools for Determining the BFE

• FEMA Independent Study course

https://training.fema.gov/is/courseoverview.aspx?code=IS-1103

Elevation Certificate for Surveyors

2 hours (0.2 CEUs)





Elevation Certificate -Summary

- NFIP Administrative Tool: community compliance, policy rating; and map amendment/revision support.
- Use FIS to determine BFE to tenth of a foot.
- Use best judgement in determining building diagram.
- Properly document flood openings to ensure proper rating/compliance.





Questions?





Letters of Map Change (LOMCs)





Letter of Map Amendment (LOMA)

- Removal of single/multiple structure(s) or portion of/entire property from a Special Flood Hazard Area.
- Usually only documentation a lender will accept to remove the mandatory flood insurance requirement for a building; will not accept just an Elevation Certificate.





Removal of a Structure

- Only the structure is removed, the rest of the lot remains in the special flood hazard area.
- Key requirement: <u>Lowest Adjacent Grade</u> is at or above the BFE.
- Elevation data is required.





Lowest Adjacent Grade



Lowest Adjacent Grade (LAG) is the lowest point where the ground touches the building.

HIGHEST RISK: LAG below Base Flood Elevation







LAG







Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP AMENDMENT DETERMINATION DOCUMENT (REMOVAL)

	COMMU	NITY AND MAP PANEL I	NFORMATION	LEGAL PROPERTY DESCRIPTION					
COMMUNITY				A parcel of land, as described in the Warranty Deed recorded as Document No. 8018356 in Book 9070, Pages 2046, 2047 and 2048, in the Office of the Register of Deeds, Hillsborough County, New Hampshire					
		COMMUNITY NO: 3300	33						
AFF	ECTED	NUMBER: 33011C035	D						
MAP	PANEL	DATE: 9/25/2009							
FLOO	DING SO	JRCE: BOWMAN BROO	к	APPROXIMATE LATITUD	E & LONGITUDI G: GOOGLE EAI	E OF PROPERTY: RTH DATUM: NA	: 42.965930, -71.50 D 83	7456	
				DETERMINATION					
LOT	BLOCK/ SECTION	SUBDIVISION	STREET	OUTCOME WHAT IS REMOVED FROM THE SFHA	FLOOD ZONE	1% ANNUAL CHANCE FLOOD ELEVATION (NAVD 88)	LOWEST ADJACENT GRADE ELEVATION (NAVD 88)	LOWEST LOT ELEVATION (NAVD 88)	
-	-	-	54 Old Bedford Road	Structure (Residence)	X (unshaded)	-	248.1 feet	-	
Special being	Special Flood Hazard Area (SFHA) - The SFHA is an area that would be inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood).								
ADDIT	IONAL CO	NSIDERATIONS (Please r	efer to the appropriate se	ction on Attachment 1 fo	r the additional o	considerations list	ed below.)		
PORTIC	MINATION TAU INS REMAIN I DETERMINAT	BLE (CONTINUED) N THE SFHA/FLOODWAY ION							
This o	focument p	rovides the Federal Emerge	ncy Management Agenc	/s determination regard	ng a request fo	or a Letter of Ma	ap Amendment fo	r the property	

This document provides the Federal Emergency Management Agency's determination regarding a request for a Letter of Map Amendment for the property described above. Using the information submitted and the effective National Flood Insurance Program (NFIP) map, we have determined that the structure(s) on the property(ies) is/are not located in the SFHA, an area inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood). This document amends the effective NFIP map to remove the subject property from the SFHA located on the effective NFIP map; therefore, the Federal mandatory flood insurance requirement does not apply. However, the lender has the option to continue the flood insurance requirement to protect its financial risk on the loan. A Preferred Risk Policy (PRP) is available for buildings located outside the SFHA. Information about the PRP and how one can apply is enclosed.

This determination is based on the flood data presently available. If there are any errors on this eLOMA Determination Letter that cause FEMA to rescind and/or nullify the determination the property owner should consult the Licensed Professional that submitted this eLOMA. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at (877) 336-2627 (877-FEMA MAP) or by letter addressed to the Federal Emergency Management Agency, Attn: North Wind Resource Partners (NWRP) eLOMA Coordinator, 3601 Eisenhower Avenue, Alexandria, VA 22304-4605, Fax: 703-751-7415.



time on

Luis V. Rodriguez, P.E., Director Engineering and Modeling Division Federal Insurance and Mitigation Administration



Page 1	of 2				Date: August 01, 2	018 Ca	se No.: 18-01-17	719A	LOMA-DEN
Federal Emergency Management Agency Washington, D.C. 20472									
LETTER OF MAP AMENDMENT									
DETERMINATION DOCUMENT (NON-REMOVAL)									
COMMUNITY AND MAP PANEL INFORMATION LEGAL PROPERTY DESCRIPTION									
COMMUNITY AND MAP PANEL INFORMATION TOWN OF DANVILLE, ROCKINGHAM COUNTY, NEW HAMPSHIRE				DANVILLE, COUNTY, NEW SHIRE	A parcel of land, a Document No. 02 Office of the Regis Hampshire	is described 5259, in Boo stry of Deed	in the Quitclaim k 5222, Pages 0 s, Rockingham 0	Deed recorded 1500 and 0501, County, New	as in the
		CON	MUNITY NO.: 330	199	1				
AFEE	CTED	NUN	IBER: 33015C037	0E	1				
MAP P	PANEL	DAT	E: 5/17/2005		ł				
		- Al							
FLOOD	ING SO	URCE	E: COLBY BROOK	C C C C C C C C C C C C C C C C C C C	SOURCE OF LAT & LO	NG: LOMA LO	GIC	1:42.912131, -/1.12	DATUM: NAD 83
					DETERMINATIO	N			
LOT	BLOC SECTI	ж/ юN	SUBDIVISION	STREET	OUTCOME WHAT IS NOT REMOVED FROM THE SFHA	FLOOD ZONE	1% ANNUAL CHANCE FLOOD ELEVATION (NGVD 29)	LOWEST ADJACENT GRADE ELEVATION (NGVD 29)	LOWEST LOT ELEVATION (NGVD 29)
	-			58 Colby Road	Structure (Residence)	A	186.7 feet	186.2 feet	
Special Flood Hazard Area (SFHA) - The SFHA is an area that would be inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood). ADDITIONAL CONSIDERATIONS (Please refer to the appropriate section on Attachment 1 for the additional considerations listed below.) ZONE A									
This document provides the Federal Emergency Management Agency's determination regarding a request for a Letter of Map Amendment for the property described above. Using the information submitted and the effective National Flood Insurance Program (NFIP) map, we have determined that the structure(s) on the property(ies) is/are located in the SFHA, an area inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood). Therefore, flood insurance is required for the property described above. The lowest adjacent grade elevation to a structure must be at or above the Base Flood Elevation for a structure to be outside of the SFHA. This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination and information regarding your options for obtaining a Letter of Map Amendment. If you have any questions about this document, please contact the FEMA Map information eXchange (FMIX) toll free at (877) 336-2627 (877-FEMA MAP) or by letter addressed to the Federal Emergency Management Agency, Engineering Library, 3601 Elsenhower Ave Ste 500, Alexandria, VA 22304-6425.									
					1000	7	>		
					Luis V. Rodriguez, P.E.	, Director			

Engineering and Modeling Division Federal Insurance and Mitigation Administration



NATIONAL FLOOD

Removal of Portion of Property Metes & Bounds

- Removing a portion of a legally recorded property from the SFHA is known as a metes and bounds request.
- Key Requirement: The elevation of the lowest ground on the portion of the property must be at or above the BFE.





Removal of Portion of Property Metes & Bounds



Out-As-Shown LOMA







Page 1	of 2			ate: January 31,	2017 Ca	se No.: 17-01-0	703A	LOMA-OAS
			Federal Er	mergency Washington	Manag n, D.C. 20472	ement Ag	gency	
			LETTER O	F MAP AN		NT		
		DETE	RMINATION D	OCUMEN	T (OUT)	AS SHOV	VN)	
C	OMMUN	IITY AND MAP PANE	L INFORMATION		LEGAL P	ROPERTY DESC	RIPTION	
COMMUNITY			Lot 2, Plan No. 24,314, as described in the Warranty Deed recorded in Book 5279, Pages 17, 18 and 19, in the Office of the Register of Deeds, Hillsborough County, New Hampshire					
		COMMUNITY NO.: 3	30093					
		NUMBER: 33011C05	06D					
MAP	PANEL							
		DATE: 9/25/2009						
FLOOD	ING SOL	JRCE: NESENKEAG	BROOK A	APPROXIMATE LATITUDE & LONGITUDE OF PROPERTY:42.847671, -71.433692 SOURCE OF LAT & LONG: LOMA LOGIC DATUM: NAD 83				
				DETERMINATIO	N			
LOT	BLOC	K/ SUBDIVISION	STREET	OUTCOME WHAT IS OUTSIDE OF THE SFHA	FLOOD ZONE	1% ANNUAL CHANCE FLOOD ELEVATION (NAVD 88)	LOWEST ADJACENT GRADE ELEVATION (NAVD 88)	LOWEST LOT ELEVATION (NAVD 88)
2		-	6 Evergreen Circle	Structure	X (unshaded)	-	-	
Specia equale	d or exc	Hazard Area (SFH, eded in any given ye	A) - The SFHA is an a ar (base flood).	rea that would be	inundated by	y the flood havir	ng a 1-percent o	chance of being
ADDIT	IONAL C	CONSIDERATIONS (F	Please refer to the appropriat	e section on Attachme	ent 1 for the add	itional consideration	ns listed below.)	
PORTI	ONS REM	IAIN IN THE SFHA						

LOMA in Zone A

- FEMA will determine BFE if:
 - Property < 5 acres OR < 50 lots.
 - Applicant must research the possibility that Federal, State, and local agencies have already calculated a BFE for the area.
- May require survey data.



Fact Sheet #6 - Surveying for a LOMA in Zone A





LOMA in Zone A with no BFE

				DETERMINATION		_		
LOT	BLOCK/ SECTION	SUBDIVISION	STREET	OUTCOME WHAT IS REMOVED FROM THE SFHA	FLOOD ZONE	1% ANNUAL CHANCE FLOOD ELEVATION (NGVD 29)	LOWEST ADJACENT GRADE ELEVATION (NGVD 29)	LOWEST LOT ELEVATION (NGVD 29)
	-		99 Longview Drive	Structure	X (shaded)	-	206.9 feet	-

FEMA BFE is typically only provided for non-removals

	DETERMINATION										
LOT	BLOCK/ SECTION	SUBDIVISION	STREET	OUTCOME WHAT IS NOT REMOVED FROM THE SFHA	FLOOD ZONE	1% ANNUAL CHANCE FLOOD ELEVATION (NAVD 88)	LOWEST ADJACENT GRADE ELEVATION (NAVD 88)	LOWEST LOT ELEVATION (NAVD 88)			
		-	35-37 Chase Avenue	Structure	AE	408.3 feet	406.2 feet				
Specia		ard Area (SEHA)	. The SEHA is an a	rea that would be	inundated h	, the flood having	a 1-percent c	hance of being			





LOMAs in Zone AO

- No single approach used to determine whether the Zone AO property can be removed.
- Review of requests for properties in Zone AO is case specific and must consider several characteristics.
- Sufficient topographic information is required and likely will need to extend beyond a property boundary.





Other LOMA Requests (MT-1)

- Letter of Map Revision Based on Fill (LOMR-F)
 - Lot or existing structure that has been elevated by fill.
- Letter of Map Revision Floodway (LOMR-FW)
 - Lot or existing structure on natural grade (no fill) has been inadvertently mapped within a regulatory floodway.





Use of LiDAR-Derived Topographic Data for LOMAs

- FEMA is now accepting LiDAR-derived topographic data in place of certified surveyed elevation data for certain LOMA applications.
- Data must meet USGS Quality Level 3 standard and be available from a Federal, State, or Local government source.
- These LOMA applications must either be submitted by community officials, licensed surveyors, or professional engineers.





Use of LiDAR-Derived Topographic Data for LOMAs

- Cannot be used for buildings or lots:
 - elevated by fill
 - in the regulatory floodway
 - in AO zones
- Other restrictions apply.





MT-1 Technical Guidance

- Comprehensive technical resource about LOMAs, LOMR-Fs, LOMR-FWs
- Zone AO LOMA process
- Metes & Bounds
 Considerations (removing portion of property)
- Use of LiDAR-derived data







Submittal Options for LOMCs

- Mail in paper forms and accompanying documents
- Online LOMC
- eLOMA some LOMCs not included





Online LOMC

• Online LOMC Submittal Tool

http://www.fema.gov/change-flood-zonedesignation-online-letter-map-change

• Online LOMC Training

http://www.fema.gov/online-lomc-training

- Online LOMC Tutorial for Amendments
- Online LOMC Tutorial for Revisions





eLOMA

- Provides licensed land surveyors and professional engineers with web-based system to submit simple LOMA requests
- Only for a subset of LOMA requests
- Determinations can be made in minutes
- Must be Licensed Professional to use
- Access application and tutorial at: <u>https://hazards.fema.gov/femaportal/resources/whatisel</u> <u>oma.htm</u>





FEMA Mapping & Insurance eXchange (FMIX)

- FEMA's help line for questions about the FEMA maps and Letters of Map Change (including applications)
 - 1-877-FEMA MAP (1-877-336-2627)
 - <u>FEMA-FMIX@fema.dhs.gov</u>
 - Live Chat also available
- Learn more at: <u>https://www.floodmaps.fema.gov/fhm/fmx_main</u> <u>.html</u>




LOMCs - Summary

- Removal of structure based on Lowest Adjacent Grade (LAG) at or above Base Flood Elevation (BFE).
- Removal of entire or portion of property based on Lowest Lot Elevation (LLE) at or above BFE.
- Check out MT-1 Technical Guidance for good information and tips.
- LOMC submittal tools include Online LOMC, eLOMA, and mail. Tutorials available.
- For questions, the FEMA FMIX helpline is available.





Questions?





NFIP Resources





Strategic Initiatives

Thursday, May 10, 2018

AA

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For My Home For My Business



For My Community

an official NEW HAMPSHIRE government website

Floodplain Management Program

An overview of the New Hampshire's Floodplain Management Program and the information and services it offers

News and Updates:

- Get the latest news about the National Flood Insurance Program and floodplain management topics in New Hampshire in the latest edition of our <u>Flood Lines newsletter</u>!
- March 12-16th is Flood Safety Awareness Week in New Hampshire. During this week all NH residents are
 encouraged to learn about their risk from flooding and take precautions to protect their families, homes, and
 businesses in the event of flooding. Learn more about simple things you can do today to prepare for a flood on our
 Flood Safety Awareness Week webpage.
- It is that time of year again when New Hampshire is most susceptible to ice jams and flooding. Ice jams can be
 unpredictable and happen very quickly. A handout regarding ice jam flooding and how property owners can protect
 their property from flooding are is now available. More information about ice jams can be found on the <u>NH Geological
 Survey's Flood and Geologic Hazards Program</u> page (see NH Silver Jackets/USACE CRREL Ice Jam Observer,
 which are slides from recent trainings).
- More than a decade after releasing its original report on mitigation, the National Institute of Building Sciences issued <u>Natural Hazard Mitigation Saves: 2017 Interim Report</u>. The 2017 Interim Report highlights the benefits of two mitigation strategies. Mitigation funding can save the nation \$6 in future disaster costs for every \$1 spent on hazard mitigation.
- The <u>2018 NH Water and Watershed Conference</u> will be held on March 23, 2018 at Plymouth State University in
 Plymouth. The Conference is a key event for sharing water resource information. For 2018, the event will focus on
 regional environmental stresses and how we are adapting to new information, emerging issues, and current events
 affecting water quality and water supply.

Information and Resources for:

- <u>Community Officials</u>
- Property Owners, Renters, Businesses

Surveyors, Engineers, Architects

Other Information:

- About the NH Floodplain Management Program
- Flood Mitigation and Resiliency
- Floodplain Mans and Studios

www.nh.gov/osi/planning/programs/fmp





Surveyors, Engineers, Architects Information



Information for surveyors, engineers, and architects regarding floodplain mapping, floodplain development requirements, and education and training opportunities.

Floodplain Maps and Studies:

- Floodplain Maps and Studies
- Current NH Floodplain Mapping Activities
- How to Change the Floodplain Maps

How to find out if a structure or property is shown to be in the floodplain:

- Find Your Flood Zone and Create a Printable Version of a Map and
- How to View Preliminary Flood Maps and Additional Products
- <u>Comparing Preliminary and Effective Flood Maps</u> and
- How to View Pending Flood Maps

Floodplain Regulations:

If a community participates in the NFIP, the community has adopted at least the minimum NFIP standards into the community's floodplain regulations. Some communities adopt stricter floodplain regulations. For more information, see the links below.

- · Community floodplain regulations and permitting
- Permit Process, Applications and Certificates
- Elevation Certificate How to review to ensure compliance with floodplain ordinance and
- <u>12 Key Floodplain Management Regulations</u> and
- Technical information and guidance on various floodplain regulations

Frequently Asked Questions

Engineers Surveyors and Architects: Frequently Asked Questions

Education and Training:

- Presentation slides from "Surveying in Floodplains" class at UNH-Manchester on September 26, 2018
- Floodplain Management Training & Education page



Flood Lines Newsletter

- Distributed via email to the distribution list quarterly
- Provides updates on NFIP issues both nationally and locally





Fall 2018

Volume XII Issue 4

Inside this issue: Discovery Meetings 2

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Publication

Spotlight

Mapping

NFIP Update

CRS Update

GIS for Flood-

New Publications

Training &

Events

plain Managers

NH Office of

Strategic Initiatives

(OSI) 107 Pleasant Street Johnson Hall,

3rd Floor

Concord, NH 03301

Phone:

603-271-2155

Website: www.nh.gov/osi

Update

Now Available! Updated NH Model Floodplain Ordinances

OSI's Floodplain Management Team recently released updated versions of New Hampshire's model floodplain ordinances. While the minimum National Flood Insurance Program (NFIP) regulations have not changed, OSI encourages NH communities to consider adopting the new version in the future since it includes improvements to make the regulations more understandable and added sections that provide a clearer description of the floodplain administrator's roles and responsibilities, the floodplain permitting process, and how substantial improvement and damage determinations are made.

An accompanying notes document explains the sections of the ordinance, includes guidance resources, and references applicable sections of the Code of Federal Regulations, State statute, and State building code. Also now available is a companion **Menu of Higher Standards** that provides examples of recommended higher floodplain regulations that go beyond the minimum NFIP standards. The menu includes sample ordinance language and resources to learn more about each of the standards featured.

OSI will be holding training events for community officials next year to guide them in the use of the new model ordinances. These events will be announced in future editions of Flood Lines so stay tuned!

You can access all of the documents above on OSI's Regulations page.



Regulations

This page includes the State's model floodplain ordinances, the minimum NFIP language for subdivision and site plan regulations, the Federal and State executive orders requiring Federal and State agencies to comply with floodplain regulations, and New Hampshire legislation related to floodplain management.

NH Model Floodplain Ordinances

The Office of Strategic Initiatives (OSI) has developed three state model floodplain ordinances, which contain the minimum regulations that a community must adopt in order to participate in the National Flood Insurance Program (N#TP) as obtailed in <u>TBA 44 or the Code of Indeal Regulations</u>. The type of model a commently adopt depends on the information contained on the community's Flood Insurance Rate Map developed by the Federal Ensergency Management Agency (FUMA).

Contact and Presentation Information

Jennifer Gilbert

NHOSI State Coordinator 603-271-1762 jennifer.r.gilbert@osi.nh.gov Samara Ebinger Assistant Coordinator 603-271-1755 samara.m.ebinger@osi.nh.gov



