CLACKAMAS COUNTY

SUPPLEMENTAL APPLICATION
FLOODPLAIN DEVELOPMENT PERMIT[1]

(November-2008)

APPLICANT INFORMATION

Name_____ File_____

Date_____

WHAT IS A FLOODPLAIN DEVELOPMENT PERMIT?

The County Zoning & Development Ordinance (ZDO) allows for development within the floodplain of rivers and streams.

WHAT IS NEEDED FOR APPROVAL?

All Floodplain Development permits are discretionary and MAY be permitted after evaluation according to criteria in the ZDO. The County must make written findings to support the decision. The applicant is responsible for providing evidence to support the floodplain development request, according to ZDO Section 703.

WHAT ARE CHANCES FOR APPROVAL?

Staff cannot predetermine the decision on this or any application. A decision of approval or denial will only be made after the complete application is processed. This includes review of citizen and agency comments. The decision is based on criteria appropriate to this application as listed in the ordinance. In order to address the necessary criteria, the information requested in this supplemental application should be as thorough and complete as possible.

APPLICATION PROCESS

Floodplain development permits are subject to the Administrative Action process and public notice. Public comments received from the Community Planning Organizations (CPO), property owners, agencies and other interested person.

STAFF WILL ATTACH THE FOLLOWING PERTINENT INFORMATION:

_____	Land Use Application	_____	Supplemental Application
_____	Sample Plot Plan	_____	CPO Information
_____	ZDO Section 703	_____	Application Process

[1] **Note:** This form is also used for an application for a Planning Staff Review for Flood Hazard Determination for Fish Enhancement Structure in Floodway. However, such projects are reviewed under Subsection 104.01(A) of the ZDO.

HOW LONG WILL IT TAKE TO GET A FINAL DECISION ON AN APPLICATION?

Approximately 50 days for Administrative Action applications or 120 days if the initial decision is appealed.

COMPLETE APPLICATIONS REQUIRE THE FOLLOWING:

1. Land Use Application – Information on applicant and land involved in application.

2. Supplemental Application – Information requested on this form. Please be as complete and thorough as possible and provide additional plans, written responses and supporting information, as necessary.

3. Application Fee.

4. Floodplain Elevation Certificate or Floodproofing Certificate – For all proposed structures: A fully completed FEMA-issued Elevation Certificate or Floodproofing Certificate stamped by a licensed surveyor, licensed architect, or professional engineer. If the permit application is approved, a second Elevation Certificate or Floodproofing Certificate will be required that certifies the as-built elevations, construction characteristics and site conditions.

5. Plot Plan – Drawn to scale on 8.5" x 11," or 8.5" x 14," or 11" x 17" paper (an additional full-size site plan may also be provided), at a scale of no greater than 1" = 100', that illustrates the following:
   A. A site plan of the entire property that illustrates all proposed development, including structures, water supply, sanitary facilities, cut, fill, grading, riprap, other stream bank protection measures, dams, impoundments, channel work, etc.
   B. Elevations of the site, including elevations at the areas of all proposed development and the 100-year floodplain contour.
   C. All elevations shall be referenced to the the North American Vertical Datum of 1988 (NAVD 88).

6. Profiles / Cross Sections – Drawn to scale showing all proposed development, including:
   A. Elevations of lowest floor including basement, lowest construction elements, and next higher floor of residential structures and elevated (non-floodproofed) commercial / industrial structures.
   B. Elevations of duct work, furnace, hot water heater, electrical service, air conditioning units, fuel storage tanks, and other equipment, machinery or appliances.
   C. Elevation to which any structure, equipment, machinery and appliances shall be flood-proofed or wet-floodproofed.
   D. Locations and area in square inches of flood vents for residential and non-residential structures.
   E. Elevations, length, width, thickness and materials for riprap or other stream bank protection measures.
   F. Elevations, length, width, thickness, materials and source of materials for areas of fill.
   G. Certification by a professional engineer or licensed architect that the floodplain development methods of all elements of the proposed development meet the applicable criteria of ZDO Subsections 703.10 and 703.11, while conforming to the applicable

Federal Emergency Agency (FEMA) National Flood Insurance Program (NFIP) standards.

H. Certification from a professional engineer or registered architect that cut and fill is balanced if cut and fill is necessary for the project.

7. Technical or Additional Data – Including specifications for erosion control, filling, cutting, balancing of cut and fill, dredging, grading, channel improvement, storage of materials, and any other specific data that may be unique to the project, as requested by Staff or determined by the applicant to be relevant.

   A. For projects where the boundary of the floodway is important: The site plan shall include the boundary of the floodway, professionally scaled and drawn by a licensed surveyor, licensed architect, or professional engineer.

   B. For projects, besides stream crossings, that impact the floodway: A "no-rise" certification, certified by a qualified professional engineer, is likely required pursuant to Subsection 703.07.

   C. For stream crossings that impact the floodway: A Conditional Letter of Map Revision (CLOMR) may be required instead of a "no-rise" certification pursuant to Subsections 703.07(D) and 703.10(G).

   D. For riprap or other stream bank protection measures: The items in Subsection 703.10(J) are required.

APPROVAL CRITERIA: The following standards shall be addressed through a combination of plans, supporting information and written responses. Only those standards that apply specifically to the proposed development need be addressed. See Section 703 for specific requirements.

1. State and Federal Permits: All necessary permits will be obtained from federal, state and local government agencies.

   A. Many types of development within or adjacent to streams and rivers (e.g., riprap, grading, filling, docks, bridges, dams, water impoundments, etc.) require permits from state and federal agencies, pursuant to Subsection 703.09(C)(1). For more information, contact the Oregon Department of State Lands, Oregon Department of Water Resources and U.S. Army Corps of Engineers.

2. Development in the Floodway: If the proposed development is in the floodway, the applicable standards of Subsection 703.07 will be addressed and met.

   A. Waterfront Development: Address and meet Subsections 703.07(A) and the applicable standards of 703.10 and 703.11.

   B. Riprap or Other Stream Bank Protection Methods: Address and meet Subsections 703.07(B), 703.10(J) and the applicable standards of 703.10 and 703.11.

   C. Hydroelectric Facilities: Address and meet Subsections 703.07(C) and the applicable standards of 703.10 and 703.11.

   D. Bridges & Other Stream Crossings: Address and meet Subsections 703.07(D), 703.10(G) and the applicable standards of 703.10 and 703.11.

   E. Replacement, Substantial Improvement, or Repair of Substantial Damage of Structure: Address and meet Subsection 703.07(E) and the applicable standards of 703.10 and 703.11.

F. Fish Enhancement Projects, Sponsored or Approved by State or Federal Agency: Address and meet only Subsection 703.07(F). Such projects are reviewed as a Planning Staff Review, rather than a Floodplain Development Permit, pursuant to ZDO Subsection 104.01(A).

3. Alteration of a Watercourse: If the proposed development includes alteration of a watercourse, a maintenance plan and program will be provided that maintains the altered or relocated portion of said watercourse so that the flood carrying capacity is not diminished, pursuant to Subsection 703.09(C)(3).

4. Pole Barns, Detached Garages, Shops, Sheds, Agricultural Buildings, Etc.: Per Subsection 703.12(A), certain non-residential structures, mostly those that are not used for commercial and industrial uses, may be granted an exception to some of the construction and elevation standards of Subsections 703.10 and 703.11. Such non-residential structures will address and meet the standards of Subsections 703.12 and 703.13.

5. All Development: All development — except fish enhancement projects sponsored or approved by a state or federal agency and certain non-residential structures proposed under Item 4 above — will address and meet the applicable standards of Subsection 703.10.

   A. Anchoring: All development will be anchored pursuant to Subsection 703.10(A)(1).

   B. Below-Grade Crawl Spaces: Will address and meet the standards of Subsection 703.10(B)(1)(a-h).

   C. Flood-Resistant & Damage-Minimizing Construction: All construction will address and meet the standards of Subsection 703.10(B)(2).

   D. Water Supply Systems: Will address and meet the standards of Subsection 703.10(B)(3).

   E. Sanitary Sewage Systems: Will address and meet the standards of Subsection 703.10(B)(4).

   F. Equipment, Machinery & Appliances: Will address and meet the standards of Subsection 703.10(B)(5).

   G. Waste Disposal Systems: Will address and meet the standards of Subsection 703.10(B)(6).

   H. Substantially Improved Structures & Repair of Substantially Damaged Structures: Will address and meet the standards of Subsection 703.10(C), in addition to all other applicable standards of 703.10 and 703.11.

   I. Manufactured Homes: Will address and meet the standards of Subsection 703.10(D), in addition to all other applicable standards of 703.10 and 703.11.

   J. Recreational Vehicles: Will address and meet the standards of Subsection 703.10(E).

   K. Fill, Including Structures Built on Fill: Will address and meet the standards of Subsection 703.10(F).

   L. Bridges & Other Stream Crossings: Will address and meet the standards of Subsection 703.10(G).

   M. Subdivisions: Will address and meet the standards of Subsection 703.10(H).

   N. Toxic or Hazardous Materials: Will address and meet the standards of Subsection 703.10(I).

   O. Riprap or Other Structural Stream Bank Protection Measures: Will address and meet the standards of Subsection 703.10(J).

6. All Development: All development — except fish enhancement projects sponsored or approved by a state or federal agency and certain non-residential structures proposed under Item 4 above — will address and meet the applicable standards of Subsection 703.11.

   A. Structures in Flood Fringe & Floodway Areas (Zone AE, areas that are mapped with 100-year flood elevations and a floodway): Will address and meet the standards of Subsection 703.11(A).

   B. Development in Flood Hazard Areas (also Zone AE, areas that are mapped with 100-year flood elevations, but no floodway, rare in Clackamas County): Will address and meet the standards of Subsection 703.11(B).

   C. Development in Flood Prone Areas (Zone A, also known as "un-numbered A zones," areas that do not contain 100-year flood elevations or a floodway): Will address and meet the standards of Subsection 703.11(C)

   D. Structures in Shallow Flooding Areas (Zone AH or AO, areas subject to shallow flooding, where depth numbers may or may not be shown on the map, rare in Clackamas County: Will address and meet the standards of Subsection 703.11(D).

7. Variances: Variances are required for non-residential structures that are proposed under Item 5 above. In very rare cases, variances may also be granted to other standards of Section 703. Proposed variances will address and meet the standards of Subsection 703.13.

QUESTIONS? Call Steve Hanschka in the Planning Division at (503) 742-4512.

CLACKAMAS COUNTY

Campbell M. Gilmour
Director

DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

SUNNYBROOK SERVICE CENTER
9101 SE SUNNYBROOK BLVD. | CLACKAMAS, OR 97015

Floodplain Development Permit Application

List of Additional Attachments

1. **Mandatory Flood Insurance Purchase Requirement:** Explanation of required purchase of flood insurance for all federally backed loans for structures in floodplain.
2. **Elevation Certificate & Instruction:** Required for nearly all Floodplain Development Permits. A preliminary and final Elevation Certificate is needed for all proposed structures, additions, construction, building service systems, equipment, machinery, appliances, other insurable facilities, etc.
3. **Floodproofing Certificate:** A preliminary and final Floodproofing Certificate is required for all proposed commercial and industrial structures, additions, construction, building service systems, equipment, machinery, appliances, other insurable facilities, etc., that are proposed to be floodproofed rather than elevated.
4. **Worksheet for Substantial Improvement, or Repair of Substantial Damage:** A form used to determine whether an existing structure will be substantially improved, or has been substantially damaged, and will, therefore, need to be elevated, retrofitted and otherwise brought into compliance with current floodplain development standards.
5. **"No-Rise" Certification Form & Associated Procedures:** Required for nearly all development in the Regulatory Floodway.
6. **Hydraulic Shadow Computations:** Computations and diagram that can be utilized by a professional engineer or registered architect to illustrate that a proposed increase in ground coverage of a structure in the Floodway will be located within the Hydraulic Shadow and, therefore, does not require a "no-rise" analysis.

Flood Insurance Purchase Requirement

NFIP: This community participates in the National Flood Insurance Program (NFIP). The NFIP makes federally backed flood insurance available for all buildings, whether they are in a floodplain or not. Flood insurance covers direct losses caused by surface flooding, including a river flowing over its banks, a lake or ocean storm, and local drainage problems.

The NFIP insures building, including mobile homes, with two types of coverage: structural and contents. Structural coverage is for the walls, floors, insulation, furnace, and other items permanently attached to the structure. Contents coverage may be purchased separately provided the contents are in an insurable building.

Mandatory Purchase Requirement: The mandatory purchase requirement applies to all forms of federal or federally related financial assistance for buildings located in a Special Flood Hazard Area (SFHA). This requirement affects loans and grants for the purchase, construction, repair, or improvement of any publicly or privately owned building in the SFHA, including machinery, equipment, fixtures, and furnishings contained in such buildings.

Financial assistance programs affected include loans and grants from agencies such as the Department of Veterans Affairs, Farmers Home Administration, Federal Housing Administration, Small Business Administration, and FEMA. The requirement also applies to secured mortgage loans from financial institutions, such as commercial lenders, savings and loan associations, savings banks. and credit unions, that are regulated, supervised, or insured by federal agencies such as the Federal Deposit Insurance Corporation and the Office of thrift Supervision. It also applies to all mortgage loans purchased by Fannie Mae or Freddie Mac in the secondary mortgage market.

How it Works: Before a person can receive a loan or other financial assistance from one of the affected agencies or lenders, there must be a check to see if the building is in an SFHA. The SFHA is the base (100-year) floodplain mapped on a Flood Insurance Rate Map (FIRM). It is shown as one of more zones that begin with the letter "A" or "V".

Copies of the FIRM are available for review in most local government building or planning departments. Many lenders and insurance agents also have copies. It is the agency's or the lender's responsibility to check the FIRM to determine if the building is in an SFHA, although many communities provide assistance.

If the building is in an SFHA, the agency or lender is required by law to require the recipient to purchase a flood insurance policy on the building. The requirement is for structural coverage equal to the amount of the loan (or other financial assistance) or the maximum amount available, whichever is less. The maximum amount available for a single-family house is $250,000.

The mandatory purchase requirement does no affect loans or financial assistance for items that are not covered by a flood insurance policy, such as vehicles, business expenses. landscaping, and vacant lots. It does not affect loans for building that are not in the SFHA, even though a portion of the lot may be floodprone. While not mandated by law, a lender may require a flood insurance policy as a condition of a loan for a property in any zone on a FIRM.

FEMA

NATIONAL FLOOD INSURANCE PROGRAM

ELEVATION CERTIFICATE

AND

INSTRUCTIONS

NATIONAL FLOOD INSURANCE PROGRAM
ELEVATION CERTIFICATE

PAPERWORK REDUCTION ACT NOTICE

Public reporting burden for this data collection is estimated to average 3.75 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and submitting this form. You are not required to respond to this collection of information unless a valid OMB control number is displayed on this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing the burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 500 C Street SW, Washington DC 20472, Paperwork Reduction Project (1660-0008). **NOTE: Do not send your completed form to this address.**

PURPOSE OF THE ELEVATION CERTIFICATE

The Elevation Certificate is an important administrative tool of the National Flood Insurance Program (NFIP). It is to be used to provide elevation information necessary to ensure compliance with community floodplain management ordinances, to determine the proper insurance premium rate, and to support a request for a Letter of Map Amendment (LOMA) or Letter of Map Revision based on fill (LOMR-F).

The Elevation Certificate is required in order to properly rate Post-FIRM buildings, which are buildings constructed after publication of the Flood Insurance Rate Map (FIRM), located in flood insurance Zones A1-A30, AE, AH, A (with BFE), VE, V1-V30, V (with BFE), AR, AR/A, AR/AE, AR/A1-A30, AR/AH, and AR/AO. The Elevation Certificate is not required for Pre-FIRM buildings unless the building is being rated under the optional Post-FIRM flood insurance rules.

As part of the agreement for making flood insurance available in a community, the NFIP requires the community to adopt a floodplain management ordinance that specifies minimum requirements for reducing flood losses. One such requirement is for the community to obtain the elevation of the lowest floor (including basement) of all new and substantially improved buildings, and maintain a record of such information. The Elevation Certificate provides a way for a community to document compliance with the community's floodplain management ordinance.

Use of this certificate does not provide a waiver of the flood insurance purchase requirement. Only a LOMA or LOMR-F from the Federal Emergency Management Agency (FEMA) can amend the FIRM and remove the Federal mandate for a lending institution to require the purchase of flood insurance. However, the lending institution has the option of requiring flood insurance even if a LOMA/LOMR-F has been issued by FEMA. The Elevation Certificate may be used to support a LOMA or LOMR-F request. Lowest floor and lowest adjacent grade elevations certified by a surveyor or engineer will be required if the certificate is used to support a LOMA or LOMR-F request. A LOMA or LOMR-F request must be submitted with either a completed FEMA MT-EZ or MT-1 package, whichever is appropriate.

This certificate is used only to certify building elevations. A separate certificate is required for floodproofing. Under the NFIP, non-residential buildings can be floodproofed up to or above the Base Flood Elevation (BFE). A floodproofed building is a building that has been designed and constructed to be watertight (substantially impermeable to floodwaters) below the BFE. Floodproofing of residential buildings is not permitted under the NFIP unless FEMA has granted the community an exception for residential floodproofed basements. The community must adopt standards for design and construction of floodproofed basements before FEMA will grant a basement exception. For both floodproofed non-residential buildings and residential floodproofed basements in communities that have been granted an exception by FEMA, a floodproofing certificate is required.

Additional guidance can be found in FEMA Publication 467-1, Floodplain Management Bulletin: Elevation Certificate, available on FEMA's website at http://www.fema.gov/library/viewRecord.do?id=1727.

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

ELEVATION CERTIFICATE

Important: Read the instructions on pages 1-9.

OMB No. 1660-0008
Expires March 31, 2012

SECTION A - PROPERTY INFORMATION

For Insurance Company Use:
Policy Number
Company NAIC Number

A1. Building Owner's Name

A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box 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 Datum: ☐ NAD 1927 ☐ NAD 1983

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

A7. Building Diagram Number_____

A8. For a building with a crawlspace or enclosure(s):
- a) Square footage of crawlspace or enclosure(s) _____ sq ft
- b) No. 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 _____ sq in
- d) Engineered flood openings? ☐ Yes ☐ No

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

SECTION B - FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

B1. NFIP Community Name & Community Number	B2. County Name	B3. State

B4. Map/Panel Number	B5. Suffix	B6. FIRM Index Date	B7. FIRM Panel Effective/Revised Date	B8. Flood Zone(s)	B9. Base Flood Elevation(s) (Zone AO, use base flood depth)

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

B11. Indicate elevation datum used for BFE in Item B9: ☐ NGVD 1929 ☐ NAVD 1988 ☐ Other (Describe) _____

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

SECTION C - BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

C1. Building elevations are based on: ☐ Construction Drawings* ☐ Building Under Construction* ☐ Finished Construction
*A new Elevation Certificate will be required when construction of the building is complete.

C2. Elevations – Zones A1-A30, AE, AH, A (with BFE), VE, V1-V30, V (with BFE), AR, AR/A, AR/AE, AR/A1-A30, AR/AH, AR/AO. Complete Items C2.a-h below according to the building diagram specified in Item A7. Use the same datum as the BFE.

Benchmark Utilized _____ Vertical Datum _____

Conversion/Comments _____

		Check the measurement used.	
a)	Top of bottom floor (including basement, crawlspace, or enclosure floor) _____	☐ feet	☐ meters (Puerto Rico only)
b)	Top of the next higher floor _____	☐ feet	☐ meters (Puerto Rico only)
c)	Bottom of the lowest horizontal structural member (V Zones only) _____	☐ feet	☐ meters (Puerto Rico only)
d)	Attached garage (top of slab) _____	☐ feet	☐ meters (Puerto Rico only)
e)	Lowest elevation of machinery or equipment servicing the building (Describe type of equipment and location in Comments) _____	☐ feet	☐ meters (Puerto Rico only)
f)	Lowest adjacent (finished) grade next to building (LAG) _____	☐ feet	☐ meters (Puerto Rico only)
g)	Highest adjacent (finished) grade next to building (HAG) _____	☐ feet	☐ meters (Puerto Rico only)
h)	Lowest adjacent grade at lowest elevation of deck or stairs, including structural support _____	☐ feet	☐ meters (Puerto Rico only)

SECTION D - SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION

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

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

PLACE SEAL HERE

Certifier's Name License Number

Title Company Name

Address City State ZIP Code

Signature Date Telephone

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.	Policy Number
City State ZIP Code	Company NAIC Number

SECTION D - SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION (CONTINUED)

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

Comments

Signature Date

☐ Check here if attachments

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).
a) 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 openings provided in Section A Items 8 and/or 9 (see pages 8-9 of Instructions), the next higher floor (elevation C2.b in 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 floodplain management ordinance? ☐ Yes ☐ No ☐ Unknown. The local official must certify this information in Section G.

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's or Owner's Authorized Representative's Name

Address City State ZIP Code

Signature Date Telephone

Comments

☐ Check here if attachments

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 and G9.

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-G9) 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

G8. Elevation of as-built lowest floor (including basement) of the building _____. ___ ☐ feet ☐ meters (PR) Datum_____

G9. BFE or (in Zone AO) depth of flooding at the building site _____. ___ ☐ feet ☐ meters (PR) Datum_____

G10. Community's design flood elevation _____. ___ ☐ feet ☐ meters (PR) Datum_____

Local Official's Name Title

Community Name Telephone

Signature Date

Comments

☐ Check here if attachments

Building Photographs

See Instructions for Item A6.

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.			For Insurance Company Use: Policy Number
City	State	ZIP Code	Company NAIC Number

If using the Elevation Certificate to obtain NFIP flood insurance, affix at least two 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." If submitting more photographs than will fit on this page, use the Continuation Page on the reverse.

Building Photographs

Continuation Page

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.			For Insurance Company Use Policy Number
City	State	ZIP Code	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."

INSTRUCTIONS FOR COMPLETING THE ELEVATION CERTIFICATE

The Elevation Certificate is to be completed by a land surveyor, engineer, or architect who is authorized by law to certify elevation information when elevation information is required for Zones A1-A30, AE, AH, A (with BFE), VE, V1-V30, V (with BFE), AR, AR/A, AR/AE, AR/A1-A30, AR/AH, or AR/AO. Community officials who are authorized by law or ordinance to provide floodplain management information may also complete this form. For Zones AO and A (without BFE), a community official, a property owner, or an owner's representative may provide information on this certificate, unless the elevations are intended for use in supporting a request for a LOMA or LOMR-F. Certified elevations must be included if the purpose of completing the Elevation Certificate is to obtain a LOMA or LOMR-F.

The property owner, the owner's representative, or local official who is authorized by law to administer the community floodplain ordinance can complete Section A and Section B. The partially completed form can then be given to the land surveyor, engineer, or architect to complete Section C. The land surveyor, engineer, or architect should verify the information provided by the property owner or owner's representative to ensure that this certificate is complete.

In Puerto Rico only, elevations for building information and flood hazard information may be entered in meters.

SECTION A – PROPERTY INFORMATION

Items A1-A4. This section identifies the building, its location, and its owner. Enter the name(s) of the building owner(s), the building's complete street address, and the lot and block numbers. If the building's address is different from the owner's address, enter the address of the building being certified. If the address is a rural route or a Post Office box number, enter the lot and block numbers, the tax parcel number, the legal description, or an abbreviated location description based on distance and direction from a fixed point of reference. For the purposes of this certificate, "building" means both a building and a manufactured (mobile) home.

A map may be attached to this certificate to show the location of the building on the property. A tax map, FIRM, or detailed community map is appropriate. If no map is available, provide a sketch of the property location, and the location of the building on the property. Include appropriate landmarks such as nearby roads, intersections, and bodies of water. For building use, indicate whether the building is residential, non-residential, an addition to an existing residential or non-residential building, an accessory building (e.g., garage), or other type of structure. Use the Comments area of the appropriate section if needed, or attach additional comments.

Item A5. Provide latitude and longitude coordinates for the center of the front of the building. Use either decimal degrees (e.g., 39.5043°, -110.7585°) or degrees, minutes, seconds (e.g., 39° 30' 15.5", -110° 45' 30.7") format. If decimal degrees are used, provide coordinates to at least 4 decimal places or better. When using degrees, minutes, seconds, provide seconds to at least 1 decimal place or better. The latitude and longitude coordinates must be accurate within 66 feet. When the latitude and longitude are provided by a surveyor, check the "Yes" box in Section D and indicate the method used to determine the latitude and longitude in the Comments area of Section D. If the Elevation Certificate is being certified by other than a licensed surveyor, engineer, or architect, this information is not required. Provide the type of datum used to obtain the latitude and longitude. FEMA prefers the use of NAD 1983.

Item A6. If the Elevation Certificate is being used to obtain flood insurance through the NFIP, the certifier must provide at least two photographs showing the front and rear of the building taken within 90 days from the date of certification. The photographs must be taken with views confirming the building description and diagram number provided in Section A. To the extent possible, these photographs should show the entire building including foundation. If the building has split-level or multi-level areas, provide at least two additional photographs showing side views of the building. In addition, when applicable, provide a photograph of the foundation showing a representative example of the flood openings or vents. All photographs must be in color and measure at least 3"x3". Digital photographs are acceptable.

Item A7. Select the diagram on pages 7-9 that best represents the building. Then enter the diagram number and use the diagram to identify and determine the appropriate elevations requested in Items C2.a-h. If you are unsure of the correct diagram, select the diagram that most closely resembles the building being certified.

Item A8.a Provide the square footage of the crawlspace or enclosure(s) below the lowest elevated floor of an elevated building with or without permanent flood openings. Take the measurement from the outside of the crawlspace or enclosure(s). Examples of elevated buildings constructed with crawlspace and enclosure(s) are shown in Diagrams 6-9 on pages 8-9. Diagram 2, 4, or 9 should be used for a building constructed with a crawlspace floor that is below the exterior grade on all sides.

Items A8.b-d Enter in Item A8.b the number of permanent flood openings in the crawlspace or enclosure(s) that are no higher than 1.0 foot above the higher of the exterior or interior grade or floor immediately below the opening. (A permanent flood opening is a flood vent or other opening that allows the free passage of water automatically in both directions without human intervention.) If the interior grade elevation is used, note this in the Comments area of Section D. Estimate the total net area of all such permanent flood openings in square inches, excluding any bars, louvers, or other covers of the permanent flood openings, and enter the total in Item A8.c. If the net area cannot be reasonably estimated, provide the size of the flood openings without consideration of any covers and indicate in the Comments area the type of cover that exists in the flood openings. Indicate in Item A8.d whether the flood openings are engineered. If applicable, attach a copy of the Individual Engineered Flood Openings Certification or an Evaluation Report issued by the International Code Council Evaluation Service (ICC ES), if you have it. If the crawlspace or enclosure(s) have no permanent openings within 1.0 foot above adjacent grade, enter "0" (zero) in Items A8.b-c.

Item A9.a Provide the square footage of the attached garage with or without permanent flood openings. Take the measurement from the outside of the garage.

Items A9.b-d Enter in Item A9.b the number of permanent flood openings in the attached garage that are no higher than 1.0 foot above the higher of the exterior or interior grade or floor immediately below the opening. (A permanent flood opening is a flood vent or other opening that allows the free passage of water automatically in both directions without human intervention.) If the interior grade elevation is used, note this in the Comments area of Section D. This includes any openings that are in the garage door that are no higher than 1.0 foot above the adjacent grade. Estimate the total net area of all such permanent flood openings in square inches and enter the total in Item A9.c. If the net area cannot be reasonably estimated, provide the size of the flood openings without consideration of any covers and indicate in the Comments area the type of cover than exists in the flood openings. Indicate in Item A9.d whether the flood openings are engineered. If applicable, attach a copy of the Individual Engineered Flood Openings Certification or an Evaluation Report issued by the International Code Council Evaluation Service (ICC ES), if you have it. If the garage has no permanent flood openings within 1.0 foot above adjacent grade, enter "0" (zero) in Items A9.b-c.

SECTION B - FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

Complete the Elevation Certificate on the basis of the FIRM in effect at the time of the certification.

The information for Section B is obtained by reviewing the FIRM panel that includes the building's location. Information about the current FIRM is available from the Federal Emergency Management Agency (FEMA) by calling 1-800-358-9616. If a Letter of Map Amendment (LOMA) or Letter of Map Revision (LOMR-F) has been issued by FEMA, please provide the letter date and case number in the Comments area of Section D or Section G, as appropriate.

For a building in an area that has been annexed by one community but is shown on another community's FIRM, enter the community name and 6-digit number of the annexing community in Item B1, the name of the new county in Item B2, and the FIRM index date for the annexing community in Item B6. Enter information from the actual FIRM panel that shows the building location, even if it is the FIRM for the previous jurisdiction, in Items B4, B5, B7, B8, and B9.

If the map in effect at the time of the building's construction was other than the current FIRM, and you have the past map information pertaining to the building, provide the information in the Comments area of Section D.

Item B1. NFIP Community Name & Community Number. Enter the complete name of the community in which the building is located and the associated 6-digit community number. For a newly incorporated community, use the name and 6-digit number of the new community. Under the NFIP, a "community" is any State or area or political subdivision thereof, or any Indian tribe or authorized native organization, that has authority to adopt and enforce floodplain management regulations for the areas within its jurisdiction. To determine the current community number, see the NFIP *Community Status Book*, available on FEMA's web site at http://www.fema.gov/fema/csb.shtm, or call 1-800-358-9616.

Item B2. County Name. Enter the name of the county or counties in which the community is located. For an unincorporated area of a county, enter "unincorporated area." For an independent city, enter "independent city."

Item B3. State. Enter the 2-letter state abbreviation (for example, VA, TX, CA).

Items B4-B5. Map/Panel Number and Suffix. Enter the 10-character "Map Number" or "Community Panel Number" shown on the FIRM where the building or manufactured (mobile) home is located. For maps in a county-wide format, the sixth character of the "Map Number" is the letter "C" followed by a four-digit map number. For maps not in a county-wide format, enter the "Community Panel Number" shown on the FIRM.

Item B6. FIRM Index Date. Enter the effective date or the map revised date shown on the FIRM Index.

Item B7. FIRM Panel Effective/Revised Date. Enter the map effective date or the map revised date shown on the FIRM panel. This will be the latest of all dates shown on the map. The current FIRM panel effective date can be determined by calling 1-800-358-9616.

Item B8. Flood Zone(s). Enter the flood zone, or flood zones, in which the building is located. All flood zones containing the letter "A" or "V" are considered Special Flood Hazard Areas. The flood zones are A, AE, A1-A30, V, VE, V1-V30, AH, AO, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, and AR/AO. Each flood zone is defined in the legend of the FIRM panel on which it appears.

Item B9. Base Flood Elevation(s). Using the appropriate Flood Insurance Study (FIS) Profile, Floodway Data Table, or FIRM panel, locate the property and enter the BFE (or base flood depth) of the building site. If the building is located in more than one flood zone in Item B8, list all appropriate BFEs in Item B9. BFEs are shown on a FIRM or FIS Profile for Zones A1-A30, AE, AH, V1-V30, VE, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, and AR/AO; flood depth numbers are shown for Zone AO. Use the AR BFE if the building is located in any of Zones AR/A, AR/AE, AR/A1-A30, AR/AH, or AR/AO. In A or V zones where BFEs are not provided on the FIRM, BFEs may be available from another source. For example, the community may have established BFEs or obtained BFE data from other sources for the building site. For subdivisions and other developments of more than 50 lots or 5 acres, establishment of BFEs is required by the community's floodplain management ordinance. If a BFE is obtained from another source, enter the BFE in Item B9. In an A Zone where BFEs are not available, complete Section E and enter N/A for Section B, Item B9. Enter the BFE to the nearest tenth of a foot (nearest tenth of a meter, in Puerto Rico).

Item B10. Indicate the source of the BFE that you entered in Item B9. If the BFE is from a source other than FIS Profile, FIRM, or community, describe the source of the BFE.

Item B11. Indicate the elevation datum to which the elevations on the applicable FIRM are referenced as shown on the map legend. The vertical datum is shown in the Map Legend and/or the Notes to Users on the FIRM.

Item B12. Indicate whether the building is located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA). (OPAs are portions of coastal barriers that are owned by Federal, State, or local governments or by certain non-profit organizations and used primarily for natural resources protection.) Federal flood insurance is prohibited in designated CBRS areas or OPAs for buildings or manufactured (mobile) homes built or substantially improved after the date of the CBRS or OPA designation. For the first CBRS designations, that date is October 1, 1983. Information about CBRS areas and OPAs may be obtained on the FEMA web site at http://www.fema.gov/business/nfip/cbrs/cbrs.shtm.

SECTION C - BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

Complete Section C if the building is located in any of Zones A1-A30, AE, AH, A (with BFE), VE, V1-V30, V (with BFE), AR, AR/A, AR/AE, AR/A1-A30, AR/AH, or AR/AO, or if this certificate is being used to support a request for a LOMA or LOMR-F. If the building is located in Zone AO or Zone A (without BFE), complete Section E instead. To ensure that all required elevations are obtained, it may be necessary to enter the building (for instance, if the building has a basement or sunken living room, split-level construction, or machinery and equipment).

Surveyors may not be able to gain access to some crawlspaces to shoot the elevation of the crawlspace floor. If access to the crawlspace is limited or cannot be gained, follow one of these procedures.

- Use a yardstick or tape measure to measure the height from the floor of the crawlspace to the "next higher floor," and then subtract the crawlspace height from the elevation of the "next higher floor." If there is no access to the crawlspace, use the exterior grade next to the structure to measure the height of the crawlspace to the "next higher floor."
- Contact the local floodplain administrator of the community in which the building is located. The community may have documentation of the elevation of the crawlspace floor as part of the permit issued for the building.
- If the property owner has documentation or knows the height of the crawlspace floor to the next higher floor, try to verify this by looking inside the crawlspace through any openings or vents.

In all three cases, provide the elevation in the Comments area of Section D on the back of the form and a brief description of how the elevation was obtained.

Item C1. Indicate whether the elevations to be entered in this section are based on construction drawings, a building under construction, or finished construction. For either of the first two choices, a post-construction Elevation Certificate will be

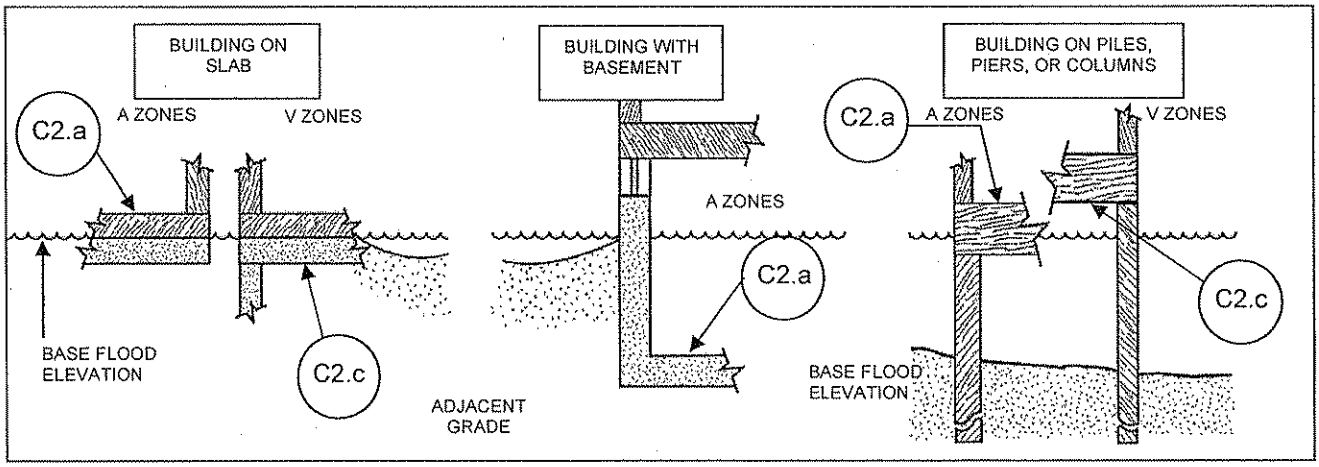
required when construction is complete. If the building is under construction, include only those elevations that can be surveyed in Items C2.a-h. Use the Comments area of Section D to provide elevations obtained from the construction plans or drawings. Select "Finished Construction" only when all machinery and/or equipment such as furnaces, hot water heaters, heat pumps, air conditioners, and elevators and their associated equipment have been installed and the grading around the building is completed.

Item C2. A field survey is required for Items C2.a-h. Most control networks will assign a unique identifier for each benchmark. For example, the National Geodetic Survey uses the Permanent Identifier (PID). For the benchmark utilized, provide the PID or other unique identifier assigned by the maintainer of the benchmark. For GPS survey, indicate the benchmark used for the base station, the Continuously Operating Reference Stations (CORS) sites used for an On-line Positioning User Service (OPUS) solution (also attach the OPUS report), or the name of the Real Time Network used.

Also provide the vertical datum for the benchmark elevation. All elevations for the certificate, including the elevations for Items C2.a-h, must use the same datum on which the BFE is based. Show the conversion from the field survey datum used if it differs from the datum used for the BFE entered in Item B9 and indicate the conversion software used. Show the datum conversion, if applicable, in this section or in the Comments area of Section D.

For property experiencing ground subsidence, the most recent reference mark elevations must be used for determining building elevations. However, when subsidence is involved, the BFE should not be adjusted. Enter elevations in Items C2.a-h to the nearest tenth of a foot (nearest tenth of a meter, in Puerto Rico).

Items C2.a-d Enter the building elevations (excluding the attached garage) indicated by the selected building diagram (Item A7) in Items C2.a-c. If there is an attached garage, enter the elevation for top of attached garage slab in Item C2.d. (Because elevation for top of attached garage slab is self-explanatory, attached garages are not illustrated in the diagrams.) If the building is located in a V zone on the FIRM, complete Item C2.c. If the flood zone cannot be determined, enter elevations for all of Items C2.a-h. For buildings in A zones, elevations a, b, d, and e should be measured at the top of the floor. For buildings in V zones, elevation c must be measured at the bottom of the lowest horizontal structural member of the floor (see drawing below). For buildings elevated on a crawlspace, Diagrams 8 and 9, enter the elevation of the top of the crawlspace floor in Item C2.a, whether or not the crawlspace has permanent flood openings (flood vents). *If any item does not apply to the building, enter "N/A" for not applicable.*



Item C2.e Enter the lowest platform elevation of at least one of the following machinery and equipment items: elevators and their associated equipment, furnaces, hot water heaters, heat pumps, and air conditioners in an attached garage or enclosure or on an open utility platform that provides utility services for the building. Note that elevations for these specific machinery and equipment items are required in order to rate the building for flood insurance. Local floodplain management officials are required to ensure that all machinery and equipment servicing the building are protected from flooding. Thus, local officials may require that elevation information for all machinery and equipment, including ductwork, be documented on the Elevation Certificate. If the machinery and/or equipment is mounted to a wall, pile, etc., enter the platform elevation of the machinery and/or equipment. Indicate machinery/equipment type and its general location, e.g., on floor inside garage or on platform affixed to exterior wall, in the Comments area of Section D or Section G, as appropriate. *If this item does not apply to the building, enter "N/A" for not applicable.*

Items C2.f-g Enter the elevation of the ground, sidewalk, or patio slab immediately next to the building. For Zone AO, use the natural grade elevation, if available. This measurement must be to the nearest tenth of a foot (nearest tenth of a meter, in Puerto Rico) if this certificate is being used to support a request for a LOMA or LOMR-F.

Item C2.h Enter the lowest grade elevation at the deck support or stairs. For Zone AO, use the natural grade elevation, if available. This measurement must be to the nearest tenth of a foot (nearest tenth of a meter, in Puerto Rico) if this certificate is being used to support a request for a LOMA or LOMR-F.

SECTION D - SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION

Complete as indicated. This section of the Elevation Certificate may be signed by only a land surveyor, engineer, or architect who is authorized by law to certify elevation information. Place your license number, your seal (as allowed by the State licensing board), your signature, and the date in the box in Section D. You are certifying that the information on this certificate represents your best efforts to interpret the data available and that you understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001. Use the Comments area of Section D, on the back of the certificate, to provide datum, elevation, openings, or other relevant information not specified on the front.

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

Complete Section E if the building is located in Zone AO or Zone A (without BFE). Otherwise, complete Section C instead. Explain in the Section F Comments area if the measurement provided under Items E1- E4 is based on the "natural grade."

Items E1.a and b Enter in Item E1.a the height to the nearest tenth of a foot (tenth of a meter in Puerto Rico) of the top of the bottom floor (as indicated in the applicable diagram) above or below the highest adjacent grade (HAG). Enter in Item E1.b the height to the nearest tenth of a foot (tenth of a meter in Puerto Rico) of the top of the bottom floor (as indicated in the applicable diagram) above or below the lowest adjacent grade (LAG). For buildings in Zone AO, the community's floodplain management ordinance requires the lowest floor of the building be elevated above the highest adjacent grade at least as high as the depth number on the FIRM. Buildings in Zone A (without BFE) may qualify for a lower insurance rate if an engineered BFE is developed at the site.

Item E2. For Building Diagrams 6-9 with permanent flood openings (see pages 8-9), enter the height to the nearest tenth of a foot (tenth of a meter in Puerto Rico) of the next higher floor or elevated floor (as indicated in the applicable diagram) above or below the highest adjacent grade (HAG).

Item E3. Enter the height to the nearest tenth of a foot (tenth of a meter in Puerto Rico), in relation to the highest adjacent grade next to the building, for the top of attached garage slab. (Because elevation for top of attached garage slab is self-explanatory, attached garages are not illustrated in the diagrams.) *If this item does not apply to the building, enter "N/A" for not applicable.*

Item E4. Enter the height to the nearest tenth of a foot (tenth of a meter in Puerto Rico), in relation to the highest adjacent grade next to the building, of the platform elevation that supports the machinery and/or equipment servicing the building. Indicate machinery/equipment type in the Comments area of Section F. *If this item does not apply to the building, enter "N/A" for not applicable.*

Item E5. For those communities where this base flood depth is not available, the community will need to determine whether the top of the bottom floor is elevated in accordance with the community's floodplain management ordinance.

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

Complete as indicated. This section is provided for certification of measurements taken by a property owner or property owner's representative when responding to Sections A, B, and E. The address entered in this section must be the actual mailing address of the property owner or property owner's representative who provided the information on the certificate.

SECTION G - COMMUNITY INFORMATION (OPTIONAL)

Complete as indicated. The community 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. Section C may be

filled in by the local official as provided in the instructions below for Item G1. If the authorized community official completes Sections C, E, or G, complete the appropriate item(s) and sign this section.

Check **Item G1** if Section C is completed with elevation data from other documentation, including elevations obtained from the Community Rating System Elevation Software, 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 of the elevation data and the date obtained in the Comments area of Section G. If you are both a community official and a licensed land surveyor, engineer, or architect authorized by law to certify elevation information, and you performed the actual survey for a building in Zones A1-A30, AE, AH, A (with BFE), VE, V1-V30, V (with BFE), AR, AR/A, AR/A1-A30, AR/AE, AR/AH, or AR/AO, you must also complete Section D.

Check **Item G2** if information is entered in Section E by the community for a building in Zone A (without a FEMA-issued or community-issued BFE) or Zone AO.

Check **Item G3** if the information in Items G4-G10 has been completed for community floodplain management purposes to document the as-built lowest floor elevation of the building. Section C of the Elevation Certificate records the elevation of various building components but does not determine the lowest floor of the building or whether the building, as constructed, complies with the community's floodplain management ordinance. This must be done by the community. Items G4-G10 provide a way to document these determinations.

Item G4. Permit Number. Enter the permit number or other identifier to key the Elevation Certificate to the permit issued for the building.

Item G5. Date Permit Issued. Enter the date the permit was issued for the building.

Item G6. Date Certificate of Compliance/Occupancy Issued. Enter the date that the Certificate of Compliance or Occupancy or similar written official documentation of as-built lowest floor elevation was issued by the community as evidence that all work authorized by the floodplain development permit has been completed in accordance with the community's floodplain management laws or ordinances.

Item G7. New Construction or Substantial Improvement. Check the applicable box. "Substantial Improvement" means any reconstruction, rehabilitation, addition, or other improvement of a building, the cost of which equals or exceeds 50 percent of the market value of the building before the start of construction of the improvement. The term includes buildings that have incurred substantial damage, regardless of the actual repair work performed.

Item G8. As-built lowest floor elevation. Enter the elevation of the lowest floor (including basement) when the construction of the building is completed and a final inspection has been made to confirm that the building is built in accordance with the permit, the approved plans, and the community's floodplain management laws or ordinances. Indicate the elevation datum used.

Item G9. BFE. Using the appropriate FIRM panel, FIS Profile, or other data source, locate the property and enter the BFE (or base flood depth) of the building site. Indicate the elevation datum used.

Item G10. Community's design flood elevation. Enter the elevation (including freeboard above the BFE) to which the community requires the lowest floor to be elevated. Indicate the elevation datum used.

Enter your name, title, and telephone number, and the name of the community. Sign and enter the date in the appropriate blanks.

BUILDING DIAGRAMS

The following diagrams illustrate various types of buildings. Compare the features of the building being certified with the features shown in the diagrams and select the diagram most applicable. Enter the diagram number in Item A7, the square footage of crawlspace or enclosure(s) and the area of flood openings in square inches in Items A8.a-c, the square footage of attached garage and the area of flood openings in square inches in Items A9.a-c, and the elevations in Items C2.a-h.

In A zones, the floor elevation is taken at the top finished surface of the floor indicated; in V zones, the floor elevation is taken at the bottom of the lowest horizontal structural member (see drawing in instructions for Section 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 one side.*

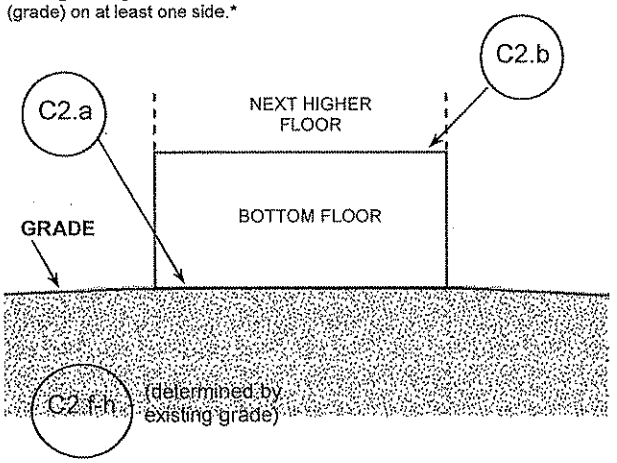


DIAGRAM 1B

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.

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

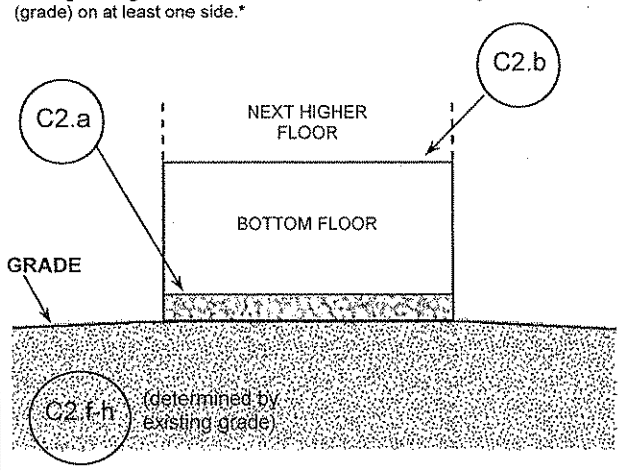
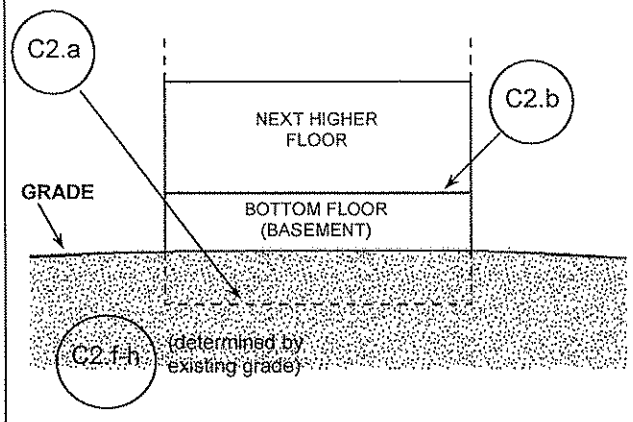


DIAGRAM 2

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.*



* A floor that is below ground level (grade) on all sides is considered a basement even if the floor is used for living purposes, or as an office, garage, workshop, etc

DIAGRAM 3

All split-level buildings that are slab-on-grade, either detached or row type (e.g., townhouses); with or without attached garage.

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

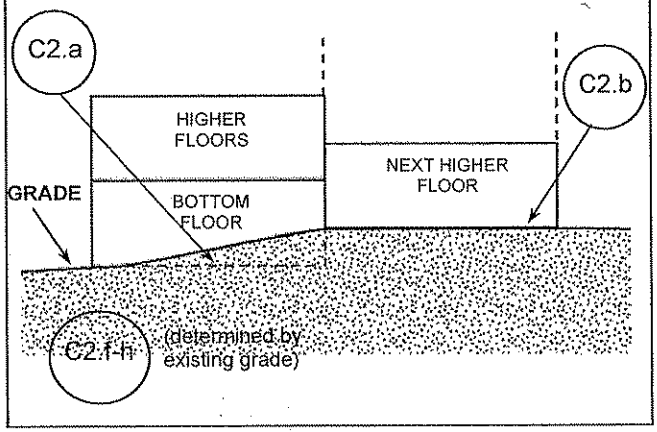


DIAGRAM 4

All split-level buildings (other than slab-on-grade), 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.*

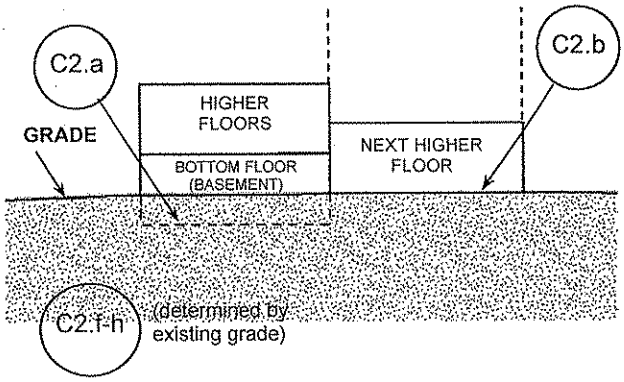


DIAGRAM 5

All buildings elevated on piers, posts, piles, columns, or parallel shear walls. No obstructions below the elevated floor.

Distinguishing Feature – For all zones, the area below the elevated floor is open, with no obstruction to flow of flood waters (open lattice work and/or readily removable insect screening is permissible).

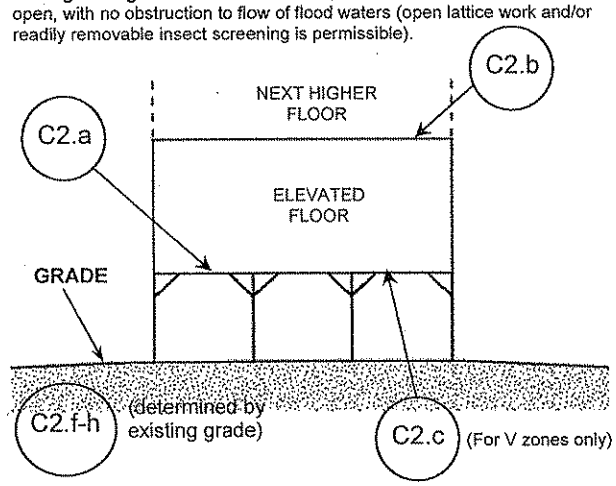
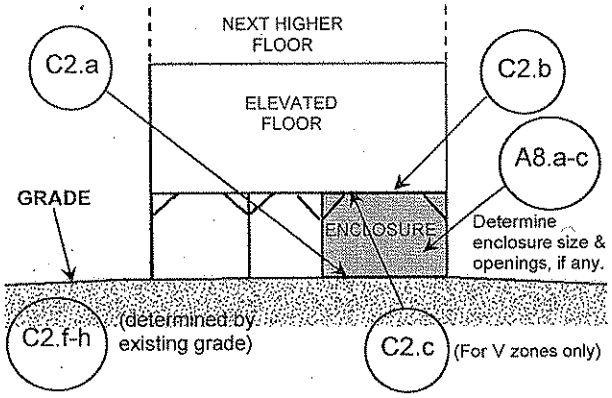


DIAGRAM 6

All buildings elevated on piers, posts, piles, columns, or parallel shear walls with full or partial enclosure below the elevated floor.

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.



* A floor that is below ground level (grade) on all sides is considered a basement even if the floor is used for living purposes, or as an office, garage, workshop, etc.

** An "opening" is a permanent opening that allows for the free passage of water automatically in both directions without human intervention. Under the NFIP, a minimum of two openings is required for enclosures or crawlspaces. The openings shall provide a total net area of not less than one square inch for every square foot of area enclosed, excluding any bars, louvers, or other covers of the opening. Alternatively, an Individual Engineered Flood Openings Certification or an Evaluation Report issued by the International Code Council Evaluation Service (ICC ES) must be submitted to document that the design of the openings will allow for the automatic equalization of hydrostatic flood forces on exterior walls. A window, a door, or a garage door is not considered an opening; openings may be installed in doors. Openings shall be on at least two sides of the enclosed area. If a building has more than one enclosed area, each area must have openings to allow floodwater to directly enter. The bottom of the openings must be no higher than one foot above the higher of the exterior or interior grade or floor immediately below the opening. For more guidance on openings, see NFIP Technical Bulletin 1.

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.

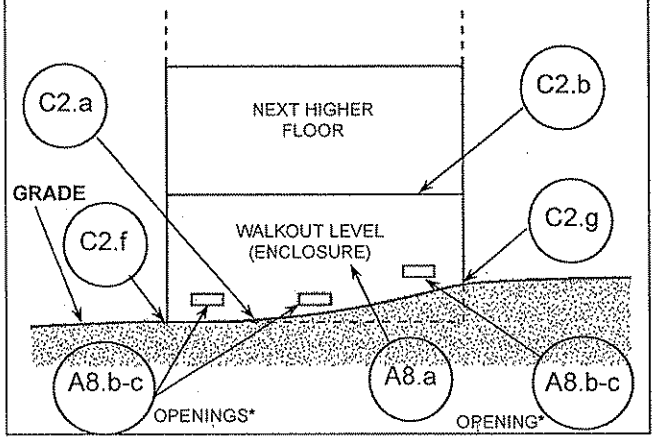


DIAGRAM 8

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.

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.

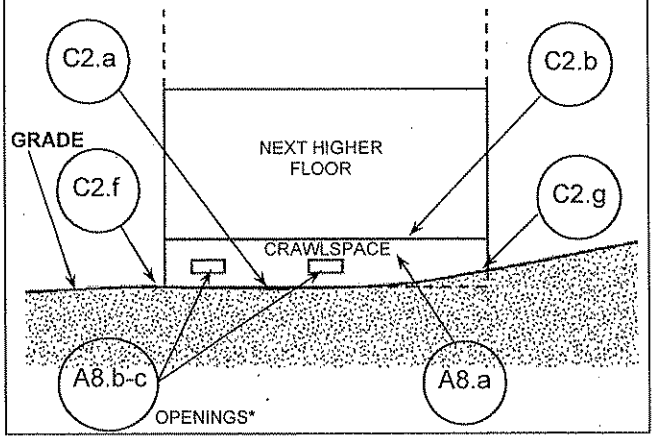
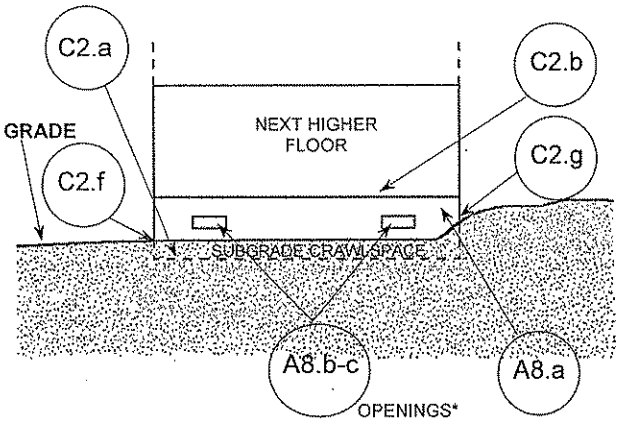


DIAGRAM 9

All buildings (other than split-level) elevated on a sub-grade crawlspace, with or without attached garage.

Distinguishing Feature – The bottom (crawlspace) floor is at or below ground level (grade) on all sides.** (If the distance from the crawlspace floor to the top of the next higher floor is more than 5 feet, or the crawlspace floor is more than 2 feet below the grade (LAG) on all sides, use Diagram 2.)



* An "opening" is a permanent opening that allows for the free passage of water automatically in both directions without human intervention. Under the NFIP, a minimum of two openings is required for enclosures or crawlspaces. The openings shall provide a total net area of not less than one square inch for every square foot of area enclosed, excluding any bars, louvers, or other covers of the opening. Alternatively, an Individual Engineered Flood Openings Certification or an Evaluation Report issued by the International Code Council Evaluation Service (ICC ES) must be submitted to document that the design of the openings will allow for the automatic equalization of hydrostatic flood forces on exterior walls. A window, a door, or a garage door is not considered an opening; openings may be installed in doors. Openings shall be on at least two sides of the enclosed area. If a building has more than one enclosed area, each area must have openings to allow floodwater to directly enter. The bottom of the openings must be no higher than one foot above the higher of the exterior or interior grade or floor immediately below the opening. For more guidance on openings, see NFIP Technical Bulletin 1.

** A floor that is below ground level (grade) on all sides is considered a basement even if the floor is used for living purposes, or as an office, garage, workshop, etc.

U.S. DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY

National Flood Insurance Program

O.M.B. NO. 1660-0008
Expires March 31, 2012

FLOODPROOFING CERTIFICATE

FOR NON-RESIDENTIAL STRUCTURES

The floodproofing of non-residential buildings may be permitted as an alternative to elevating to or above the Base Flood Elevation; however, a floodproofing design certification is required. This form is to be used for that certification. Floodproofing of a residential building does not alter a community's floodplain management elevation requirements or affect the insurance rating unless the community has been issued an exception by FEMA to allow floodproofed residential basements. The permitting of a floodproofed residential basement requires a separate certification specifying that the design complies with the local floodplain management ordinance.

BUILDING OWNER'S NAME

STREET ADDRESS (Including Apt., Unit, Suite, and/or Bldg. Number) OR P.O. ROUTE AND BOX NUMBER

OTHER DESCRIPTION (Lot and Block Numbers, etc.)

FOR INSURANCE COMPANY USE

POLICY NUMBER

COMPANY NAIC NUMBER

CITY STATE ZIP CODE

SECTION I FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

Provide the following from the proper FIRM:

COMMUNITY NUMBER	PANEL NUMBER	SUFFIX	DATE OF FIRM INDEX	FIRM ZONE	BASE FLOOD ELEVATION (In AO Zones, Use Depth)

SECTION II FLOODPROOFING INFORMATION (By a Registered Professional Engineer or Architect)

Floodproofing Design Elevation Information:

Building is floodproofed to an elevation of ..... feet NGVD. (Elevation datum used must be the same as that on the FIRM.)

Height of floodproofing on the building above the lowest adjacent grade is ..... feet.

(NOTE: For insurance rating purposes, the building's floodproofed design elevation must be at least one foot above the Base Flood Elevation to receive rating credit. If the building is floodproofed only to the Base Flood Elevation, then the building's insurance rating will result in a higher premium.)

SECTION III CERTIFICATION (By Registered Professional Engineer or Architect)

Non-Residential Floodproofed Construction Certification:

I certify that, based upon development and/or review of structural design, specifications, and plans for construction, the design and methods of construction are in accordance with accepted standards of practice for meeting the following provisions:

The structure, together with attendant utilities and sanitary facilities, is watertight to the floodproofed design elevation indicated above, with walls that are substantially impermeable to the passage of water.

All structural components are capable of resisting hydrostatic and hydrodynamic flood forces, including the effects of buoyancy, and anticipated debris impact forces.

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.

CERTIFIER'S NAME LICENSE NUMBER (or Affix Seal)

TITLE COMPANY NAME

ADDRESS CITY STATE ZIP CODE

SIGNATURE DATE PHONE

Copies should be made of this Certificate for: 1) community official, 2) Insurance agent/company, and 3) building owner.

FLOOD INSURANCE
FLOODPROOFING CERTIFICATE
FEMA FORM 81-65

GENERAL–This information is provided pursuant to Public Law 96-511 (the Paperwork Reduction Act of 1980, as amended), dated December 11, 1980, to allow the public to participate more fully and meaningfully in the Federal paperwork review process.

AUTHORITY–Public Law 96-511, amended; 44 U.S.C. 3507; and 5 CFR 1320

PAPERWORK BURDEN DISCLOSURE NOTICE–Public reporting burden for this data collection is estimated to average 3.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and submitting this form. You are not required to respond to this collection of information unless a valid OMB control number is displayed on this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing the burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 500 C Street SW, Washington, DC 20472, Paperwork Reduction Project (1660-0008).
NOTE: Do not send your completed form to this address.

CLACKAMAS COUNTY

Campbell M. Gilmour
Director

DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

SUNNYBROOK SERVICE CENTER
9101 SE SUNNYBROOK BLVD. | CLACKAMAS, OR 97015

Clackamas County Worksheet for Determination of Substantial Improvement, or Repair of Substantial Damage

Substantial Improvement: Any repair, rehabilitation, reconstruction, or improvement — or series of repairs, rehabilitations, reconstruction, or improvements — of a pre-FIRM structure, the cost of which — or cumulative costs of which at the time of the most recent repair, rehabilitation, reconstruction, or improvement — equals or exceeds 50 percent of the market value of the structure.

Substantial Damage: Any damage of any origin sustained by a pre-FIRM 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.

Property Address: _____

Parcel Number: T____S, R____E / W Section _____, Tax Lot(s) _____

Type of Project: _____

Permit Number(s): _____

Contact Person: _____ Owner: _____

_____ _____

_____ _____

_____ _____

Cost of Project[1]: $_____

Market Value of Structure[2]: $_____

Percentage of Cost of Project Relative to Market Value: _____%

Total Percentage of Costs of Projects to Date Relative to Current Market Value: _____%

Applicant's Signature: _____ Date: _____

County Official's Signature: _____ Date: _____

[1] As determined in coordination with the County Building Codes Division. Please provide documentation of the determination.

[2] The market value of a structure that is used for determining whether a project is a substantial improvement, or repair of substantial damage, is the Real Market Value figure of the structure that is provided by the County Tax Assessor's Office and is available through the County's GIS software.

Federal Emergency Management Agency
Region X
130 228th Street, Southwest
Bothell, WA 98021-9796

Procedures for "No-Rise" Certification For Proposed Developments in the Regulatory Floodway

Section 60.3 (d) (3) of the National Flood Insurance Program (NFIP) regulations states that a community shall "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 (100-year) flood discharge."

Prior to issuing any building, grading or development permits involving activities in a regulatory floodway the community must obtain a certification stating the proposed development will not impact the pre-project base flood elevations, floodway elevations, or floodway data widths. The certification should be obtained from the permittee and be signed and sealed by a professional engineer.

The engineering or "no-rise" certification must be supported by technical data.

The supporting technical data should be based upon two separate analyses:

1. a step-backwater analysis, and
2. conveyance compensation analysis.

The standard step-backwater computer model is utilized to develop the 100-year floodway shown on the community's effective Flood Insurance Rate Map or Flood Boundary and Floodway Map (FBFM) and the results tabulated in the community's Flood Insurance Study (FIS). The conveyance compensation analysis is necessary because it is our position that any blockage to flow in the floodway will result in a rise to the one hundred year flood profile, regardless of the tabular results comparing BFE's in pre- and post-development conditions in the backwater analysis.

Although communities are required to review and approve the "no-rise" submittals, they may request, in writing, technical assistance and review from the FEMA regional office. However, if this alternative is chosen, the community must review the technical submittal package and verify that all supporting data, listed in the following paragraphs, are included in the package before forwarding to FEMA. Additionally, they must state what part of the no rise submittals they want FEMA to comment on.

To support a "no-rise" certification for proposed developments encroaching into the regulatory floodway, a community will require that the following procedures be followed:

Currently Effective Model

1. Furnish a written request for the step backwater computer model for the specified stream and community, identifying the limits of the requested data. A fee will be assessed for providing the data. Send data requests to:

   Tom Robinson
   Michael Baker Jr., Inc.
   3601 Eisenhower Avenue, Suite 600
   Alexandria, Virginia 22304
   (703) 317-5054
   or call the FEMA Regional office for assistance

Duplicate Effective Model

2. Upon receipt of the step - backwater computer model, the engineer should run the original step-backwater model to duplicate the data in the effective (FIS).

Existing Conditions Model

3. Revise the original step - backwater model to reflect site specific existing conditions by adding new cross-sections (two or more) in the vicinity of the proposed development without the proposed development in place. Floodway limits should be manually set at the new cross-section locations by measuring from the effective FIRM or FBFM. The cumulative reach lengths of the stream should also remain unchanged. The results of these analyses will indicate the 100-year floodway elevations for revised existing conditions at the proposed project site.

Proposed Conditions Model

4. Modify the revised existing condition model to reflect the proposed development at the new cross-sections, while retaining the currently adopted floodway widths. The overbank roughness coefficients should remain the same unless a reasonable explanation of how the proposed development will impact Manning's "n" values is included with the supporting data. The results of this floodway run will indicate the 100-year floodway elevation for proposed conditions at the project site. These results must indicate NO impact on the 100-year flood elevations, floodway elevations, or floodway widths shown in the Duplicate Effective Model or in the Existing Conditions Model.

The "no-rise" supporting data and a copy of the engineering certification must be submitted to and reviewed by the appropriate community official prior to issuing a permit.

The "no-rise" supporting data should include but may not be limited to:

1) Duplicate of the original FIS step-backwater model printout or floppy disk.

2) Revised existing conditions step-backwater model

3) Proposed conditions step-backwater model.

4) FIRM and topographic map, showing floodplain and floodway, the additional cross-sections, the site location with the proposed topographic modification superimposed onto the maps, and a photocopy of the effective FIRM or FBFM showing the current regulatory floodway.

5) Documentation clearly stating analysis procedures. All modifications made to the original FIS model to represent revised existing conditions, as well as those made to the revised existing conditions model to represent proposed conditions, should be well documented and submitted with all supporting data.

6) Copy of effective Floodway Data Table copied from the (FIS) report.

7) Statement defining source of additional cross-section topographic data and supporting information.

8) Cross-section plots, of the added cross sections, for revised existing and proposed conditions.

9) Certified planimetric (boundary survey) information indicating the location of structures on the property.

10) Copy of the microfiche, or other applicable source, from which input for original FIS HEC-2 model was taken.

11) Floppy disk with all input files.

12) Printout of output files from EDIT runs for all three floodway models.

13) Hand computed conveyance compensation calculations using the cross-section and 100-year encroached hydraulic data in the modified existing conditions model comprising of:

i) Calculation of the reduction in conveyance (K) caused by the proposed obstruction, assuming no change in floodway water-surface elevation, and using the "n" value appropriate for the site of the proposed obstruction
ii) Calculation of the increase in conveyance (K) obtained by the proposed offsetting measure, using the "n" value appropriate for the site of this measure.
iii) Comparison showing that the conveyance increase computed in ii) equals or exceeds the loss computed in i).

14) Evidence that the increase in effective conveyance provided for in ii) will be maintained perpetually. This should be in the form of a self-maintaining measure or certified maintenance plans for the measure provided.

The engineering "no-rise" certification and-supporting technical data must stipulate NO impact on the 100-year flood elevations, floodway elevations, or floodway widths at the new cross-sections and at all existing cross-sections anywhere in the model. Therefore, the revised computer model should be run for a sufficient distance (usually one mile, depending on hydraulic slope of the stream) upstream and downstream of the development site to insure proper "no-rise" certification.

Attached is a sample "no-rise" certification form that can be completed by a registered professional engineer and supplied to the community along with the supporting technical data when applying for a development permit and a sample conveyance compensation calculation.

Federal Emergency Management Agency
Region X
130 228th Street, Southwest
Bothell, WA 98021-9796

Policy on Fish Enhancement Structures in the Floodway

The balance required between anadromous fish and the human environment is unique to the Northwest. Maintaining that balance often makes implementing regulations a challenge. Sometimes the local, State and Federal regulations contradict each other. This is the case with fish enhancement structures.

FEMA's regulations require communities to prohibit encroachments in regulated floodways unless provided with a no-rise analysis. The current listing and proposed listing of certain anadromous fish species as Threatened or Endangered requires the restoration of their habitat to ensure their survivability. Restoring that habitat often entails encroaching in the floodway. A strict interpretation of this standard could require a relatively expensive analysis that might exceed the cost of the enhancement project.

FEMA recognizes this. While we believe the best course of action is to preserve the floodway encroachment standard as it exists, an informed judgment regarding fish enhancement structures can be made as to exceptions for which less than the maximum hydraulic analyses are required. The community official often does not have the qualifications to make an informed judgment regarding the impacts of these structures on flood hazards. Therefore, FEMA will allow the community to defer to the "judgment" of a qualified professional regarding such impacts. Such qualified hydraulic or hydrology professionals would include staff of Rural Conservation and Development and the Natural Resource Conservation Service. It would also include similarly qualified staff of fisheries, natural resource, or water resources agencies.

The qualified professional should, as a minimum, provide a feasibility analysis and certification that the project was designed to keep any rise in 100-year flood levels as close to zero as practically possible and that no structures would be impacted by a potential rise. Additionally, routine maintenance of any project would be necessary to sustain conveyance over time and the community should commit to a long-term maintenance program in their acceptance of the project. FEMA also recommends a condition be placed on the projects emphasizing the dynamics of a river and, if the community deems necessary, further analysis be required.

We believe this is preferable to trying to specify in the ordinance language all the different types of "development" that need not comply with the "no rise" standard. Typically, any rise caused would require some offsetting action such as compensatory storage, channel alteration, or removal of existing encroachment. One of these alternatives would be appropriate to compensate for any rise and still preserve the integrity of the floodplain standards.

FEMA Region 10 feels this policy is in keeping with the concept of wise floodplain management which means enjoying the benefits of floodplain lands and waters while still minimizing the loss of life and damage from flooding and at the same time preserving and restoring the natural resources of floodplains as much as possible. If you have any questions regarding this policy, please contact the Mitigation Division at (425) 487-4677.

ENGINEERING "NO-RISE" CERTIFICATION

This is to certify that I am a duly qualified engineer licensed to practice in the State of _____.

It is to further certify that the attached technical data supports the fact that proposed _____ will
(Name of Development)
not impact the 100-year flood elevations, floodway elevations and floodway widths on _____ at published sections
(Name Of stream)
in the Flood Insurance Study for _____,
(Name of Community)
dated _____ and will not impact the 100-year flood elevations, floodway elevations, and floodway widths at unpublished cross-sections in the vicinity of the proposed development.

_____ _____
(Date) (Signature)

_____
(Title)

seal: _____
(Address)

Hydraulic Shadow Computations

A "hydraulic shadow" is the area upstream and downstream of an existing structure or other obstruction where the water is essentially stagnant due to water flowing around the structure or obstruction. Previous guidance from FEMA (Reference 1) recommended ratios of 1:1 and 4:1 for establishing the limits of the hydraulic shadow upstream and downstream of an existing structure. Other guidance from FEMA and the Philadelphia District of the U.S. Army Corps of Engineers (USACE) recommended a deflection angle of 20 degrees with the normal flow lines at the downstream corners of the building for establishing the limit of the hydraulic shadow downstream of an existing structure, with no mention regarding the upstream hydraulic shadow (Reference 2). Recent guidelines from the USACE Hydrologic Engineering Center (HEC) regarding transitions at bridges suggest that both of these methods overstate the downstream limits of the hydraulic shadow (Reference 3). Tests revealed that most cases had expansion ratios between 1:1 and 2:1.

Following is a method for establishing the limit of the hydraulic shadow downstream of a structure based on the concepts in Reference 3.

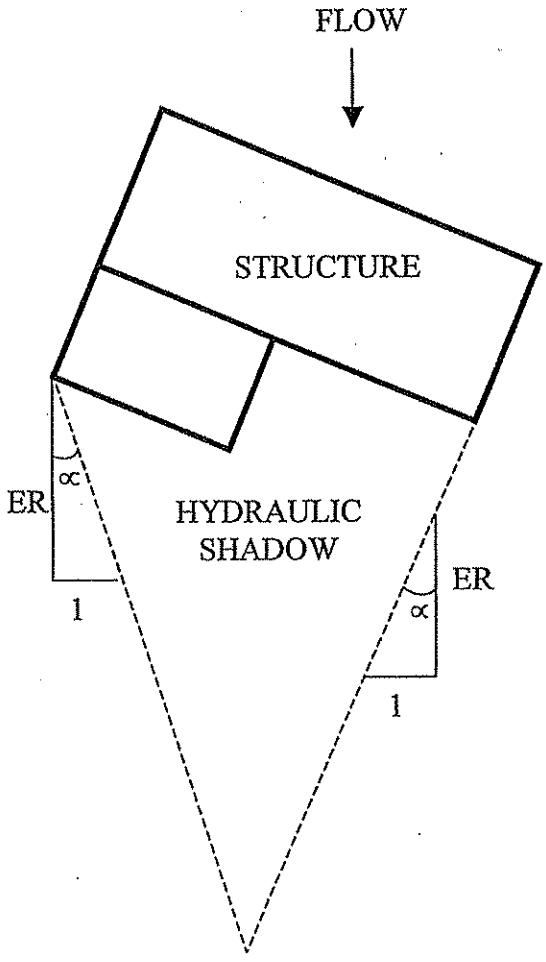


Figure 1. Hydraulic Shadow.

Table 1 offers ranges of expansion ratios which can be used for different degrees of obstruction and slopes.

Table 1.
Range of Expansion Ratios

w/W	*S (ft/mile)*	*ER*
0.90	1	1.4-3.6
	5	1.0-2.5
	10	1.0-2.2
0.75	1	1.6-3.0
	5	1.5-2.5
	10	1.5-2.0
0.5 or less	1	1.4-2.6
	5	1.3-2.1
	10	1.3-2.0

For each range, the higher value is associated with a higher discharge.

Where: *w/W = the ratio of the width of the obstruction to the total overbank width*
S = the longitudinal slope
ER = the expansion ratio

Once an expansion ratio is selected, the expansion angle can be computed as follows:

$$TAN\alpha = \frac{1}{ER}$$

or

$$\alpha = ARCTAN\left(\frac{1}{ER}\right)$$

Where: α *= the expansion angle in degrees*
ER = the expansion ratio

Bibliography and References

1. Federal Emergency Management Agency, Emergency Management Institute, Managing Floodplain Development Through the National Flood Insurance Program, Independent Study 9, August 1999.

2. U.S. Army Corps of Engineers, Philadelphia District, Federal Emergency Management Agency, Pennsylvania Department of Community Affairs, Procedures for Compliance With Floodway Regulations, Floodplain Management Information Series: A special Report, May 1990

3. U.S. Army Corps of Engineers, Hydraulic Engineering Center, HEC-RAS River Analysis System, Hydraulic Reference Manual, Version 2.2, Appendix B, Davis, California, September 1998.