

# PIMA COUNTY REGIONAL FLOOD CONTROL DISTRICT TECHNICAL PROCEDURE

**TECHNICAL PROCEDURE TECH-113**

**EFFECTIVE DATE: 5/23/2007**

**REVISED DATE(S): 1/16/2008, 11/30/2009, 2/2/2012,  
7/17/2014**

**PROCEDURE TITLE: Elevation Certificate Standard Operating Procedure for FEMA  
Form 086-0-33, July 2012**

## **PURPOSE:**

The objective of this SOP is to:

- Develop clear standards for completing Elevation Certificates.
- Establish guidelines for surveyors and engineers to follow to ensure the consistency and accuracy of elevation data on Elevation Certificates.
- Provide Quality Control guidelines to ensure that the Pima County Regional Flood Control District (District) receives Finished Construction Elevation Certificates and that they are complete and correct before acceptance.

Please note that not all Elevation Certificates will be generated by District personnel. Elevation Certificates completed wholly by surveyors or engineers require special scrutiny of Sections A and B of the Elevation Certificate to ensure that they have been completed as detailed in Sections 1.3 and 1.4 of this SOP.

## **BACKGROUND:**

Elevation Certificates are a critical component of the Districts goal of ensuring compliance with FEMA Regulations and maintaining Districts Community Ratings System (CRS) superior ranking.

Prior to this SOP, the common practice at the District was to accept “Building Under Construction” Elevation Certificates completed by an Arizona Registered Land Surveyor or Civil Engineer as proof that a structure was elevated and/or vented properly. A FEMA Community Rating System audit of District Elevation Certificate records in April 2005 found this practice to be inadequate. Community Rating System guidelines require “Finished Construction” Elevation Certificates.

## **PROCEDURE:**

This procedure applies to Elevation Certificate labeled FEMA Form 086-0-33, July 2012 and O.M.B No. 1660-0008, which expires July 31, 2015, a copy of which is attached as Attachment 1.

Properly completed Finished Construction Elevation Certificates are required for all structures that are wholly or partially within a FEMA Special Flood Hazard Area. FEMA does not accept Building Under Construction Elevation Certificates as proof of proper elevation. The Floodplain and Erosion Hazard Management Ordinance (Ordinance) also requires Elevation Certificates for any structure within any mapped regulatory floodplain, and may also be required outside of any mapped floodplain, at the discretion of District staff. Manufactured Homes and site built structures have different Elevation Certificate requirements.

For structures that are constructed on hill slopes (primarily in AO Zones), it is possible to step the finished floor of the structure down the slope. Under this circumstance, more than one Elevation

Certificate will be necessary to show that the lowest finished floor is never below the RFE at the upstream edge of that portion of the structure. A detailed drawing must accompany the Elevation Certificates that clearly demonstrates that the structure is built in compliance with the elevation requirements for the structure.

Site-built structures that are flood-proofed in lieu of elevation at or above the RFE and manufactured homes require only a Finished Construction Elevation Certificate. Both Building Under Construction and Finished Construction Elevation Certificates are required for site-built structures that are elevated at or above the RFE.

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## EXECUTIVE SUMMARY

In most cases, most of Section A and all of section B of the Elevation Certificate should be completed by the hydrologist conducting the Floodplain Use Permit (FPUP) investigation. Both Building Under Construction and Finished Construction Elevation Certificates should be completed for site-built structures that are elevated at or above the RFE. Site-built structures that are floodproofed and manufactured homes, only Finished Construction Elevation Certificates should be completed. At least four photographs are required for all Elevation Certificates.

A designated supervisor or reviewer must perform a Quality Assurance (QA) check of Sections A and B prior to issuance of the Elevation Certificate to the customer. See Sections 1.3 and 1.4 of this Standard Operating Procedure (SOP) for detailed instructions on completing Sections A and B of the Elevation Certificate. Of special note:

- In Section B7, ensure that the date of the FIRM panel and the date of the LOMA/LOMR for the property are indicated, if applicable.
- The latitude and longitude of the structure is required, and should be based on the approximate centroid of the building.

The customer shall initial each outgoing Finished Construction Elevation Certificate and a photocopy of the initialed Elevation Certificate shall be placed in the FPUP file.

Every section of Elevation Certificates returned to the Regional Flood Control District (District) must be checked for accuracy and completeness by the counter hydrologist receiving the Elevation Certificate and by a designated supervisor or reviewer. (See Attachment 1 for a list of designated supervisors and reviewers.) Both the counter hydrologist and the supervisor must initial and date the upper right-hand corner if he/she determines the Elevation Certificate is correct and complete. The Certificate should also be time stamped by the counter hydrologist upon his/her approval. See Sections 1.5.1, 1.5.3 and 1.5.4 of this SOP for detailed instructions on the proper way to complete Section C of the Elevation Certificate. Of special note:

- **NOTHING in Section C may be left blank under any circumstances.** Line-outs are not acceptable under any circumstance. “None,” “N/A” or “See comments” should be used instead, as appropriate.
- Section C2.c must only be “N/A”
- In Section C2.e, make sure that this section is completed with a value. “None” is only acceptable if the structure is non-habitable and doesn’t have any service equipment, or for Building Under Construction. The type of service equipment measured for C2.e must be indicated in the comments area of Section D, as well a statement that all other equipment is above this elevation and stating the lowest elevation of any ductwork if it is lower than the elevation indicated in C2.e.
- Items A6 through A9 shall be completed by the surveyor. “None” should be used if there are no openings.

See Sections 1.7.1 and 1.7.2 of this SOP for more details on processing completed Elevation Certificates.

# 1 Procedures

## 1.1 Creation of Elevation Certificates

Building Under Construction Elevation Certificates should be stamped with a “Building Under Construction” stamp in order to easily distinguish them from Finished Construction Elevation Certificates. However, Elevation Certificate forms are available from other sources and, therefore, some Building Under Construction Elevation Certificates received by the District may not contain this helpful identifier.

This section is written primarily to aid District staff in preparing Elevation Certificate forms for distribution to the applicant. It can also be used as a guide to ensure that an Elevation Certificate prepared by non-District staff has been completed accurately and completely.

As a general rule, District staff shall complete items A1 through A5 and all of Section B of the Elevation Certificate. All remaining blanks shall be completed by the land surveyor or civil engineer. Details on completing Sections A and B of the Elevation Certificate are found in Sections 1.3 and 1.4 of this SOP.

A digital form has been created with certain information pre-filled in to make the process of creating Elevation Certificates easier and less error-prone. These forms are located on the District website at: <http://webcms.pima.gov/cms/one.aspx?portalId=169&pageId=65057>

## 1.2 Issuing Elevation Certificates

Prior to issuing an Elevation Certificate to a client, it must be reviewed for accuracy and completeness by the hydrologist working on the permit or creating the Elevation Certificate and a supervisor or designated reviewer. Details on how to accurately complete Elevation Certificate Sections A and B are contained in Sections 1.3 and 1.4 of this SOP, respectively.

When issuing an Elevation Certificate, the customer must initial and date the upper left-hand corner of the Elevation Certificate. Make a photocopy of the initialed Elevation Certificate and place it in the permit file for District records. If issuing two Elevation Certificates, only a copy of the Finished Construction Elevation Certificate is necessary to be placed in the file.

## 1.3 Completing Elevation Certificate Section A

For Elevation Certificates issued by the District, items A1 through A5 shall be completed by District staff. **Items A6 through A9 shall be completed by the surveyor or engineer.**

The following additional guidelines apply:

1. The FPUP number and Development Services Activity Number should be placed in the upper left-hand corner of the front page of the Elevation Certificate. A box for this purpose has been added to the revised digital Elevation Certificate referenced above.
2. **Item A3** The “Property Description” area must include the property tax code (parcel number) and the Township, Range and Section of the subject property. If the property is within a subdivision, the lot number and subdivision name should also be placed here.
3. **Item A4** shall include an accurate description of the structure for which the Elevation Certificate is being completed. If a residential structure, this area must state whether the structure is a Single Family Residence or a Manufactured Home.

4. **Item A5** shall be completed using the “degrees.decimal degrees” format, i.e. 32.12121 E, 111.69815 N, measured to at least 5 decimal places. For reference, Pima County MapGuide maps present latitude/longitude data in the NAD 1983 HARN datum. The latitude/longitude information should be taken at the centroid of the structure for which the Elevation Certificate is being completed.
5. **Item A6** is required. **A minimum of four (4) photographs of the structure** (at least one per side) are required. Photographs should be in color. Photographs shall be labeled to indicate the date the photograph was taken, the direction the photograph was taken and which view of the structure (front, rear, side, etc.) the photograph is showing.
6. **Item A7** must contain the appropriate building diagram number, which can be found in the FEMA publication titled *Federal Emergency Management Agency National Flood Insurance Program Elevation Certificate and Instructions*. The pages of the FEMA publication that describe the Building Diagram Numbers are included as an attachment to this SOP (Attachment 2). Diagrams 1-4 should never be used for manufactured homes.

For the determination of what Building Diagram Number is appropriate for a manufactured home, one key distinction is the nature of any skirting or walls underneath the home.

Building Diagram 1A should be used for slab on grade, site-built construction. Building Diagram 1B should be used for site-built structures elevated on a backfilled stem wall.

Building Diagram Number 5 may only be used if there are no non-breakaway enclosures under the manufactured home (no decorative block walls/skirting).

Building Diagram Number 6 should be used if there is a non-breakaway enclosure such as decorative block or plywood skirting enclosures under the manufactured home. The enclosure must not support any part of the manufactured home. The elevation of the ground underneath the Manufactured Home would then be placed in C2.a and the elevation of the lowest finished floor would be placed in C2.b. The enclosure shall be flood-vented in accordance with 44 CFR §60.3 (c)(5).

Building Diagram Number 7 or 8 must be used, as appropriate, if the manufactured home is anchored or attached to the stem wall. The enclosure shall be flood-vented in accordance with 44 CFR §60.3 (c)(5).

7. **Item A8** shall be completed by the surveyor or engineer. If the building does not have a crawl space or enclosure below the Regulatory Flood Elevation, then all blanks shall be completed with “None.” In the absence of a crawl space or enclosure below the RFE, no other response is acceptable. Flood openings in an attached garage, if one exists, may not be included in Item A8 and instead shall be noted in Item A9. Item A8 must be used for detached garages, not A9.
8. **Item A8.b)** shall include only those openings for which the bottom of the vent is within one foot of the adjacent exterior grade. Only that portion of the openings no more than 2.0 feet above the BFE may be included in the total opening calculation, as any open space above this level is not expected to offer any additional relief of hydrostatic pressure.

9. **Item A8.c)** shall be the effective opening area of all openings. For non-engineered openings, this shall be the actual open area, minus the area taken up by grates or louvers. For engineered openings such as SmartVents™ or FloodAirVents™, this shall be the amount of flood relief that the openings are approved for. For example, if four SmartVents™ are used that have an actual opening of 112 square inches but the openings are rated for 200 square inches, “800” should be put in A8.c) (4 vents times 200 square inches of approved, effective flood relief per vent).
10. **Item A8.d)** shall be checked “Yes” for all engineered openings, including SmartVents™ or FloodAirVents™, and “No” for all other openings.
11. **Item A9** shall be completed by the surveyor or engineer. If the building does not have an **attached** garage, then all blanks shall be completed with “None” or “N/A.” In the absence of an attached garage, no other response is acceptable. This section should **NOT** be used for detached garages. For stand alone structures, Section A8 should be used.
12. **Item A9.a)** is required even if the attached garage is elevated at or above the RFE.
13. **Item A9.b)** shall include only those openings for which the bottom of the vent is within one foot of the adjacent exterior grade. “None” or “N/A” is acceptable if no vents meet the requirements.
14. **Item A9.c)** shall be the effective opening area of all openings. For non-engineered openings, this shall be the actual open area, minus the area taken up by grates or louvers. For engineered openings such as SmartVents™ or FloodAirVents™, this shall be the amount of flood relief that the openings are approved for. For example, if four SmartVents™ are used that have an actual opening of 112 square inches but the openings are rated for 200 square inches, “800” should be put in A8.c) (4 vents times 200 square inches of approved, effective flood relief per vent). “None” or “N/A” is acceptable if no vents meet the requirements.
15. **Item A9.d)** shall be checked “Yes” for all engineered openings, including SmartVents™ or FloodAirVents™, and “No” for all other openings.
16. **For items A8 and A9**, if the openings are covered with louvers or some type of screen, the surveyor or engineer must note the type of covering and calculate or estimate the amount of permanent openings, not including the area blocked by louvers or screen and place a note in the Section D comments area indicating the type of covering over the openings.

## 1.4 Completing Elevation Certificate Section B

For Section B, the following guidelines apply:

1. **Item B1** must contain “Pima County / 040073”.
2. **Item B2** must contain “Pima County”.
3. **Item B3** must contain “AZ”.
4. **Item B4** must contain “04019C” plus the correct FIRM panel number for the subject property, excluding the one letter suffix.
5. **Item B5** must contain ONLY a single letter suffix.

6. **Item B6** must contain the date of the latest FIRM Index.
7. **Item B7** must contain the FIRM Panel effective date AND the effective date for the LOMR/LOMA that the property is contained within, if applicable. . (Example: enter “6-16-11 / 3-6-12” if the property is contained within the boundary of a LOMR with an effective date of 3-6-12). If the property is not affected by a LOMA or LOMR, enter only the effective date of the FIRM Panel.
8. **Item B8** should include any and all flood zones that the structure is located within. Do not include flood zones that are not immediately adjacent to the subject structure. If an AO Zone, include the depth number in Box B8 (i.e. “AO depth 1”, “AO depth 2”, etc.).
9. **Item B9** must contain a Base Flood Elevation (BFE) or a depth of flooding. Within a local sheetflow floodplain or an A Zone with an assumed depth of flooding, enter the depth + 100.0 ft, i.e. “101.0 ft.” if the assumed depth of flooding is 1.0 feet above HANG. In A Zones with a BFE tied to a national datum, use that value. In an AO Zone, use the depth of flow from the FIRM panel, i.e. “1.0” for an AO Depth 1 Zone.
10. One box in **Item B10** must be marked.
  - Wherever available, an FIS Profile shall be used to determine the BFE within an AE Zone and the “FIS Profile” box marked.
  - The “FIRM” box should be marked for AO Zones, or for AH Zones or AE Zones without an FIS Profile, unless there is a detailed study that has a higher BFE than the AO Zone depth on the FIRM, in which case use the “Other” box.
  - The “Community Determined” box should be marked when the BFE was determined by the District or a consultant under contract to the District. The distinguishing feature is that the study has been officially adopted by the District.
  - The “Other” box should be marked when the BFE has been determined through an engineering report prepared for a private property owner or developer. The distinguishing feature is that the study has been accepted but not officially adopted by the District. Please note the engineering report and/or engineer of record in this section.
  - Special case: If a detailed study in an AO Zone has determined that the BFE is higher than the AO depth indicated on the FIRM, use “Other” and indicate the source of the elevation, as noted above. Document Section G.
11. **Item B11** should never be blank. Indicate the correct datum on which the elevation of the structure is to be established (from the BFE in B9). Within a local sheetflow floodplain, an A Zone with an assumed depth of flooding (i.e. 1.0 ft. above HANG) or and AO Zone mark the “Other” box and enter “Highest Adj. Natural Grade = 100.0 ft.” All elevation data on the Elevation Certificate shall be on this datum.
12. For **Item B12** the “No” box must be marked and “N/A” must be placed in the Designation Date blank.

## 1.5 Completing Elevation Certificate Section C (to be Completed by Surveyor or Engineer)

Section C of the Elevation Certificate must be filled out and sealed by an Arizona Registered Land Surveyor or Arizona Registered Civil Engineer. The purpose of this section of the SOP is to provide information on how to direct surveyors and engineers to complete Section C of the Elevation Certificate and to provide District reviewers with the knowledge to adequately check Section C for completeness and accuracy. Line-outs are not acceptable under any circumstance.

It is preferred to have elevation data presented to the nearest tenth of a foot. Hundredths of feet should only be used when necessary to demonstrate compliance. All elevations in C must be values in the same datum as the datum indicated for Box B9.

If a local datum or benchmark is used to complete Section C, the highest adjacent natural grade shall be used as the baseline and that elevation shall be assumed to be 100.0 feet. It will often be necessary for the surveyor or engineer to place a temporary benchmark prior to any grading work in order to establish the elevation of natural grade.

Review the Building Diagrams closely. The lowest floor (C2.a) of a site-built structure may not always be the top of the slab or stem wall. If there is an open space below the lowest finished floor, such as a crawl space, the elevation of the enclosure is the lowest floor, and the elevation of the top of the slab shall be placed in C2.b. The lowest constructed floor of a manufactured home is the finished floor elevation. Please bear in mind that even manufactured homes may have sunken living rooms within the structure, and that the top of any sunken floor would be considered the lowest finished floor.

If a structure is elevated on a stem wall that is surrounded by a fill pad, but the area inside of the stem wall is open space, then necessary flood-venting must be placed in the stem wall and the openings must extend through the fill.

### 1.5.1 Completing Elevation Certificate Section C for Manufactured Homes

For manufactured homes, a single Elevation Certificate will fulfill FEMA requirements, but only if the machinery and/or equipment servicing the building is in place and is adequately noted in C2.e of the Elevation Certificate. The information in Section C2.e applies to all manufactured homes and should not be listed as “N/A.” If the installation includes any skirting or walls, the Elevation Certificate may not be completed until they are installed/constructed and any necessary flood vents are installed.

An original seal in Section C by an Arizona Registered Land Surveyor or Arizona Registered Civil Engineer is required. Photocopied or faxed Elevation Certificates are not acceptable.

Section C shall be completed as follows:

1. **Item C1**, the “Finished Construction” box must be checked. Only Finished Construction Elevation Certificates are acceptable for manufactured homes.
2. **Item C2** shall contain the datum used by the surveyor or engineer and the reference mark used as well as any necessary conversion information or comments, if applicable. For AO Zones and A Zones without a WSEL, or if the elevation requirement is based on height above grade, write in “N/A” for the reference mark, “local” for the vertical datum, and “Assumed datum of 100.0 ft. at Highest Adjacent Natural Grade” for the comments. See Section 1.5 for

more details.

3. **Item C2.a** must contain an elevation and cannot be “N/A” even for manufactured homes. This elevation may be the dirt underneath the manufactured home if there is non-breakaway skirting or a stem wall.
4. **Item C2.b** must contain an elevation value if Building Diagram Number 6, 7 or 8 is used, in which case the elevation given is for the lowest “living floor” of the home. “N/A” may only be used for Building Diagram Number 5, and only if the structure has only one floor level. C2.b must never be left blank. Use “None” if there is no next higher floor.
5. **Item C2.c** shall always be “N/A” since there are no V Zones within Pima County. The elevation of the bottom of the structural frame shall be placed in the comments area of Section D of the Elevation Certificate to satisfy permitting requirements.
6. **Item C2.d** must never be left blank. Use “None” if there is no attached garage.
7. **Item C2.e** must contain an elevation unless ALL service equipment is on the roof or in the attic.

A note must be placed in the comments area of Section D indicating the identity of the lowest equipment (what was measured in C2e) as well as a definitive statement to the effect that all other equipment is at or above the elevation of the equipment measured for C2e. For the protection of surveyors and engineers, the District recommends that the actual identity of ALL equipment be placed in the comments area of Section D, in case additional service equipment is placed after the Elevation Certificate is completed.

Completion of C2.e may require access to the interior of the structure.

If all service equipment is on the roof or in the attic, write “See comments” for C2.e and place a note to that effect in the comments area of Section D.

The lowest elevation of any ductwork must also be included in the comments area of Section D.

8. **Item C2.f** must contain a finished grade elevation. This elevation may differ from natural grade, indicate the elevation of natural grade in Section D comments. Indicating highest and lowest natural grade in Section D is required when box B.9 is a depth of flow above grade.
9. **Item C2.g** must contain a finished grade elevation. This elevation may differ from natural grade, indicate the elevation of natural grade in Section D comments. Indicating highest and lowest natural grade in Section D is required when box B.9 is a depth of flow above grade.
10. **Item C2.h** covers decks and stairs for decks, as well as any structural support for the deck or stairs. This item does NOT include stairs used only to access a door or concrete steps by a door with solid ground beneath them.

### **1.5.2 Completing Elevation Certificate Section C for Site Built Structures**

For site-built structures elevated to the RFE, **two** Elevation Certificates will be required.

One Elevation Certificate is needed prior to the 1010/1015 inspection (prior to slab or P2S). This Elevation Certificate must have the “Building Under Construction” box marked under Section C1.

A second Elevation Certificate is required prior to the Final Inspection. This Elevation Certificate must have the “Finished Construction” box marked under Section C1.

### **1.5.3 Completing Section C for Building Under Construction Elevation Certificate (Site-Built Structure)**

A 1010/1015 (“prior to slab” or “P2S”) hold will be placed on each site built structure until an Elevation Certificate for “Building Under Construction” for the structure has been approved by the District. The Elevation Certificate should be completed by an Arizona Registered Land Surveyor or Civil Engineer once the stem wall has been constructed or the forms for the finished floor are in place.

The purpose of this Elevation Certificate is to ensure that the home is going to be elevated properly, as required by the FPUP, before expensive work is performed. Catching mistakes early could save property owners many thousands of dollars.

Section C shall be completed as follows:

1. **Item C1**, the “Building Under Construction” box must be checked.
2. **Item C2** shall contain the datum used by the surveyor or engineer and the reference mark used as well as any necessary conversion information or comments, if applicable. For AO Zones and A Zones without a WSEL, or if the elevation requirement is based on height above grade, write in “N/A” for the reference mark, “local” for the vertical datum, and “Assumed datum of 100.0 ft. at Highest Adjacent Natural Grade” for the comments. See Section 1.5 for more details.
3. **Item C2.a** must contain an elevation. This elevation may or may not be the “living floor” of the structure. This elevation may be the garage floor IF the garage is entirely beneath the habitable portion of the structure.
4. **Item C2.b** must contain an elevation value if Building Diagram Number 2, 3, 4, 7 or 8 is used. “None” may only be used for Building Diagram Number 1, and only if the floor of the structure is all on one level.
5. **Item C2.c** must be “N/A”.
6. **Item C2.d** may be “N/A” at this stage of construction, but must never be left blank. The elevation shall be taken at the entry to the garage.
7. **Item C2.e** may be “N/A” at this stage of construction, but must never be left blank.
8. **Item C2.f** must contain a finished grade elevation. This elevation may differ from natural grade, indicate the elevation of natural grade in Section D comments. Indicating highest and lowest natural grade in Section D is required when box B.9 is a depth of flow above grade.
9. **Item C2.g** must contain a finished grade elevation. This elevation may differ from natural grade, indicate the elevation of natural grade in Section D comments. Indicating highest and lowest natural grade in Section D is required when box B.9 is a depth of flow above grade.

10. **Item C2.h** will likely be “NA” at this stage of construction. This item covers decks and stairs for decks, as well as any structural support for the deck or stairs. This item does NOT include stairs used only to access a door or concrete steps by a door with solid ground beneath them.

#### **1.5.4 Completing Elevation Certificate Section C for Finished Construction Elevation Certificate (Site-Built Structure)**

A “Prior to Final Inspection” (“P2F”) hold will be placed on each home until an Elevation Certificate for “Finished Construction” for that home has been approved by the District. The Elevation Certificate cannot be completed until the home is constructed and all machinery and/or equipment servicing the building (i.e., air conditioning units, heaters, water heaters, etc.) have been installed.

Section C shall be completed as follows:

1. **Item C1**, the “Finished Construction” box must be checked.
2. **Item C2** shall contain the datum used by the surveyor or engineer and the reference mark used as well as any necessary conversion information or comments, if applicable. For AO Zones and A Zones without a WSEL, or if the elevation requirement is based on height above grade, write in “N/A” for the reference mark, “local” for the vertical datum, and “Assumed datum of 100.0 ft. at Highest Adjacent Natural Grade” for the comments. See Section 1.5 for more details.
3. **Item C2.a** must contain an elevation. This elevation may or may not be the “living floor” of the structure. This elevation may be the garage floor IF the garage is entirely beneath the habitable portion of the structure, but not if the garage is beside the structure.
4. **Item C2.b** must contain an elevation value if Building Diagram Number 2, 3, 4, 7 or 8 is used. “None” may only be used for Building Diagram Number 1 and only if the floor of the structure is all on one level.
5. **Item C2.c** must be “N/A”.
6. **Item C2.d** Must contain an elevation if there is an attached garage. “None” or “N/A” may be used ONLY IF the structure does not have an attached garage. The elevation shall be taken at the garage door.
7. **Item C2.e** must contain an elevation unless ALL service equipment is on the roof or in the attic.

A note must be placed in the comments area of Section D indicating the identity of the lowest equipment (what was measured in C2e) as well as a definitive statement to the effect that all other equipment is at or above the elevation of the equipment measured for C2e. For the protection of surveyors and engineers, the District recommends that the actual identity of ALL equipment be placed in the comments area of Section D, in case additional service equipment is placed after the Elevation Certificate is completed.

Use “See comments” and specifically state that there is no equipment servicing the building if there is no service equipment.

Completion of C2.e may require access to the interior of the structure.

If all service equipment is on the roof or in the attic, write “See comments” for C2.e and place a note to that effect in the comments area of Section D.

The lowest elevation of any ductwork must also be included in the comments area of Section D.

8. **Item C2.f** must contain a finished grade elevation. This elevation may differ from natural grade, indicate the elevation of natural grade in Section D comments. Indicating highest and lowest natural grade in Section D is required when box B.9 is a depth of flow above grade.
9. **Item C2.g** must contain a finished grade elevation. This elevation may differ from natural grade, indicate the elevation of natural grade in Section D comments. Indicating highest and lowest natural grade in Section D is required when box B.9 is a depth of flow above grade.
10. **Item C2.h** may be “NA”. This item covers decks and stairs for decks, as well as any structural support for the deck or stairs. This item does NOT include stairs used only to access a door or concrete steps by a door with solid ground beneath them.

## 1.6 Completing Elevation Certificate Section D

Section D must contain an original seal and signature by an Arizona Registered Land Surveyor or an Arizona Registered Civil Engineer and must be filled in completely. It is important to note that Section D continues on the back side of the Elevation Certificate, and that the Comments section may contain very important information. Only the surveyor or engineer should complete any portion of Section D. District comments or information must go in Section G.

Be sure to check the comments section of Section D, as it may contain information that validates or invalidates the Elevation Certificate. Items that will commonly be found in Section D comments section include: the elevation of the bottom of the structural frame of a manufactured home, the identity of service equipment for the building, natural grade measurements, or any other clarifying notes.

Since Section C records only highest and lowest adjacent finished grade, highest and lowest adjacent natural grade shall be placed in Section D.

If the Elevation Certificate is being completed for an addition to an existing structure, the finished floor elevation(s) of the existing structure shall be placed in Section D.

## 1.7 Processing Completed Elevation Certificates

When a client returns an Elevation Certificate to the District, it must be reviewed for accuracy and completeness by at least two qualified individuals prior to the release of any building permit holds or issuance of any additional permits. The counter hydrologist should complete the first Quality Assurance (QA) check. The second QA check must be completed by the QA Officer. Details on checking Elevation Certificates for QA are contained in Sections 1.3 1.4, 1.5, 1.6, and 4 of this SOP.

### 1.7.1 Processing Returned Building Under Construction Elevation Certificates

Remember, Building Under Construction Elevation Certificates are not acceptable for Manufactured Homes.

### **Intake Hydrologist**

1. Ask the customer to remain in the office until you have had a chance to review the Elevation Certificate.
2. Make sure that the FPUP number and Development Services Activity Permit number are in the upper left-hand corner of the front page of the Elevation Certificate.
3. If the permit numbers are missing, get the correct information from the permit file.
4. Review ALL sections of the Elevation Certificate for completeness and accuracy. See Sections 1.3, 1.4 and 1.5.1, 1.5.3 or 1.5.4, as appropriate for what constitutes a complete and correct Building Under Construction Elevation Certificate.
5. **If the Elevation Certificate is not complete and correct**, make a photocopy of the Elevation Certificate and highlight and/or annotate the photocopy to show what portions of the Elevation Certificate are incomplete or incorrect. Make a photocopy of the annotated Elevation Certificate and give it to the QA Officer. Explain the inadequacies of the Elevation Certificate to the client and return the original Elevation Certificate and the original annotated photocopy to the client.
6. **If the Elevation Certificate is complete and correct**, time stamp the Elevation Certificate along the upper right-hand side of the Elevation Certificate and place your initials next to the time stamp.
7. Inform the customer that the hold will be released once the QA Officer has reviewed and approved the Elevation Certificate, and after any necessary site inspections have been completed, which may take several days.
8. Give the Elevation Certificate to a QA Officer for a second review for completeness and accuracy.

### **QA Officer**

9. Review ALL sections of the Elevation Certificate for completeness and accuracy. See Sections 1.3, 1.4 and 1.5.1, 1.5.3 or 1.5.4, as appropriate for what constitutes a complete and correct Building Under Construction Elevation Certificate. If acceptable, proceed to step 14. If unacceptable, proceed to step 10.
10. If this review determines that the Elevation Certificate is not acceptable, make a photocopy of the Elevation Certificate and highlight and/or annotate the photocopy to show what portions of the Elevation Certificate are incomplete or incorrect then make a photocopy of the annotated Elevation Certificate.
11. Return the original and original annotated copy of the Elevation Certificate to the intake hydrologist and explain the necessary corrections. Keep the photocopy of the annotated Elevation Certificate on file.

### **Intake hydrologist (only if Elevation Certificate is unacceptable)**

12. If the Elevation Certificate is incorrect, contact the customer and explain the inadequacies of the Elevation Certificate.

13. Return the original Elevation Certificate and the original annotated photocopy to the customer.

**QA Officer**

14. If the second review confirms that the Elevation Certificate is acceptable, initial and date the Elevation Certificate in the upper right-hand corner and release the P2S hold in Permits Plus, if applicable.
15. Make sure the Elevation Certificate has a “Building Under Construction” stamp on it and give the original Elevation Certificate to the database manager, who will enter the Certificate as approved and place it in the Building Under Construction Elevation Certificate folder.

## **1.7.2 Processing Returned Finished Construction Elevation Certificates**

Complete Steps 1-13 from 1.7.1, then:

**QA Officer**

1. If the second review confirms that the Elevation Certificate is correct, initial and date the Elevation Certificate in the upper right-hand corner. If there are no additional District holds on the P2E or P2F (for an As-Built certification or Manufactured Home Installation Certification for example) then release the P2E or P2F hold in Permits Plus, as applicable.
2. Make one complete photocopy (front and back) of the Elevation Certificate and any attachments.
3. In the right hand margin of the front of the photocopy, write “FILE COPY” and note the height of the structural frame or lowest finished floor above the BFE, and the height of the lowest service equipment above the BFE, as appropriate. This copy serves as the FPUP file copy.
4. Give the file copy and the original Elevation Certificate to the database manager.

**Database Manager**

5. Place the file copy of the Elevation Certificate in the FPUP file.
6. Modify the database to note the date that the Elevation Certificate was received.
7. Scan the original Elevation Certificate and place it in the correct directory.
8. Place the original Elevation Certificate in the Elevation Certificate files, sorted by year and FPUP number.

## **2 Roles and Responsibilities**

It is the responsibility of anyone involved in creating, processing or reviewing Elevation Certificates to know and follow this Standard Operating Procedure. This includes all counter hydrologists, area hydrologists, supervisors, designated reviewers and related support personnel.

A log of authorized supervisors, designated reviewers, database managers and the Quality Assurance Officer is included in Attachment 1.

## **2.1 Area and Counter Hydrologists**

Area and counter hydrologists are responsible for:

- Creating Elevation Certificates for distribution with Floodplain Use Permits or upon request by a customer.
- Completing Sections A and B of the Elevation Certificate.
- Review of all sections of returned Elevation Certificates for accuracy and completeness.
- Distribution of Elevation Certificates to proper individuals.

## **2.2 Supervisors and Designated Reviewers**

Supervisors and designated reviewers are responsible for:

- Review of outgoing Elevation Certificates for accuracy and completeness of Sections A and B.
- Review of all sections of returned Elevation Certificates for accuracy and completeness.
- Distribution of Elevation Certificates to proper individuals.
- Releasing holds.
- Tracking errors found on Elevation Certificates on the attached Quality Assurance Form

## **2.3 Quality Assurance Officer**

The Quality Assurance Officer is responsible for:

- Ensuring that the Quality Assurance procedures are implemented.
- Ensuring that the Quality Assurance procedures are adequate.
- Training staff on the implementation of this SOP, as needed.
- Implementing training of the survey community.
- Reviewing errors found on Elevation Certificates as noted by Supervisors and Designated Reviewers on the Quality Assurance Form.

## **2.4 Database Managers**

Database managers are responsible for:

- Entering Elevation Certificates into the database(s) in a timely manner.
- Scanning Elevation Certificates and filing them electronically.
- Filing Elevation Certificates in the proper locations.

## **3 Training**

The Quality Assurance Officer is tasked with providing all training under this section. The QA Officer may designate another individual to perform the training.

Initial training on this SOP should take place upon approval of the SOP. All new employees covered in Section 2 of this SOP must receive training to supplement this SOP.

Additional training should be scheduled as needed, and may be on an individual or group basis.

The QA officer or CRS Coordinator is required to provide a training program to the survey community on an as-needed basis to promote greater accuracy in the completion of Elevation Certificates. At a minimum, this training must occur upon the release of each new Elevation Certificate form by FEMA, prior to the effective date of the new form, if possible. Otherwise, the training must occur as soon after the effective date of the form as possible.

## 4 Quality Assurance

This section outlines the Quality Assurance (QA) procedures for outgoing and incoming Elevation Certificates.

The Quality Assurance officer is primarily responsible for ensuring that the provisions of this section are followed. The Quality Assurance officer is the supervisor in charge of area hydrologists or an individual designated by said supervisor.

### 4.1 QA of Outgoing Elevation Certificates

Sections A and B of all outgoing Elevation Certificates must be checked for accuracy and completeness by the person who generates the Elevation Certificate AND a supervisor or designated reviewer.

This QA should focus on ensuring that the property description is adequate, that the building use information is correct, and that all portions of Section B have been completed as outlined in Section 1.4.

### 4.2 QA of Completed Elevation Certificates

Sections A, B, C and D of all incoming Elevation Certificates must be checked for accuracy and completeness by the person who receives the Elevation Certificate AND a supervisor or designated reviewer.

Designated reviewers and supervisors in charge of final Elevation Certificate review and approval are directed to track Elevation Certificate errors to help pinpoint issues that may require further training.

The Quality Assurance Officer must review error reports to promote timely responses to issues that need to be addressed and may require further training.

It is the responsibility of the Quality Assurance Officer to assure that the provisions of this SOP are adequate to ensure that Elevation Certificates are complete and correct in accordance with FEMA requirements.

## 5 Definitions

**Base Flood Elevation** – The calculated water surface elevation of the base flood.

**BFE** – see base flood elevation.

**CRS** – Community Rating System. This is a program under the National Flood Insurance Program (NFIP) through which communities are rated for the effectiveness of their floodplain management practices.

**engineer** – An Arizona registered civil engineer.

**FEMA** – Federal Emergency Management Agency

**FIRM** – Flood Insurance Rate Map

**FFE** – Finished Floor Elevation, the elevation of the floor of a structure, usually refers to the lowest finished floor.

**FPUP** – Floodplain Use Permit

**HANG** – Highest Adjacent Natural Grade. Usually measured from directly adjacent to the footprint of the structure or the footprint of the fill pad for the structure. Usually refers to highest adjacent *natural* grade.

**Regulatory Flood Elevation** – the elevation that is one foot above the calculated water surface elevation of the base flood.

**RFE** – see regulatory flood elevation

**Service Equipment** – Any machinery or equipment related to the structure, such as an air conditioning unit, evaporative cooler, furnace, heat pump, etc.

**Special Flood Hazard Area** – a floodplain with depths of flow of one foot or greater during the 100-year base flood that has been mapped by FEMA and shown on the Flood Insurance Rate Maps.

**Structure** – A structure is defined as any habitable building and anything attached to that habitable building, such as a carport, porch, or patio cover.

**Surveyor** – An Arizona Registered Land Surveyor.

**QA** – Quality Assurance

**WSEL** – Water Surface Elevation

## 6 References and Related Documents

Federal Emergency Management Agency National Flood Insurance Program Elevation Certificate and Instructions. <http://www.fema.gov/pdf/nfip/elvcert.pdf>

FEMA Elevation Certificate can be downloaded here: <http://www.fema.gov/doc/nfip/elevfnl3.dot>

National Flood Insurance Program Floodplain Management Bulletin: Elevation Certificate, FEMA 467-1, May 2004. <http://www.fema.gov/pdf/fima/fema467-6-10-04.pdf>

Floodplain and Erosion Hazard Management Ordinance No. 2005-FC2 for Pima County, Arizona

Floodplain and Erosion Hazard Management Ordinance No. 2005-FC2 for Pima County, Arizona, section 16.26.030A requires Registered Land Surveyors or Registered Civil Engineers to fill out Elevation Certificates.

Floodplain and Erosion Hazard Management Ordinance No. 2005-FC2 for Pima County, Arizona, section 16.20.040 requires structures to be elevated or flood proofed to the RFE.

## 7 Attachments

Attachment 1 - Elevation Certificate, FEMA Form 81-31, February 2006, O.M.B. No. 3067-0077, Expires February 28, 2009.

J:\Data\SOPs\PER\PER001\Elevation Certificate.doc

Attachment 2 - Building diagrams (pages 6 and 7) from *Federal Emergency Management Agency National Flood Insurance Program Elevation Certificate and Instructions*. <http://www.fema.gov/pdf/nfip/elvcert.pdf>

  
Suzanne Shields  
Director

Date 7/23/14

# ELEVATION CERTIFICATE

**IMPORTANT:** Follow the instructions on pages 1-9.

OMB No. 1660-0008  
 Expiration Date: July 31, 2015

**SECTION A - PROPERTY INFORMATION**

# INFORMATION ONLY

<b>FOR INSURANCE COMPANY USE</b>	
A1. Building Owners Name _____	Policy Number: _____
A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No., or P.O. Route and Box No.) _____	Company NAIC Number: _____
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) Number 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 A0, 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/Source: \_\_\_\_\_

B11. Indicate elevation datum used for BFE in Item B9:  NGVD 1929  NAVD 1988  Other/Source: \_\_\_\_\_

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. In Puerto Rico only, enter meters.

Benchmark Utilized: \_\_\_\_\_ Vertical Datum: \_\_\_\_\_

Indicate elevation datum used for the elevations in items a) through h) below.  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 - 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.  Check here if attachments.

Were latitude and longitude in Section A provided by a licensed land surveyor?  Yes  No

Certifier's Name _____		License Number _____	
Title _____	Company Name _____		
Address _____	City _____	State _____	ZIP Code _____
Signature _____	Date _____	Telephone _____	

PLACE  
SEAL  
HERE

<b>IMPORTANT:</b> 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 PO, 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

**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 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–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–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 Datum \_\_\_\_\_
- G9. BFE or (in Zone AO) depth of flooding at the building site: \_\_\_\_\_ . \_\_\_\_\_  feet  meters Datum \_\_\_\_\_
- G10. Community’s design flood elevation: \_\_\_\_\_ . \_\_\_\_\_  feet  meters Datum \_\_\_\_\_

Local Official’s Name	Title
Community Name	Telephone
Signature	Date

Comments

FPM SOP# PER-001A.1 Attachment 1  
Page 2 of 4

Check here if attachments.

See Instructions for Item A6.

<b>IMPORTANT:</b> 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 PO, Route and Box No.		Policy Number:
City	State ZIP Code	Company NAIC Number:

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

<b>IMPORTANT: In these spaces, copy the corresponding information from Section A.</b>		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:

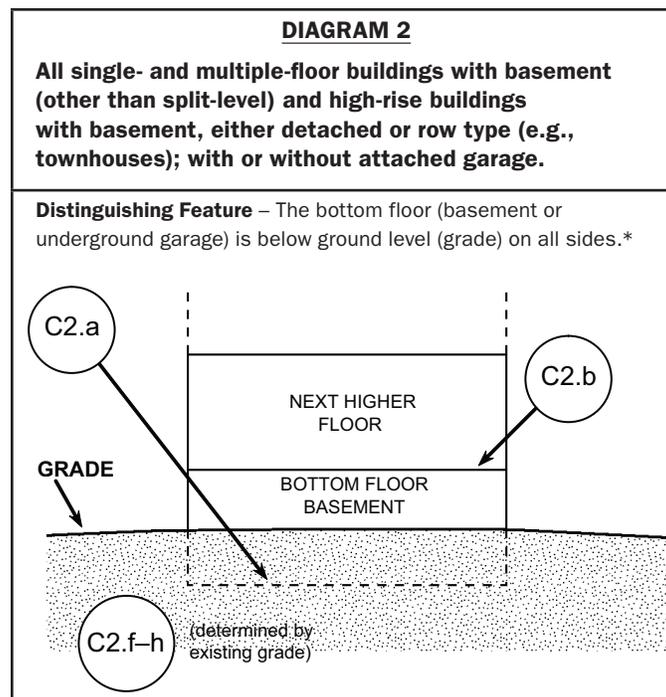
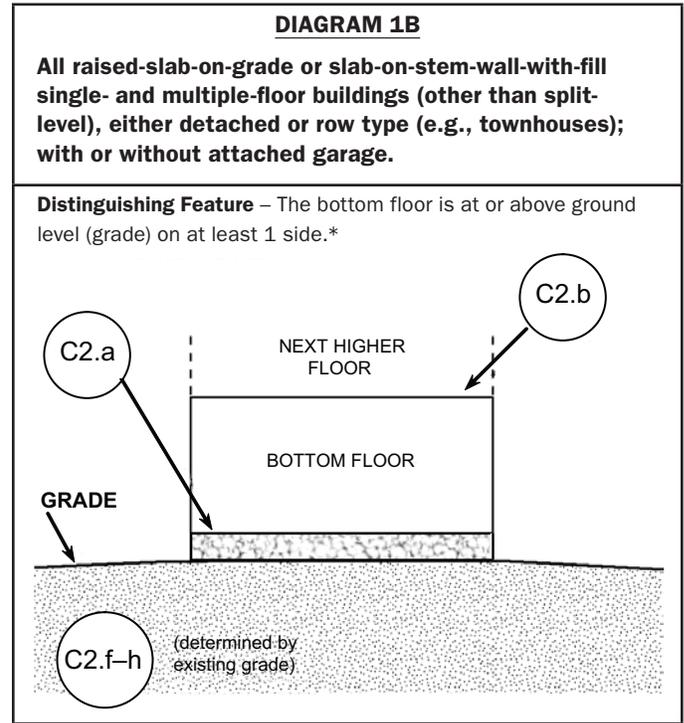
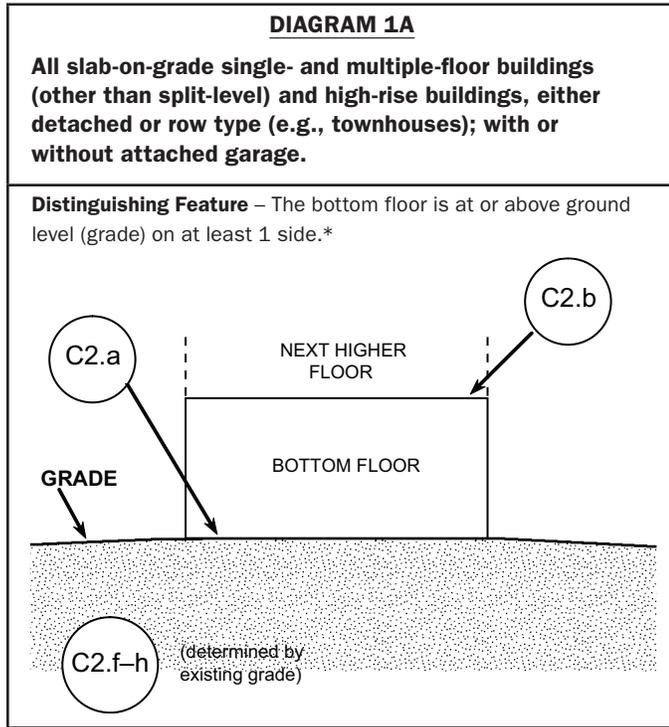
**INFORMATION ONLY**

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

## 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).

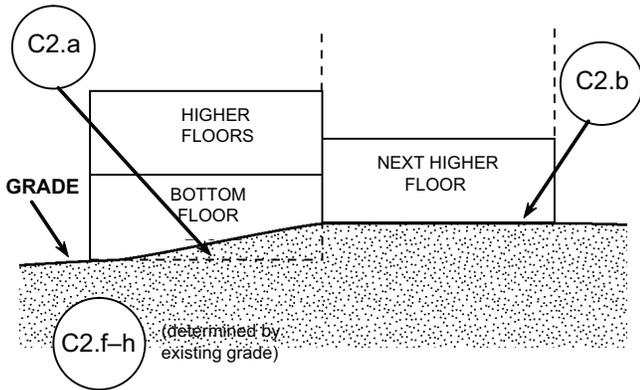


\* A floor that is below ground level (grade) on all sides is considered a basement even if the floor is used for living purposes, or as an office, garage, workshop, etc.

**DIAGRAM 3**

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

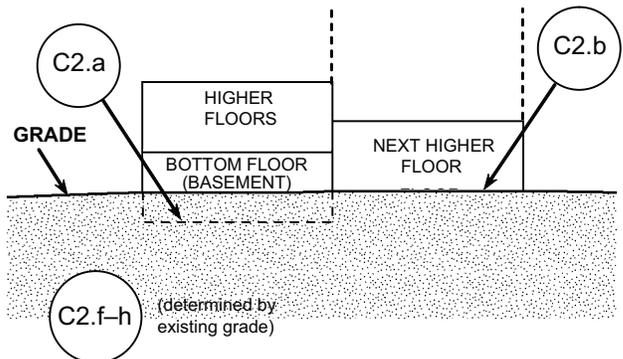
**Distinguishing Feature** – The bottom floor (excluding garage) is at or above ground level (grade) on at least 1 side.\*



**DIAGRAM 4**

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

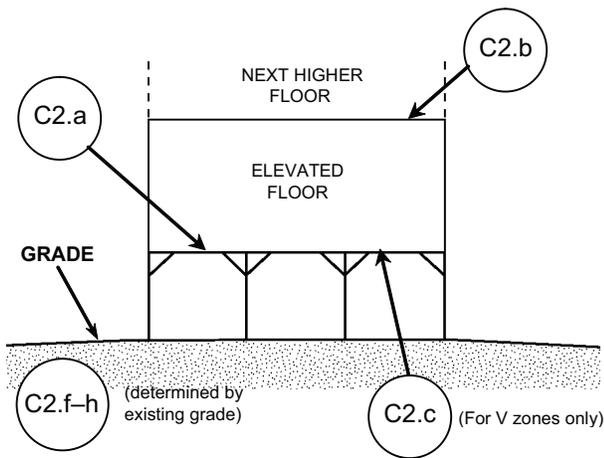
**Distinguishing Feature** – The bottom floor (basement or underground garage) is below ground level (grade) on all sides.\*



**DIAGRAM 5**

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

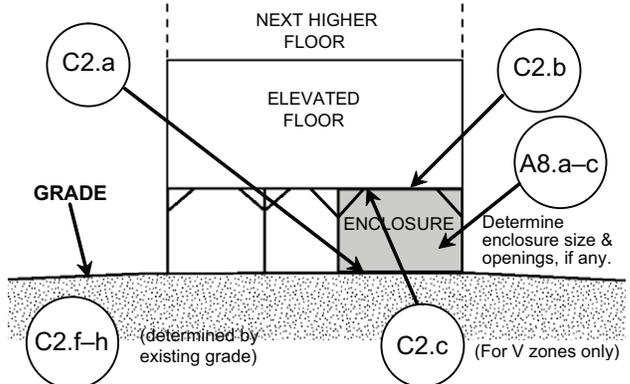
**Distinguishing Feature** – For all zones, the area below the elevated floor is open, with no obstruction to flow of floodwaters (open lattice work and/or insect screening is permissible).



**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.



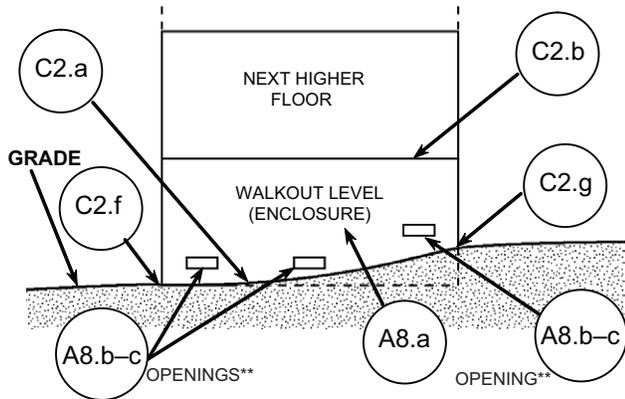
\* A floor that is below ground level (grade) on all sides is considered a basement even if the floor is used for living purposes, or as an office, garage, workshop, etc.

\*\* 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 2 openings is required for enclosures or crawlspaces. The openings shall provide a total net area of not less than 1 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 2 sides of the enclosed area. If a building has more than 1 enclosed area, each area must have openings to allow floodwater to directly enter. The bottom of the openings must be no higher than 1.0 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 1 side is at or above grade. The principal use of this building is located in the elevated floors of the building.

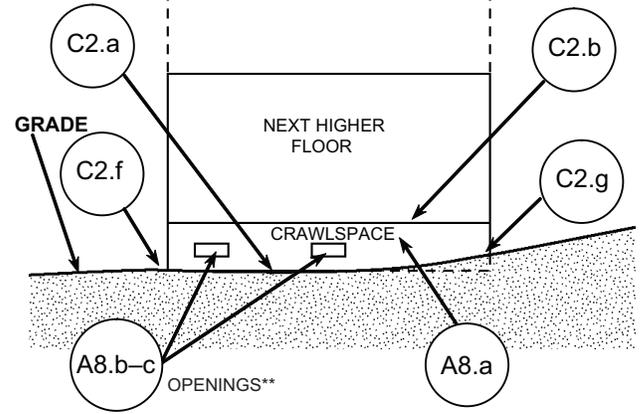
**Distinguishing Feature** – For all zones, the area below the elevated floor is enclosed, either partially or fully. In A Zones, the partially or fully enclosed area below the elevated floor is with or without openings\*\* present in the walls of the enclosure. Indicate information about enclosure size 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 1 side, with or without an attached garage.

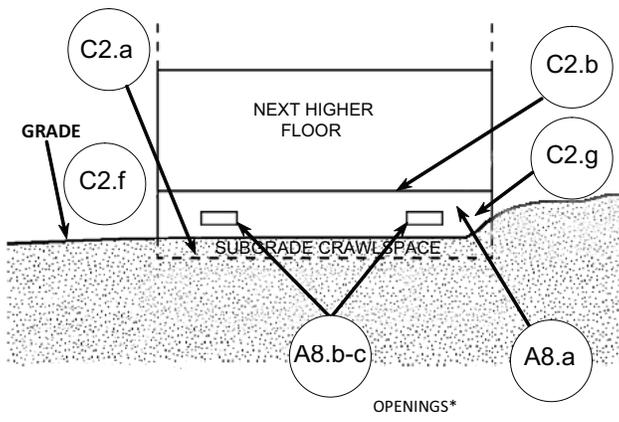
**Distinguishing Feature** – For all zones, the area below the first floor is enclosed by solid or partial perimeter walls. In all A zones, the crawlspace is with or without openings\*\* present in the walls of the crawlspace. Indicate information about crawlspace size and openings in Section A – Property 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 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.)



\* 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 2 openings is required for enclosures or crawlspaces. The openings shall provide a total net area of not less than 1 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 2 sides of the enclosed area. If a building has more than 1 enclosed area, each area must have openings to allow floodwater to directly enter. The bottom of the openings must be no higher than 1.0 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.