

# 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, 5/16/2016, 5/11/2022**

**PROCEDURE TITLE: Construction/Elevation Certificate Management Procedure**

## **PURPOSE:**

The objective of this procedure is to:

- Satisfy the National Flood Insurance Program (NFIP) Community Rating System (CRS) requirement for a Construction Certificate Management Plan (CCMP).
- Develop clear standards for completing Elevation Certificates.
- Establish guidelines for Arizona registered land surveyors and civil engineers (hereafter “surveyor or engineer”) 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.

## **BACKGROUND:**

Construction Certificates are a critical and required component of the District’s goal of ensuring compliance with FEMA regulations and maintaining the District’s Community Ratings System (CRS) superior ranking. Accurate certificates that demonstrate compliance is a major component of the CCMP required by CRS. This procedure was modified in 2021 to better incorporate the CCMP requirements into a single, comprehensive document.

Verifying that structures built within floodplains are compliant with floodplain regulations is accomplished in part via several types of construction certificates; Elevation Certificates, As-Built Certificates, Floodproofing Certificates. Compliance is also verified through Building Codes inspections by Pima County Development Services Department.

This procedure focuses primarily on Elevation Certificates since it is the most common construction certificate used. Typically, most of Section A and all of section B should be completed by the hydrologist processing the Floodplain Use Permit (FPUP). Both Building Under Construction and Finished Construction Elevation Certificates are required for site-built structures that are being elevated to mitigate flood risk. Manufactured Homes and floodproofed site-built structures only require a Finished Construction Elevation Certificate. At least four color photographs are required for all Elevation Certificates.

During NFIP audits, including Annual Recertification and less frequent Cycle Visits, Finished Construction Elevation Certificates must be submitted for all structures within the SFHA. Achieving 90% accuracy is a CRS Class 9 prerequisite. Pima County is currently rated a Class 3, and continually seeks to maintain and improve this rating.

# Table of Contents

Executive Summary.....	3
1 Construction Certificate Management Procedures .....	3
1.1 Compliance with CRS Construction Management Plan Requirements .....	3
1.2 Coordination with Pima County Development Services/Building Codes .....	3
1.3 Types of Certificates Required.....	4
1.4 When Certificates Are Required and Reviewing Department.....	4
1.4.1 As-Built Certificates .....	4
1.4.2 Elevation Certificates .....	4
1.4.3 Floodproofing Certificates.....	4
1.5 Certificate Storage and Availability .....	5
1.5.1 All Certificate Types .....	5
1.5.2 Elevation Certificates .....	5
2 Roles and Responsibilities.....	5
2.1 Area and Counter Hydrologist.....	5
2.2 Engineer.....	5
2.3 Supervisor/Designated Reviewer .....	6
2.4 Quality Assurance (QA) Officer .....	6
2.4.1 As-Built Certificates .....	6
2.4.2 Floodproofing Certificates.....	6
2.4.3 Elevation Certificates .....	6
2.5 Quality Assurance (QA) Reviewer.....	7
2.6 Database Manager .....	7
3 Quality Assurance for Certificates .....	7
3.1 QA of Outgoing Elevation Certificates .....	7
3.2 QA for All Completed Certificates.....	7
3.3 QA of Completed Elevation Certificates.....	8
3.4 Elevation Certificate Creation and Review Procedures.....	8
3.4.1 Creation of Elevation Certificates .....	8
3.4.2 Issuing Elevation Certificates .....	8
3.4.3 Processing Completed Elevation Certificates.....	9
4 Line by Line Elevation Certificate Completion Guidance .....	11
4.1 Completing Elevation Certificate Section A .....	11
4.2 Completing Elevation Certificate Section B .....	13
4.3 Completing Elevation Certificate Section C (to be Completed by Surveyor or Engineer) .....	14
4.3.1 Completing Elevation Certificate Section C for Manufactured Homes .....	15
4.3.2 Completing Elevation Certificate Section C for Site Built Structures.....	16
4.3.3 Completing Section C for Building Under Construction Elevation Certificate (Site-Built Structure)16	
4.3.4 Completing Elevation Certificate Section C for Finished Construction Elevation Certificate (Site-Built Structure) .....	17
4.4 Completing Elevation Certificate Section D .....	19
5 Training .....	19
6 Definitions .....	20
7 References and Related Documents .....	21

## **PROCEDURE:**

# **1 Construction Certificate Management Procedures**

With respect to Elevation Certificates, this procedure applies to Elevation Certificate Form 086-0-33, July 2015 and O.M.B No. 1660-0008, which expires November 30, 2022. This procedure applies to any future addition of the Elevation Certificate unless changes are made to the form and/or the CRS Manual that necessitate a revision of the procedure.

As-Built Certificates shall be on a form provided by the District and include reference to a sealed plan set.

Floodproofing Certificates must be completed on the current effective FEMA form.

## **1.1 Compliance with CRS Construction Management Plan Requirements**

This procedure includes all credit criteria for the CRS Construction Management Plan. Each credit criteria and its location in this procedure is detailed below:

- a) Description of what types of construction certificates are required is found in section 1.3.
- b) Description of when construction certificates are required is found in section 1.4.
- c) Description of what department collects certificates is found in section 1.4.
- d) Description of what department reviews certificates is found in section 1.4.
- e) Description of how certificates are corrected is found in section 3.
- f) Description of how and where the certificates are maintained is found in section 1.5.
- g) Description of how certificates are made available to inquirers is found in section 1.5.
- h) The District requires certificates for development outside the SFHA and this procedure applies equally to certificates both inside and outside the SFHA.

## **1.2 Coordination with Pima County Development Services/Building Codes**

Within unincorporated Pima County, regulation and certifications of construction within floodplains is a joint effort between Pima County Development Services Department (DSD) and Pima County Regional Flood Control District (District). DSD issues Building Permits, while the District issues Floodplain Use Permits (FPUP) that largely rely on the Building Permits process to ensure FPUP conditions are met.

As-Built, Elevation, and Floodproofing Certificates are used by the District to ensure compliance with elevation and other flood risk mitigation requirements of the FPUP. DSD's inspection process ensures that other aspects of the building, such as materials used in construction, location of the improvement on the property, etc. are consistent with the conditions of the approved permits. DSD's role is as follows:

1. When a building permit application is submitted, identify whether the proposed improvement is in a floodplain (including Special Flood Hazard Areas and Other Flood Areas as designated on Flood Insurance Rate Maps as well as in locally identified flood and erosion hazard areas) and send the permit to the District for review to ensure conformance with the Floodplain Management Ordinance (Ordinance) and approval.
2. Provide mechanisms through the County permitting software to place holds on inspections to ensure that the District receives As-Built, Elevation, and/or Floodproofing Certificates, as necessary and at the appropriate time during the construction process.

3. Inspect aspects of construction that are not addressed on As-Built, Elevation, and/or Floodproofing Certificates.

Inspection holds are placed by the District on Building Permits for Elevation Certificates, Floodproofing Certificates and As-Built Certificates as appropriate depending on the project.

### **1.3 Types of Certificates Required**

As appropriate, the District requires As-built Certificates, Floodproofing Certificates and Elevation Certificates (which may also include engineered flood opening certificates) for compliance with the conditions of the FPUP.

## **1.4 When Certificates Are Required and Reviewing Department**

### **1.4.1 As-Built Certificates**

As Built Certificates are required to be submitted to and reviewed by the District when there are aspects of new construction that are designed by an Engineer and the engineered component of the development will not be inspected by DSD building inspectors or when the complexity of the design warrants the engineer of record certifying that the improvements were completed as designed. Examples include fill pad erosion protection, foundation stem walls, or piers.

### **1.4.2 Elevation Certificates**

For new construction that is elevated at/above the Regulatory Flood Elevation (RFE), the applicant is required to submit a Building Under Construction Elevation Certificate prior to pouring the floor slab and a Finished Construction Elevation Certificate prior to the final inspection of the structure by DSD staff. District staff receive (collect), review and approve these certificates prior to the release of these inspection holds. Structures that are wet floodproofed (not elevated to the RFE) only require a Finished Construction Elevation Certificate since the necessary flood protection measures are not in place at the time of the pouring of the floor slab.

For structures that are constructed on hill slopes, 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 of each level is at or above the Regulatory Flood Elevation (RFE) at the upstream point of that portion of the structure. A detailed drawing that is sealed by the surveyor or engineer must accompany the Elevation Certificates that clearly demonstrates the structure is constructed in compliance with the requirement that each level be at or above the RFE for the respective level of the structure.

Engineered flood opening certificates are reviewed and approved by the District along with Elevation Certificates.

At the discretion of the District, to address freeboard issues, Elevation Certificates may be required for structures immediately adjacent to the floodplain to ensure that the structure is elevated to the Regulatory Flood Elevation.

### **1.4.3 Floodproofing Certificates**

Floodproofing Certificates are required to be submitted to and reviewed by the District for all structures that are dry floodproofed.

## **1.5 Certificate Storage and Availability**

### **1.5.1 All Certificate Types**

A physical copy of all certificate types shall be stored in each respective permit file. Electronic copies of these certificates are stored in the OnBase electronic document management system as part of the storage of the entire permit file and on the County computer network. These certificates are available to County staff through direct access to the aforementioned locations. These certificates are available free to the public upon request.

### **1.5.2 Elevation Certificates**

Elevation Certificates are stored and available as described in section 1.5.1 as well as a separate physical filing system containing only Elevation Certificates. Electronic copies of Elevation Certificates are additionally available to staff and the public on the District Elevation Certificate web page, located at: <https://rfcd.pima.gov/fpm/permits/eclisting.cfm>.

## **2 Roles and Responsibilities**

It is the responsibility of anyone involved in creating, processing or reviewing Certificates to know and follow this Procedure. This includes all counter hydrologists, area hydrologists, engineers, supervisors, designated reviewers, QA Officers, QA Reviewers and related support personnel. All roles are assigned by the Floodplain Management Division Manager.

### **2.1 Area and Counter Hydrologist**

Area and Counter Hydrologists are expected to be Certified Floodplain Managers (CFM) within a year of initial hire and will be expected to take the first available Elevation Certificate training. Area and Counter Hydrologists are responsible for:

- Creating Elevation Certificates and Floodproofing Certificates for distribution with Floodplain Use Permits or upon request by a customer, such as for insurance purposes.
- Completing Sections A1-A5 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 as detailed in this procedure.

### **2.2 Engineer**

For As-Built Certificates, a District engineer is responsible for:

- Creating As-Built Certificates for distribution with Floodplain Use Permits.
- Review of returned As-Built Certificates for accuracy and completeness.
- Review of engineering aspects of Floodproofing Certificates for accuracy and completeness.
- Documenting certificate review results (approval or rejection) in the electronic permit record.
- Releasing associated permit holds.
- The engineer role serves as the role of QA Officer for As-Built Certificates and any technical aspects of Floodproofing Certificates.

The Floodplain Management Division Manager, Deputy Director, Director or designee of same shall be considered Designated Reviewers for this role.

## **2.3 Supervisor/Designated Reviewer**

Supervisors and Designated Reviewers must be CFMs, have taken an Elevation Certificate training, and are responsible for:

- Review of outgoing Elevation Certificates and Floodproofing Certificates for accuracy and completeness of Sections A1-A5 and B of Elevation Certificates.
- Review of all sections of returned Elevation Certificates for accuracy and completeness, as needed.
- Distribution of Elevation Certificates to proper individuals as detailed in this procedure.
- Tracking errors found on Elevation Certificate on the attached Quality Assurance Form, as needed.
- The Floodplain Management Division Manager, Deputy Director, Director or designee of same shall be considered the Designated Reviewers to fulfill any role within this procedure.
- The Designated Reviewer for Floodproofing Certificates shall be the Floodplain Management Division Manager, Deputy Director, Director or designee of same.

## **2.4 Quality Assurance (QA) Officer**

### **2.4.1 As-Built Certificates**

With respect to As-Built Certificates, the Quality Assurance Officer must be an engineer or Designated Reviewer and is responsible for:

- Reviewing As-Built Certificates and associated letters/plans to ensure improvements have been constructed per plan.
- When deviations from plan are found, determining whether those deviations negatively impact the effectiveness of the protective measures.
- Releasing associated permit holds.

### **2.4.2 Floodproofing Certificates**

With respect to Floodproofing Certificates, the Quality Assurance Officer must be a Designated Reviewer as described in section 2.3 and is responsible for:

- Reviewing Floodproofing Certificates for completeness, accuracy and compliance.
- Releasing associated permit holds.

### **2.4.3 Elevation Certificates**

The Quality Assurance Officer for Elevation Certificates shall be a single designated individual who must be a CFM, have taken an Elevation Certificate training. This role 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 procedure, as needed.
- Implementing training of the survey community.
- Documenting errors found on Elevation Certificates as noted by Supervisors and Designated Reviewers on the Quality Assurance Form.
- Releasing associated permit holds.

## **2.5 Quality Assurance (QA) Reviewer**

The Quality Assurance Reviewer is a role specific to Elevation Certificates. The QA Reviewer shall be a single designated individual who must be a CFM who has taken an Elevation Certificate course. This role is responsible for:

- At least monthly, reviewing all Finished Construction Elevation Certificates approved by the QA Officer.
- Documenting errors not discovered by prior reviews.
- Ensuring that the Quality Assurance procedures are implemented.
- Ensuring that the Quality Assurance procedures are adequate.
- Training staff on the implementation of this procedure, as needed.
- Implementing training of the survey community.
- Reviewing errors found on Elevation Certificates as noted by Supervisors, Designated Reviewers and QA Officers on the Quality Assurance Form.

## **2.6 Database Manager**

Database managers are administrative and/or information technology staff who are responsible for:

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

## **3 Quality Assurance for Certificates**

This section outlines the QA procedures for outgoing and incoming Certificates.

For Elevation Certificates, the QA Officer is the primary person responsible for ensuring that the provisions of this section are followed. The QA Officer is designated by the Floodplain Management Division Manager and must be a CFM. The QA Reviewer serves as both an additional review and as back-up to the QA Officer.

### **3.1 QA of Outgoing Elevation Certificates**

Sections A1-A5 and B of all outgoing Elevation Certificates must be checked for accuracy and completeness by the individual 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 accurately completed as outlined in section 4.2.

### **3.2 QA for All Completed Certificates**

The following QA review procedure is applicable to all certificate types. A more specific process for Elevation Certificates is also detailed starting in section 3.4.3.

1. All certificates shall be reviewed and approved by District staff with the appropriate knowledge and training to conduct such reviews.
2. The QA Officer shall verify that the certificate has been completed by a qualified individual.
3. If the QA Officer identifies any omissions, errors or deficiencies in the certificate, the QA Officer shall provide one or both of the following to the permit applicant and/or the individual who completed the certificate
  - a. Written correspondence specifically detailing the omissions, errors or deficiencies in the certificate.

- b. A marked up copy of the certificate that details the omissions, errors or deficiencies in the certificate.
4. The QA Officer shall document either the certificate approval or rejection in the electronic permit record.
5. Upon approval, the QA Officer shall mark the certificate as approved and release any permit holds associated with the certificate.

### **3.3 QA of Completed Elevation Certificates**

The basic steps provided in section 3.2 above apply to Elevation Certificates, but due to the relatively higher incidence of errors in completing Elevation Certificates, greater specificity on the creation and review of Elevation Certificates is provided in section 3.4.

The QA Officer and Reviewer shall track Elevation Certificate errors to help identify recurring issues that may require further training for District staff and/or the surveying community.

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

It is the responsibility of the QA Reviewer to assure that the provisions of this procedure are adequate to ensure that Elevation Certificates are accurate and complete in accordance with FEMA requirements.

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 4.1 and 4.2 of this procedure.

### **3.4 Elevation Certificate Creation and Review Procedures**

This section deals specifically with Elevation Certificates in order to serve as a reference to District staff and surveyors and engineers who complete Elevation Certificates to assist in ensuring they are completed thoroughly and accurately. This section details the creation of Elevation Certificates, the issuance of Elevation Certificates, and the processing and review of completed Elevation Certificates. A detailed guide on how to complete each field on the Elevation Certificate is found in section 4.

#### **3.4.1 Creation of Elevation Certificates**

As a general rule, District staff complete items A1 through A5 and all of Section B of the Elevation Certificate. All remaining blanks shall be completed by an Arizona registered land surveyor or engineer. See Sections 4.1 and 4.2 of this procedure for more details on completing sections A and B of the Elevation Certificate.

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

#### **3.4.2 Issuing Elevation Certificates**

Prior to issuing an Elevation Certificate to an applicant, it must be reviewed for accuracy and completeness by the hydrologist working on the permit and/or a designated supervisor/ reviewer. See Sections 4.1 and 4.2 of this procedure for more details on how to accurately complete Sections A and B of an Elevation Certificate.

### 3.4.3 Processing Completed Elevation Certificates

When an applicant returns an Elevation Certificate to the District, it must be reviewed for accuracy and completeness by at least two qualified District staff prior to the release of any associated building permit holds or issuance of any additional permits. When received by a counter hydrologist, the counter hydrologist shall complete the first QA check. The Elevation Certificate shall then be given to the QA Officer for review. Only the QA Officer or Designated Reviewer may release inspection holds associated with the permit. An additional, periodic QA check will be done by the QA Reviewer. This final check may be completed after the release of inspection holds. Line by line guidance for Elevation Certificate QA is provided in Section 4 of this procedure.

#### 3.4.3.1 *Processing Returned Building Under Construction Elevation Certificates*

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

##### **Intake Hydrologist**

1. Ask the applicant to remain in the office until you have had a chance to review the Elevation Certificate for accuracy and completeness.
2. Make sure that the FPUP number and Building Permit number are in the upper left-hand corner of the front page of the Elevation Certificate. If missing, get the information from the permit file.
3. Review ALL sections of the Elevation Certificate for accuracy and completeness. See Sections 4.1, 4.2 and 4.3.1, 4.3.3 or 4.3.4, as appropriate for what constitutes a complete and correct Building Under Construction Elevation Certificate.
4. **If the Elevation Certificate is not accurate and/or complete**, make a photocopy of the Elevation Certificate and highlight and/or annotate the photocopy to show what portions of the Elevation Certificate are inaccurate and/or incomplete. Make a photocopy of the annotated Elevation Certificate and give it to the QA Officer. Explain the inadequacies of the Elevation Certificate to the applicant and return the original Elevation Certificate and the annotated photocopy to the applicant.
5. **If the Elevation Certificate is accurate and complete**, time stamp the Elevation Certificate along the upper right-hand side of the Elevation Certificate and place your initials next to the time stamp.
6. Inform the applicant 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.
7. Give the Elevation Certificate to the QA Officer for a second review for accuracy and completeness.

##### **QA Officer**

8. Review ALL sections of the Elevation Certificate for accuracy and completeness. See Sections 4.1, 4.2 and 4.3.1, 4.3.3 or 4.3.4, as appropriate for what constitutes an accurate and complete Building Under Construction Elevation Certificate. If acceptable, proceed to step 13. If unacceptable, proceed to step 9.

9. 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 inaccurate and/or incomplete then make a photocopy of the annotated Elevation Certificate.
10. Return the original and annotated copy of the Elevation Certificate to the intake hydrologist and explain the necessary corrections. Keep the photocopy of the annotated Elevation Certificate in the permit file.

**Intake hydrologist (only if Elevation Certificate is not accepted by QA Officer)**

11. If the Elevation Certificate is incorrect, contact the applicant and explain the required corrections.
12. Return the original Elevation Certificate and the original annotated photocopy to the applicant.

**QA Officer**

13. If the 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 Accela, if applicable.
14. 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.

**QA Reviewer**

15. At least monthly, the QA Reviewer shall perform an additional review of all approved Elevation Certificates as an extra measure of surety that all Elevation Certificates are completed with 100% accuracy, completeness and consistency.

**3.4.3.2 Processing Returned Finished Construction Elevation Certificates**

Complete Steps 1-12 from 3.4.3.1, 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 Accela, if 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.

## 4 Line by Line Elevation Certificate Completion Guidance

### 4.1 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 Floodplain Use Permit (FPUP) number and Development Services Activity Number should be placed in the upper left-hand corner of the front page of the Elevation Certificate.
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, plus the subdivision name and lot number if applicable.
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, Guest House or a Manufactured Home.
4. **Item A5** shall be completed using the “decimal degrees” format, (32.12121, -111.69815) measured to at least 5 decimal places. For reference, Pima County PimaMaps present latitude/longitude data in the NAD 1983 HARN datum. The latitude/longitude information should be taken at the approximate 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 it was taken, the cardinal direction (N, S, E, W) and which view of the structure (front, rear, side, etc.) is being shown.
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*. 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 none or 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 enclosure underneath the manufactured home. The enclosure must not support any part of the manufactured home. The elevation of the ground underneath the manufactured home should be placed in C2.a and the top of the next higher floor (generally the finished floor of the home) manufactured home which should 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 RFE, then all blanks shall be completed with “None” or “N/A”. 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 or, if the interior floor grade is more than one foot above exterior grade, openings for which the bottom of the vent is within one foot of interior grade and as close as possible to the floor elevation. Only that portion of the openings below the RFE may be included in the total opening calculation.
  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, louvers or block. 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.
  10. **Item A8.d)** shall be checked “Yes” for all engineered openings, including SmartVents™ or FloodAirVents™, and “No” for all other openings. If “Yes” is checked, the engineering report or manufacturers specification sheet for the opening must be attached to the Elevation Certificate.
  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 garages, 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 or, if the interior floor grade is more than one foot above exterior grade, openings for which the bottom of the vent is within one foot of interior grade and as close as possible to the floor elevation. “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, louvers or block. 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. If “Yes” is checked, the engineering report or manufacturers specification sheet for the opening must be attached to the Elevation Certificate.
16. **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.

## 4.2 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 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 if applicable, the effective date for the LOMR/LOMA that the property is contained within (Example: enter “6-16-2011 / 3-6-2012” 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 do not impact 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.

- The “FIS Profile” box shall be marked within an AE Zone where an FIS profile is available.
- The “FIRM” box shall 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 (see “Special case” below), in which case use the “Other” box.
- The “Community Determined” shall 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 shall 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 the details in Section D and/or G, including that the local study BFE is higher than the BFE from the FIRM Panel.**

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 an 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. **Item B12** the “No” box must be marked.

### 4.3 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 procedure 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 in Box B.11 for the BFE in Box B9. When the BFE provided in Box B.9 is a depth (height above highest adjacent natural grade), if an elevation tied datum such as NAVD88 is used to survey the property, the elevation data must be converted to the local datum (HANG = 100.0 feet).

If a local datum or benchmark is used to complete Section C, the highest adjacent natural grade shall be used as the benchmark 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 enclosed space is the lowest floor, and the elevation of the top of the slab or finished floor elevation shall be placed in C2.b. 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.

Though not recommended, if a structure is elevated on a crawl space stem wall foundation that is surrounded by fill, then flood-openings must be placed in the stem wall and the openings must extend through the fill.

#### **4.3.1 Completing Elevation Certificate Section C for Manufactured Homes**

For manufactured homes, a single Finished Construction Elevation Certificate will fulfill FEMA requirements, but must include the machinery and/or equipment servicing the building and should not be completed until it is in place so it can be 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 non-breakaway skirting or walls, the Elevation Certificate may not be completed until skirting or walls are installed/constructed and any necessary flood vents are installed.

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 4.3 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 enclosed space (dirt) underneath the manufactured home if there is non-breakaway skirting or a block stem wall under the manufactured home.
4. **Item C2.b** must contain an elevation value if Building Diagram Number 6, 7, 8 or 9 is used, in which case the elevation given is for the lowest “living floor” of the manufactured home. “N/A” may only be used for Building Diagram Number 5, only if there is no skirting or breakaway skirting, and only if the structure has only one floor level. C2.b must never be left blank. Use “N/A” 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 lowest horizontal structural member 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” or “N/A” 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. If all service equipment is in the attic or on the roof, this must be noted in Section D Comments.

A note must be placed in the comments area of Section D indicating the identity of the lowest service 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 manufactured home.

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 below the floor must also be included in the comments area of Section D.

8. **Item C2.f** must contain the lowest adjacent finished grade elevation. This elevation may differ from lowest adjacent natural grade, the elevation of which must be noted in Section D comments. Indicating highest and lowest adjacent natural grade in Section D is required when box B.9 is a depth of flow above grade.
9. **Item C2.g** must contain the highest adjacent finished grade elevation. This elevation may differ from highest adjacent natural grade, the elevation of which must be noted in Section D comments. Indicating highest and lowest adjacent natural grade in Section D is required when box B.9 is a depth of flow above grade.
10. **Item C2.h** includes decks and/or 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.

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

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

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

#### **4.3.3 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 a surveyor or 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 lowest finish floor of the home is going to be elevated properly, as required by the FPUP, before expensive work is performed. Identifying mistakes early may provide financial benefits to the property owners.

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 4.3 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 as measured at the garage door IF the garage is entirely beneath the habitable portion of the structure or there is a sunken bathroom shower.
4. **Item C2.b** must contain an elevation value if Building Diagram Number 2, 3, 4, 7, 8 or 9 is used. “None” or “N/A” 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 “None” or “N/A”.
6. **Item C2.d** may be “None” or “N/A” if there is no attached garage, but must never be left blank. If there is an attached garage, C.2.d must be completed with an elevation value. The elevation shall be taken at the entry to the garage.
7. **Item C2.e** may be “None” or “N/A” at this stage of construction, but must never be left blank.
8. **Item C2.f** must contain the lowest adjacent finished grade elevation. This elevation may differ from lowest adjacent 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 the highest adjacent finished grade elevation. This elevation may differ from highest adjacent (natural) grade, indicate the elevation of natural grade in Section D comments. Indicating highest and lowest adjacent natural grades in Section D is required when box B.9 is a depth of flow above grade.
10. **Item C2.h** will likely be “None” or “NA” at this stage of construction. This item covers decks and/or 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.

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

A “Prior to Final Inspection” (“P2F”) hold will be placed on the structure until an Elevation Certificate for “Finished Construction” for the structure has been approved by the District. The Elevation Certificate cannot be completed until the structure is constructed and all machinery and equipment servicing the building (i.e., air conditioning units, furnace, 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 “None” or “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 4.3 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 as measured at the garage door IF the garage is entirely beneath the habitable portion of the structure, but not if the garage is laterally attached to the structure.
4. **Item C2.b** must contain an elevation value if Building Diagram Number 2, 3, 4, 7 or 8 is used. “None” or “N/A” 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 “None” or “N/A”.
6. **Item C2.d** Must contain an elevation value 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 measured at the garage door.
7. **Item C2.e** must contain an elevation unless ALL service equipment is on the roof or in the attic. If all service equipment is in the attic or on the roof, this must be noted in Section D Comments.

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.

Ductwork may be considered the the lowest elevation of service equipment and must also be included in the comments area of Section D.

8. **Item C2.f** must contain the lowest adjacent finished grade elevation. This elevation may differ from lowest adjacent (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 the highest adjacent finished grade elevation. This elevation may differ from highest adjacent natural grade, indicate the elevation of natural grade in Section D comments. Indicating highest and lowest adjacent natural grades in Section D is required when box B.9 is a depth of flow above grade.
10. **Item C2.h** may be “None” or “NA”. This item covers decks and/or 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.

#### 4.4 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 prompts for additional information that the District requires to verify compliance. Only the surveyor or engineer should complete any portion of Section D. District comments or information must go in Section G.

Photocopied or faxed Elevation Certificates are not acceptable.

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 next to the building, 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. It may say “Lowest floor elevation of the existing structure \_\_\_\_\_ and addition \_\_\_\_\_.”

## 5 Training

The Quality Assurance Officer and/or Quality Assurance Reviewer is tasked with providing all training under this section. The QA Officer/Reviewer may designate another individual to perform or assist in the training provided that individual is qualified to do so.

Initial training on this procedure should take place upon hiring or assignment of a new role within this procedure. All new employees covered in Section **Error! Reference source not found.** of this procedure must receive training to supplement this procedure.

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

The District will 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 as possible after the effective date of the form.

## 6 Definitions

**Base Flood Elevation** – The calculated water surface elevation of the 100-year base flood.

**BFE** – see base flood elevation.

**CCMP** – Construction Certificate Management Plan.

**CFM** – Certified Floodplain Manager.

**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.

**District** – **Pima County Regional Flood Control District**

**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

**HAG** – Highest Adjacent (Finished) Grade. This could be natural grade or it could reflect the elevation of fill or cuts and be higher or lower than natural grade.

**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. Refers to highest adjacent *natural* grade.

**LAG** – Lowest Adjacent (Finished) Grade. This could be natural grade or it could reflect the elevation of fill or cuts and be higher or lower than natural grade.

**LANG** – Lowest Adjacent Natural Grade. Usually measured from directly adjacent to the footprint of the structure or the footprint of the fill pad for the structure. 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. This may include ductwork if it is the lowest part of the HVAC system.

**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 attached or detached habitable or non-habitable building.

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

**QA** – Quality Assurance

**WSEL** – Water Surface Elevation

## 7 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.

5/11/2022

---

Brian Jones, CFM  
Floodplain Management Division Manager

---

Date