JOHN J. TECKLENBURG
Mayor

City of Charleston
South Carolina
Department of Public Service

THOMAS F. O'BRIEN
Director of Public Service

Guide to Completing Elevation Certificates (EC)

This document is a guide for completing Elevation Certificates (ECs) in accordance with FEMA's National Flood Insurance Program (NFIP), South Carolina Building Codes and City of Charleston Code of Ordinances requirements.* Elevation Certificates demonstrate New Construction and Substantial Improvements in the Special Flood Hazard Area (SFHA) comply with current flood design requirements. For questions about completing and submitting ECs for review, please contact the City's Floodplain Review Technician at 843-724-7446 or inspections@charleston-sc.gov.

Contents

Thank you for your contribution to our Floodplain Management Program and Community Rating System (CRS) participation, which provides flood insurance discounts to City residents!

*This guide is not comprehensive. Insurance representatives may request additional information. Please defer to FEMA NFIP guidance for additional questions.

Elevation Certificate General Requirements

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

Always use the current EC form. The EC form number and expiration date can be found in the upper right-hand corner of the first page. Any EC signed and dated after 2/21/2020 must use the 2019 FEMA FORM 086-0-33 (12/19). **Submissions using the incorrect form will not be approved.**

A fillable PDF version with corresponding instructions is linked on the City of Charleston website. Please submit all six pages of the form, even if certain pages are not relevant to this specific structure. Do not submit FEMA instructions with ECs.

Section A- Property Information

Field	Clerical Notes
A2/A3 (street address/property description)	Either A2 or A3 must be filled out with identifying information for the property. The city, state, and zip code for the property must be provided and match the permit in question. The address or identifying property information must be the filled out at the top of each page of the elevation certificate. **ECs with incomplete or mismatched property identification will not be approved.**
A4 (building use)	Building use must be identified, at minimum specifying the scope of work as residential, non-residential, accessory, or addition. **ECs that do not specify or incorrectly identify building use will not be approved.**
A7 (building diagram number)	A7 must be filled out with the correct building diagram, verifiable by photographs provided. Building diagrams can be found on pages 7 through 9 of the FEMA EC Instructions with supplemental resources linked at the end of this guide. In the FCEC, building diagram number 5 may require additional justification regarding Free-of-Obstructions Requirements. The diagram selected must include both the number and letter of the diagram indicated, if a letter is present. **ECs with incorrect or incomplete building diagrams will not be approved.**
A8 (For buildings with a crawlspace or enclosure)	Generally, A8 is completed for building diagrams 5, 6, 7, or 8. Include only exterior vents in b, c, and d. Mark A8d "Yes" when the flood openings are installed AND the ICCES Report or Certification of Engineered Flood Openings is attached to this document. **ECs for buildings with a crawlspace or enclosure with incorrect or missing information for A8 will not be approved.** If there is not an attached garage, mark A8a-c as N/A (not "0") and leave A8d blank.
A9 (For buildings with an attached garage)	An attached garage is a garage that is laterally attached to a non-elevated building. Generally, A9 is completed for building diagrams 1a, 1b, 2a, 2b, 3, 4, or 9. Include only exterior vents in b, c, and d. Mark A8d "Yes" when the flood openings are installed AND the ICCES Report or Certification of Engineered Flood Openings is attached to this document. **ECs for buildings with attached garages with incorrect or missing information for A9 will not be approved. ECs for buildings without attached garages that complete A9 will not be approved.** If there is not an attached garage, mark A9a-c as N/A (not "0") and leave A9d blank.

A8/A9 Flood Design Consideration

Wet floodproofed enclosures below the Design Flood Elevation are only allowed to be used for parking, storage and building access. Each enclosure must have a minimum of two openings within one foot above adjacent grade on different sides, totaling to be equal to or greater than one square inch of opening per one square foot of enclosure. Commercial buildings with dry floodproofing (i.e., utilizing flood panels or flood logs) to protect habitable ground floor enclosures must also complete the Floodproofing Certificate for Non-Residential Structures.

Section B- Flood Insurance Rate Map (FIRM) Information

All information in Section B must use the current effective FIRM at the time of EC completion, using Section D to provide additional clarifying information and the FIRM information at time of permitting (if applicable). FIRM information can be located using FEMA's Flood Map Service Center (MSC).

SECTION B – FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

B1. NFIP Community Name & Community Number	B2. County Name	B3. State
City of Charleston, 455412	Charleston / Berkeley	South Carolina

B4. Map/Panel Number	B5. Suffix	B6. FIRM Index Date	B7. FIRM Panel Effective/ Revised Date	B8. Flood Zone(s)	B9. Base Flood Elevation(s) (Zone AO, use Base Flood Depth)
Example: 45019C 0493	K / E	1/29/2021 (Charleston County) / 12/7/2018 (Berkeley County)		AE / VE / X (Shaded) / X (Unshaded)	8, 9, 10, 11, 12, 13, 14, 15, N/A

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

Field	Clerical Notes
B7 (FIRM Panel Effective/Revised Date)	The date provided in B7 is the date of the current effective FIRM when EC is being submitted. However, the effective FIRM at the date of permit application is the FIRM used to certify elevations and compliance with DFE for EC review. If a different FIRM was effective during permit application, Section D must be used to provide elevations and datum from the applicable previous FIRM. **ECs with incorrect or missing FIRM Panel Effective/Revised Date and necessary comments will not be approved.** If a LOMR applies to a project, provide the LOMR effective date in B7.
B8 (Flood Zone(s))	The flood zone designation provided in B8 apply to the *building limits* only, not the property. If the building is in one or more flood zones, include ALL flood zones the building falls within. Flood Zones "X (Shaded)" and "X (Unshaded)" will have a BFE of "N/A". **ECs with missing or incorrect flood zone information will not be approved.**
B11 (Elevation Datum of BFE)	All ECs must indicate which elevation datum was used for the provided BFE. Only ONE box indicating the appropriate datum should be checked. If Other/Source is selected, the blank *must* be used to describe the source of data, using Section D to provide additional clarifying comments if necessary.

Field B8 Flood Design Considerations

The most restrictive flood zone will apply, even if a portion of the building falls within that flood zone. If B8 is marked "VE," then V-Zone Design Certifications must be attached. Pre-construction V-Zone Design Certifications will be reviewed during permitting and UCEC review. As built V-Zone Design Certifications will be reviewed during the FCEC review.

Section C- Building Elevation Information (Survey Required)

Field	Clerical Notes
C1 (Construction Stage)	Mark the stage of construction that elevations are based on. UCEC surveys should be completed after the FFE has been established and before the building has 'gone vertical' to ensure compliance before proceeding. FCEC surveys should be completed after final grading is in place and all flood openings and machinery/equipment have been installed. An FCEC is required for all permitted projects. **ECs with inconsistent or incorrect stage of work will not be approved.**
C2 (Elevations)	Elevation data provided must be consistent with the building diagram provided in A7. Fill in all relevant fields that apply to the type of building indicated by the diagram. Elevations must be provided to the nearest 0.10 of a foot. All provided elevations must mark "feet" or "meters." The elevation datum used for C2a-h must be indicated (NGVD 1929/NAVD 1988). If the datum used to determine C2a-h does not match the datum used for BFE provided in B11, elevations provided must be converted, with calculations shown using Section D to provide this information. **ECs with missing or incorrect elevation information will not be approved.**
C2.a	Always required. Bottom floor elevation must be provided for every building. For the purposes of the EC, "bottom floor" includes basements, crawlspaces, and enclosures.
C2.b	For buildings with a next higher floor only. Must be completed if applicable.*
C2.c	For buildings in the V-Zone only. Must be completed if applicable.*
C2.d	For buildings with attached garages only. Must be completed if applicable.* If A9 is completed, then C2d must be provided, and vis versa.
C2.e	For UCECs, mark N/A if M&E has not been installed, using Section D to provide any relevant information. Required for FCEC, with description and location of equipment provided in Section D. FCECs will not be approved prior to machinery installation. Guidance on what is considered lowest machinery is provided below.
C2.f	Always required, measured relative to foundation.
C2.g	Always required, measured relative to foundation.
C2.h	For buildings with deck or stairs only. Must be completed if applicable.*

* If a section does not apply to the building, please indicate that using N/A – do not leave blank responses. If blank responses are left, the reviewer may request clarifying information or revision.

Machinery and Equipment to be considered for C2.e:

- Central air conditioning units
- Hot water heaters
- Central furnaces
- Heat pumps
- Generators
- Elevator cab and respective electrical/mechanical components

There may be additional machinery and equipment that must be elevated or protected from flood as required by building code and city ordinances that are not generally used for C2.e in ECs (i.e., ductwork, pool equipment, plumbing fixtures and electrical disconnect switch).

Machinery and equipment that should NOT be included in C2.e includes those elements owned or maintained by utilities, those elements not located on the parcel, and those elements not associated with servicing the building. Examples of excluded machinery and equipment include *but are not limited to*:

- Water, sewer, gas, and power service lines and meters
- Public utility transformers
- Elevator pit

Lowest Floor Flood Design Considerations

As defined by the City's Ordinance, "lowest floor means the lowest floor of the lowest enclosed area (including basement). An unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access, or storage in an area other than a basement area is not considered a building's lowest floor, provided that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of this article." The lowest floor elevation (C2.a, C2.b or C2.c) used for compliance and insurance purposes depends on the building diagram number.

Section D- Surveyor, Engineer, or Architect Certification

All information in this section is required to certify the information provided in the EC. Name, license number, signature, and date lines must be filled out. The certification seal may be an original or a copy, and may be placed digitally, but must be clear and visible. Stamps that are crimped must submitted using the hard copy to the attention of Building Inspections at 2 George St. **ECs with missing certification information or unreadable seal will not be approved.**

Comments in Section D

Use the comment area beneath the certification information to provide relevant information for the property and reference the field or section you are commenting on. This will help to assist the reviewer and prevent delays in processing. Some instances where comments must be provided:

- When C2.e is filled out, describe type and location of equipment referenced.
- When C2.e is "N/A", clarify if machinery or equipment is not yet installed or if none will be present.
- Elevation of the bottom of the elevator shaft.
- When engineered flood vents are used provide the make, model, and coverage. This information must match the attached ICC-ES or Engineered Certification.
- If there are not adequate flood openings at time of the UCEC survey, add a comment clarifying that there will be sufficient openings on the FCEC.
- When there are multiple exterior or interior enclosures present, specify square footage, the number of vents, net area of flood vent coverage and vent type/model for each enclosure. Only include exterior openings in A8/A9 and only count each opening once.
- When using a different FIRM for building compliance than current effective FIRM. For example, buildings in Charleston County permitted prior to 1/29/2021, the comments section should provide 2004 FEMA FIRM information for sections B and C, noting the applicable vertical datum of NGVD 1929.
- When vertical datum used for C is different than in B, provide conversion calculations used.

Other Considerations

Sections E, F and G

While these sections are not required to be completed, pages 3 and 4 must be included for a complete EC. Corrections and clarifications may be added by the EC reviewer in Section G.

Photographs

Provide 2-4 clear, dated photographs within 90 days of certification. The reviewer may request additional photographs for compliance purposes prior to approval. Copies of pages 5 and 6 can be added to accommodate more photos. The following should be clearly visible, if applicable:

- A full front and rear photo for insurance purposes.
- If the foundation is obscured by landscaping in the full view photos, we require a close-up of the foundation.
- Equipment and Machinery used for C2.e
- Flood openings with every type or model shown
- Interior Enclosures (Closets, stairwells, storage rooms, elevators, etc.)

Attachments and Additional Construction Certificates

The following must be submitted if applicable to the building:

- Engineered flood openings require an ICC-ES Report or Certification of Engineered Openings. The latter should include the building address, design certification, certification statement, and the range of flood heights tested.
- Development in the V-Zone requires pre-construction and as built V-Zone Design Certificate, and V-Zone Breakaway Wall Design Certificate if there are any enclosures on the ground floor.
- Buildings utilizing a dry floodproofing system to meet the Design Flood Elevation (DFE) must submit the Floodproofing Certificate for Non-Residential Structures (viewable only through Internet Explorer) at time of permitting.

Additional Resources and Guidance

- How to View City of Charleston Inspection Results
- Fillable PDF version of the Elevation Certificate and instructions.
- For FIRM information, visit FEMA's Flood Map Service Center (MSC).
- For more information about definitions and using the correct diagrams, please see the Quick Guide for Floodplain Management in South Carolina.
- FEMA's Lowest Floor Guide shows the appropriate locations for taking C2.a and C2.b elevations, depending on the building diagram number.
- For CRS guidance on completing elevation certificates, please watch their Elevation Certificate Training Series videos.

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

Example EC provided courtesy of Ashley Land Surveying, Inc.

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

ELEVATION CERTIFICATE

Important: Follow the instructions on pages 1–9.

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

SECTION A – PROPERTY INFORMATION

FOR INSURANCE COMPANY USE
Policy Number:
Company NAIC Number:

A1. Building Owner's Name [redacted]

A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. [redacted]

City	State	ZIP Code
Charleston	South Carolina	29412

A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.) [redacted]

A4. Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.) Residential

A5. Latitude/Longitude: Lat. [redacted] Long. [redacted] 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 6

A8. For a building with a crawlspace or enclosure(s):

a) Square footage of crawlspace or enclosure(s) 1,086 sq ft

b) Number of permanent flood openings in the crawlspace or enclosure(s) within 1.0 foot above adjacent grade 6

c) Total net area of flood openings in A8.b 1,200 sq in

d) Engineered flood openings? ☒ Yes ☐ No

A9. For a building with an attached garage:

a) Square footage of attached garage N/A sq ft

b) Number of permanent flood openings in the attached garage within 1.0 foot above adjacent grade N/A

c) Total net area of flood openings in A9.b N/A 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
City of Charleston 455412	Charleston	South Carolina

B4. Map/Panel Number	B5. Suffix	B6. FIRM Index Date	B7. FIRM Panel Effective/ Revised Date	B8. Flood Zone(s)	B9. Base Flood Elevation(s) (Zone AO, use Base Flood Depth)
45019C 0679	K	01/29/2021	01/29/2021	AE	11

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

Signature: Paul C. Lawson Date: 08-25-2021 Job Number 2021-5148-006

ELEVATION CERTIFICATE

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

IMPORTANT: In these spaces, copy the corresponding information from Section A.			FOR INSURANCE COMPANY USE
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. [redacted]			Policy Number:
City Charleston	State South Carolina	ZIP Code 29412	Company NAIC Number

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: GPS Vertical Datum: NAVD 1988

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)	7.3	☒ feet	☐ meters
b) Top of the next higher floor	18.6	☒ feet	☐ meters
c) Bottom of the lowest horizontal structural member (V Zones only)	N/A	☒ feet	☐ meters
d) Attached garage (top of slab)	N/A	☒ feet	☐ meters
e) Lowest elevation of machinery or equipment servicing the building (Describe type of equipment and location in Comments)	15.2	☒ feet	☐ meters
f) Lowest adjacent (finished) grade next to building (LAG)	6.7	☒ feet	☐ meters
g) Highest adjacent (finished) grade next to building (HAG)	6.9	☒ feet	☐ meters
h) Lowest adjacent grade at lowest elevation of deck or stairs, including structural support	6.8	☒ 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.*

Were latitude and longitude in Section A provided by a licensed land surveyor? ☒ Yes ☐ No ☒ Check here if attachments.

Certifier's Name	License Number	
Paul C. Lawson, Jr.	14191	
Title President		
Company Name Ashley Land Surveying, Inc		
Address PO Box 1302, (306 Sangaree Parkway)		
City Summerville	State South Carolina	ZIP Code 29484
Signature Paul C Lawson Jr	Date 08-25-2021	Telephone 843-871-4416 Ext.

SOUTH CAROLINA PROFESSIONAL LAND SURVEYOR No. 14191 PAUL C. LAWSON, JR. 12-1221

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

Comments (including type of equipment and location, per C2(e), if applicable) Elevator Shaft (7.7 NGVD 29) & (10.7' NAVD 88)

B4. 45019C 0679 B5. J B6.11/17/2004 B7.11/17/2004 B8. VE B9. 15 B11. NGVD 1929
C2 a) 8.3 b) 19.6 c) 18.3 d) N/A e)16.2 f) 7.7 g) 7.9 h) 7.8 NGVD 29
C2. e) Electric outlets under the house 15.2' (NAVD 88) & 16.2' NGVD 29
C2. e) Water Heater is (20.3' NGVD 29) & (19.3' NAVD 88)
A8. b) Smart Vent Model 1540-570 (200 sq in per vent) 200 X 6 = 1,200 sq in
C2. c) Note: Lot is in Moderate Wave Action Zone C2 c) Elevation is (18.3' NGVD 29) & (17.3' (NAVD 88).

ELEVATION CERTIFICATE

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

IMPORTANT: In these spaces, copy the corresponding information from Section A.			FOR INSURANCE COMPANY USE
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. [redacted]			Policy Number:
City	State	ZIP Code	Company NAIC Number
Charleston	South Carolina	29412	

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 1–2 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.

ELEVATION CERTIFICATE

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

IMPORTANT: In these spaces, copy the corresponding information from Section A.			FOR INSURANCE COMPANY USE
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. [redacted]			Policy Number:
City	State	ZIP Code	Company NAIC Number
Charleston	South Carolina	29412	

SECTION G – COMMUNITY INFORMATION (OPTIONAL)

The local official who is authorized by law or ordinance to administer the community's floodplain management ordinance can complete Sections A, B, C (or E), and G of this Elevation Certificate. Complete the applicable item(s) and sign below. Check the measurement used in Items G8–G10. In Puerto Rico only, enter meters.

G1. ☐ The information in Section C was taken from other documentation that has been signed and sealed by a licensed surveyor, engineer, or architect who is authorized by law to certify elevation information. (Indicate the source and date of the elevation data in the Comments area below.)

G2. ☐ A community official completed Section E for a building located in Zone A (without a FEMA-issued or community-issued BFE) or Zone AO.

G3. ☐ The following information (Items G4–G10) is provided for community floodplain management purposes.

G4. Permit Number	G5. Date Permit Issued	G6. Date Certificate of Compliance/Occupancy Issued

G7. This permit has been issued for: ☐ New Construction ☐ Substantial Improvement

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 (including type of equipment and location, per C2(e), if applicable)

☐ Check here if attachments.

ELEVATION CERTIFICATE

BUILDING PHOTOGRAPHS

See Instructions for Item A6.

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

IMPORTANT: In these spaces, copy the corresponding information from Section A.			FOR INSURANCE COMPANY USE
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. [redacted]			Policy Number:
City	State	ZIP Code	Company NAIC Number
Charleston	South Carolina	29412	

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

Photo One

Photo One Caption: Front View 08-25-2021 — Clear Photo One

Photo Two

Photo Two Caption: Rear View 08-25-2021 — Clear Photo Two

ELEVATION CERTIFICATE

BUILDING PHOTOGRAPHS
Continuation Page

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

IMPORTANT: In these spaces, copy the corresponding information from Section A.			FOR INSURANCE COMPANY USE
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. [redacted]			Policy Number:
City	State	ZIP Code	Company NAIC Number
Charleston	South Carolina	29412	

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

Photo Three

Photo Three Caption: Left Side View 11-11-2021 — Clear Photo Three

Photo Four

Photo Four Caption: Right Side View 08-25-2021 — Clear Photo Four

ELEVATION CERTIFICATE

BUILDING PHOTOGRAPHS

See Instructions for Item A6.

OMB No. 1660-0008
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Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. [redacted]			Policy Number:
City Charleston	State South Carolina	ZIP Code 29412	Company NAIC Number

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

Photo One

Photo One Caption: Water Heater 08-25-2021 — Clear Photo One

Photo Two

Photo Two Caption: Electric Meter & Disconnect 11-11-2021 — Clear Photo Two

feet (18.6 m^2) of enclosed area, except that the SmartVENT® Stacking Model #1540-511 and FloodVENT® Stacking Model #1540-521 must be installed with a minimum of one FV for every 400 square feet (37.2 m^2) of enclosed area.

- Below the base flood elevation.
- With the bottom of the FV located a maximum of 12 inches (305.4 mm) above the higher of the final grade or floor and finished exterior grade immediately under each opening.

4.2 Flood Vent Sealing Kit

The Flood Vent Sealing Kit Model 1540-526 is used in conjunction with FloodVENT® Model #1540-520. When installed and tested in accordance with ASTM E283, the FV and Flood Vent Sealing Kit assembly have an air leakage rate of less than 0.2 cubic feet per minute per lineal foot (18.56 l/min per lineal meter) at a pressure differential of 1 pound per square foot (50 Pa) based on 12.58 lineal feet (3.8 lineal meters) contained by the Flood Vent Sealing Kit.

5.0 CONDITIONS OF USE

The Smart Vent® FVs described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 The Smart Vent® FVs must be installed in accordance with this report, the applicable code and the manufacturer's installation instructions. In the event of a conflict, the instructions in this report govern.

5.2 The Smart Vent® FVs must not be used in the place of "breakaway walls" in coastal high hazard areas, but are permitted for use in conjunction with breakaway walls in other areas.

6.0 EVIDENCE SUBMITTED

6.1 Data in accordance with the ICC-ES Acceptance Criteria for Mechanically Operated Flood Vents (AC364), dated August 2015 (editorially revised October 2017).

6.2 Test report on air infiltration in accordance with ASTM E283.

7.0 IDENTIFICATION

7.1 The Smart VENT® models and the Flood Vent Sealing Kit recognized in this report must be identified by a label bearing the manufacturer's name (Smartvent Products, Inc.), the model number, and the evaluation report number (ESR-2074).

7.2 The report holder's contact information is the following:

SMART VENT PRODUCTS, INC.
430 ANDBRO DRIVE, UNIT 1
PITMAN, NEW JERSEY 08071
(877) 441-8368
www.smartvent.com
info@smartvent.com

TABLE 1—MODEL SIZES

MODEL NAME	MODEL NUMBER	MODEL SIZE (in.)	COVERAGE (sq. ft.)
FloodVENT®	1540-520	15 3/4" X 7 3/4"	200
SmartVENT®	1540-510	15 3/4" X 7 3/4"	200
FloodVENT® Overhead Door	1540-524	15 3/4" X 7 3/4"	200
SmartVENT® Overhead Door	1540-514	15 3/4" X 7 3/4"	200
Wood Wall FloodVENT®	1540-570	14" X 8 3/4"	200
Wood Wall FloodVENT® Overhead Door	1540-574	14" X 8 3/4"	200
SmartVENT® Stacker	1540-511	16" X 16"	400
FloodVent® Stacker	1540-521	16" X 16"	400

For **SI:** 1 inch = 25.4 mm; 1 square foot = m^2

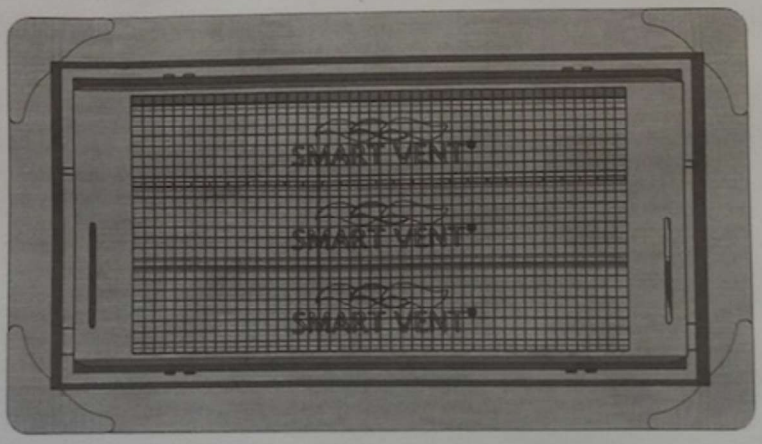

FIGURE 1—SMART VENT: MODEL 1540-510

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ICC-ES Evaluation Report

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ESR-2074

Reissued 02/2019
This report is subject to renewal 02/2021.

DIVISION: 08 00 00—OPENINGS

SECTION: 08 95 43—VENTS/FOUNDATION FLOOD VENTS

REPORT HOLDER:

SMART VENT PRODUCTS, INC.

EVALUATION SUBJECT:

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

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ICC-ES Evaluation Report

ESR-2074

Reissued February 2019
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DIVISION: 08 00 00—OPENINGS
Section: 08 95 43—Vents/Foundation Flood Vents

REPORT HOLDER:

SMART VENT PRODUCTS, INC.

EVALUATION SUBJECT:

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

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2018, 2015, 2012, 2009 and 2006 *International Building Code*® (IBC)
- 2018, 2015, 2012, 2009 and 2006 *International Residential Code*® (IRC)
- 2018 *International Energy Conservation Code*® (IECC)
- 2013 *Abu Dhabi International Building Code* (ADIBC)†

†The ADIBC is based on the 2009 IBC. 2009 IBC code sections referenced in this report are the same sections in the ADIBC.

Properties evaluated:

- Physical operation
- Water flow

2.0 USES

The Smart Vent® units are engineered mechanically operated flood vents (FVs) employed to equalize hydrostatic pressure on walls of enclosures subject to rising or falling flood waters. Certain models also allow natural ventilation.

3.0 DESCRIPTION

3.1 General:

When subjected to rising water, the Smart Vent® FVs internal floats are activated, then pivot open to allow flow in either direction to equalize water level and hydrostatic pressure from one side of the foundation to the other. The FV pivoting door is normally held in the closed position by a buoyant release device. When subjected to rising water, the buoyant release device causes the unit to unlatch, allowing the door to rotate out of the way and allow flow. The water level stabilizes, equalizing the lateral forces. Each unit is fabricated from stainless steel. Smart Vent® Automatic Foundation Flood Vents are available in various models and sizes as described in Table 1. The SmartVENT® Stacking Model #1540-511 and FloodVENT® Stacking Model #1540-521 units each contain two vertically arranged openings per unit.

3.2 Engineered Opening:

The FVs comply with the design principle noted in Section 2.7.2.2 and Section 2.7.3 of ASCE/SEI 24-14 [Section 2.6.2.2 of ASCE/SEI 24-05 (2012, 2009, 2006 IBC and IRC)] for a maximum rate of rise and fall of 5.0 feet per hour (0.423 mm/s). In order to comply with the engineered opening requirement of ASCE/SEI 24, Smart Vent FVs must be installed in accordance with Section 4.0.

3.3 Ventilation:

The SmartVENT® Model #1540-510 and SmartVENT® Overhead Door Model #1540-514 both have screen covers with $^1/_4$-inch-by-$^1/_4$-inch (6.35 by 6.35 mm) openings, yielding 51 square inches (32 903 mm^2) of net free area to supply natural ventilation. The SmartVENT® Stacking Model #1540-511 consists of two Model #1540-510 units in one assembly, and provides 102 square inches (65 806 mm^2) of net free area to supply natural ventilation. Other FVs recognized in this report do not offer natural ventilation.

3.4 Flood Vent Sealing Kit:

The Flood Vent Sealing Kit Model #1540-526 is used with SmartVENT® Model #1540-520. It is a Homasote 440 Sound Barrier® (ESR-1374) insert with 21 – 2-inch-by-2-inch (51 mm x 51 mm) squares cut in it. See Figure 4.

4.0 DESIGN AND INSTALLATION

4.1 SmartVENT® and FloodVENT®:

SmartVENT® and FloodVENT® are designed to be installed into walls or overhead doors of existing or new construction from the exterior side. Installation of the vents must be in accordance with the manufacturer's instructions, the applicable code and this report. Installation clips allow mounting in masonry and concrete walls of any thickness. In order to comply with the engineered opening design principle noted in Section 2.7.2.2 and 2.7.3 of ASCE/SEI 24-14 [Section 2.6.2.2 of ASCE/SEI 24-05 (2012, 2009, 2006 IBC and IRC)], the Smart Vent® FVs must be installed as follows:

- With a minimum of two openings on different sides of each enclosed area.
- With a minimum of one FV for every 200 square

feet (18.6 m^2) of enclosed area, except that the SmartVENT® Stacking Model #1540-511 and FloodVENT® Stacking Model #1540-521 must be installed with a minimum of one FV for every 400 square feet (37.2 m^2) of enclosed area.

- Below the base flood elevation.
- With the bottom of the FV located a maximum of 12 inches (305.4 mm) above the higher of the final grade or floor and finished exterior grade immediately under each opening.

4.2 Flood Vent Sealing Kit

The Flood Vent Sealing Kit Model 1540-526 is used in conjunction with FloodVENT® Model #1540-520. When installed and tested in accordance with ASTM E283, the FV and Flood Vent Sealing Kit assembly have an air leakage rate of less than 0.2 cubic feet per minute per lineal foot (18.56 l/min per lineal meter) at a pressure differential of 1 pound per square foot (50 Pa) based on 12.58 lineal feet (3.8 lineal meters) contained by the Flood Vent Sealing Kit.

5.0 CONDITIONS OF USE

The Smart Vent® FVs described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 The Smart Vent® FVs must be installed in accordance with this report, the applicable code and the manufacturer's installation instructions. In the event of a conflict, the instructions in this report govern.

5.2 The Smart Vent® FVs must not be used in the place of "breakaway walls" in coastal high hazard areas, but are permitted for use in conjunction with breakaway walls in other areas.

6.0 EVIDENCE SUBMITTED

6.1 Data in accordance with the ICC-ES Acceptance Criteria for Mechanically Operated Flood Vents (AC364), dated August 2015 (editorially revised October 2017).

6.2 Test report on air infiltration in accordance with ASTM E283.

7.0 IDENTIFICATION

7.1 The Smart VENT® models and the Flood Vent Sealing Kit recognized in this report must be identified by a label bearing the manufacturer's name (Smartvent Products, Inc.), the model number, and the evaluation report number (ESR-2074).

7.2 The report holder's contact information is the following:

SMART VENT PRODUCTS, INC.
430 ANDBRO DRIVE, UNIT 1
PITMAN, NEW JERSEY 08071
(877) 441-8368
www.smartvent.com
info@smartvent.com

TABLE 1—MODEL SIZES

MODEL NAME	MODEL NUMBER	MODEL SIZE (in.)	COVERAGE (sq. ft.)
FloodVENT®	1540-520	$15^3/_4$" X $7^3/_4$"	200
SmartVENT®	1540-510	$15^3/_4$" X $7^3/_4$"	200
FloodVENT® Overhead Door	1540-524	$15^3/_4$" X $7^3/_4$"	200
SmartVENT® Overhead Door	1540-514	$15^3/_4$" X $7^3/_4$"	200
Wood Wall FloodVENT®	1540-570	14" X $8^3/_4$"	200
Wood Wall FloodVENT® Overhead Door	1540-574	14" X $8^3/_4$"	200
SmartVENT® Stacker	1540-511	16" X 16"	400
FloodVent® Stacker	1540-521	16" X 16"	400

For **SI:** 1 inch = 25.4 mm; 1 square foot = m^2

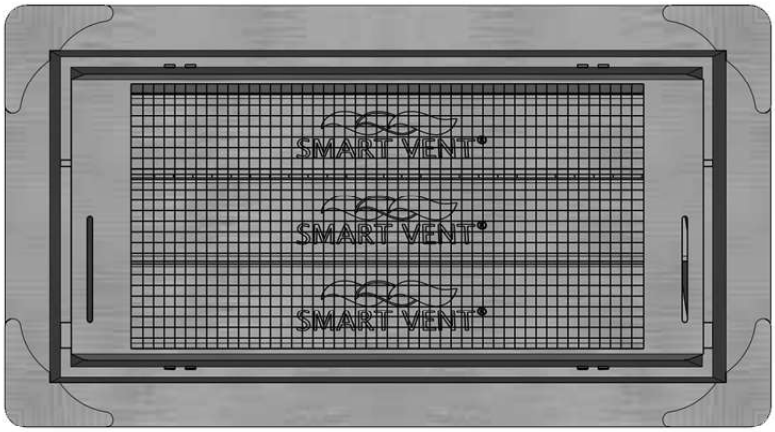

FIGURE 1—SMART VENT: MODEL 1540-510

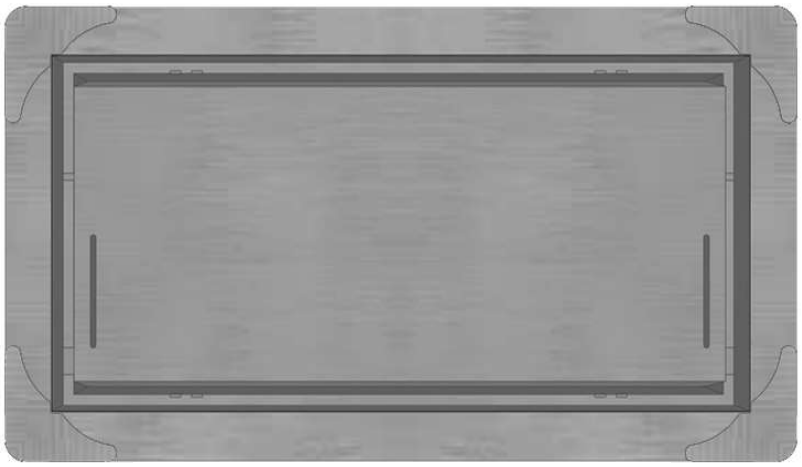

FIGURE 2—SMART VENT MODEL 1540-520

FIGURE 3—SMART VENT: SHOWN WITH FLOOD DOOR PIVOTED OPEN

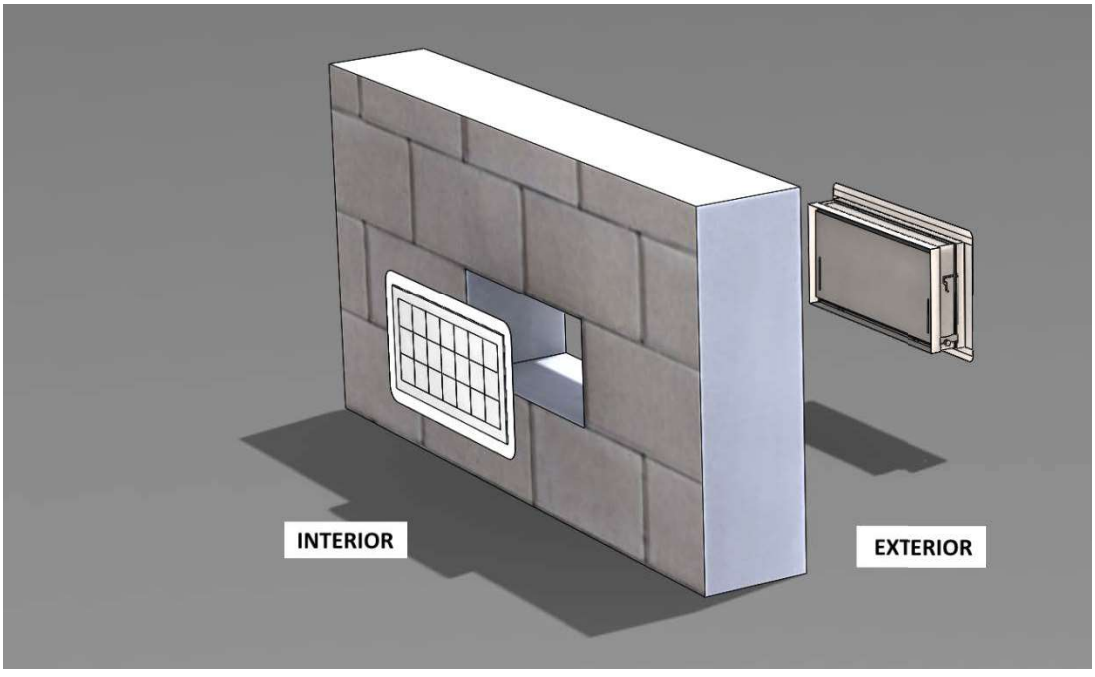

FIGURE 4—FLOOD VENT SEALING KIT

ICC-ES Evaluation Report

ESR-2074 CBC and CRC Supplement

Reissued February 2019

This report is subject to renewal February 2021.

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DIVISION: 08 00 00—OPENINGS
Section: 08 95 43—Vents/Foundation Flood Vents

REPORT HOLDER:

SMART VENT PRODUCTS, INC.

EVALUATION SUBJECT:

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

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that Smart Vent® Automatic Foundation Flood Vents, recognized in ICC-ES master evaluation report ESR-2074, have also been evaluated for compliance with codes noted below.

Applicable code edition:

- 2016 *California Building Code* (CBC)
- 2016 *California Residential Code* (CRC)

2.0 CONCLUSIONS

2.1 CBC:

The Smart Vent® Automatic Foundation Flood Vents, described in Sections 2.0 through 7.0 of the master evaluation report ESR-2074, comply with 2016 CBC Chapter 12, provided the design and installation are in accordance with the 2015 *International Building Code*® (IBC) provisions noted in the master report and the additional requirements of CBC Chapters 12, 16 and 16A, as applicable.

The products recognized in this supplement have not been evaluated under CBC Chapter 7A for use in the exterior design and construction of new buildings located in any Fire Hazard Severity Zone within State Responsibility Areas or any Wildland-Urban Interface Fire Area.

2.2 CRC:

The Smart Vent® Automatic Foundation Flood Vents, described in Sections 2.0 through 7.0 of the master evaluation report ESR-2074, comply with the 2016 CRC, provided the design and installation are in accordance with the 2015 *International Residential Code*® (IRC) provisions noted in the master report.

The products recognized in this supplement have not been evaluated under 2016 CRC Chapter R337, for use in the exterior design and construction of new buildings located in any Fire Hazard Severity Zone within State Responsibility Areas or any Wildland-Urban Interface Fire Area.

The products recognized in this supplement have not been evaluated for compliance with the International Wildland–Urban Interface Code®.

This supplement expires concurrently with the master report, reissued February 2019.

ICC-ES Evaluation Report

ESR-2074 FBC Supplement

Reissued February 2019

This report is subject to renewal February 2021.

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DIVISION: 08 00 00—OPENINGS
Section: 08 95 43—Vents/Foundation Flood Vents

REPORT HOLDER:

SMART VENT PRODUCTS, INC.

EVALUATION SUBJECT:

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

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that Smart Vent® Automatic Foundation Flood Vents, recognized in ICC-ES master report ESR-2074, have also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2017 *Florida Building Code—Building*
- 2017 *Florida Building Code—Residential*

2.0 CONCLUSIONS

The Smart Vent® Automatic Foundation Flood Vents, described in Sections 2.0 through 7.0 of the master evaluation report ESR-2074, comply with the *Florida Building Code—Building* and the FRC, provided the design and installation are in accordance with the 2015 *International Building Code®* provisions noted in the master report.

Use of the Smart Vent® Automatic Foundation Flood Vents has also been found to be in compliance with the High-Velocity Hurricane Zone provisions of the *Florida Building Code—Building* and the *Florida Building Code—Residential* .

For products falling under Florida Rule 9N-3, verification that the report holder's quality assurance program is audited by a quality assurance entity approved by the Florida Building Commission for the type of inspections being conducted is the responsibility of an approved validation entity (or the code official when the report holder does not possess an approval by the Commission).

This supplement expires concurrently with the master report, reissued February 2019.

CITY OF CHARLESTON V-ZONE DESIGN CERTIFICATE

PRE- CONSTRUCTION_____ AS BUILT__X__

Name of Property Owner [redacted] Permit No_____

Building Address [redacted]

TMS #_____

City Charleston State SC Zip Code 29412

Flood Insurance Rate Map (FIRM) Information

Community No 455512 Panel C0679 Suffix J

Date of FIRM Index 11/17/04

Elevation Information

1. Base Flood Elevation (BFE) 15 feet (NGVD)
2. Bottom of Lowest Horizontal Structural Member 18.3 feet (NGVD)
3. Elevation of Lowest Adjacent Grade 7.7 (NGVD)
4. Approximate Depth of Anticipated Scour/ Erosion used for Foundation Design is 4 feet
5. Embedment Depth of Pilings/Columns/Footing Below Lowest Adjacent Grade is 4 feet
6. Datum Used: NGVD 29 X NAVD 88 _____ Other _____

V-Zone Certification Statement

Note: Certificate must be signed and sealed by a registered professional engineer or architect. A signed/sealed copy of this statement must also appear on the approved construction plans.

I certify that I have developed or reviewed the structural design, plans and specifications for construction. The design and methods of construction to be used are in accordance with accepted standards of practice for meeting the following provisions:

- The bottom of the lowest horizontal structural member of the lowest floor (excluding piles and columns) is elevated to or above the BFE; and
- The pile or column foundation and structure attached thereto is anchored to resist flotation, collapse, and lateral movement due to the combined effects of wind and water loads acting simultaneously on all building components. Water loading values used are those associated with the base flood. Wind loading values used are those required by the applicable state or local building code. The potential for scour and erosion at the foundation has been anticipated for conditions associated with the base flood, including wave action.

For "As Built" certifications, I am certifying that the construction has been done in accordance with the design parameters indicated above.

Certification

Certifier's Name Cory Munson Title Engineer

Company Name Residential Structures Registration Number 28674

Street Address 930-A Folly Rd.

City Charleston State SC Zip Code 29412 Telephone No 843-406-7174

Signature _____ Date 10/15/21

SEAL:

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No. 28674 CORY MUNSON

CITY OF CHARLESTON V-ZONE BREAKAWAY WALL DESIGN CERTIFICATE

PRE- CONSTRUCTION_____ AS BUILT X

Name of Property Owner [redacted] Permit No_____

Building Address [redacted]

TMS #_____

City Charleston State SC Zip Code 29412

Flood Insurance Rate Map (FIRM) Information

Community No 455412 Panel C0679 Suffix J

Date of FIRM Index 11/17/04

Elevation Information

1. Base Flood Elevation (BFE) 15 feet (NGVD)
2. Bottom of Lowest Horizontal Structural Member 18.3 feet (NGVD)
3. Elevation of Lowest Adjacent Grade 7.7 (NGVD)
4. Datum Used: NGVD 29 X NAVD 88 _____ Other _____

Breakaway Wall Certification Statement

Note: Certificate must be signed and sealed by a registered professional engineer or architect. A signed/sealed copy of this statement must also appear on the approved construction plans detailing breakaway wall construction.

I certify that I have developed or reviewed the structural design, plans and specifications for construction of breakaway walls. The design and methods of construction to be used for the breakaway walls are in accordance with accepted standards of practice for meeting the following provisions:

- Breakaway walls have a design safe loading resistance of not less than 10 and no more than 20 pounds per square foot.
- Breakaway walls' collapse shall result from a water loads no less than that which would occur during the base flood; and
- The elevated portion of the building and supporting foundation system shall not be subject to collapse, displacement, or other structural damage due to the combined effects of wind and water loads acting simultaneously on all building components, structural and non-structural. Wind loading values used shall be those required by applicable state or local building standards. Water loading values shall be those associated with the base flood. Such enclosed space shall be useable solely for parking of vehicles, building access or limited storage of maintenance items.

For "As Built" certifications, I am certifying that the construction has been done in accordance with the design parameters indicated above.

Certification

Certifier's Name Cory Munson Title Engineer

Company Name Residential Structures Registration Number 28674

Street Address 930 A Fort Johnson Rd.

City Charleston State SC Zip Code 29412 Telephone No 843-406-7174

Signature [signature] Date 10/15/21

SEAL: SOUTH CAROLINA PROFESSIONAL ENGINEER No. 28674 CORY MUNSON