U.S. DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY
National Flood Insurance Program

ELEVATION CERTIFICATE

IMPORTANT: FOLLOW THE INSTRUCTIONS ON PAGES 8-15

OMB Control Number: 1660-0008
Expiration: 11/30/2018

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

SECTION A - PROPERTY INFORMATION

FOR INSURANCE COMPANY USE

A1. Building Owner's Name
Ernest Signature Custom Homes, LLC

Policy Number:

A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.
15 Sweetgrass Lane

Company NAIC Number:

City **Richmond Hill** | State **GA** | Zip Code **31324**

A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.)
Lot 87B Dunham Marsh Ph 3C (2015)

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

A5. Latitude/Longitude: Lat. **31°51'07.3"** Long. **81°16'53.4"** 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 **1B**

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

a) Square footage of crawlspace or enclosure(s) **N/A** sq ft

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

c) Total net area of flood openings in A8.b **N/A** sq in

d) Engineered flood openings? ○ Yes ◉ No

A9. For a building with an attached garage:

a) Square footage of attached garage **317** sq ft

b) Number of permanent flood openings in the attached garage within 1.0 foot above adjacent grade **4**

c) Total net area of flood openings in A9.b **410** 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
Bryan County 130016	**Bryan (unincorporated)**	**GA**

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
13029C0375	**C**	**5/5/2014**	**3/2/2009**	**AE**	**12.0**

B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in Item B9:
○ FIS Profile ◉ FIRM ○ Community Determined ○ Other/Source:

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

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

SECTION C - BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

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

C2. Elevations: Zones A1-A30, AE, AH, A (with BFE), VE, V1-V30, V (with BFE), AR, AR/A, AR/AE, AR/A1-A30, AR/AH, AR/AO. Complete Items C2.a-h below according to the building diagram specified in Item A7. In Puerto Rico only, enter meters.

Benchmark Utilized: **AB3037** 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)	**13.0**	◉ feet ○ meters
b) Top of the next higher floor	**23.5**	◉ feet ○ meters
c) Bottom of the lowest horizontal structural member (V Zones only)	**N/A.**	◉ feet ○ meters
d) Attached garage (top of slab)	**11.6**	◉ feet ○ meters
e) Lowest elevation of machinery or equipment servicing the building (Describe type of equipment and location in Comments)	**13.4**	◉ feet ○ meters
f) Lowest adjacent (finished) grade next to building (LAG)	**11.2**	◉ feet ○ meters
g) Highest adjacent (finished) grade next to building (HAG)	**12.2**	◉ feet ○ meters
h) Lowest adjacent grade at lowest elevation of deck or stairs, including structural support	**12.2**	◉ feet ○ meters

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. **15 Sweetgrass Lane**			Policy Number:
City **Richmond Hill**	State **GA**	Zip Code **31324**	Company NAIC Number:

SECTION D - SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION

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

☑ Check here if attachments.

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

Certifier's Name		License Number
David A. Brunson		**2538**
Title **President**	Company Name **Southeast Georgia Surveying, P.C.**	
Address **518 Edsel Drive, Suite D**	City **Richmond Hill**	State / Zip Code **GA** **31324**
Signature	Date **10/25/2017**	Telephone **912 756-2211**

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

Comments (including type of equipment and location, per C2(e), if applicable)
Job #17-41 (87B) Lot 87B Dunham Marsh Latitude and Longitude were obtained from Google Earth. The Lowest servicing equipment for C2e is an A/C unit located on the left side of house. There exist two engineered flood vents for the garage model #816CS. Also two regular vents exist.

Signature Date **10/25/2017**

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 page 8 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.

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. **15 Sweetgrass Lane**	Policy Number:
City **Richmond Hill** State **GA** Zip Code **31324**	Company NAIC Number:

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.

BUILDING PHOTOGRAPHS

See instructions for Item A6.

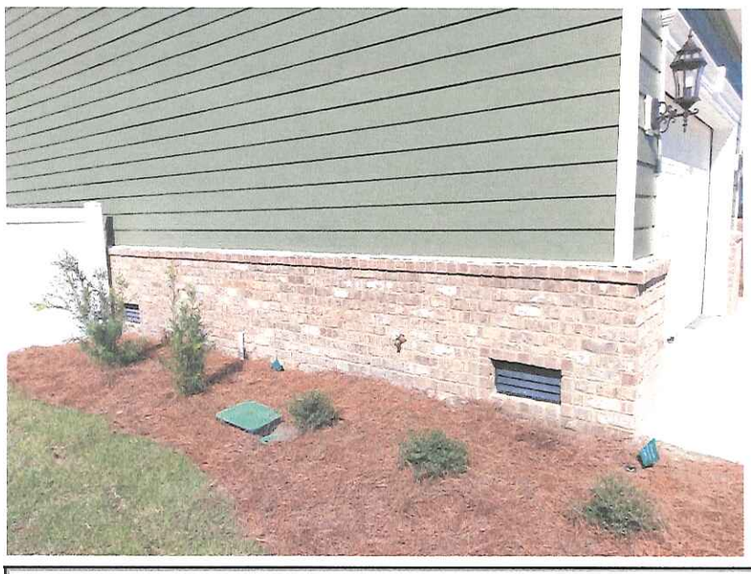
OMB Control Number: 1660-0008
Expiration: 11/30/2018

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. **15 Sweetgrass Lane**	Policy Number:
City: **Richmond Hill** State: **GA** Zip Code: **31324**	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.

Front View taken 10/23/2017

Rear View taken 10/23/2017



Left Side View taken 10/23/2017 showing Engineered Flood Vents

Certification of Engineered Flood Openings

In accordance with NFIP, FEMA TB 1-08, and ASCE/SEI 24-05

I hereby certify that the **Crawl Space Door Systems flood vents 816CS, 1220CS, 1232CS, 1616CS, 1624CS, 1632CS, 2032CS, 2424CS, and 2436CS are designed** in accordance with the requirements of the NFIP "Flood Insurance Manual" (2011) **to provide automatic equalization of hydrostatic flood forces by allowing for the entry and exit of floodwaters**, when properly installed and sized as set forth below. This certification follows the design requirements and specifications established in FEMA Technical Bulletin 1-08, "Openings in Foundation Walls and Walls of Enclosures Below Elevated Buildings in Special Flood Hazard Areas", and the ASCE Standard for "Flood Resistant Design and Construction" (ASCE/SEI 24-05).

Design Characteristics

Section 2.6.2.2 of ASCE 24 provides an equation to determine the required net area of engineered openings (A_o) for a given enclosed area (A_e). This equation is based on the hydraulic formula for the flow rate across sharp edged orifices. I have utilized this equation to calculate 1) the respected flow rate through the individual openings between louvers; 2) the flow rate through the main frame opening in case the louver is blown out during a flood event; and 3) the flow rate of water flowing through louver blades following hydraulic short tube theory. The ultimate maximum total enclosed area (A_e) that can be serviced by a single vent has then been determined by utilizing the lowest flow rate of the three assessed scenarios for each vent and is listed in Table 1.
These values are based on the following assumptions:

- In absence of reliable data, the rates of rise and fall have been assumed with 5 feet/hour;
- The (maximum) difference between the exterior and interior floodwater levels has been assumed with 1 foot during base flood conditions;
- A factor of safety of 5 has been assumed, which is consistent with design practices related to protection of life and property;
- The net area of openings (A_o) as provided by the manufacturer.

*)	Model	H x W [in]	A_o [in^2]	A_e [ft^2]
☑	816CS	8 x 16	105	**205**
☐	1220CS	12 x 20	235	**500**
☐	1232CS	12 x 32	305	**645**
☐	1616CS	16 x 16	180	**395**
☐	1624CS	16 x 24	310	**670**
☐	1632CS	16 x 32	405	**835**
☐	2032CS	20 x 32	630	**1240**
☐	2424CS	24 x 24	570	**1230**
☐	2436CS	24 x 36	850	**1765**

Table 1 Maximal total enclosed area (A_e) that can be served by each individual model based on the given net area of engineered openings (A_o)

Installation Requirements and Limitations

This certification will be voided if the following installation requirements and limitations are not enforced:

- There shall be a minimum of two openings on different sides of each enclosed area;
- The bottom of each required opening shall be no more than 1ft above the adjacent ground level;
- No temporary (e.g. during cold weather) or permanent solid cover may be placed into or over the flood vent that would block the automatic entry or exit of floodwaters at any time;
- Where analysis indicates rates of rise and fall greater than 5 ft/hr, the total enclosed area as given in Table 1 shall be reduced accordingly to account for the higher rates of rise and fall.

Identification of the Building and Installed Flood Vents

The flood vent models marked in Table 1*) are being installed at the following building:

Building Address

Certifying Design Professional

Name	**Christopher Mark Loney**
Title	**Mechanical Engineer**
Address	**1675 Meredith Road, Virginia Beach, VA 23455**
Type of License	**Professional Engineer**
License #	**0402029000**
Issuing State	**Virginia**

Signature