

ELEVATION CERTIFICATE

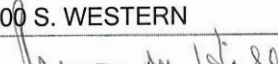
IMPORTANT: Follow the instructions on pages 1-9.

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

SECTION A - PROPERTY INFORMATION		FOR INSURANCE COMPANY USE
A1. Building Owner's Name BRIAN HESTER		Policy Number:
A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or R.O. Route and Box No. 1213 NORTH RAMSEY		Company NAIC Number:
City STILLWATER	State OK	ZIP Code 74074
A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.) LOT 10, BK.2, PAYNE'S SUBDIVISION OF LOT 6, BURR'S ADDITION		
A4. Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.) RESIDENTIAL		
A5. Latitude/Longitude: Lat. N 36 08 05 Long. W 97 04 01 Horizontal Datum: <input type="checkbox"/> NAD 1927 <input checked="" type="checkbox"/> 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 8		
A8. For a building with a crawlspace or enclosure(s):		A9. For a building with an attached garage:
a) Square footage of crawlspace or enclosure(s) 1925 sq ft		a) Square footage of attached garage NONE sq ft
b) No. of permanent flood openings in the crawlspace or enclosure(s) within 1.0 foot above adjacent grade 14		b) Number of permanent flood openings in the attached garage within 1.0 foot above adjacent grade _____
c) Total net area of flood openings in A8.b 2016 sq in		c) Total net area of flood openings in A9.b _____ sq in
d) Engineered flood openings? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		d) Engineered flood openings? <input type="checkbox"/> Yes <input type="checkbox"/> No

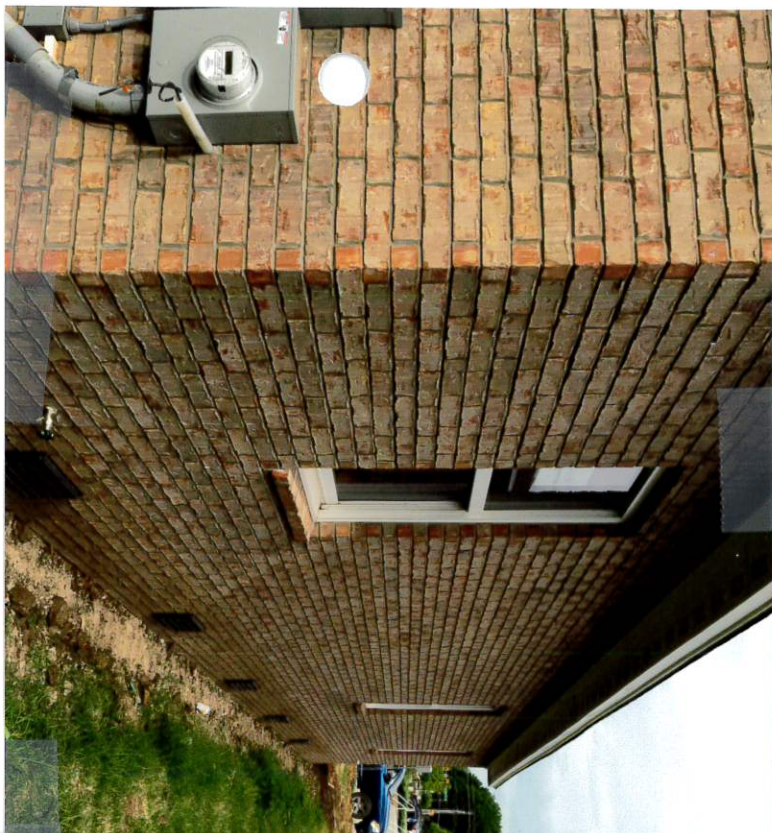
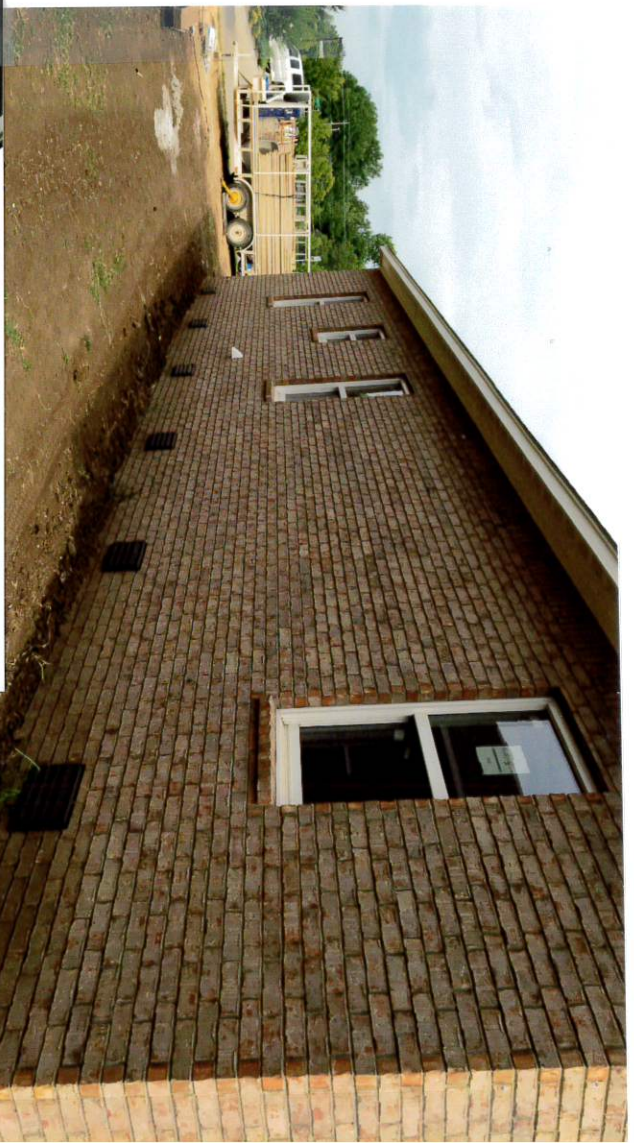
SECTION B - FLOOD INSURANCE RATE MAP (FIRM) INFORMATION					
B1. NFIP Community Name & Community Number		B2. County Name PAYNE		B3. State OK	
B4. Map/Panel Number 40119C0064	B5. Suffix F	B6. FIRM Index Date MAY 16, 2007	B7. FIRM Panel Effective/Revised Date N/A	B8. Flood Zone(s) AE	B9. Base Flood Elevation(s) (Zone AO, use base flood depth) 893.7
B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in Item B9: <input checked="" type="checkbox"/> FIS Profile <input type="checkbox"/> FIRM <input type="checkbox"/> Community Determined <input type="checkbox"/> Other/Source: _____					
B11. Indicate elevation datum used for BFE in Item B9: <input type="checkbox"/> NGVD 1929 <input checked="" type="checkbox"/> NAVD 1988 <input type="checkbox"/> Other/Source: _____					
B12. Is the building located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Designation Date: ____/____/____ <input type="checkbox"/> CBRS <input type="checkbox"/> OPA					

SECTION C - BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)	
C1. Building elevations are based on: <input type="checkbox"/> Construction Drawings* <input type="checkbox"/> Building Under Construction* <input checked="" type="checkbox"/> 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: SW17 Vertical Datum: VERTCON TO NAVD 88 Indicate elevation datum used for the elevations in items a) through h) below. <input type="checkbox"/> NGVD 1929 <input checked="" type="checkbox"/> NAVD 1988 <input type="checkbox"/> 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)	893.5 <input checked="" type="checkbox"/> feet <input type="checkbox"/> meters
b) Top of the next higher floor	896.3 <input checked="" type="checkbox"/> feet <input type="checkbox"/> meters
c) Bottom of the lowest horizontal structural member (V Zones only)	N/A <input type="checkbox"/> feet <input type="checkbox"/> meters
d) Attached garage (top of slab)	NONE <input checked="" type="checkbox"/> feet <input type="checkbox"/> meters
e) Lowest elevation of machinery or equipment servicing the building (Describe type of equipment and location in Comments)	895.4 <input checked="" type="checkbox"/> feet <input type="checkbox"/> meters
f) Lowest adjacent (finished) grade next to building (LAG)	893.5 <input checked="" type="checkbox"/> feet <input type="checkbox"/> meters
g) Highest adjacent (finished) grade next to building (HAG)	893.9 <input checked="" type="checkbox"/> feet <input type="checkbox"/> meters
h) Lowest adjacent grade at lowest elevation of deck or stairs, including structural support	N/A <input type="checkbox"/> feet <input type="checkbox"/> 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.			
<input checked="" type="checkbox"/> Check here if comments are provided on back of form.		Were latitude and longitude in Section A provided by a licensed land surveyor? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<input type="checkbox"/> Check here if attachments.			
Certifier's Name JIMMY W. HILL	License Number PE 6156		
Title PROFESSIONAL ENGINEER	Company Name PRIVATE PRACTICE ENGR.		
Address 2700 S. WESTERN	City STILLWATER	State OK	ZIP Code 74074
Signature 	Date JULY 5, 2016	Telephone 405-743-4455	

PLACE SEAL HERE

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 BP.15.28208 cjr



Certification of Engineered Flood Openings

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

I hereby certify that the Flood Space Door Systems Flood Vents 816CS, 1220CS, 1232CS, 1616CS, 1624CS, 1632CS, 2032CS, 2424CS, 2436CS, and 2496CS are designed in accordance with the requirements of the NFIP "Flood Insurance Manual" (2014) to provide protection against the hazard of hydrostatic flood forces by allowing for the entry and exit of floodwaters, when properly installed and used in accordance with the design requirements and specifications established in FEMA Technical Bulletin 1-08. This certification follows the design requirements and specifications established in FEMA Technical Bulletin 1-08, including in Foundation Walls and Walls of Enclosures Below Elevated Buildings in Special Flood Hazard Areas", and the code standard for "Flood Resistant Design and Construction" (ASCE/SEI 24-05).

Design Characteristics

ASCE 24-05 of ASCE 24 provides an equation to determine the required net area of engineered openings (A_o) for a given scenario. This equation is based on the hydraulic formula for the flow rate across sharp edged orifices. I have utilized this equation as follows: 1) the required flow rate through the individual openings between louvers; 2) the flow rate through the stack louvers in case the tower is blown out during a flood event; and 3) the flow rate of water flowing through louver plates followed by a pressure tight tube theory. The ultimate maximum total enclosed area (A_e) that can be serviced by a single vent has 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 freshwater 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 relative to protection of life and property.
 The net area of openings (A_o) as provided by the manufacturer, as shown in the manufacturer's data limitations, shall be maintained and no substitutions will be voided if the following installation conditions and limitations are not enforced:
 The openings shall be a minimum of two openings on different sides of the enclosure area;
 The bottom of each required opening shall be no more than 1ft above the adjacent ground level;
 In temporary (e.g. during cold weather) or permanent solid cover may be placed into or over the flood vent that would restrict the entry or exit of floodwaters at any time;
 The manufacturer indicates rates of rise and fall greater than 5 ft/hr, the total enclosed area as given in Table 1 shall be reduced by 20%. A discount for the higher rates of rise and fall.

*) Model	H x W [ft]	A_o [ft ²]	A_e [ft ²]
<input checked="" type="checkbox"/> 816CS	8 x 16	105	225
<input type="checkbox"/> 1220CS	12 x 20	235	500
<input type="checkbox"/> 1232CS	12 x 32	305	645
<input type="checkbox"/> 1616CS	16 x 16	180	395
<input type="checkbox"/> 1624CS	16 x 24	310	675
<input type="checkbox"/> 1632CS	16 x 32	405	875
<input type="checkbox"/> 2032CS	20 x 32	630	1350
<input type="checkbox"/> 2424CS	24 x 24	570	1215
<input type="checkbox"/> 2436CS	24 x 36	850	1705

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

Installation of the Building and Installed Flood Vents

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

1213 N. Ramsey Stillwater, OK

Professional Engineer

Professional Engineer

Professional Engineer, Virginia Beach, VA 23455

Professional Engineer

Professional Engineer

Signature

