BP2021-0732

LAUGHLIN and SPENCE
CIVIL ENGINEERS & SURVEYORS
1008 Live Oak Boulevard
Yuba City, California 95991
(530) 671 1008
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Post-construction Elevation Certificate For Les Lyman (Grow West) Soils Blending Building (Dry floodproofed) 39290 County Road 16 Woodland, CA 95695 APN: 056-250-013

Sheet Index

*See Separate Flood Emergency Operation Plan

Yolo County Bldg. Permit #BP21-0732
L&S Job Number 216088

Preconstruction EC submitted 9/20/21 rev. 10-19-21
Form Board EC submitted _/_/__
Final EC submitted 08-10-2023
revised 9-14-2023

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

OMB Control No. 1660- 008
Expiration Date: 06/30/2026

ELEVATION CERTIFICATE

IMPORTANT: MUST FOLLOW THE INSTRUCTIONS ON PAGES 9-19

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: LES LYMAN

Policy Number:

A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.: 39290 County Road 16

Company NAIC Number:

City: Woodland State: CA ZIP Code: 95695

A3. Property Description (e.g., Lot and Block Numbers or Legal Description) and/or Tax Parcel Number: Yolo County APN: 056-250-013

A4. Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.): Non residential Dry Floodproofed Soils Blending Bldg.

A5. Latitude/Longitude: Lat. 38°45'02.0" N Long. 121°46'46.5"W Horizontal Datum: ☐ NAD 1927 ☒ NAD 1983 ☐ WGS 84

A6. Attach at least two and when possible four clear photographs (one for each side) of the building (see Form pages 7 and 8).

A7. Building Diagram Number: 1A

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

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

b) Is there at least one permanent flood opening on two different sides of each enclosed area? ☐ Yes ☐ No ☒ N/A

c) Enter number of permanent flood openings in the crawlspace or enclosure(s) within 1.0 foot above adjacent grade:
Non-engineered flood openings: N/A Engineered flood openings: N/A

d) Total net open area of non-engineered flood openings in A8.c: N/A sq. in.

e) Total rated area of engineered flood openings in A8.c (attach documentation – see Instructions): N/A sq. ft.

f) Sum of A8.d and A8.e rated area (if applicable – see Instructions): N/A sq. ft.

A9. For a building with an attached garage:

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

b) Is there at least one permanent flood opening on two different sides of the attached garage? ☐ Yes ☐ No ☒ N/A

c) Enter number of permanent flood openings in the attached garage within 1.0 foot above adjacent grade:
Non-engineered flood openings: N/A Engineered flood openings: N/A

d) Total net open area of non-engineered flood openings in A9.c: N/A sq. in.

e) Total rated area of engineered flood openings in A9.c (attach documentation – see Instructions): N/A sq. ft.

f) Sum of A9.d and A9.e rated area (if applicable – see Instructions): N/A sq. ft.

SECTION B – FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

B1.a. NFIP Community Name: Yolo County B1.b. NFIP Community Identification Number: 060423

B2. County Name: Yolo B3. State: CA B4. Map/Panel No.: 06113C/0300 B5. Suffix: G

B6. FIRM Index Date: 5-16-2012 B7. FIRM Panel Effective/Revised Date: 6-18-2010

B8. Flood Zone(s): A B9. Base Flood Elevation(s) (BFE) (Zone AO, use Base Flood Depth): 51.5'

B10. Indicate the source of the BFE data or Base Flood Depth entered in Item B9:
☐ FIS ☐ FIRM ☒ Community Determined ☐ Other: WOOD RODGERS FLOOD STUDY (2012)

B11. Indicate elevation datum used for BFE in Item B9: ☐ NGVD 1929 ☒ NAVD 1988 ☐ Other/Source: N/A

B12. Is the building located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA)? ☐ Yes ☒ No
Designation Date: N/A ☐ CBRS ☐ OPA

B13. Is the building located seaward of the Limit of Moderate Wave Action (LIMWA)? ☐ Yes ☒ No

ELEVATION CERTIFICATE

IMPORTANT: MUST FOLLOW THE INSTRUCTIONS ON PAGES 9-19

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.:	FOR INSURANCE COMPANY USE
39290 County Road 16	Policy Number:
City: Woodland State: CA ZIP Code: 95695	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, AO, A (with BFE), VE, V1–V30, V (with BFE), AR, AR/A, AR/AE, AR/A1–A30, AR/AH, AR/AO, A99. Complete Items C2.a–h below according to the Building Diagram specified in Item A7. In Puerto Rico only, enter meters.

Benchmark Utilized: NGS OPUS Vertical Datum: NAVD 1988

Indicate elevation datum used for the elevations in items a) through h) below.
☐ NGVD 1929 ☒ NAVD 1988 ☐ Other:

Datum used for building elevations must be the same as that used for the BFE. Conversion factor used? ☒ Yes ☐ No
If Yes, describe the source of the conversion factor in the Section D Comments area.

		Check the measurement used:
a) Top of bottom floor (including basement, crawlspace, or enclosure floor):	51.97	☒ feet ☐ meters
b) Top of the next higher floor (see Instructions):	N/A	☒ feet ☐ meters
c) Bottom of the lowest horizontal structural member (see Instructions):	N/A	☒ feet ☐ meters
d) Attached garage (top of slab):	N/A	☒ feet ☐ meters
e) Lowest elevation of Machinery and Equipment (M&E) servicing the building (describe type of M&E and location in Section D Comments area):	51.97	☒ feet ☐ meters
f) Lowest Adjacent Grade (LAG) next to building: ☐ Natural ☒ Finished	51.93	☒ feet ☐ meters
g) Highest Adjacent Grade (HAG) next to building: ☐ Natural ☒ Finished	51.97	☒ feet ☐ meters
h) Finished LAG at lowest elevation of attached deck or stairs, including structural support:	N/A	☒ 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 state 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 and describe in the Comments area. **JOB #: 216105**

Certifier's Name: Jeff W. Spence License Number: LS7414

Title: Land Surveyor

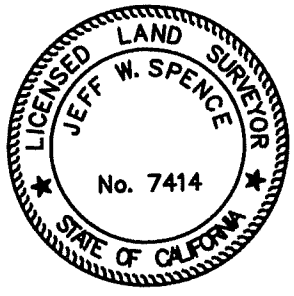
Company Name: Laughlin and Spence

Address: 1008 Live Oak Blvd

City: Yuba City State: CA ZIP Code: 95991

Signature: Date: 8-10-2023

Telephone: 530-671-1008 Ext.: Email: jeff@laughlinspence.com



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

Comments (including source of conversion factor in C2; type of equipment and location per C2.e; and description of any attachments):

Section C2.e) Lowest elevation of machinery or equipment servicing the building: Bottom of soils mixing equipment at a finished floor of 51.97

See page 9 for additional notes. See pages 22-25 for dry floodproofed certificate.

ELEVATION CERTIFICATE

IMPORTANT: MUST FOLLOW THE INSTRUCTIONS ON PAGES 9-19

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.: **39290 County Road 16**

City: **Woodland** State: **CA** ZIP Code: **95695**

FOR INSURANCE COMPANY USE

Policy Number: _____

Company NAIC Number: _____

SECTION E – BUILDING MEASUREMENT INFORMATION (SURVEY NOT REQUIRED) FOR ZONE AO, ZONE AR/AO, AND ZONE A (WITHOUT BFE)

For Zones AO, AR/AO, and A (without BFE), complete Items E1–E5. For Items E1–E4, use natural grade, if available. If the Certificate is intended to support a Letter of Map Change request, complete Sections A, B, and C. Check the measurement used. In Puerto Rico only, enter meters.

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

E1. Provide measurements (C.2.a in applicable Building Diagram) for the following and check the appropriate boxes to show whether the measurement is above or below the natural HAG and the LAG.

NOT REQUIRED

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 (C2.b in applicable Building Diagram) 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 AUTHORIZED REPRESENTATIVE) CERTIFICATION

The property owner or owner's authorized representative who completes Sections A, B, and E for Zone A (without BFE) or Zone AO must sign here. *The statements in Sections A, B, and E are correct to the best of my knowledge*

☐ Check here if attachments and describe in the Comments area.

Property Owner or Owner's Authorized Representative Name: _____

Address: _____

City: _____ State: _____ ZIP Code: _____

Signature: _____ Date: _____

Telephone: _____ Ext.: _____ Email: _____

Comments:

ELEVATION CERTIFICATE

IMPORTANT: MUST FOLLOW THE INSTRUCTIONS ON PAGES 9-19

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.: 39290 County Road 16	FOR INSURANCE COMPANY USE
City: Woodland State: CA ZIP Code: 95695	Policy Number: _____ Company NAIC Number: _____

SECTION G – COMMUNITY INFORMATION (RECOMMENDED FOR COMMUNITY OFFICIAL COMPLETION)

The local official who is authorized by law or ordinance to administer the community's floodplain management ordinance can complete Section A, B, C, E, G, or H of this Elevation Certificate. Complete the applicable item(s) and sign below when:

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 state law to certify elevation information. (Indicate the source and date of the elevation data in the Comments area below.)

G2.a. ☐ A local official completed Section E for a building located in Zone A (without a BFE), Zone AO, or Zone AR/AO, or when item E5 is completed for a building located in Zone AO.

G2.b. ☐ A local official completed Section H for insurance purposes.

G3. ☐ In the Comments area of Section G, the local official describes specific corrections to the information in Sections A, B, E and H.

G4. ☐ The following information (Items G5–G11) is provided for community floodplain management purposes.

G5. Permit Number: BP2021-0732 G6. Date Permit Issued: 04/29/2022

G7. Date Certificate of Compliance/Occupancy Issued: 11/22/23

G8. This permit has been issued for: ☐ New Construction ☐ Substantial Improvement

G9.a. Elevation of as-built lowest floor (including basement) of the building: 52.0 ☑ feet ☐ meters Datum: NAVD1988

G9.b. Elevation of bottom of as-built lowest horizontal structural member: N/A ☐ feet ☐ meters Datum: _____

G10.a. BFE (or depth in Zone AO) of flooding at the building site: 51.5 ☐ feet ☐ meters Datum: NAVD 1988

G10.b. Community's minimum elevation (or depth in Zone AO) requirement for the lowest floor or lowest horizontal structural member: 52.5 ☑ feet ☐ meters Datum: NAVD 1988

G11. Variance issued? ☐ Yes ☐ No If yes, attach documentation and describe in the Comments area.

The local official who provides information in Section G must sign here. I have completed the information in Section G and certify that it is correct to the best of my knowledge. If applicable, I have also provided specific corrections in the Comments area of this section.

Local Official's Name: _____ Title: _____

NFIP Community Name: _____

Telephone: _____ Ext.: _____ Email: _____

Address: _____

City: _____ State: _____ ZIP Code: _____

Signature: _____ Date: _____

Comments (including type of equipment and location, per C2.e; description of any attachments; and corrections to specific information in Sections A, B, D, E, or H):

Dry Floodproofed

ELEVATION CERTIFICATE

IMPORTANT: MUST FOLLOW THE INSTRUCTIONS ON PAGES 9-19

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.: **39290 County Road 16**	**FOR INSURANCE COMPANY USE**
City: **Woodland** State: **CA** ZIP Code: **95695**	Policy Number:
	Company NAIC Number:

SECTION H – BUILDING'S FIRST FLOOR HEIGHT INFORMATION FOR ALL ZONES (SURVEY NOT REQUIRED) (FOR INSURANCE PURPOSES ONLY)

NOT REQUIRED

The property owner, owner's authorized representative, or local floodplain management official may complete Section H for all flood zones to determine the building's first floor height for insurance purposes. Sections A, B, and I must also be completed. Enter heights to the nearest tenth of a foot (nearest tenth of a meter in Puerto Rico). Reference the Foundation Type Diagrams (at the end of Section H Instructions) ***and the appropriate Building Diagrams (at the end of Section I Instructions) to complete this section.***

H1. Provide the height of the top of the floor (as indicated in Foundation Type Diagrams) above the Lowest Adjacent Grade (LAG):

a) For Building Diagrams 1A, 1B, 3, and 5–9. Top of bottom floor (include above-grade floors only for buildings with subgrade crawlspaces or enclosure floors) is: _____ ☐ feet ☐ meters ☐ above the LAG

b) For Building Diagrams 2A, 2B, 4, and 6–9. Top of next higher floor (i.e., the floor above basement, crawlspace, or enclosure floor) is: _____ ☐ feet ☐ meters ☐ above the LAG

H2. Is all Machinery and Equipment servicing the building (as listed in Item H2 instructions) elevated to or above the floor indicated by the H2 arrow (shown in the Foundation Type Diagrams at end of Section H instructions) for the appropriate Building Diagram?

☐ Yes ☐ No

SECTION I – PROPERTY OWNER (OR OWNER'S AUTHORIZED REPRESENTATIVE) CERTIFICATION

The property owner or owner's authorized representative who completes Sections A, B, and H must sign here. The statements in Sections *A, B, and H are correct to the best of my knowledge. Note: If the local floodplain management official completed Section H, they should* indicate in Item G2.b and sign Section G.

☐ Check here if attachments are provided (including required photos) and describe each attachment in the Comments area.

Property Owner or Owner's Authorized Representative Name: _____

Address: _____

City: _____ State: _____ ZIP Code: _____

Signature: _____ Date: _____

Telephone: _____ Ext.: _____ Email: _____

Comments:

ELEVATION CERTIFICATE

IMPORTANT: MUST FOLLOW THE INSTRUCTIONS ON PAGES 9-19

BUILDING PHOTOGRAPHS

See Instructions for Item A6.

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.: **39290 County Road 16**

City: **Woodland** State: **CA** ZIP Code: **95695**

FOR INSURANCE COMPANY USE

Policy Number: _____

Company NAIC Number: _____

Instructions: Insert below at least two and when possible four photographs showing each side of the building (for example, may only be able to take front and back pictures of townhouses/rowhouses). Identify all photographs with the date taken and "Front View," "Rear View," "Right Side View," or "Left Side View." Photographs must show the foundation. When flood openings are present, include at least one close-up photograph of representative flood openings or vents, as indicated in Sections A8 and A9.

WEST ELEVATION

NORTH ELEVATION

ELEVATION CERTIFICATE

IMPORTANT: MUST FOLLOW THE INSTRUCTIONS ON PAGES 9-19

BUILDING PHOTOGRAPHS

Continuation Page

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.:
39290 County Road 16

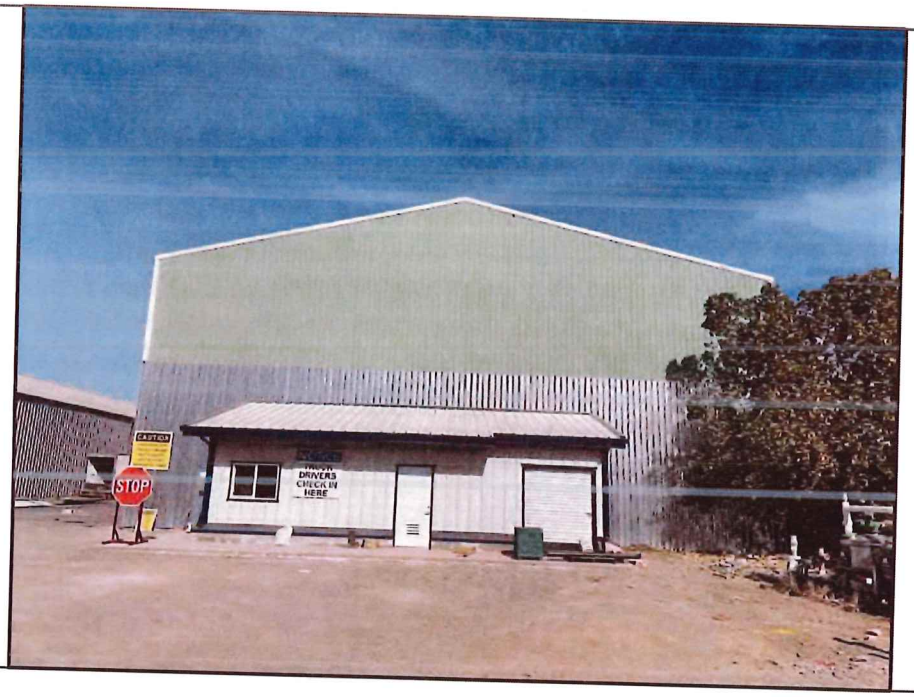
City: **Woodland** State: **CA** ZIP Code: **95695**

FOR INSURANCE COMPANY USE

Policy Number: _____

Company NAIC Number: _____

Insert the third and fourth photographs below. Identify all photographs with the date taken and "Front View," "Rear View," "Right Side View," or "Left Side View." When flood openings are present, include at least one close-up photograph of representative flood openings or vents, as indicated in Sections A8 and A9.



SOUTH ELEVATION

Photo Four Caption:

FEMA Elevation Certificate Supplemental Information

For Les Lyman (Grow West)
39290 County Road 16
Woodland, CA 95695
POST-CONSTRUCTION

1. This elevation certificate is for a 10,500 sq.ft. existing barn with a "U" occupancy that is changing its occupancy to an "F-1" and will become a soils blending facility. The existing finished floor of the building is below the DFE therefore an 8" high CMU flood wall will be constructed at the perimeter of the building. The top of the flood wall will be above the DFE.

2. All elevations referred to in these comments refer to the NAVD88 datum.

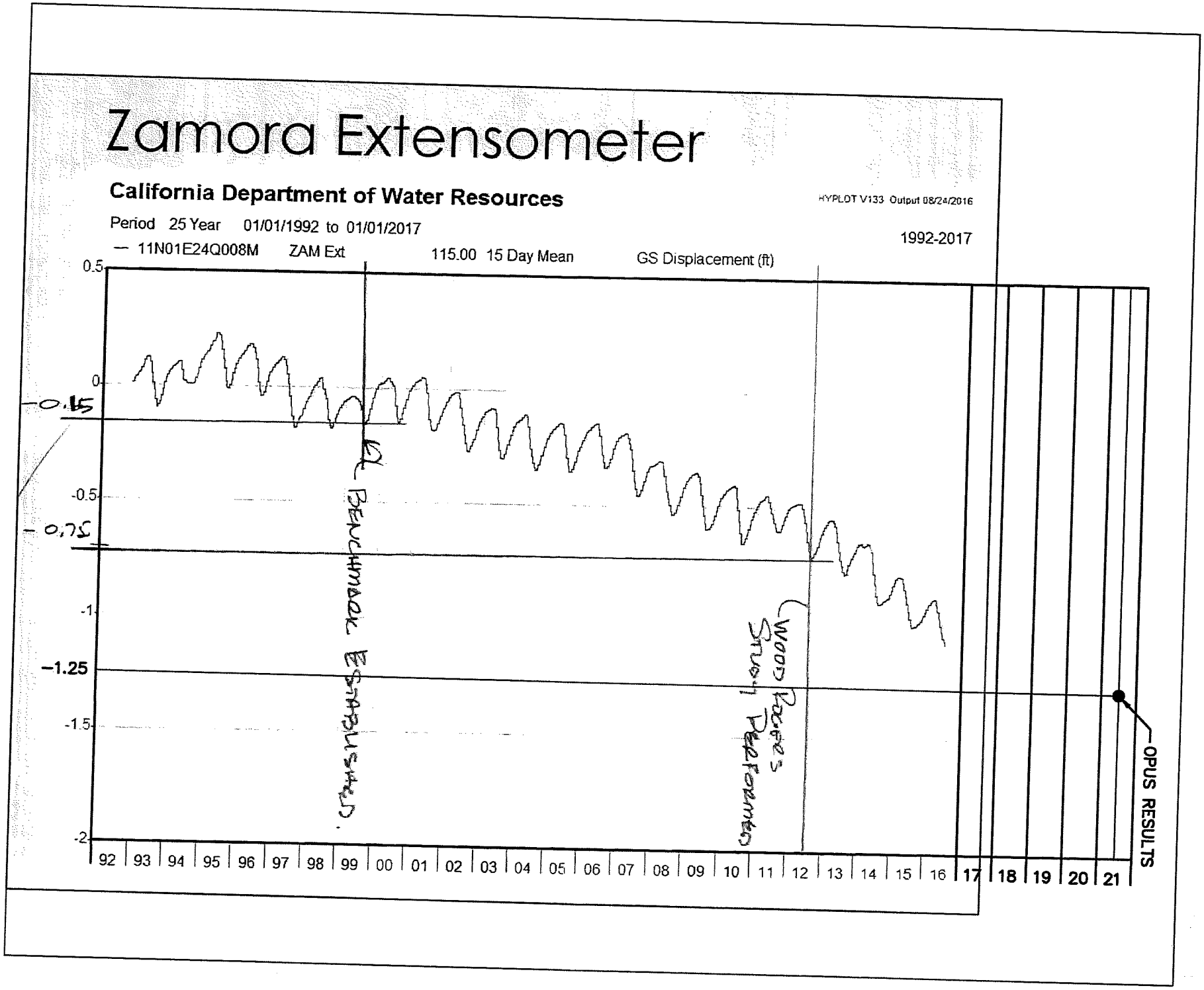
3. An existing NGS Benchmark "AI5056" with an elevation of 41.6 feet was established in 1999. In 2012, Wood Rodgers Flood Safe Yolo map was published, establishing a BFE for this site at 52.0'. According to the California Department of Water Resources, from 1999 to 2012, the ground subsidence for this site was approximately -0.6 feet. In 2021, using NGS OPUS system, a control point was set on site with an elevation of 50.82' and the NGS benchmark "AI5056" was also shot at the same time and an elevation of 40.52' was determined. This is a difference in elevation of approximately -1.1 feet from when the benchmark was established in 1999. Being that the ground had subsided -0.6 feet from 1999 to 2012, then another -0.5 feet from 2012 to 2021 (being the current year), the BFE would decrease with the ground elevation, making the BFE = 51.5'.

4. The design flood elevation (DFE) is 52.5 feet being one foot above the Base Flood Elevation.

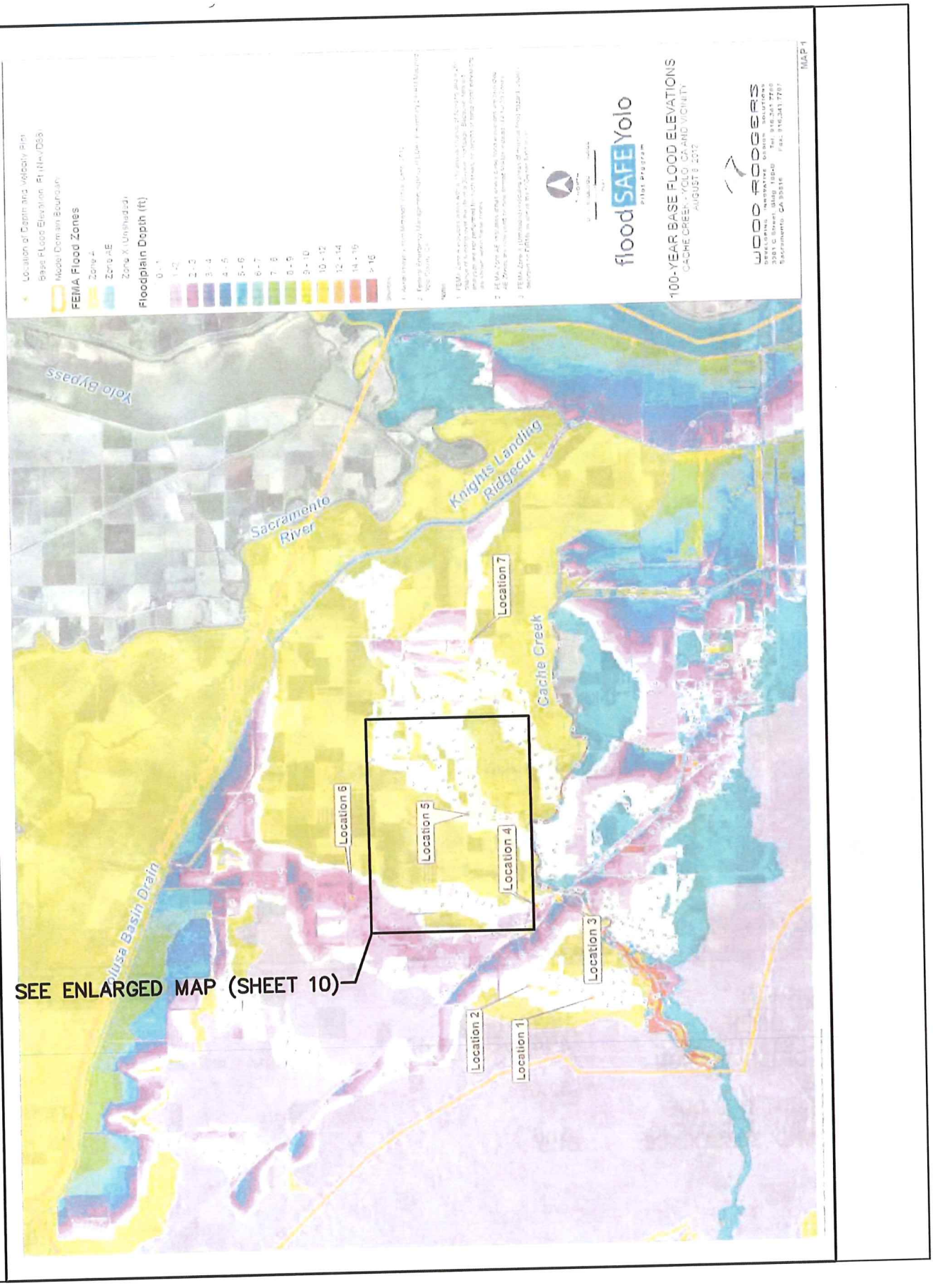
5. All building materials and utility equipment less than one foot above the base flood elevation shall be flood resistant materials and in conformance with FEMA Technical Bulletin 2-08 Flood Damage Resistant Materials. https://www.fema.gov/sites/default/files/2020-07/fema_tb_2_rev1.pdf

6. All mechanical equipment or plumbing components are proposed above the BFE or are protected with dry floodproofing to the DFE.

7. All electrical in building are proposed above the BFE or are protected with dry floodproofing to the DFE .

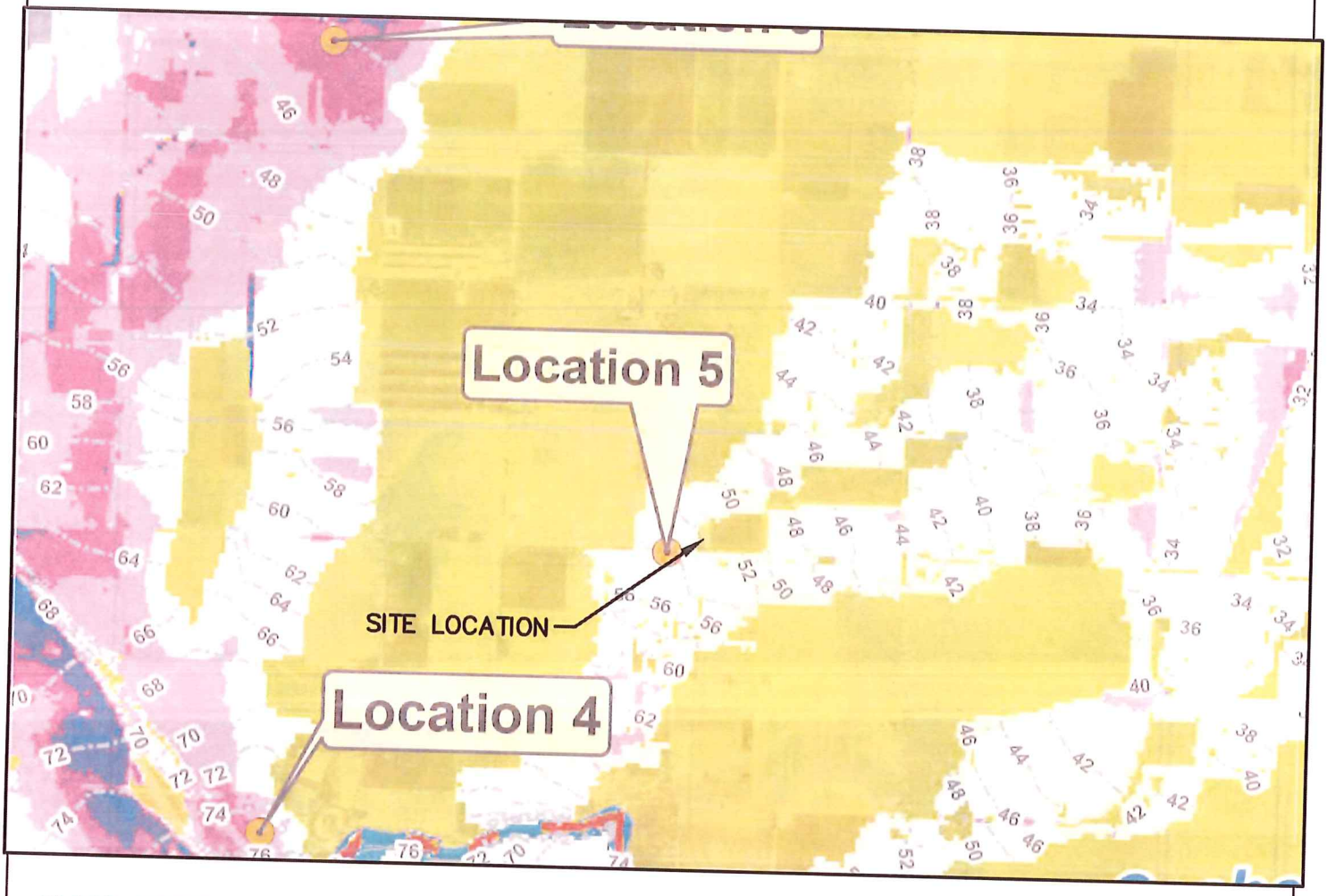


Ground Subsidence Chart



Wood Rodgers Flood Safe Yolo Map

DATUM : NAVD 1988



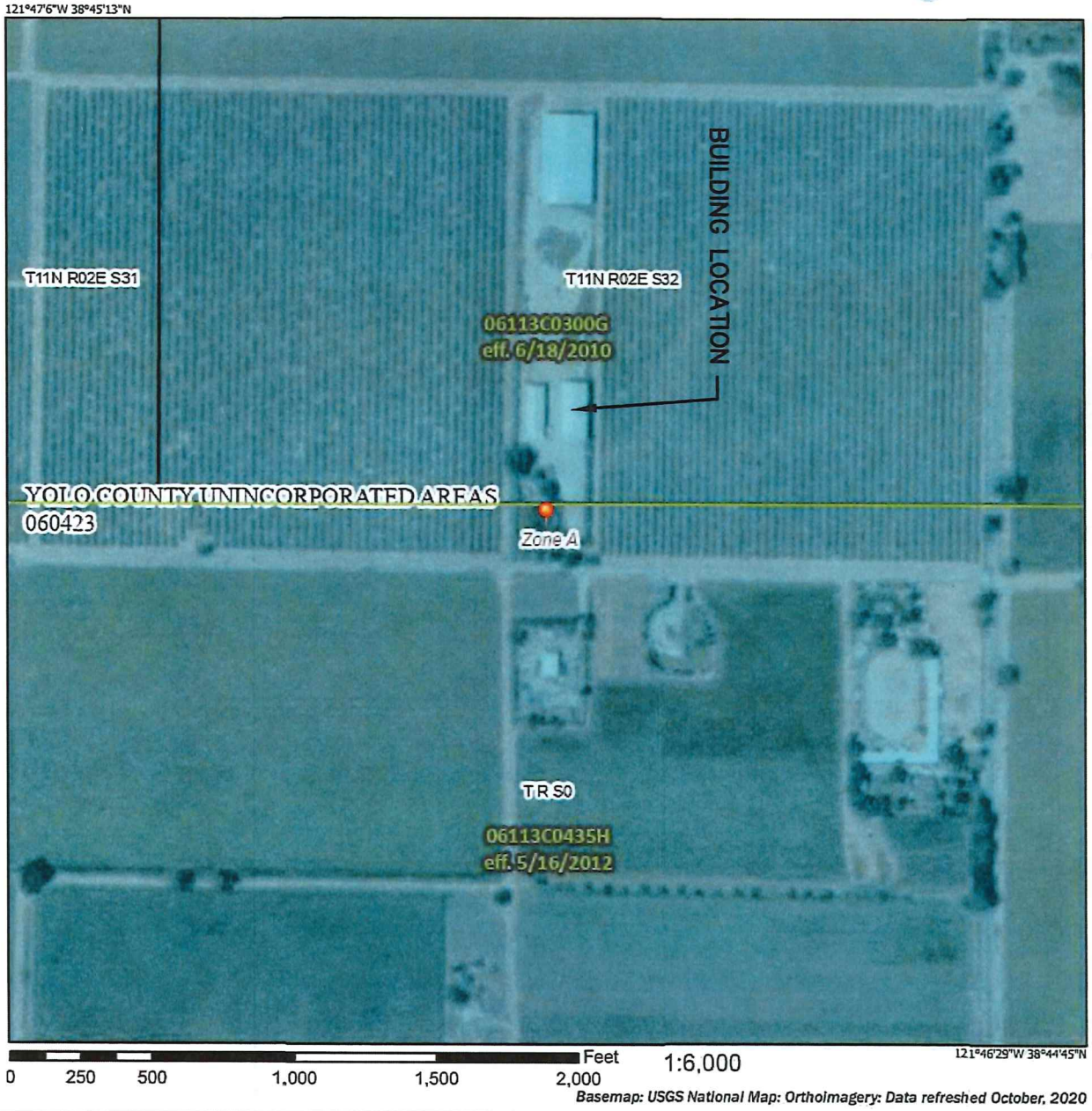
FLOOD NOTES:

1. DATUM USED:	NAVD 1988
2. MAP ESTABLISHED :	AUGUST 8, 2012
3. BFE DETERMINATION IN 2012:	52.0'
4. CURRENT BFE DUE TO GROUND SUBSIDENCE:	51.5'

Enlarged Flood Map (BFE Determination)

National Flood Hazard Layer FIRMette

FEMA



Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) Zone A, V, A99
- With BFE or Depth Zone AE, AO, AH, VE, AR
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee. See Notes. Zone X
- Area with Flood Risk due to Levee Zone D

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard Zone X
- Effective LOMRs
- Area of Undetermined Flood Hazard Zone D

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

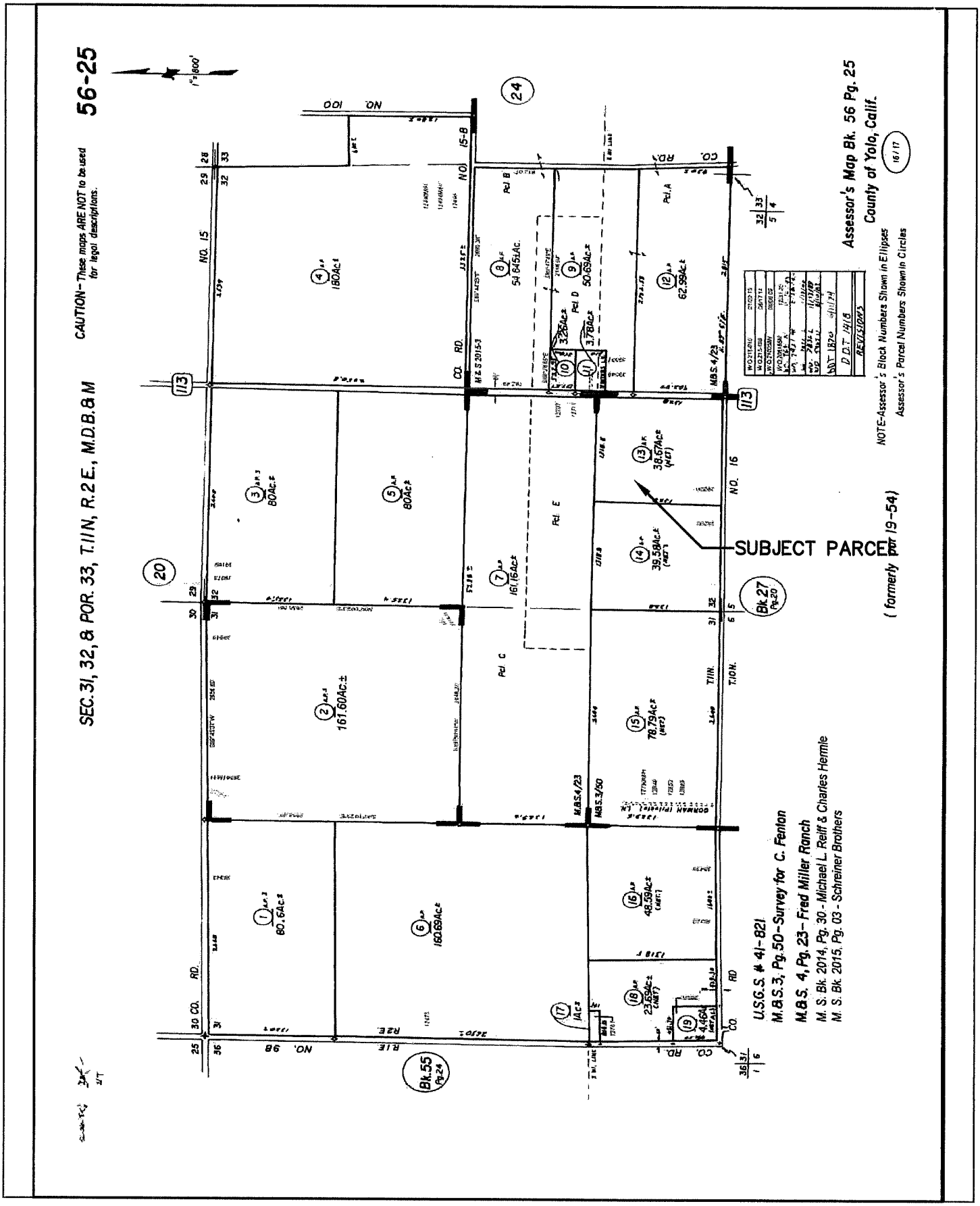
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

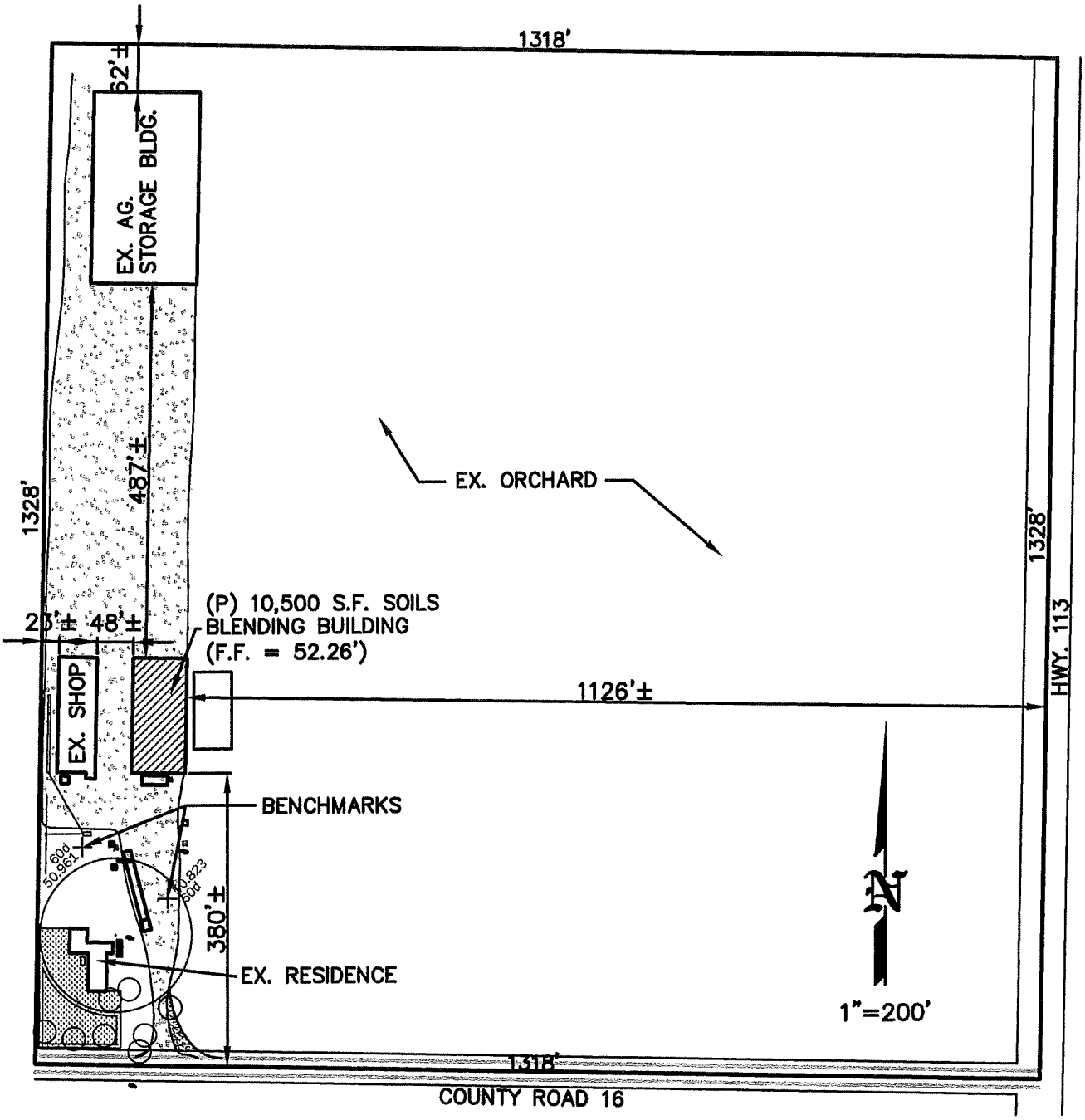
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/27/2021 at 12:46 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

FIRMette Map

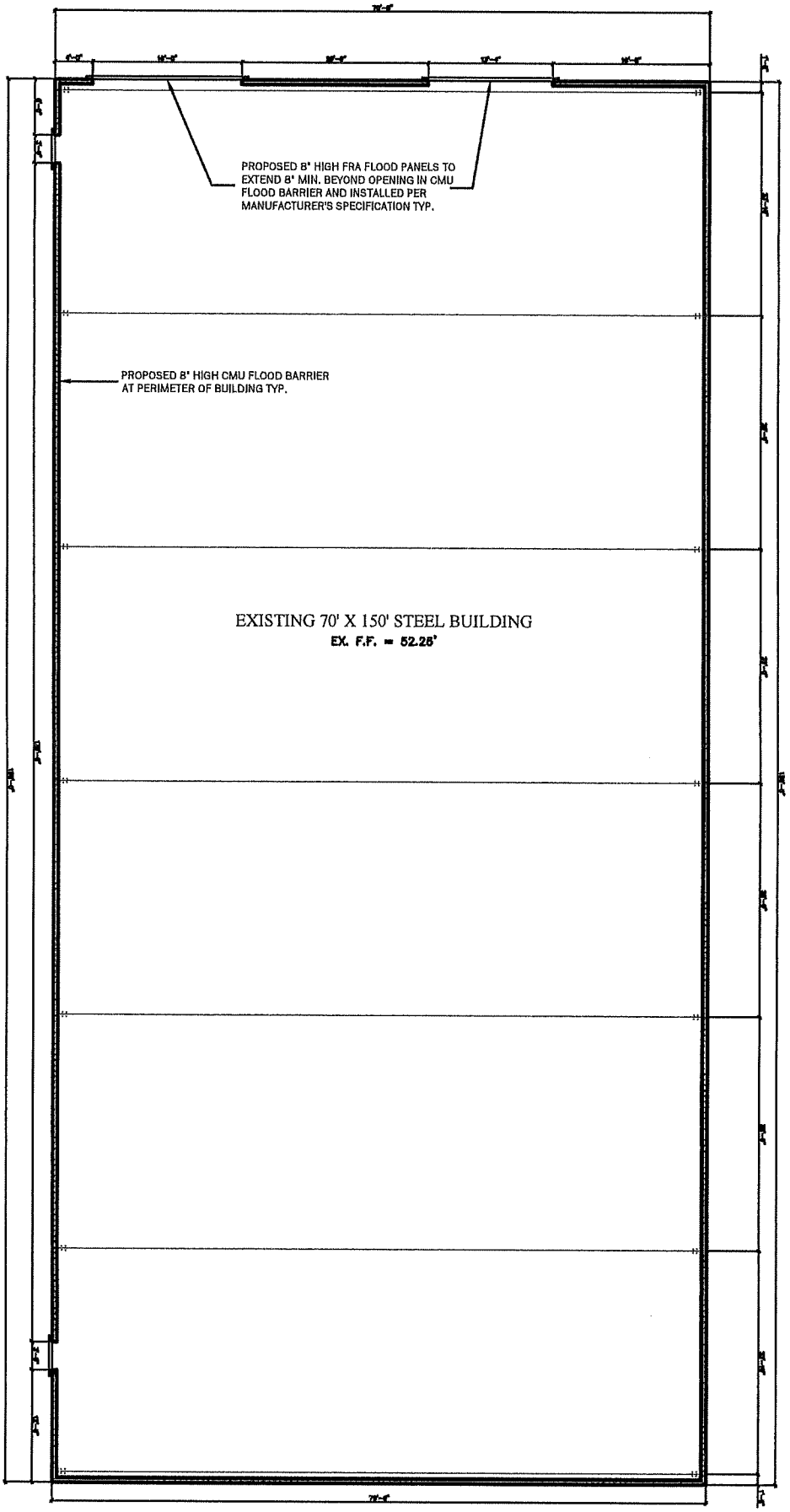


Assessor Parcel Map of subject property



SITE PLAN

DATUM : NAVD 1988



WALL LEGEND

EXISTING STEEL BUILDING WALLS TO REMAIN

PROPOSED NEW 6" WIDE X 8" HIGH CMU FLOOD BARRIER

FLOOR PLAN

The NGS Data Sheet

See file dsdata.pdf for more information about the datasheet.

```
PROGRAM = datasheet95, VERSION = 8.12.5.13
Starting Datasheet Retrieval...
1        National Geodetic Survey,   Retrieval Date = AUGUST  4, 2021
 AI5056 ***********************************************************************
 AI5056  HT_MOD      -  This is a Height Modernization Survey Station.
 AI5056  DESIGNATION -  CODY
 AI5056  PID         -  AI5056
 AI5056  STATE/COUNTY-  CA/YOLO
 AI5056  COUNTRY     -  US
 AI5056  USGS QUAD   -  ELDORADO BEND (2018)
 AI5056
 AI5056                        *CURRENT SURVEY CONTROL
 AI5056  ______________________________________________________________________
 AI5056* NAD 83(2011) POSITION- 38 47 30.59962(N) 121 46 29.02277(W)   ADJUSTED
 AI5056* NAD 83(2011) ELLIP HT-   -17.618 (meters)        (06/27/12)   ADJUSTED
 AI5056* NAD 83(2011) EPOCH    -  2010.00
 AI5056* NAVD 88 ORTHO HEIGHT -    12.67  (meters)       41.6   (feet) GPS OBS
 AI5056  ______________________________________________________________________
 AI5056  NAVD 88 orthometric height was determined with geoid model    GEOID09
 AI5056  GEOID HEIGHT    -        -30.402 (meters)                     GEOID09
 AI5056  GEOID HEIGHT    -        -30.312 (meters)                     GEOID18
 AI5056  NAD 83(2011) X  - -2,621,227.014 (meters)                     COMP
 AI5056  NAD 83(2011) Y  - -4,231,772.900 (meters)                     COMP
 AI5056  NAD 83(2011) Z  -  3,974,320.290 (meters)                     COMP
 AI5056  LAPLACE CORR    -          2.66  (seconds)                    DEFLEC18
 AI5056
 AI5056  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 AI5056  Standards:
 AI5056         FGDC (95% conf, cm)     Standard deviation (cm)     CorrNE
 AI5056            Horiz  Ellip          SD_N   SD_E   SD_h      (unitless)
 AI5056  ----------------------------------------------------------------------
 AI5056  NETWORK    0.33   0.49          0.15   0.11   0.25     -0.06617237
 AI5056  ----------------------------------------------------------------------
 AI5056  Click here for local accuracies and other accuracy information.
 AI5056
 AI5056
AI5056.The horizontal coordinates were established by GPS observations
AI5056.and adjusted by the National Geodetic Survey in June 2012.
AI5056
AI5056.NAD 83(2011) refers to NAD 83 coordinates where the reference frame has
AI5056.been affixed to the stable North American tectonic plate. See
AI5056.NA2011 for more information.
AI5056
AI5056.The horizontal coordinates are valid at the epoch date displayed above
AI5056.which is a decimal equivalence of Year/Month/Day.
AI5056
AI5056.The orthometric height was determined by GPS observations and a
AI5056.high-resolution geoid model using precise GPS observation and
AI5056.processing techniques.
AI5056
AI5056.Significant digits in the geoid height do not necessarily reflect accuracy.
AI5056.GEOID18 height accuracy estimate available here.
AI5056
AI5056.Click photographs - Photos may exist for this station.
AI5056
AI5056.The X, Y, and Z were computed from the position and the ellipsoidal ht.
```

```
AI5056
AI5056.The Laplace correction was computed from DEFLEC18 derived deflections.
AI5056
AI5056.The ellipsoidal height was determined by GPS observations
AI5056.and is referenced to NAD 83.
AI5056
AI5056. The following values were computed from the NAD 83(2011) position.
AI5056
AI5056;                  North         East      Units Scale Factor Converg.
AI5056;SPC CA 2      -   624,923.801 2,019,570.071   MT  0.99992766   +0 08 31.3
AI5056;SPC CA 2      - 2,050,270.84  6,625,872.81    sFT  0.99992766   +0 08 31.3
AI5056;UTM  10       - 4,294,389.386   606,410.350   MT  0.99973943   +0 46 03.7
AI5056
AI5056!              -  Elev Factor  x  Scale Factor =   Combined Factor
AI5056!SPC CA 2      -   1.00000276  x   0.99992766  =   0.99993042
AI5056!UTM  10       -   1.00000276  x   0.99973943  =   0.99974219
AI5056
AI5056_U.S. NATIONAL GRID SPATIAL ADDRESS: 10SFH0641094389(NAD 83)
AI5056
AI5056                             SUPERSEDED SURVEY CONTROL
AI5056
AI5056  NAD 83(2007)-  38 47 30.59910(N)     121 46 29.02194(W) AD(2007.00) 0
AI5056  ELLIP H (02/10/07)  -17.614  (m)                        GP(2007.00)
AI5056  NAD 83(1998)-  38 47 30.59722(N)     121 46 29.01978(W) AD(2002.53) 1
AI5056  ELLIP H (02/03/03)  -17.586  (m)                        GP(2002.53) 4 1
AI5056  NAD 83(1998)-  38 47 30.59651(N)     121 46 29.01915(W) AD(1999.51) 1
AI5056  ELLIP H (05/12/00)  -17.530  (m)                        GP(1999.51) 4 1
AI5056  NAVD 88 (02/03/03)   12.75   (m)  UNKNOWN model used   GPS OBS
AI5056  NAVD 88 (05/12/00)   12.81   (m)  GEOID99 model used   GPS OBS
AI5056
AI5056.Superseded values are not recommended for survey control.
AI5056
AI5056.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
AI5056.See file dsdata.pdf to determine how the superseded data were derived.
AI5056
AI5056_MARKER: DD = SURVEY DISK
AI5056_SETTING: 50 = ALUMINUM ALLOY ROD W/O SLEEVE (10 FT.+)
AI5056_STAMPING: CODY 1999
AI5056_MARK LOGO: CA-113
AI5056_PROJECTION: RECESSED 7 CENTIMETERS
AI5056_MAGNETIC: M = MARKER EQUIPPED WITH BAR MAGNET
AI5056_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
AI5056_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AI5056+SATELLITE: SATELLITE OBSERVATIONS - January 01, 2008
AI5056_ROD/PIPE-DEPTH: 6.1  meters
AI5056
AI5056  HISTORY      - Date     Condition        Report By
AI5056  HISTORY      - 1999     MONUMENTED       FRAME
AI5056  HISTORY      - 20020826 GOOD             FRAME
AI5056  HISTORY      - 20080101 GOOD             FRAME
AI5056
AI5056                             STATION DESCRIPTION
AI5056
AI5056'DESCRIBED BY FRAME SURVEYING AND MAPPING 1999 (JHF)
AI5056'THE STATION IS LOCATED ABOUT 5.5 MI (8.9 KM) EAST OF ZAMORA AND ABOUT
AI5056'3 MI (4.8 KM) WEST OF KNIGHTS LANDING.  TO REACH THE STATION FROM THE
AI5056'INTERSECTION OF INTERSTATE HIGHWAY 5 AND COUNTY ROAD E10, ROAD 13, IN
AI5056'ZAMORA, GO EAST ON ROAD E10 FOR ABOUT 3.0 MI (4.8 KM) TO THE
AI5056'INTERSECTION OF ROAD 97.  CONTINUE EAST ON ROAD E10 FOR ABOUT 2.5 MI
AI5056'(4.0 KM) TO THE END OF ROAD E10 AND THE INTERSECTION OF STATE HIGHWAY
AI5056'113 AND COUNTY ROAD E11, ROAD 99E.  TURN RIGHT AND GO SOUTH ON HIGHWAY
AI5056'113 FOR ABOUT 0.1 MI (0.2 KM) TO THE STATION ON THE RIGHT JUST PAST A
AI5056'LARGE MILLING AND STORAGE PLANT.  THE STATION IS A 2 1/2 IN YOLO
AI5056'COUNTY DISK SET INSIDE AN ALUMINUM LOGO CAP.  IT IS ABOUT 40 M (131.2
AI5056'FT) SOUTH-SOUTHEAST OF THE SOUTHEAST CORNER OF A LARGE CORRUGATED
```

```
AI5056'METAL BUILDING, 21.4 M (70.2 FT) WEST-SOUTHWEST OF AND ACROSS HIGHWAY
AI5056'113 FROM A POWER POLE WITH TRANSFORMER, 10.5 M (34.4 FT) WEST OF THE
AI5056'CENTERLINE OF THE HIGHWAY AND 0.8 M (2.6 FT) EAST OF A CARSONITE
AI5056'WITNESS POST.
AI5056
AI5056                          STATION RECOVERY (2002)
AI5056
AI5056'RECOVERY NOTE BY FRAME SURVEYING AND MAPPING 2002 (JHF)
AI5056'RECOVERED AS DESCRIBED.
AI5056
AI5056                          STATION RECOVERY (2008)
AI5056
AI5056'RECOVERY NOTE BY FRAME SURVEYING AND MAPPING 2008 (JHF)
AI5056'RECOVERED AS DESCRIBED.



*** retrieval complete.
Elapsed Time = 00:00:02
```

FILE: 1___1190.21o OP1619793278537

2005 NOTE: The IGS precise and IGS rapid orbits were not available
2005 at processing time. The IGS ultra-rapid orbit was/will be used to
2005 process the data.
2005

NGS OPUS-RS SOLUTION REPORT
==========

All computed coordinate accuracies are listed as 1-sigma RMS values.
For additional information: https://www.ngs.noaa.gov/OPUS/about.jsp#accuracy

USER: brett@laughlinspence.com DATE: April 30, 2021
RINEX FILE: 1___119v.21o TIME: 14:37:19 UTC

SOFTWARE: rsgps 1.38 RS93.prl 1.99.3 START: 2021/04/29 21:21:20
EPHEMERIS: igu21554.eph [ultra-rapid] STOP: 2021/04/29 22:27:45
NAV FILE: brdc1190.21n OBS USED: 5454 / 6228 : 88%
ANT NAME: LEIATX1230GG NONE QUALITY IND. 27.87/ 47.50
ARP HEIGHT: 1.617 NORMALIZED RMS: 0.259

REF FRAME: NAD_83(2011)(EPOCH:2010.0000) ITRF2014 (EPOCH:2021.32579)

X:	-2623114.720(m)	0.010(m)	-2623115.743(m)	0.010(m)
Y:	-4234019.303(m)	0.012(m)	-4234017.929(m)	0.012(m)
Z:	3970709.180(m)	0.012(m)	3970709.133(m)	0.012(m)

LAT:	38 45 0.32926	0.006(m)	38 45 0.34085	0.006(m)
E LON:	238 13 13.50635	0.007(m)	238 13 13.44040	0.007(m)
W LON:	121 46 46.49365	0.007(m)	121 46 46.55960	0.007(m)
EL HGT:	-14.986(m)	0.017(m)	-15.506(m)	0.017(m)
ORTHO HGT:	15.491(m)	0.033(m)	[NAVD88 (Computed using GEOID18)]	

60.623' ± 0.108'

	UTM COORDINATES (Zone 10)	STATE PLANE COORDINATES (0402 CA 2)
Northing (Y) [meters]	4289751.574	620289.307
Easting (X) [meters]	606050.665	2019159.712
Convergence [degrees]	0.76396111	0.13896667
Point Scale	0.99973849	0.99993163
Combined Factor	0.99974084	0.99993398

1

NGS OPUS Data

US NATIONAL GRID DESIGNATOR: 10SFH0605089751(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DN7510	ORVB OROVILLE DAM CORS ARP	N393316.644	W1213000.994	92525.4
DN7569	P256 FALLMANPRPCN2005 CORS ARP	N375555.058	W1213617.369	92089.9
DG8210	P261 HUNTERHILLCN2004 CORS ARP	N380910.643	W1221303.089	76518.7
DK6402	P336 HUBBARDRDGCN2007 CORS ARP	N393141.074	W1222549.687	103085.9
AF9564	QUIN QUINCY CORS ARP	N395828.380	W1205639.889	153832.9
DN7372	P310 ALDERRIDGECN2006 CORS ARP	N384408.171	W1202003.561	125686.9
DO7031	CASR SANTA ROSA CA CORS ARP	N382626.414	W1224449.165	91007.5
DK6396	P206 CRAZYCREEKCN2006 CORS ARP	N384640.128	W1223432.803	69270.2
DN7395	P346 BUZZARDRSTCN2007 CORS ARP	N394740.941	W1205202.816	140194.2

NEAREST NGS PUBLISHED CONTROL POINT

JS2233	YOLO RM 1	N384300038.	W1214800023.	3439.0

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

Copy all pages of this Dry Floodproofing Certificate and all attachments for 1) community official, 2) insurance agent/ company, and 3) building owner. The dry floodproofing of non-residential buildings and the non-residential portions of mixed-use buildings may be permitted as an alternative to elevating to or above the Base Flood Elevation (BFE); however, a dry floodproofing design certification is required. This form is to be used for that certification. Dry floodproofing of a residential building does not alter a community's floodplain management elevation requirements or affect the insurance rating unless the community has been issued an exception by FEMA to allow dry floodproofed residential basements. The permitting of a dry floodproofed residential basement requires a separate certification specifying that the design complies with the local floodplain management ordinance.

PROPERTY INFORMATION

Building Owner's Name: **Les Lyman**

Building Street Address (Including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.: **39290 County Road 16**

City: **Woodland** State: **CA** ZIP Code: **95695**

FOR INSURANCE COMPANY USE

Policy Number:

Company NAIC Number:

Property Description (e.g., Lot and Block Numbers, or Legal Description) and/or Tax Parcel Number: **Yolo County APN: 056-250-013**

Building Use (e.g., Non-Residential, Mixed Use, Addition, Accessory, etc.): **Non residential Dry Floodproofed Soils Blending Bldg.**

Latitude/Longitude: Lat. **38°45'02.0" N** Long. **121°46'46.5"W** Horizontal Datum: ☐ NAD 1927 ☒ NAD 1983 ☐ WGS 84

SECTION I – FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

NFIP Community Name: **Yolo County** NFIP Community Identification Number: **060423**

County Name: **YOLO** State: **CA** Map/Panel Number: **06113C/0300** Suffix: **G**

FIRM Index Date: **5-16-2012** FIRM Panel Effective/Revised Date: **6-18-2010** Flood Zone(s): **A**

BFE(s) (Zone AO, use Base Flood Depth (BFD)): **51.5**

Indicate the source of the BFE data or BFD entered above: ☐ Flood Insurance Study (FIS) ☐ FIRM

☒ Community Determined ☐ Other:

Indicate elevation datum used for BFE shown above: ☐ NGVD 1929 ☒ NAVD 1988 ☐ Other/Source:

Is a Limit of Moderate Wave Action (LiMWA) shown on the FIRM? ☐ Yes ☒ No

If Yes, is the property located in the Coastal A Zone [area between the LiMWA and Zone V boundary (or shoreline)]? ☐ Yes ☐ No

Is the property located in a floodway? ☐ Yes ☒ No If Yes, provide the velocity at the building location:

Is the property located in an alluvial fan? ☐ Yes ☒ No

If Yes, provide the depth at the building location: and velocity:

SECTION II – DRY FLOODPROOFED DESIGN CERTIFICATION

(By a Registered Professional Engineer or Architect licensed in the State where the building is located)

(Note: For insurance rating purposes in all zones except for B, C or X, the building's dry floodproofed design elevation must be at least one foot above the BFE to be considered for floodproofing credit. For B, C, or X Zones, the building's dry floodproofed design elevation must be at least two feet above the natural HAG to be considered for floodproofing credit. If the building is not dry floodproofed to the above-mentioned standards, then the building will be ineligible for floodproofing credit. See the Instructions section for information on documentation that must accompany this certificate if being submitted for flood insurance rating purposes.)

Briefly list measures incorporated into the design to meet the performance criteria for dry floodproofing and attach calculations showing the structure is designed with structural components that have the capability of resisting hydrostatic and hydrodynamic loads and the effects of buoyancy and will be watertight and substantially impermeable to the passage of water.

Masonry block provided at perimeter of building with FRA flood panels to be installed at doorways in the event of a potential flood.

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.:	FOR INSURANCE COMPANY USE
39290 County Road 16	
City: Woodland State: CA ZIP Code: 95695	Policy Number:
	Company NAIC Number:

SECTION II – DRY FLOODPROOFED DESIGN CERTIFICATION (Continued)

(By a Registered Professional Engineer or Architect licensed in the State where the building is located)

Provide elevations used in design, specifications and construction drawings. In Puerto Rico only, enter meters.

Indicate elevation datum used for the elevations in this section. ☐ NGVD 1929 ☒ NAVD 1988 ☐ Other/Source:

Elevation datum used for building elevations must be the same as that used for the BFE. Conversion factor used? ☐ Yes ☒ No
If Yes, describe the source of the conversion factor in the Comments area of this Section.

A. Dry Floodproofed Design Elevation:			52.63	☒ feet ☐ meters
B. Lowest Adjacent Grade (LAG) next to the building:	☐ Natural	☒ Finished	51.93	☒ feet ☐ meters
C. Highest Adjacent Grade (HAG) next to the building:	☐ Natural	☒ Finished	51.97	☒ feet ☐ meters

Non-Residential Dry Floodproofed Design Certification:

I certify the structure, based upon development and/or review of the design and specifications for construction, has been designed in accordance with the accepted standards of practice (ASCE 24-05, ASCE 24-14 or their equivalent) and the following provisions.

- *The structure, together with attendant utilities and sanitary facilities will be watertight to the dry floodproofed design elevation indicated above, will be substantially impermeable to the passage of water, and shall perform in accordance with the 44 Code of Federal Regulations (44 CFR 60.3(c)(3)).*
- *All structural components are capable of resisting hydrostatic and hydrodynamic flood forces, including the effects of buoyancy, and anticipated debris impact forces up to the dry floodproofed design elevation. Flood damage-resistant materials are used for all areas where seepage is intended to collect inside the dry floodproofed areas up to at least 4 inches above the floor.*

I certify that the information in Section II on this certificate represents a true and accurate determination by the undersigned using the available information and data. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.

Certifier's Name: Jeff W. Spence License Number (or Affix Seal): LS7414

Title: Civil Engineer Company Name: Laughlin and Spence

Mailing Address: 1008 Live Oak Blvd

City: Yuba City State: CA ZIP Code: 95991

Phone #1: 530-671-1008 Ext.: Phone #2: Ext.:

Email: jeff@laughlinspence.com

Signature: Date:

Comments (including source of conversion factor and description of any attachments):

See attached flood emergency operation plan.

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.:	FOR INSURANCE COMPANY USE
39290 County Road 16	
City: Woodland State: CA ZIP Code: 95695	Policy Number:
	Company NAIC Number:

SECTION III – DRY FLOODPROOFED ELEVATION CERTIFICATION

(By a Registered Professional Land Surveyor, Engineer or Architect licensed in the State where the building is located)

Benchmark Utilized: NGS OPUS (see note #3, sheet 9 for additional information) Vertical Datum: NAVD 1988

Indicate elevation datum used for the elevations provided in this section:

☐ NGVD 1929 ☒ NAVD 1988 ☐ Other/Source:

Elevation datum used for building elevations must be the same as that used for the BFE. Conversion factor used? ☐ Yes ☒ No
If Yes, describe the source of the conversion factor in the Comments area of this section.

A. Dry floodproofed elevation (must be based on finished construction):	52.63	☒ feet	☐ meters
B. Lowest Adjacent Grade (LAG) next to the building: ☐ Natural ☒ Finished	51.93	☒ feet	☐ meters
C. Natural Highest Adjacent Grade (HAG) next to the building:	51.97	☒ feet	☐ meters

Height of floodproofing on the building above the natural or finished LAG is 0.7 feet.
(In Puerto Rico only: _____ meters.)

(Note: For insurance rating purposes in all eligible zones inside the SFHA, the building's dry floodproofed design elevation must be at least one foot above the BFE to be considered for floodproofing credit. For B, C, D, or X Zones, the building's dry floodproofed design elevation must be at least two feet above the natural HAG. If the building is not dry floodproofed to the above-mentioned standards, then the building will not be considered for floodproofing credit. See the Instructions section for information on documentation that must accompany this certificate if being submitted for flood insurance rating purposes.)

Non-Residential Dry Floodproofed Elevation Information Certification:

Section III 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 in Section III on this Certificate represents a true and accurate interpretation and determination by the undersigned using the available information and data. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.

Certifier's Name: Jeff W. Spence License Number (or Affix Seal): LS7414

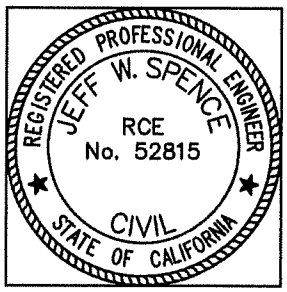
Title: Civil Engineer Company Name: Laughlin and Spence

Mailing Address: 1008 Live Oak Blvd

City: Yuba City State: CA ZIP Code: 95991

Phone #1: 530-671-1008 Ext.: Phone #2: Ext.:

Email: jeff@laughlinspence.com



Signature: Date:

Comments (including source of conversion factor and description of any attachments):

none

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.:	FOR INSURANCE COMPANY USE
39290 County Road 16	
City: Woodland State: CA ZIP Code: 95695	Policy Number:
	Company NAIC Number:

SECTION IV – DRY FLOODPROOFED CONSTRUCTION CERTIFICATION

(By a Registered Professional Engineer or Architect licensed in the State where the building is located)

Non-Residential Dry Floodproofed Construction Certification:

I certify the structure, based upon development and/or review of the design, specifications, as-built drawings for construction and physical inspection, has been designed and constructed in accordance with the accepted standards of practice (ASCE 24-05, ASCE 24-14 or their equivalent) and any alterations also meet those standards and the following provisions.

- *The structure, together with attendant utilities and sanitary facilities is watertight to the dry floodproofed design elevation indicated above, is substantially impermeable to the passage of water, and shall perform in accordance with the 44 Code of Federal Regulations (44 CFR 60.3(c)(3)).*
- *All structural components are capable of resisting hydrostatic and hydrodynamic flood forces, including the effects of buoyancy, and anticipated debris impact forces up to the dry floodproofed design elevation.*
- *The floodproofed elevation is in accordance with the design and any alteration(s) to the design.*
- *Flood damage-resistant materials have been incorporated/used in all areas where seepage would collect inside the dry floodproofed areas up to at least 4 inches above the floor.*

I certify that the information in Section IV on this certificate represents a true and accurate determination by the undersigned using the available information and data. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.

Certifier's Name: Jeff W. Spence License Number (or Affix Seal): LS7414

Title: Civil Engineer Company Name: Laughlin and Spence

Mailing Address: 1008 Live Oak Blvd

City: Yuba City State: CA ZIP Code: 95991

Phone #1: 530-671-1008 Ext.: Phone #2: Ext.:

Email: jeff@laughlinspence.com

Signature: Date:

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

Les Lyman (Grow West)

39290 County Road 16
Woodland, CA 95695

Flood Emergency Operation Plan
Soils Building

August 05, 2021

Table of Contents

Safety/Regulatory Manager
Ken Bates
(530) 671-3571 (office)
(530) 681-2948 (cell)

Overview

The danger of flooding is considered to be from November 1st through March 15th. A 70' x 150' soils blending building with a CMU flood barrier at the exterior and a 12' x 34' utility room with a concrete flood barrier at the exterior will be built approximately 2 miles from the Cache Creek at Yolo CDEC station. In the event of a flood, the building will be dry flood proofed using masonry walls with FRA flood barriers at door openings.

The flood stages per California Data Exchange Center from Cache Creek at Yolo station (NGVD 29 Datum):

Stage 1 – Elevation 75' – Monitor Stage.

Stage 2 – Elevation 81' – Flood Stage.

Stage 3 – Elevation 82.1' – Danger Stage.

Stage 4 – Elevation 84.1' – Top of Levee.

Historical Information

The following information was obtained from the California Department of Water Resources California Data Exchange Center showing the Cache Creek elevations and times at the Cache Creek at Yolo gauge to demonstrate historical lengths of time between creek stages (NGVD 29 Datum). The event in December 2005 was chosen because of its rapid change in creek elevation once it reached approximately 60'. The event in February 2019 was chosen because of the flood risk technical memorandum that was written by MBK Engineers on March 28, 2019.

Date	Time	Creek Elevation	Change in Time
Event #1			
12/29/2005	08:00	60.73	
			44 hours
12/31/2005	04:00	60.13	
			5 hours
12/31/2005	09:00	68.81	
			3 hours
12/31/2005	12:00	74.95	
			5 hours
12/31/2005	17:00	81.53	
			2 hours
12/31/2005	19:00	84.34	
Event #2			
02/24/2019	01:00	58.86	
			50 hours
02/26/2019	03:00	60.21	
			11 hours
02/26/2019	14:00	70.69	
			12 hours
02/27/2019	02:00	75.44	
			8 hours
02/27/2019	10:00	81.21	
			6 hours
02/27/2019	16:00	84.90	

Flood Procedure

From November 1st through March 15th the Cache Creek water surface elevations shall be monitored to determine the need to take action to prevent water seepage into the building and to remove significant portions of the fertilizer control components.

On a weekly basis, the creek elevations shall be monitored and recorded to determine if further action is needed. If the creek elevations are at an elevation or to be projected to be at an elevation of at least 60 feet, monitoring and recording of the creek elevations shall occur daily. If the creek elevations are at an elevation or to be projected to be at an elevation of at least 75 feet which is the monitor stage for this site, the FRA flood panels shall be installed to the flood wall per manufactures specifications. According to the equipment manufacturer, the flood panels for the building can be installed in approximately 3 hours. All personnel shall evacuate the site when the creek elevation reaches 81 or as determined by Yolo County Emergency Services. (Elevations noted are based on the Cache Creek at Yolo gauge.)

To inquire of creek elevations and possible flood events call:

Department of Water Resources
River and Reservoir Information System
(800) 952-5530

or

Department of Water Resources
California Data Exchange Center
http://cdec.water.ca.gov/cgi-progs/rivfcast/LSACBUL

Determine the following;

Rate-Of-Rise, Flood Warning Time, and Lead time to implement operating procedures

During a threat of an event (elevation 75 feet or above) the Safety/Regulatory Manager Operator shall notify the Operations and Facility Manager, perform personnel assessments and continue with the following steps.

1. Identify and record inventory.
2. Retrieve FRA panels from storage area and clean sealing surfaces prior to installation.
3. Install flood panels per manufacturer's installation instructions, approved shop drawings, and product carton instructions for installation (installation instructions attached).
4. Scout the entire affected area for unsecured items and take precaution for high water.
5. Continuously monitor reporting agency information bulletins for updates on flood warnings for the area.

Flood-proofing Construction components

Custom FRA flood panel at each opening in the flood wall. The flood panel will extend a minimum of 8" beyond the opening on each side. Flood panels to be installed per manufactures specifications with the following items listed:

1. Snake or Hilti Anchors with anchor set tool
2. Hex bolts
3. 3" dock washers with gasket faces
4. FRA easy turn knob

Installation

For detailed instructions on the installation of FRA flood see installation instructions(attached) from manufacturer, online installation guides at https://www.floodproofing.com, or contact an installation team at 1-(800) 507-0865. Steps for installation of panels include:

1. Clean panel sealing surfaces.
2. Drill holes with proper diameter to required depth in wall for anchors.
3. Fill holes with adhesive and install anchors with threaded rod.
4. Assemble hex bolt with turn knob and washer.
5. Install FRA panel in place and ensure anchors are in line with pre-drilled holes in panels.
6. Use hardware to tighten anchor until you see the compression of the gaskets.
7. Remove panel and repeat these steps for the floor anchors.
8. Install FRA panel back in place and tighten all anchors. (Do not over tighten)

Annually, the installation is required of the FRA panels to ensure they are correctly installed and in working condition. When panels are not installed, install a plug in each hole, flush with wall, to ensure adhesive anchors remain undamaged and clean.

Inspections

Inspection of flood-proofing components to be included at the current facility with monthly inspections and more detailed annual inspections shall be performed. Company personnel shall be trained annually along with backup staff to implement this Plan. Annual inspections of the wet floodproofed components shall include:

1. Sealants used on frames and connections. Replace any cracked, loose, or otherwise non-preforming sealants.
2. Lubricate hardware and other components.
3. Anchors and hardware to be cleaned and stored free of debris.
4. Sump pump to be tested to ensure proper operation.

Maintenance

1. Prior to installation of FRA panels, clean all sealing surfaces.
2. Repair or replace any damaged product and touch up any damaged finish.
3. Store panels in a dry area with temperatures between 40°F -90°F.
4. Anchors and hardware to be stored in a clean area free of debris.
5. Panels should be installed horizontally with all gaskets facing upward. Never store panels directly on the floor surface and use wood cribbing to allow panels to be separated.

Notification

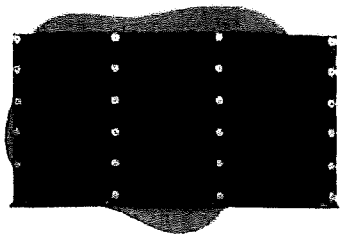
Written notification that the site has been properly secured in accordance with these written procedures shall be provided to the Floodplain Manager with the Yolo County Public Works Department by November 1st of each year.

Any amendment of the site layout and/or equipment components shall be reviewed and approved by a Registered Engineer and the Yolo County Floodplain Manager.

This document shall be posted permanently in two locations minimum within the structure.

FRA PANEL SPECIFICATIONS

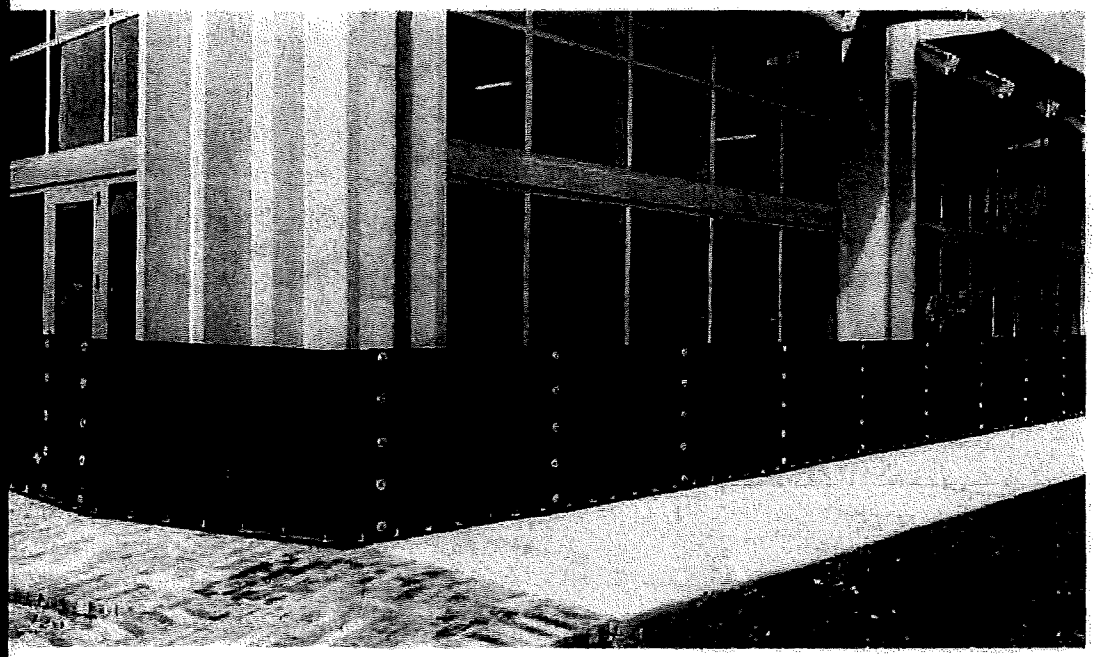
Custom Door + Window Flood Barrier



FRA FLOOD PANEL

A custom-engineered barrier that protects any sized opening against intrusion + flood water damage.

The Flood Risk America (FRA) Flood Panel uses sustainable flood-seal technology to protect any opening against flood water + is highly resistant to heavy impact forces. Each panel is custom-engineered to meet individual installation requirements + job-specific demands. It is easy to install, deploy, + remove.

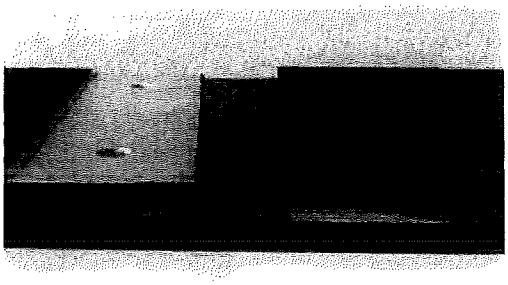


Storefront Protection Door + Window Barrier

Applications

Storefronts | Windows/Doors | Vehicle Access Points | Drain Covers

info@floodproofing.com | 1 (800) 507 0865

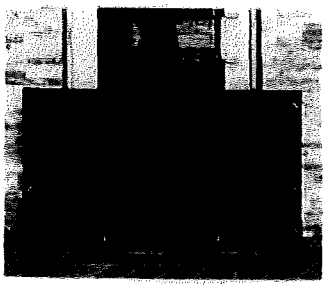


Spline Connection For Interlocking Sections

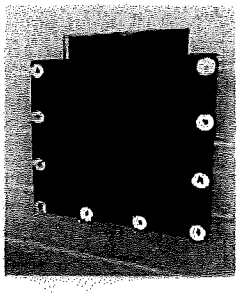
Storefront Flood Protection

Technical Specifications

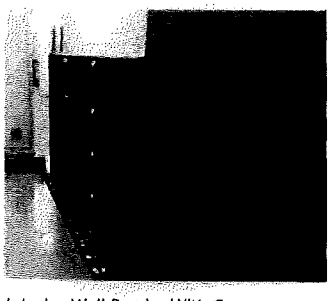
MATERIAL	High Density Foam Core, Fiberglass Skin, Structural Coating
SEAL	Gasket Compression
HARDWARE	Stainless Steel Anchors
WEIGHT	< 5 lbs PSF
DESIGN	Meets FEMA + ASCE Requirements
WARRANTY	Lifetime (Panel Only)



Door Barrier

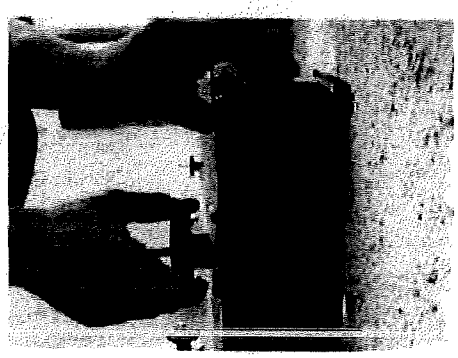


Window Barrier



Interior Wall Barrier With Corner

HAND TIGHTENING TOOLLESS DEPLOYMENT



FEATURES

Durable

Strong Composite Materials

Custom Sizes

Dimensions to Fit Your Needs

Lightweight

Less Than 5 Pounds Per Ft²

Quick Deployment

Panels Are Easy To Transport + Install

Versatile

Gasket Conforms To Uneven Surfaces

SECTION 10 71 19.16
REMOVABLE FLOOD BARRIERS

Part 1. GENERAL

1.1 SECTION INCLUDES

A. Flood Panels

1.2 RELATED SECTIONS

A. Section 03300 - Cast-In-Place Concrete

B. Section 04810 - Unit Masonry Assemblies

C. Section 05120 - Structural Steel

1.3 REFERENCES

A. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

B. ASTM B 211 - Standard Specification for Aluminum and Aluminum-Alloy Bar, Rod, and Wire.

C. Aluminum Association - Specification for Aluminum Structures, 7th Edition.

D. ASME Structural Welding Code Section IX.

E. FEMA Technical Bulletin 3-93 - Non-Residential Flood Proofing.

F. SEI/ASCE 7-16 - Minimum Design Loads for Buildings and Other Structures.

G. ASCE 24-14 AWS D1.2 - Structural Welding Code - Aluminum.

H. Aluminum Structures - A Guide to Their Specifications and Design.

I. U.S. Army Corps of Engineers, EP 1165-2-314 - Flood Proofing Regulations, 15 December 1995.

1.4 DESIGN / PERFORMANCE REQUIREMENTS

A. Design watertight panels to perform under load criteria as set forth is standards noted above. All water pressure loads and operating loads are transferred to the building structure.

B. Standard loading: Standard Flood Panels are designed for hydrostatic loading, hydrodynamic loads, wave loads and debris impact loads.

1.5 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations,
2. Storage and handling requirements and recommendations,
3. Installation instructions.

C. Shop Drawings: Provide shop drawings showing layout, profiles, and product components, including anchorage, hardware, and finishes. Include dimensional plans, applicable material specifications, elevations and sections detailing mounting and connections, and load diagrams.

D. Calculations: Submit calculations approved by a qualified engineer to verify the flood panel's ability to withstand the design loading.

E. Closeout Submittals: Provide Operation and Maintenance data to include methods for maintaining installed products, precautions against cleaning materials, and methods detrimental to finishes and performance.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer must demonstrate previous successful experience in design and manufacture of similar flood-related closures. Upon request, provide supporting evidence including list of installations, descriptions, name, and method of contact.

B. Welder Qualifications: Welders certified in accordance with American Welding Society Procedures: AWS-1-GMAW-S, WPS No. B2.004.90 for applicable material used in production of specified product.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging container with identification labels intact until ready for installation.

B. Protect materials from exposure to moisture.

C. Store materials in a dry, warm, ventilated, weather-tight location. If outdoor storage is required, block materials to store at an incline, to prevent pooling of any moisture and pro-mote runoff. Tarp materials in a tent-like arrangement, elevated above the product with open sides to allow airflow. Store all other hardware in a dry controlled environment.

D. Store materials so that no damage occurs to gaskets and attached hardware.

E. Use caution when unloading and handling product to avoid bending, denting, crushing, or other damage to the product.

F. When using forklifts, use forks of proper length to fully support product being moved. Consult shop drawings or consult with factory for proper lift points.

1.8 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.9 COORDINATION

A. Coordinate work with other trades, operations, and installation of adjacent materials to avoid damage.

1.10 WARRANTY

A. Watertight closure shall operate satisfactorily and be free of defects in material and workmanship for a period of not less than one year from the date of delivery

Part 2. PRODUCTS

2.1 DISTRIBUTORS & MANUFACTURERS

A. Acceptable Distributor:

Floodproofing.com
430 Andbro Drive, Unit 1
Pitman, NJ, 08071

B. Acceptable Manufacturer:

Flood Risk America
720 Lucerne Avenue, Suite 567
Lake Worth, FL-33460

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C. Contact:

Floodproofing.com, 800-507-0868, PLANS@Floodproofing.com

D. Substitutions:

Not Permitted

E. Obtain all watertight doors and window panel assemblies from single manufacturer

2.2 EQUIPMENT

A. Watertight Door and window panels: Provide the following panels:

1. FRA Door Panel: Flood Risk America
2. FRA Window Panel: Flood Risk America

B. Product Details:

1. Sealing Requirements: Flood Panel and gasket design shall provide an effective seal for short-term high water situations, to the protection level indicated on drawings.
2. Operation: Panels are non-operable.
3. Mounting/Load Transfer: Anchor to existing structure. Flood Panel designed for specified hydrostatic pressure (and other loads as specified) and will transfer loads to adjacent structure.
4. Panels to be anchored utilizing mechanical, anchor types as designed. Manufacturer to include all anchors, water-stop, and sealants, as designed.
5. Loading Direction Selection:
   a) Standard: Positive Pressure Loading: (Direction of loading against flood panel so as to further compress gaskets against flood panel frame-"seating").
   b) Optional: Reverse Pressure Loading: (Direction of loading against flood panel so as to force the flood panel away from the structure-"unseating").
6. Provide compression gasket, which requires no inflation.
7. Provide anchoring to all structural elements.

2.3 MATERIALS

A. Flood Panel:

1. Composite FRP / IPN chemical structure panels

B. Gaskets to be factory mounted to flood panel assembly. Gaskets to be compressible closed cell type, and to be field replaceable.

C. Jamb members to be designed and fabricated with appropriate material as required for the loading.

1. Aluminum 6061 of appropriate size and strength with welded or mechanical fastened construction.

2. Polyfiber of appropriate size and strength with epoxied or mechanical fastened construction.

D. Sill members to be designed and fabricated with appropriate material as required for the loading:

1. Aluminum 6160 of appropriate size and strength with welded or mechanical fastened construction.

2. Polyfiber of appropriate size and strength with epoxied or mechanical fastened construction.

E. Panel Mounting Hardware: Provide hardware sized for the size and weight of the flood panel and loads. Hardware to be factory located on panels, as practical. All loads are transferred to building structure.

F. Anchors: Manufacturer provided stainless steel 304 anchors as noted on shop drawings.

G. Aluminum products to be mill finish, welds are ground smooth, not polished, and are factory acid washed, neutralized and rinsed.

H. Labeling. Each watertight panel and frame will be individually identified for matched installation.

2.4 FABRICATION

A. Fit and shop assemble items in largest practical sections, for delivery to site.

B. Fabricate items with joints tightly fitted and secured.

C. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

Part 3. EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

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3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install in accordance with manufacturer's installations instructions, approved shop drawings, shipping, handling, and storage instructions, and product carton instructions for installation.

B. Panels shall be installed level, square, plumb, and rigid.

C. Sealants, water-stop, and grouting to be applied per product application directions and in accordance with manufacturer's instructions.

D. Tolerances: All dimensional requirements must be in accordance with manufacturer's installation instructions and shop drawings.

3.4 FIELD QUALITY CONTROL

A. Products to be operated and field verified including the sealing surfaces to assure that they maintain contact at the correct sealing points.

B. Verify all anchorage is in accordance with manufacture's installation instructions and applicable data sheets.

3.5 CLEANING

A. Repair or replace damaged installed products or components.

B. Clean all sealing surfaces.

C. Touch up damaged finish.

Part 4.

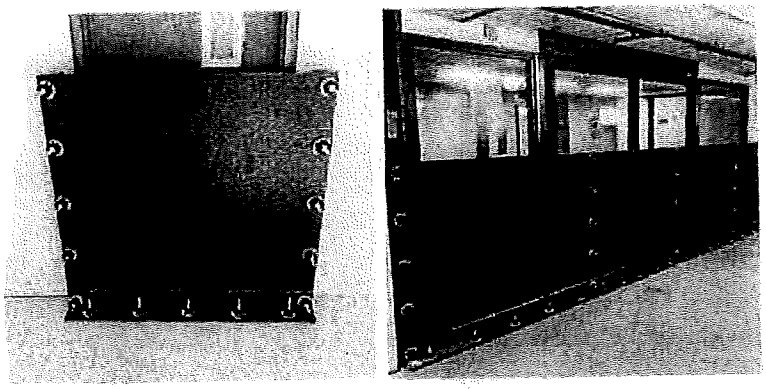
3.6 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair, or replace damaged products before substantial completion.

END OF SECTION

Please feel free to copy and paste the below graphic to your plans.



FRA FLOOD PANEL BY:

Contact:
1-800-507-0865
INFO@FLOODPROOFING.COM

FRA PANEL INSTALLATION INSTRUCTIONS

INSPECTION AND MAINTENANCE

TO PREVENT DAMAGE TO CONTENTS, STORE DRY BETWEEN 40° AND 90° F.

Flood Risk America recommends that the owner implement a regular maintenance program to inspect all anchoring components, gaskets, and panels. This program may require the replacement of gaskets; touch up painting and accounting for of all the latching devices.

If the water height exceeds the level of any door penetrations or water protective design height, leakage will occur. Flood Risk America recommends a flood preparedness plan be developed, trained on, and implemented to be activated during times of potential flooding conditions.

This product is a flood protective panel. The effectiveness of the product is directly related to the proper installation and maintenance of this product. Failure to properly maintain this product will adversely affect performance.

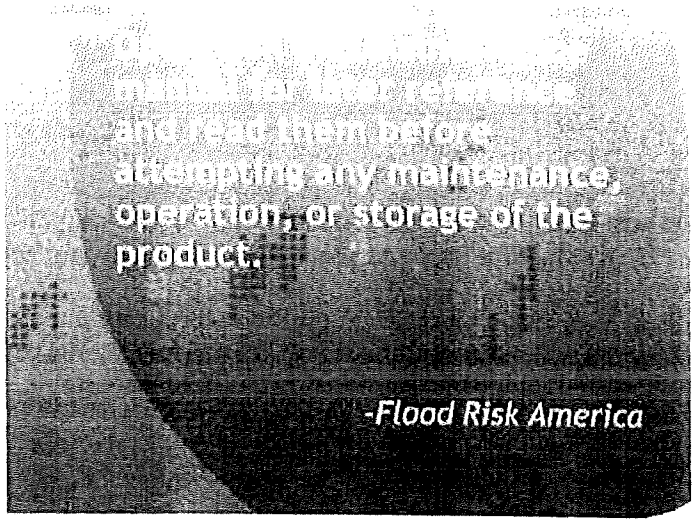
Sealants: Inspect all sealants used on frames and connections to insure their effectiveness. Replace any cracked, loose, or otherwise non-performing sealants. Use only Flood Risk America approved products.

Lubrication: Periodically lubricate hardware and other components every year.

Cleaning: Inspect and clean finishes periodically, keep hardware and anchors free of any debris and keep the area clean throughout the operating area of the FRA Flood Panels.

Anchors: All anchors are engineered for load design and shall not be changed without Flood Risk America authorization.

Installation Instructions: It is important to verify the door opening to the door size before starting with the installation.



Door sill / Door and Window Jams:

1. Clean floor sill and sidewall jambs. Keep area clean.

2. Measure door-opening width at the top

3. Measure door-opening width at the floor

4. Measure door-opening height at left side

5. Measure door-opening height at right side

6. Surface MUST be level and plumb

Protect all gaskets and hardware. Always consult Flood Risk America for all installation dimensions, details, hardware, and specifications. Check gaskets around perimeter of opening.

When the FRA Flood Panel is not deployed, an anchor cap seal is used to protect the Anchors. Inspect and clean periodically. Keep all bolts, nuts, dock washers and associated hardware clean.

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NOTICE

FRA FLOOD PANEL SAFETY PRECAUTIONS

The FRA Flood Panel is a specially designed Flood Panel Barrier capable of providing floodwater protection. FRA Flood Panel is specifically manufactured to meet individual window or door opening dimensions to a Water Protective Height of each customer's specific site requirements. Due to the custom design each FRA Flood Panel, they will not look the same and will not anchor the same. Refer to installation shop drawings and related construction documentation for specific installation details for each panel.

The Flood Risk America Flood Panel system is to be installed in accordance with FRA's standard design, specification, and fabrication methods for Custom Flood Panels. This product is a flood protective barrier. The effectiveness of the product is directly related to its proper installation and maintenance. Failure to properly maintain this product will affect the product's performance.

GENERAL INFORMATION:

This manual contains information regarding operation and maintenance of custom water resistant flood panel assemblies.

This product is manufactured to specific guidelines. Unauthorized alteration in any way will result in voiding Factory Warranty, and may cause product failure.

WARNING

OPERATION GUIDELINES

The following procedures and information are supplied for the operation of the FRA Flood Panel Barrier assemblies. Operation in a manner other than intended could result in damage or less than acceptable performance at time of need, for which Flood Risk America will not be held responsible. Always plan for potential leakage and condensation that can occur during flooding conditions.

SAFETY PRECAUTIONS: IMPORTANT

- Ensure opening is clear of all obstructions or debris during operation.
- Do not force planks or components if they do not operate freely.
- If removing panels or hardware for maintenance, consult documents for component weights, and use appropriate lifting equipment. Protect all gaskets and hardware. Always consult original factory drawings for all installation dimensions, details, hardware, and specifications.

OPERATION UNDER FLOODING CONDITIONS:

Pre-flooding or Potential Flooding Conditions:

- Conduct Inspection and Maintenance activities as described in this Operations & Maintenance Manual and in accordance with any Flood Maintenance Plan and Emergency Action Plan.
- Ensure the FRA Flood Panel system is located near each required opening prior to flooding conditions and is deployed for placement when needed.

Flooding Conditions Present:

- Ensure FRA Flood Panel system remains fully anchored when flood event conditions are present.
- Check FRA Flood Panel system for leakage or condensation accumulation during flood conditions

THIS IS A FLOOD PROTECTION BARRIER. NEVER OPEN DURING ANY FLOODING CONDITIONS AS WATER LEAKAGE WILL OCCUR AND YOU WILL NOT BE ABLE TO RE-CLOSE THE BARRIER.

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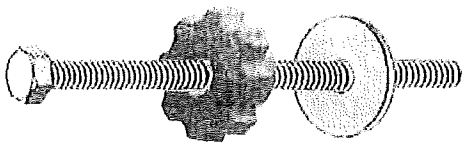
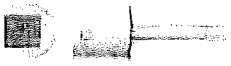
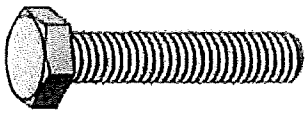
Picture Guide For FRA Flood Panel Installation



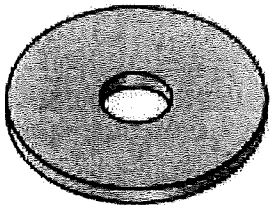
Snake or Hilti Anchor



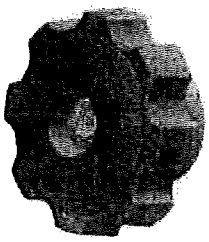
Anchor Set Tool



Hex Bolt



3" Dock Washer with gasket faces



FRA Easy Turn Knob

FRA Flood Panel Installation

Use caution when unpacking upon delivery. To reduce the risk of damaging gaskets do not use a razor blade or box knife or any other sharp instrument to unpack the panels. Check packing list to make sure all hardware is present.

FRA Flood Panels, in most cases, can be installed with one person, although it can be significantly easier with 2 people. There are some cases where 2 people are required to safely install the **FRA Flood Panel.**

- The panel comes with holes pre-drilled in predetermined locations
- Temporarily set the panel making sure the panel is level and square.
- Use extreme caution with the panel in windy situations.
- Use a pencil or marker to mark all the holes on the left and right verticals.
- The holes are larger than the bolt size.
- Make your mark on the bottom half of the holes.

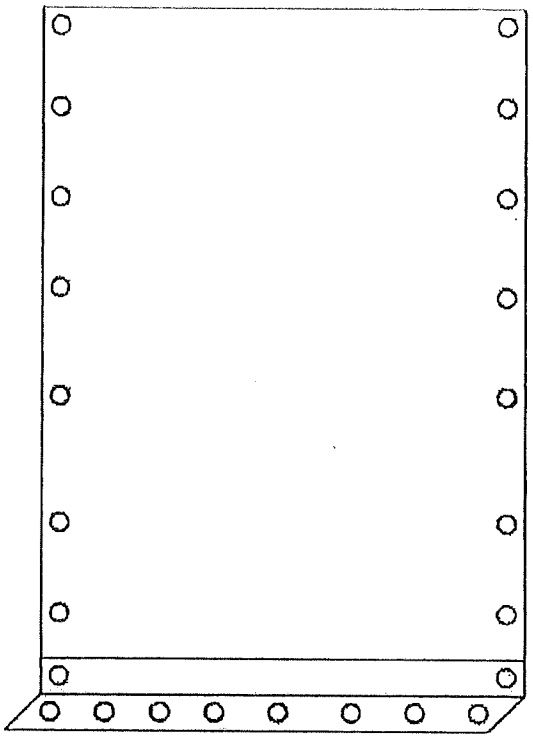
Do not mark the sill plate holes at this time. Remove The FRA Flood Panel

FRA Flood Panels hole. Make mark on bottom half of elongated hole.

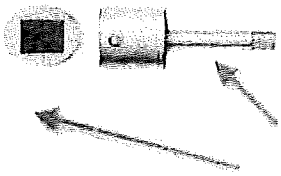
Use a proper drill to drill all marked holes. Refer to your architectural drawings to find what size holes you will be drilling. Drills and drill bits may vary depending on the material penetrated. Caution should be taken to utilize the appropriate tools when drilling. Refer to the Buildings Finish Materials's manufacturing specifications to become familiar with the material penetrated.

IMPORTANT

- Do not drill the holes too deep.
- Refer to anchor manufacturer's specifications for depth guide.

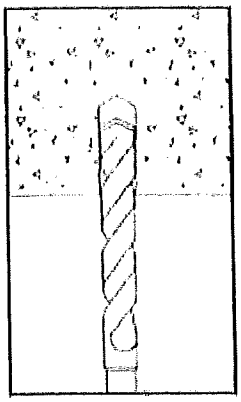


Anchor Installation Tools Needed:



Drill/Drill Bit

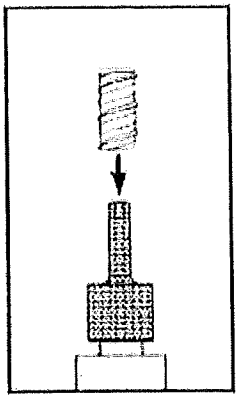
Anchor Installation



Step 1

Using the proper drill bit size, drill a hole into the base material to the required depth.

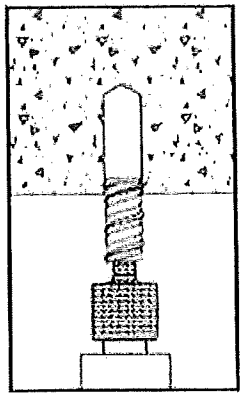
****DO NOT DRILL THE HOLE TOO DEEP.***



Step 2

- *Select a powered impact wrench that does not exceed the maximum torque for the selected anchor diameter.*
- *Attach the Snake plus setting tool supplied by Powers Fasteners to the impact wrench.*
- *Mount the anchor onto the setting tool.*

Fill Anchor hole with a construction adhesive



Step 3

Drive the anchor into the hole until the shoulder of the Snake+ setting tool comes into contact with the surface of the base material.

Do not spin the setting tool off the anchor to disengage.

Refer to epoxy manufacturer for epoxy set times.

Make sure epoxy is fully set before you proceed.

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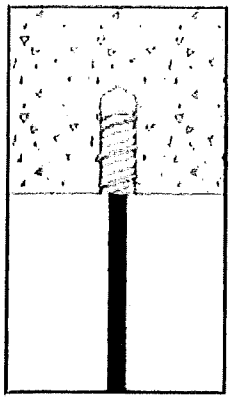
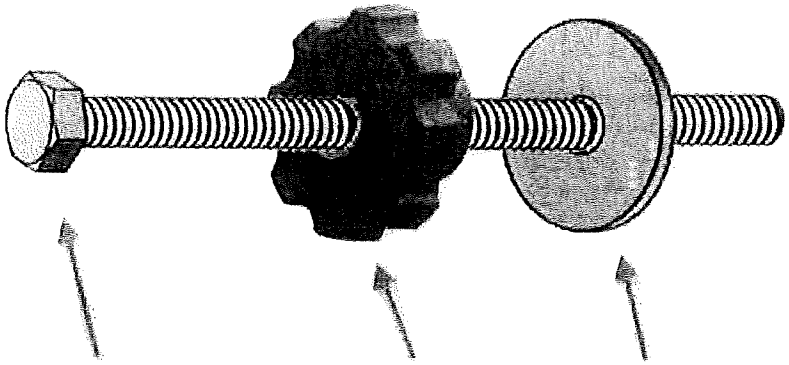


Step 4

Insert threaded rod or a bolt into the Snake+, taking care not to exceed the maximum specified tightening torque of the steel insert element.

The anchors are set. You can now proceed to assembling the hardware.



Bolt

FRA Easy Turn Knob

3" Dock Washer

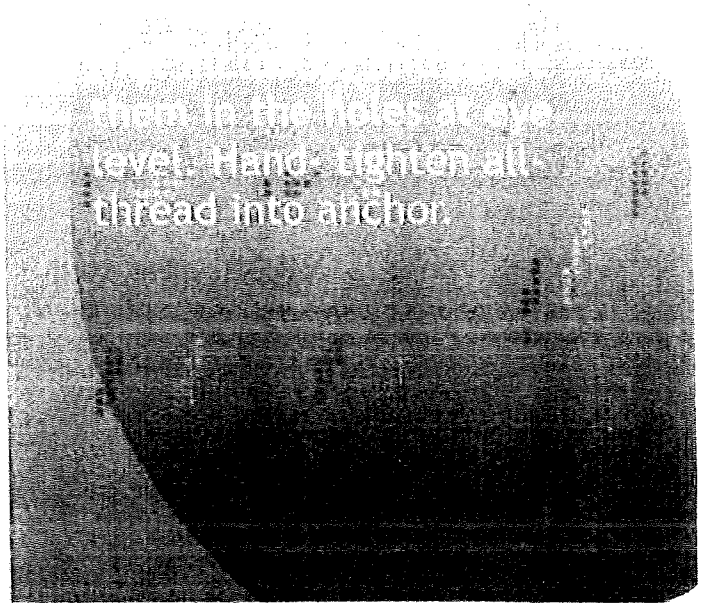
**Optional Dock washer with gasket faces

IMPORTANT

SHT 23/

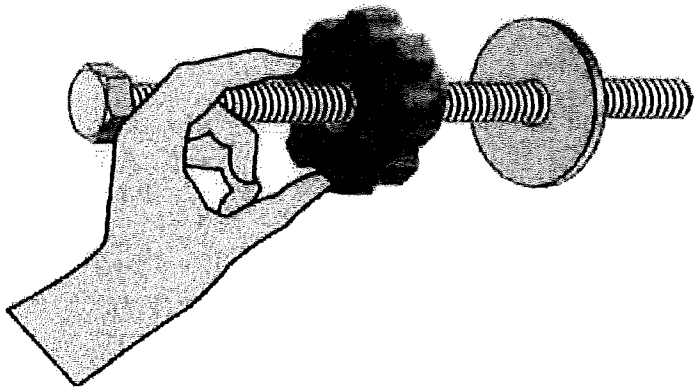
- Place FRA **Flood Panel** back in place.
- Make sure that all anchors are in line with all anchor holes.
- Place all vertical hardware and hand tighten the FRA Easy Turn Knob onto the anchors. Hand tightening is all that is necessary.

  NOTE: Ensure the proper anchor is installed as per site specific shop drawing which is provided with each installation project



NOTICE

- **Do NOT over tighten.**
- **Over tightening can cause the anchor to fail, which could cause a complete failure of the flood panel.**
- Starting at eye level, begin to tighten until you see the gasket compress.
- Once you see compression of the gasket move on to the next hole.
- Work from side to side. You are only looking for compression of the gasket.



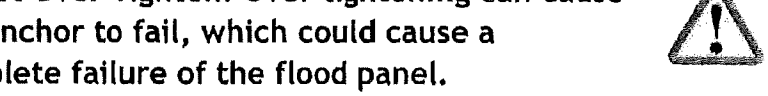
- Drill the final holes for the sill plate.
- Remove FRA Flood Panel
- Drill Floor Material and set the anchors for the sill plate.

Final Installation

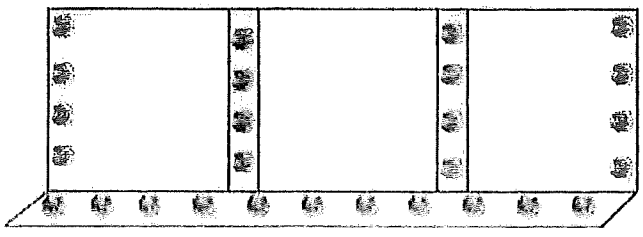
- Place **FRA Flood Panel** back in place, paying close attention to make sure panel aligns with wall anchors.
- Mount the panel's side hardware for the final Installation.
- Begin tightening the lower vertical hardware. **DO NOT TIGHTEN ALL THE WAY DOWN.**

NOTICE

- As you begin tightening the lower side hardware, alternating from side to side, you will begin to see the anchors of the sill plate.
- Once the sill plate anchors are centered in the sill holes, place all sill plate bolts into the anchors.
- Begin tightening the sill hardware. Before the sill plate hardware is tightened all the way, loosen all vertical hardware.
- You can now tighten all sill plate hardware. **(Only tighten until you see gasket compression).**
- **Do Not Over Tighten. Over tightening can cause the anchor to fail, which could cause a complete failure of the flood panel.**



- After the sill plate gasket is compressed, you can retighten all vertical hardware. Only tighten until you see gasket compression.



Wall Anchor Location with Mounting Hardware (4"X 4" Angles) (Vertical Mounting Hardware Deployment Procedure)

In the event FRA Panel deployment requires mounting to the butt end of the building (as opposed to face mounting), a 4" x 4" FRP angle (mounting hardware) is provided. For this mounting condition, the following deployment procedure should be utilized.

- Remove all sidewalk bolts in the preset walls and floor anchors.
- Set the mounting hardware in place aligning the holes in the mounting hardware with the anchors in the wall and floor slab.
- Securely attached the mounting hardware to the wall and floor slab ensuring good (approximately 25%) gasket compression at all wall, floor and mounting hardware interfaces.
- All individual panels should be set in place to confirm proper alignment with all anchors in the floor slab and in the mounting hardware.
- Temporary connecting of individual panels will need to occur.
- Connect one side and bottom of the overall opening to be anchored the mounting hardware, only slightly tightening all connections.
- Slide the next individual panel into the panel just deployed and anchor the two panels together with the patented FRA Tightening Knobs, only slightly tightening all connections.

- "IMPORTANT" Take note that the 3" diameter dock washers for these locations are provided with ¼" gasket's on both faces MUST be utilized at the spline connection locations.
- Continue this procedure until all individual panels are connected vertically along the mounting hardware (at each end of the opening), to the floor slab and to one another.
- Ensure all gaskets are tight to the structure and perform final tightening of all hardware, making sure to NOT over tighten the connections. Proper tightening is accomplished when the normal gaskets being approximately 25% compressed. In the event of uneven mounting surface, we provide a "soft sponge" gasket. When this "soft sponge" gasket is utilized, the gasket compression should be to 80% to 90%.
- DO NOT over tighten. Over tightening can cause anchors to pull from the building which could cause a complete failure of the flood panel system.

Multiple Panel Deployment Procedure
(Vertical Spline Deployment Procedure)

In the event FRA Panel deployment requires multiple panels to be joined side by side, to accommodate larger openings, a vertical tongue and groove connection is provided. The following deployment procedure should be utilized when connecting panels side by side.

- Remove all sidewalk bolts in the preset walls and floor anchors.
- All individual panels should be set in place to confirm proper alignment with all anchors.
- Temporary connecting of all individual panels will need to occur.
- Connect one side of the overall opening to be anchored the building and connect the panel to the building, only slightly tightening all connections.
- Connect the bottom of the first individual panel to the structure, only slightly tightening all connections.
- Slide the next individual panel into the panel just deployed and anchor the two panels together with the patented FRA Tightening Knobs, only slightly tightening all connections.

- "IMPORTANT" Take note that the 3" diameter dock washers for these locations are provided with ¼" gasket's on both faces MUST be utilized at the spline connection locations.
- Continue this procedure until all individual panels are connected along the walls (at each end of the opening), the bottom and to one another.
- Ensure all gaskets are tight to the structure and perform final tightening of all hardware, making sure to NOT over tighten the connections. Proper tightening is accomplished when the normal gaskets being approximately 25% compressed. In the event of uneven mounting surface, we provide a "soft sponge" gasket. When this "soft sponge" gasket is utilized, the gasket compression should be to 80% to 90%.
- DO NOT over tighten. Over tightening can cause anchors to pull from the building which could cause a complete failure of the flood panel system.
- Ensure there is good (min. 50%) gasket compression against the gasketed dock washers at all tightening knob locations.

(Horizontal Flange Deployment Procedure)

In the event FRA Panel deployment requires multiple panels to be stacked, to accommodate larger openings in eight, a horizontal "flanged" connection is provided. The following deployment procedure should be utilized when stacking panels on top of one another.

- Remove all sidewalk bolts in the preset walls and floor anchors.
- All individual lower panels should be set in place to confirm proper alignment with all anchors.
- Temporary connecting of all individual panels will need to occur.
- Stack the next panel on top of the already "in place" panel(s) and anchor the two panels together with the patented FRA Tightening Knobs, only slightly tightening all connections
- Continue this procedure until all individual panels are connected along the walls (at each end of the opening), the bottom and to one another.
- Ensure all gaskets are tight to the structure, and stacking flanges, and perform final tightening of all hardware, making sure to NOT over tighten the connections. Proper tightening is accomplished when the normal gaskets being approximately 25% compressed. In the event of uneven mounting surface, we provide a "soft sponge" gasket. When this "soft sponge" gasket is utilized, the gasket compression should be to 80% to 90%.

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Storage

- Remove **FRA Flood Panel** from wall and slab anchors.
- Inspect all hardware and gaskets to ensure integrity.
- Documents any adverse conditions. Replace any damaged gaskets or hardware as required. Use only FRA approved gaskets and hardware
- **NEVER** transport panels in a manner that will damage or compress any gaskets or hardware.
- **NEVER** store panels in a manner that will damage or begin to compress any gaskets or hardware
- Panels should be stored horizontally with all gaskets facing upward. Wood cribbing should be utilized to separate panels and avoid adjacent panels from compressing any gaskets.
- **NEVER** store the first panel directly on the floor surface. Provide wood cribbing to allow the first panel to be elevated off the floor surface.
- **NEVER** store any items on the panels including provided hardware.
- **Do Not Over Tighten. Over tightening can cause the anchor to fail, which could cause a complete failure of the flood panel.**