

How to Identify Zones in the Land Subject to Coastal Storm Flowage (LSCSF) from FEMA Maps

Rebecca Haney, CFM
Coastal Geologist, MA CZM

Barnstable County Training
June 25, 2025



Photo Credit: MyCoast.org/ma

FEMA Coastal Flood Zone Definitions

- **Zone VE – Areas of 100-year flood with velocity waves**
 - Wave height 3 feet or greater
 - Wave runup depth 3 feet or greater
 - Primary frontal dune (first dune landward of the beach)
- **Zone AE – Areas of 100-year flood**
 - May be coastal or riverine
 - Coastal can contain up to 2.9 feet wave height
 - Coastal flood elevations at top of wave envelope
 - **Moderate Wave Action Area (MoWA)**
 - Portion of A Zone with 1.5 – 3.0' waves and moving water
 - Also known as Coastal A Zone
 - **Minimal Wave Action Area (MiWA)**
 - Less than 1.5' waves, possible moving water
 - **Limit of Moderate Wave Action (LiMWA)**
 - Delineates the landward extent of the MoWA
 - LiMWA's were update/added to FEMA flood maps in MA in 2017
- **AO Zone**
 - Overwash area with flow depths of 1 to 3 feet

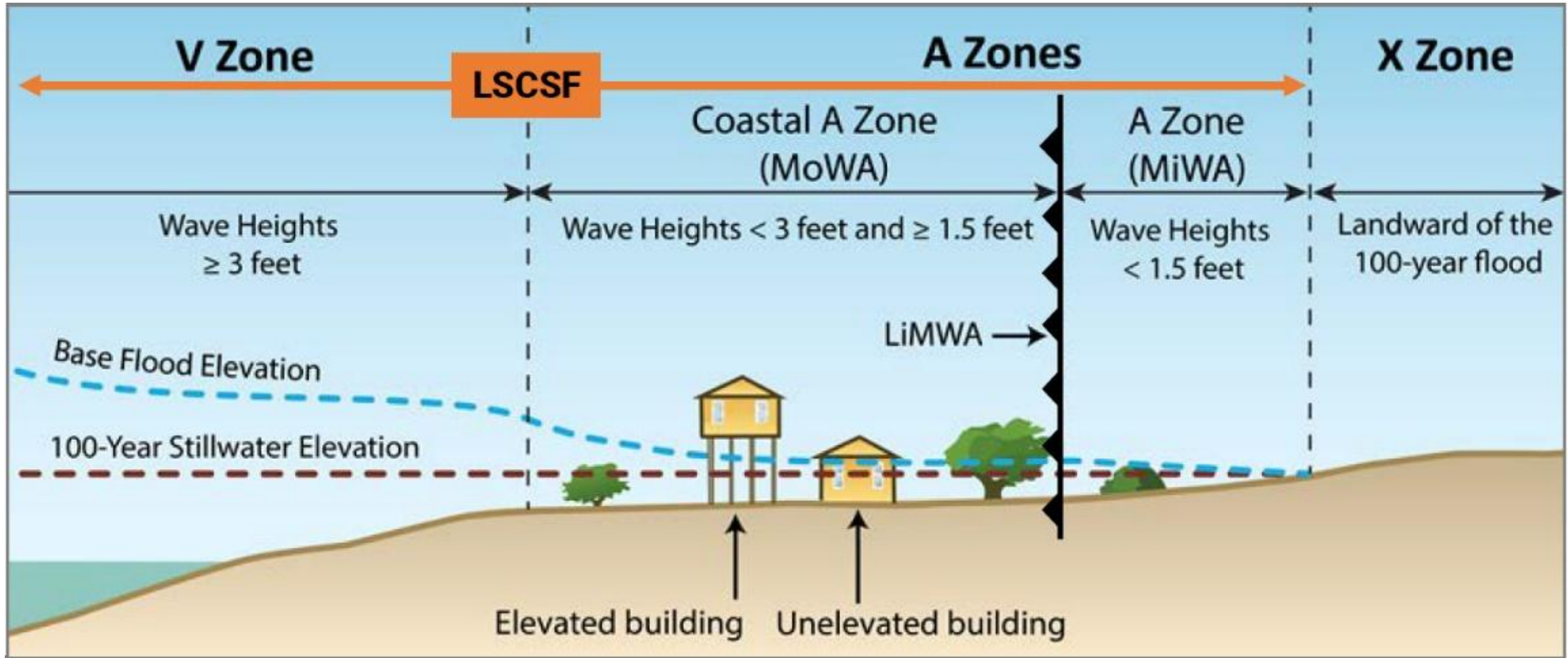
FEMA Map Service Center: msc.fema.gov

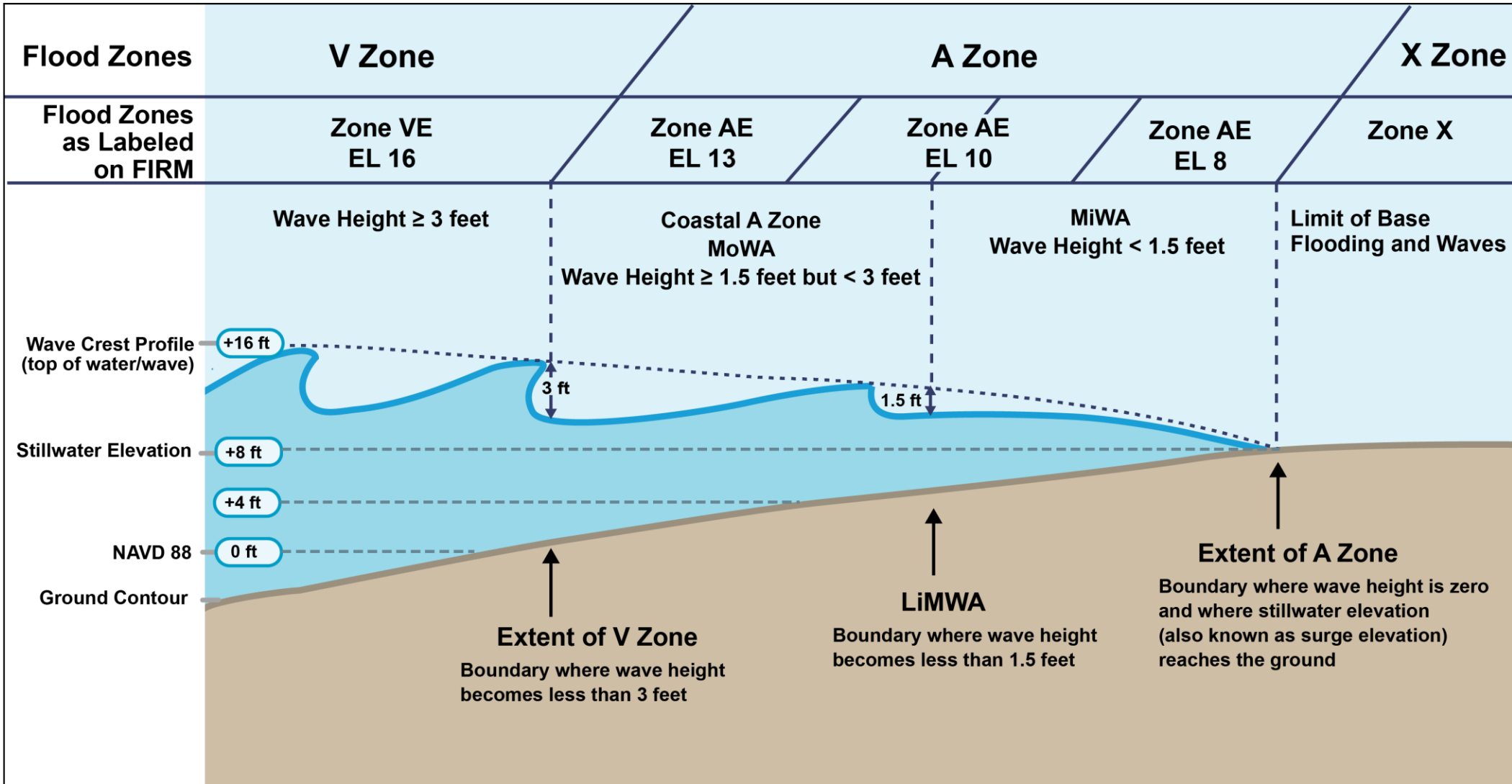


Photo Credit: CZM

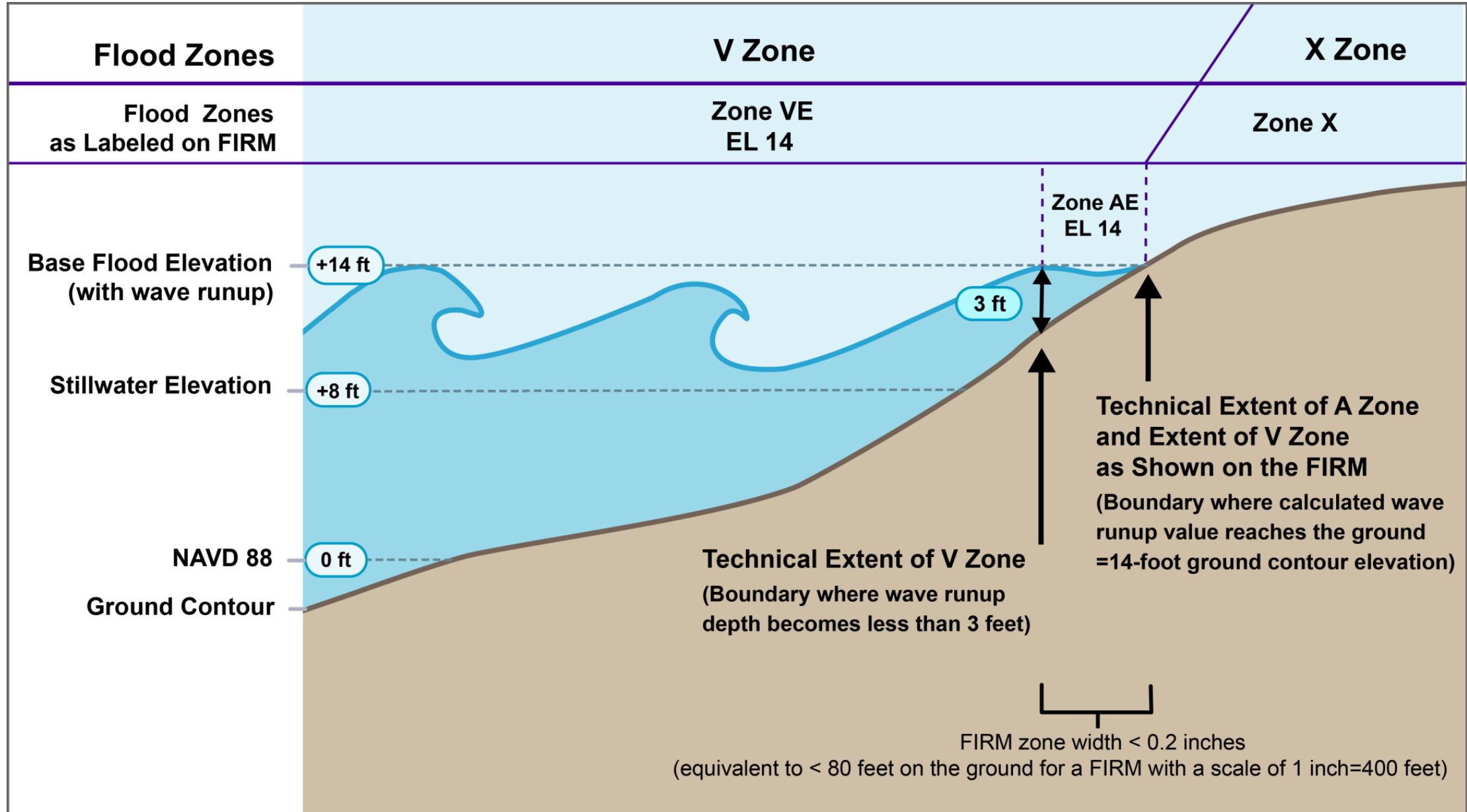
FEMA Coastal Flood Zone Definitions

- Shaded Zone X – Areas of 500-year flood
- Unshaded Zone X – “Areas of minimal flooding”





The "Invisible A Zone"



General Points to Consider

- Maps are a graphic representation of engineering data
- Detailed information generated only at specific transects
- Effective maps are based on sea level and shoreline position at the time the flood study was conducted (FIS available in the Map Service Center).



Example 1: LiMWA, MoWA and MiWA

Location: North Shore Boulevard,
East Sandwich

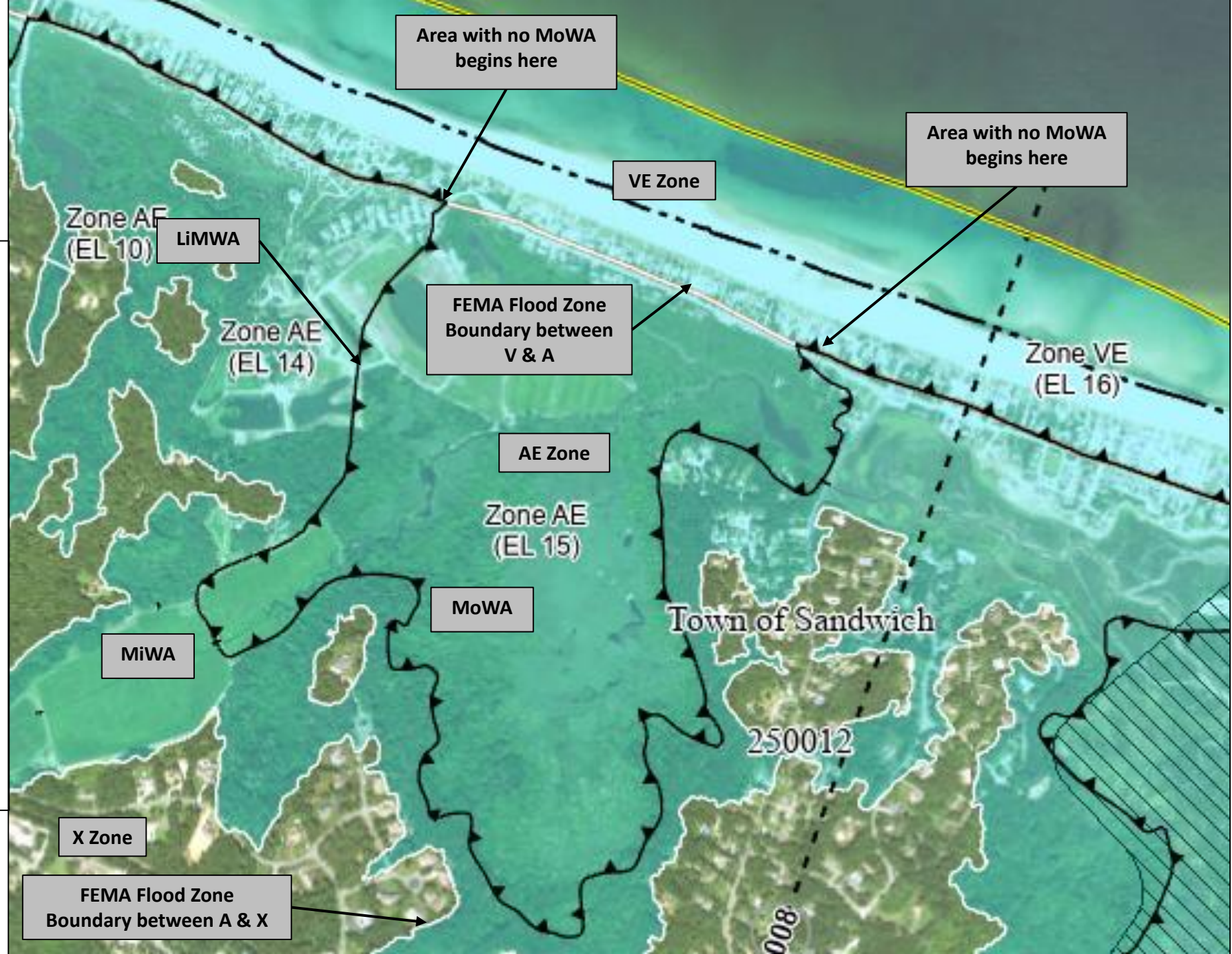
White lines = flood zone boundaries

LiMWA = boundary between MoWA and MiWA. Triangles point towards higher hazard area.

Zone AE and VE elevations (EL) are
Base Flood Elevation.

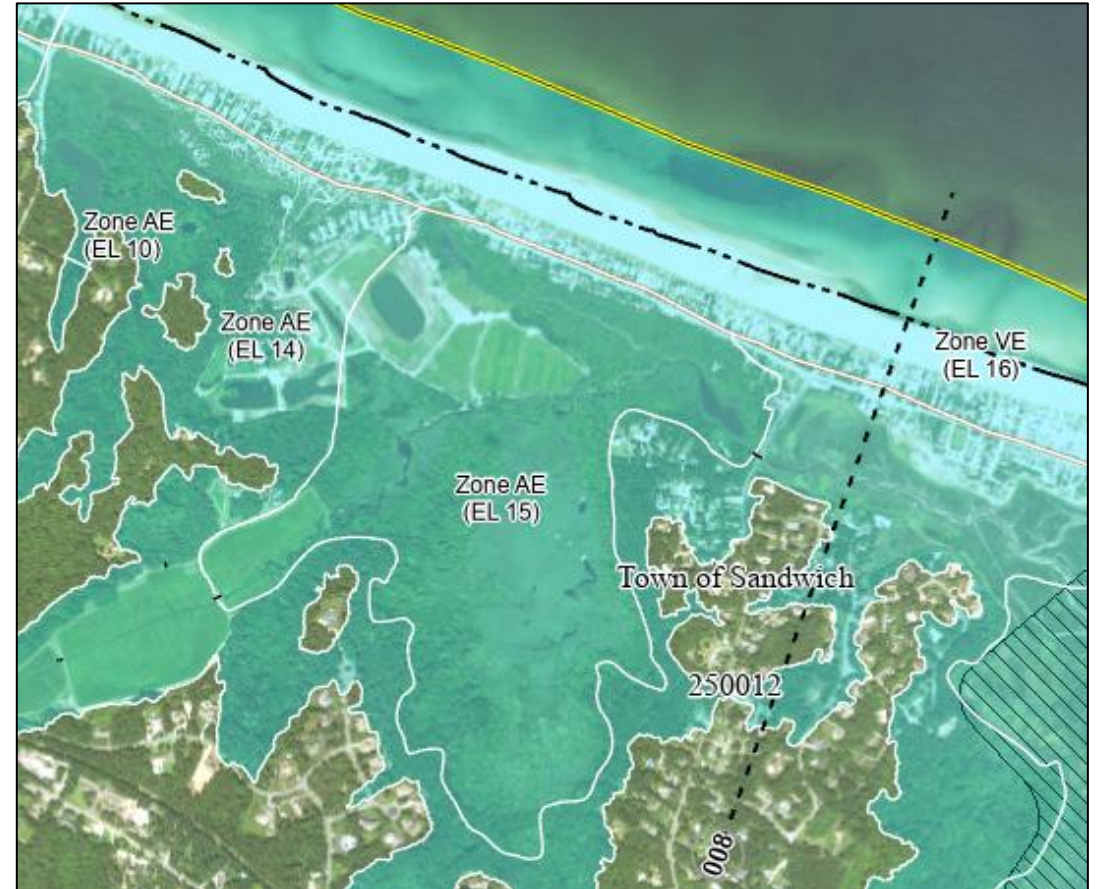
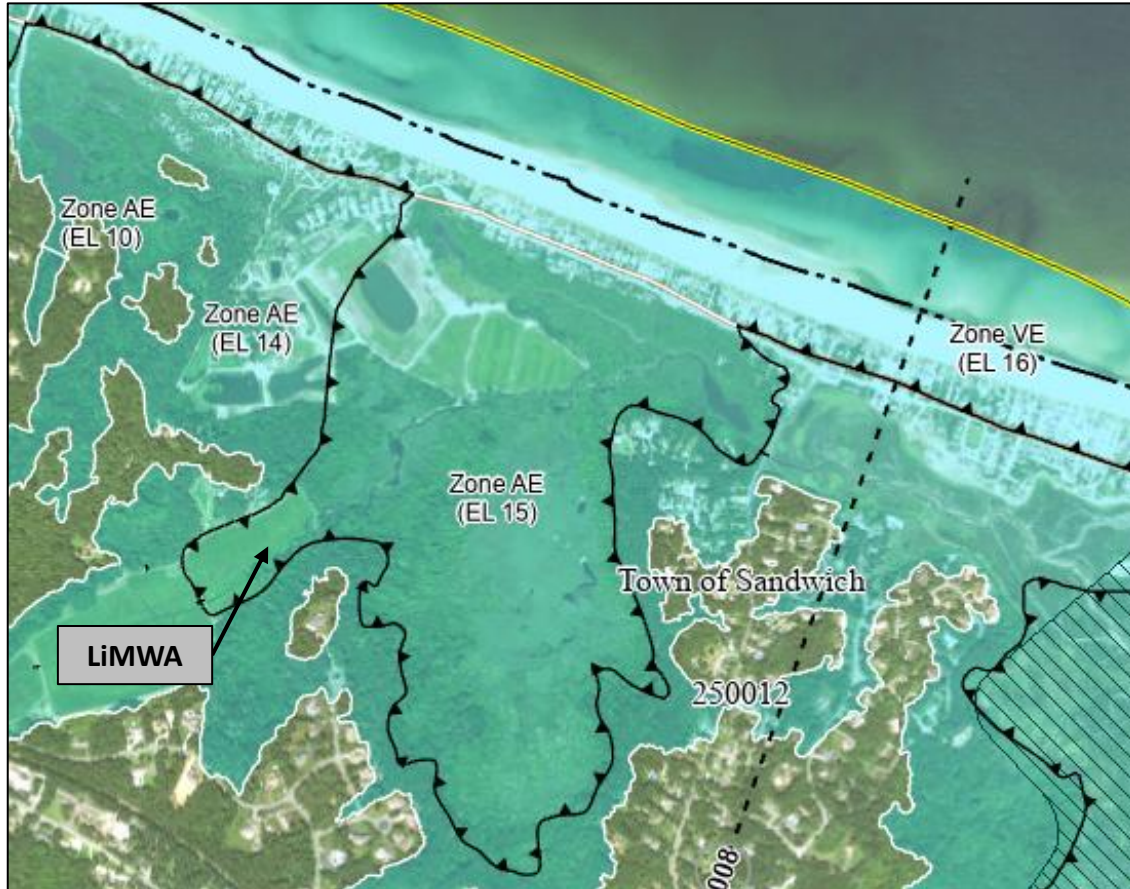
Note: In some cases, there is no
MoWA as the LiMWA divides the V
Zone and MiWA only.

Tip: The NFHL viewer allows you to
toggle on/off the LiMWA layer to
verify that the LiMWA line coincides
with the V/A boundary in some
places.



Example 2: Toggle LiMWA in the Viewer

Location: North Shore Boulevard, East Sandwich



Tip: The NFHL viewer allows you to toggle on/off the LiMWA layer to verify that the LiMWA line coincides with the V/A boundary in some places.

Example 3A: Seawall with no MoWA

Location: Revere
Beach Boulevard,
Revere

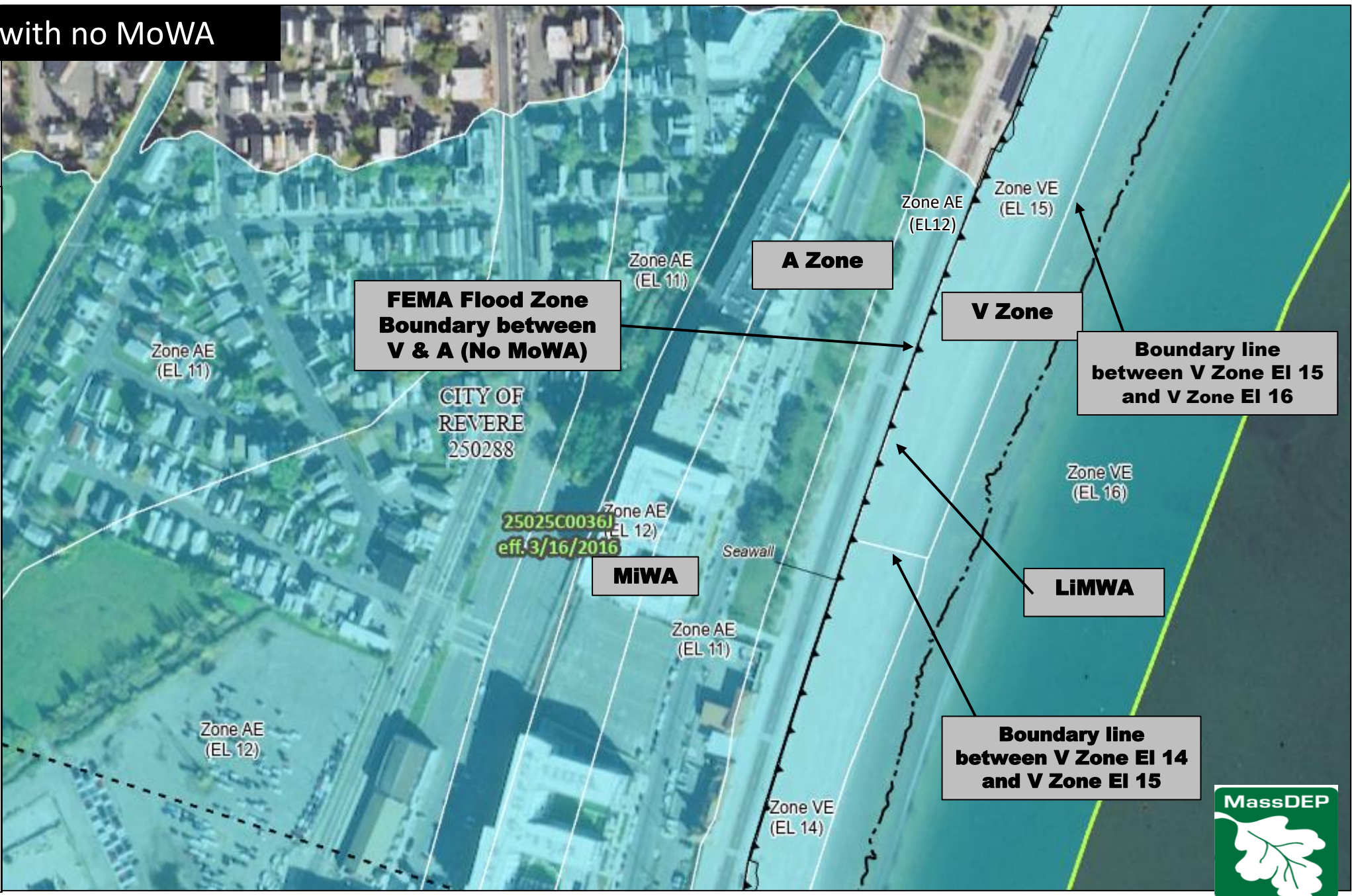
White lines = flood zone boundaries

LiMWA = boundary between MoWA and MiWA. Triangles point towards higher hazard area.

Zone AE and VE elevations (EL) are Base Flood Elevation.

Note: In some cases, there is no MoWA as the LiMWA divides the Zone V and MiWA only.

Tip: The NFHL viewer allows you to toggle on/off the LiMWA layer to verify that the LiMWA line coincides with the V/A boundary in some places.



Example 3B: Seawall with no A Zone
(no MiWA and no MoWA)

Location: Winthrop
Parkway, Revere

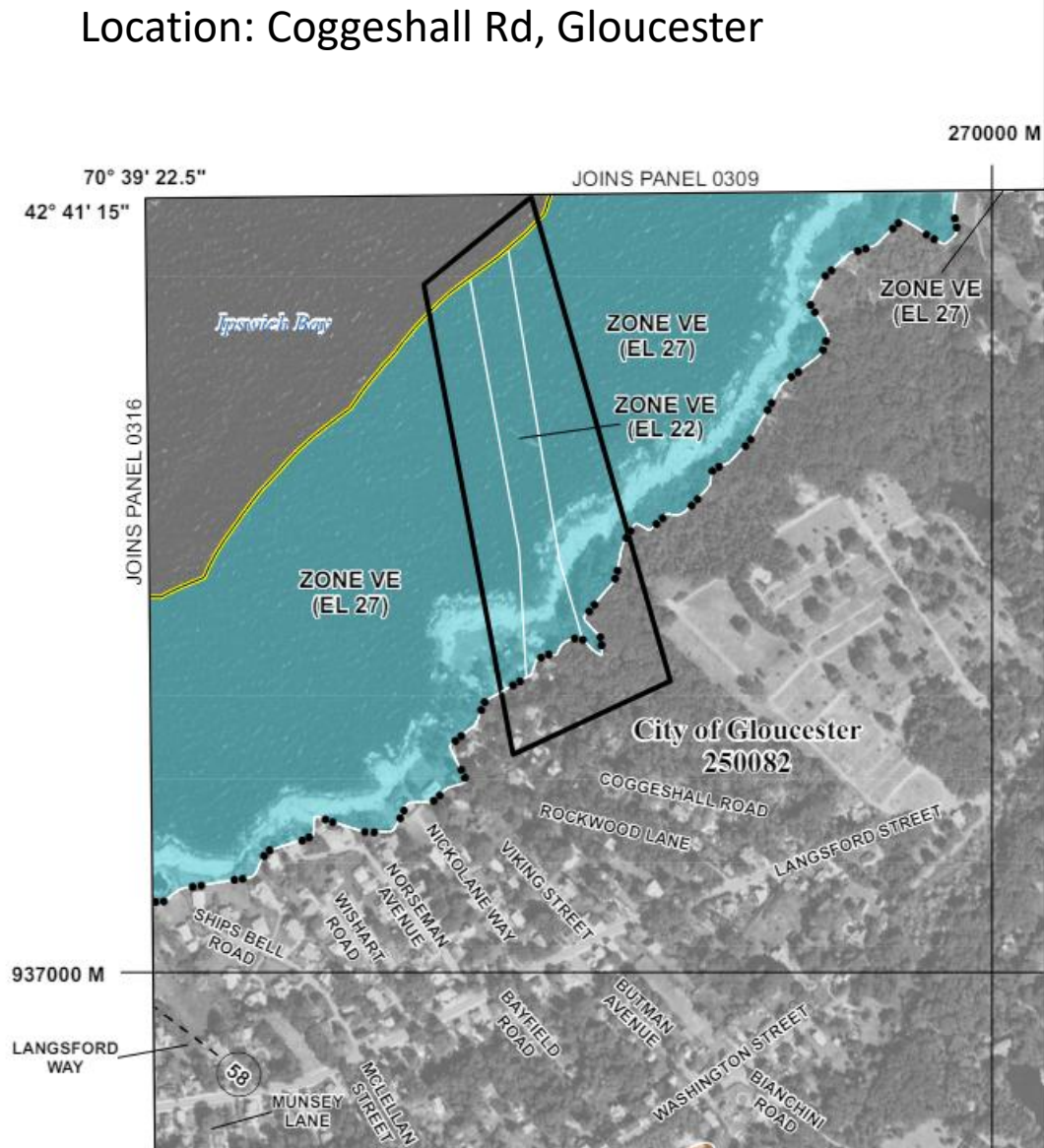
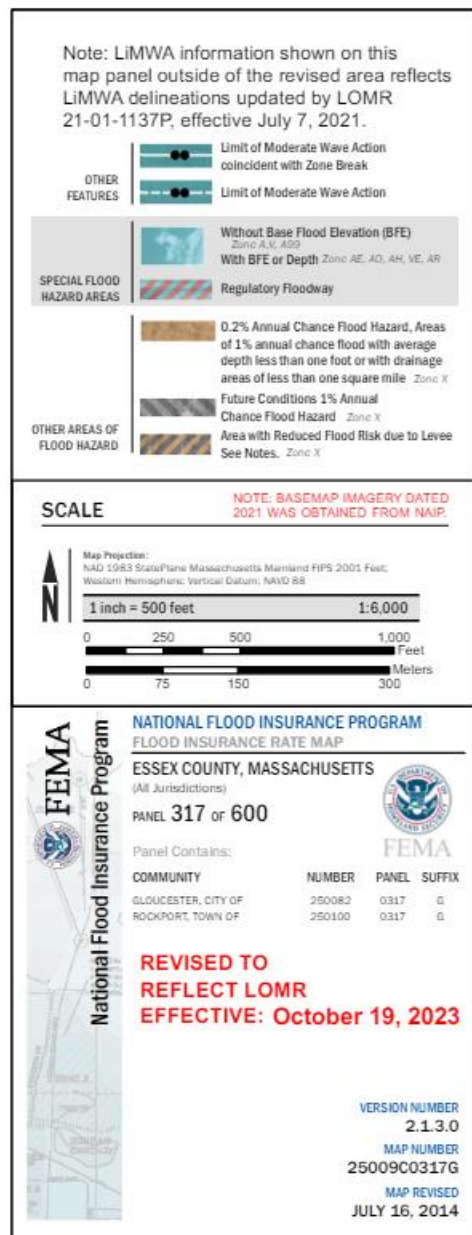
White lines = flood
zone boundaries

LiMWA = boundary
between MoWA and
MiWA. Triangles
point towards higher
hazard area.

Zone AE and VE
elevations (EL) are
Base Flood Elevation.



- Letter of Map Amendment (LOMA)
 - ☐ Interpretation of what the current FIRM depicts for a specific site
- Letter of Map Revision (LOMR)
 - ☐ Request to change the FIRM based on new, site-specific data and engineering analysis.
- Do not use a revised flood zone or base flood elevation that is less restrictive than the FIRM until the written LOMC decision is issued by FEMA.
 - To use evidence of higher flood elevations, credible evidence must be provided. For example, a photograph showing flooding with identifiable landmarks.



Example 4: No A Zone & Letter of Map Revision (LOMR)

Location: Coggeshall Rd,
Gloucester

White lines = flood zone
boundaries

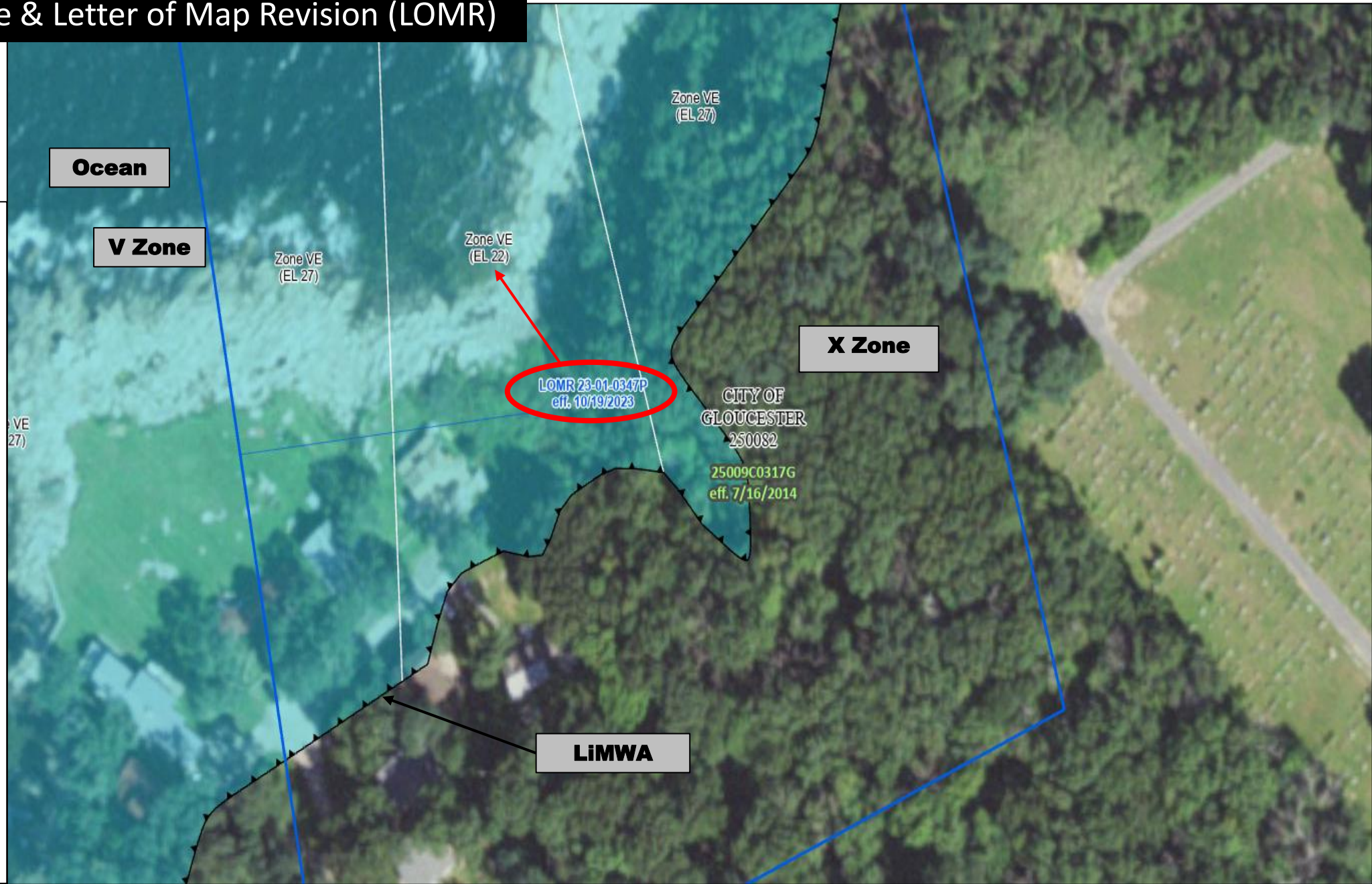
LiMWA = boundary between
MoWA and MiWA. Triangles point
towards higher hazard area.

Zone AE and VE elevations (EL) are
Base Flood Elevation.

Note:

1. In some cases, there is no A Zone, and therefore no MiWA or MoWA as the LimWA divides the V and X Zones only.
2. Letter of map revision in the VE EL22 area.
3. Calculations approved by FEMA to revise the V Zone elevation at 22 within the LOMR defined area.

Tip: The NFHL viewer allows you to toggle on/off the LiMWA layer to verify that the LiMWA line coincides with the V/A boundary in some places.

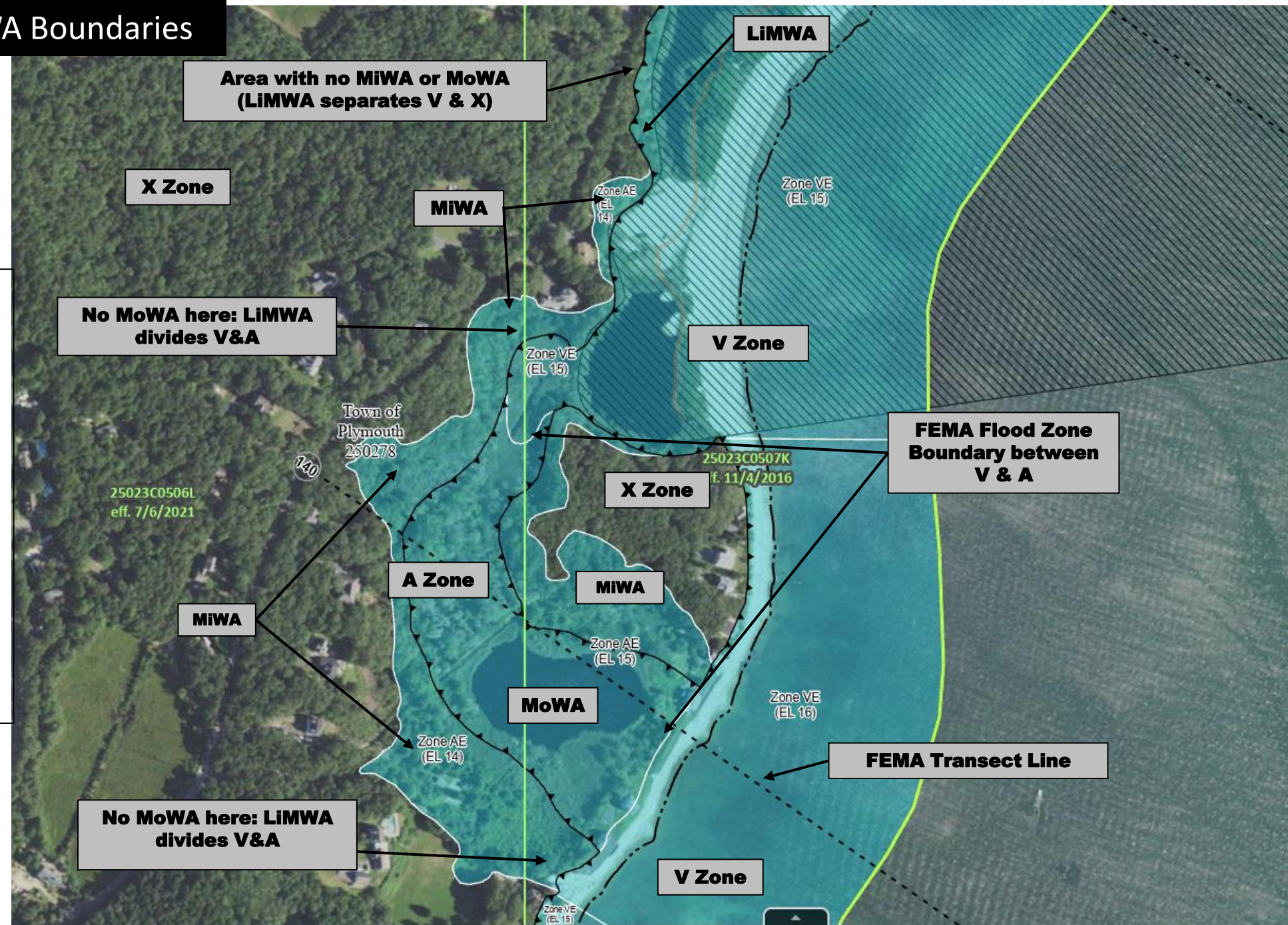


Location: Black Pond Rd,
Plymouth

LiMWA = boundary between MoWA and MiWA. Triangles point towards higher hazard area.

Note:

1. FEMA Transect line is where the detailed mapping analysis is done.



Location: Ellisville Harbor
State Park, Plymouth

Note: In some areas, the LimWA divides the Zone V and Zone X only and there is no A Zone, and therefore no MiWA or MoWA.



Example 7: No MoWA, AO Zone Present

Location: Atlantic Ave, Salisbury

White lines = flood zone boundaries

LiMWA = boundary between MoWA and MiWA.
Triangles point towards higher hazard area.

Zone AE and VE elevations (EL) are Base Flood Elevation.

Notes:

1. In some cases, there is no MoWA as the LiMWA divides the Zone V and MiWA only.
2. In new LSCSF regulations: AO Zone will have the same perf standards as the MoWA. The AO Zone is considered an overwash area with directional flow during flood events. Often found on barrier beaches.

Tip: The NFHL viewer allows you to toggle on/off the LiMWA layer to verify that the LiMWA line coincides with the V/A boundary in some places.



Example 8: Levee

Location: Harbor & Cove Streets,
New Bedford

White lines = flood zone boundaries

LiMWA = boundary between MoWA and MiWA. Triangles point towards higher hazard area.

Zone AE and VE elevations (EL) are Base Flood Elevation.



Example 10: Quiz

Location: Scituate

A Zone

MoWA

X Zone

V Zone

FEMA Flood Zone
Boundary between V & A

A Zone



White lines = flood zone boundaries

LiMWA = boundary between MoWA and MiWA. Triangles point towards higher hazard area.

Zone AE and VE elevations (EL) are Base Flood Elevation.



Example 10: ANSWER

Location: Scituate

MoWA

No MoWA as the LiMWA separates the V and A



White lines = flood zone boundaries

LiMWA = boundary between MoWA and MiWA. Triangles point towards higher hazard area.

Zone AE and VE elevations (EL) are Base Flood Elevation.



Example 10: Toggle the LiMWA



FEMA's National Flood Hazard Layer (NFHL) Viewer

Location: Scituate

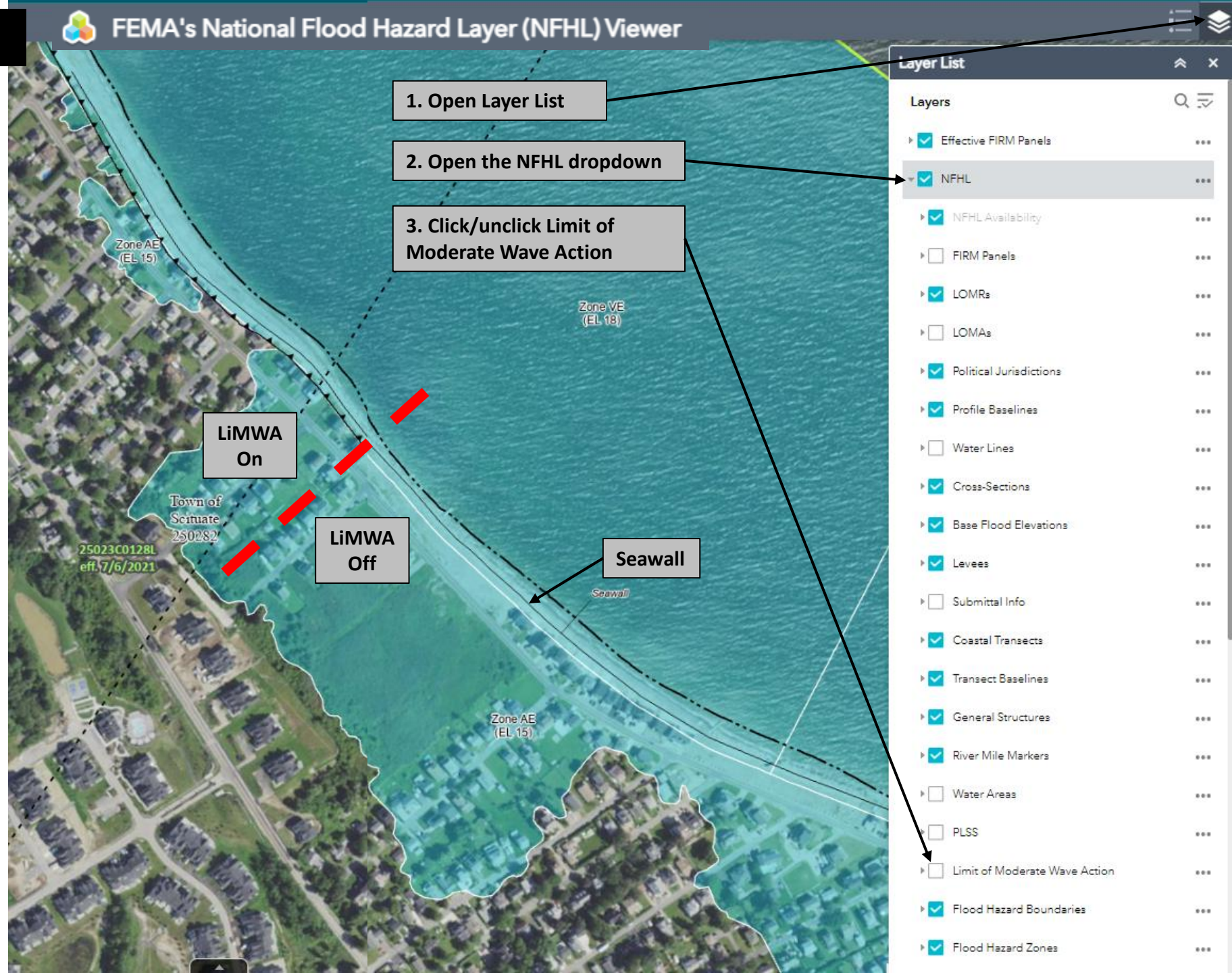
FEMA Map Service Center: msc.fema.gov

White lines = flood zone boundaries

LiMWA = Limit of Moderate Wave Action

To Toggle the LiMWA on/off in the viewer:

1. Click/open the layer list
2. Open the NFHL dropdown
3. Click/unclick Limit of Moderate Wave Action (may need to scroll down)



Example 11: Quiz

Location: Rockport

X Zone

V Zone

A Zone

LiMWA

MoWA

MiWA

FEMA Flood Zone
Boundary between A & X

FEMA Flood Zone
Boundary between V & X

LOMR



White lines = flood zone boundaries

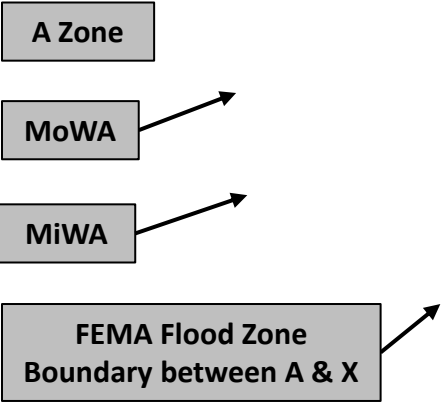
LiMWA = boundary between MoWA and MiWA. Triangles point towards higher hazard area.

Zone AE and VE elevations (EL) are Base Flood Elevation.



Example 11: ANSWER

Location: Rockport



No Zone A, the LiMWA separates the Zone V from the Zone X.

No MiWA and no MoWA

White lines = flood zone boundaries

LiMWA = boundary between MoWA and MiWA. Triangles point towards higher hazard area.

Zone AE and VE elevations (EL) are Base Flood Elevation.



Delineating (or Reviewing Delineation of) Flood Zones on Site Plans

Zone A/X or V/X Zone boundary

(landward extent of 1% chance flood)

- Use flood and ground elevations
 - Use same datum for all elevations
 - Newer FIRMs typically referenced to NAVD 88
 - Use best available topography (e.g., site survey, LIDAR)
 - Flood elevation of the most landward flood zone
 - BFE on FIRMs is rounded to the nearest foot

Methodology described on p. 1-83 in: [Applying the Massachusetts Coastal Wetlands Regulations: A Practical Manual for Conservation Commissions to Protect the Storm Damage Prevention and Flood Control Functions of Coastal Resource Areas](#) (aka the Coastal Manual)



Delineating (or Reviewing a Delineation of) Flood Zones on Site Plans

Zone V/A Zone boundary

- Can't be determined by ground elevation
- Must use the location of the boundary on the FIRM
- What is shown on the FIRM can be based on:
 - Wave height
 - Wave runup
 - Splash zone behind a coastal engineering structure (typically 30' from the seaward face)
 - Primary Frontal Dune
- Use the same technique to delineate the LiMWA line

Methodology described on p. 1-82 in: [Applying the Massachusetts Coastal Wetlands Regulations: A Practical Manual for Conservation Commissions to Protect the Storm Damage Prevention and Flood Control Functions of Coastal Resource Areas](#) (aka the Coastal Manual)



Reviewing Delineation of Flood Zones on Site Plans

- VE/X flood zone boundary is incorrectly scaled from FEMA Flood Map.
- It should be delineated at the ground contour corresponding to the Base Flood Elevation for the landward most flood zone (Elevation 15)



Questions?

Rebecca Haney, CFM,
Coastal Geologist,
MA Office of Coastal Zone
Management

rebecca.haney@mass.gov



Photo Credit: CZM

Massachusetts State Building Code Flood Standards

June, 2025

10th Edition Base Volume

10th Edition Residential Volume



44 CFR 60.3

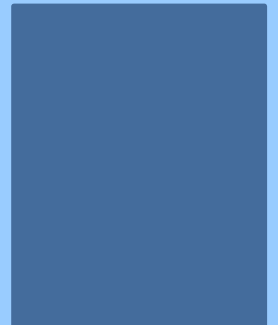
Minimum standards for
National Flood Insurance
Program



International Code Series



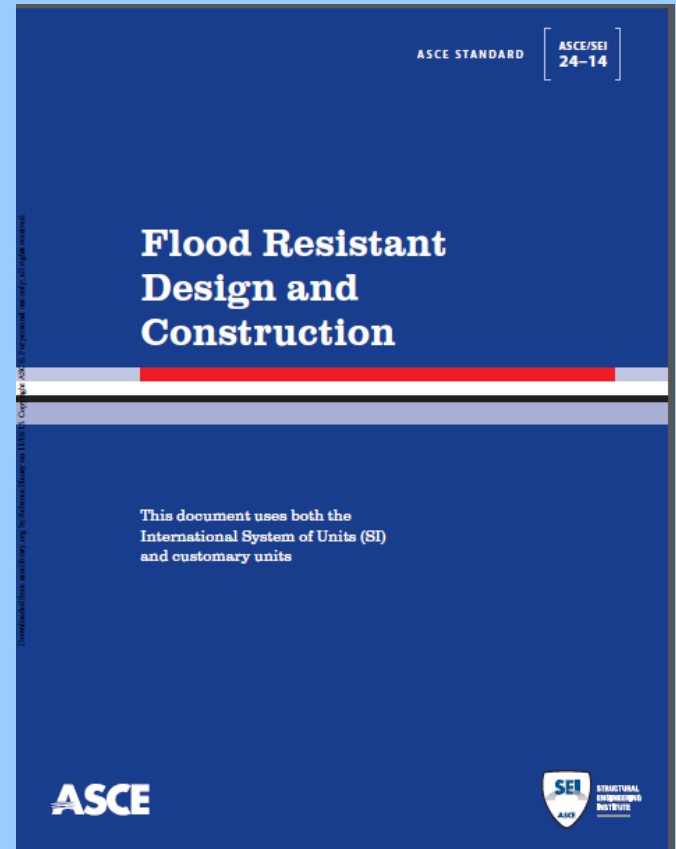
Massachusetts Code 10th Ed based on
2021 I Code Series



Referenced Standards

ASCE 24-14 Flood
Resistant Design

ASCE 7-16 Minimum
Design Loads



Massachusetts
State Building
Code

10th Edition Residential
Volume

10th Edition Base Volume

Building Code Standards



Residential Volume

Chapter 1, Scope and
Administration

Chapter 2, Definitions

Chapter 3, Building Planning

Section R322 Flood-Resistant
Construction

Chapter 4, Foundations

Residential Volume

Flood Hazard Areas (A zones)

Coastal High Hazard Areas (V zones and Coastal A zones)

Coastal Dunes

Design Flood/Base Flood

R322.1.5 Lowest Floor and Basement.



The lowest floor shall be the lowest floor of the lowest enclosed area, including basement, and excluding any unfinished flood-resistant enclosure that is useable solely for vehicle parking, building access or limited storage provided that such enclosure is not built so as to render the building or structure in violation of this section.

R322.1.5

Lowest Floor

and

Basement.

A basement is the portion of a building, including crawl spaces, having its floor below exterior grade on all sides. This definition of “basement” is limited in application to the provisions of section R322.

Substantial Improvement Residential Volume

R105.3.1.1 Determination of Substantially Improved or Substantially Damaged Existing Buildings in Flood Hazard Areas.

This is not in definitions

Substantial Repair of a Foundation

R105.3.1.1.1 Determination of Substantial Repair of a Foundation. When work to repair or replace a foundation results in the repair or replacement of a portion of the foundation with a perimeter along the base of the foundation that equals or exceeds 50% of the perimeter of the base of the foundation measured in linear feet, or repair or replacement of 50% of the piles, columns or piers of a pile, column or pier supported foundation, the building official shall determine it to be substantial repair of a foundation...

Construction
Documents
Residential
Volume

- **R322.1.11 Construction Documents.** The construction documents shall include documentation that is prepared and sealed by a registered design professional that the design and methods of construction to be used meet the applicable criteria of this section.

R107.2.7 Information for construction in flood hazard areas. For buildings and structures located in whole or in part in flood hazard areas as established by Table R301.2(1), construction documents shall include:

1. Delineation of flood hazard areas, floodway boundaries and flood zones and the design flood elevation, as appropriate.
2. The elevation of the proposed lowest floor, including basement...
3. The elevation of the bottom of the lowest horizontal structural member in coastal high hazard areas (V Zone)...
4. If design flood elevations are not included on the community's Flood Insurance Rate Map (FIRM), the building official and the applicant shall obtain and reasonably utilize any design flood elevation and floodway data available from other sources.



Construction Standards Residential Volume A zones

R322.1.4 Establishing the Design Flood Elevation.

- 1. For AO Zones, the design flood elevation shall be the elevation of the highest adjacent grade plus the flood depth specified on the FIRM plus two foot or the elevation of the highest adjacent grade plus four feet if no flood depth is specified. See section R322.2 for requirements.
- 2. For A Zones, the design flood elevation shall be the base flood elevation plus two foot. See section R322.2 for requirements.

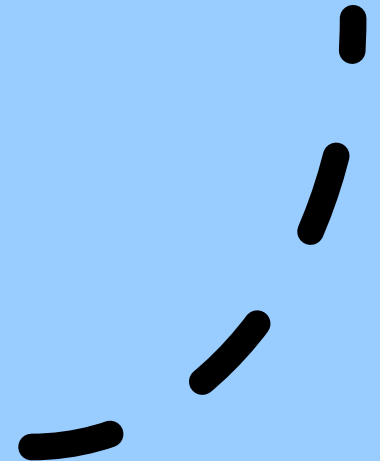


R322.2.1 Elevation requirements.

1. Buildings and structures in A Zones, shall have the lowest floors elevated to or above the design flood elevation.
2. In AO Zones buildings and structures shall have the lowest floor (including basement) elevated to a height of not less than the design flood elevation.

- **R322.2.1 Elevation requirements.**

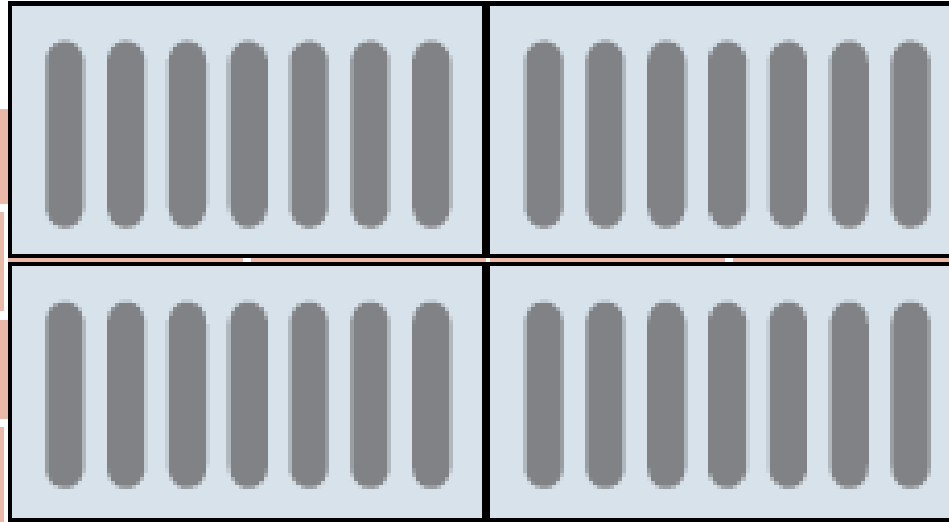
- 3. Basement floors that are below grade on all sides shall be elevated to or above design flood elevation.



Enclosed Areas Below the Design Flood Elevation

R322.2.2 Enclosed Area Below Design Flood Elevation. Enclosed areas, including crawl spaces, that are below the design flood elevation and are not basements shall:

1. Be used solely for parking of vehicles, building access or storage.
2. Be provided with flood openings that meet the following criteria and are installed in accordance with section R322.2.2.1:



R322.2.2

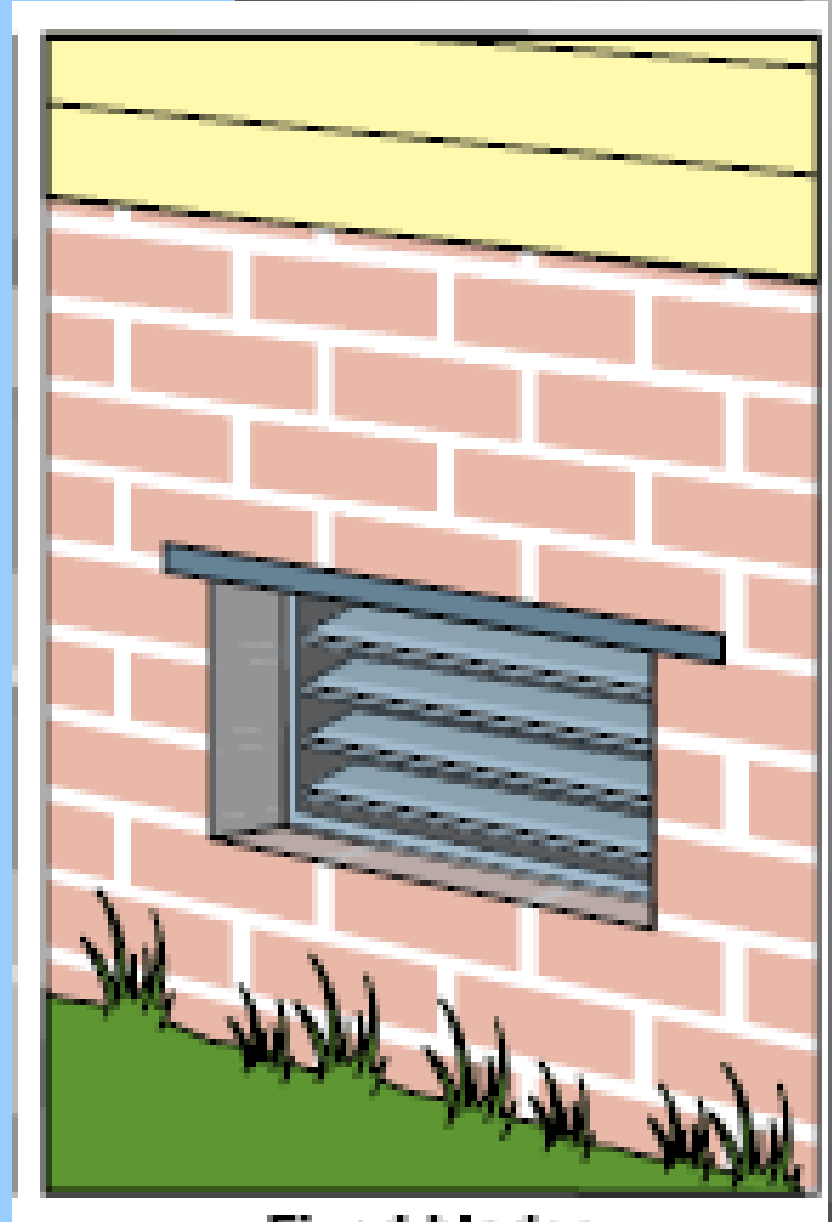
2.1. The total net area of openings shall be not less than one in² (645 mm²) for each ft² (0.093 m²) of enclosed area where the enclosed area is measured on the exterior of the enclosure walls, or the openings shall be designed as engineered openings and the construction documents shall include a statement by a registered design professional that the design of the openings will provide for equalization of hydrostatic flood forces on exterior walls by allowing for the automatic entry and exit of floodwaters as specified in section 2.6.2.2 of ASCE 24.

2.2. Openings shall be not less than three inches (76 mm) in any direction in the plane of the wall.

R322.2.2

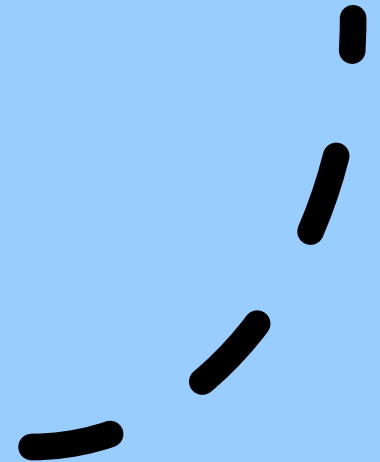
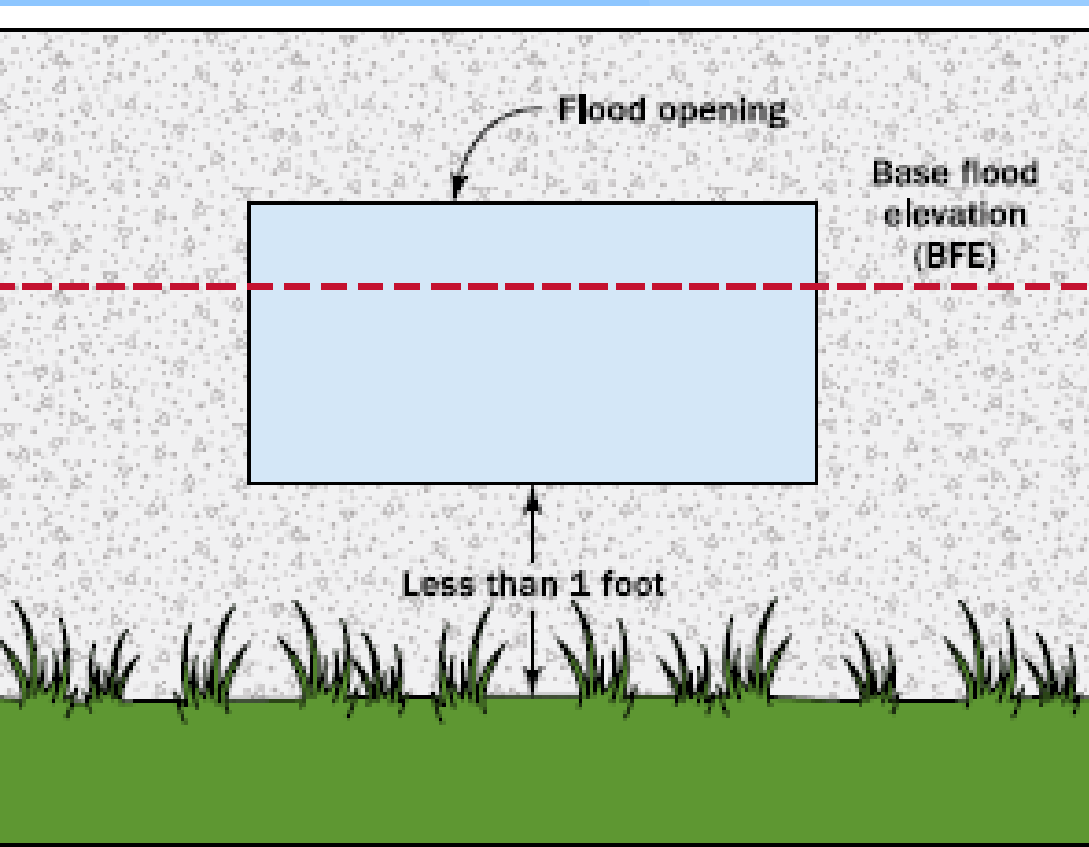
R322.2.2.1 Installation of Openings. The walls of enclosed areas shall have openings installed such that:

1. There shall be not less than two openings on different sides of each enclosed area; if a building has more than one enclosed area below the design flood elevation, each area shall have openings on exterior walls.



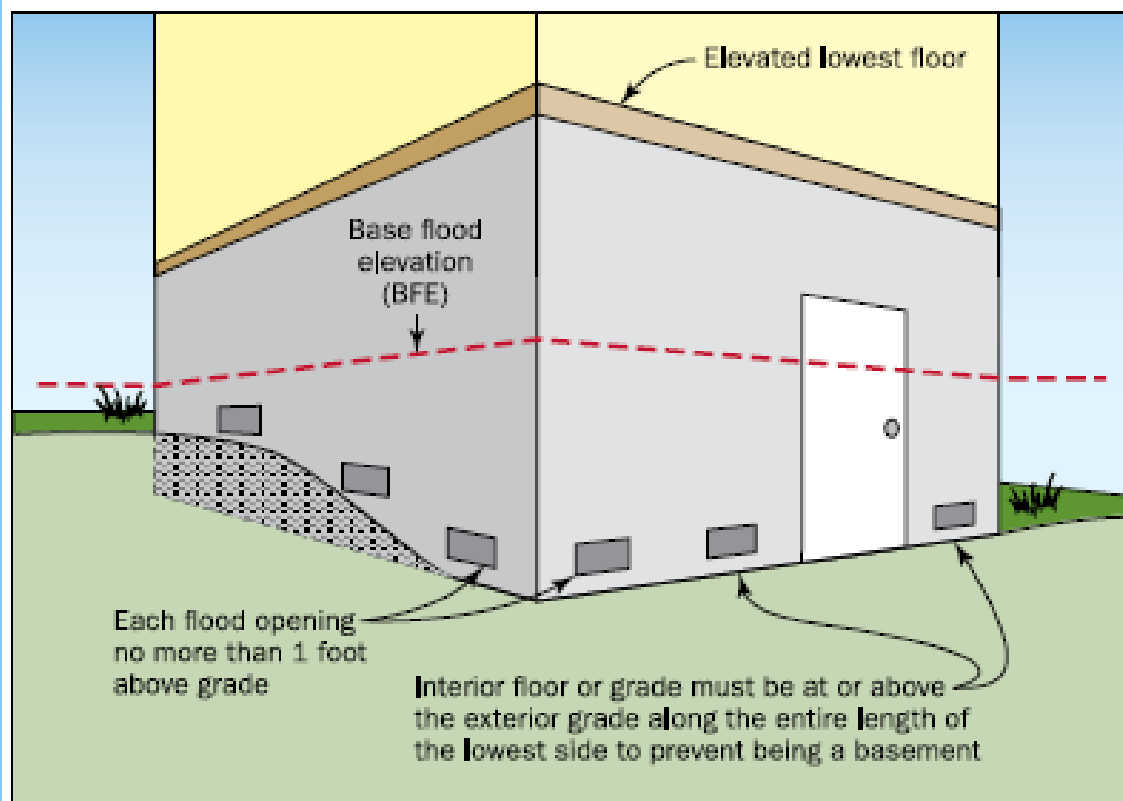
R322.2.2.1 Installation of Openings. The walls of enclosed areas shall have openings installed such that:

2. The bottom of each opening shall be not more than one foot (305 mm) above the higher of the final interior grade or floor and the finished existing exterior grade immediately under each opening.



R322.2.2.1 Installation of Openings. The walls of enclosed areas shall have openings installed such that:

3. Openings shall be permitted to be installed in doors and windows; doors and windows without installed openings do not meet the requirements of this section.



R322.1.6 Protection of mechanical and electrical systems.

Electrical systems, equipment and components; heating, ventilating, air conditioning; plumbing appliances and plumbing fixtures; duct systems; and other service equipment shall be located at or above the elevation required in section R322.2, R322.3 or R322.4. If replaced as part of a substantial improvement, electrical systems, equipment and components; heating, ventilating, air conditioning and plumbing appliances and plumbing fixtures; duct systems; and other service equipment shall meet the requirements of this section. Systems, fixtures, and equipment and components shall not be mounted on or penetrate through walls intended to break away under flood loads.

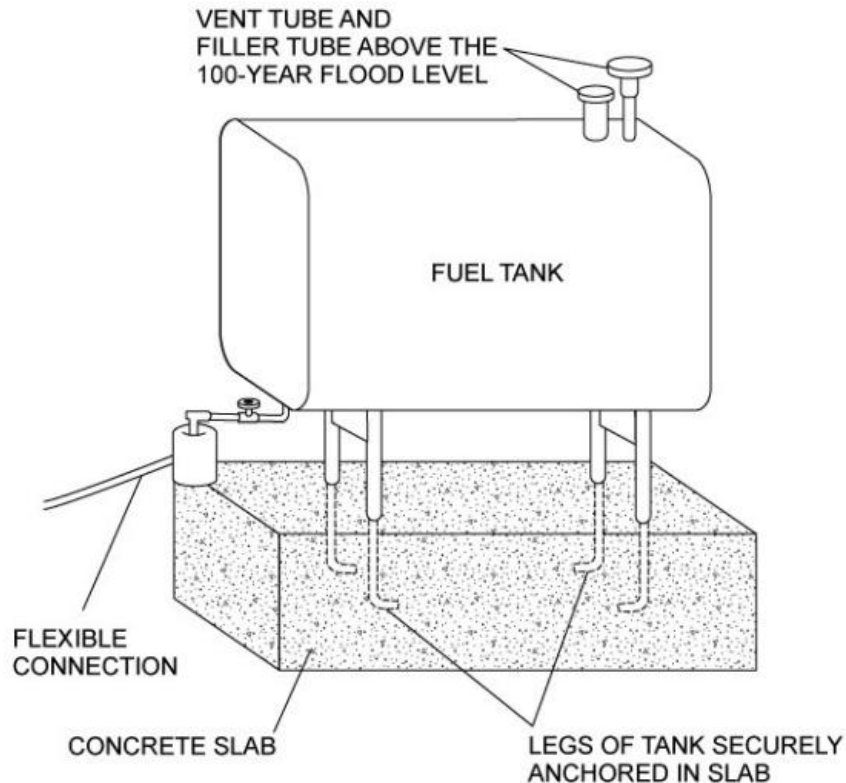
R322.1.6 Protection of mechanical and electrical systems.

Exception: Locating electrical systems, equipment and components; heating, ventilating, air conditioning; plumbing appliances and plumbing fixtures; duct systems; and other service equipment only within flood hazard areas including A and AO Zones is permitted below the elevation required in section R322.2 provided that they are designed and installed to prevent water from entering or accumulating within the components and to resist hydrostatic and hydrodynamic loads and stresses, including the effects of buoyancy, during the occurrence of flooding to the design flood elevation in accordance with ASCE 24. Electrical wiring systems are permitted to be located below the required elevation provided that they conform to the provisions of the electrical part of 780 CMR 51.00: Massachusetts Residential Code for wet locations.

R322.1.8 Flood- resistant materials.

Building materials and installation methods used for flooring and interior and exterior walls and wall coverings below the elevation required in Section R322.2 or R322.3 shall be flood damage- resistant materials that conform to the provisions of FEMA TB-2.

R322.2.4 Tanks. Underground tanks shall be anchored to prevent flotation, collapse and lateral movement under conditions of the base flood. Above-ground tanks shall be installed at or above the elevation required in Section R322.2.1 or shall be anchored to prevent flotation, collapse and lateral movement under conditions of the base flood.



Chapter 4 - Foundations

R408.7 Flood resistance. For buildings located in flood hazard areas as established in Table R301.2(1):

1. Walls enclosing the under-floor space shall be provided with flood openings in accordance with Section R322.2.2.
2. The finished ground level of the under-floor space shall be equal to or higher than the outside finished ground level on at least one side.

Exception: Deleted. (use of TB 11)



Technical Bulletin

Crawlspace Construction

for Buildings Located in Special Flood Hazard Areas
National Flood Insurance Program Interim Guidance

FEMA TB-11 / November 2001



FEMA



Openings in Foundation Walls and Walls of Enclosures

Below Elevated Buildings in Special Flood Hazard Areas
in accordance with the National Flood Insurance Program

Technical Bulletin 1 / August 2008



FEMA



Flood Damage-Resistant Materials Requirements

for Buildings Located in Special Flood Hazard Areas in
accordance with the National Flood Insurance Program

Technical Bulletin 2 / August 2008



FEMA

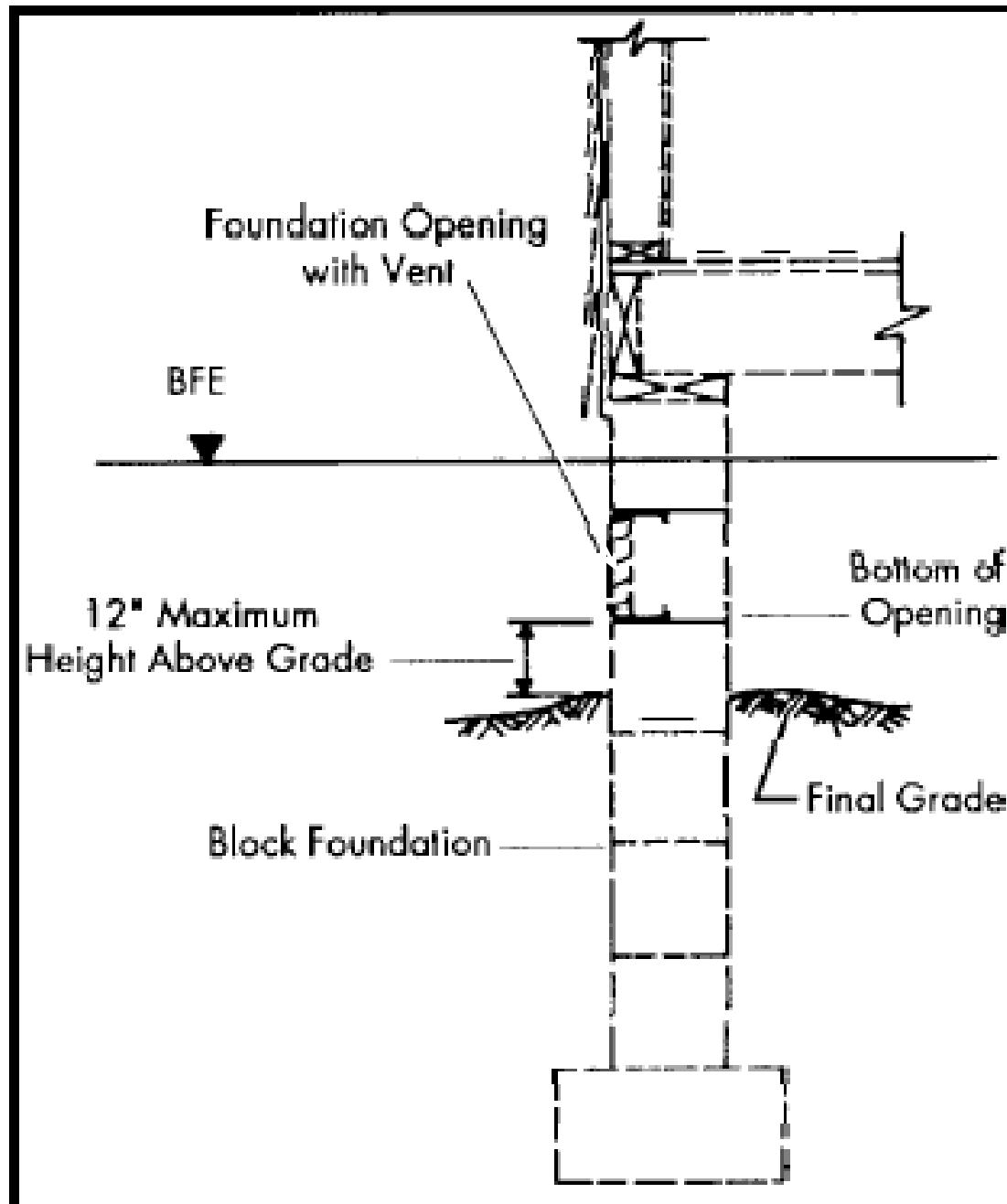


Figure 1. Opening for Solid Foundation Wall

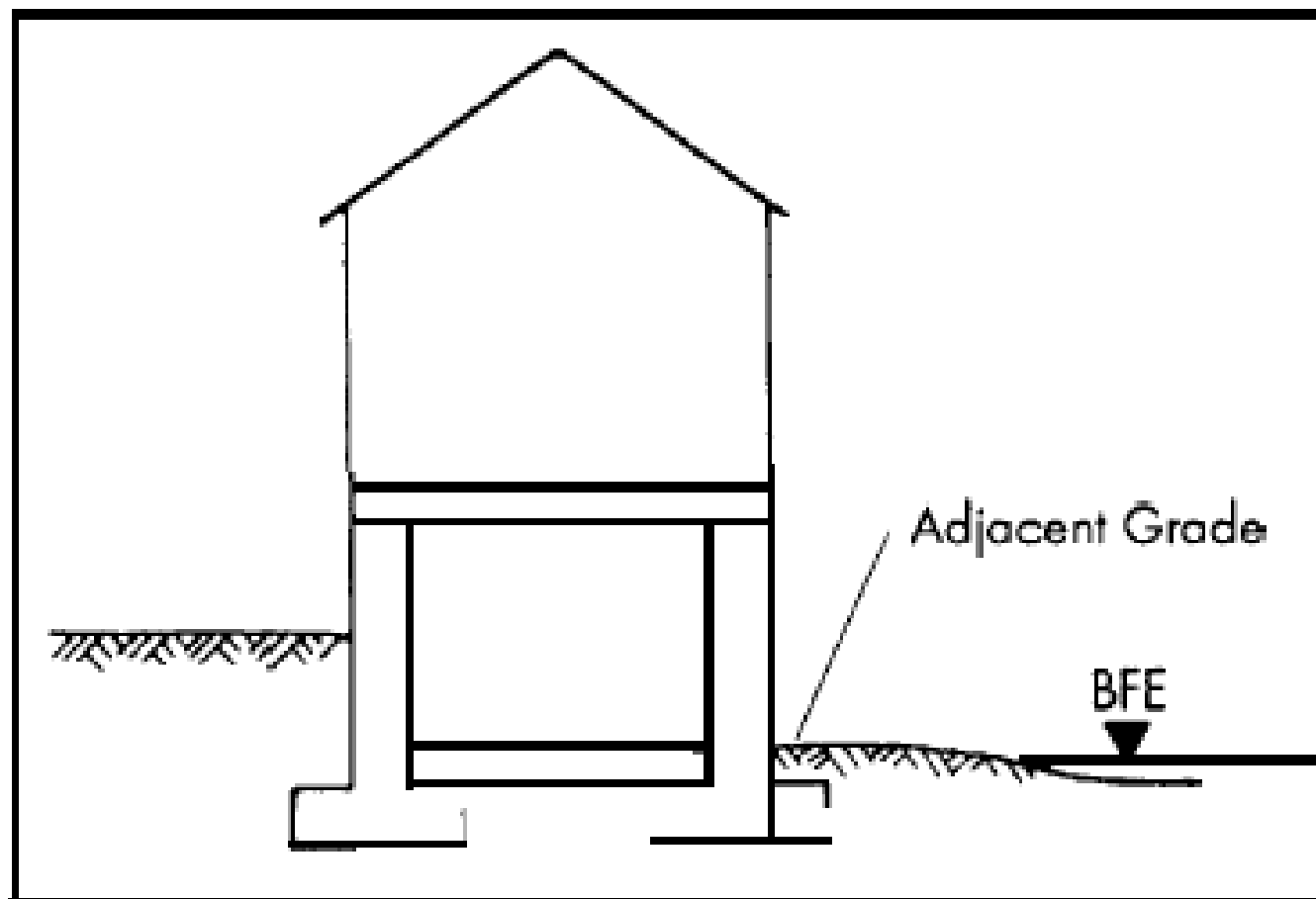


Figure 2. Compliant Grading for a Walkout Basement

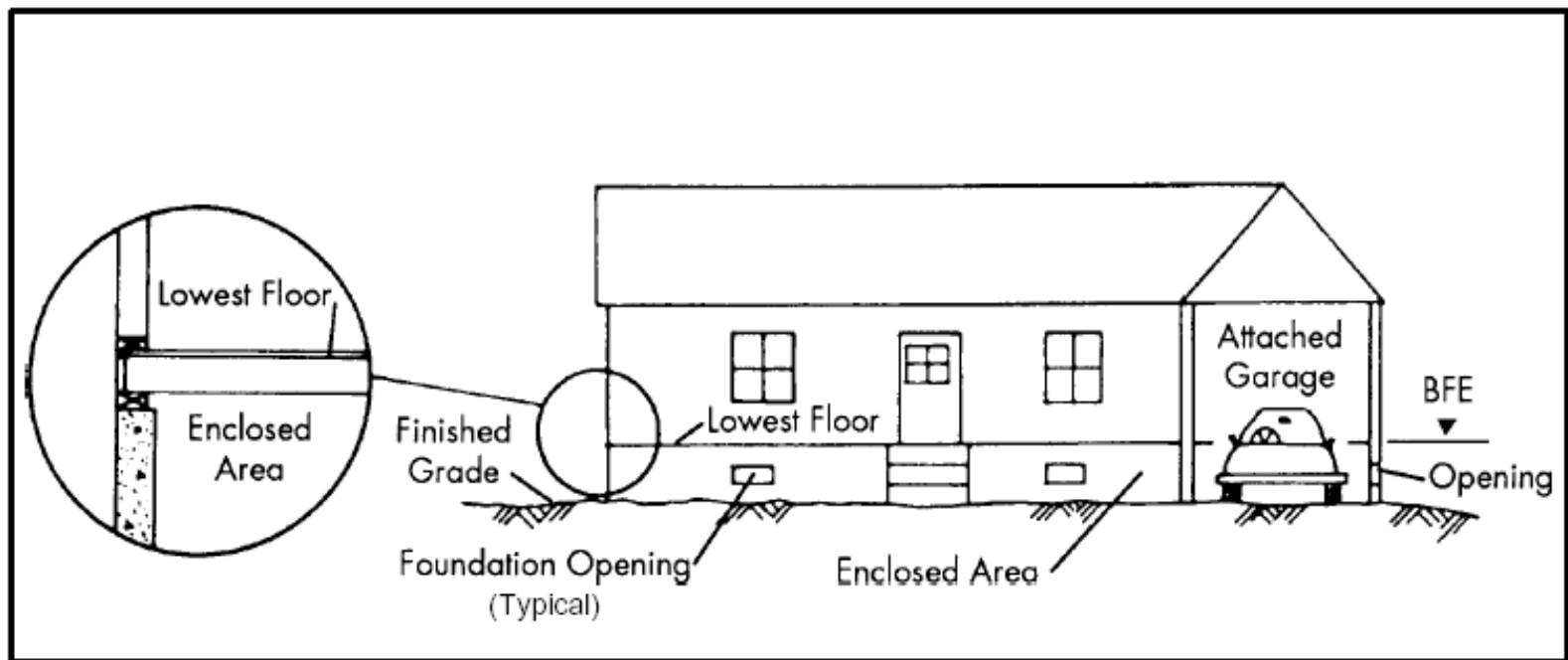
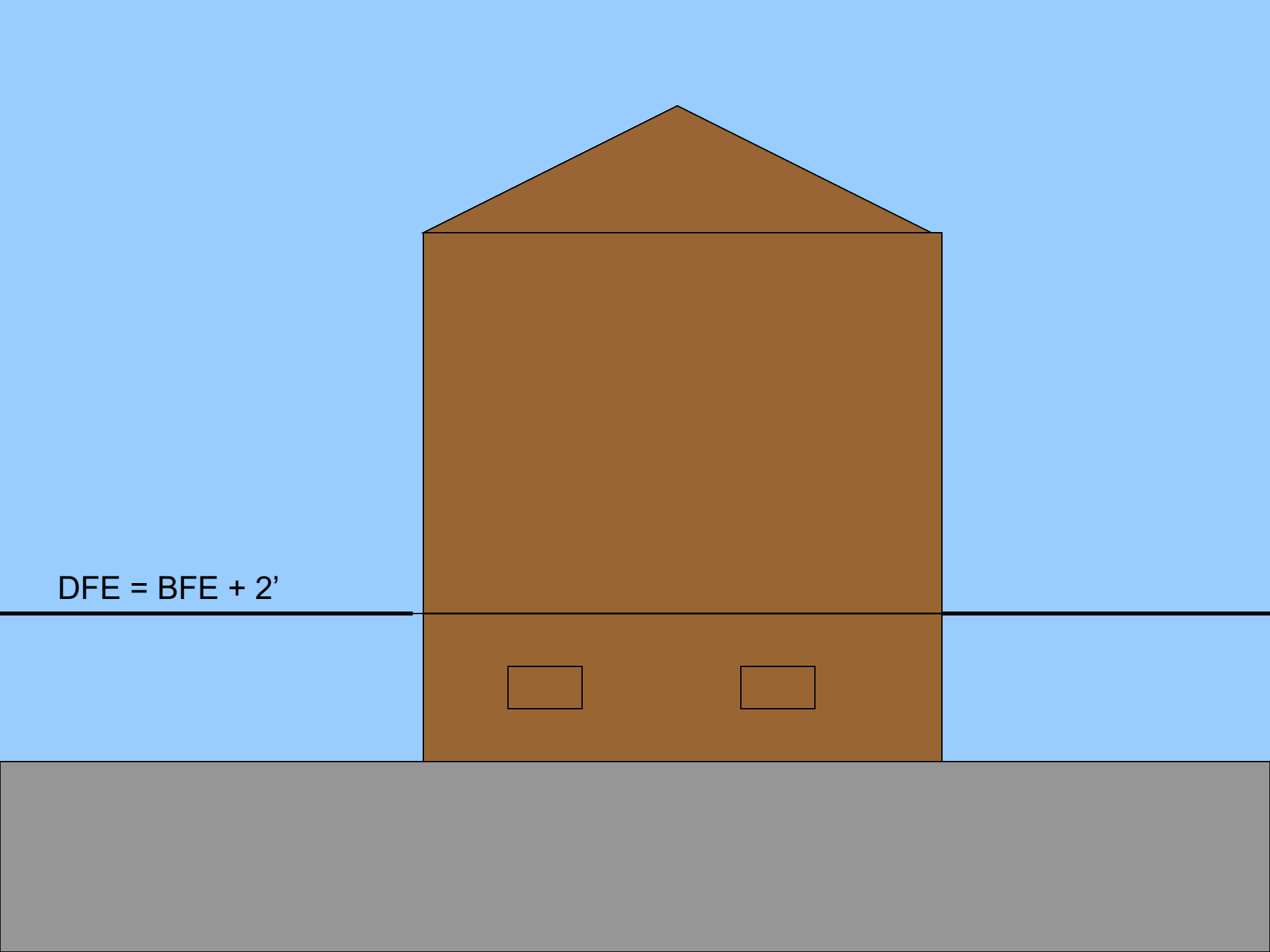
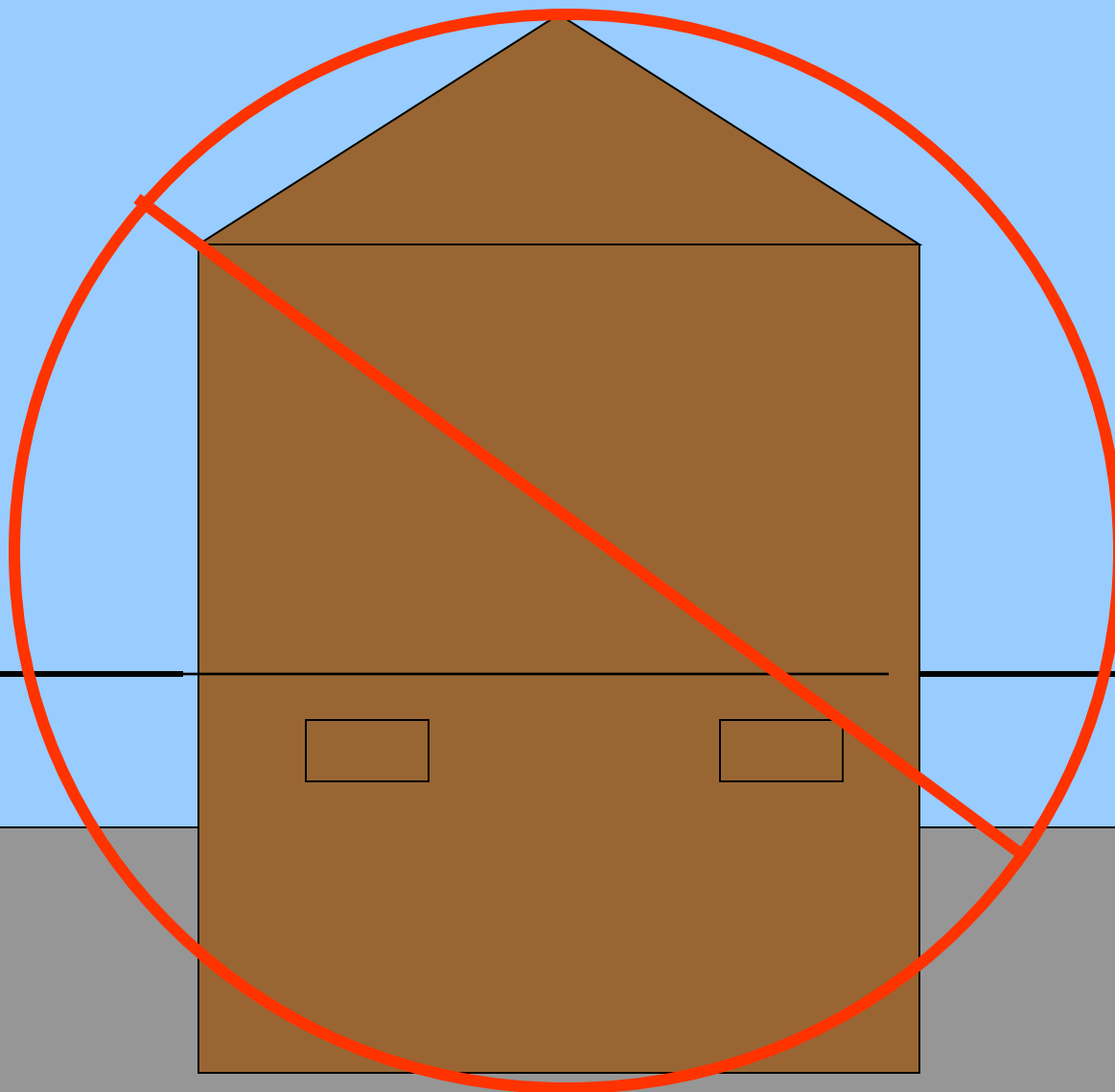


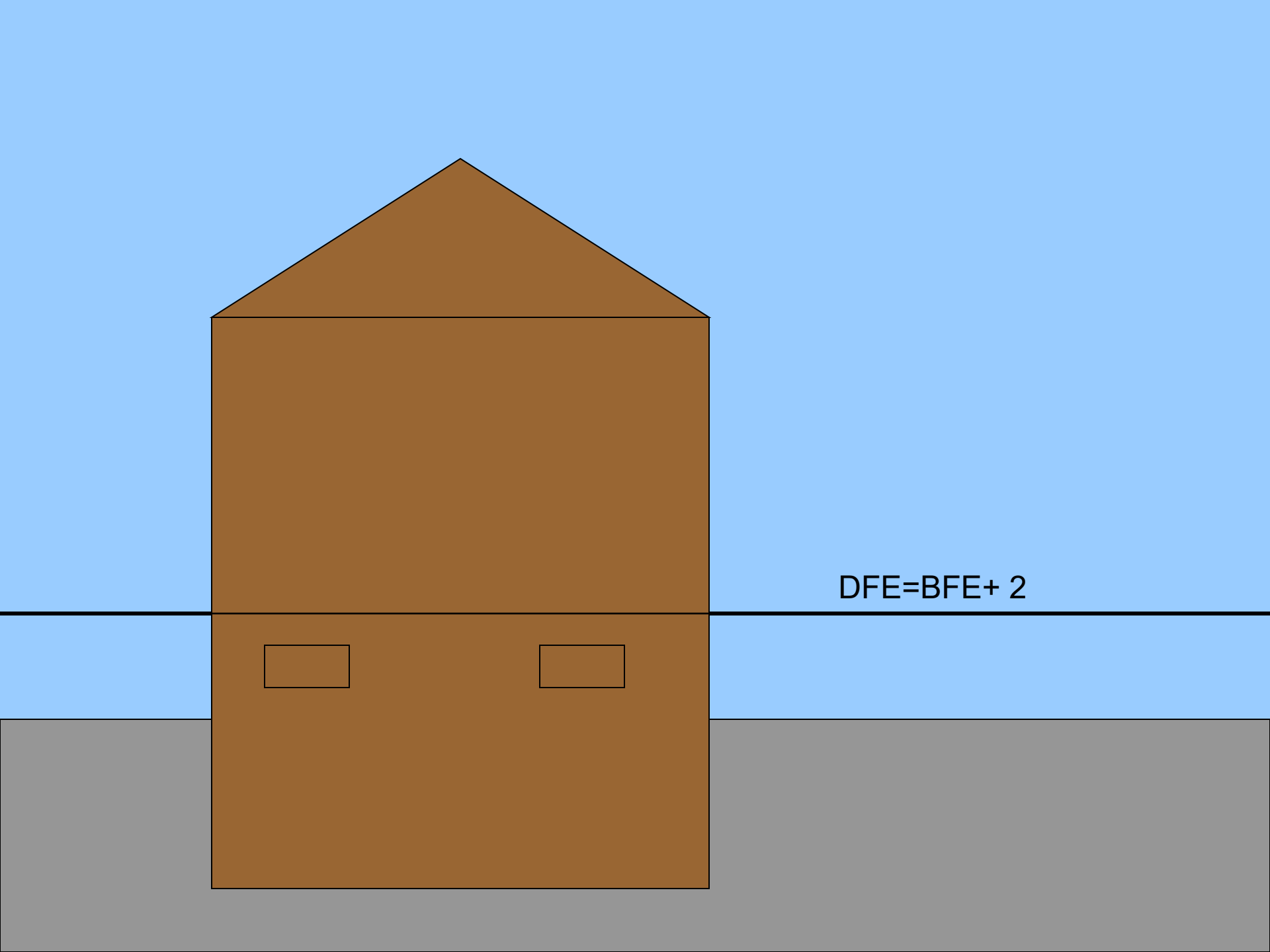
Figure 3. Compliant Residential Building Built on Solid Foundation Walls With Attached Garage



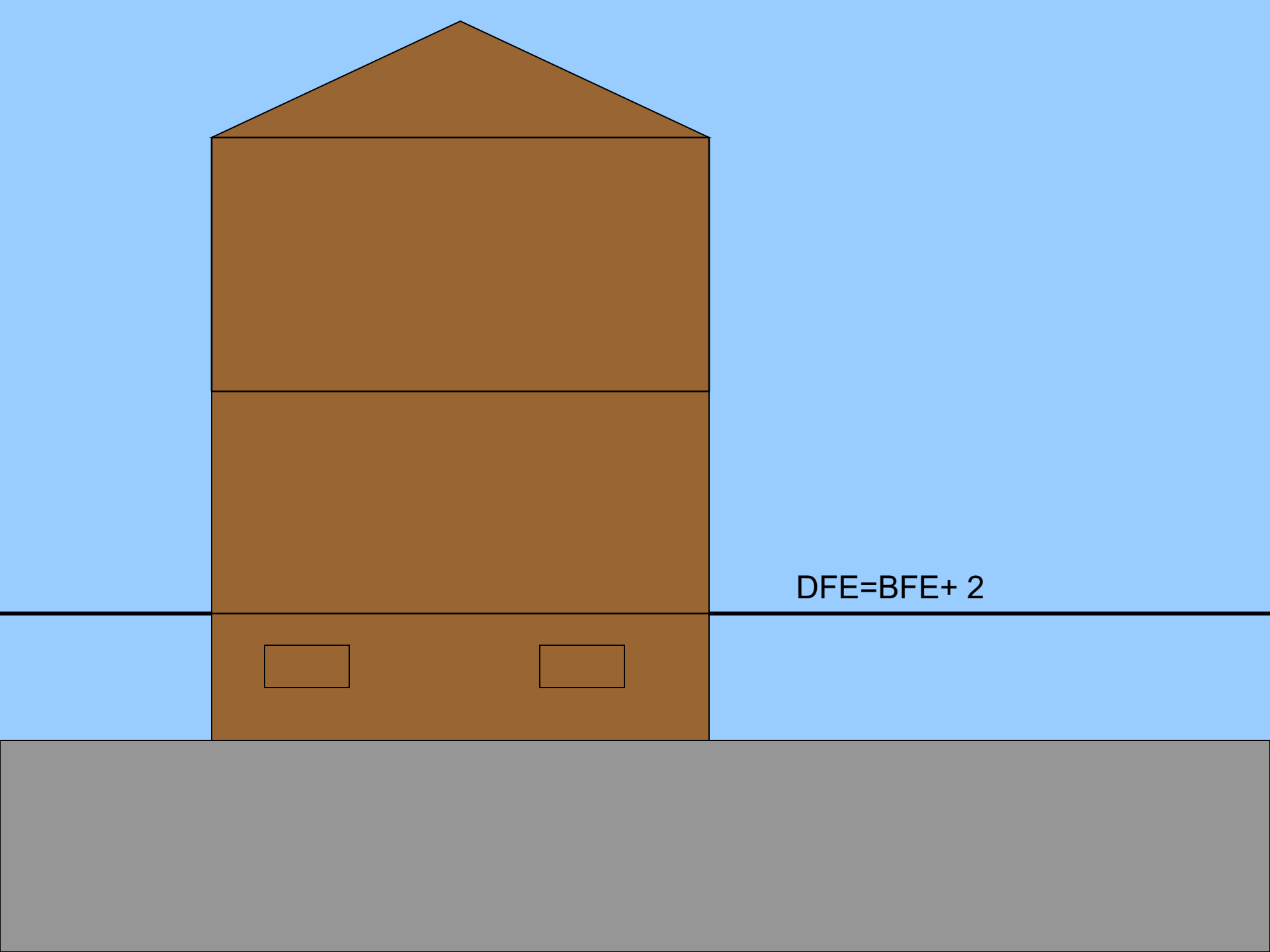
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DFE=BFE+2



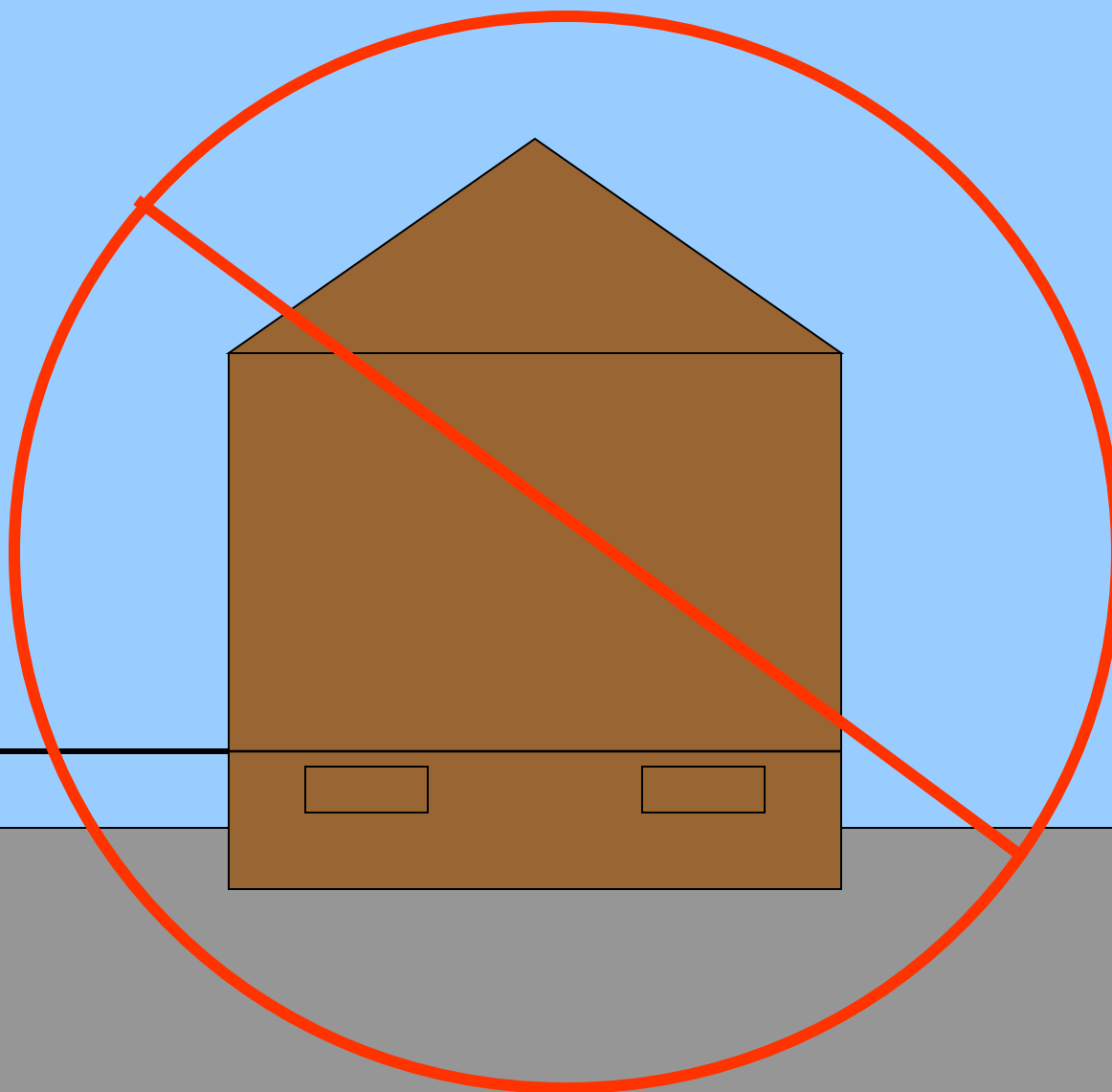


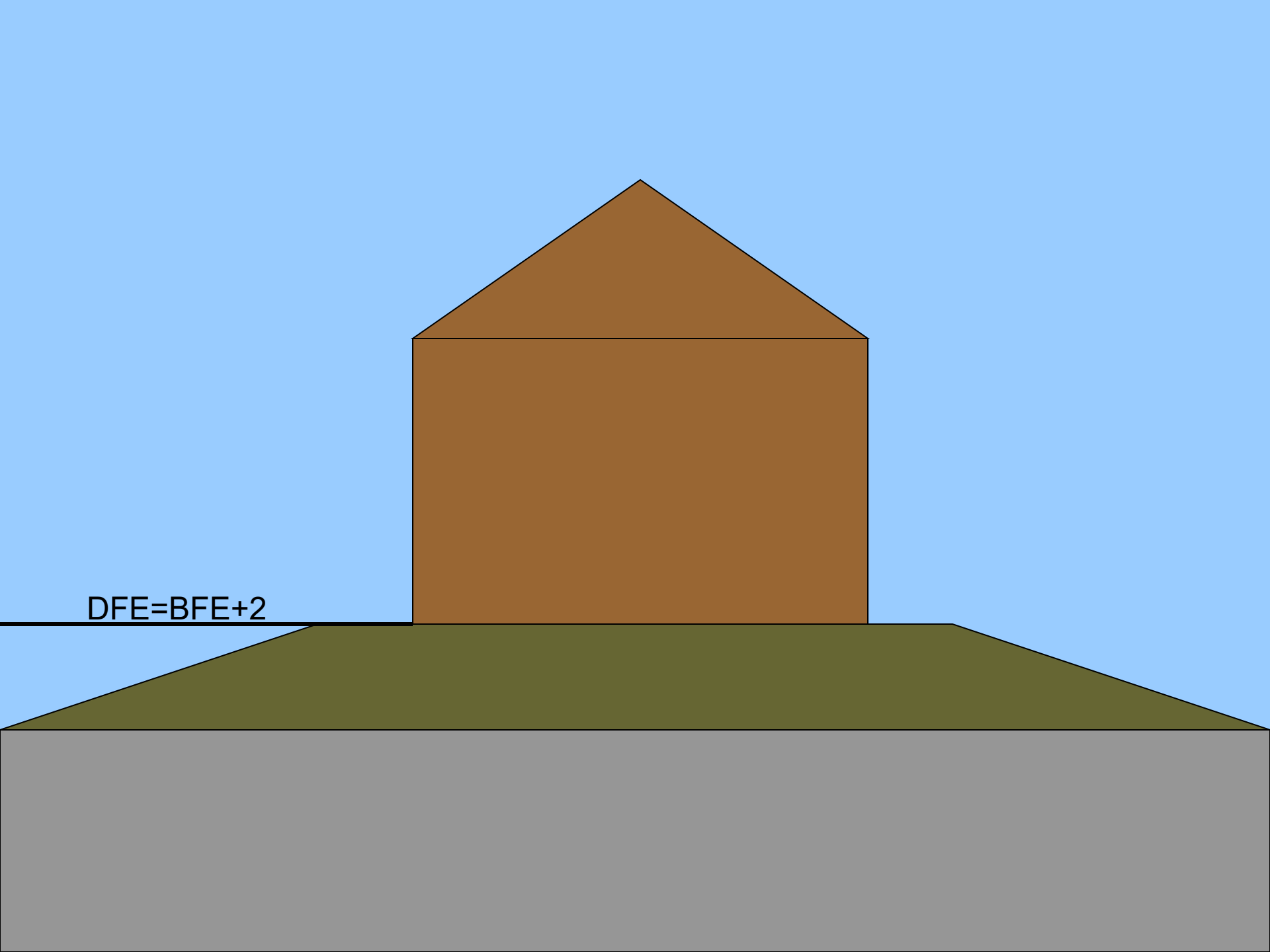
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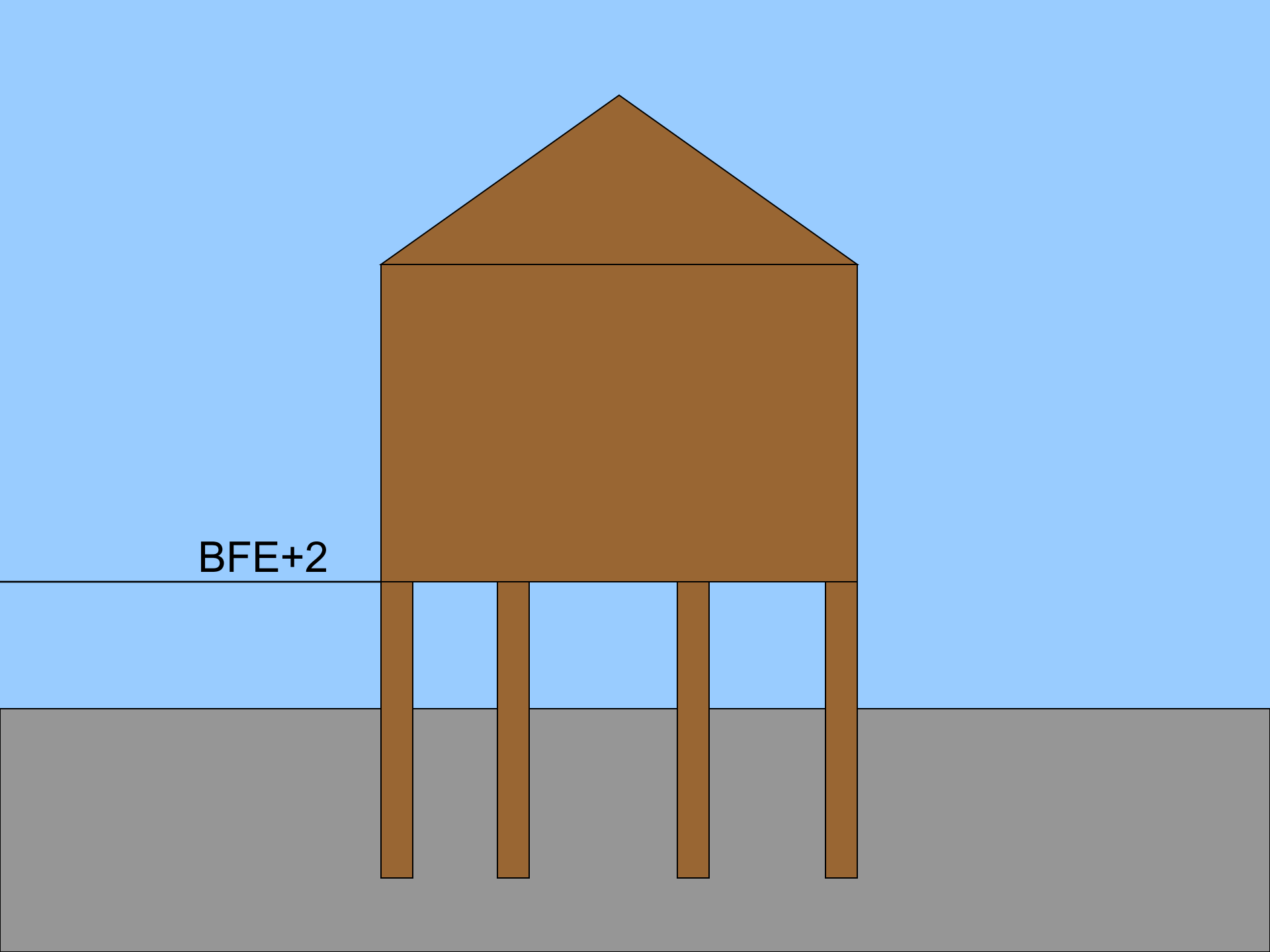
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$DFE=BFE+2$



BFE+2

Documentation Requirements

- **R322.1.10 As-built elevation documentation.**
A registered *design professional* shall prepare and seal documentation of the elevations specified in Section R322.2 or R322.3.

10th Edition

Coastal High Hazard
Areas

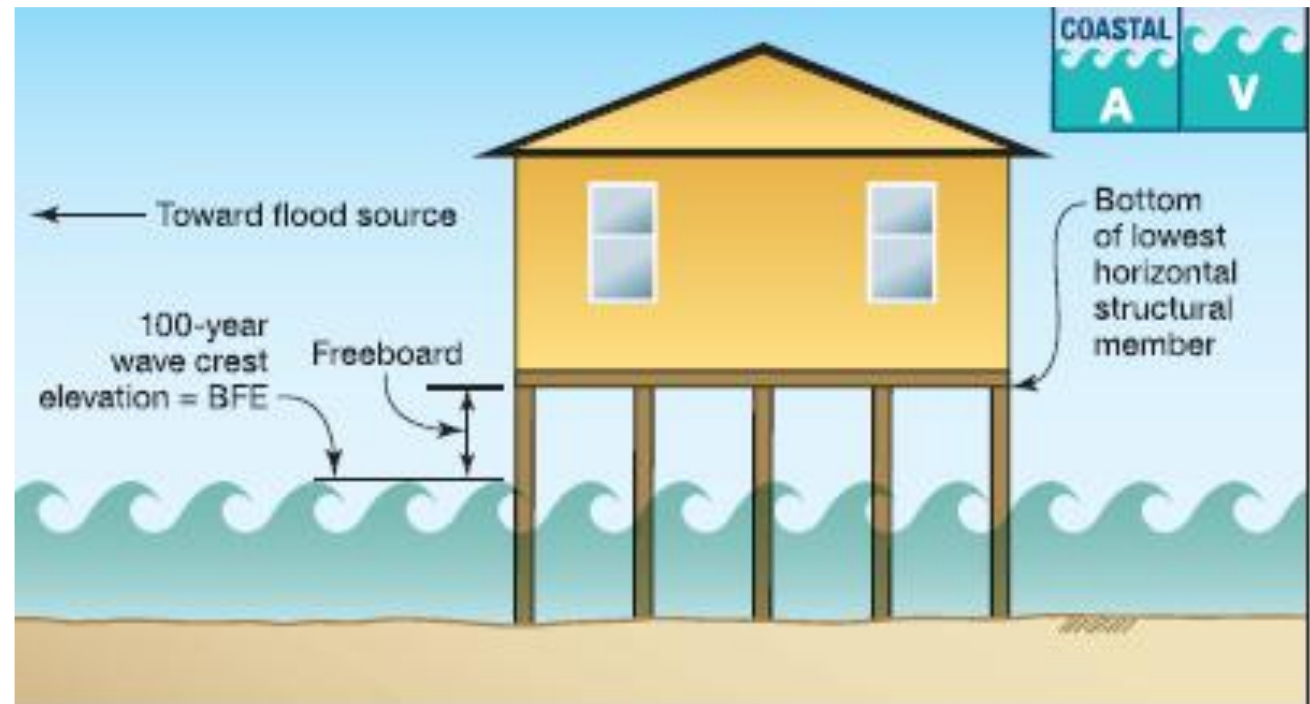
V Zones and Coastal
A zones

Coastal Dunes



Design Flood Elevation R322.1.4

For V Zones and coastal A zones, the design flood elevation shall be the base flood elevation plus three feet. See section R322.3 for requirements.



Coastal A Zone and LiMWA



R322.3 Coastal high-hazard areas (including V Zones and Coastal A zones).

- Buildings and structures constructed in whole or in part in V Zones shall be designed and constructed in accordance with sections R322.3.1 through R322.3.6.

R322.3.2 Elevation requirements.

1. Buildings and structures shall be elevated so that the bottom of the lowest portion of horizontal structural members supporting the lowest floor, with the exception of pilings, pile caps, columns, grade beams and bracing, is elevated to the design flood elevation.
2. Basement floors that are below grade on all sides are prohibited.
3. The use of fill for structural support is prohibited.

R322.3.2 Elevation requirements.

4. Minor grading, and the placement of minor quantities of fill, shall be permitted for landscaping and for drainage purposes under and around buildings and for support of parking slabs, pool decks, patios and walkways. Fill is prohibited unless such fill is constructed and/or placed to avoid diversion of water and waves toward any building or structure.
5. Walls and partitions enclosing areas below the design flood elevation shall meet the requirements of sections R322.3.4 and R322.3.5.
6. For lateral additions in V Zones that are not a substantial improvement, only the addition shall be elevated so that the bottom of the lowest horizontal structural member of the lowest floor with the exception of pilings, pile caps, columns, grade beams and bracing, is located at an elevation that is at least the design flood elevation.

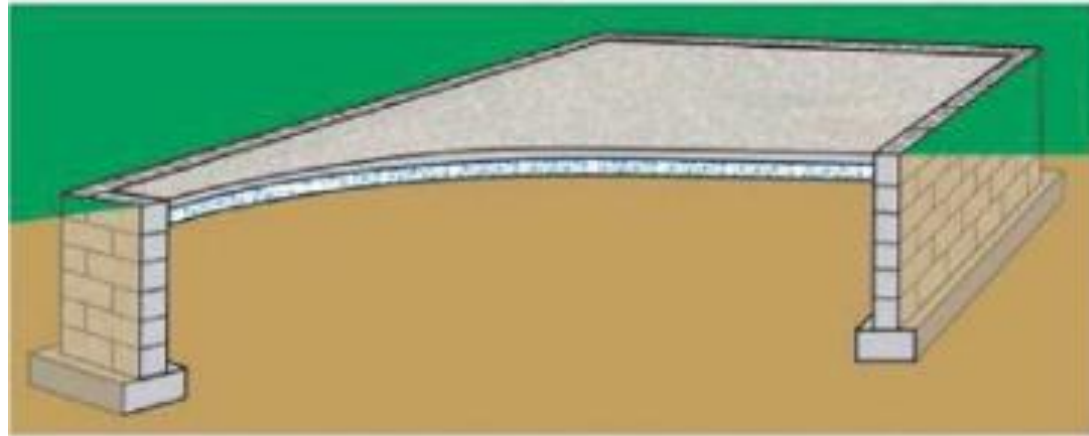
R322.3.3 Foundations

R322.3.3 Foundations. Buildings and structures erected in coastal high-hazard areas and shall be supported on pilings or columns and shall be adequately anchored to such pilings or columns. The space below the elevated building shall be either free of obstruction or, if enclosed with walls, the walls shall meet the requirements of section R322.3.4.

R322.3.3 Foundations 10th Edition

Coastal A zone Exception

Exception: In Coastal A Zones, stem wall foundations supporting a floor system above and backfilled with soil or gravel to the underside of the floor system shall be permitted provided that the foundations are designed to account for wave action, debris impact, erosion and local scour. Where soils are susceptible to erosion and local scour, stem wall foundations shall have deep footings to account for the loss of soil.



Closed, shallow continuous stem wall with
soil supported slab

Coastal A zone Standards Base Code

1612.2 Design and construction.

The design and construction of buildings and structures located in flood hazard areas, including coastal high hazard areas and coastal A zones, shall be in accordance with Chapter 5 of ASCE 7 and ASCE 24. For minimum elevation requirements for lowest floor, bottom of lowest horizontal structural member, utilities, flood-resistant materials and wet and dry flood-proofing refer to tables in ASCE 24 which are to be amended as shown below. The design and construction of buildings and structures located in coastal dunes shall be in accordance with Appendix G.

Exceptions: Existing non-residential structures and non-residential portions of existing mixed use structures in Coastal A Zones shall be allowed to meet the A Zone requirements.



R322.3.4 Walls below design flood elevation.

Walls and partitions are permitted below the elevated floor, provided that such walls and partitions are not part of the structural support of the building or structure and:

1. Electrical, mechanical and plumbing system components are not to be mounted on or penetrate through walls that are designed to break away under flood loads; and
2. Are constructed with insect screening or open lattice; or
3. Are designed to break away or collapse without causing collapse, displacement or other structural damage to the elevated portion of the building or supporting foundation system. Such walls, framing and connections shall have a resistance of not less than ten lbs. per ft² (479 Pa) and not more than 20 lbs. per ft² (958 Pa) as determined using allowable stress design;

R322.3.4 Walls below design flood elevation.

5. Walls intended to break away under flood loads as specified in Item 3 or 4 have flood openings that meet the criteria in section R322.2.2, Item 2.

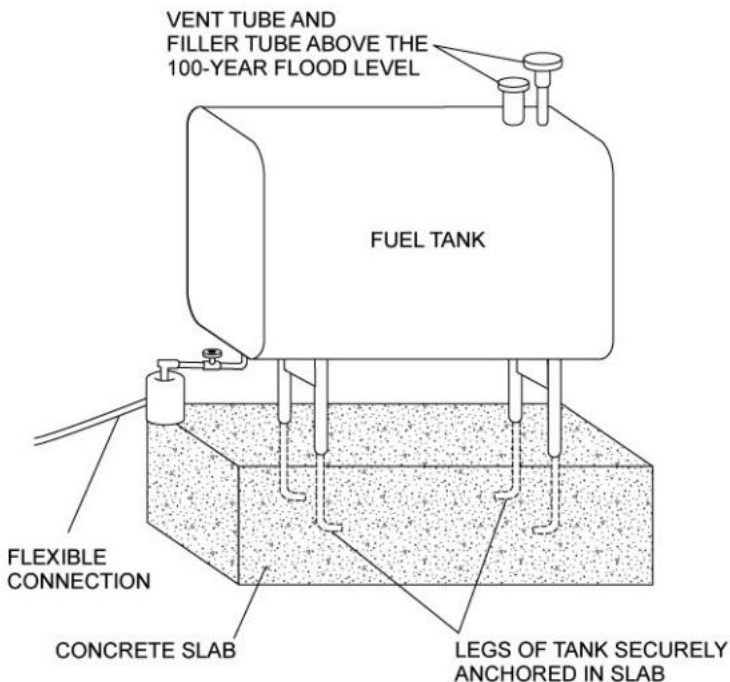


R322.3.5 Enclosed areas below design flood elevation.

- Enclosed areas below the design flood elevation shall be used solely for parking of vehicles, building access or storage.

R322.3.7 Tanks.

- Underground tanks shall be anchored to prevent flotation, collapse and lateral movement under conditions of the base flood. Above-ground tanks shall be installed at or above the elevation required in Section R322.3.2. Where elevated on platforms, the platforms shall be cantilevered from or knee braced to the building or shall be supported on foundations that conform to the requirements of Section R322.3.

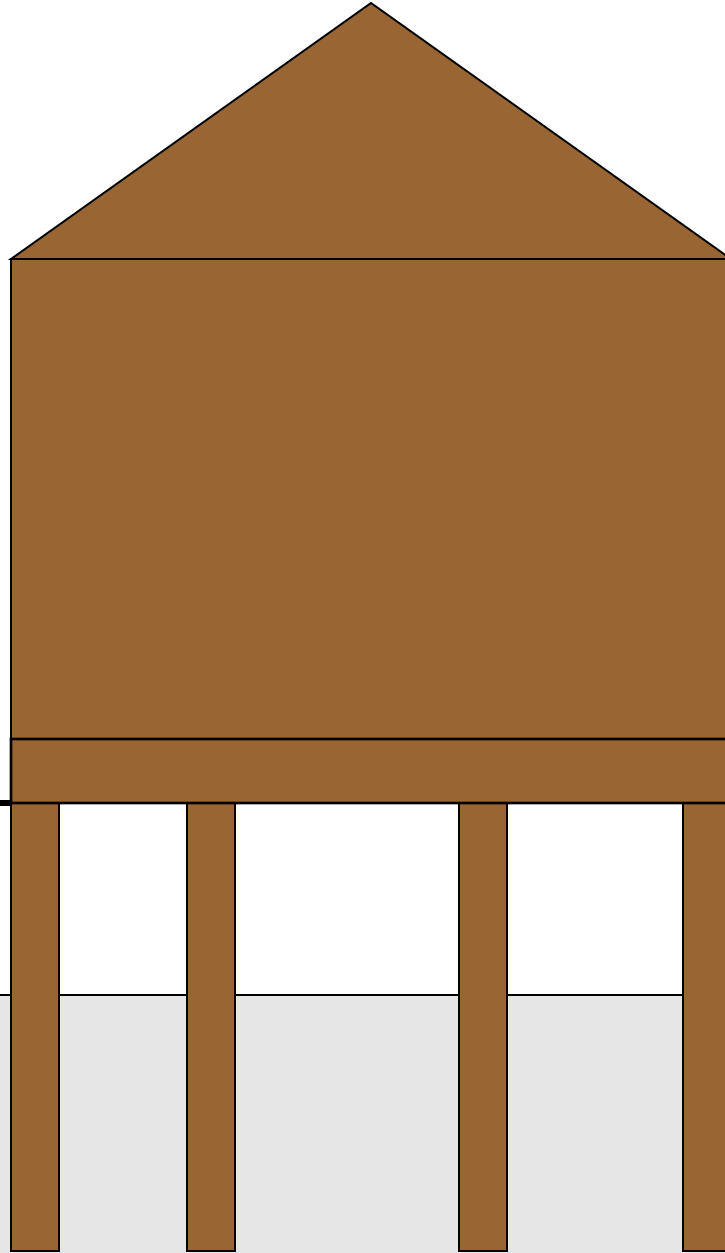


R322.1.6 Protection of mechanical and electrical systems.

Electrical systems, equipment and components; heating, ventilating, air conditioning; plumbing appliances and plumbing fixtures; duct systems; and other service equipment shall be located at or above the elevation required in section R322.2, R322.3 or R322.4.



$$\text{DFE} = \text{BFE} + 3'$$



Coastal Dunes
(All of the
coastal dune
standards are
MA
amendments)

Residential Code R322.4 Coastal Dunes.

Base Code Ch 1612 and Appendix G

R322.4.1 Determination of Coastal Dunes.

- **R322.4.2** For buildings and structures, including new or replacement manufactured homes, lateral additions, foundations that are replaced in total or repaired so as to constitute *substantial repair of a foundation*, or substantial repair or improvement of a building or structure that has incurred substantial damage as a result of flooding and/or storms, proposed on a parcel of land that is located wholly or partially within a coastal wetland resource area shown on the map entitled “Map of Coastal Wetland Resources For Building Officials”, the building official shall require submission of one of the construction documents specified in (a) through (d) below

- (a) An Order of Conditions establishing the boundaries of all coastal wetland resource areas in a plan referenced in and accompanying the Order.
- (b) An Order of Resource Area Delineation stating that the proposed construction work is outside the boundaries of all coastal wetland resource areas as shown on a plan referenced in and accompanying the Order.
- (c) A Determination of Applicability stating that the proposed construction work is outside the boundaries of all coastal wetland resource areas as shown on a plan referenced in and accompanying the Determination or will not fill, dredge or alter a coastal wetland resource area.
- (d) A Notice of Non-significance evidencing that the proposed construction work is within a coastal wetland resource area as shown on a plan referenced in and accompanying the Notice and stating that the coastal wetland resource area is not significant to any of the interests identified in the Wetlands Protection Act, M.G.L.c. 131, § 40.

R322.4.5 Elevation requirements.

- **R322.4.5 Elevation requirements.** For new buildings and *structures*, new foundations, replacement or substantial repair of a foundation, or repair of a substantially damaged structure where damage is the result of a storm or flooding the entire structure shall be elevated so that the bottom of the lowest horizontal structural member of the lowest floor with the exception of pilings or pile caps is located at the elevation required by the Order of Conditions of the local Conservation Commission...

R322.4.5 Elevation requirements.

- **R322.4.6 Foundations.** Foundations for work meeting the elevation requirements of Section **R322** shall consist of open pilings without footings to allow the movement of the dune.
- **R322.4.7 Enclosed areas below design flood elevation.** Enclosures are not permitted below the lowest horizontal structural member of the lowest floor.