Manufactured Homes and the NFIP

G282.2

Student Manual

June 2009

FEMA


Manufactured Homes and the NFIP
FEMA
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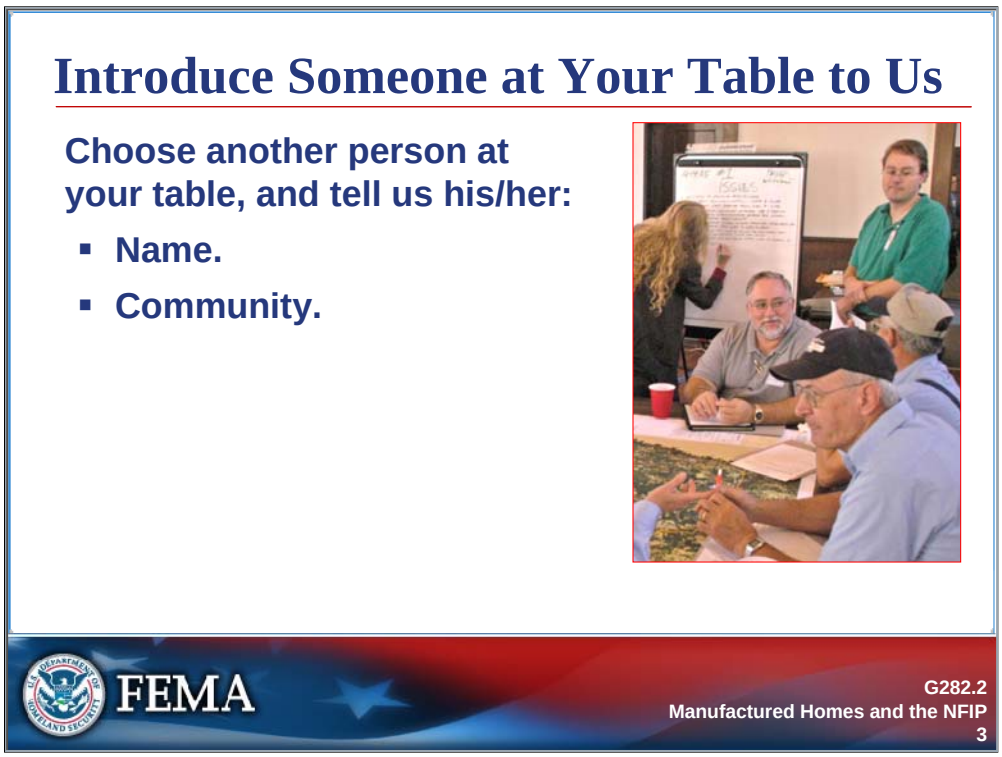
Key Points

Key Points – Introduction

Introduce yourself to the members of your table group. Give them your:

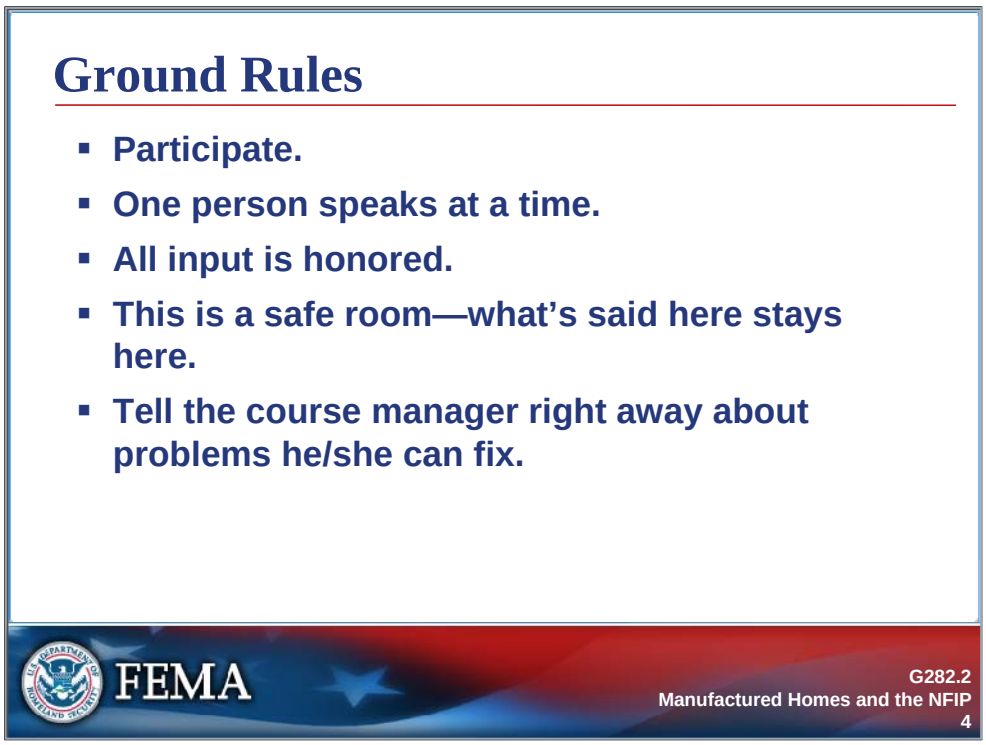
- Name.
- Community.
- Floodplain Manager (FPM) position in your community.
- Floodplain management concerns/need for improvement.



Key Points – Introduction

Introduce one person at your table to the rest of the group by presenting his or her:

- Name.
- Community.



Key Points – Introduction

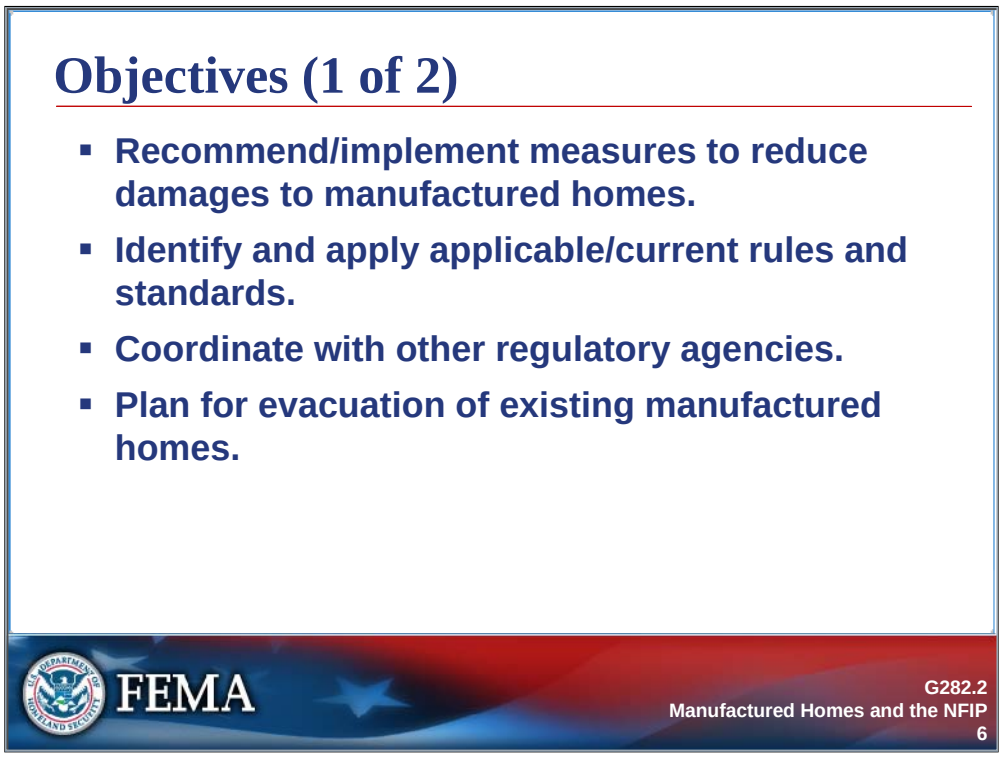
The course ground rules are:

- Participate.
- One person speaks at a time.
- All input is honored.
- This is a safe room—what's said here stays here.
- Tell the course manager right away about problems he/she can fix.

Key Points – Introduction

Answer the following discussion question:

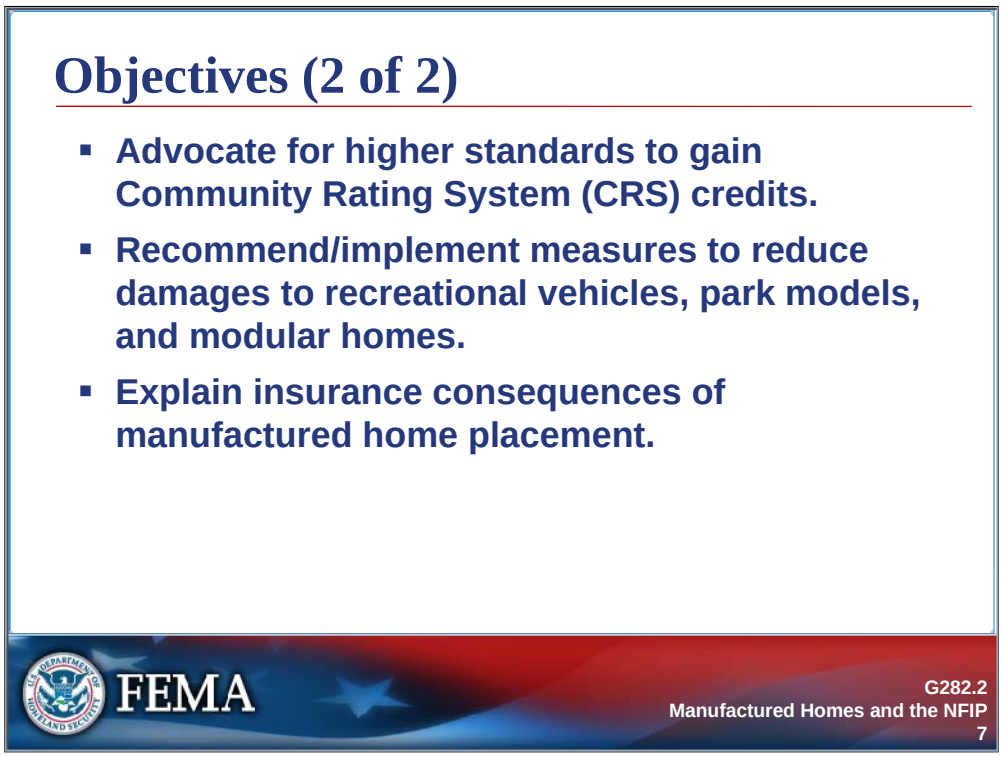
What do you want to gain from attending this course?



Key Points – Introduction

The objectives of the Manufactured Homes and the NFIP course:

- Recommend/implement measures to reduce damages to manufactured homes.
- Identify and apply applicable/current rules and standards.
- Coordinate with other regulatory agencies.
- Plan for evacuation of existing manufactured homes.



Key Points – Introduction

The other objectives of the course are:

- Advocate for higher standards to gain Community Rating System (CRS) credits.
- Recommend/implement measures to reduce damages to recreational vehicles, park models, and modular homes.
- Explain insurance consequences of manufactured home placement.

Any Floodplain Manager who deals with manufactured homes should use FEMA 85 as a reference. FEMA 85 is available on the FEMA Web site and can be ordered from the Map Service Center.

Key Points – Regulatory Requirements

This course includes the following major topics:

- Regulatory Requirements
- Site Review Process
- Foundations
- Other Installation Concerns
- Enforcement
- Recreational Vehicles

This section of the course covers regulatory requirements.

Key Points – Regulatory Requirements

This visual lists the regulatory requirements that will be discussed on the next few visuals.

The standards governing manufactured homes continue to improve; Federal, State, and local governments and the manufactured home industry strive to institute construction practices and regulations to increase the safety of manufactured homes in natural hazards environments.

This list of regulations has improved the resistance of manufactured homes to natural hazards.

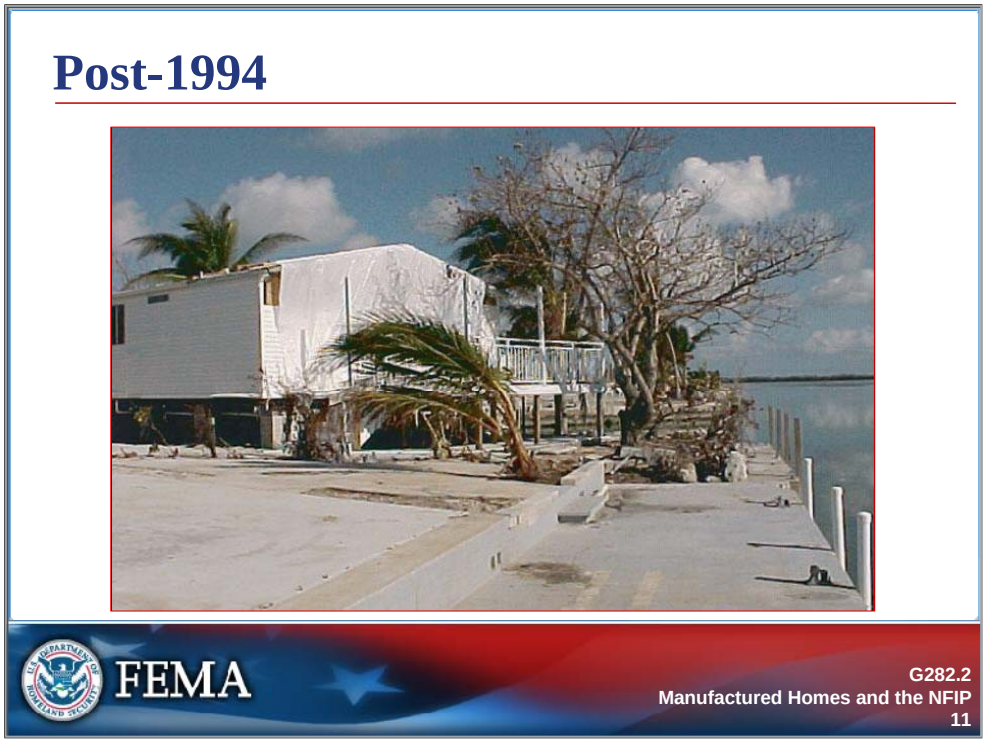
Key Points – Regulatory Requirements

This pre-1994 manufactured home suffered severe damage because of:

- An inadequate strap anchor installed by the homeowner.
- Lack of elevation.
- Unreinforced piers.
- A weak anchor foundation system.

Note:

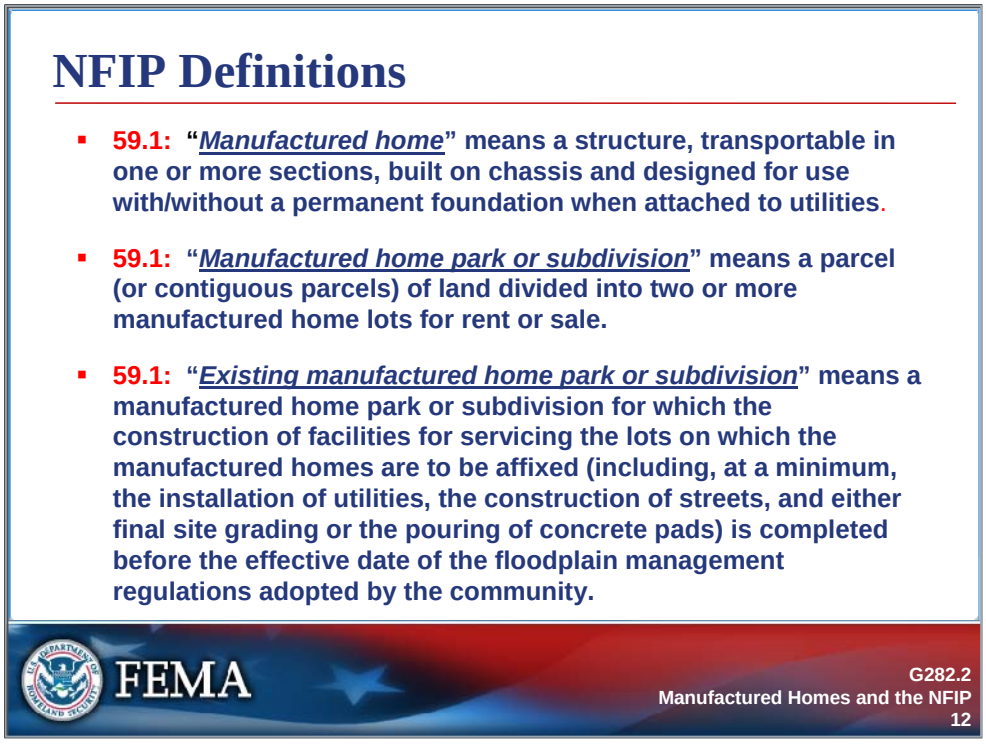
- The replacement turnbuckle anchor attached to the frame.
- The concrete of the new permanent foundation.



Key Points – Regulatory Requirements

Post-1994 Installation:

- This manufactured home was installed after 1994 standards went into effect. The location is Cudjoe Key in Monroe County, in the Florida Keys.
- The home survived Hurricane Georges with only minor damage.



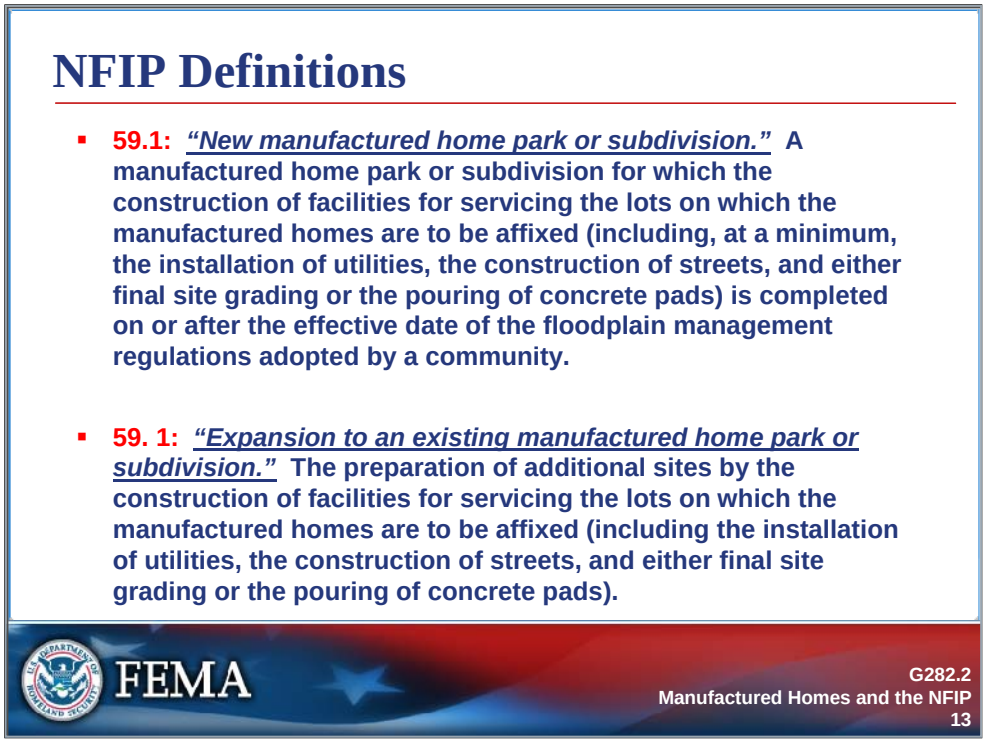
Key Points – Regulatory Requirements

Note the 44 CFR definitions that regulate manufactured homes for the NFIP:

On September 29, 1989, FEMA published a Final Rule in the Federal Register amending Chapter 44 of the Code of Federal Regulations (CFR) which regulates the placement or substantial improvement of manufactured homes in existing manufactured home parks or subdivisions in Special Flood Hazard Areas (SFHA). This rule revised previous floodplain management regulations that had been in effect since 1986.

Note that a modular home is delivered on a flat-bed truck and is installed using a crane. A modular home is not a separate category in 44 CFR. The NFIP regulates a modular home the same as a stick-built home.

Note: According the 59.1 definition, the term manufactured home does not include a recreational vehicle.



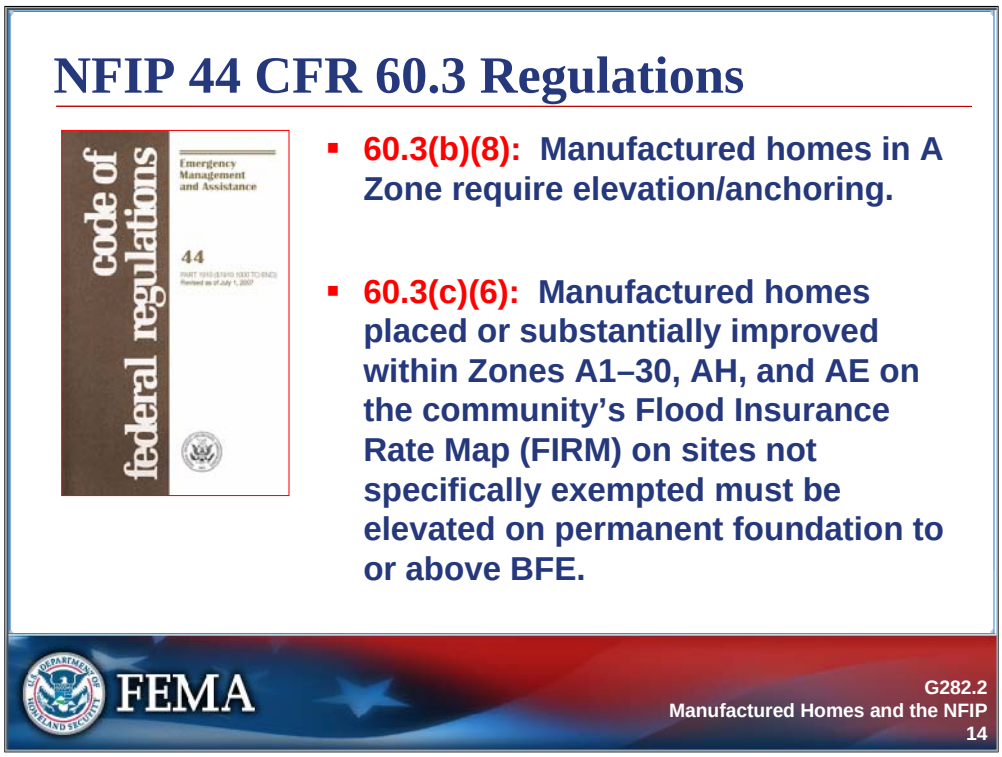
Key Points – Regulatory Requirements

Note additional 44 CFR definitions that regulate manufactured homes for the NFIP:

Manufactured home parks or subdivisions are regulated according to three separate categories:

- Existing manufactured homes parks that completed construction of facilities before the effective date of the community's floodplain ordinance.
- New manufactured home parks that completed construction of facilities on or after the effective date of the community's floodplain ordinance.
- Expansions to existing manufactured home parks, which consist of adding sites to parks that pre-date the floodplain ordinance.

The 44 CFR definition of manufactured home parks or subdivisions is broad. Look at your State law for definitions.



Key Points – Regulatory Requirements

An overview of NFIP 44 CFR 60.3 primary regulations for manufactured homes:

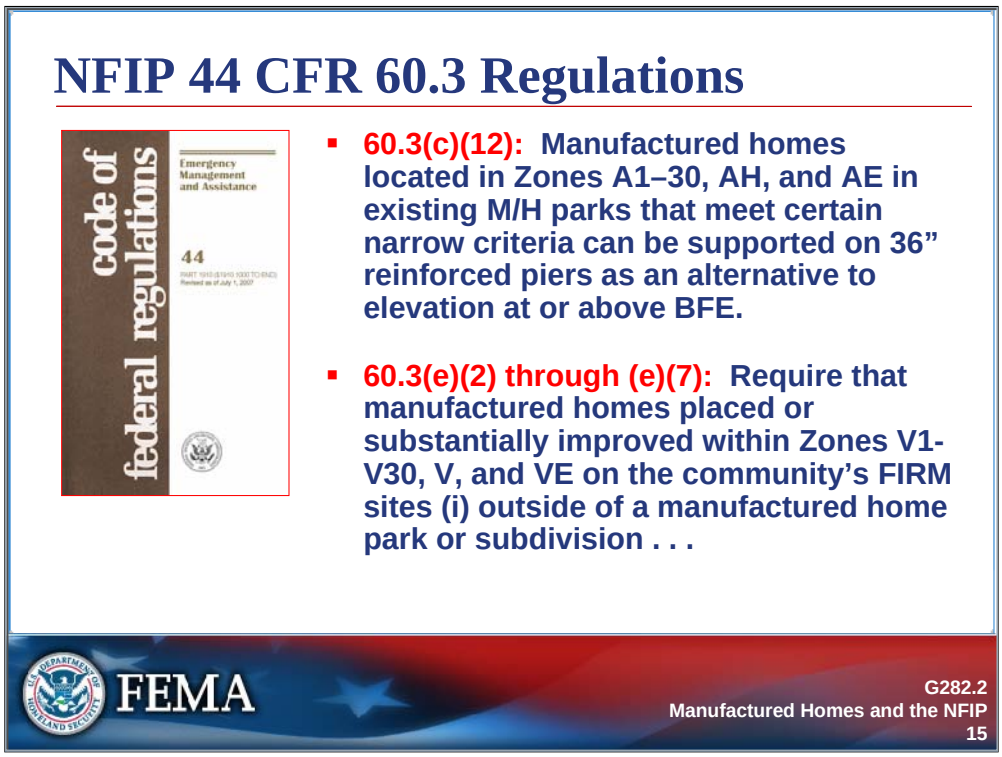
- **60.3(b)(8):** This minimum standard requires that:
  - In an Approximate A zone, manufactured homes must be elevated and anchored to resist flotation, collapse, or lateral movement.
  - Methods of anchoring may include, but are not to be limited to, use of over-the-top or frame ties to ground anchors. This requirement is in addition to applicable State and local anchoring requirements for resisting wind forces.

  Note: The "reasonably safe from flooding" requirement in 60.3(a) still applies**.** The 60.3(a) standard also applies to units placed in existing A zone manufactured home parks.

  A manufactured home being "affixed" to a permanent foundation is not specifically required by 60.3(b)(8) in A zones. However, the Flood Insurance Manual notes on page GR-3 that flood insurance claims can be denied if unit is determined to not be "affixed" to a permanent foundation!

- **60.3(c)(6):** This standard requires that manufactured homes installed on a site that meets any one of the conditions described must be elevated on a permanent foundation to the BFE.

  In addition, the general performance standard introduced in 44 CFR 60.3(b)(8) must be satisfied. The manufactured home must be elevated and anchored so that it is not subject to flotation, collapse, or lateral movement from either flood or wind.



Key Points – Regulatory Requirements

Overview of NFIP 44 CFR 60.3 continues:

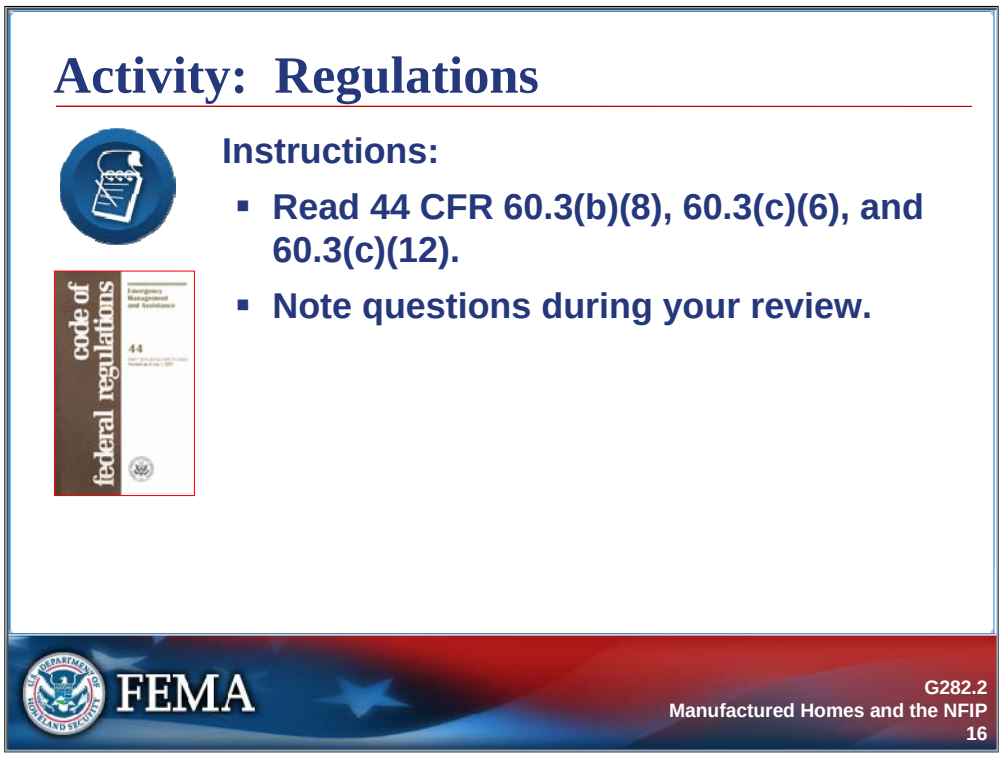
- **60.3(c)(12):** According to this rule, there are two options for elevating homes in pre-existing (pre-FIRM) manufactured homes parks. They may be either elevated:
  - To BFE; or
  - To no less than 36 inches in height on reinforced piers.

  A manufactured home that is either placed or replaced on a site in an existing manufactured home park or subdivision where the only substantial damage sustained by a previous home was due to reasons other than a flood can be "partially elevated" so that its chassis is supported by foundation elements no less than 36 inches in height above grade.

  Note: If a manufactured home in the park has sustained substantial damage from flooding, then new/replacement manufactured homes on that lot only, not in the entire park, must be elevated in compliance with 60.3(c)(6).

  Substantial Damage is defined in the local ordinance and can include cumulative damage or be more restrictive than the 50-percent standard. The local Floodplain Manager determines whether a structure is substantially damaged.

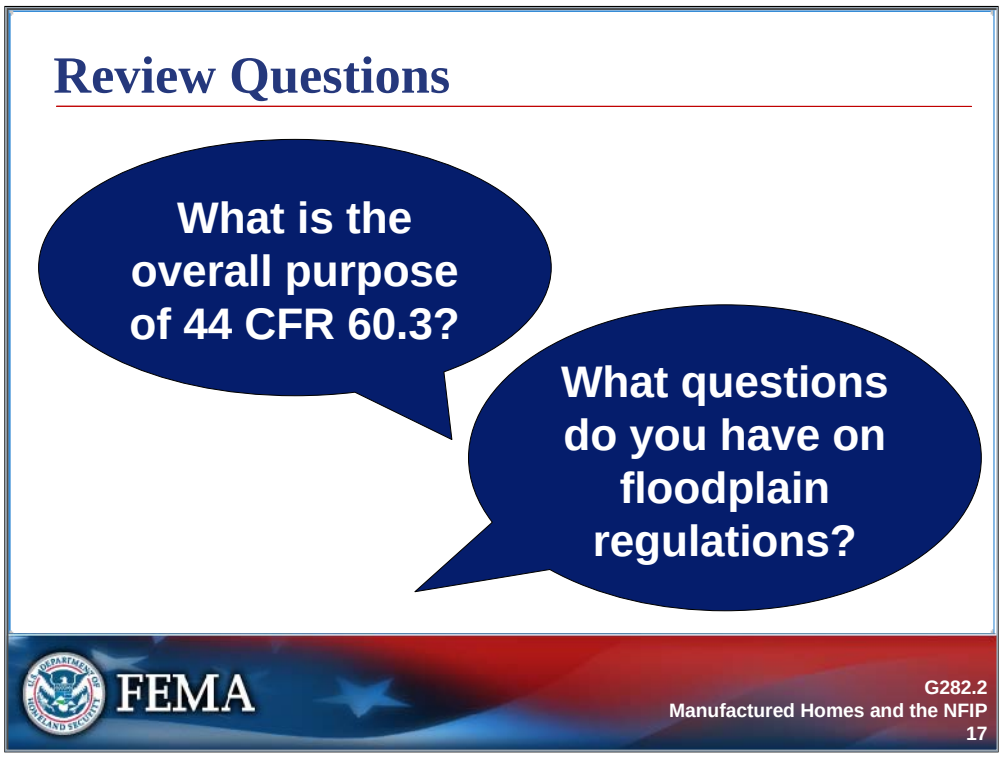
- **60.3(e)(2) through (e)(7):** This regulation provides the criteria for the installation of manufactured homes in coastal high-hazard areas or V-zones. The manufactured home must meet one of the two sets of criteria in 44 CFR 60.3(e)(2) through (e)(7).



Key Points – Regulatory Requirements

Activity Instructions:

1. Locate the 44 CFR 60.3 in the Resource Booklet.
2. Read 44 CFR 60.3(b)(8) and 60.3(c)(6) and (12), and note questions you may have on the regulations.
3. After you have reviewed the CFR sections, share and discuss your questions.



Key Points – Regulatory Requirements

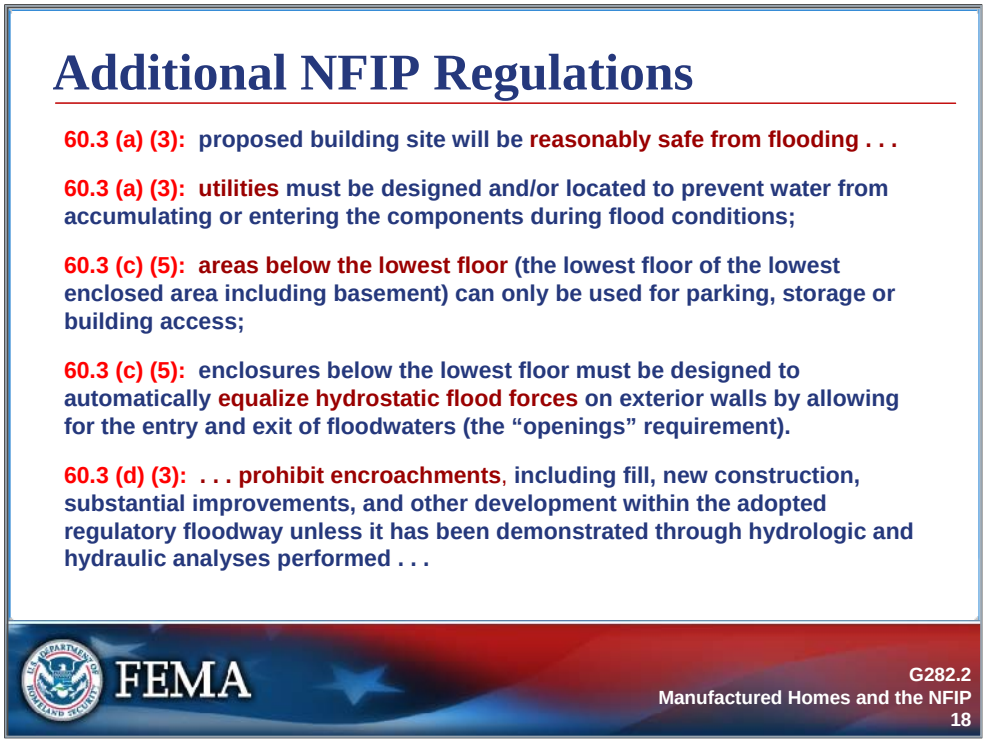
Answer the following discussion questions:

Can you place a 36-inch foundation in a V zone?

What is the overall purpose of 44 CFR 60.3?

Remember that the regulations:

- Are cumulative and are built upon each other.
- Are minimum standards. Communities can require higher standards.



Key Points – Regulatory Requirements

All manufactured homes (regardless of whether they are placed in new or existing manufactured home parks) must meet the additional floodplain management requirements that apply to conventional homes in Zones AE, A1-A30, and AH.

Refer to the Floodplain Management Criteria for Flood Prone Areas in the Resource Booklet.

Key Points – Regulatory Requirements

HUD has established minimum standards that relate to manufactured homes, and include:

- A program that regulates the installations of homes.
- A program that regulates installers in States that do not have a State managed program.
- A program that regulates the construction standards or how the homes are built (the box).

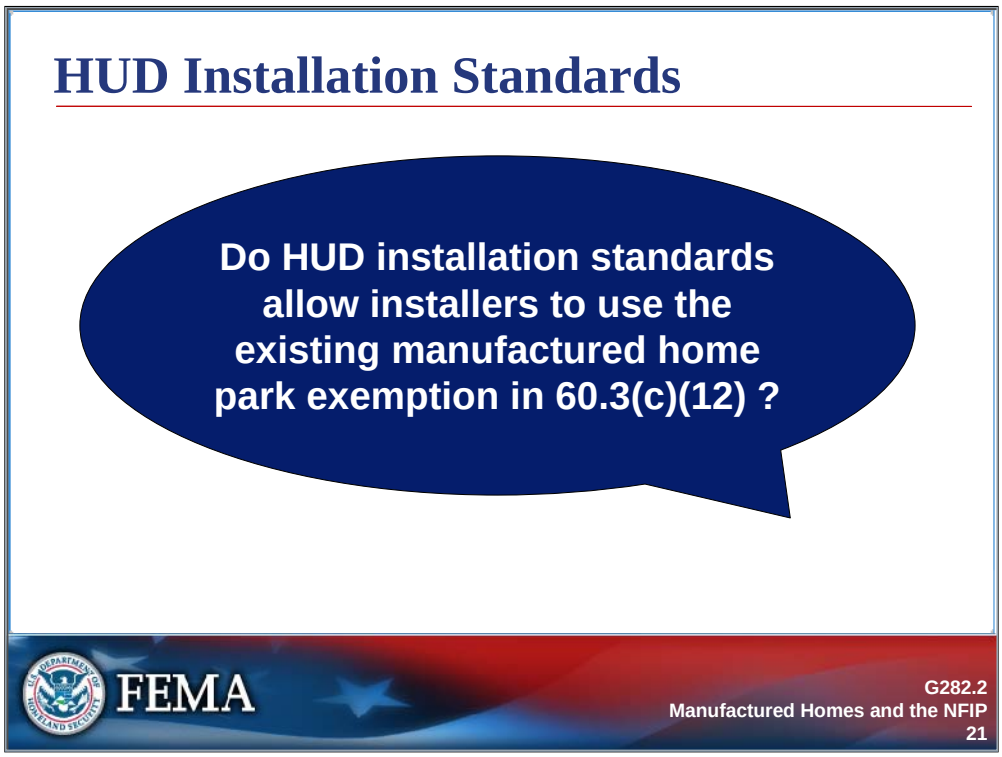
This course does not discuss the construction and safety standards, but it is important to know that HUD is the Federal agency that regulates construction and safety standards for how manufactured homes are built.

In States not choosing to administer their own manufactured home installation program, HUD will ensure that manufactured home installers are trained and licensed, and will administer an inspection program.

Key Points – Regulatory Requirements

Requirements on Construction Safety:

- HUD 3285 sets installation standards requirements that are preemptive. HUD's installation standards are only minimum standards, and localities can require that builders meet standards above and beyond HUD's.
- When it comes to installation in the floodplain, the installers must follow the local floodplain ordinance. Some States do not allow local jurisdictions to require installers to exceed HUD's minimum standards. Yet this does not apply to floodplain management ordinances.
- CFR 3285 makes reference to specific provisions for flood hazard areas but all of the NFIP requirements are not included. Specific, reference is made to the requirements of the Local Authority Having Jurisdiction (LAHJ).
- HUD reviews State regulations to make sure they are in compliance with HUD's minimum standards.



Key Points – Regulatory Requirements

Answer the following discussion question:

Do HUD's installation standards allow installers to use the existing manufactured home park exemption in 60.3(c)(12)?

Key Points – Regulatory Requirements

Specific points about HUD 24 CFR Part 3285.

- The manufacturer must clearly specify in its installation instructions and foundation specification that the box or home:
  - Has been designed for flood resistant considerations (the conditions of applicability are to be listed (velocities, depths or wave action) and the design must be certified by a registered professional engineer or architect), or
  - Has not been designed to address flood loads.

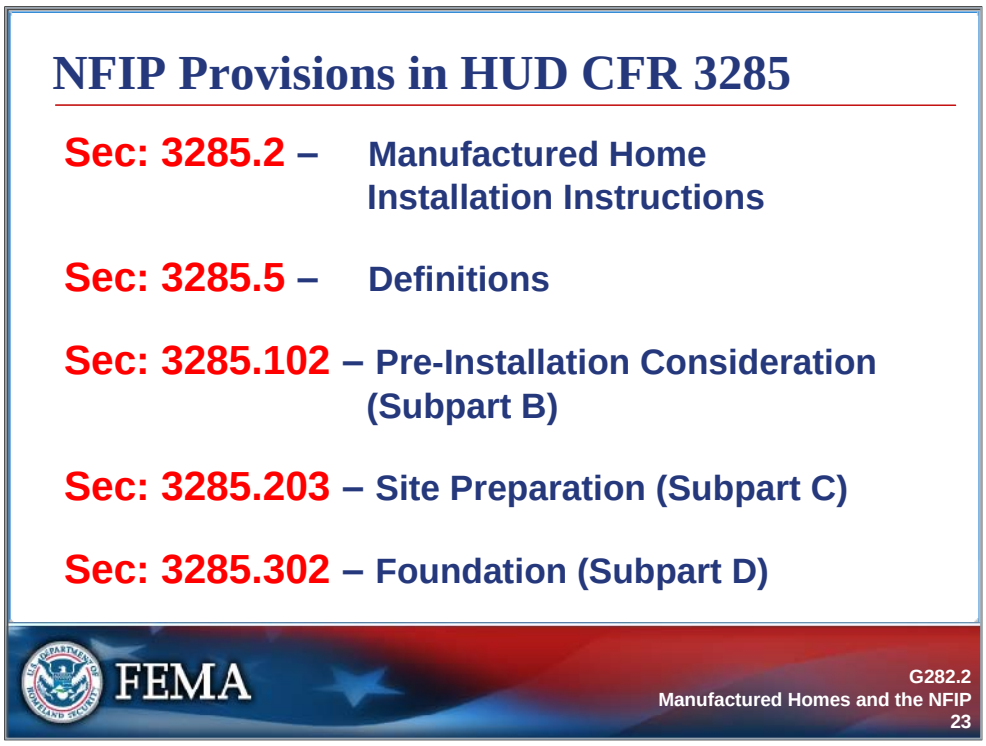
- If the manufacturer instructions do not include foundation specifications that address flood loads, the instructions are to direct the installer to "obtain an alternate design prepared and certified by a registered professional engineer or registered architect for the support and anchor."

- The burden is on the installer to determine whether a home site is wholly or partly in a flood hazard area. The installer should seek help from the Floodplain Manager.

  Note: Many installers rely on lenders' determinations. This practice should be discouraged, because liability issues could arise if the installer relies on incorrect information. There have been cases where lenders have made floodplain determinations using the retailer's lot as the site location.

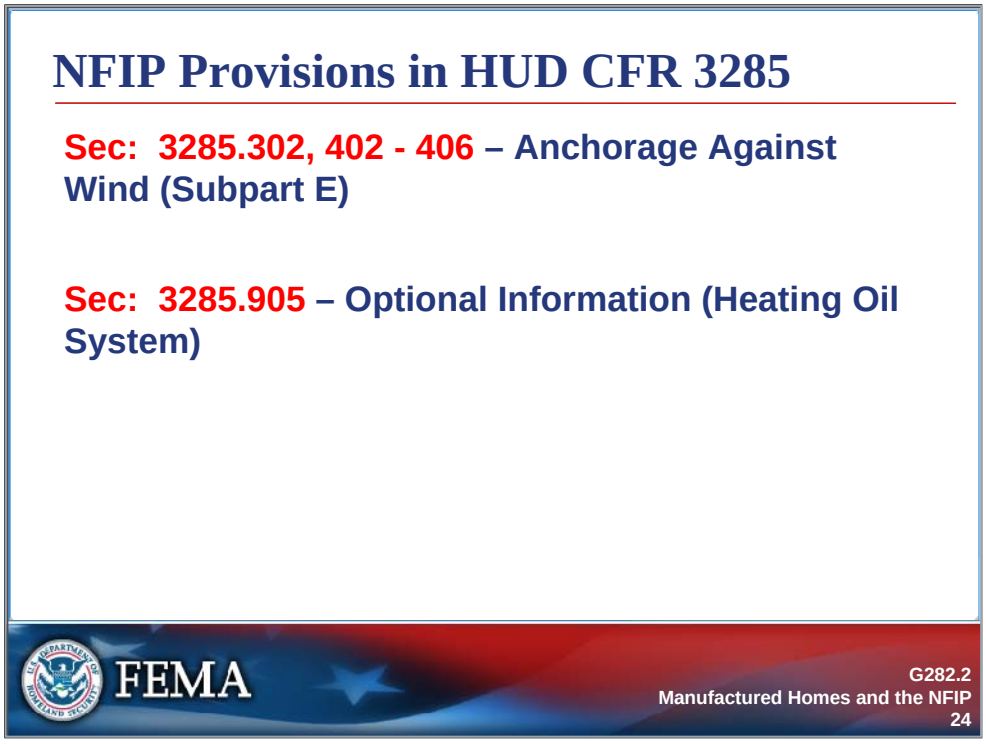
- The HUD provisions related to installation of manufactured homes in flood hazard areas only applies to the initial installation of new manufactured homes.

  State programs may regulate any installation by a licensed installer, new or used.



Key Points – Regulatory Requirements

This visual lists areas of the HUD regulations that make reference to “flood hazards” or make direct reference to the NFIP regulations or FEMA 85.



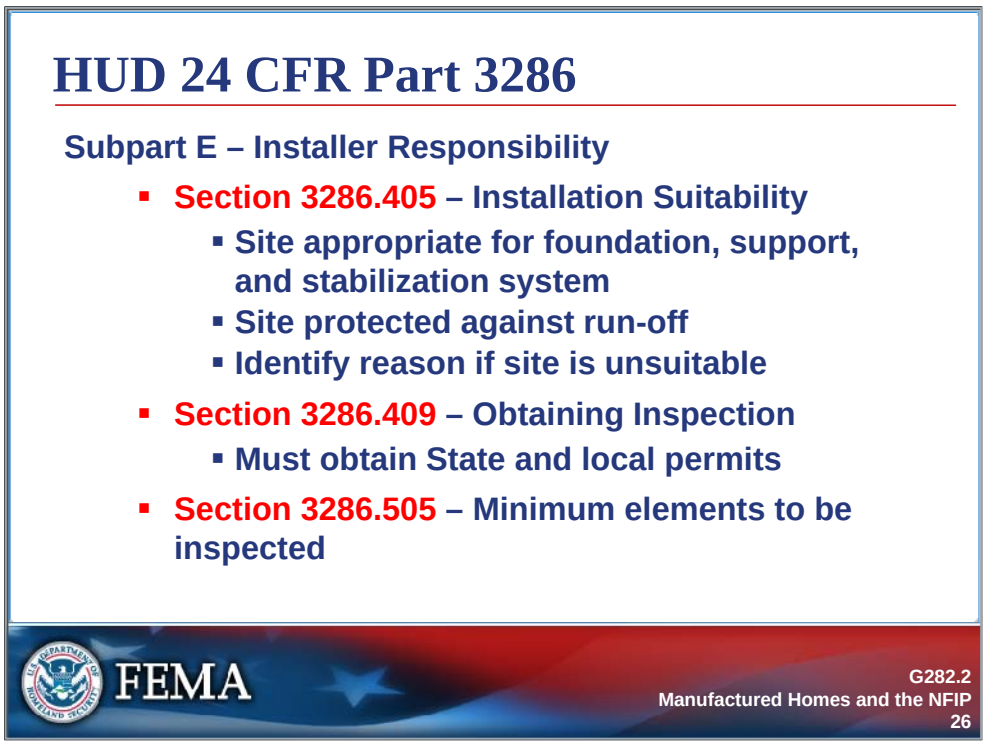
Key Points – Regulatory Requirements

This visual lists additional areas of the HUD regulations that make reference to “flood hazards” or make direct reference to the NFIP regulations or FEMA 85.

Key Points – Regulatory Requirements

Note the following key content points:

- HUD 24 CFR Part 3286 manages licensed installation of manufactured homes in 15 States, but States that have their own programs must meet HUD standards. This regulation covers:
  - Installer certification, licensing, and training for installations in the SFHA.
  - Inspections.
  - Retailer responsibilities.
  - Related oversight and enforcement.
- Floodplain Managers operating within State-run programs should have the name and contact information for their liaison at their State agency. Note that an up-to-date list of States managing HUD licensing requirements and those States that "default to HUD management" can be found at **www.hud.gov**.



Key Points – Regulatory Requirements

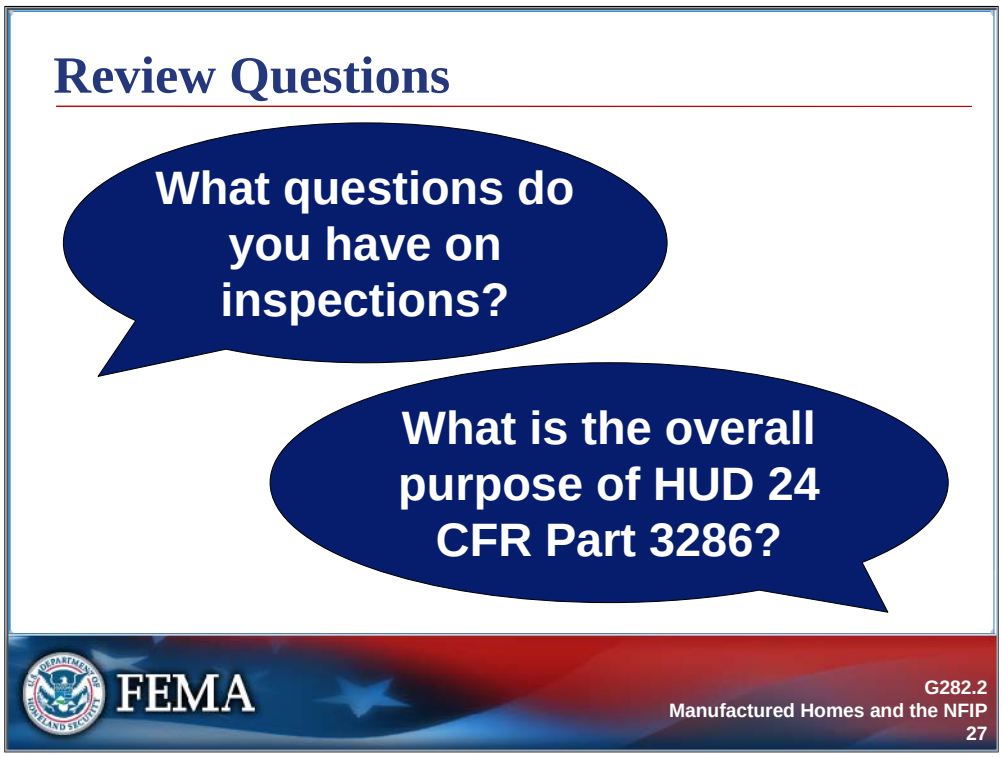
The requirements of Subpart E only apply in States where HUD will administer the installation program.

Section 3286.405 (a)(2) requires that the installer determine that the site is appropriate for the proposed foundation or support and stabilization system to be used to install the home in accordance with the Federal installation standards in Part 3285.

- Therefore, all references in 3285 to the flood hazard areas for pre-installation, site preparation, and foundation requirements must be met.
- This section would also require the installer to ensure that all unique characteristics of the site have been fully addressed. These "unique characteristics" would include being in a SFHA.

Section 3286.409 (c) requires that all State and local permits are obtained, which would include a floodplain development permit.

Section 3286.505 requires that an installation inspection ensure that all elements comply with the requirements of 3285 (Installation Standards). Elements such as site, location, site preparation, foundation, anchorage, and skirting have an NFIP flood standard referenced in 3285.



Key Points – Regulatory Requirements

Answer the following discussion question:

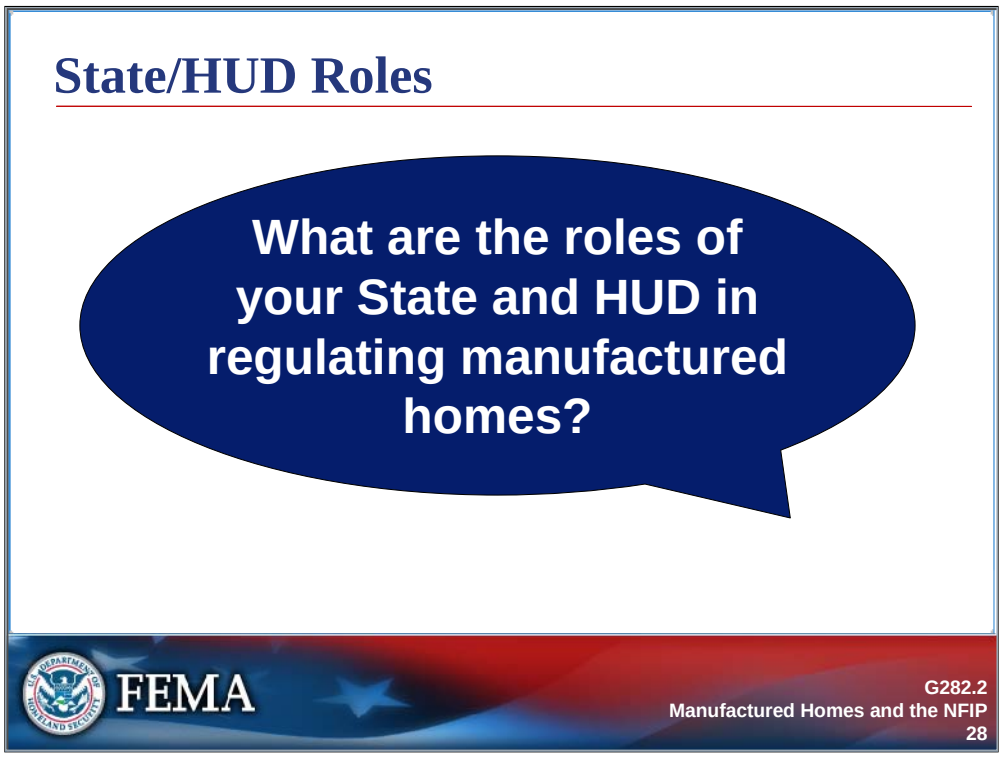
Do you have any questions about inspections?

Note that:

- Under HUD 3285.2c, when installation designs do not work for site conditions, installers must go back to the manufacturers.
- Any new installation designs proposed by an installer must be signed and sealed by an engineer and be submitted to the Design Approval Primary Inspection Agency (DAPIA) and the manufacturer for approval. DAPIA is an acronym for the State agency with regulatory responsibility, if the program is State-administered.

Answer the following discussion question:

What is the overall purpose of HUD 24 CFR Part 3286?



Key Points – Regulatory Requirements

Answer the following discussion question:

What are the roles of your State and HUD in regulating manufactured homes?

Some States that regulate installers will have a “recovery” fund that can be used to correct installations which violate the floodplain ordinance.

Key Points – Regulatory Requirements

Answer the following discussion question:

Can retailers store manufactured homes in the floodplain?

Key Points – Regulatory Requirements

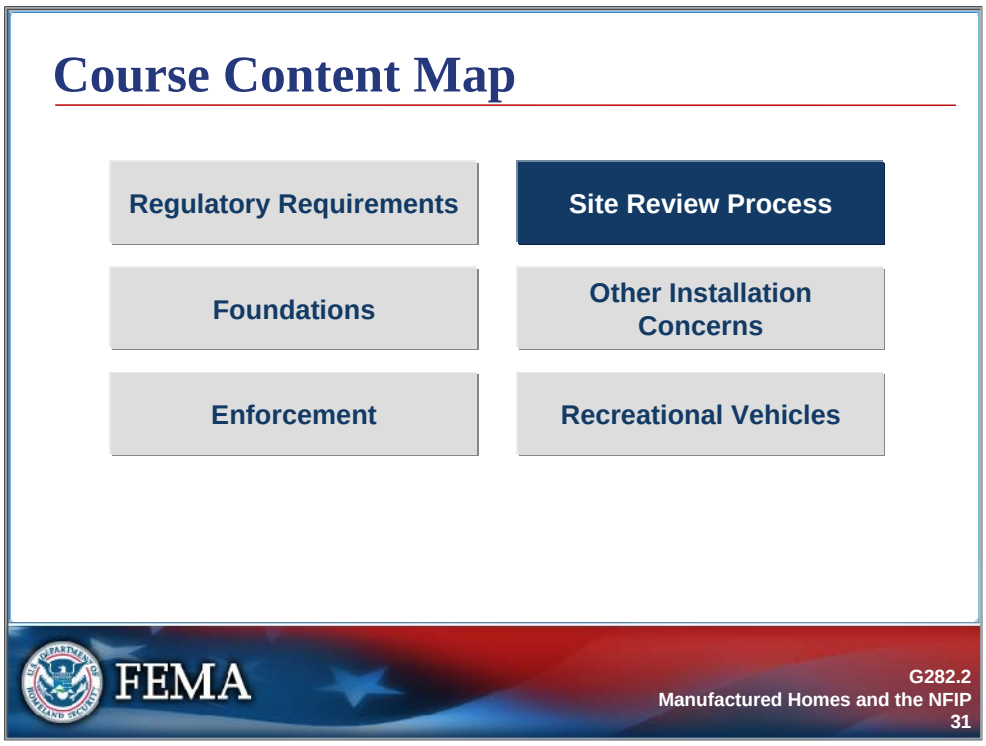
Note that two model code resources are available:

- National Fire Protection Association (NFPA) 225, which covers model manufactured installation codes. FEMA participated in the development of NFPA 225 and has addressed performance and prescriptive requirements for flood loads. NFPA 225 includes requirements for installations of new manufactured homes, replacement, substantial improvement, and substantially damaged manufactured homes.

  Note: There are definitions in NFPA that differ from the NFIP.

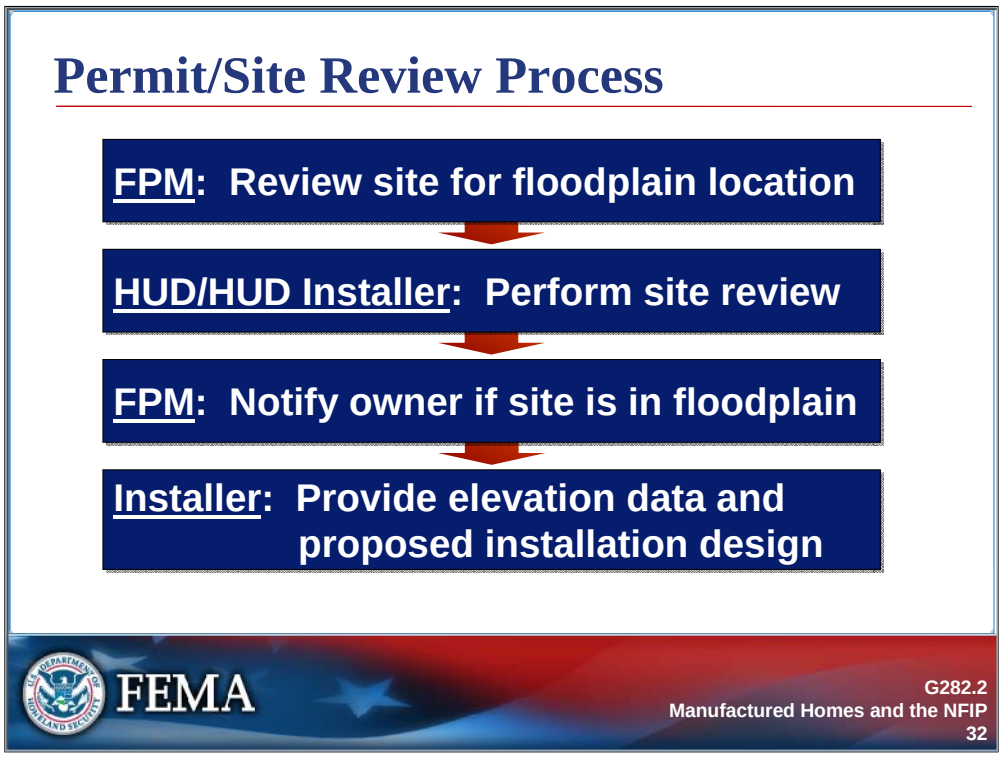
- National Fire Protection Association (NFPA) 501. *Standard on Manufacturing Housing* covers the design, manufacturer and transportation of manufactured homes.

- International Residential Code, Appendix E, which applies to manufactured housing used as dwellings.



Key Points – Site Review Process

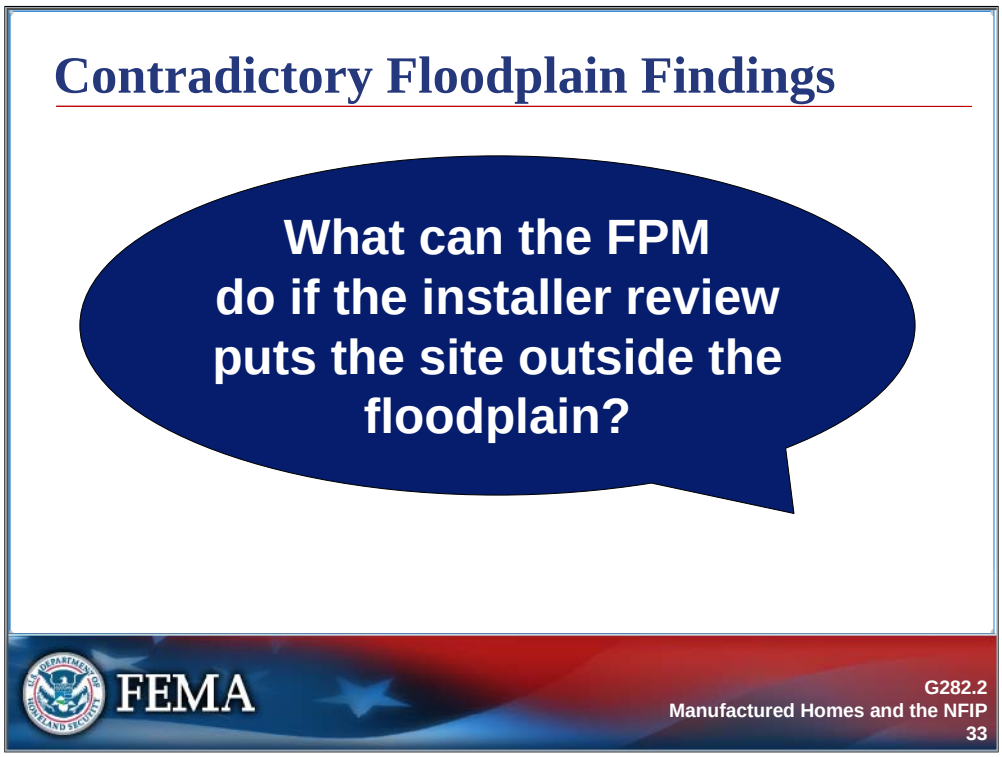
This section of the course covers the site review process.



Key Points – Site Review Process

The permit/site review process includes the following:

- The permit application is reviewed by the Floodplain Manager (FPM), who determines if the project is in or out of the floodplain. The HUD installer also is required to perform a site review, which should include determining the site's location relative to flood hazards.
- Generally, site evaluation is completed in a 5 step process.
  1. Compile lot/parcel information
  2. Review siting information
  3. Identify the hazard at the site
  4. Protect properties in and near hazard prone areas
  5. Decide on property development: approve or reject
- The FPM's written determination can be used as part of the HUD installer's required site review. The FPM must coordinate with the installer.
- The installer is responsible for ensuring that all permits are obtained.
- The FPM should alert the property owner if the property is located in a floodplain. The property owner may decide to re-locate the unit on the site to avoid being in the SFHA.
- The FPM should require the installer to provide elevation data, marked "construction drawings," either on the site plan or the elevation certificate (EC).
- The FPM should require a copy of the proposed installation design.
- HUD or State inspector must know if a site is in a floodplain in order to verify that installation met State/HUD standards.



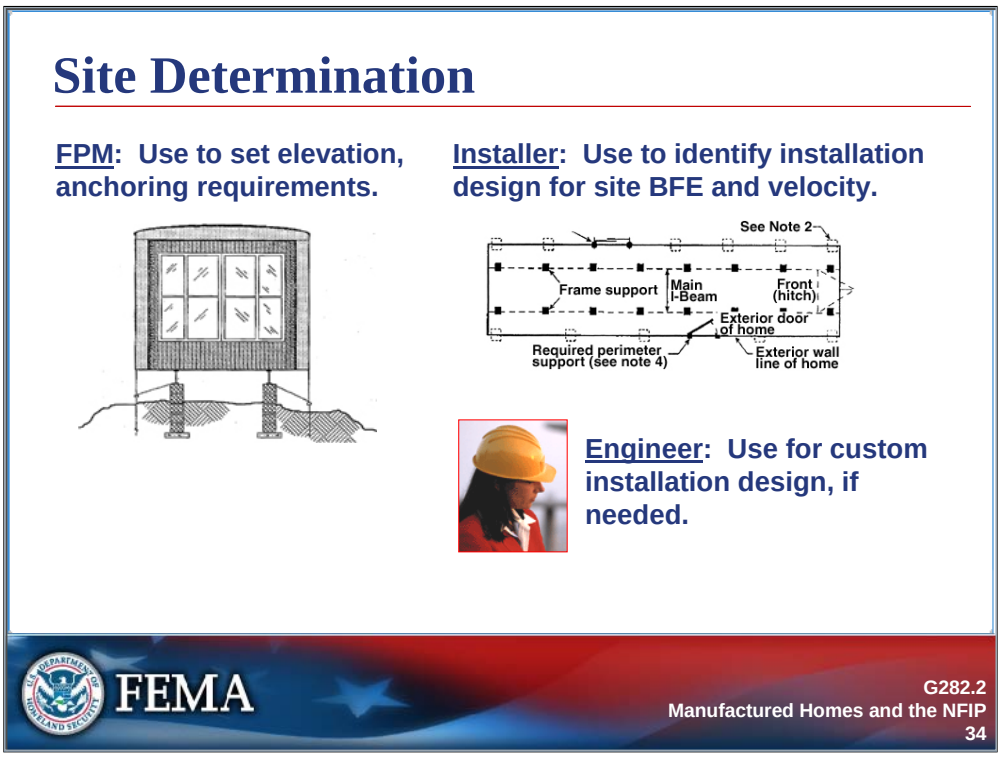
Key Points – Site Review Process

Note the following scenario:

- The FPM says a site is in the floodplain.
- The installer review concludes that the site is outside the flood hazard area.

Answer the following discussion question:

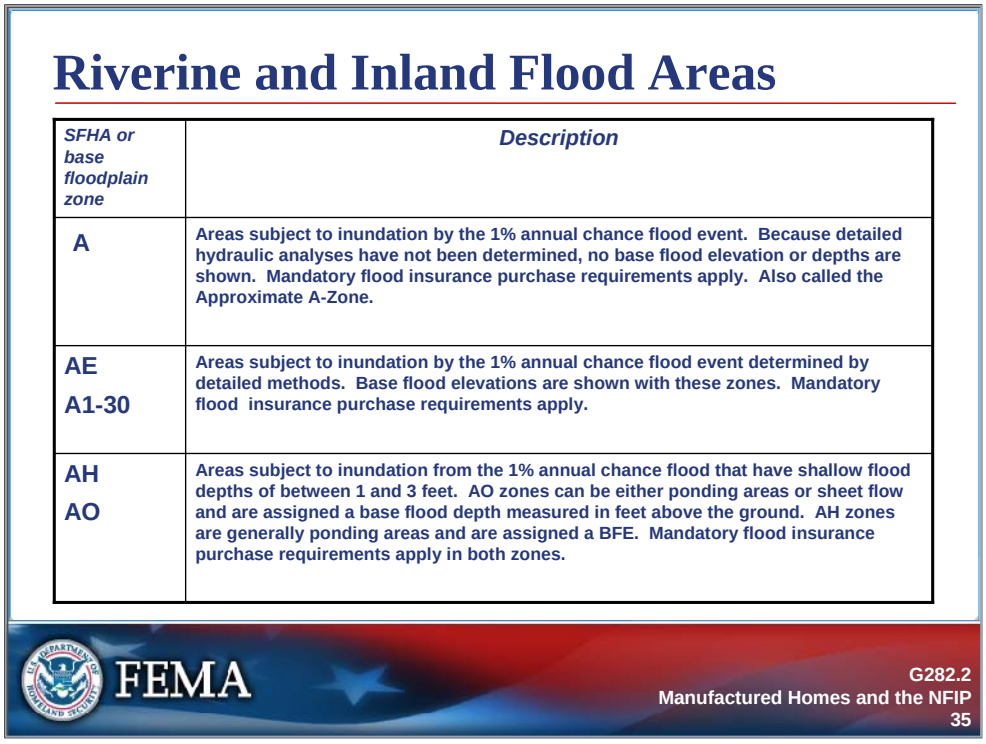
What can the FPM do if the installer review puts the site outside the floodplain?



Key Points – Site Review Process

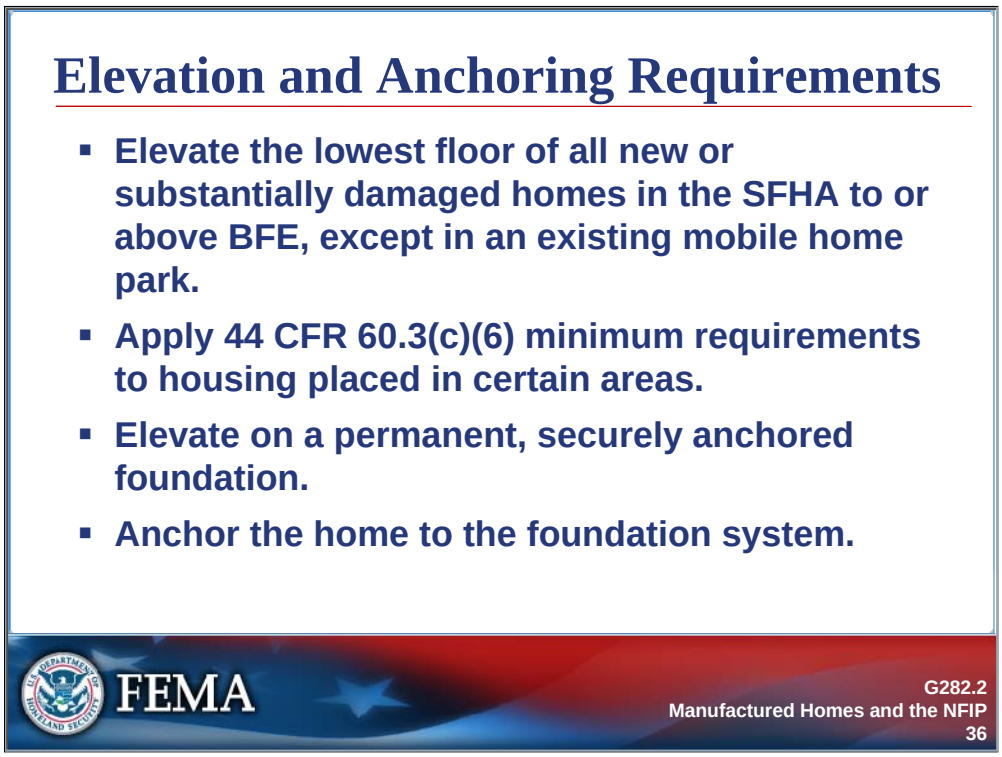
Manufactured home development requirements are based on the following type of SFHA.

- The floodplain management ordinance requires elevation above the BFE and anchoring to prevent flotation, collapse, and lateral movement.
- The licensed installer looks for an installation design from the manufacturer that fits site BFE and velocity conditions and uses the design. If the manufacturer has not provided an installation design that will work on the site, the installer must have a design prepared by a licensed professional engineer (or architect where State law allows). This design must be submitted to the manufacturer for approval.
- The engineer or architect can use FEMA 85 as resource to prepare installation design.



Key Points – Site Review Process

Note that zone designations found on older FIRMs have been replaced by the designation listed in the zone column.



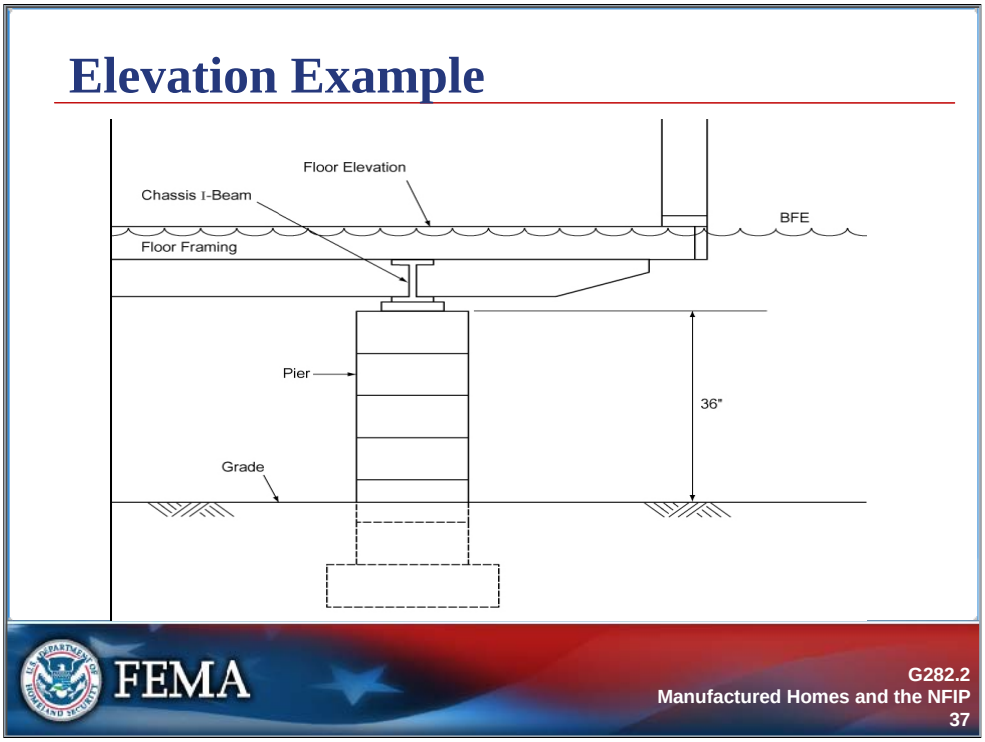
Key Points – Site Review Process

Elevation and Anchoring Requirements:

- There are elevation requirements for new and substantially damaged structures that apply to all residential structures within A1-30, AH, and AE Zones, including manufactured housing.
- The top of the lowest floor of these structures must be elevated to or above the BFE. New or substantially improved conventional homes are subject to the same requirements.
- 60.3 (c)(6) provides minimum requirements for certain types of manufactured housing when placed or substantially improved. The section applies only to housing placed in certain areas:
  1. Outside of a manufactured home park or subdivision,
  2. In a new manufactured home park or subdivision,
  3. In an expansion to an existing manufactured home park or subdivision, or
  4. In an existing manufactured home park or subdivision on which a manufactured home has incurred substantial damage as the result of a flood.
- The description in 44 CFR 60.3 (c)(6)(iv) applies to specific lots within an existing manufactured home park or subdivision. “Existing manufactured home park or subdivision” and “New manufactured home park or subdivision.”

  In these areas, the home must be elevated on a permanent foundation such that the lowest floor of the manufactured home is elevated to or above the base flood elevation and be securely anchored to an adequately anchored foundation system to resist floatation, collapse, and lateral movement.

Note: Once a manufactured home within an existing park or subdivision has been substantially damaged by a flood, from that point on, all manufactured homes installed on that particular lot must be elevated to the BFE.



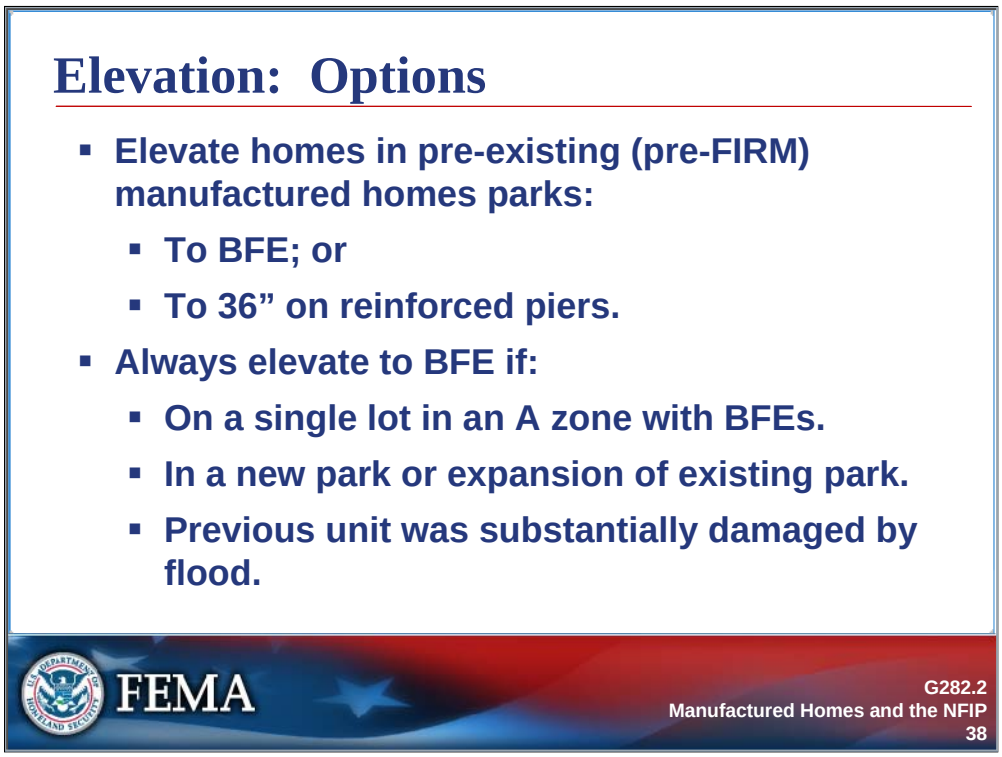
Key Points – Site Review Process

Elevation Example:

- The requirement to elevate to the BFE assumes that all other floodplain management requirements have been met, including provisions that require:
  - Construction of all portions of the building below the BFE with flood-resistant materials.
  - Protection of all building utilities and equipment.

Notice the I-beam at the bottom of the steel frame.

- Elevating the bottom of the steel frame (I-beams) at the BFE as recommended almost always protects utility and mechanical equipment. Note that the diagram shows the I-beam at 36 inches, which is below the BFE.
- The exception is installation of cross-over duct work for manufactured housing that needs to pass under the I-beams. Heating, ventilating and cooling (HVAC) utilities including air handling units and compressors are also required to be protected from flooding by using:
  - Elevation, and
  - Other measures.



Key Points – Site Review Process

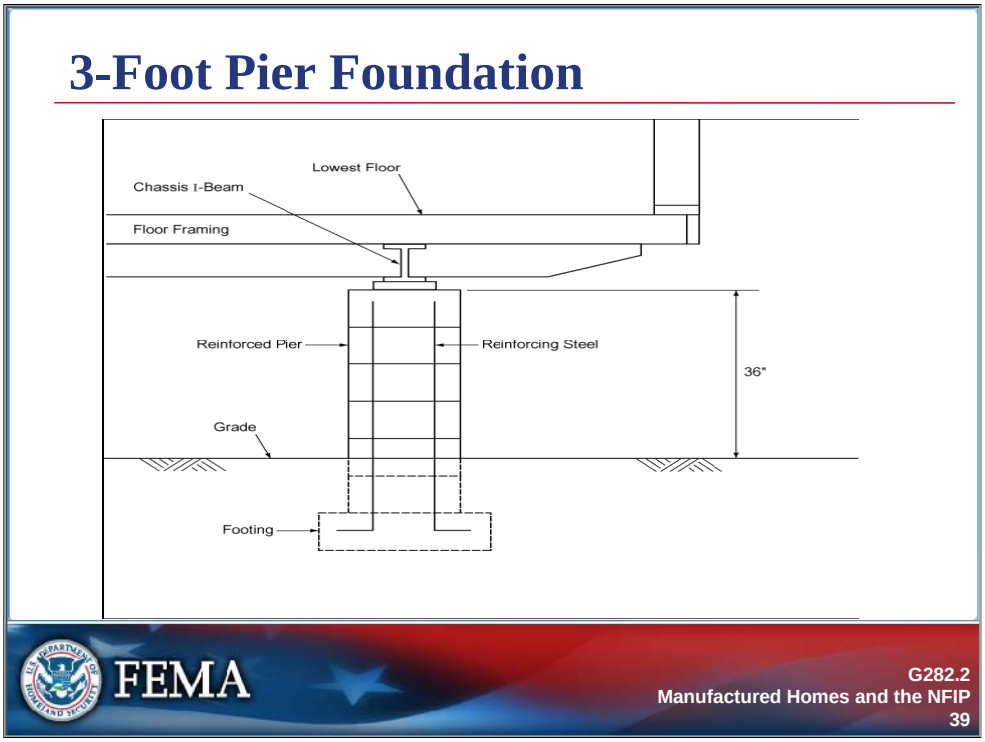
Two elevation scenarios may be possible for housing sites in existing (pre-FIRM) manufactured home parks or subdivisions:

- The lowest floor of the manufactured home must be elevated to or above the BFE, or
- The manufactured home must be supported on reinforced piers or other foundation elements of at least equivalent strength that are no less than 36 inches in height above grade.

Manufactured housing cannot be placed or substantially improved below BFE if a home is:

- On a single lot in A1 – A30 zones, AH or AE zone.
- In a new park or expansion to an existing park.
- In a park where previous units were substantially damaged by flood.

Note: When a BFE is not known in an A zone, the 36-inch foundation is highly recommended.



Key Points – Site Review Process

According to the regulations that define this 3-foot pier foundation, the manufactured home chassis must be:

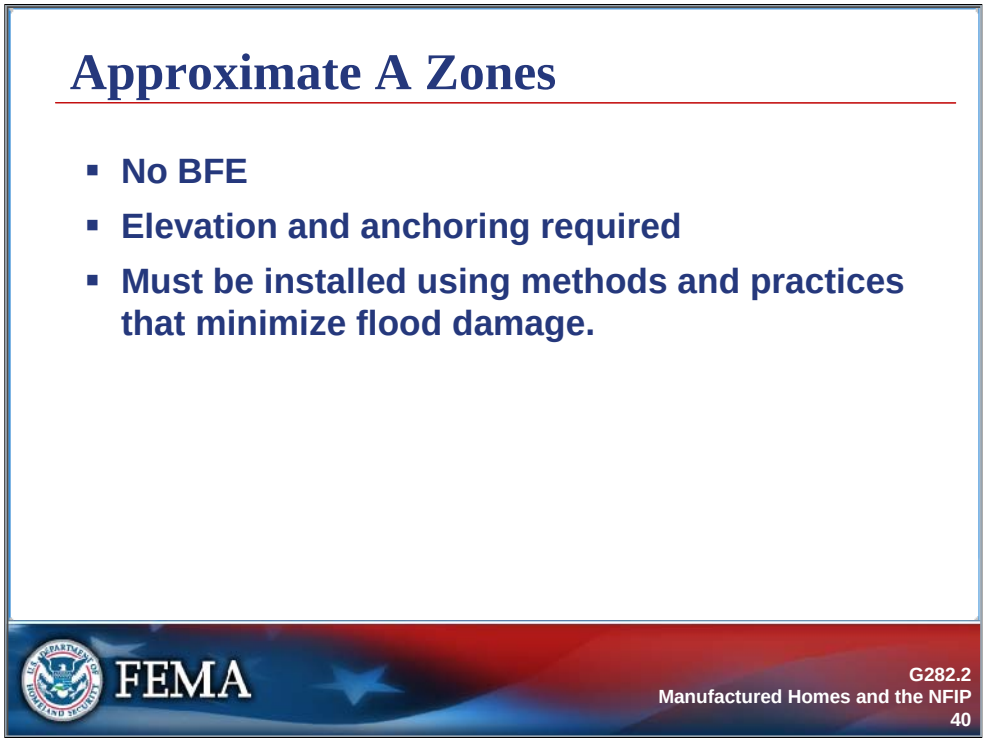
- Supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than 36 inches in height above grade, and
- Securely anchored to an adequately anchored foundation system to resist flotation, collapse, and lateral movement.

The pier, footing, and connection between the pier and the home must be designed to resist floatation, collapse, and lateral movement.

A 3-foot foundation generally places a manufactured home floor approximately 4 feet above the grade**.**

The NFIP acknowledges that the requirement to elevate on 36-inch high piers may, in some cases, result in less than 100-year flood protection. For this reason, care must be exercised in using the 3-foot pier option.

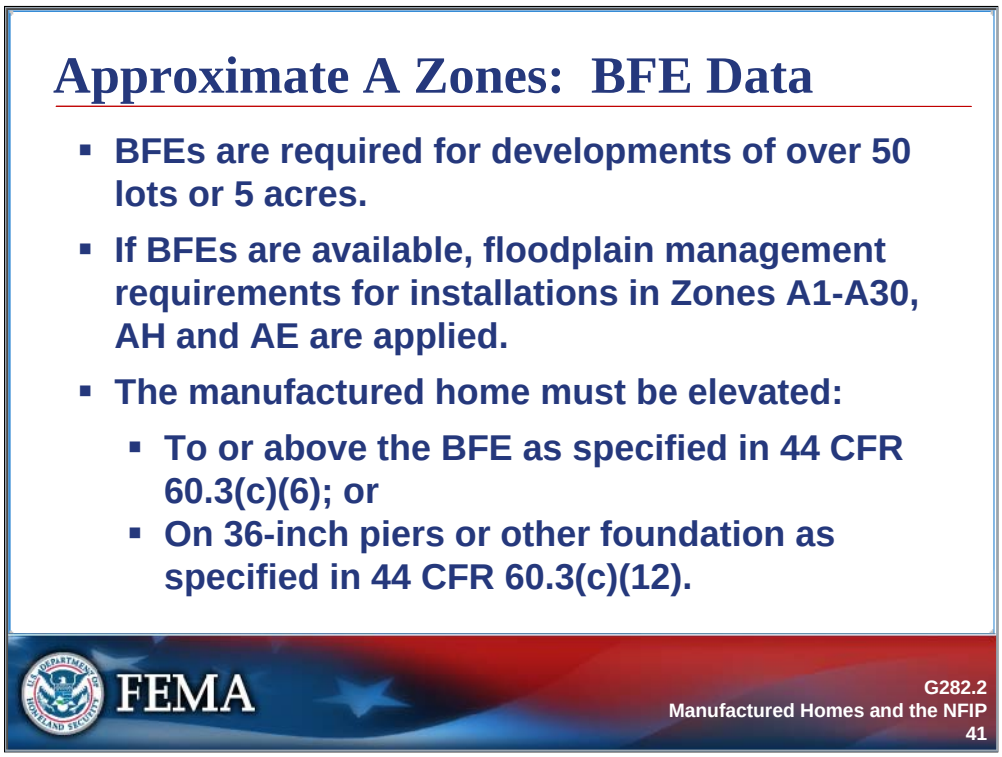
Note: Flood insurance will be rated according to lowest floor elevation in relation to BFE. Insurance could be very expensive if the 36-inch rule results in the floor being below BFE.



Key Points – Site Review Process

CFR 60.3 (b)(8) addresses regulations for manufactured homes to be placed in Approximate A-Zones.

- Because there are no BFE data available from the FIS or FIRM for this SFHA, the regulations do not list an elevation requirement related to a BFE.
- Instead, the regulations state that there must be elevation and anchoring to protect the manufactured home from damage or destruction.



Key Points – Site Review Process

A Zones:

- NFIP floodplain management regulations at 44 CFR 60.3(b)(4) state that base flood elevation data must be submitted by the developer with proposals for manufactured home parks or subdivisions that are greater than 50 lots or 5 acres in size (whichever is less).
- If base flood elevation data is available in Approximate A zones, manufactured homes placed or substantially improved in these areas are subject to the same floodplain management requirements that apply to installations in Zones A1-A30, AH, and AE.

Due to the regulatory requirement, if BFE information is available, the manufactured home must be elevated:

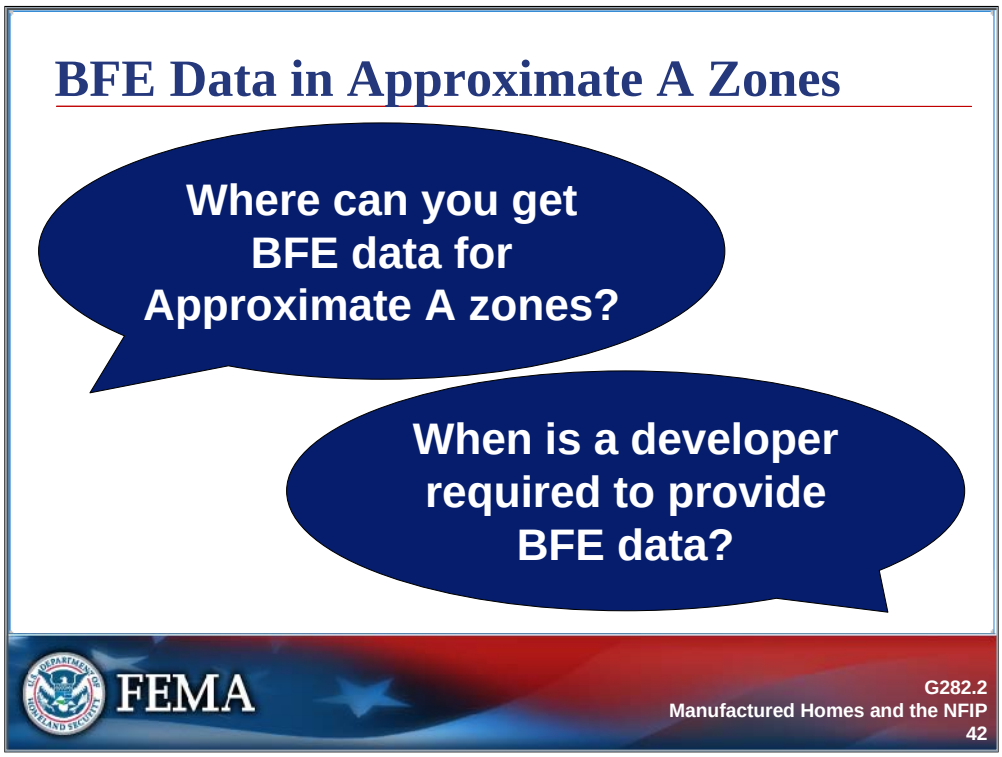
- To or above the BFE when placed or substantially improved on sites specified in 44 CFR 60.3(c)(6); or
- On 36-inch piers or other foundation of equivalent strength when placed or substantially improved on sites specified in 44 CFR 60.3(c)(12).

When the BFE is not known, FEMA recommends the use of the 36-inch foundation as a minimum standard as stated in 44 CFR 60.3(c)(12).

Key points:

- Local jurisdictions typically will establish a “community flood elevation” to meet the “reasonably safe from flooding” requirement in 60.3(a).
- A permanent foundation is not specifically required by 60.3(b)(8) in A zones. However, the NFIP Flood Insurance Manual notes on page GR-3 that flood insurance can be denied if unit is determined to not be “affixed” to a permanent foundation.

Refer to job aid “Obtaining BFE Data in Approximate A Zones” located in the Resource Booklet.

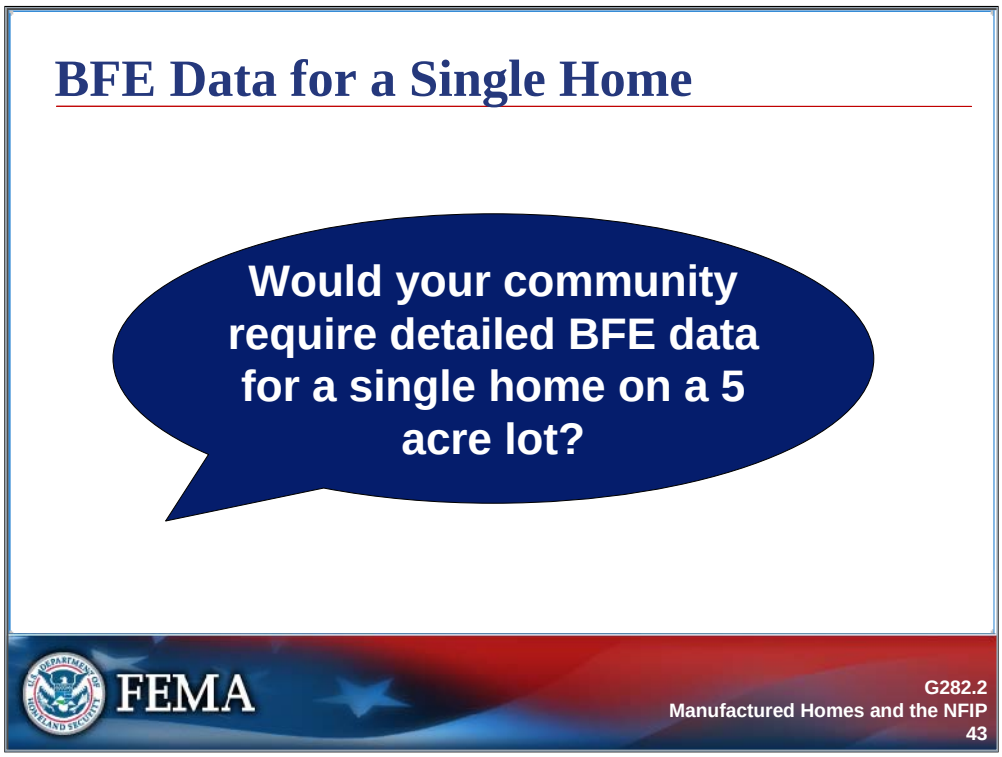


Key Points – Site Review Process

Answer the following discussion questions:

Where can you get BFE data for Approximate A zones?

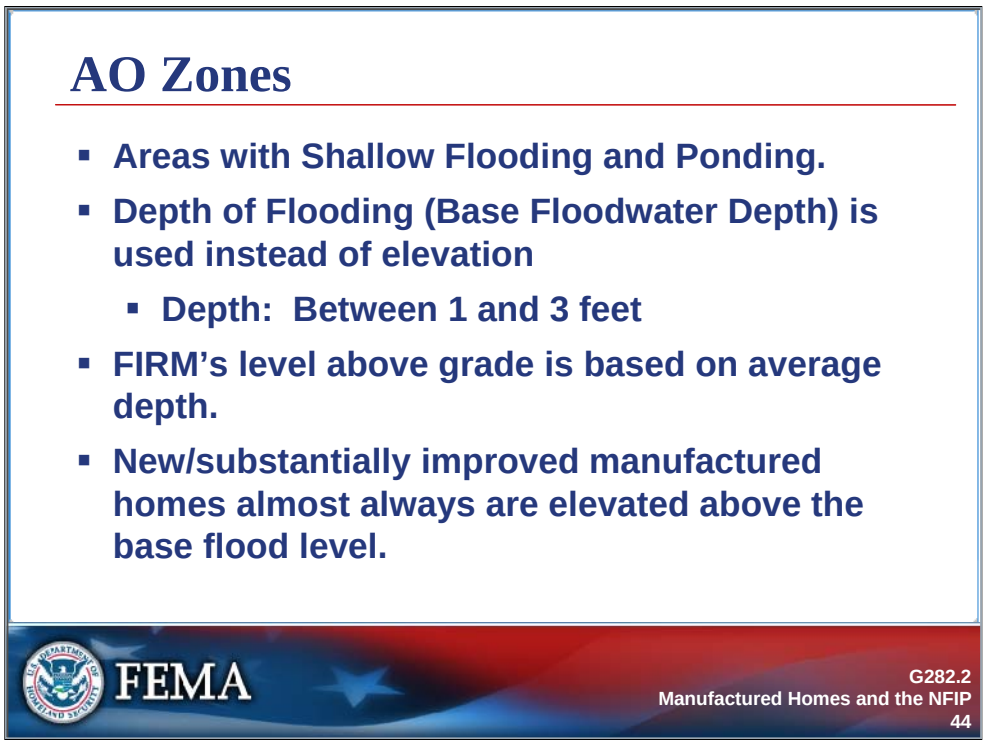
When is a developer required to provide BFE data in A zones?



Key Points – Site Review Process

Answer the following discussion question:

Would your community require detailed BFE data for a single home on a 5 acre lot in an Approximate A zone?



Key Points – Site Review Process

Key Points on A Zones:

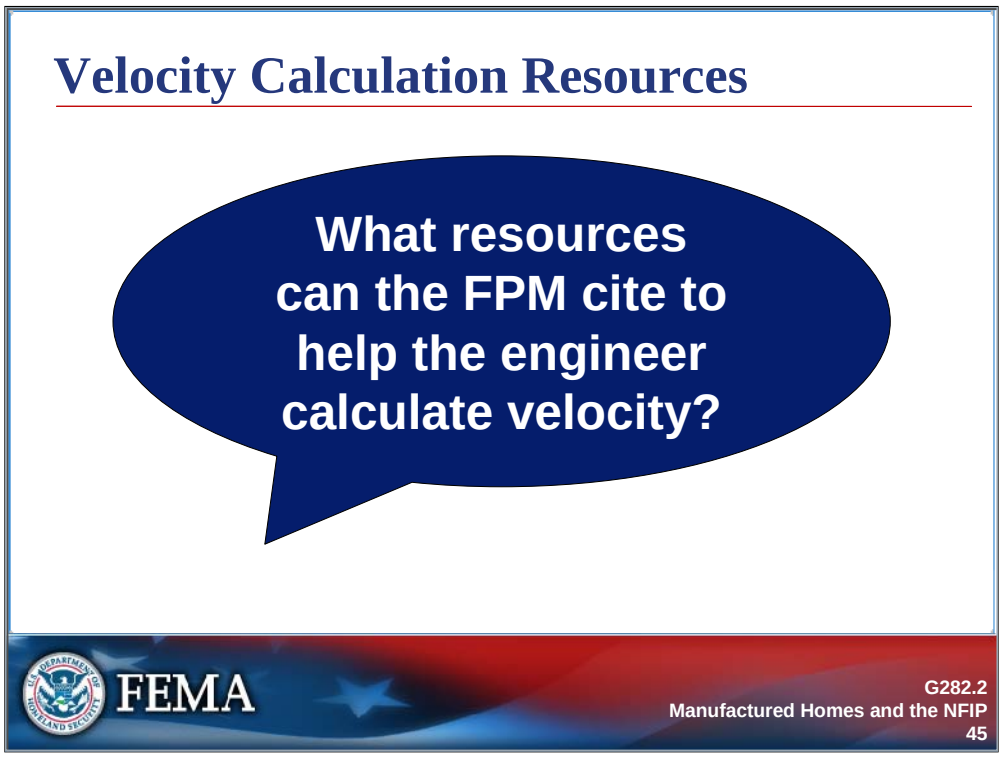
- AO zones experience shallow flooding and ponding.
- All the same basic regulations apply to NFIP installation regulations for manufactured housing in AO zones as apply to A zones.
- AO zones have some distinct features that make the enforcement of NFIP regulations unique.

The base floodwater depth in AO zones is always between 1 and 3 feet. As a result, structures in this zone are required to be elevated between 1 and 3 feet above grade. This level of elevation can be accomplished by using standard manufactured home installation techniques such as placing the home on dry-stacked block piers and securing it with ground anchors.

A dry-stacked block and ground anchors foundation style can provide adequate elevation, but can only withstand relatively low flood velocities. Therefore, it is recommended that, where practical, fill be placed to elevate the building pad site before using this technique.

Standard installation techniques provide a foundation that is generally elevated at least 3 feet above grade.

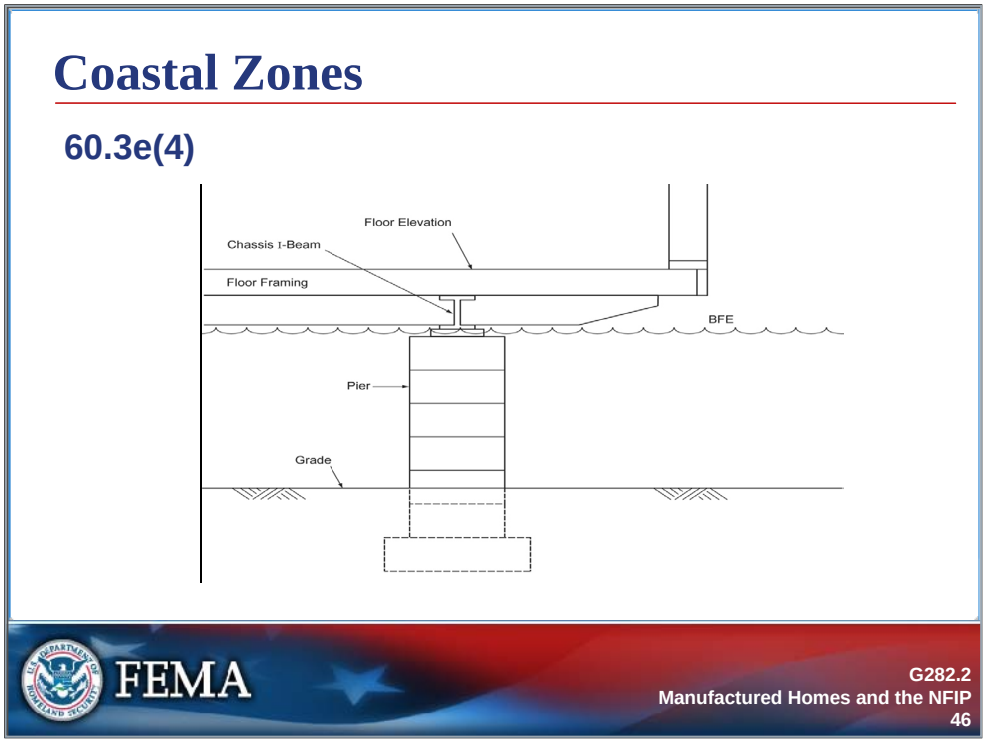
- Because flood depths in AO-Zones are never more than 3 feet, new and substantially improved manufactured homes in AO zones are always elevated to or above the base flood level. Even homes placed in pre-FIRM manufactured home parks or subdivisions usually will be above BFE.
- The best practice of elevating the bottom of the steel frame (I-beam) to the BFE is still recommended in AO zones.
- As in all SFHAs, anchoring of manufactured housing is required in AO Zones per Sections 60.3 (a)(3) and (b)(8).



Key Points – Site Review Process

Answer the following discussion question:

What resources can the FPM cite to help the engineer calculate velocity?



Key Points – Site Review Process

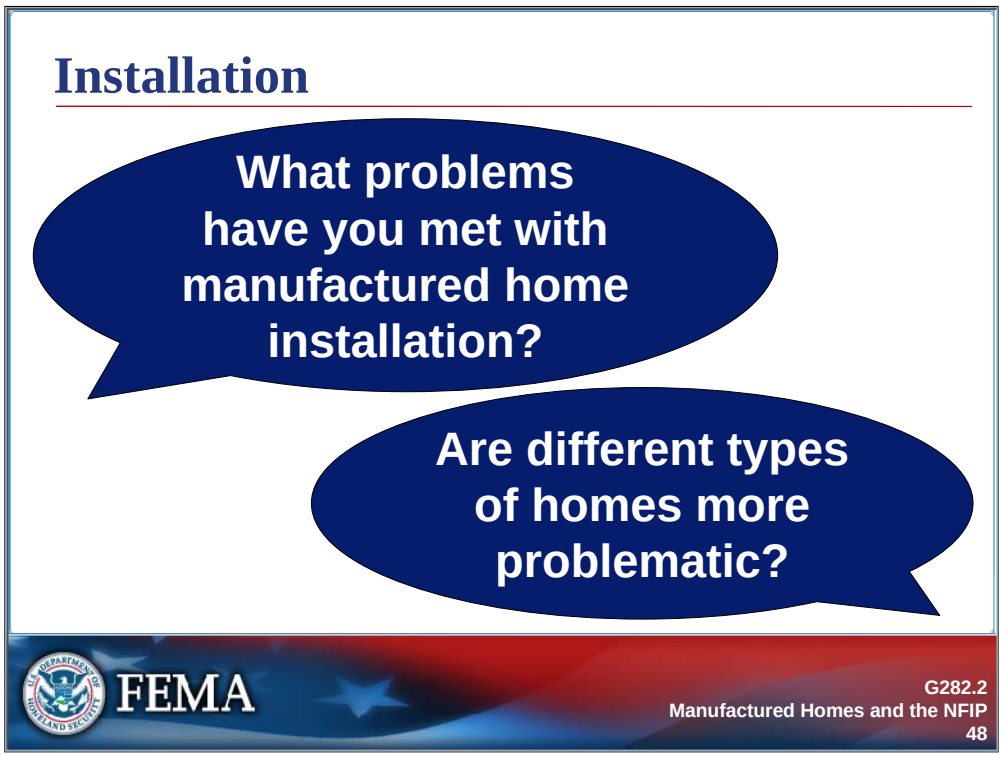
Elevation requirements for structures in the V-Zones differ from those in the A-Zones.

- The elevation of the top of the lowest floor is used as the reference elevation for A1-30, AE, A, and AO Zones. This means that the top of the lowest floor must be at or above the BFE.
- Structures in V-Zones must be elevated so that "the bottom of the lowest horizontal structural member of the lowest floor is elevated to or above the base flood." This reference level is taken as the bottom of the chassis to which the manufactured home is affixed. The elevation is usually 12 inches or more below the top of the lowest floor.
- Therefore, the minimum required elevation level for structures in V-Zones can be 1 foot or more higher than what it would be in A-Zones. V-Zone regulations should be followed for Coastal A zones.

FEMA's *Coastal Construction Manual* (FEMA 55) recommends that for areas subject to coastal flooding, the bottom of the lowest horizontal structural member should actually be elevated some height above the BFE; the manual thus advocates the use of freeboard. Additionally, the manual states that the lowest horizontal structural members in coastal areas should be perpendicular to the expected wave crest. This manual can be found on the FEMA web site http://www.fema.gov/library/viewRecord.do?id=1671.

Key Points – Foundations

This section of the course covers considerations for installations and foundations when placing manufactured homes.

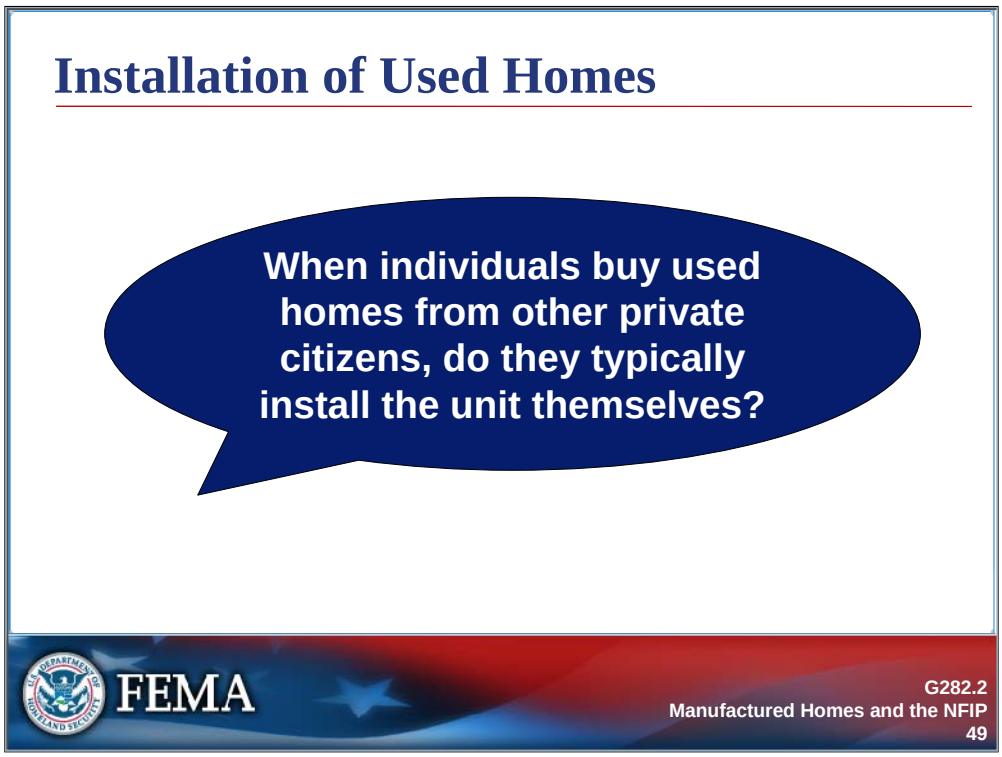


Key Points – Foundations

Answer the following discussion questions:

What problems have you met with manufactured home installation?

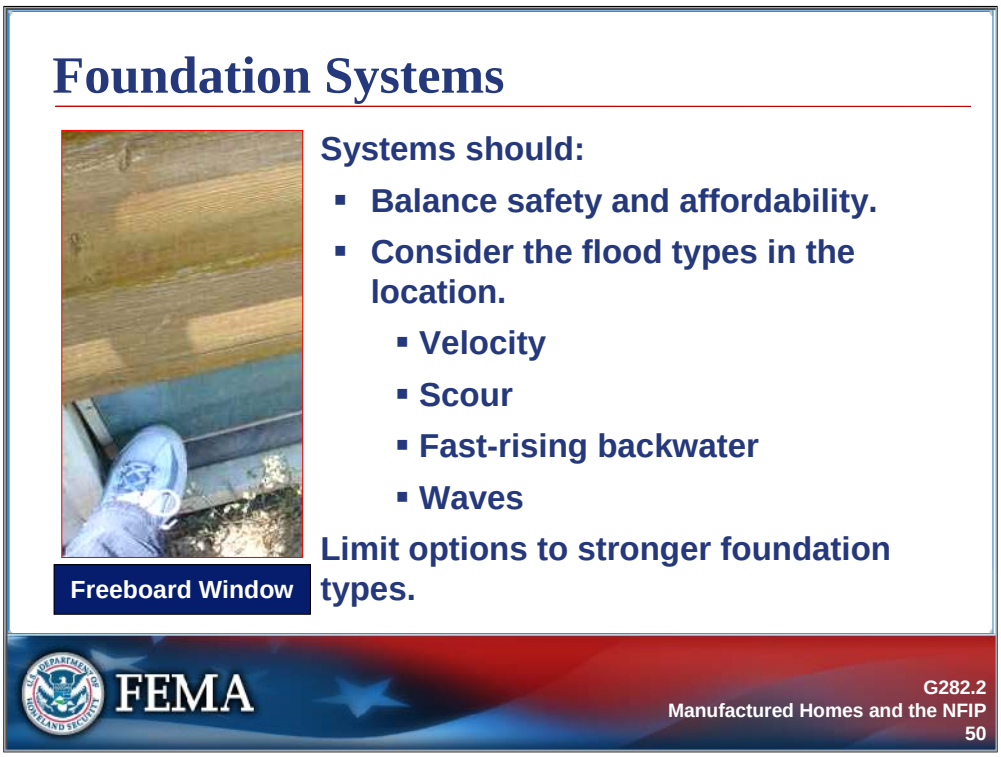
Are different types of homes more problematic?



Key Points – Foundations

Answer the following discussion question:

When individuals buy used homes from other private citizens, do they typically install the unit themselves?



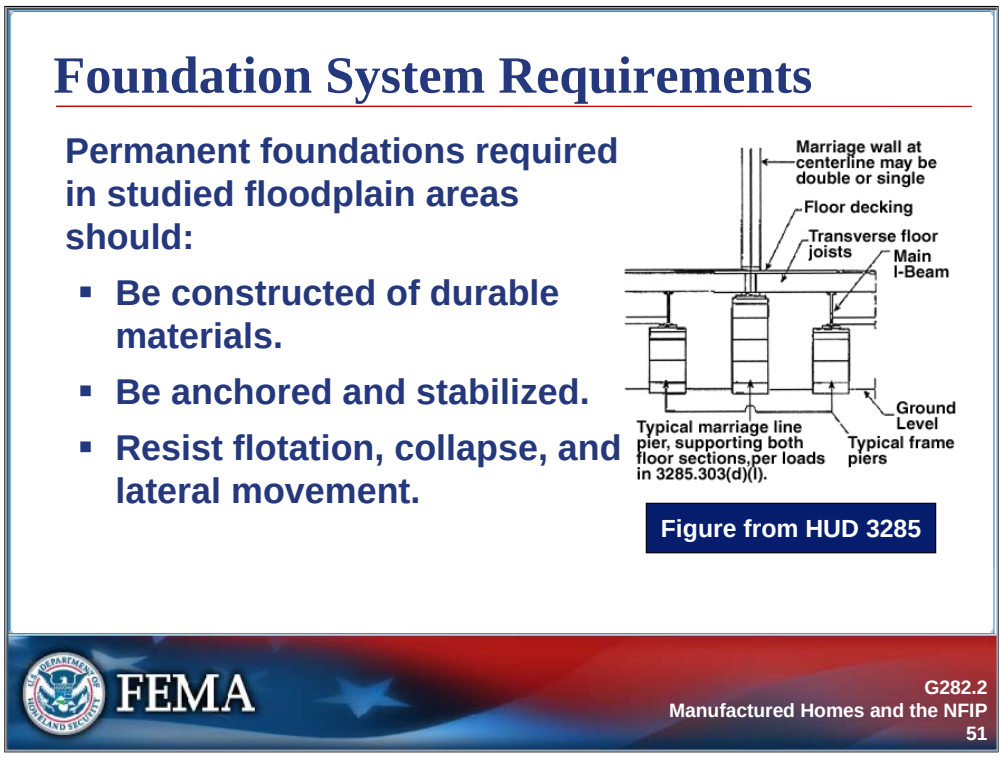
Key Points – Foundations

Note that manufactured home foundation systems should:

- Balance safety and affordability.
- Consider the flood types in the location, including the following characteristics:
  - Velocity.
  - Scour.
  - Fast-rising backwater.
  - Waves.

The local FPM should limit options to stronger foundation types.

If velocity is a concern throughout your community, a more restrictive requirement would be to state plainly in the floodplain management ordinance that dry stacked block piers are not allowed.

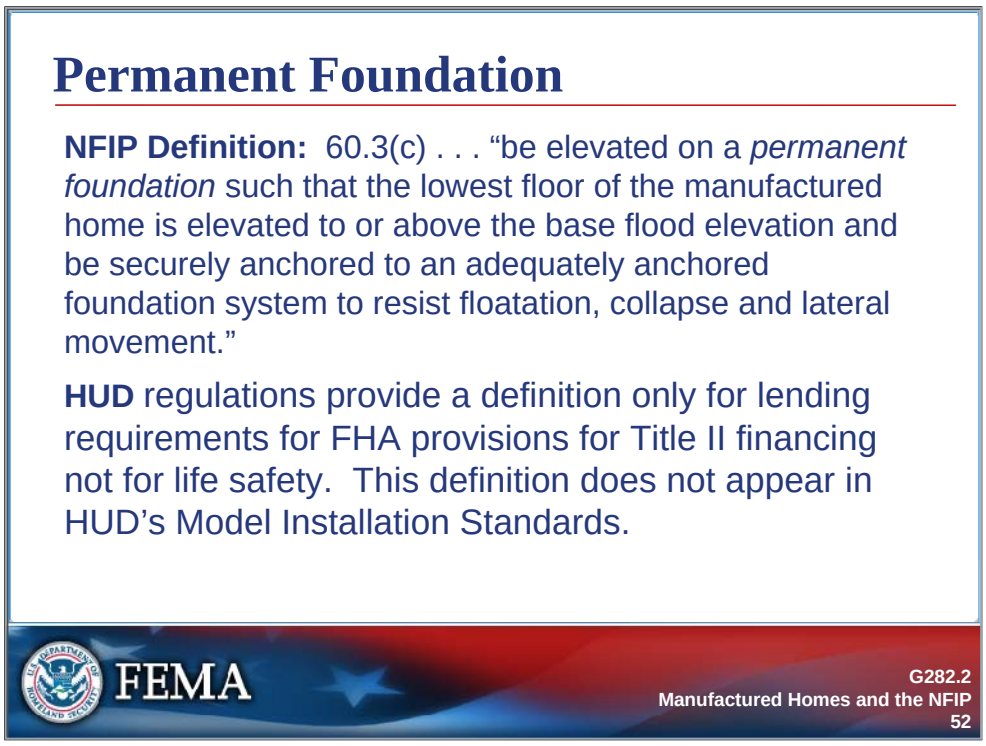


Key Points – Foundations

Permanent foundations required in studied floodplain areas should:

- Be constructed of durable materials.
- Be anchored and stabilized.
- Resist flotation, collapse, and lateral movement.

Manufactured homes are especially vulnerable to flood damage. If the floor is soaked, the home is considered substantially damaged. Foundations are a key component to protecting the home from damage.



Key Points – Foundations

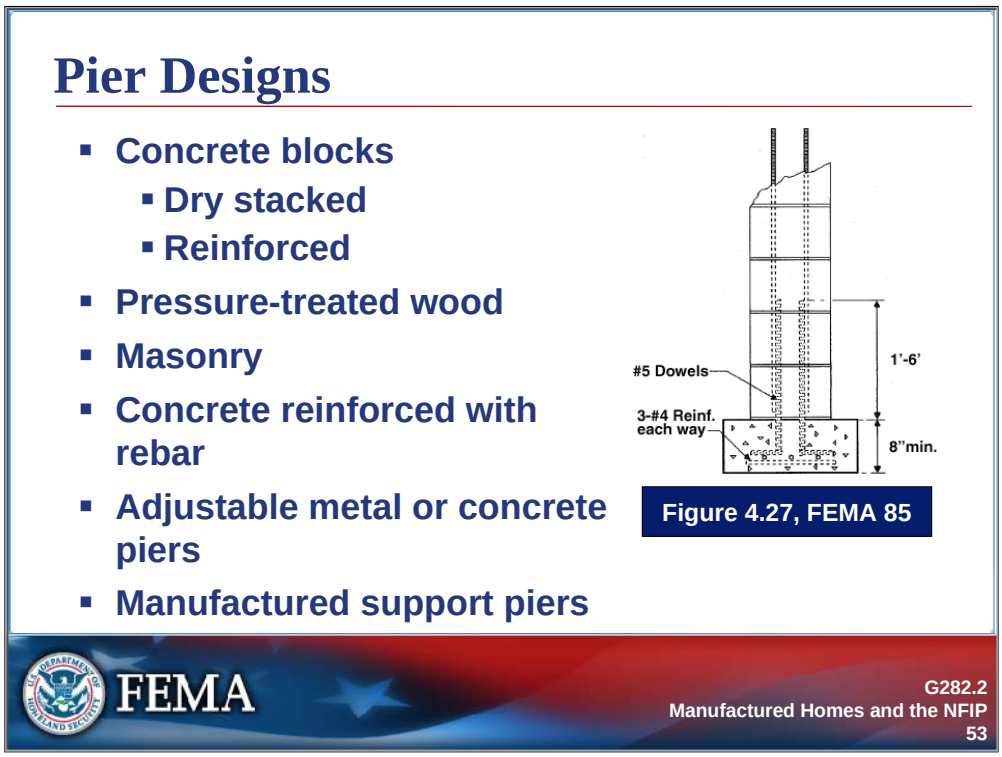
The NFIP does not define "permanent foundation", however, the regulations do provide a prescriptive requirement. At 60.3(c) . . . "be elevated on a permanent foundation such that the lowest floor of the manufactured home is elevated to or above the base flood elevation and be securely anchored to an adequately anchored foundation system to resist floatation, collapse and lateral movement."

FHA has issued a proposed rule to remove the requirement for permanent foundations and replace it with a reference to foundation support and anchorage which complies with HUD's Model Installation Standards.

States also may have a different definition of a "permanent foundation."

There are two types of foundation systems that are commonly used to support manufactured homes:

- Pier and ground anchors
- Perimeter wall foundations



Key Points – Foundations

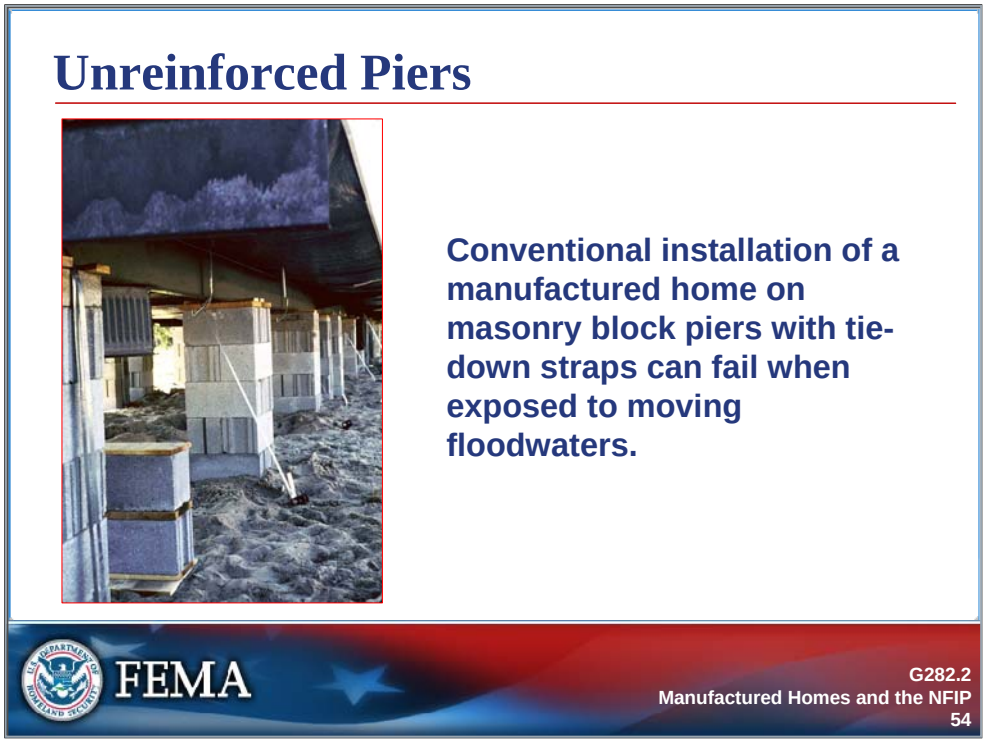
Pier designs may be:

- Concrete blocks
  - Dry stacked: Low velocity only; must have anchors
  - Reinforced
- Pressure-treated wood
- Masonry
- Concrete reinforced with rebar
- Adjustable metal or concrete piers
- Manufactured support piers

Debris loading is an issue for manufactured home foundations during flooding, and buildup of debris around or under the home could destabilize the foundation.

The type of pier shown in the figure on the visual needs to be tied into continuous footings or to resist lateral loads by other methods.

A foundation may be built around the piers for aesthetic purposes, and may not be load-bearing.

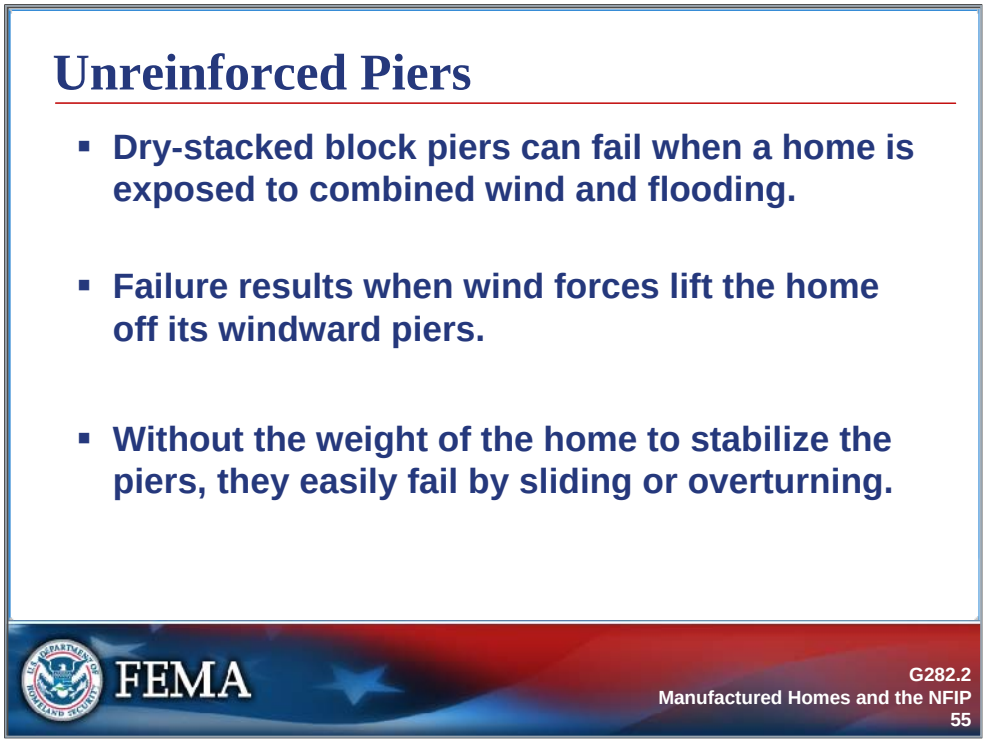


Key Points – Foundations

When flood velocities are less than 1 foot per second, piers can be constructed with non-mortared (dry-stacked) concrete blocks, but must be anchored.

Pier footings are sized to resist vertical loads only and, by increasing pier size or reducing pier spacing, adequate foundations can be constructed for a wide range of soil bearing capacities.

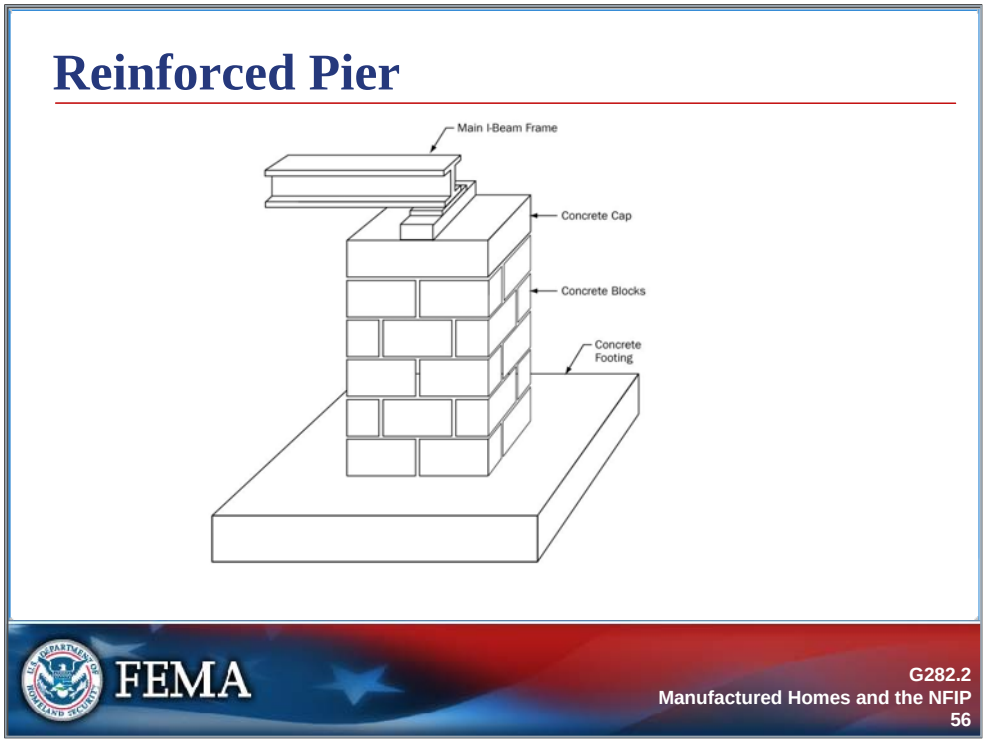
- Unreinforced piers are typically placed every 8 to 10 feet of length beneath the two steel beams. Frame ties are connected to the steel chassis or perimeter beams, and run to ground anchors.
- Ground anchors are used with tie-downs and straps to secure a manufactured home in place. The frame ties and anchors provide lateral support while piers provide vertical support.
- Unreinforced brick or concrete masonry unit (CMU) pier systems have no reinforcing steel and, therefore, have nearly no resistance to overturning, shearing and uplift.
- Because of this lack of resistance, unreinforced piers should never be used alone and should always be provided with other stabilizing devices like ground anchors.
- When used with stabilizing devices, many styles of unreinforced piers are available to support manufactured homes.



Key Points – Foundations

Piers should only be used when other foundation components (such as ground anchors) are in place to resist lateral loads.

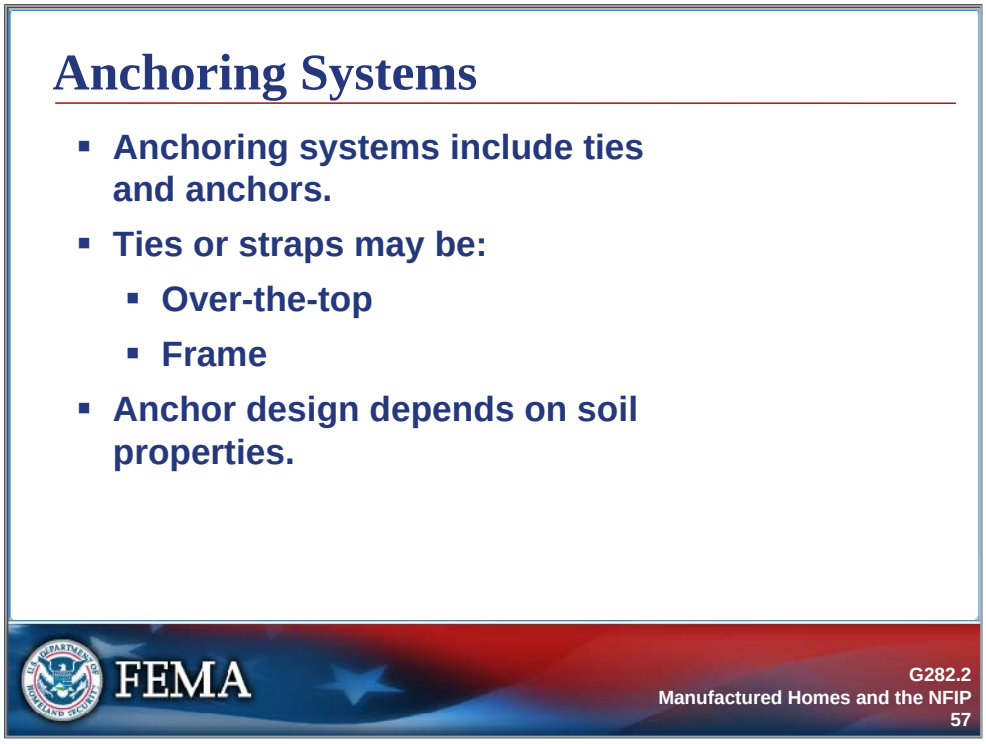
- Even when used with other foundation components, dry-stacked piers remain vulnerable to damage from moving floodwaters and should only be used in areas exposed to limited flood depths and velocities.
- When placed directly on concrete footings or pads, 3-foot tall piers constructed with single, dry-stacked blocks to create an 8-inch by 11-inch pier can only resist flood velocities of approximately 1.5 feet per second.
- Three-foot tall, double-stacked piers (16 inch by 16 inch) can resist flood velocities of approximately 2 feet per second. Dry-stacked piers or posts on the more slippery ABS pads fail at somewhat lower velocities.
- Unreinforced piers (even fully grouted piers) cannot be used in V-Zones.
- In Coastal A-Zones, fully grouted piers may be adequate for low flood velocities, but reinforcing with steel is suggested.



Key Points – Foundations

Reinforced Pier:

- The term *reinforced* as it pertains to a manufactured home foundation means that the foundation must be strengthened to withstand flotation, collapse and lateral movement from both the flood and wind forces acting on the manufactured home.
- These forces can be extremely powerful, so this requirement generally necessitates that the foundation be constructed of cast-in-place reinforced concrete or reinforced concrete masonry piers, or continuous foundation walls.
- As loose or dry-stacked blocks offer no resistance to the lateral forces produced by wind and water, they are not an acceptable elevation technique.
- Reinforced piers typically have steel reinforcements placed inside of the piers. The vertical reinforcing helps to prevent overturning, sliding and uplift due to wind or flood forces.
- Even when grouted and reinforced, piers, by themselves (i.e., used with no other stabilizing devices), provide only limited resistance to lateral forces.
- Adequate connections between the piers and the manufactured home are necessary for the manufactured home and its foundation to resist lateral and uplift loads from flood.
- Generally, multiple fastener bolted connections are needed to connect the top of the piers to the manufactured home frames when the piers must transfer stresses.



Key Points – Foundations

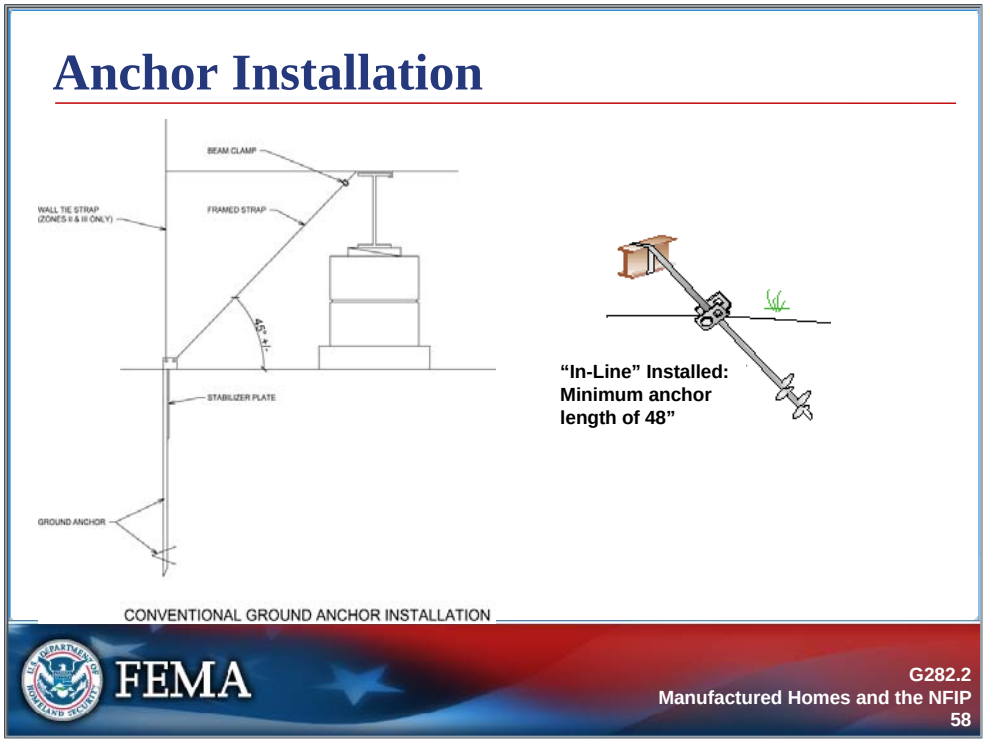
Note that:

- Anchoring systems consist of ties (straps) and anchors which enable the manufactured home to resist the uplift and lateral forces of wind.
- Ties are generally of two types:
  - Over-the-top-ties, which run over the top and sides of the manufactured home.
  - Frame ties, which connect the I-beam to the anchor.

Because anchor strength depends on the soil properties, anchors are designed for the soils they are to be used in.

- Anchors with longer shafts and larger helixes are needed for poor soils.
- Shorter anchors with smaller helixes can be used in more capable soils.

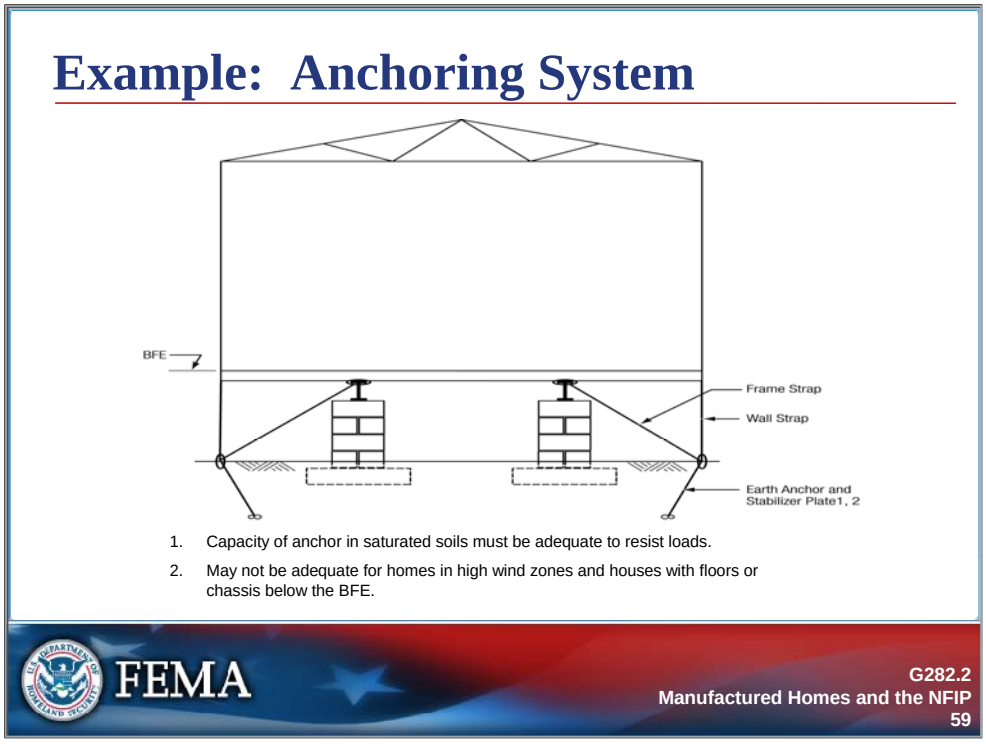
Caution: Installers may cut anchors if they encounter rock, resulting in failures during flooding.



Key Points – Foundations

Anchor Installation:

- Ground anchors must develop their strength without the anchor head moving more than 3 inches horizontally or 2 inches vertically.
- When a manufactured home is secured with ground anchors, it too can move up to 3 inches when exposed to wind and flood, events. Three inches of *horizontal* movement can allow the piers under a home to become unstable and make the entire home vulnerable to collapse.
- Two inches of *vertical* movement can allow the home to lift and lose contact with the supporting piers.
- Unless the home is securely fastened to the piers, the loss of contact can make the piers vulnerable to being displaced by rapidly moving flood waters.
- Unfastened piers supporting a home placed in an area where flood velocities are less than 1 foot per second will likely not experience that mode of failure.



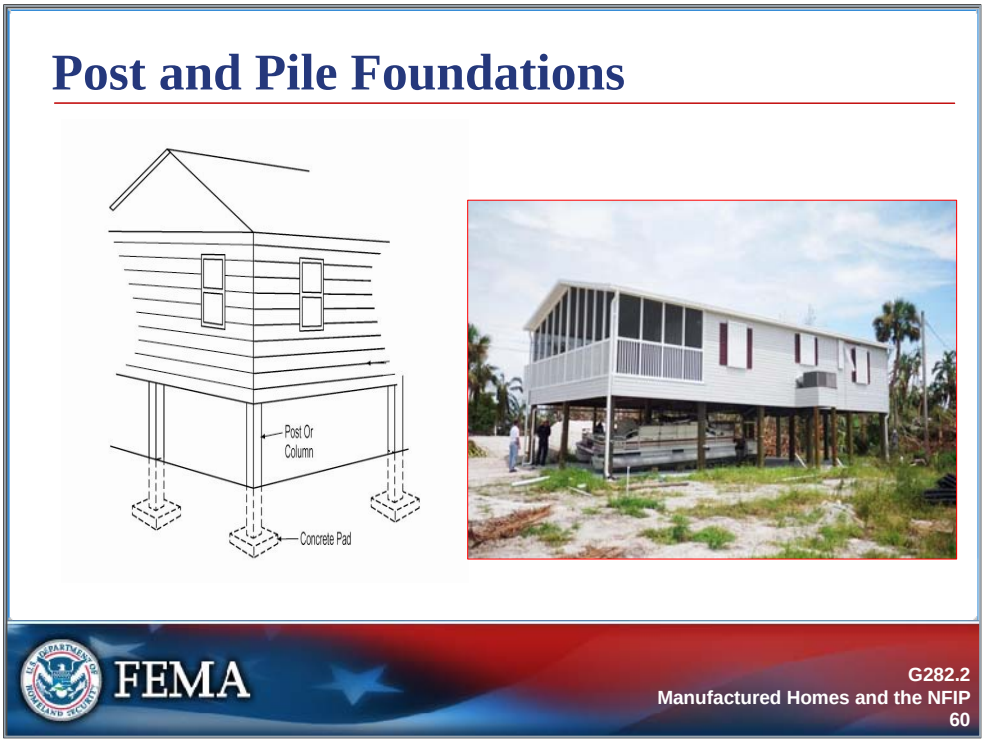
Key Points – Foundations

Examples of Anchoring Systems:

- In flood hazard areas, the most appropriate anchoring system is determined based on the particular foundation upon which the manufactured home is elevated.
- Piers have limited resistance to lateral loads.
- To anchor a manufactured home to a pier foundation, frame ties connect the I-beams to an anchor set into the ground below the manufactured home.
- Additional resistance to uplift forces is achieved through the use of over-the-top ties connected to ground anchors.

Note: FEMA 85 places the BFE at the bottom of the steel I beams.

FEMA 85, Chapter 7, Ground Anchors, contains the results of a study conducted on anchors in saturated soils.



Key Points – Foundations

Post and Pile Foundations:

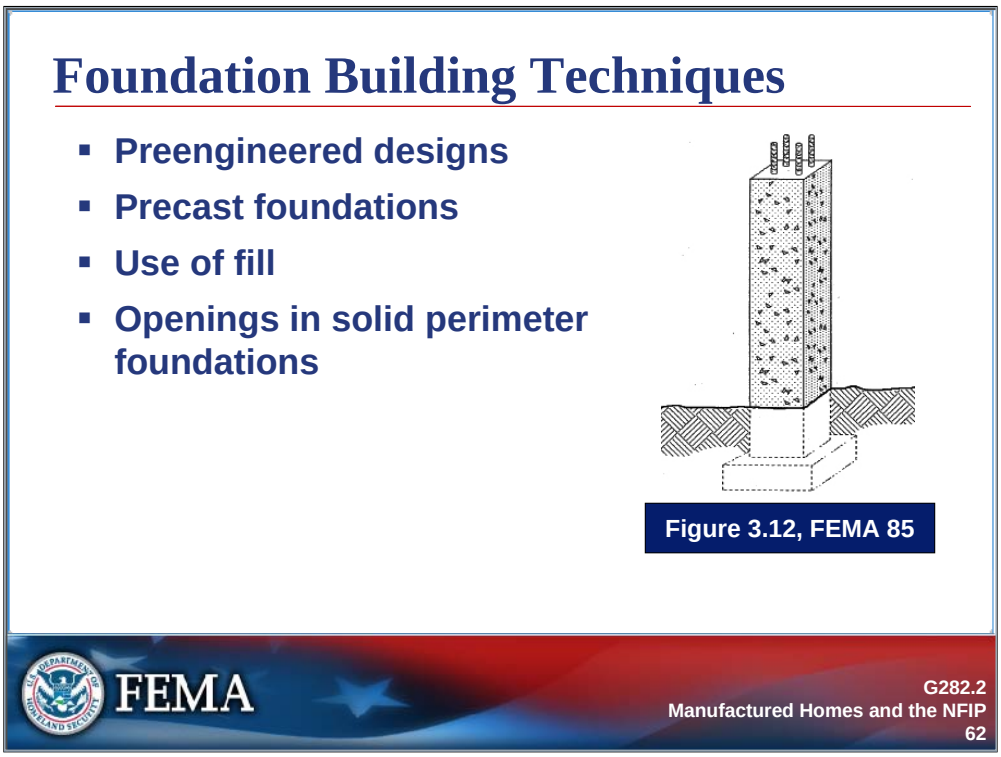
- **Post** foundations are members placed in relatively shallow holes.
  - Post foundations are approximately 3 feet deep.
  - Posts rely on soil friction to resist uplift and are generally only acceptable where seismic and wind forces are very low.
  - Because posts are placed relatively close to the ground surface, post foundations are vulnerable to erosion and scour and should not be used in areas subjected to wave action or high-velocity flow.
  - Post foundations can be of wood, concrete, or steel. Steel members should be galvanized to prevent corrosion.

- **Pile** foundations provide protection for the broadest range of flooding conditions.
  - Pile foundations are driven in until resistance holds the pile in place, and may go very deep.
  - A pile foundation system consists of the pile supports, horizontal beams, longitudinal support under the manufactured home, and foundation bracing for additional resistance to lateral wind, floodwaters, and seismic events.
  - A properly designed pile foundation can withstand high wind and water velocities, and can resist scour and erosion around its base if embedded to an adequate depth.
  - Because of resistance to scour and erosion, pile foundations are required by the NFIP when homes are placed in V-Zones. Pile foundations are also appropriate for Coastal A-Zones and for areas exposed to high-velocity riverine flooding.

Key Points – Foundations

Key points about perimeter wall foundations:

- A less frequently used elevation technique is to raise the manufactured home on perimeter foundation walls, often creating the appearance of a conventionally built home.
- The walls are usually either reinforced concrete block or poured concrete perimeter walls.
- Enclosed foundations consist of perimeter foundation walls placed on continuous footings.
  - The walls enclose the area below the living space of the home.
  - Perimeter walls are commonly constructed of concrete masonry or wood.
- Continuous wall foundations must be designed to withstand soil hydrostatic pressures as well as hydrostatic forces caused by standing water which may require added reinforcement in the walls.
- The NFIP permits enclosed foundations in A-Zones provided the foundation contains openings to allow automatic entry and exit of floodwaters as required in 44 CFR 60.3 (c)(5). The openings are needed to equalize internal and external hydrostatic pressures during flood conditions and reduce flood forces on the foundation walls.



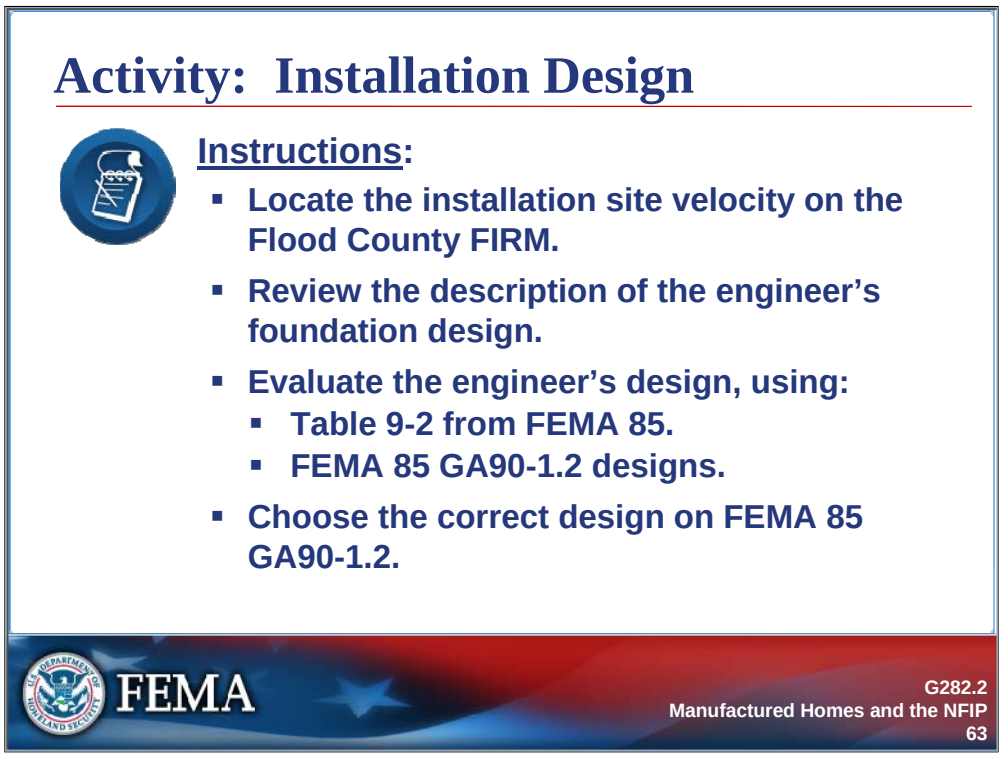
Key Points – Foundations

Note the following foundation building techniques:

- Preengineered designs: There are six pre-engineered foundations suitable for use in many SFHAs:
    - Reinforced masonry
    - Wood framed
    - Braced masonry pier
    - Wood H-frame
    - Ground anchors with stabilizer plate
    - Ground anchor (in-line)

    These foundations can be used for sites in A-Zones with low to moderate floodwater velocities and depths. They are not suitable for V-Zones, Coastal A-Zones, and home sites in floodways or other high velocity areas.
- Precast foundations
- Use of fill
- Openings in solid perimeter foundations

Locate the Summary of Pre-Engineered Foundations and to Tables 9-1, 9-2, and 9-3 in the Resource Booklet. These examples are from FEMA 85, and provide excellent references to the types of foundations that work best based on the flood zones.



Key Points – Foundations

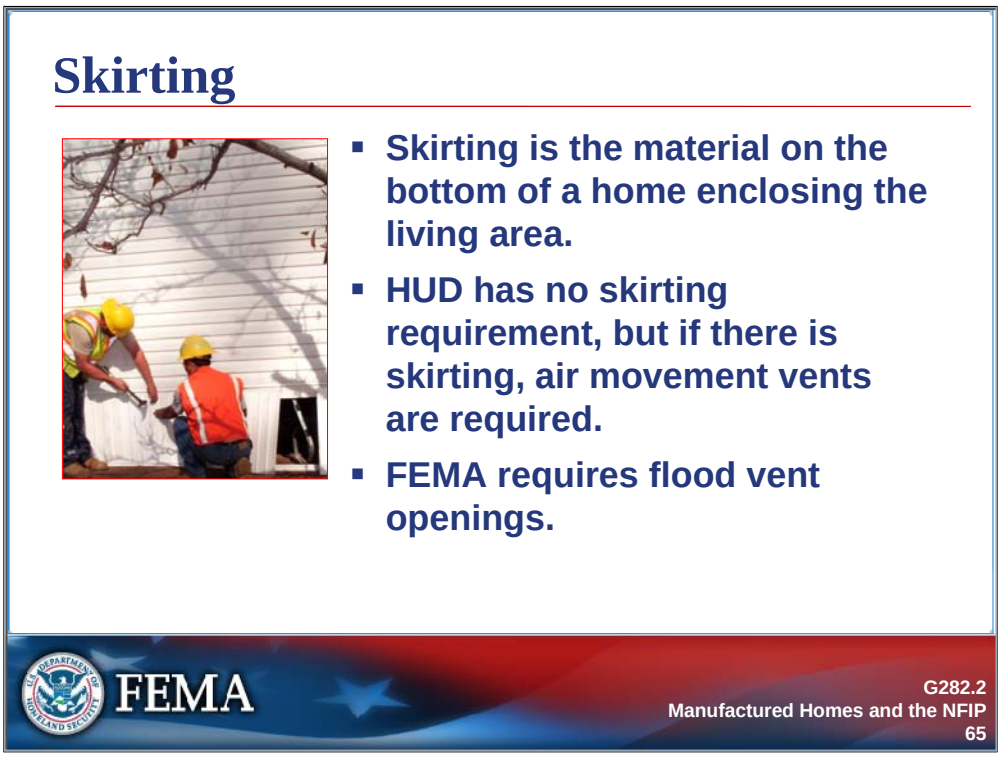
Activity Instructions:

1. Note the following scenario: An FPM receives an installation design sealed by the engineer. The design incorporates piers made of dry-stacked cinder blocks.
2. Use the following information to evaluate the design.
   - Identify the installation site on Flood County FIRM map panel 40, in Zone AE at cross-section "K" on the Rocky River. Find the velocity on the Floodway Data Table in the FIS.
   - Find the design appropriate for the velocity in Table 9-2 from FEMA 85, which categorizes foundation designs by flood zone and velocity. Table 9-2 is in the Resource Booklet.
3. Choose the appropriate installation design from FEMA 85 GA90-1.2.
4. Ask a spokesperson from your group to present your group's answer and the reason supporting the answer.

Key Points – Other Installation Concerns

This section will include discussions on:

- Skirting
- Insurance
- HVAC
- Ductwork
- Fuel tanks



Key Points – Other Installation Concerns

HUD's definition of skirting is weather-resistant material used to enclose a perimeter under the living area of a home. Key points:

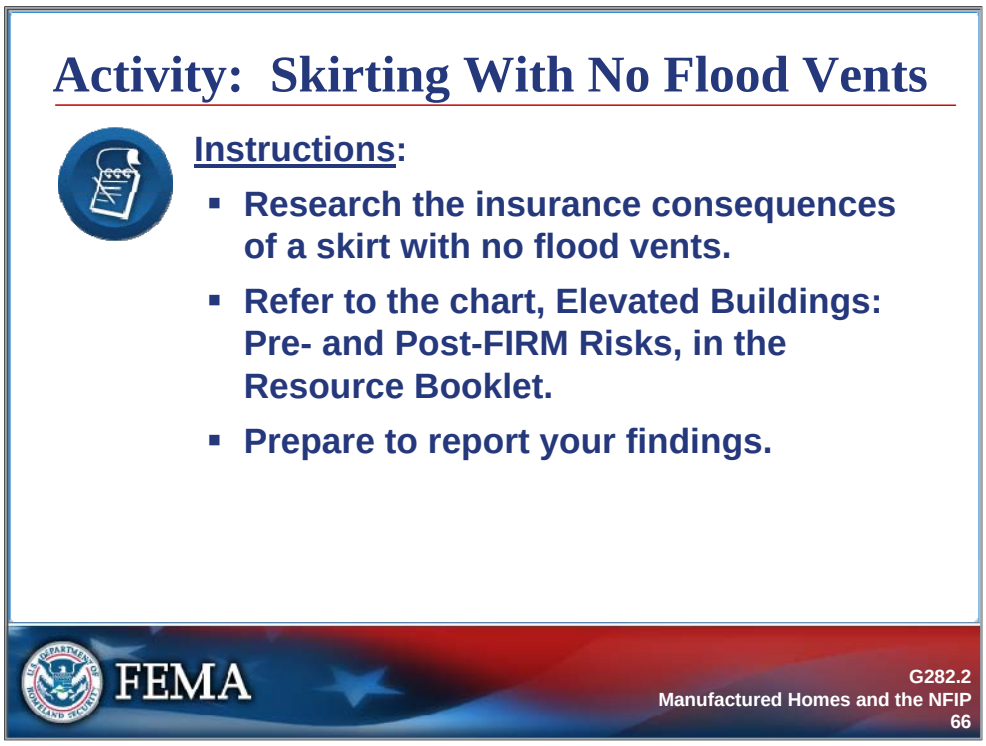
- While HUD does not require skirting, some municipalities do.
- According to HUD 3285.5, if a builder installs skirts, the skirting must include vents for air movement.
- HUD venting requirements do not replace FEMA's requirement for flood vent openings that are adopted in the floodplain management ordinance.

Key points on openings:

- Permanently attached rigid skirts and perimeter wall skirts of brick or block must have openings, as this type of skirting can collapse during floods and compromise supporting piers.
- The NFIP at 60.3(c)(5) requires that permanent foundations must have the openings designed to automatically equalize hydrostatic flood forces by allowing for entry and exit of floodwaters.
- Designs for meeting this requirement must either be certified by a registered professional engineer or meet or exceed the following minimum criteria:
    - A minimum of two openings having a total net area of not less than 1 square inch for every square foot of enclosed area that is subject to flooding shall be provided.
    - The bottom of all openings shall be no higher than 1 foot above grade.
    - Openings may be equipped with screens, louvers, valves, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.
    - Breakaway fiberglass skirts are allowed in coastal zones but not in riverine zones.

Note: Flood insurance rating is not affected by installation of non-rigid skirting in riverine areas.

Refer to the "Openings" information in the Resource Booklet.



Key Points – Other Installation Concerns

Activity Instructions

1. Research the insurance consequences of a vinyl or fiberglass skirt with no flood vents.
2. Refer to the chart, Elevated Buildings: Pre- and Post-FIRM Risks, in the Resource Booklet.
3. Prepare to report your findings.

Key Points – Other Installation Concerns

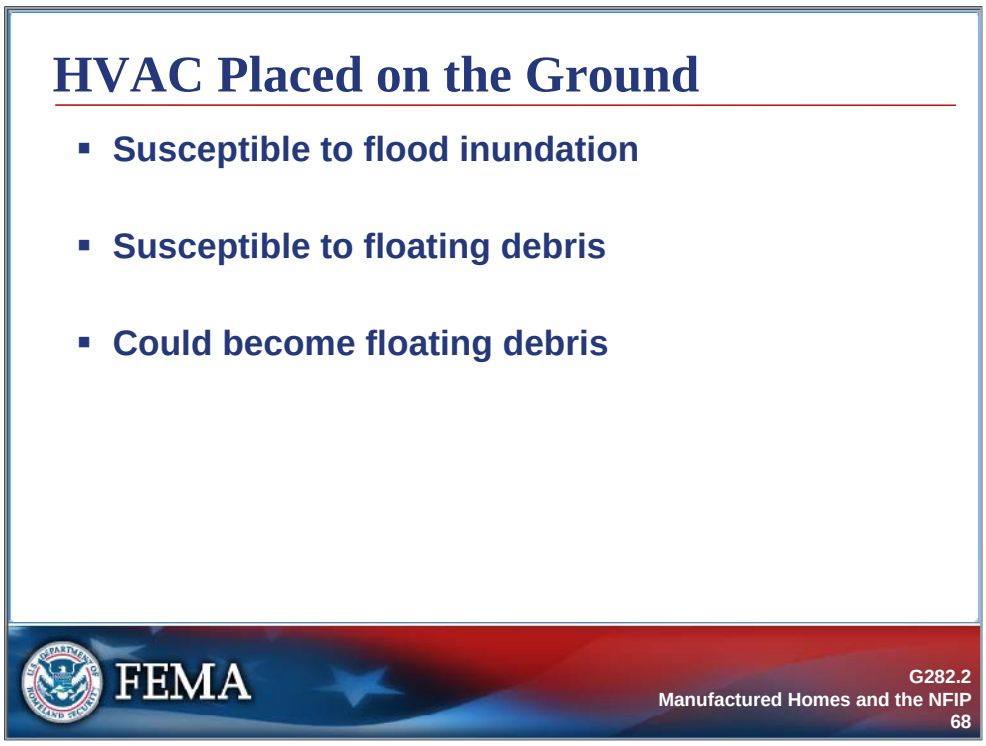
Activity: Skirting With No Flood Vents

Note the flexible and rigid skirting in each of the examples in the visual.

- The upper photograph shows flexible skirting that does not have flood vents.
- The lower photo has a backfilled rigid foundation with proper flood openings.

All flood insurance on manufactured homes is written through the NFIP. All-hazards insurance may be provided by manufactured home lenders without a mandatory purchase requirement.

The community or a land surveyor may provide an estimated BFE to complete an elevation certificate for insurance purposes. The estimated BFE would be entered in section G of the Elevation Certification. NFIP insurance costs rise dramatically when the home is below BFE.



Key Points – Other Installation Concerns

Carefully consider the placement of:

- Utilities such as water, sewer, and gas services.
- Mechanical systems.

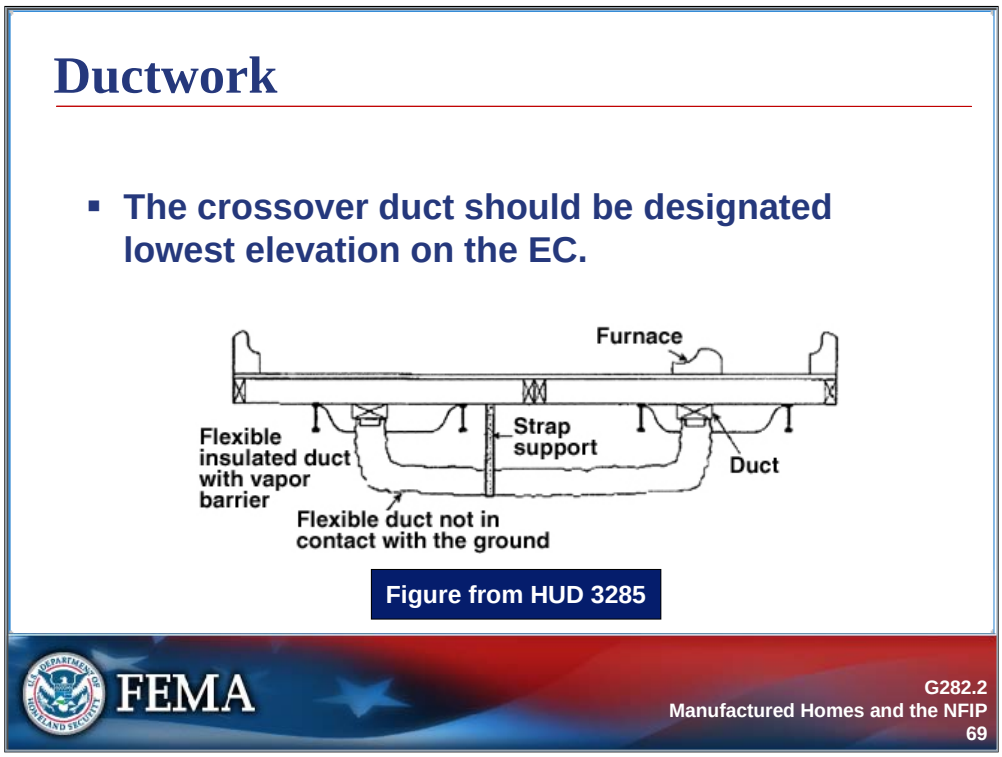
Connecting the manufactured home to these utility and mechanical systems requires the systems to extend from the grade beneath the home up through the floor. Their location makes them susceptible to flood inundation (leakage) and damage from floating debris.

Note: Ductwork below BFE can be made of sealed PVC pipes.

- To minimize damage, place pipes in waterproof risers located adjacent to the elevated foundation member on the downstream side of the flood flow.
- Protection of utilities and mechanical systems may require the waterproofing of all connections, the use of certain specific waterproof materials, and backflow preventers on water and sewage service.
- Underground telephone and electric service should also be enclosed in a riser and protected from damage in a similar manner.

Special care must be taken in running underground utilities to homes built on unstable soils such as expansive clay. Installing a flexible connection in the line is one way to prevent line breakage.

The most common violation is an outside heat pump sitting on the ground.



Key Points – Other Installation Concerns

The figure on the visual shows crossover duct installation with one connecting duct.

Note that ductwork is the installer's responsibility.

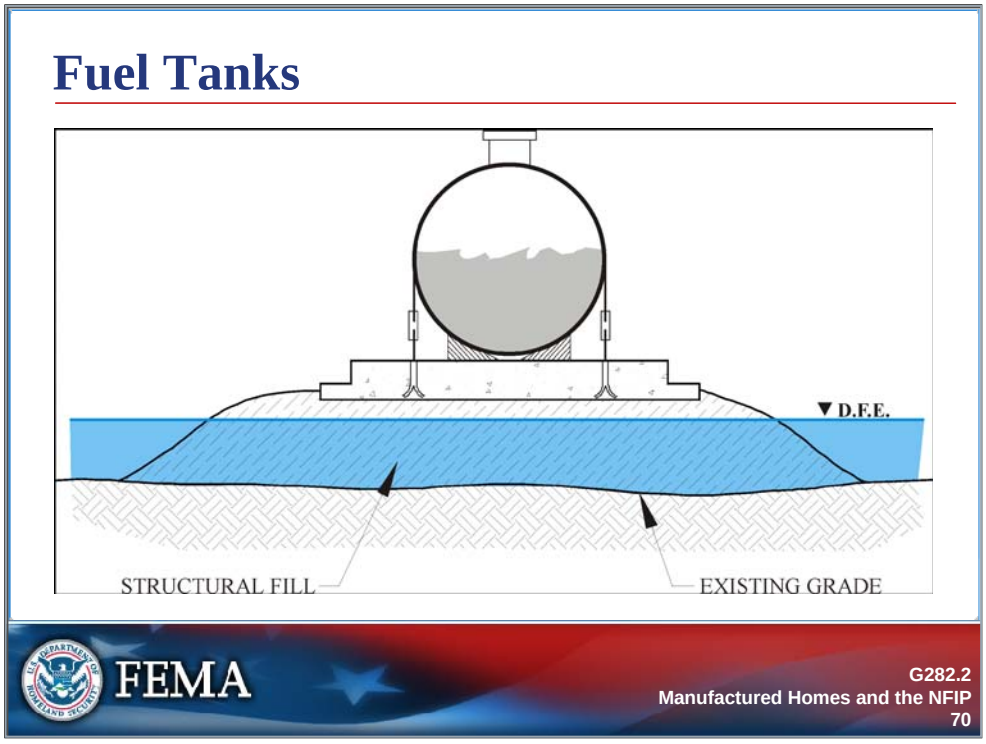
- The NFIP requires the top of the lowest floor to be placed at the BFE, any ducts installed under the floor would be placed below the BFE and thus exposed to floodwaters.
- The NFIP also requires building materials below the BFE to be constructed using flood-resistant materials, but flood-resistant duct materials are not always readily available.
- In multi-section homes, site-installed heating and air conditioning ducts are typically needed to connect sections of factory installed interior ductwork.

These duct sections, often called "crossover ducts," are typically installed below the floor.

- The "best practice" approach would be to elevate the home sufficiently to place the bottom of the lowest duct at the BFE.
- However, the best practice approach typically increases the elevation of the home 2 to 3 feet, increases installation cost, and can limit access and egress.
- In areas where increased elevation cannot be tolerated from a cost or access standpoint, the crossover duct should be constructed using flood resistant materials such as sealed PVC pipe.

The elevation required by the 2005 edition of the NFPA 225 Model Manufactured Home Installation Standard is to elevate the home so the bottom flanges of its main frames are at the BFE.

This elevation requirement, which has been endorsed by the Manufactured Housing Institute (MHI), exceeds the NFIP requirements and provides some protection for the crossover ducts.

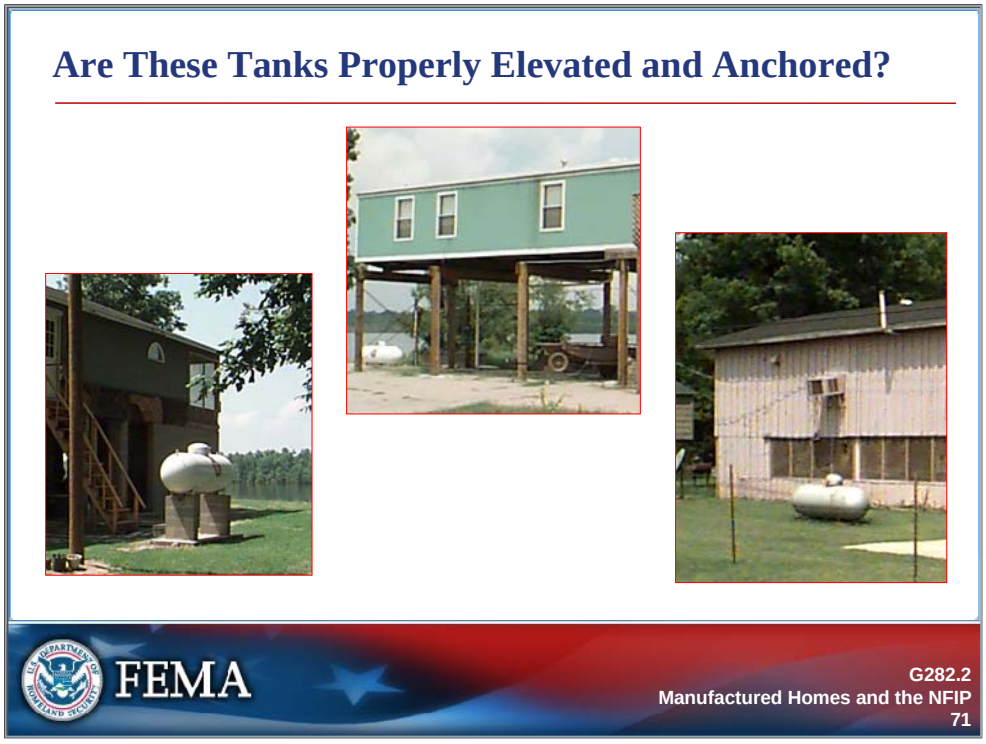


Key Points – Other Installation Concerns

Propane and fuel storage oil tanks should be either elevated above the BFE or anchored to prevent floatation.

- Fuel oil storage tanks should be located in waterproof enclosures to prevent contamination.
- Supporting these tanks above grade should include a separate elevated foundation system from a platform built off of the foundation system.
- To minimize the potential for debris impact and damage, tanks and their supporting foundations should be located on the downstream side of homes.

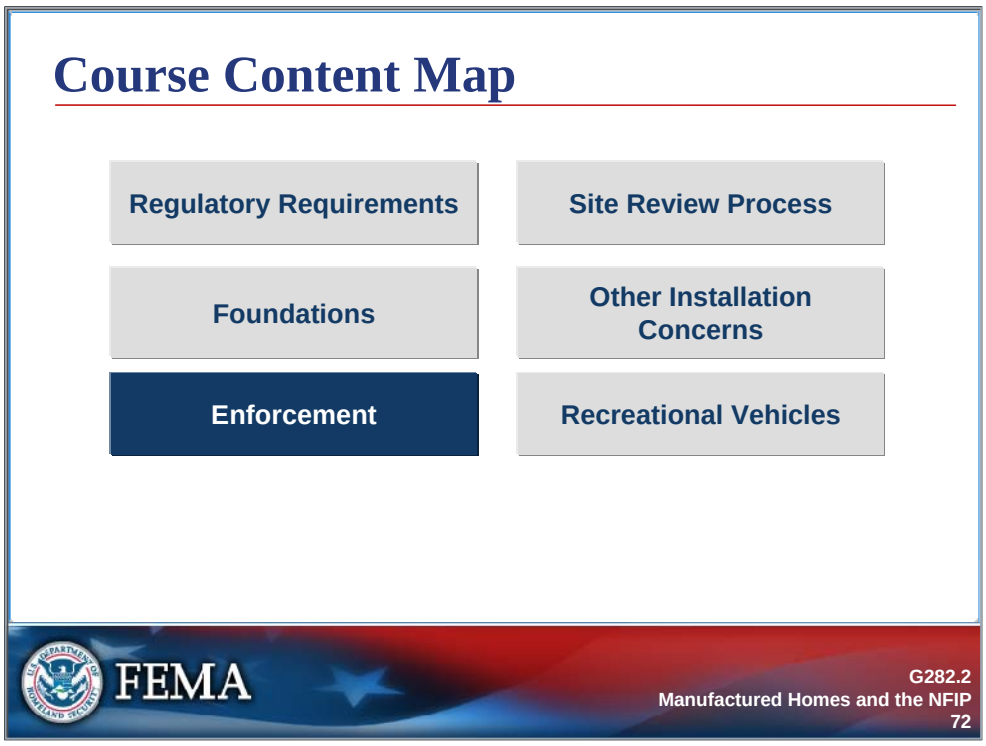
Note: Properly anchored fuel oil tanks should have all openings above BFE or sealed.



Key Points – Other Installation Concerns

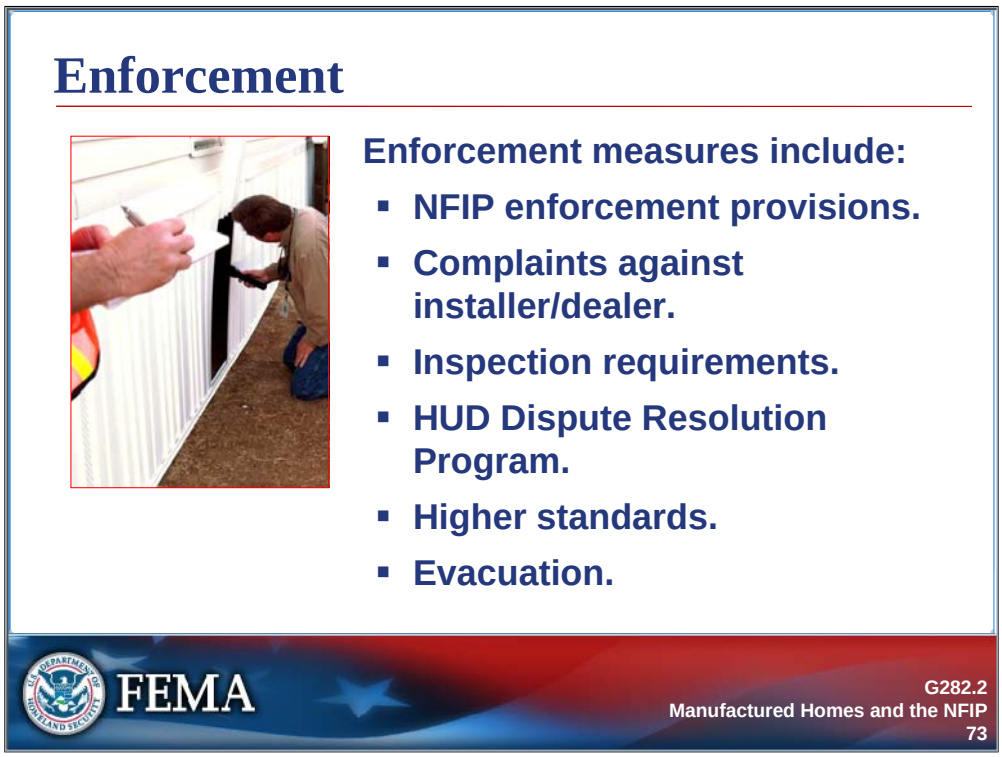
Answer the following discussion question:

Are the tanks shown in these photos properly elevated and anchored?



Key Points – Enforcement

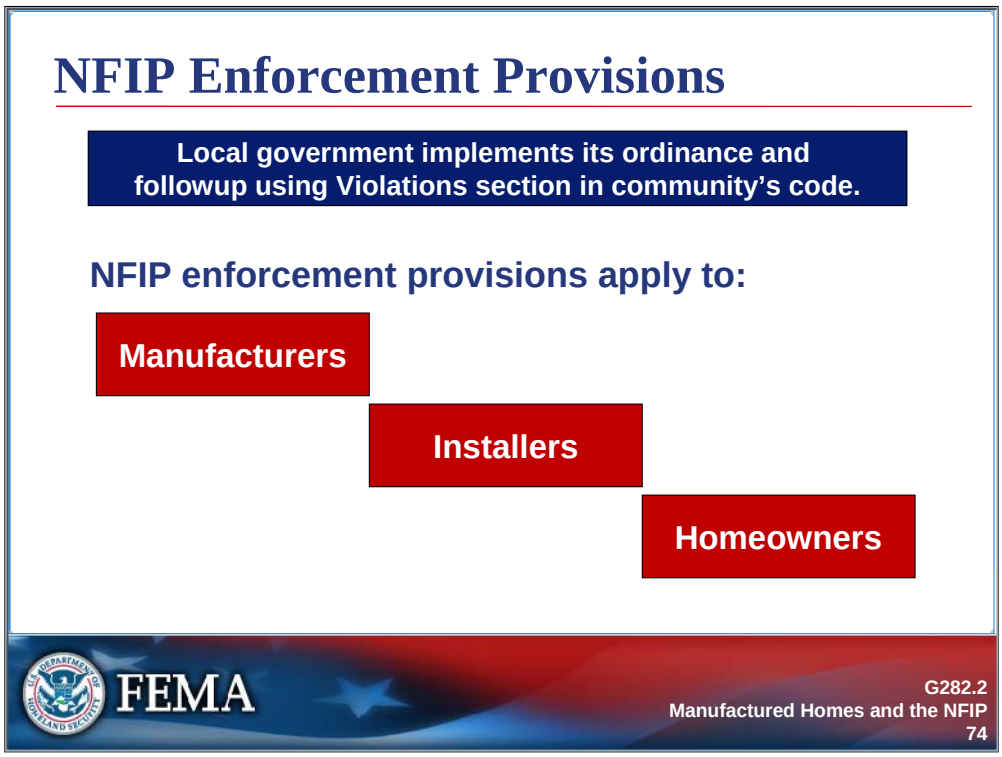
This section of the course covers enforcement.



Key Points – Enforcement

The next section of this course will review the following enforcement measures:

- NFIP enforcement provisions
- Complaints against installer/dealer
- Inspection requirements
- HUD Dispute Resolution Program
- Higher standards
- Evacuation



Key Points – Enforcement

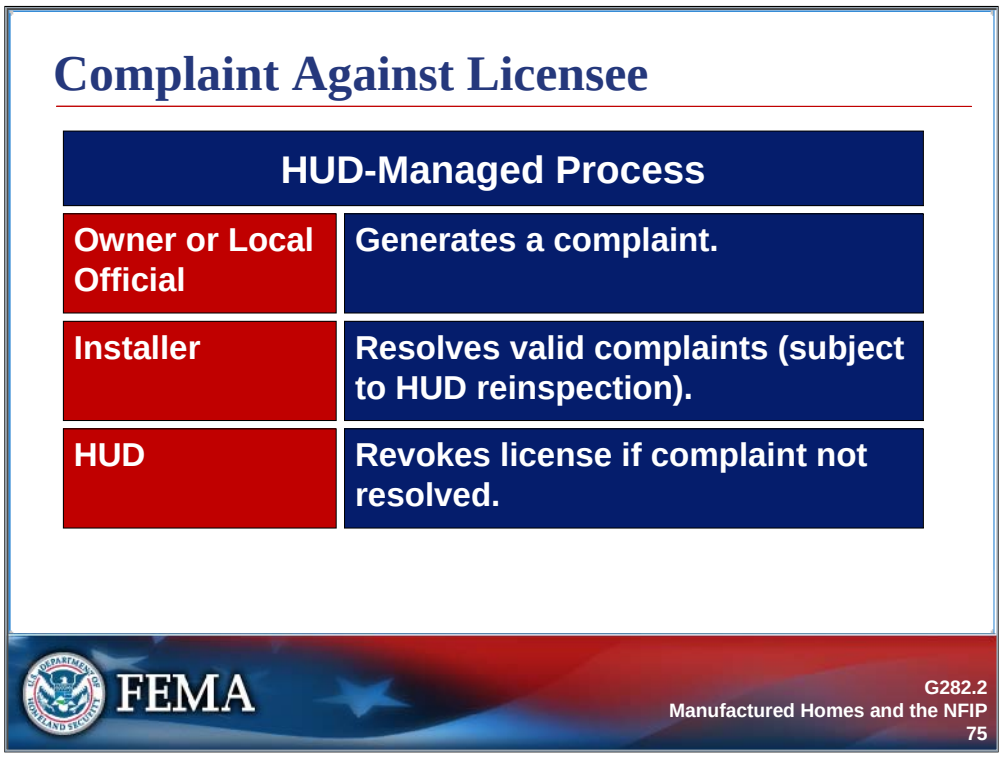
NFIP enforcement provisions apply to:

- Installers.
- Manufacturers.
- Homeowners.

Under NFIP enforcement provisions, community officials are required to implement the element of the floodplain management ordinance that has enforcement procedures. Sometimes enforcement requires that the community must follow its ordinance criteria for violations and use the mechanisms available to the community under this section.

Noncompliant manufactured homes are violations of the NFIP minimum standard, and a community could be placed on probation or suspended from the program for the failure to enforce the program.

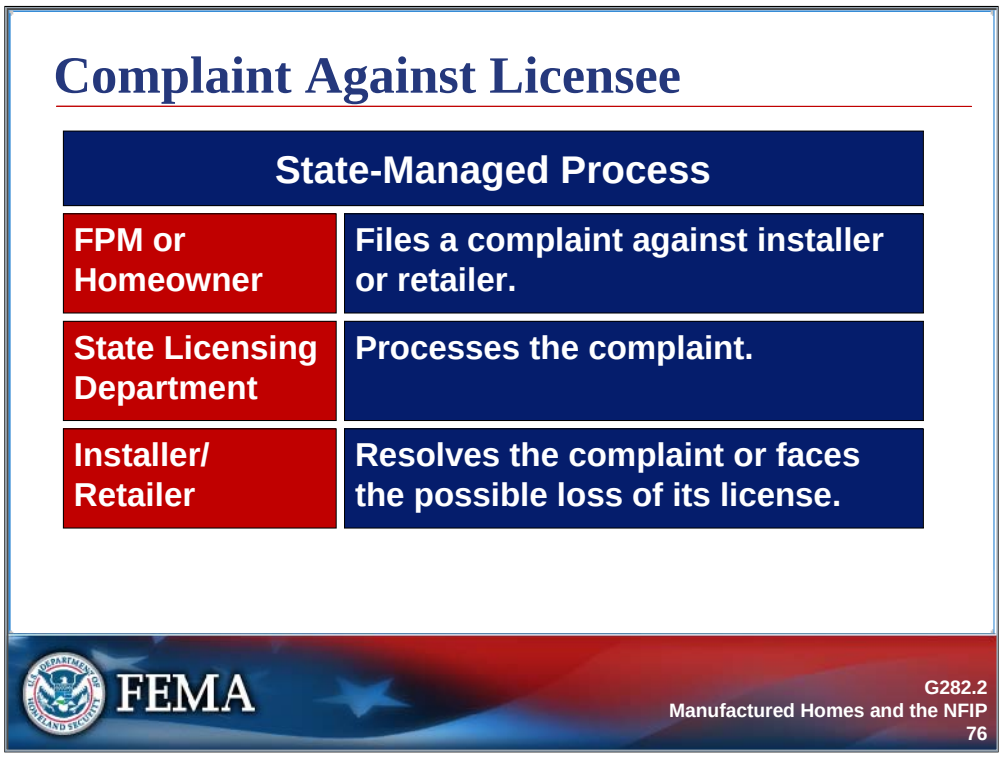
An option is to refer violations to FEMA's Regional Office, which may process a Section 1316 declaration on the home to deny access to flood insurance and remove liability to the fund.



Key Points – Enforcement

The following HUD-managed process is in place to handle complaints against licensees in applicable States:

1. The homeowner or local official generates a complaint. Complainants have 1 year to file a complaint.
2. The installer resolves valid complaints, subject to HUD reinspection.
3. HUD revokes the installer's license if the complaint is not resolved. If the licensee loses its license, a licensed installer could then make the necessary changes; the homeowner or retailer would have to pay.
4. The homeowner or retailer must post a bond to cover the cost of the changes. The bond would be activated to pay for the second installer to complete the work.



Key Points – Enforcement

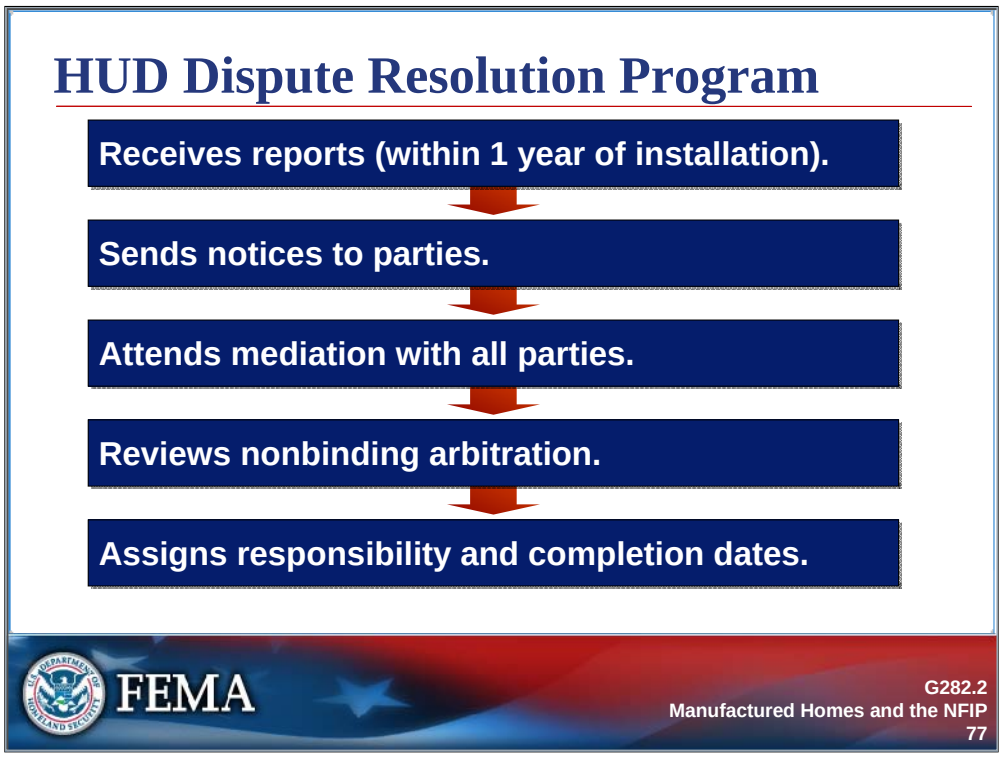
The following State-managed process is in place to handle complaints against licensees:

- The FPM or the homeowner files a complaint against the licensee (installer or retailer).
- The State licensing department processes the complaint.
- The installer or retailer must resolve the complaint or face the possibility of losing its license.

Note the following points about the State-managed process:

- Some States operate a “recovery fund” that will pay to correct violations if the installer refuses.
- Remember that the State or local government can pass regulations requiring all manufactured homes in the floodplain to be sited by licensed installers.

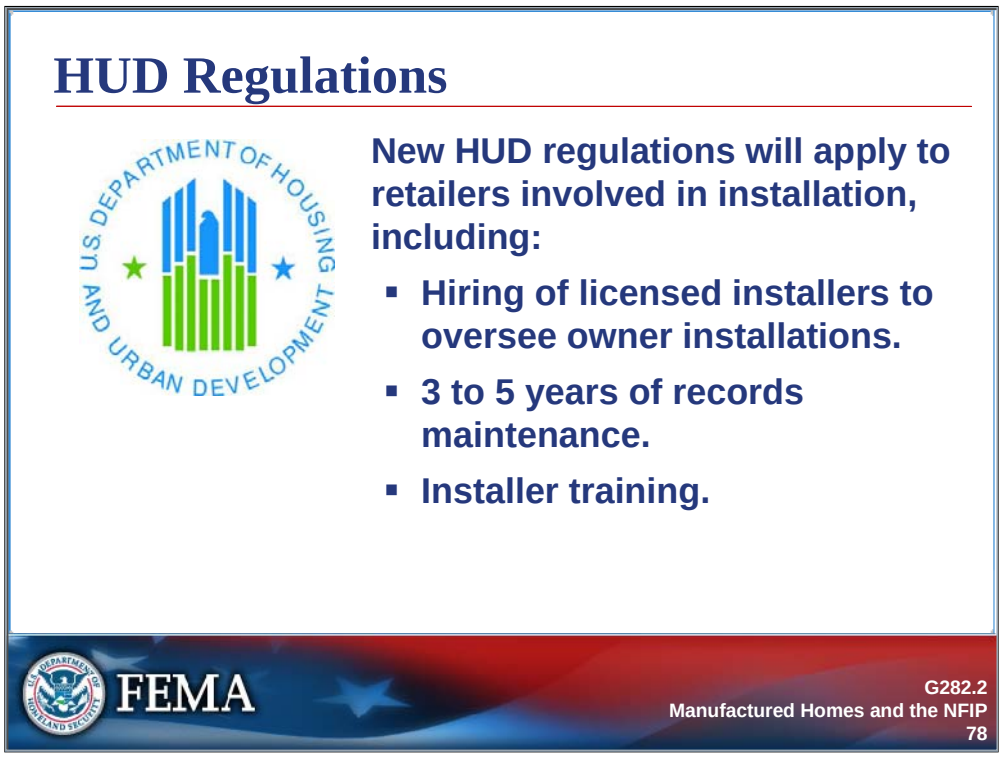
Go to the HUD Web site to find out whether your State has a State-managed program. If so, contact the person responsible for the program to discuss potential issues in your jurisdiction.



Key Points – Enforcement

The HUD Dispute Resolution Program applies to HUD-managed State programs. Note that HUD's process is as follows:

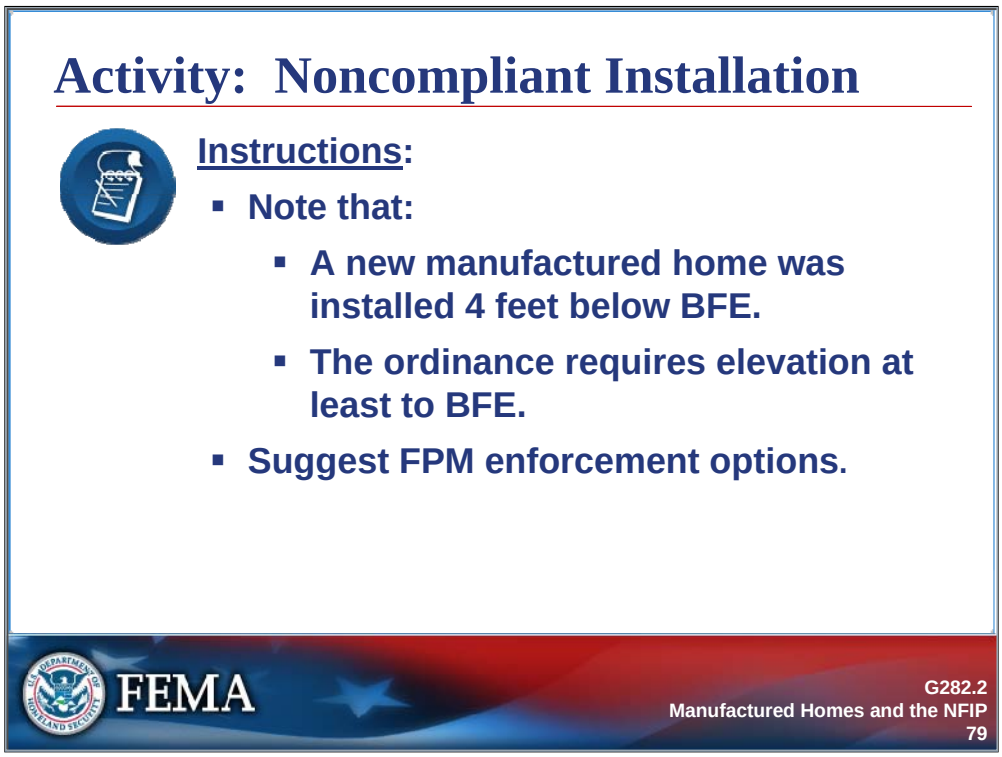
1. HUD receives the complaint (within 1 year of installation).
2. HUD sends a notice to the appropriate parties.
3. Both parties attend mediation, which leads to nonbinding arbitration.
4. HUD reviews the arbitration.
5. HUD assigns responsibility **and** a completion date for the repair of defects.



Key Points – Enforcement

When the following HUD regulations are in final approval stages; the regulations only apply to retailers if they participate in installation.

- HUD will require homeowners to hire a licensed installer to oversee the installation process, to ensure that the installation meets site BFE and velocity requirements. HUD also will require the installer to conduct an inspection afterwards.
- Retailers and installers must maintain installation records for 3 to 5 years. However, local officials must keep records for structures installed in the floodplain in perpetuity.
- HUD will develop a required training program for installers only.
- HUD will not certify final inspections in HUD-regulated States. Each manufactured home installed in States where HUD administers the installation program is required to be inspected by a qualified inspector. States that administer their own programs will have their own inspection process.
- The installer must report the inspection results to the retailer. HUD can take civil remedies against the retailer for not reporting the inspection findings to HUD.



Key Points – Enforcement

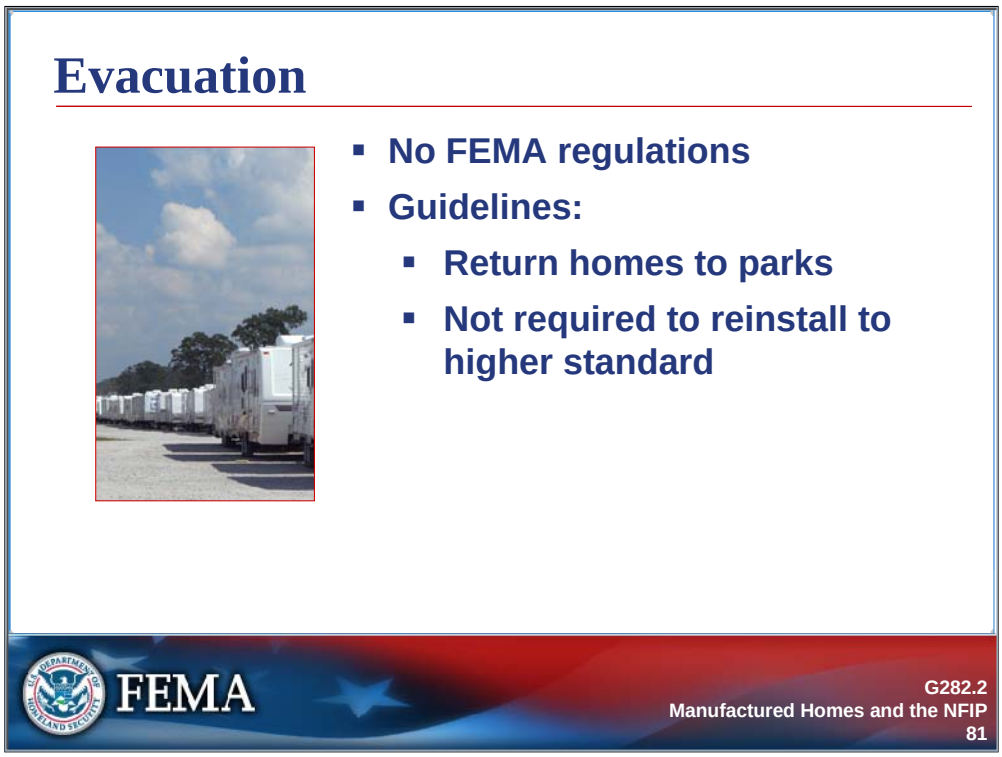
Activity Instructions

1. Note that a new manufactured home was installed 4 feet below BFE on a single lot, in violation of the ordinance. The ordinance requires elevation at least to BFE.
2. Suggest floodplain management enforcement options.
3. Select a spokesperson from your group to present your group's suggestions.

Key Points – Enforcement

Answer the following discussion question:

What are the advantages and disadvantages of each enforcement option?



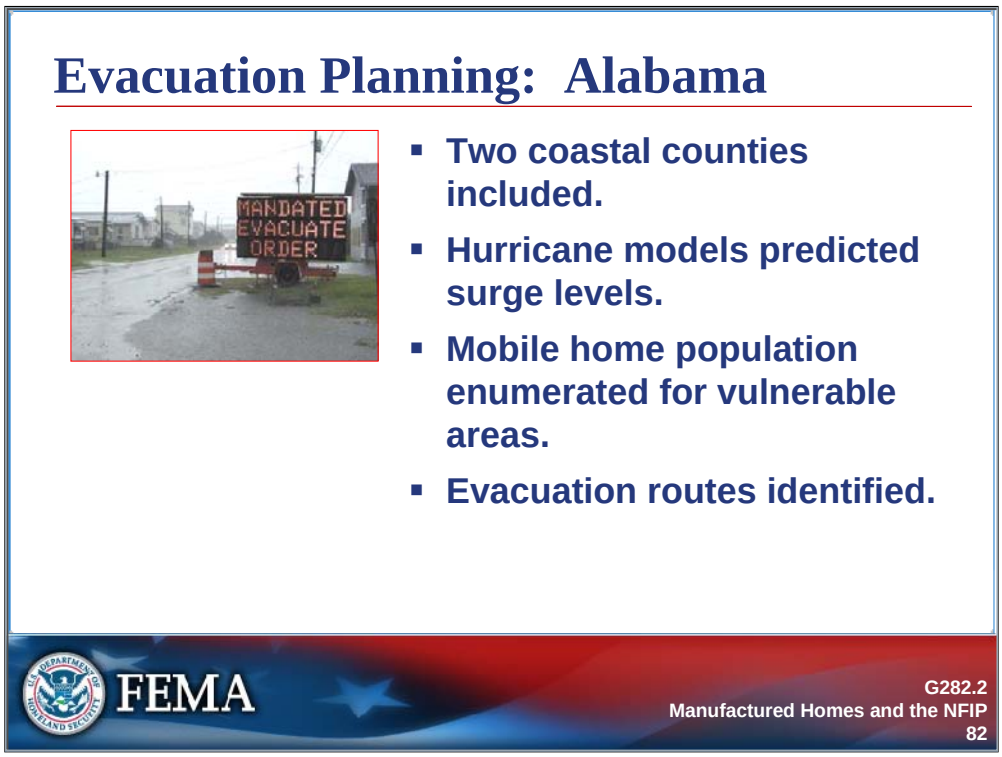
Key Points – Enforcement

FEMA has guidance but not regulations on evacuation.

Note that evacuation guidelines require that manufactured homes be put back in the park where they were located, but do not have to be reinstalled according to a higher standard.

The guidance came about as a result of Hurricane Hugo, as people were complaining about requirements to elevate to BFE or to 3 feet above the adjacent grade during reinstallations.

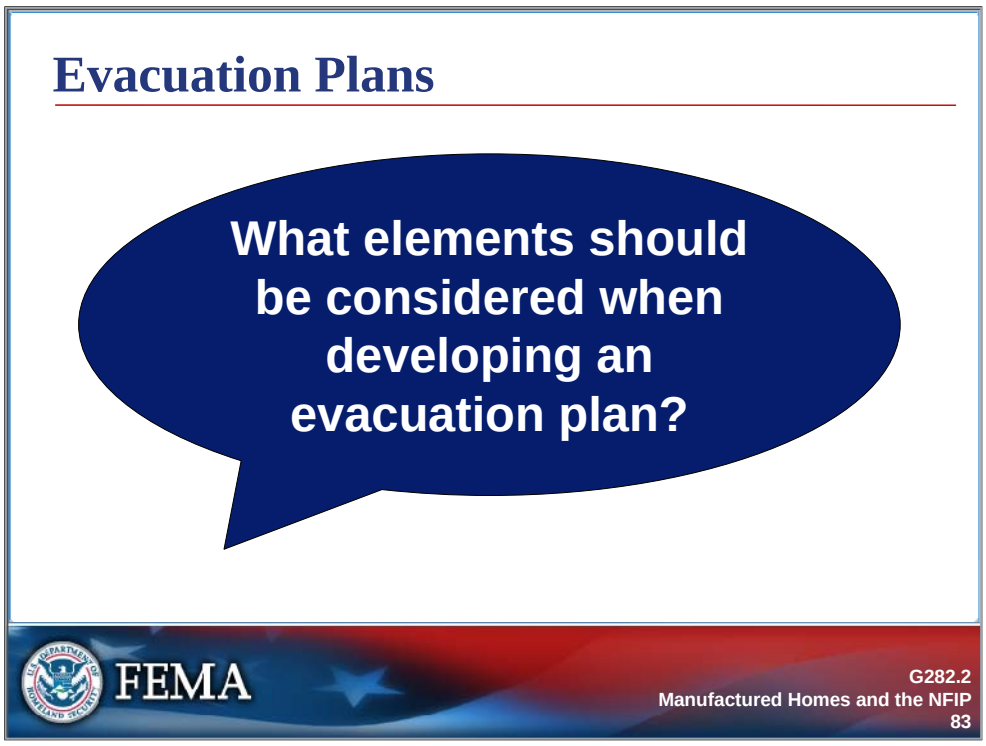
Note: If evacuation is a possibility in a jurisdiction, the local government should require written evacuation plans from manufactured home parks or subdivisions.



Key Points – Enforcement

Alabama conducted an evacuation planning study of two coastal counties, Baldwin County and Mobile County. Key points:

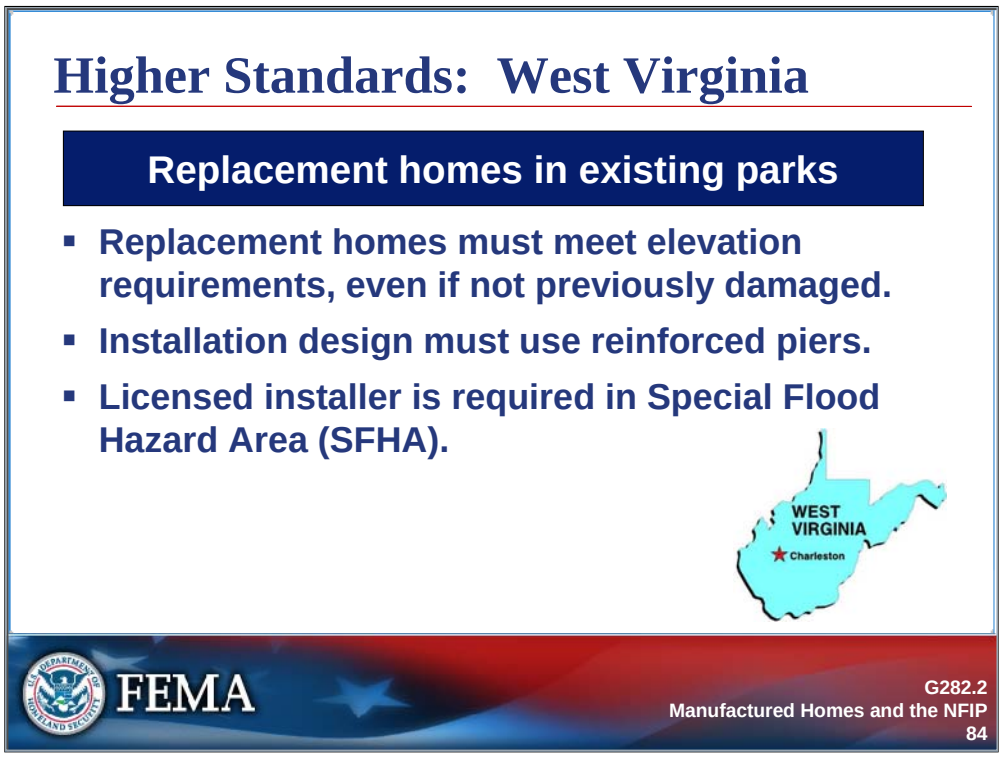
- Hurricane models predicted surge levels.
- The mobile home population was enumerated for areas vulnerable to flooding.
- Evacuation routes were identified for the total population of the counties, including residents in manufactured homes.



Key Points – Enforcement

Answer the following discussion question:

What elements should be considered when developing an evacuation plan?



Key Points – Enforcement

The State of West Virginia requires that:

- Replacement homes in an existing park meet current elevation requirements regardless of whether the homes had previously been damaged in the park.
- Installation designs must use reinforced piers. Ordinance language specifically prohibits dry stacked blocks.
- A licensed installer must install a home if the unit is located in an SFHA and certify that the unit has been installed in accordance with the local ordinance requirements. No self-installation is allowed.

Refer to the West Virginia Minimum Requirements in the Resource Booklet.

A word of advice:

> If your State prohibits singling out manufactured homes for special regulations, try changing the words in your ordinance from “Manufactured Homes” to “all homes not built onsite and primarily supported by piers.”

Key Points – Enforcement

A few ideas to help a community implement higher standards in older manufactured home parks:

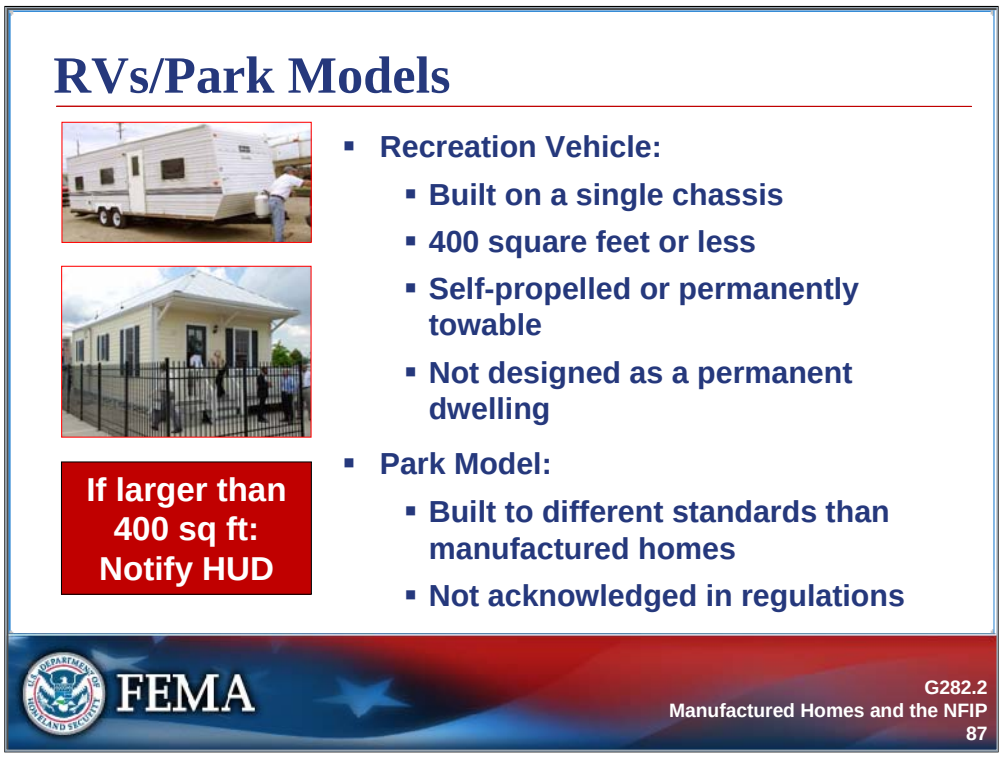
- Require or encourage retrofitting with freeboard and proper anchoring.
- Require upgrades of park drainage systems. Provide outreach and financial assistance to help parks comply.
- Require that parks improve maintenance of their drainage systems by increased service to clear debris and repair system components.

Answer the following discussion question:

Are there other standards that could be implemented to help protect an older park?

Key Points – Recreational Vehicles

The final section of the course covers recreational vehicles and park trailers.



Key Points – Recreational Vehicles

Recreational vehicles (RVs) are not subject to HUD 3282.8g, part 3280, or part 3283; they fall under 44 CFR 60.3(c)(14). An RV is a vehicle that is:

- Built on a single chassis;
- Four hundred (400) square feet or less when measured at the largest horizontal projections;
- Self-propelled or permanently towable by a light duty truck; and
- Designed primarily not for use as a permanent dwelling, but as temporary living quarters for recreational, camping, travel, or seasonal use.

To be declared an RV, the model must be:

- Licensed, road ready, or on the site for fewer than 180 consecutive days.
- Four hundred square feet or fewer. Note that any model larger than 400 square feet is considered a manufactured home, no matter what other requirements it meets. A model should not be made road ready; it must be treated and installed like a manufactured home, and HUD should be notified.

An RV that is not licensed and road ready is regulated as a manufactured home after it has been on a site for longer than 180 days.

Refer to the information on Anchoring RVs in the Resource Booklet.

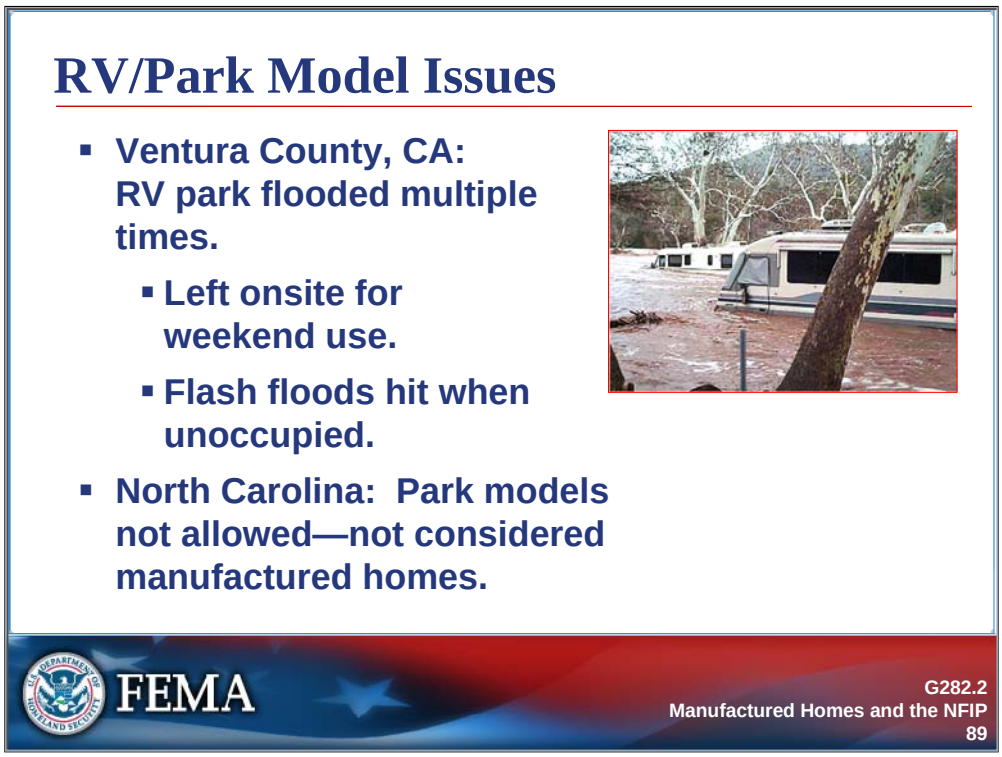
Key Points – Recreational Vehicles

The use of "park model" is a vague category. HUD regulations only acknowledge RVs and manufactured homes.

Park trailers typically stay on a site for several years or more unlike other kinds of recreational vehicles.

Most park trailers look like small houses and should be regulated as a manufactured home.

April 22, 2008 – This family lived in a FEMA trailer after Hurricane Katrina and moved into a Mississippi Cottage earlier this year. More than 2,800 families in Mississippi have transitioned from FEMA travel trailers and mobile homes into the Cottages.



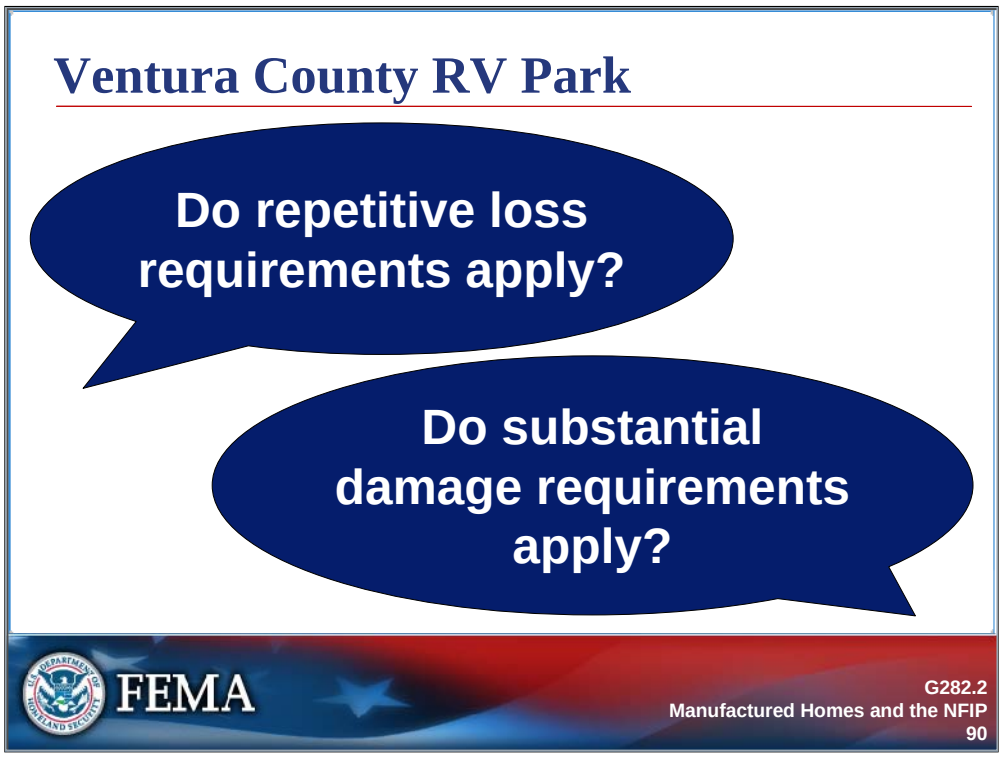
Key Points – Recreational Vehicles

This visual covers an RV park in Ventura County, CA, which was flooded multiple times, resulting in damaged and destroyed RVs.

The people living in the RVs left them at the park and were at work when flash floods occurred.

- As the flood hit the RV park on the western outskirts of Ventura, the park's 110 residents scrambled to flee their homes.
- The rushing water quickly submerged dozens of campers, trailers, and cars in the park.
- As the rain began tapering off at midmorning, floodwaters could be seen lapping over the roofs of mobile homes in the Ventura Beach RV resort.
- About half of the more than 60 recreational vehicles in the park were swept into the stream and the sea. "They looked like Tinker toys being washed away," said the owner of the RV park.

The State of North Carolina does not allow park models anywhere in the State because park models are built to a different standard than manufactured homes.

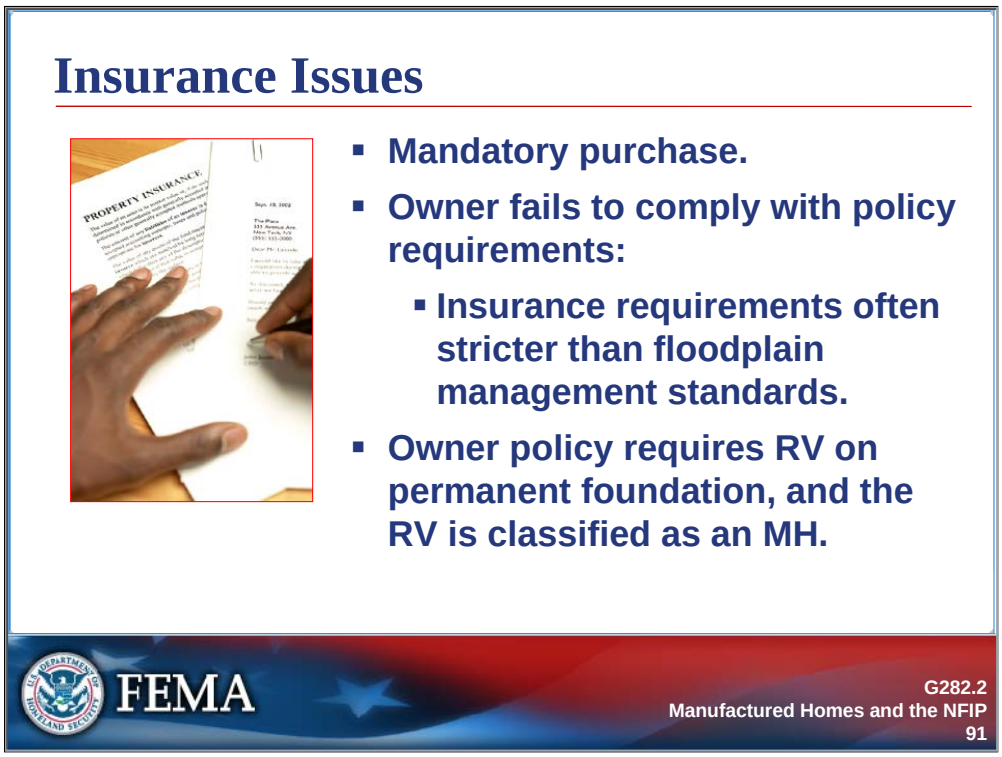


Key Points – Recreational Vehicles

Answer the following discussion questions:

Do repetitive loss requirements apply to the flooded Ventura County RVs?

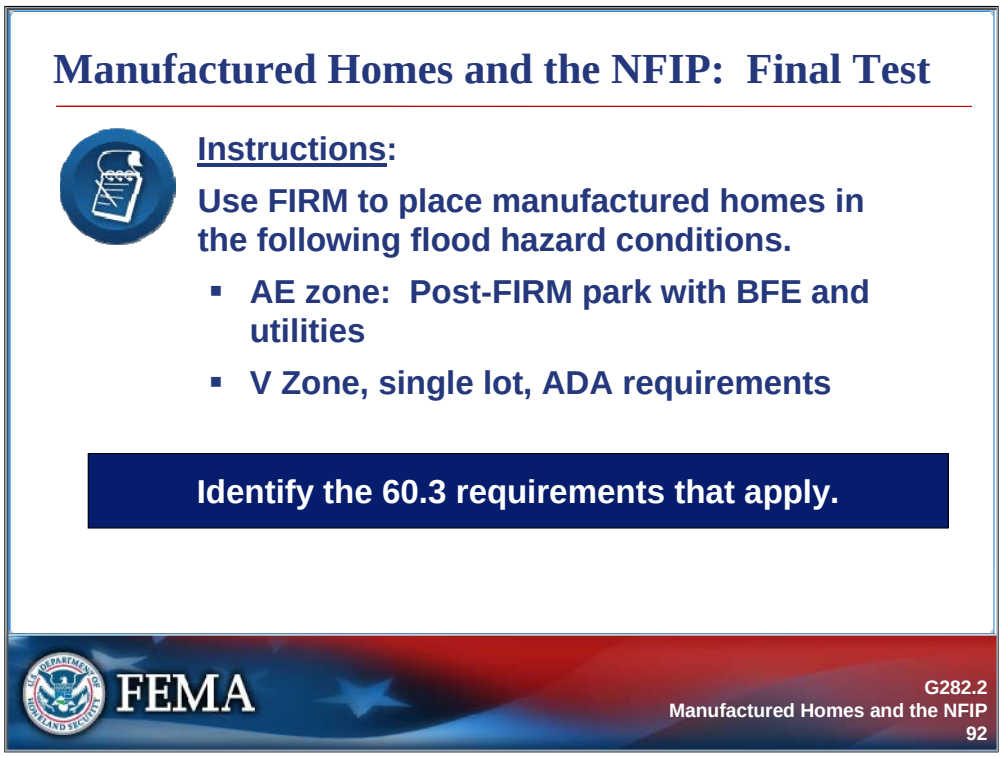
Do substantial damage requirements apply?



Key Points – Recreational Vehicles

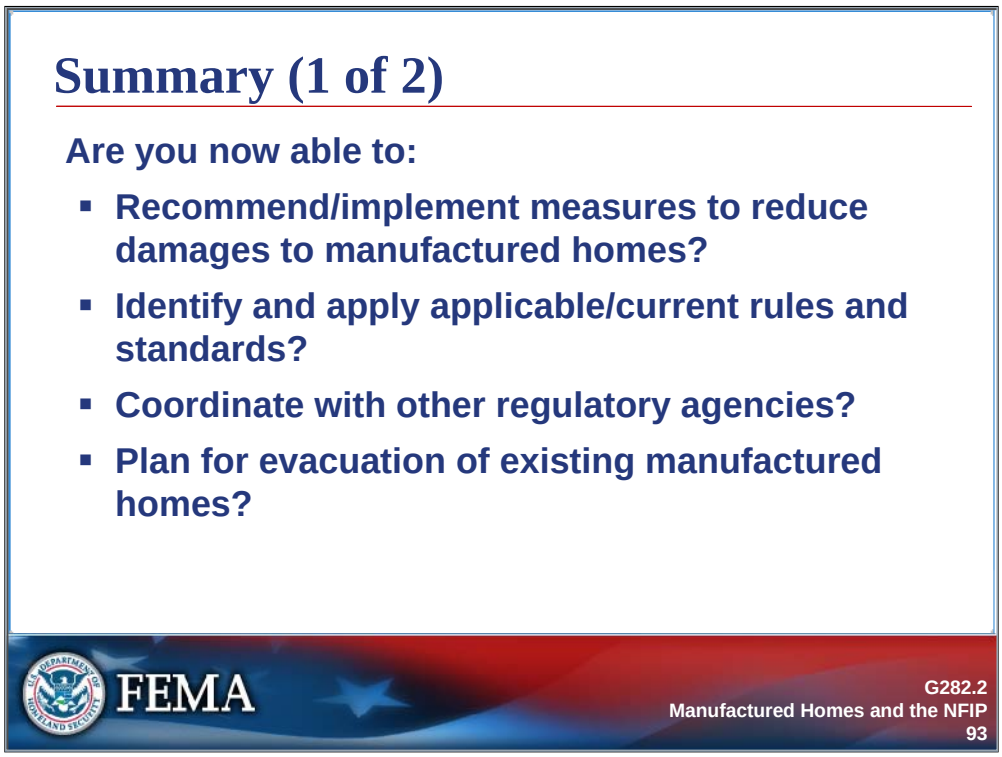
The following are manufactured homes and RV insurance issues:

- Noncompliance with mandatory purchase: The homeowner fails to purchase flood insurance. The lender will force place a policy, which will be more expensive than if the owner had purchased the policy.
- Noncompliance with policy requirements: The homeowner buys a policy that requires installation on a permanent foundation, but fails to comply, and subsequent claims are denied.
  - Approximate A Zone minimum FEMA requirements do not mention a permanent foundation.
  - Insurance requirements are more stringent. The unit cannot collect flood insurance claims without being installed on a permanent foundation.
- If an owner buys a policy for an RV that requires the unit to be installed on a permanent foundation and the owner complies, the Floodplain Manager should regulate the RV as a manufactured home.
- If the lender determines that the unit is not in a SFHA, but the FPM determines the unit is located in the SFHA, request a copy of the SFHA Determination Form from the owner or lender and notify the determination company of a possible error.
- If the insurance agent rates the insurance policy using the ground beneath the trailer as the lowest floor, even though skirting is non-rigid, request that the Regional Flood Insurance Specialist contact the insurance agent and guide the agent through a re-rating.



Key Points – Final Test

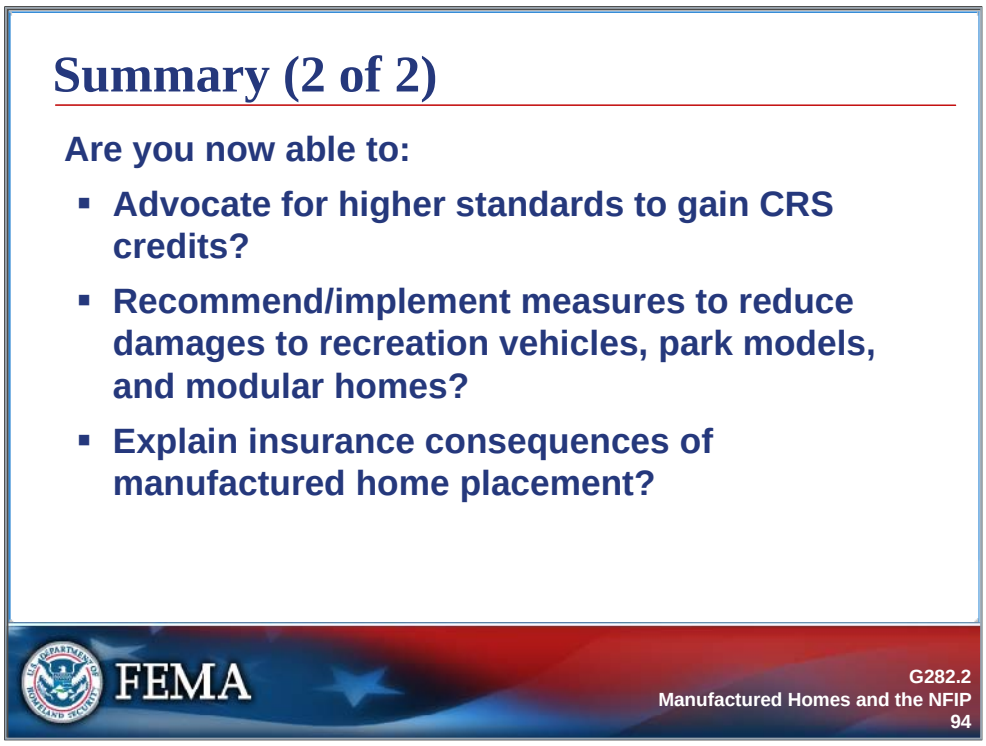
1. Refer to 44 CFR 60.3 in the Resource Booklet.
2. Use the map Flood Country, USA, Panel 40, to place a home in the assigned location.
3. Identify the requirements in 44 CFR 60.3 that apply to the location.



Key Points – Summary

You should now be able to:

- Recommend/implement measures to reduce damages to manufactured homes.
- Identify and apply applicable/current rules and standards.
- Coordinate with other regulatory agencies.
- Plan for evacuation of existing manufactured homes.



Key Points – Summary

You should now be able to:

- Advocate for higher standards to gain CRS credits.
- Recommend/implement measures to reduce damages to recreation vehicles, park models, and modular homes.
- Explain insurance consequences of manufactured home placement.

Refer to your expectations posted at the beginning of this course. Answer the following discussion question:

Were your expectations met?