

Flooding Hazards and Floodplain Management



Acknowledgements

- Department of Community Affairs (DCA)
<http://www.state.nj.us/dca/>



- Jacques Cousteau National Estuarine Research Reserve
www.jcnerr.org



- Bruce Wallauer and Jim Watt – NJDEP
Floodplain Management



- Richard Ehinhorn - FEMA



Course Expectations

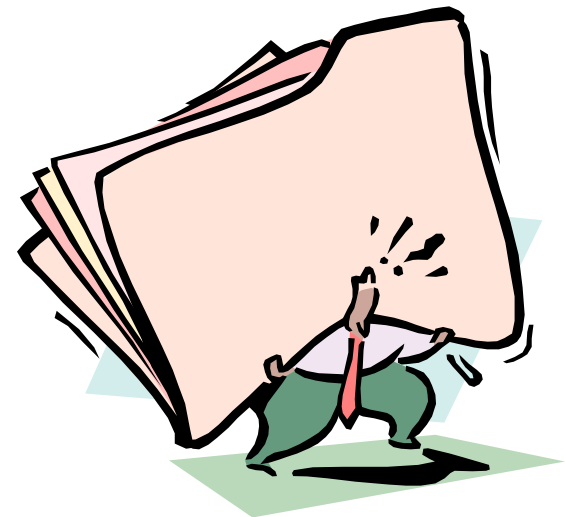
Time Commitment Summary

1. Course Overview, Forces on Flooded Buildings (1 hour)
2. Floodplain Mapping (1 hour)
3. Design and Construction Standards on Floodplains and The Relationship of Floodplain Management and the Construction Office (1 hour)
4. Local Administration of the Floodplain Program (1 hour)
5. New Jersey's Land Use Regulations For Floodplain Areas (a.k.a – Stream Encroachment) (1 hour)

Course Expectations

Interactive Resources

- During this course, you will be presented with a variety of resources for information. Some of those resources will be in the form of links on websites outside the course. For example:
 - You will be provided with a link to the DEP website to download some forms



Course Expectations

- **Interactive Requirements**
 - The following tutorial will walk you through the steps to access information on various websites, and ensure that your computer system is capable of viewing the material.



Course Expectations

Interactive Requirements

- Here is a link to a letter from the NJDEP Commissioner. Click on the link below to ensure you can download the letter

www.njflood.org/docs/jacksonletter200602.pdf



After you click on the link, move to next slide
(even if the link does not work for you)

You should have seen this screen



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

JON S. CORZINE
Governor

LISA P. JACKSON
Acting Commissioner

February 20, 2006

Dear Flood Area Residents:

Following a major rain storm in the last days of March 2005 and another between Friday, April 1, and Sunday, April 3, 2005, the Delaware River overflowed its banks, flooding an estimated 3,500 homes and forcing the evacuation of more than 5,500 people. In response, Acting Governor Richard J. Codey announced the formation of a Flood Mitigation Task Force to study and implement measures to reduce future impacts of flooding in New Jersey communities. The Task Force convened four public meetings in Warren, Hunterdon, and Mercer Counties to solicit public concern.

I am very pleased to inform you that we are moving forward with the finalization of the Delaware River Flood Mitigation Task Force Report in accordance with the following tentative schedule and timeline:

- > Public Comment Period on the Draft Report (February 20 through March 15, 2006)
- > Public Meeting on Draft Report (To Be Announced)
- > Final Report Submitted to Governor Corzine (April 2006)

As we approach the spring runoff season, I also want you to know that we are not waiting to finalize the report before beginning to undertake recommended actions. Implementation has begun as follows:

1. The NJ Department of Environmental Protection (NJDEP) has set aside funding required to begin the preparation of new floodplain delineations and associated mapping for the main stem of the Delaware River. This state of the art new mapping will be a valuable resource during times of emergency and for the regulation of land use along the floodplain area.
2. The NJDEP has committed funding to be cost shared with the US Army Corps of Engineers (USACE) for the preparation of a feasibility study to evaluate possible solutions including flood-proofing and removing or relocating structures within the floodplain of the Mid-Delaware River Basin. The USACE is already working on the preparation of this study.
3. The NJDEP has held a coordination meeting and developed strategies with the NJ Department of Community Affairs (NJDECA) to ensure that building codes in NJ are fully compliant with Federal Emergency Management Agency (FEMA) requirements under the National Flood Insurance Program (NFIP). These strategies will reduce potential conflicts between State requirements and the policies of NFIP, especially after flood events when local residents are sometimes caught between local, state and federal standards. Additionally, through these efforts, future exposure to flood hazards will be significantly reduced and residents will be able to continue to obtain federally guaranteed flood insurance policies for their homes.


Continue to the
next slide

Course Expectations

Interactive Requirements

1. If the document opens on your computer, continue with the tutorial
2. If the document does not open, you may need to download Adobe Acrobat reader, available for free at: <http://www.state.nj.us/acrobat.htm>
3. You will need **Acrobat 7.0** or higher to access all the information contained in this webcourse

Course Expectations

- Interactive Requirements
 5. The other external website is the DEP I-MAP site.
 1. Click on <http://www.state.nj.us/dep/gis/depsplash.htm#> to open the DEP I-MAP home page
 2. Click on  to open the I-MAP viewer
 3. If you can view a map of New Jersey, close the viewer and continue with the tutorial.
 4. If the map does not load, you will need to follow the tutorial on the DEP website above to ensure your internet browser is compatible with the I-MAP tool

Course Expectations

Interactive Requirements

Now that you have ensured your computer is compatible with the necessary external websites, documents, and resource formats, you may continue with online course.



Course Expectations

End of section quizzes

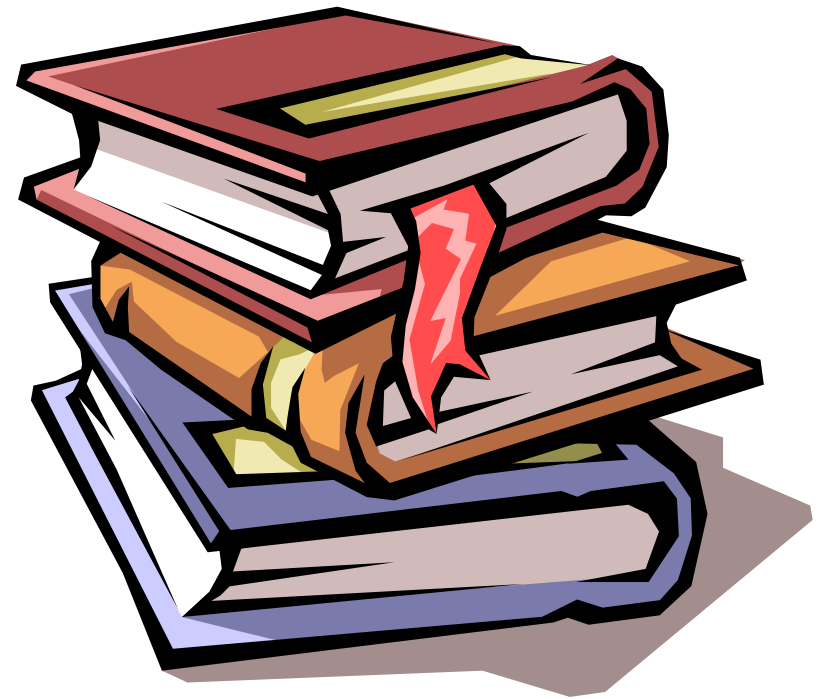
- At the end of each of the following sections, you will be presented with a brief 5-10 question online quiz that will assess the knowledge you gained from the content provided. These quizzes will need to be successfully completed to continue in the program.



Course Expectations

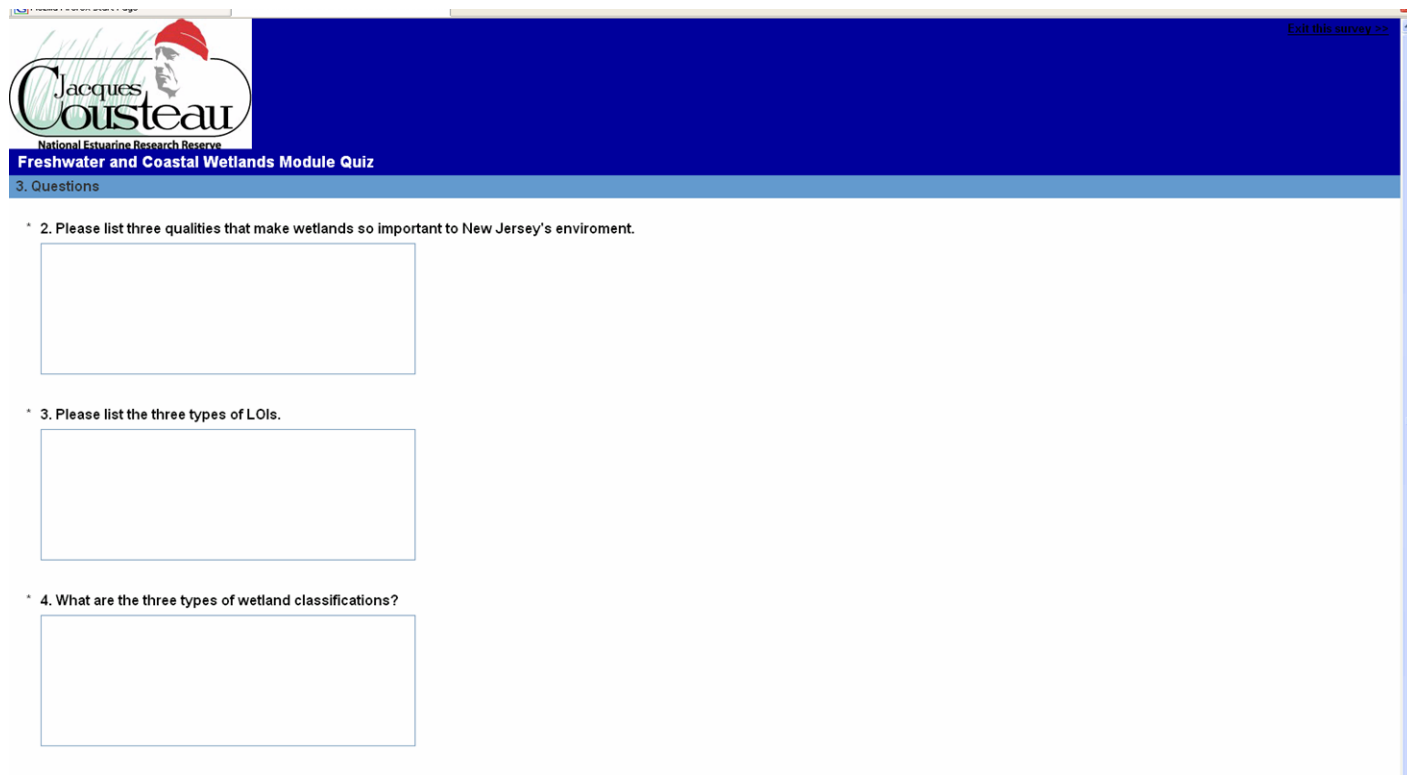
End of section quizzes

- Any written or online sources may be used to answer the questions, as the goal of the program is to not only teach the concepts but demonstrate where additional information may be found.
- The quizzes will be accessed through a web link at the end of each module.



Quizzes

Here is an example of a quiz like the quiz you will be required to complete. The questions will be all short answer.



The screenshot shows a web browser window displaying a quiz. The header features the Jacques Cousteau logo and the text 'National Estuarine Research Reserve'. Below the header, the title 'Freshwater and Coastal Wetlands Module Quiz' is displayed. The quiz is currently on question 3 of 3. The questions are:

2. Please list three qualities that make wetlands so important to New Jersey's environment.
3. Please list the three types of LOIs.
4. What are the three types of wetland classifications?

Each question is followed by a large, empty rectangular text box for the user to provide their answer.

Course Expectations

Certification Requirements

To receive certification for the successful completion of this online course, you will need to complete the following:

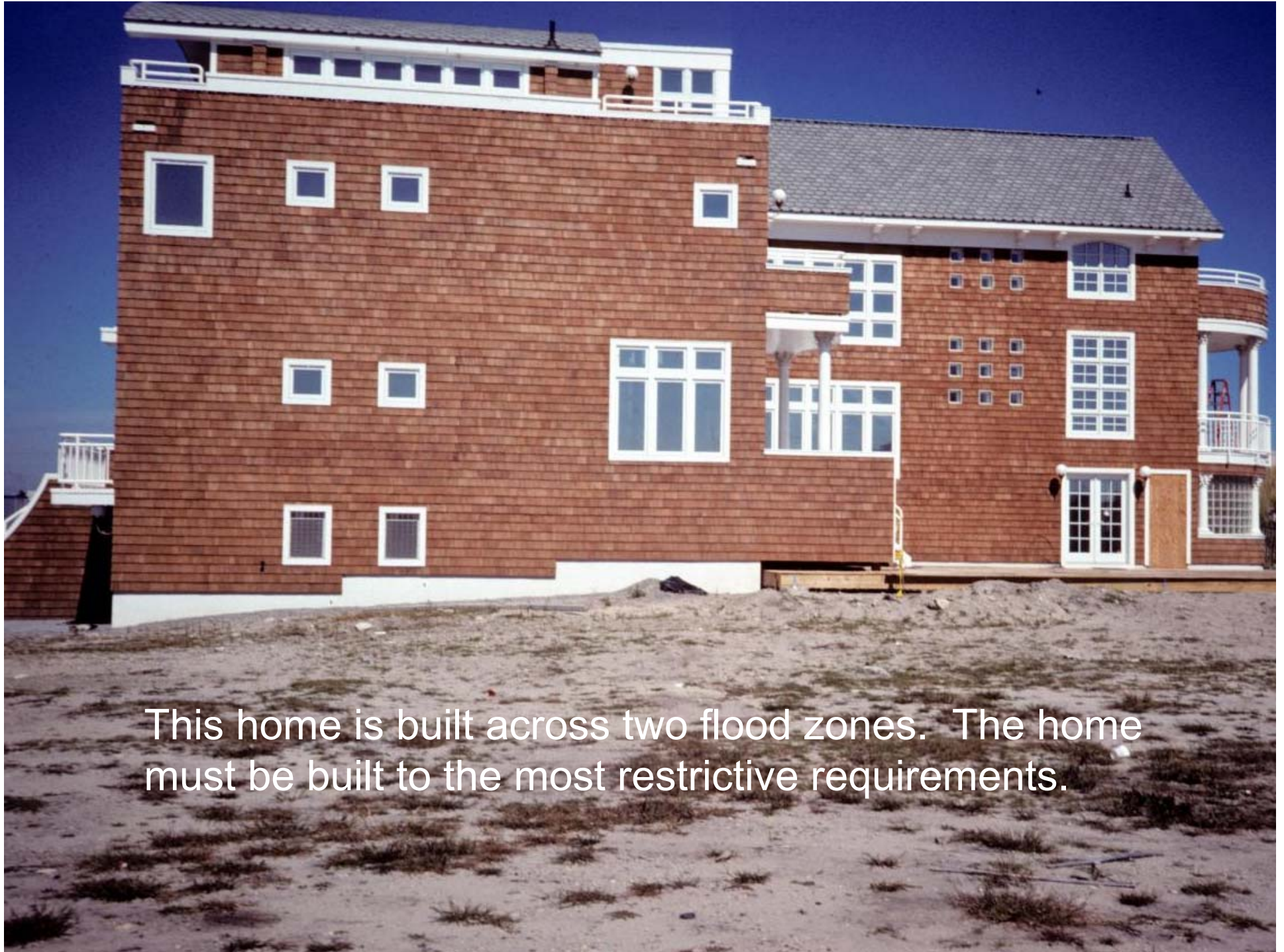
1. Completion of each of the sections of the online course
2. Completion of each of the online quizzes
3. Completion of the end of course survey



Forces of Floods on Buildings

This introductory section will give you the sense of why there is the need for floodplain management.





This home is built across two flood zones. The home must be built to the most restrictive requirements.



Even public buildings must meet the minimum requirements of the NFIP.



With new construction techniques and code requirements, problems of the past are being eliminated.



Long Beach Island – March 1962



Long Beach Island – March 1962



Long Beach Island – March 1962



Long Beach Island – March 1962



Long Beach Island – March 1962



Long Beach Island – March 1962

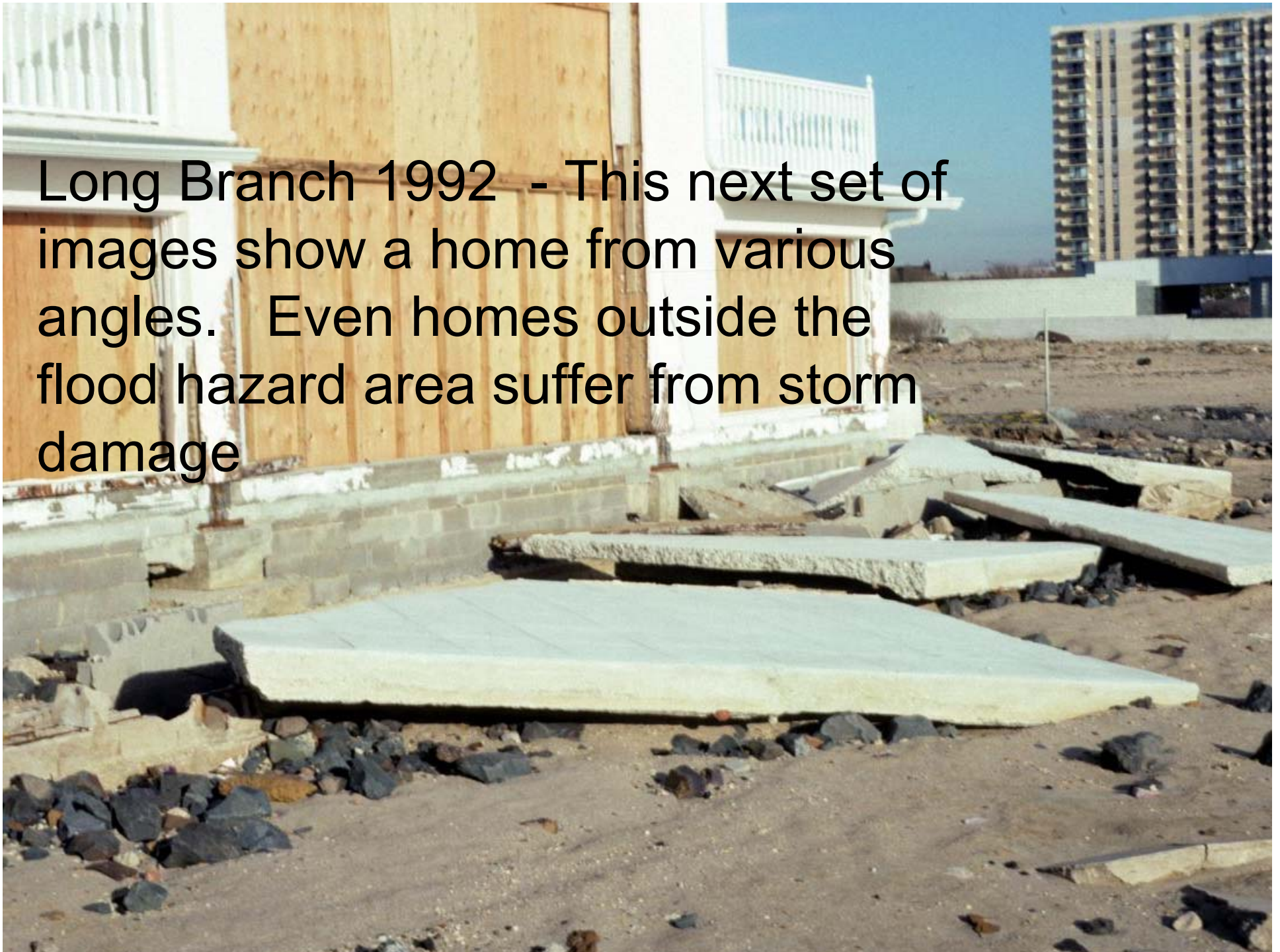
Overwash in 1992 due to Improper building setback





This is an example of why all structures should be anchored to resist lateral movement, collapsing and flotation

Long Branch 1992 - This next set of images show a home from various angles. Even homes outside the flood hazard area suffer from storm damage







Flood insurance was not required on this home but potentially should have been purchased?

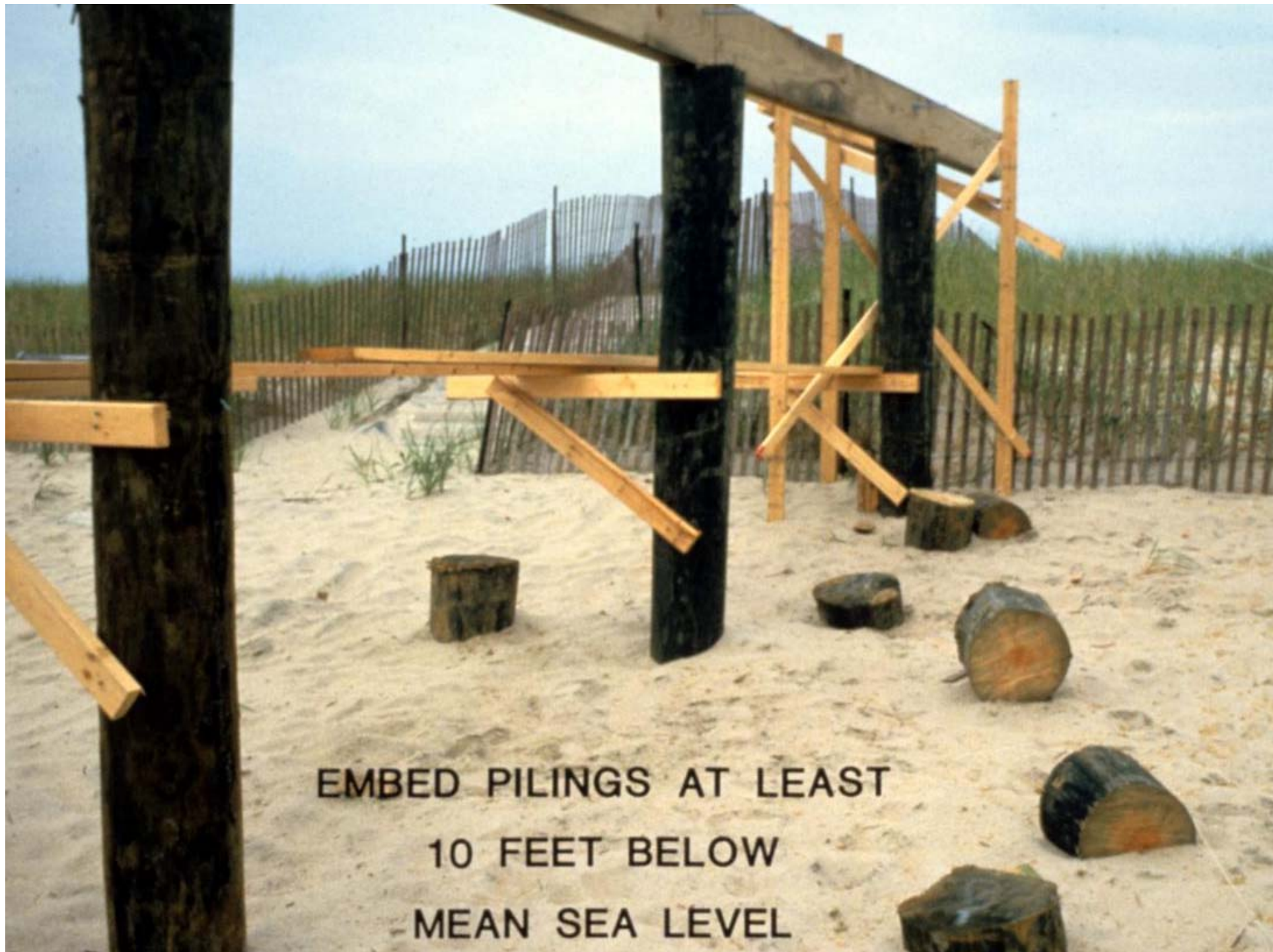


In a V zone – breakaway walls are required below the base flood elevation (BFE). Also, FEMA recommends pilings be driven 10 feet below mean sea level.

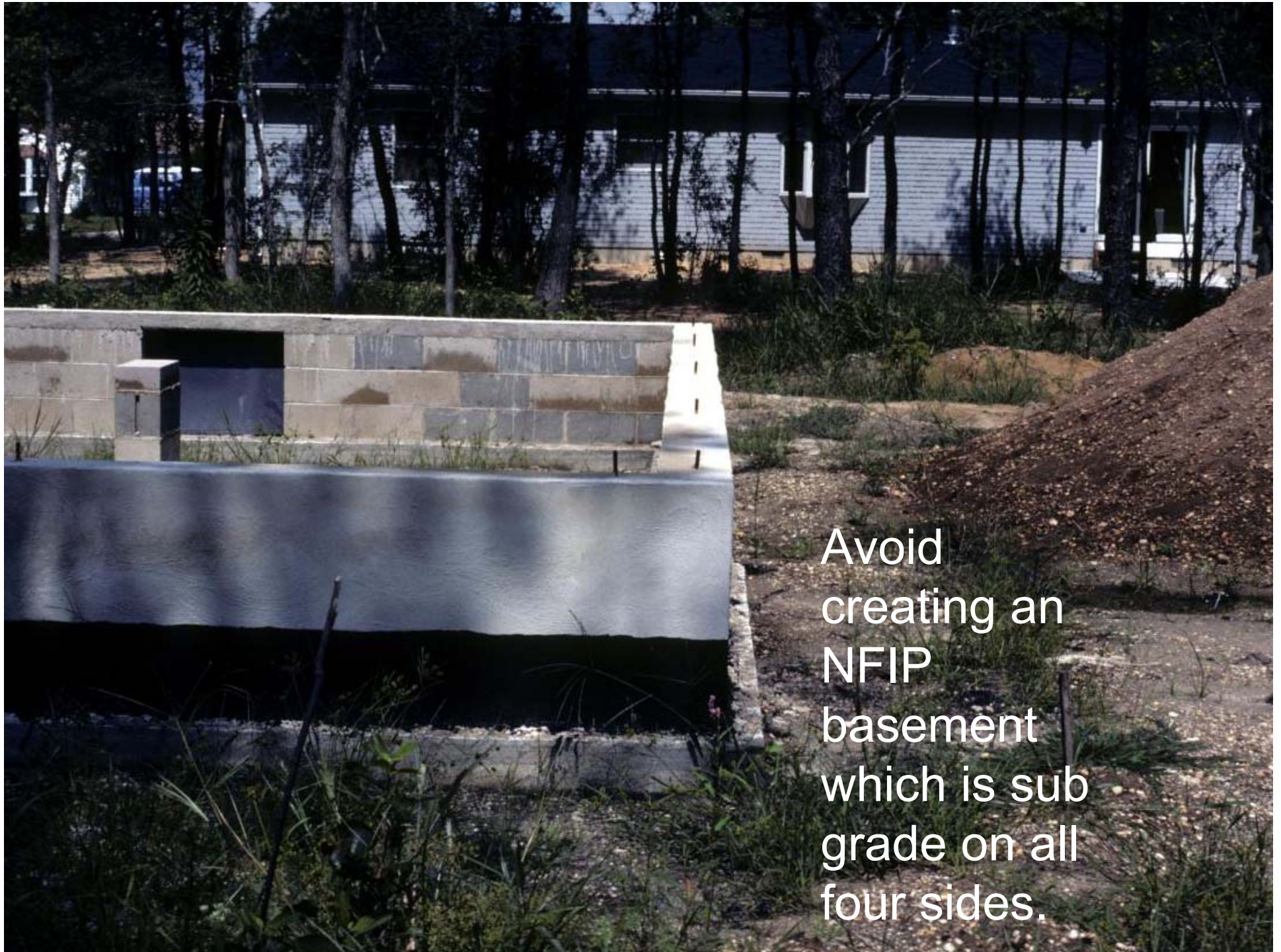








EMBED PILINGS AT LEAST
10 FEET BELOW
MEAN SEA LEVEL

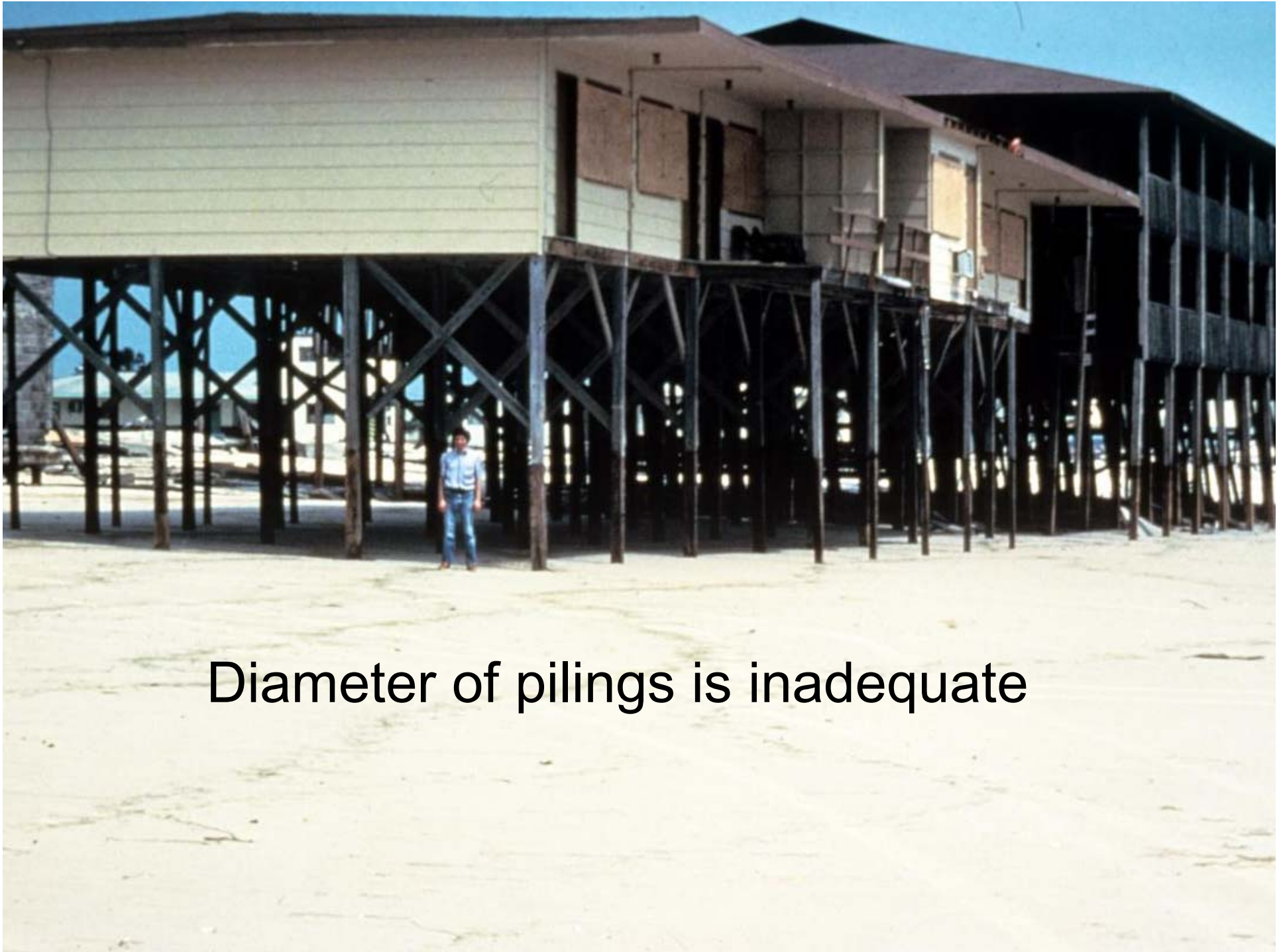


Avoid
creating an
NFIP
basement
which is sub
grade on all
four sides.

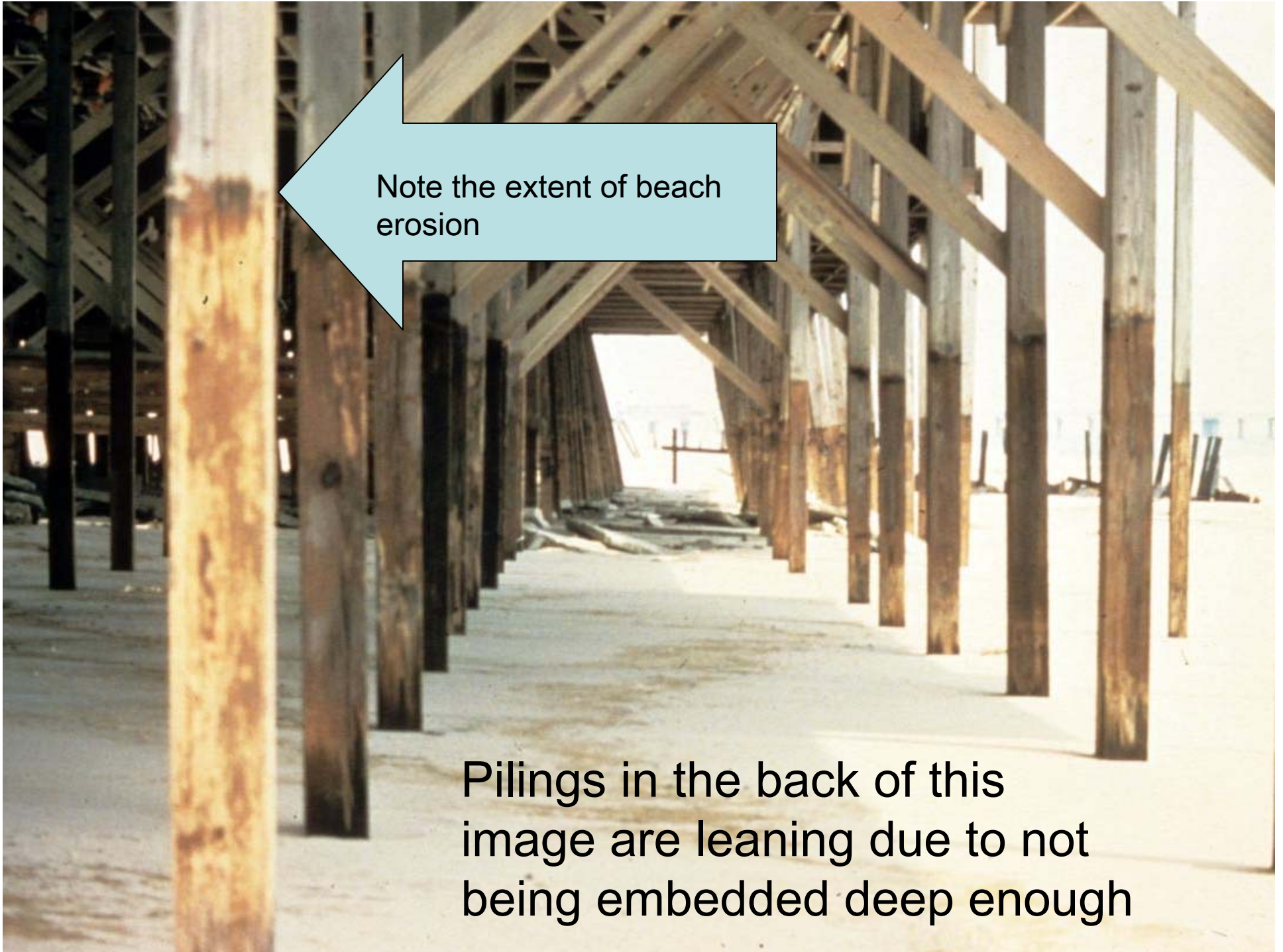
All structures need to be adequately anchored.







Diameter of pilings is inadequate




Note the extent of beach erosion

Pilings in the back of this image are leaning due to not being embedded deep enough



Same problem with the embedding of pilings




This next series of slides is affectionately called “chain saw massacre”.

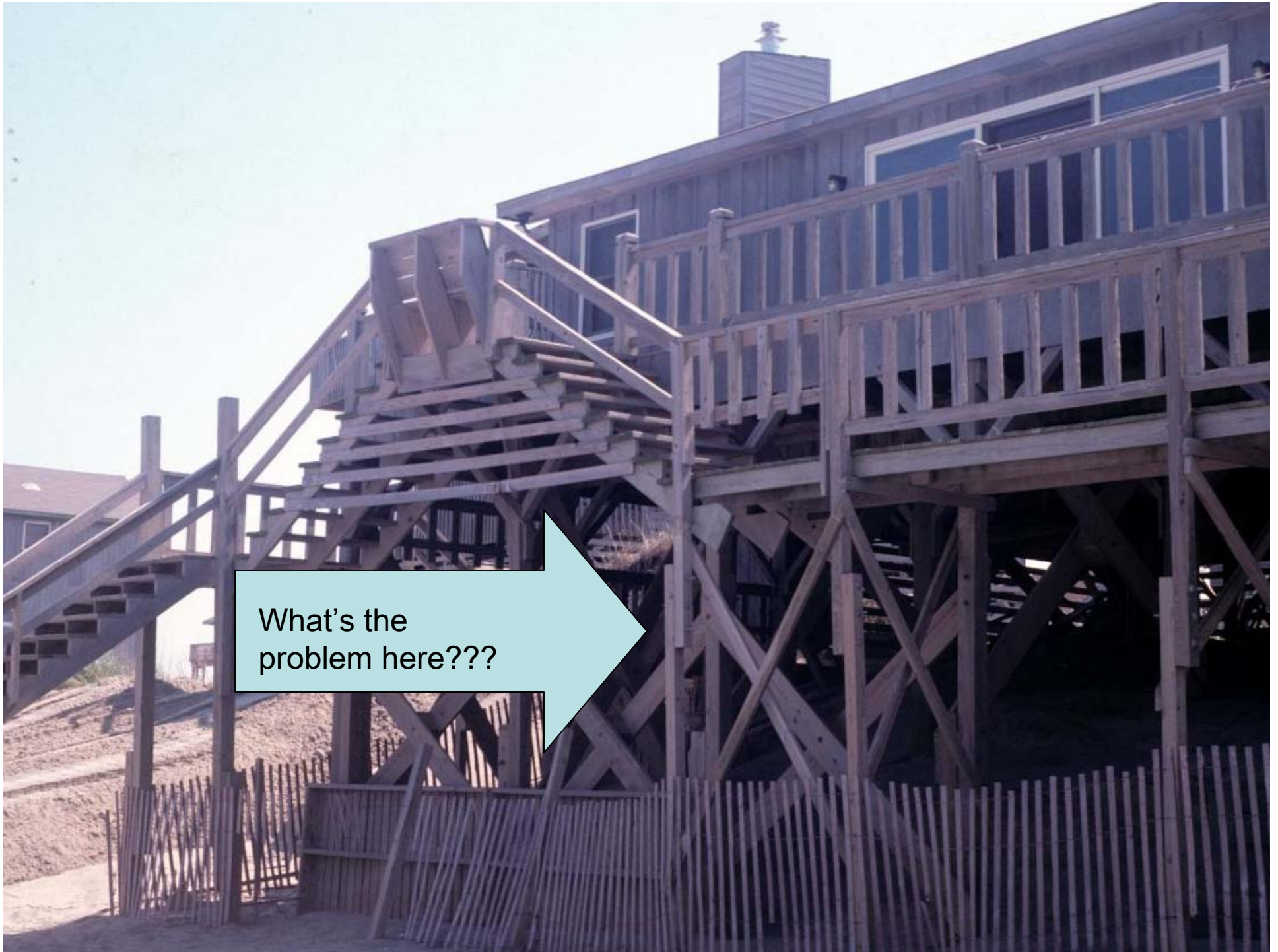




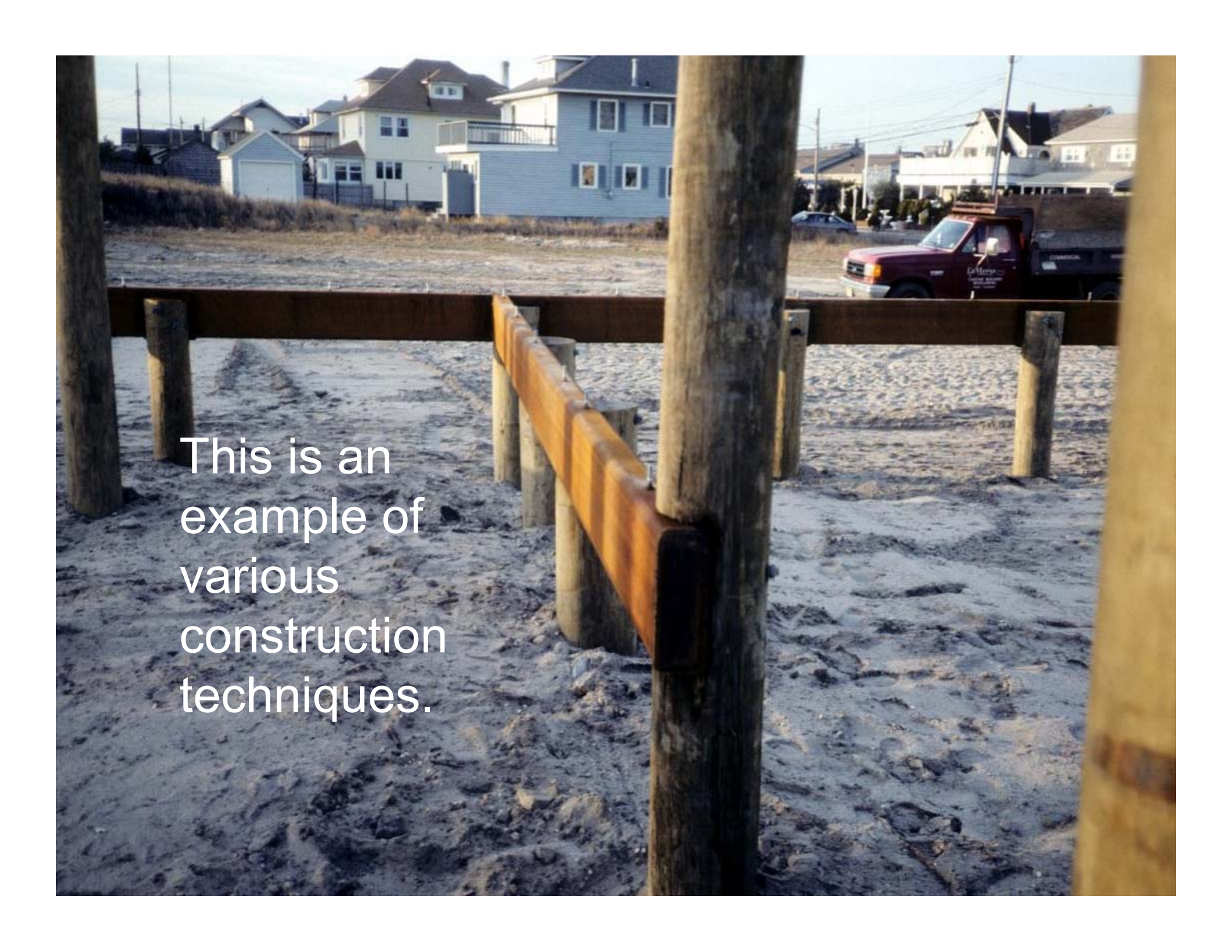




The piling splice
must be 50% or
greater



What's the
problem here???



This is an example of various construction techniques.

A photograph showing a close-up of a building's exterior. A thick, light-colored wooden beam is supported by a concrete pillar. The pillar is made of several stacked blocks. The beam is attached to a structure above it, which appears to be a roof or a second floor. The structure above has some dark, possibly charred or stained, areas. The background shows some greenery and a dirt ground. The text "Connections???" is overlaid on the image in a black, sans-serif font.

Connections???



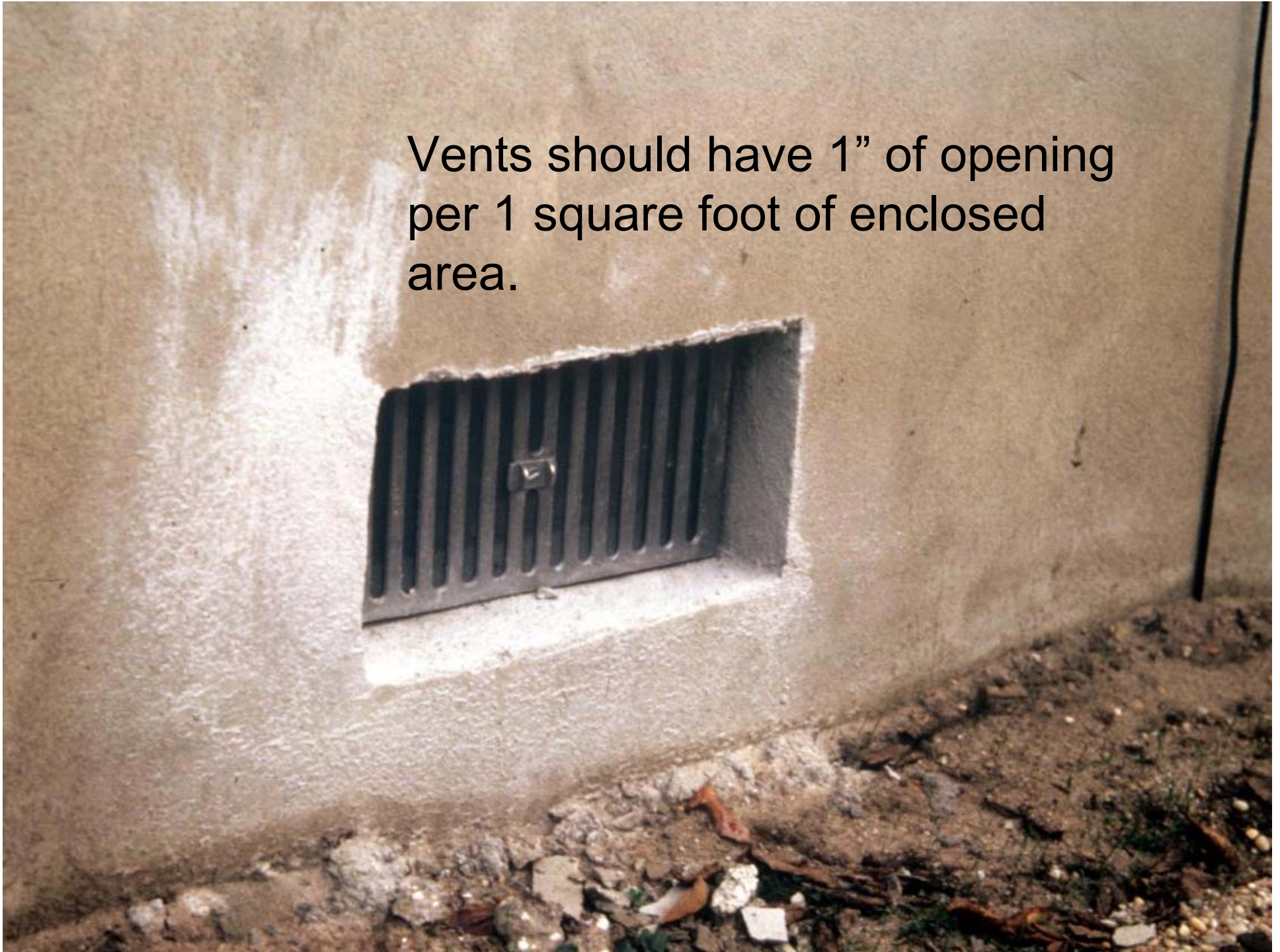
This is what happens
when you build over a
former stream bed.




4616

SALE
\$69,900

Vents should have 1" of opening per 1 square foot of enclosed area.

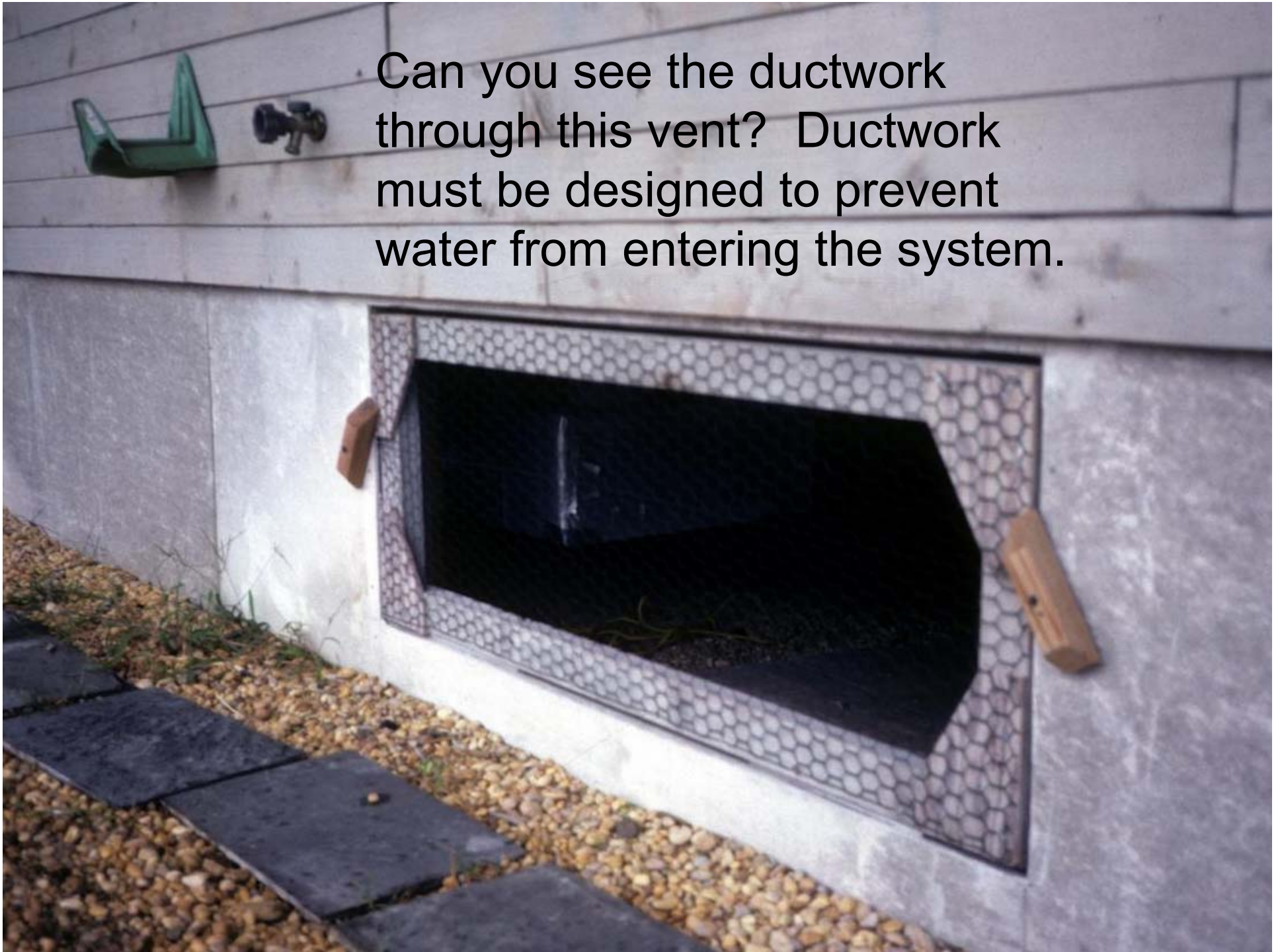







Sometimes vents have to be put in the garage door because there are limited options.

Can you see the ductwork through this vent? Ductwork must be designed to prevent water from entering the system.





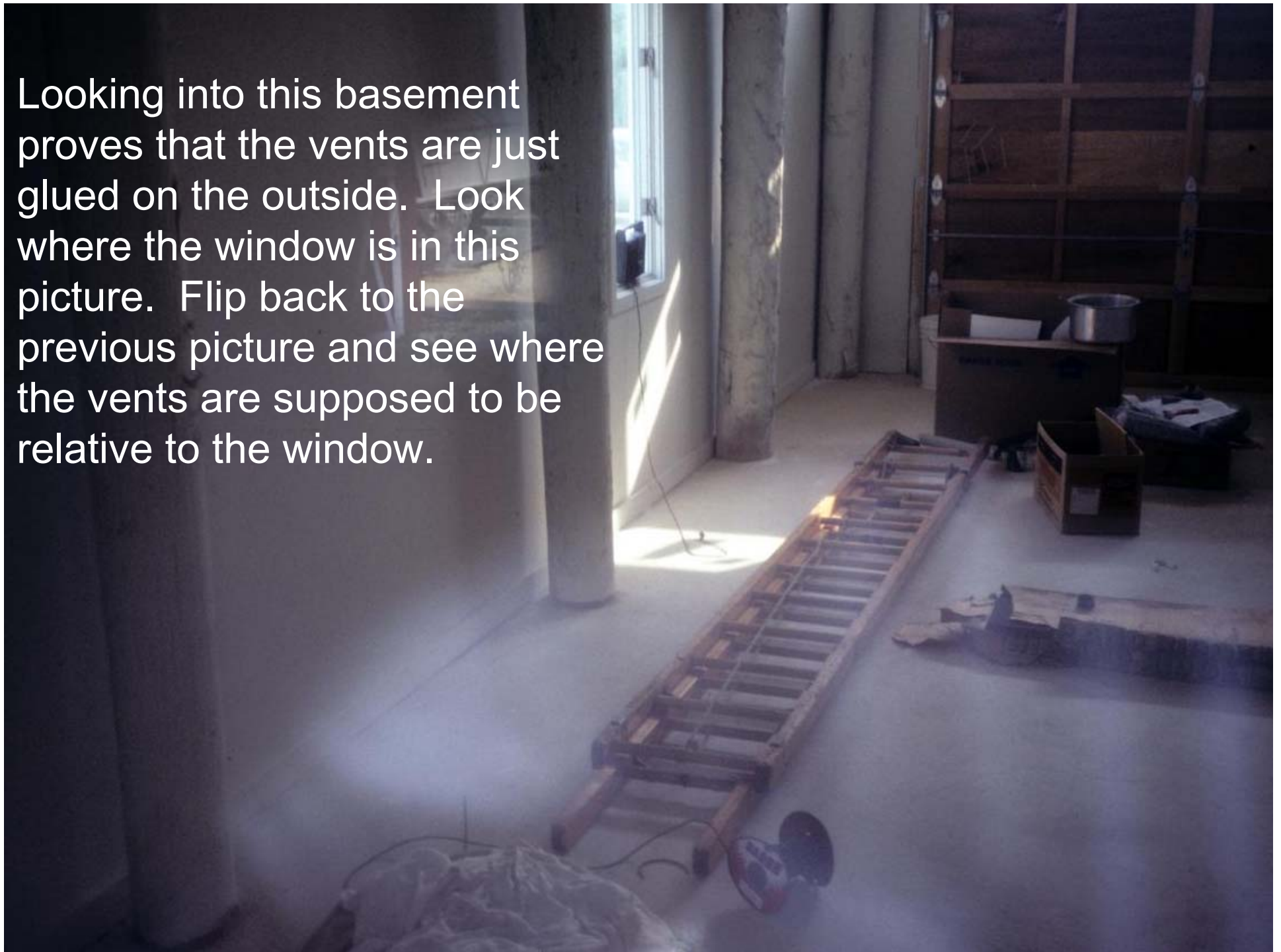
Note here that mechanicals are elevated above the base flood elevation.

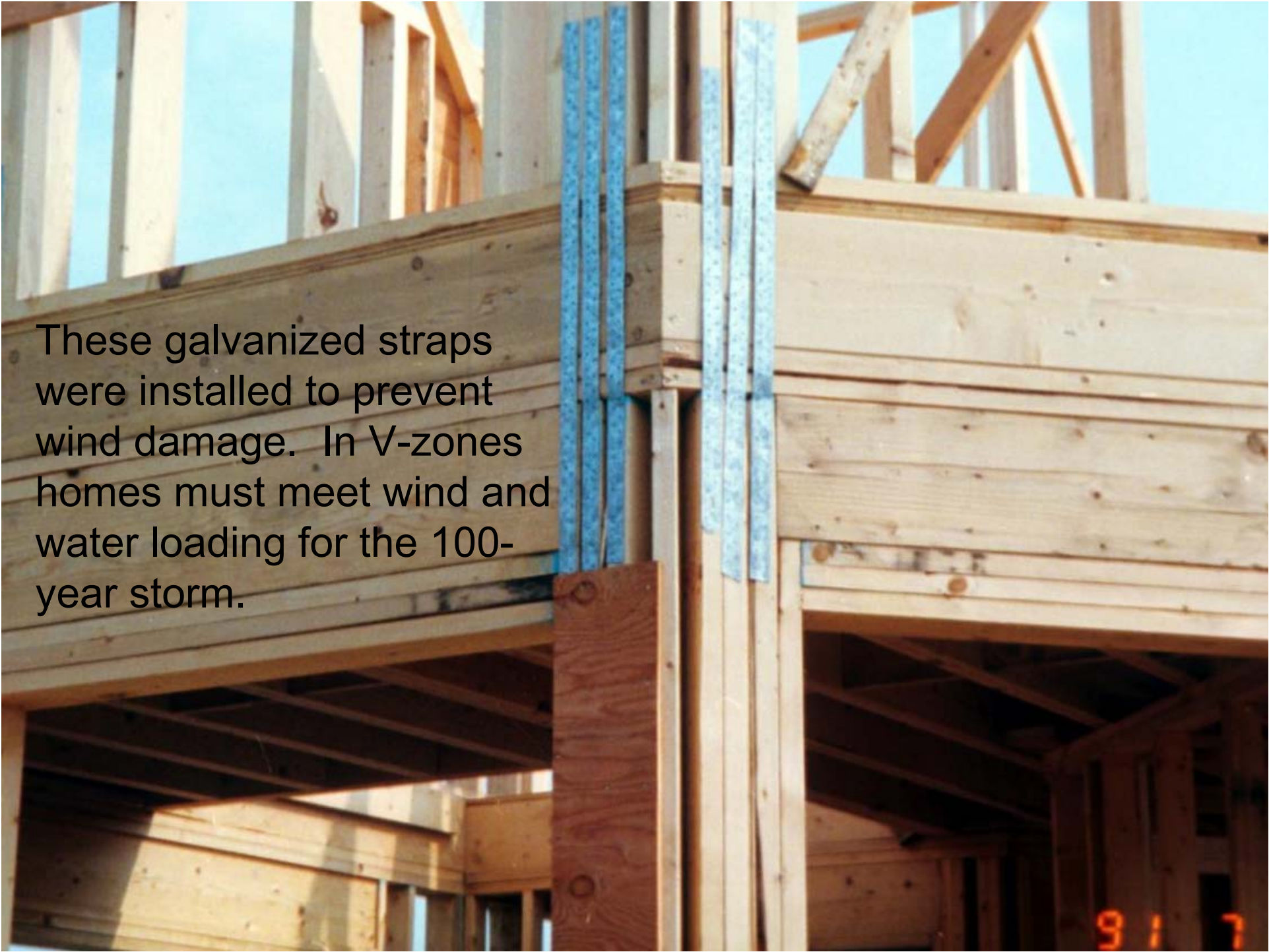




At this home the vents have been glued on.

Looking into this basement proves that the vents are just glued on the outside. Look where the window is in this picture. Flip back to the previous picture and see where the vents are supposed to be relative to the window.





These galvanized straps were installed to prevent wind damage. In V-zones homes must meet wind and water loading for the 100-year storm.

9 1 7

A photograph showing the interior of a wooden roof structure. The image captures several wooden rafters and joists. Two metal straps, likely used for securing the roof, are visible. One strap is bent and hanging loosely from a rafter, while the other is also bent and appears to be partially detached. The wood shows signs of wear and damage, consistent with the text's claim that this is the result of a storm. The lighting is somewhat dim, highlighting the textures of the wood and the metallic sheen of the straps.

This is what happens to these straps after a storm.

A photograph showing a trailer hitch assembly on a gravel surface. The hitch is elevated from the ground using a stack of concrete blocks and a wooden board. The blocks are stacked in a way that is not level, and the wooden board is placed on top of them. The hitch assembly is connected to a dark-colored trailer. The ground is covered in gravel and dirt. A dark-colored car is partially visible in the background on the left. The text "Improper elevation of a trailer" is overlaid on the image in white font.

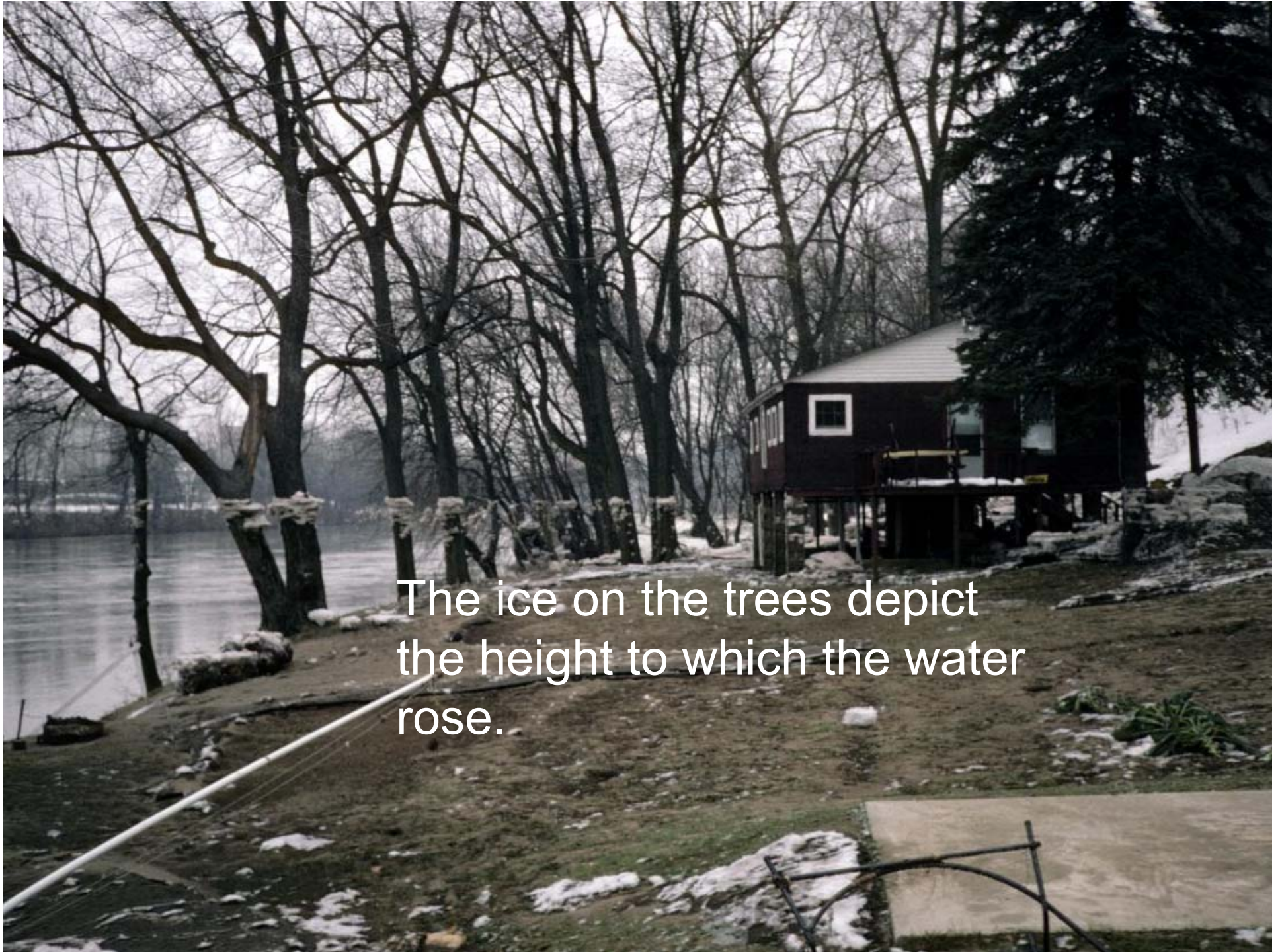
Improper
elevation
of a trailer

BEFORE



AFTER





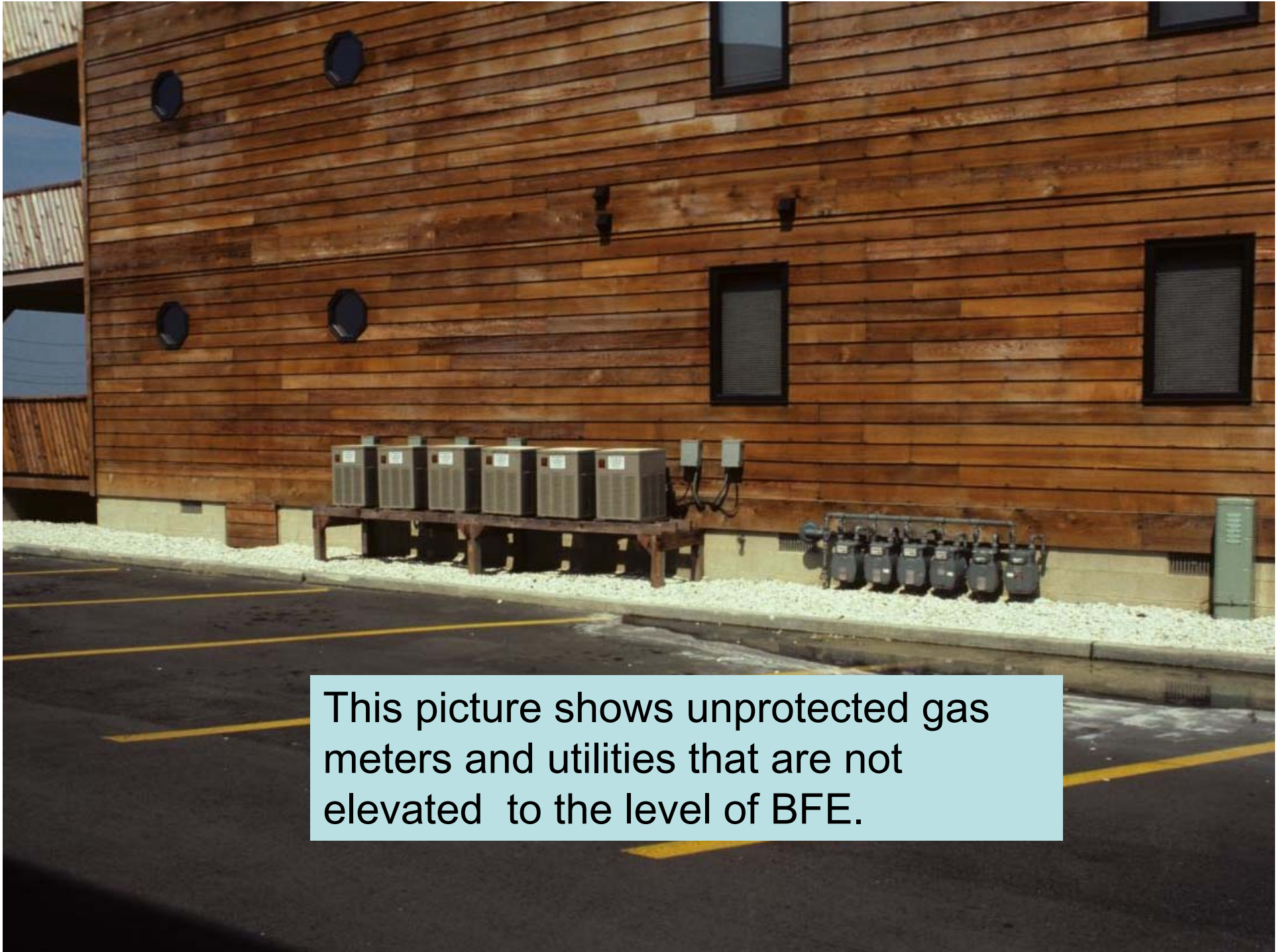
The ice on the trees depict the height to which the water rose.



The black line on this home illustrates the mud line from flooding.



Sand bags should not be placed against a building.



This picture shows unprotected gas meters and utilities that are not elevated to the level of BFE.

Making the Best of It!



In order to move onto the next section you must complete this module's web quiz. This Quiz can be found by clicking on the link below:

www.surveymonkey.com/s.asp?u=812863436058