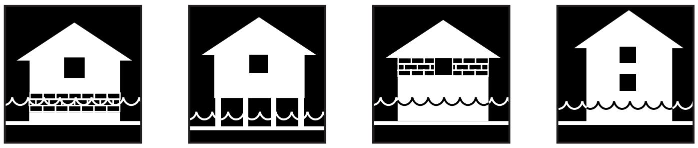
# Elevating Your House



## Introduction

One of the most common retrofitting methods is elevating a house to a required or desired Flood Protection Elevation (FPE). When a house is properly elevated, the living area will be above all but the most severe floods (such as the 500-year flood). Several elevation techniques are available. In general, they involve (1) lifting the house and building a new, or extending the existing, foundation below it or (2) leaving the house in place and either building an elevated floor within the house or adding a new upper story.

During the elevation process, most frame, masonry veneer, and masonry houses are separated from their foundations, raised on hydraulic jacks, and held by temporary supports while a new or extended foundation is constructed below. The living area is raised and only the foundation remains exposed to flooding. This technique works well for houses originally built on basement, crawlspace, and open foundations. When houses are lifted with this technique, the new or extended foundation can consist of either continuous walls or separate piers, posts, columns, or pilings. Masonry houses are more difficult to lift, primarily because of their design, construction, and weight, but lifting these homes is possible. In fact, numerous contractors throughout the United States regularly perform this work.

A variation of this technique is used for frame, masonry veneer, and masonry houses on slab-on-grade foundations. In these houses, the slab forms both the floor of the house and either all or a major part of the foundation. Elevating these houses is easier if the house is left attached to the slab and both are lifted together. After the house and slab are lifted, a new foundation is constructed below the slab.

For masonry houses on slab-on-grade foundations, some homeowners find it easier to use one of two alternative elevation techniques, in which the house is left on its original foundation. One technique is to remove the roof, extend the walls of the house upward, replace the roof, and then build a new elevated living area inside. The second is to abandon the existing lower enclosed area (the level with the slab floor) and move the living space to an existing or newly constructed upper floor. The abandoned lower enclosed area is then used only for parking, storage, and access to the house.

In both of these techniques, portions of the original walls will be below the FPE. This approach is appropriate for masonry construction, which is naturally flood-resistant, but not for frame construction, which could easily be damaged by flood waters.

This chapter describes and illustrates the various elevation methods and discusses the most important considerations regarding elevation.

## Considerations

### Amount of Elevation

The amount of elevation required is determined by the FPE you have chosen. For example, if your FPE is equal to the Base Flood Elevation (BFE), you will need to elevate your house so that the lowest floor is at or above that elevation (see Figure 5-1). As explained earlier, if your house has been substantially damaged or is being substantially improved, your community's floodplain management ordinance or law will require that your lowest floor be elevated to or above the BFE.

If substantial damage and substantial improvement do not apply, you may be able to elevate to any height you wish. But, keep in mind that raising your house to an elevation below BFE not only provides less protection but also results in little, if any, decrease in the flood insurance rate. Regardless of whether your house has been substantially damaged or is being substantially improved, you should consider incorporating at least 1 foot of freeboard into your FPE (as shown in Figure 5-1).

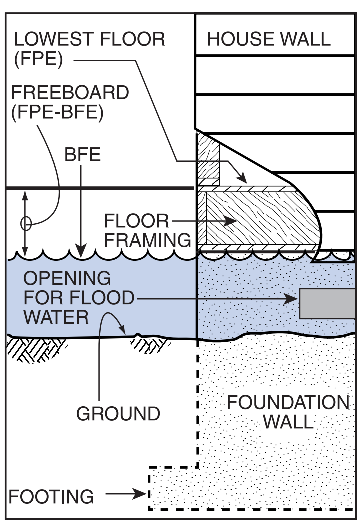


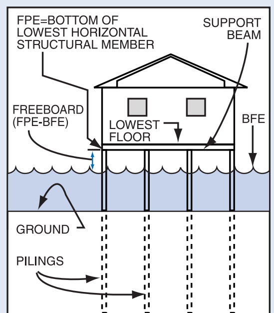

***Figure 5-1***
***As shown in the cutaway view, the lowest floor is above the flood level. When at least 1 foot of freeboard is provided, only the foundation is exposed to flooding.***

Elevating a house up to 3 or 4 feet above the existing ground level usually will not have a great effect on its appearance and will require only minimal landscaping and regrading. If you plan to elevate more than 4 feet above the existing grade, you should consider elevating your house a full story, so that you can use the space below the elevated house for parking, storage, or building access (see Figure 5-2).

***Figure 5-2***
***This house in Atlanta, Georgia, was elevated one full story. The garage and storage area are at the house's original elevation.***

### WARNING

If your house has been substantially damaged or is being substantially improved and is in a Coastal High Hazard Area (Zone V, VE, or V1-V30 on the Flood Insurance Rate Map (FIRM) for your community), your community's floodplain management ordinance or law will require that the bottom of the lowest horizontal structural member (rather than the lowest floor) be elevated to or above the BFE. In many houses, the lowest horizontal structural member is a beam that supports the framing of the lowest floor. With the exception of *Elevating on an Open Foundation*, described at the end of this chapter, the elevation techniques presented in this guide are not appropriate for houses in Coastal High Hazard Areas. If you have any doubt about the type of flood hazards that may affect your house, check with your local officials.




**ELEVATING A HOUSE IN A COASTAL HIGH HAZARD AREA**

### WARNING

If you are elevating a house that has been substantially damaged or is being substantially improved, your community's floodplain management ordinance or law will not allow you to have a basement, as defined under the NFIP. The NFIP regulations define a basement as "any area of the building having its floor subgrade on all sides." If your house has such a basement, you will be required to fill it in as part of any elevation project. Note that the National Flood Insurance Program (NFIP) definition of basement does not include what is typically referred to as a "walkout-on-grade" basement, whose floor would be at or above grade on at least one side.

## Existing Foundation

In general, the most economical approach to elevating a house is to use as much of the existing foundation as possible. Although some elevation methods do not allow this approach, most do. If you choose one of the latter, a design professional must evaluate the ability of your existing foundation to support the loads that will be imposed by the elevated house and, as discussed in the next section, the loads expected to result from flooding and other hazards at the site. If changes must be made to the foundation to increase its strength and stability, they can be made as part of your retrofitting project, but they can increase both the cost of the project and the time required to complete it.

The type of foundation on which your house was originally built (basement, crawlspace, slab-on-grade, piers, posts, pilings) also can affect the elevation process. This issue is discussed later in this chapter, in the section *The Elevation Techniques.*

### Hazards

Because so many elevation techniques are available, elevation is practical for almost any flood situation, but the flooding conditions and other hazards at the house site must be examined so that the most suitable technique can be determined. Regardless of the elevation technique used, the foundation of the elevated house must be able to withstand, at a minimum, the expected loads from hydrostatic pressure, hydrodynamic pressure, and debris impact. It must also be able to resist undermining by any expected erosion and scour.

If you are elevating a house in an area subject to high winds, earthquakes, or other hazards, a design professional should determine whether the elevated house, including its foundation, will be able to withstand all of the horizontal and vertical forces expected to act on it. In making this determination, the design professional must consider a number of factors, including the structure and condition of the house, the soil conditions at the site, the proposed elevation technique, and the hazards at the site. The conclusion may be that additional modifications must be made during the retrofitting project.

**WARNING**

Placing fill in floodways and Coastal High Hazard Areas is normally prohibited. Check with your local officials about State and local requirements concerning the use of fill.

### Access

Elevating a house usually requires that new means of access be provided. For example, if your entry doors were originally at ground level, new staircases, elevators, or ramps will have to be built. When an attached garage is elevated, providing access for vehicles may require changes to portions of your lot, such as building a new, elevated driveway on earth fill that ties into high ground elsewhere. This solution can be practical when the amount of elevation required is no more than 2 or 3 feet. As noted earlier, when the amount of elevation reaches 4 or more feet, you should consider elevating your house a full story so that you can use the lower level for parking and avoid the need for an elevated driveway.

The need to provide new means of access is often the main objection that homeowners have to elevating. But functional and attractive solutions to this problem can usually be developed, as shown in Figure 2-2 in Chapter 2 and Figure 5-3.

***Figure 5-3***
***With attention to detail and planning, homeowners have created attractive retrofitted houses.***

### House Size, Design, and Shape

In general, the larger the house and the more complex its design and shape, the more difficult it will be to lift on jacks. Multistory houses are more difficult to stabilize during the lifting process, and as the dimensions and weight of a house increase, so do the required numbers of jacks and other pieces of lifting equipment. Exterior wall coverings such as stucco and brick veneer complicate the lifting process because they must either be removed or braced so that they will stay in place when the house is lifted. Houses with simple square or rectangular shapes are easier to lift than those with attached garages, porches, wings, or additions, which often must be detached and lifted separately, especially if they are built on separate foundations.

Before a house is lifted, a design professional should inspect it to verify its structural soundness. All the structural members and their connections must be able to withstand the stresses imposed by the lifting process. Lifting an unsound house can lead to potentially expensive damage.

### Service Equipment

Before your house is elevated, all utility lines (water, sewer, gas, electric, telephone, etc.) must be disconnected. At the end of the project, the lines will be reconnected and any landscaping that may be necessary will be completed. If you elevate your house on an open foundation, utility lines that enter the house from below may be exposed to damage from flooding and below-freezing temperatures. Protecting utility lines in these situations usually involves anchoring them securely to vertical foundation members and, if necessary, insulating them. All service equipment outside the

def-ə-

**DEFINITION**

**Service equipment** includes utility systems, heating and cooling systems, and large appliances.

house, such as air conditioning and heat pump compressors and gas and electric meters, must be elevated to or above the FPE. In houses with basements, any service equipment originally installed in the basement will have to be raised above the FPE, which may require relocation to an upper floor. Chapter 8 discusses the protection of service equipment.

## The Elevation Techniques

The elevation techniques and their application to different types of houses are discussed in the following sections.

**PROCESS:**
**Elevating on Extended Foundation Walls**

EVALUATE THE EXISTING FOUNDATION TO DETERMINE WHETHER IT WILL SUPPORT THE ELEVATED HOUSE
↓
OBTAIN NECESSARY PERMITS
↓
TURN OFF UTILITY SERVICES AND DISCONNECT UTILITY LINES
↓
EXCAVATE AROUND THE FOUNDATION AS NECESSARY TO INSTALL LIFTING BEAMS AND, IF REQUIRED, TO STRENGTHEN THE FOUNDATION
↓
CUT HOLES IN THE FOUNDATION AND HOUSE WALLS AS NECESSARY TO INSTALL THE NETWORK OF LIFTING BEAMS
↓
RAISE HOUSE WITH JACKS
↓
EXTEND FOUNDATION WALLS TO DESIRED HEIGHT AND INSTALL WALL OPENINGS TO ALLOW FLOOD WATERS TO ENTER
↓
LOWER HOUSE ONTO EXTENDED FOUNDATION WALLS, RECONNECT UTILITY LINES, AND RESTORE UTILITY SERVICES

### Elevating on Extended Foundation Walls

Frame, masonry veneer, and masonry houses can all be elevated on extended foundation walls. As discussed in the following sections, the technique used for houses on basement and crawlspace foundations differs from that used for houses on slab-on-grade foundations.

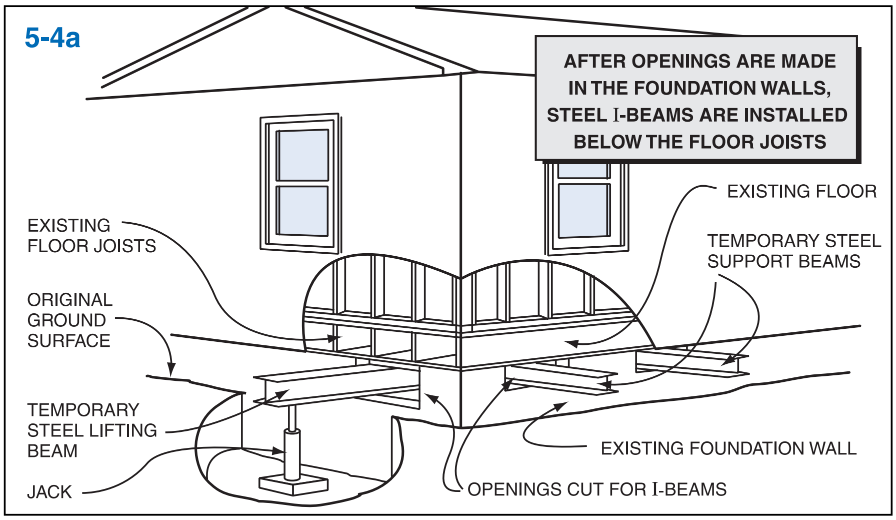
**Houses on Basement Foundations and Crawlspace Foundations**

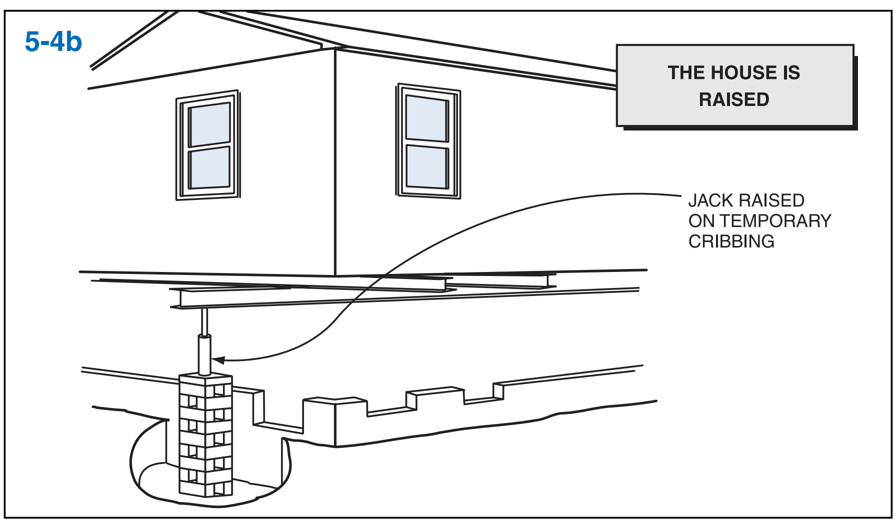
The elevation process is the same for frame, masonry veneer, and masonry houses on basement and crawlspace foundations. Figures 5-4a through 5-4d illustrate the process.

First, holes are made at intervals in the foundation wall so that a series of steel I-beams can be installed at critical points under the floor framing (see Figure 5-4a). If the foundation walls are made of concrete blocks, the lifting contractor can remove individual blocks to create the required holes. If the walls are made of poured concrete, the holes will be cut out. The I-beams are placed so that they run perpendicular to the floor joists. A second set of beams is then placed below and perpendicular to the first set (see Figure 5-4a). The two sets of beams extend the width and length of the house and form a cradle that supports the house as it is being raised.

In Figure 5-4a, the foundation walls are shown as extending far enough above the ground surface to provide easy access to the area below the floor framing. In some houses, however, the foundation walls will not be this high. To lift such a house, the contractor must first dig trenches at intervals around the foundation. The I-beams are then lowered into the trenches and inserted below the floor framing. The contractor may also have to dig holes for the lifting jacks, as shown in the figure. The number of jacks needed will depend on the size, shape, and type of house being lifted.

Once the beams and jacks are in place, the elevation process begins. The jacks will extend only so high; so at intervals during the process, the house and jacks are supported temporarily on cribbing while the jacks are raised (see Figure 5-4b). After the house is elevated high enough, it is again supported on cribbing while the foundation walls are extended to the desired height with concrete blocks or poured concrete (see Figure 5-4c). The house is then lowered onto the extended foundation walls, the I-beams are removed, and the holes where the beams passed through are filled. An important part of the project is installing openings in the foundation walls, no higher than 1 foot above the ground, so that flood waters can enter and equalize the internal and external hydrostatic pressures. As shown in Figure 5-4c, the contractor can create these openings by only partially filling the I-beam holes.

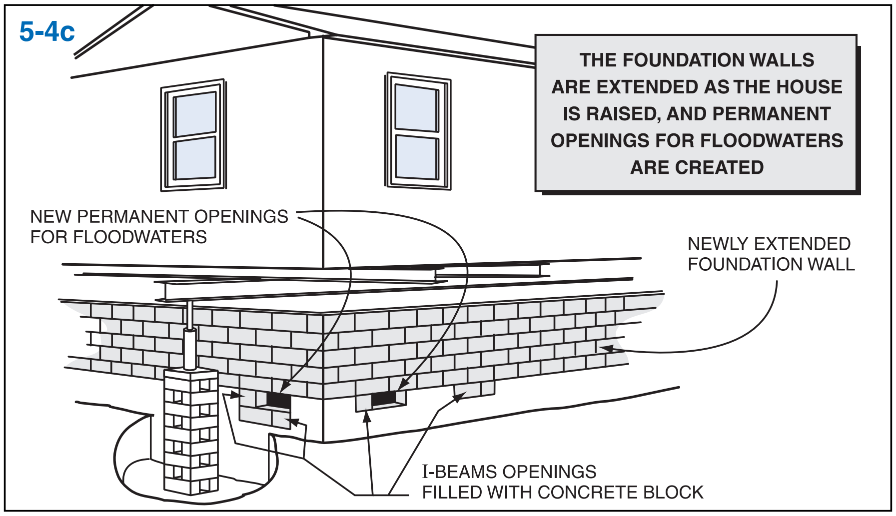


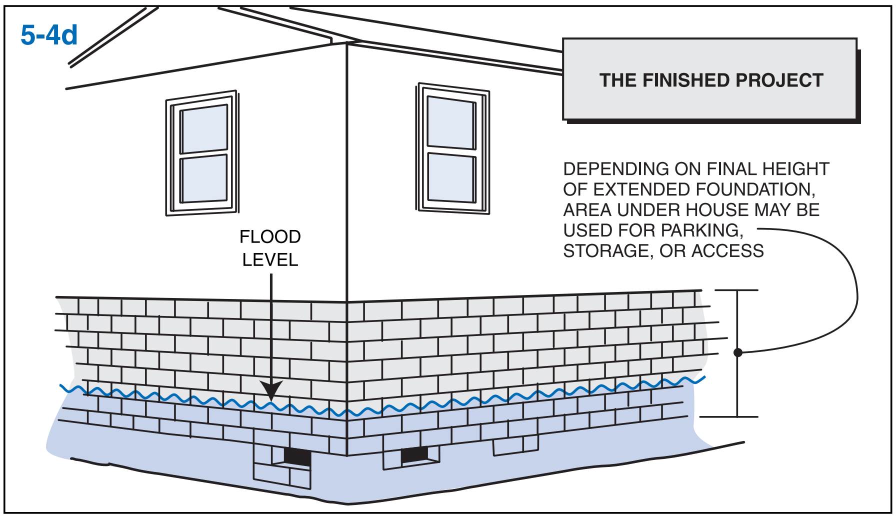




***Figures 5-4a through 5-4d. Elevating a basement or crawlspace foundation house on extended foundation walls.***

**NOTE**

For more information about openings requirements, refer to FEMA Technical Bulletin 1-93, *Openings in Foundation Walls for Buildings Located in Special Flood Hazard Areas*, and FEMA 259, *Engineering Principles and Practices for Retrofitting Flood Prone Residential Buildings.*




**Houses on Slab-On-Grade Foundations**

Frame, masonry veneer, and masonry houses on slab-on-grade foundations are also lifted with hydraulic jacks and a network of steel I-beams. However, design and construction differences between slab-on-grade houses and those on other types of foundations present special difficulties and require a different lifting technique.

The floor of a house on a slab-on-grade foundation, is formed by the slab rather than the wood joist and beam framing found in houses on crawlspace and basement foundations. The slab is usually 4 to 6 inches thick and is often reinforced with wire mesh. As shown in the cross section view in Figure 5-5, the slab can be supported by foundation walls and footings or by a thickened edge created when the slab is poured.

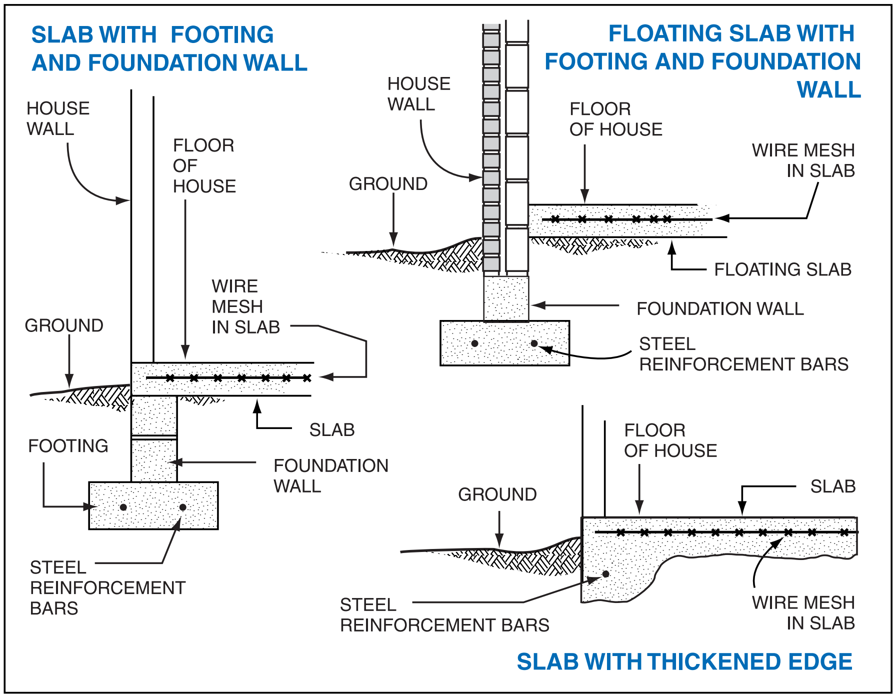


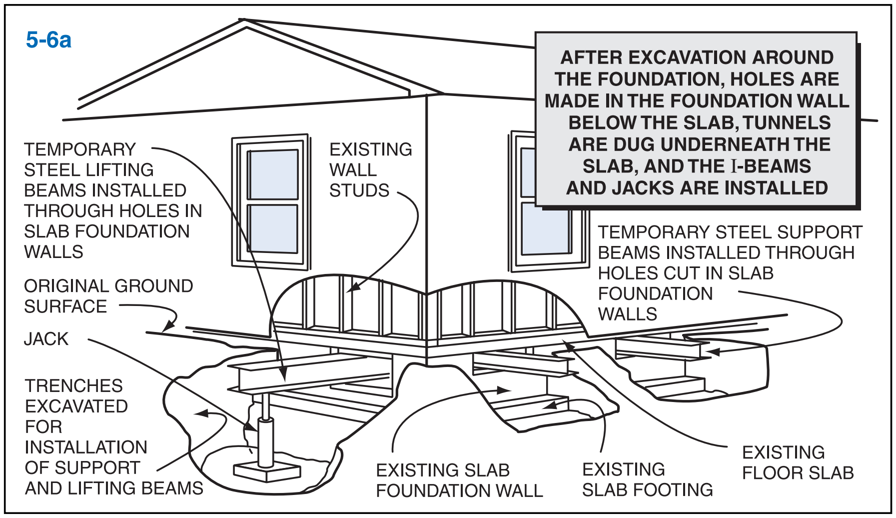

***Figure 5-5***
***Slab foundation types.***

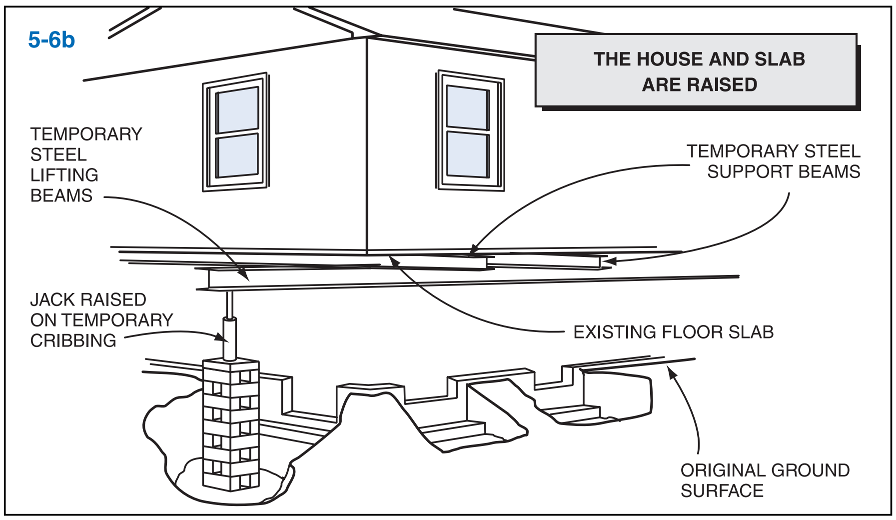
Because the slab forms the floor of the house, and occasionally the foundation as well, elevating the house is easier if the house and slab are lifted together. But this technique is more difficult than that used for houses on basement and crawlspace foundations and should be performed only by a highly skilled contractor with extensive experience in lifting slab-on-grade houses. The wire mesh in the slab is intended to prevent shrinkage cracking during the original construction of the slab; it is not intended to provide structural strength. As a result, the contractor must take extreme care during the lifting process to avoid breaking the slab and compromising the structural integrity of the house.

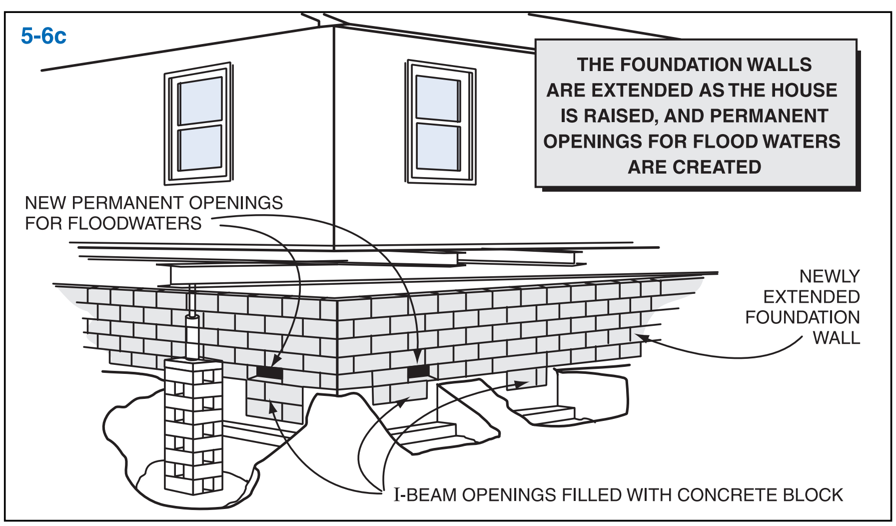
The elevation process (see Figures 5-6a through 5-6d) is similar to that used for houses on basement and crawlspace foundations, except that the I-beams must be placed below the slab, which is at ground level. So, the contractor must dig trenches at intervals around the foundation, and tunnel under the slab. The I-beams are lowered into the trenches and moved into place beneath the slab through the tunnels (see Figure 5-6a).

The contractor must also dig holes for the lifting jacks because they have to be placed below the beams. Once the beams and jacks are in place, the lifting process begins. As shown in Figures 5-6b and 5-6c, the house is lifted and a new foundation is constructed below it.

***Figures 5-6a through 5-6d. Elevating a slab-on-grade house with the slab attached***

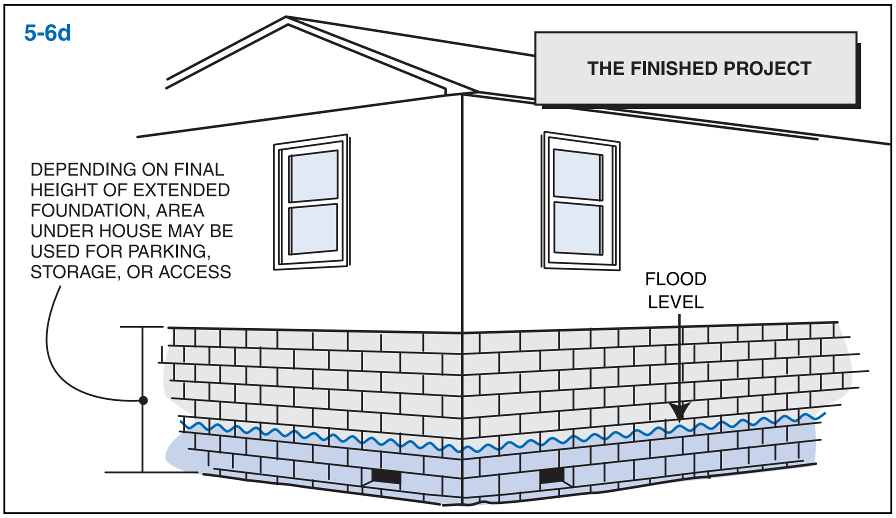



**NOTE**

For more information about openings requirements, refer to FEMA Technical Bulletin 1-93, *Openings in Foundation Walls for Buildings Located in Special Flood Hazard Areas,* and *FEMA 259, Engineering Principles and Practices for Retrofitting Flood Prone Residential Buildings.*

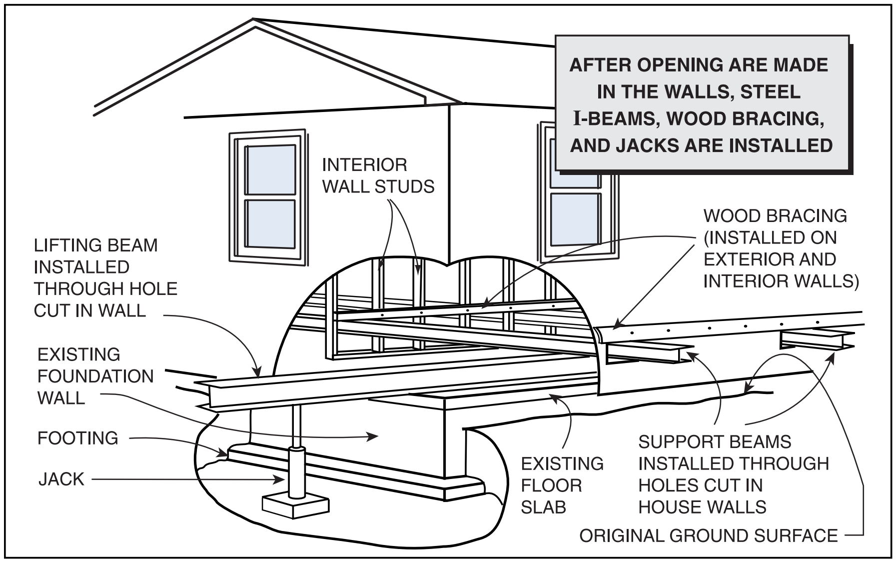



If the slab was originally supported by foundation walls and footings (see upper and left-hand illustrations in Figure 5-5), the contractor may be able to leave them in place and extend the existing walls upward. This approach will be possible only when a design professional determines that the original foundation walls and footings are strong enough to support the elevated house and slab under the expected flood, wind, earthquake, and other loads. If the slab was originally supported by its own thickened edge (shown in the lower illustration in Figure 5-5), a completely new foundation must be constructed.

In both situations, the contractor must construct not only foundation walls under the perimeter of the slab but also additional vertical foundation members, such as piers, at several locations under the slab. These additional foundation members are necessary because slabs are designed to rest directly on the ground, not to support the weight of the house.

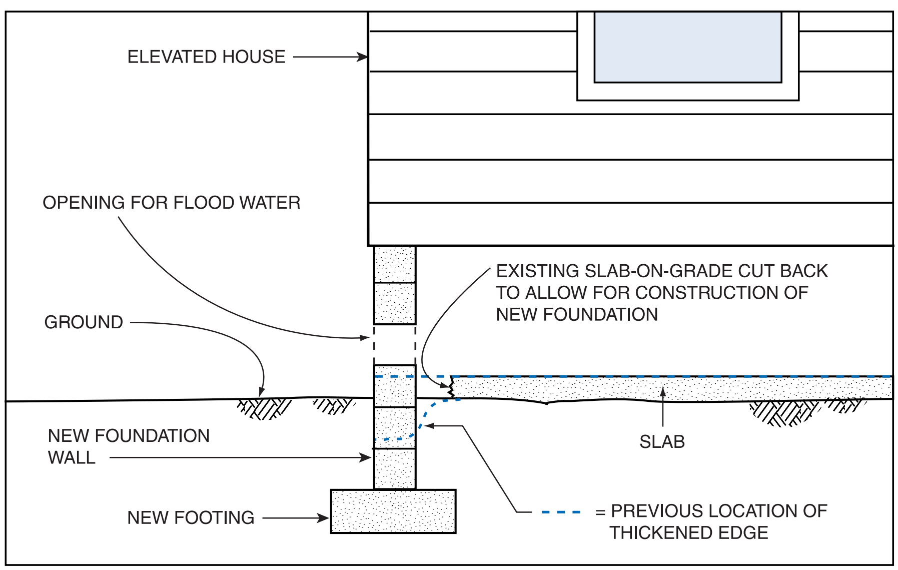
A less frequently used technique for elevating slab-on-grade houses is to separate the house from the slab, lift the house, and leave the slab on the ground. Because the slab is not lifted, the I-beams are inserted through openings cut into the walls of the house above the slab rather than below it. To enable the beams to lift the house, the contractor attaches horizontal wood bracing to the interior and exterior walls at the tops of the openings (see Figure 5-7).

***Figure 5-7 Elevating a slab-on-grade house without the slab.***




When the beams are jacked up, they push against the bracing, which distributes the lifting force equally across the walls. The bracing also supports the walls, which lack the structural stability that would otherwise be provided when the walls and floor are left attached. Without bracing, the walls could twist, bend, or collapse when the house is lifted. If a design professional determines that the original slab is strong enough to support the elevated house under the expected flood, wind, earthquake, and other loads, the slab may be left in place and the new foundation walls built on top. Otherwise, the slab must be cut back and a completely new foundation constructed, as shown in Figure 5-8.

***Figure 5-8 Building a new foundation for a slab-on-grade house***



When the slab is not lifted with the house, a new, elevated floor must be constructed. The new floor can be a wood-framed floor like that typically found in a house on a basement or crawlspace foundation, or it can be a new, elevated concrete slab. Building a new slab floor involves placing fill dirt on top of the old slab and pouring a new slab on top of the fill. Although the old slab is left in place, it is usually broken up so that it will not be forced up by the buoyant effect of flood waters or saturated soil.

The primary advantage of lifting the house without the slab is that the house is lighter and therefore easier to lift. This benefit applies mainly to frame and masonry veneer houses. This method has several disadvantages, however:

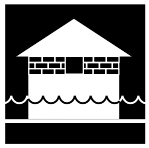
- Cutting holes in the interior and exterior walls of the house and attaching wood bracing causes extensive damage that must be repaired before the elevated house is habitable.
- Because of the damage to the habitable parts of the house, alternative housing may be needed for an extended period.
- The contents of the house must be removed before the elevation process can begin.
- Masonry veneer is likely to interfere with the installation of exterior wall bracing and to crack or break off if left in place during elevation.

Because of these disadvantages, lifting a slab-on-grade house without the slab is normally done only when the house has been severely damaged by a flood or other event and would require extensive repairs regardless of the elevation method used.

## Alternative Elevation Techniques for Masonry Houses on Slab-on-Grade Foundations

**PROCESS:**
**Elevating by Extending the Walls of the House**

- EVALUATE THE EXISTING FOUNDATION TO DETERMINE WHETHER IT WILL SUPPORT THE ELEVATED HOUSE
- OBTAIN NECESSARY PERMITS
- TURN OFF UTILITY SERVICES AND DISCONNECT UTILITY LINES
- IF NECESSARY, STRENGTHEN THE EXISTING FOUNDATION
- REMOVE THE ROOF AND THE ROOF FRAMING
- EXTEND THE WALLS TO THE DESIRED HEIGHT AND REPLACE THE ROOF FRAMING AND THE ROOF
- CONSTRUCT A NEW LOWEST FLOOR AT THE DESIRED ELEVATION
- INSTALL WALL OPENINGS IN THE WALLS OF THE ABANDONED FIRST FLOOR TO ALLOW FLOOD WATERS TO ENTER
- RECONNECT UTILITY LINES AND RESTORE UTILITY SERVICES



### Elevating by Extending the Walls of the House

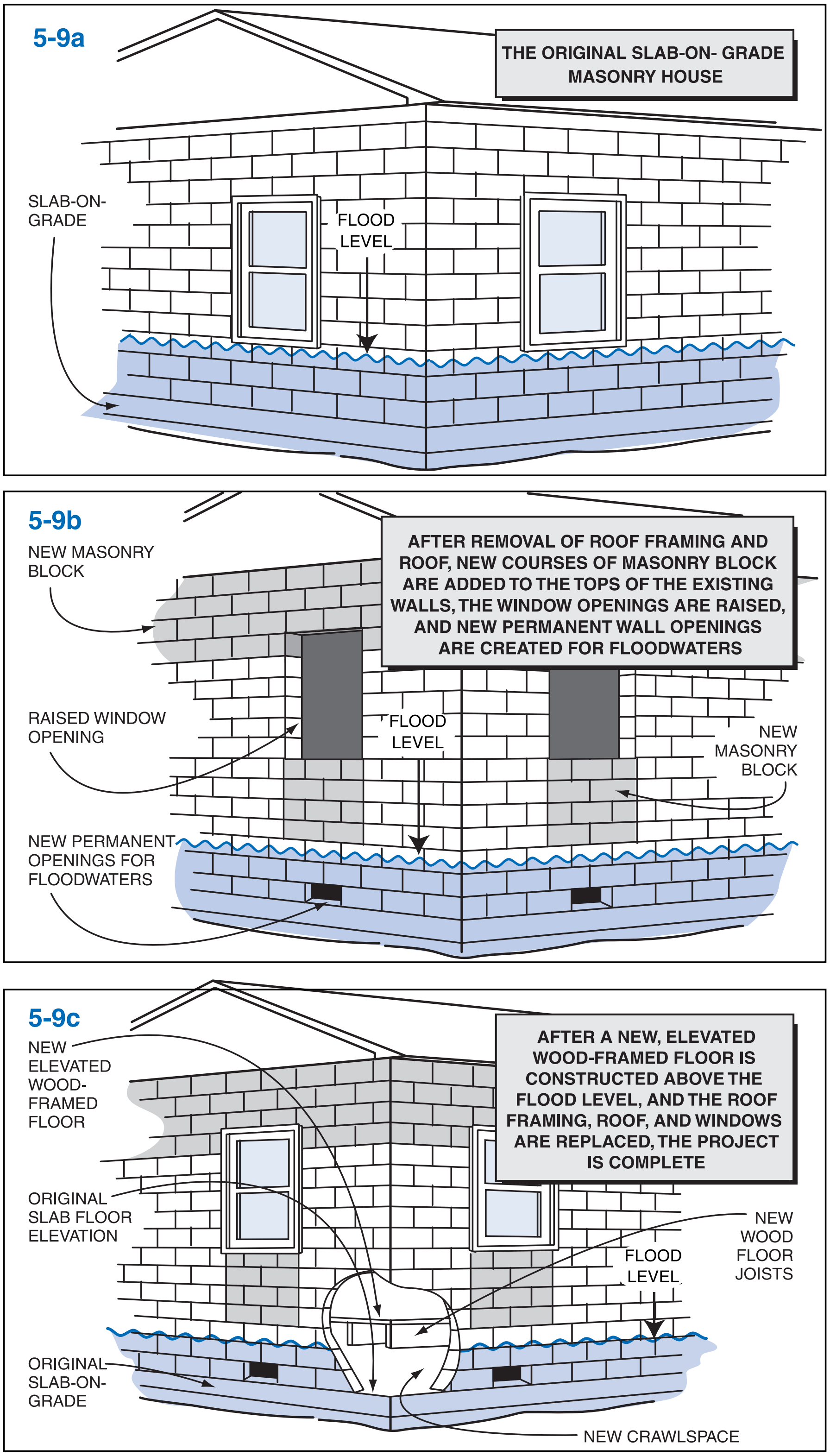
An alternative technique for elevating a masonry house on a slab-on-grade foundation is to extend the existing walls of the house upward and then build a new elevated floor above the old slab. This technique is Illustrated in Figures 5-9a through 5-9c.

First the roof and roof framing are removed so that the tops of the walls will be accessible. The contractor can then extend the walls upward with additional courses of either concrete block (as shown in Figure 5-9b) or brick or with wood or metal framing. The choice of materials is based on several considerations, including cost, the final appearance of the house, the strength of the existing foundation, and the design requirements associated with the identified hazards, including high winds and earthquakes.

The final height of the extended walls will usually depend on how high the lowest floor must be elevated. For example if the lowest floor must be elevated 3 feet to reach the FPE, the height of the walls must be increased by the same amount if the original ceiling heights in the house are to be maintained.

The new lowest floor can be either a wood-framed floor system or an elevated concrete slab similar to the original slab. When a new wood-framed floor system is installed, the area below the floor becomes a crawlspace (as in Figure 5-9c) or other enclosed area that may be used for parking, storage, or building access. So openings must be installed in the foundation walls to allow external and internal water pressures to equalize. Additional wall openings may be needed for ventilation.

For a new elevated slab floor, fill dirt is placed on top of the old slab and compacted as required. Then a new slab is poured on top of the fill. When this method is used, openings in the foundation walls are not required, because the entire area under the new slab is completely filled with dirt and is therefore protected from the pressure of flood waters.



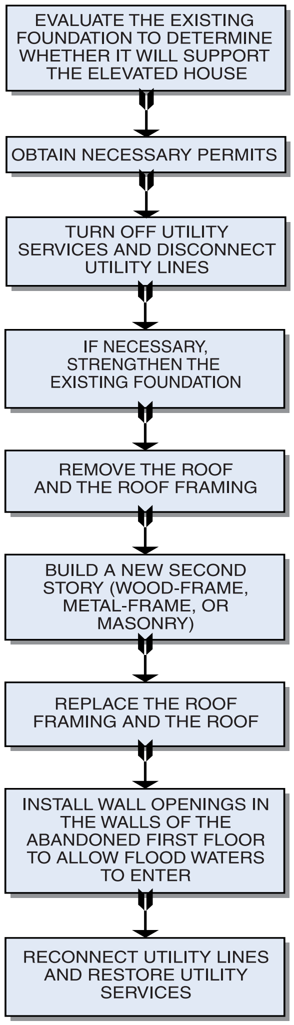

***Figures 5-9a through 5-9c. Extending the walls of a solid masonry house.***

**NOTE**

For more information about openings requirements, refer to FEMA Technical Bulletin 1-93, *Openings in Foundation Walls for Buildings Located in Special Flood Hazard Areas,* and FEMA 259, *Engineering Principles and Practices for Retrofitting Flood Prone Residential Buildings.*

**PROCESS:**

**Elevating by Abandoning the Lower Enclosed Area and Building a New Second-Story Living Area**



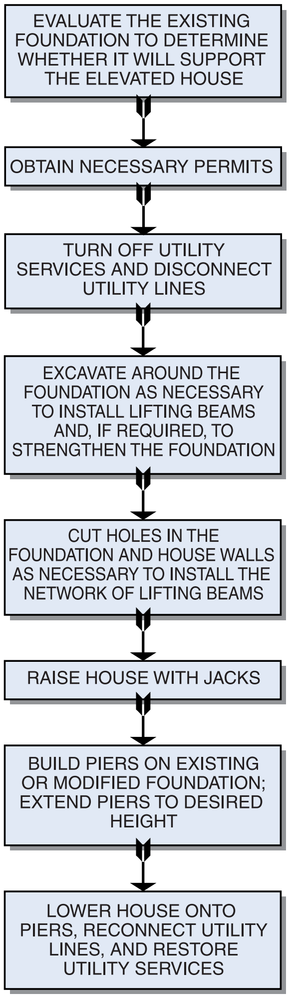

## Elevating by Abandoning the Lower Enclosed Area

Another alternative for a masonry house on a slab-on-grade foundation is to abandon the existing lower enclosed area of the house (the area with the slab floor) and allow it to remain below the FPE. This technique requires that the living area be restricted to upper floors of the house and that the lower enclosed area be used only for parking, storage, and access. Because this technique leaves the original floor and walls below the FPE exposed to flooding, it is best suited to masonry houses on slab-on-grade foundations. In these houses both the walls and floor are made of concrete or masonry, which are not easily damaged by contact with flood waters.

The amount of work required for this technique depends largely on whether the house already has an upper floor that can be used for living space. When an upper floor exists, abandoning the lower enclosed area involves removing easily damaged interior finishing materials below the FPE (including interior wall sheathing and insulation) and elevating or relocating vulnerable appliances (such as furnaces, washing machines, and freezers) and utility system components (such as electrical wiring and service boxes). These modifications are the same as those required for wet floodproofing, as described in Chapter 6. Refer to that chapter for details.

For one-story houses, abandoning the lower enclosed area requires the construction of a new second story as shown in Figures 5-10a through 5-10c. The required steps are similar to those described in the previous section, *Elevating by Extending the Walls of the House*. The roof and roof framing are removed, a new second story is built on top of the existing walls, the roof and roof framing are replaced, and openings are added for floodwaters. The construction options are the same: frame or masonry. Again, the choice is based primarily on the considerations of cost, final appearance, the strength of the existing foundation, and the need to address other natural hazards, such as high winds and earthquakes.

**PROCESS:**
**Elevating on Piers**




**NOTE**

Elevating on an open foundation is an appropriate retrofitting technique for houses in Coastal High Hazard Areas (Zones V, VE, or V1-V30 on a FIRM).

## Elevating on an Open Foundation

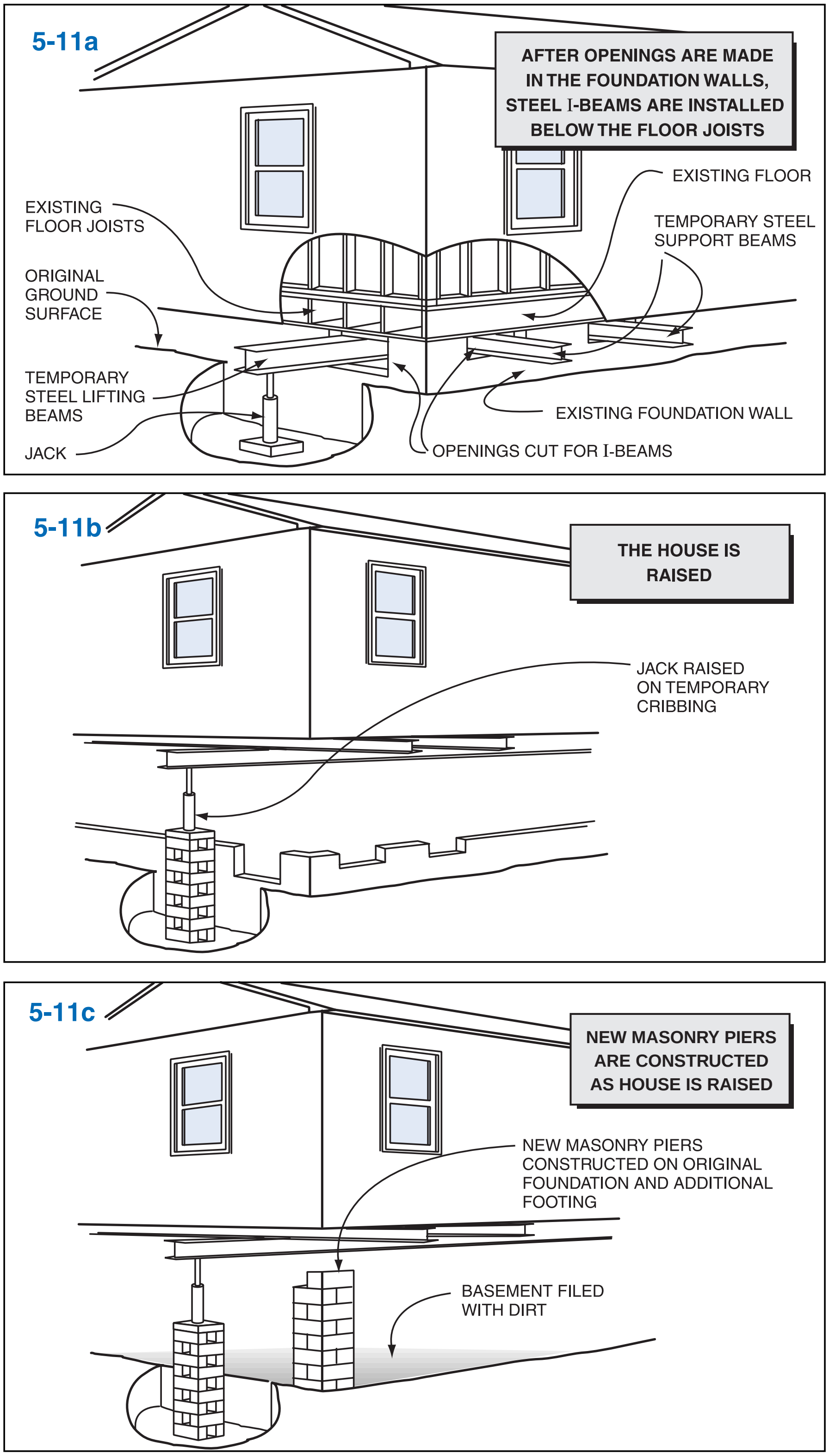
Frame, masonry veneer, and masonry houses on basement, crawlspace, and slab-on-grade foundations can also be elevated on open foundations consisting of piers, posts, columns, or pilings. Houses originally constructed on open foundations can also be elevated this way.

### Piers

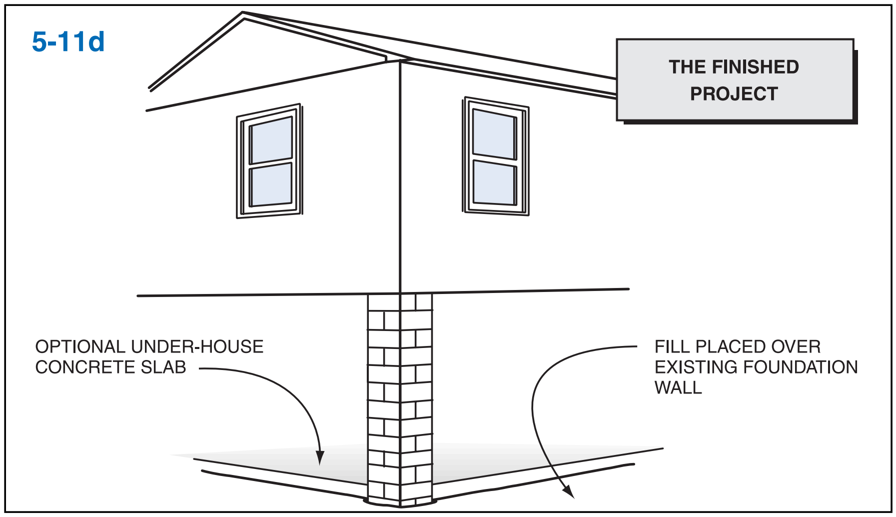
Figures 5-11a through 5-11d show how a house on a basement or crawlspace foundation can be elevated on masonry piers. The lifting process is the same as that shown in Figure 5-4 for elevating on extended foundation walls. Once the house is lifted high enough, new masonry piers are built on the existing foundation, if it is adequate. If the existing foundation is not adequate to support the elevated house, it will have to be either modified or removed and replaced by separate footings for the individual piers.

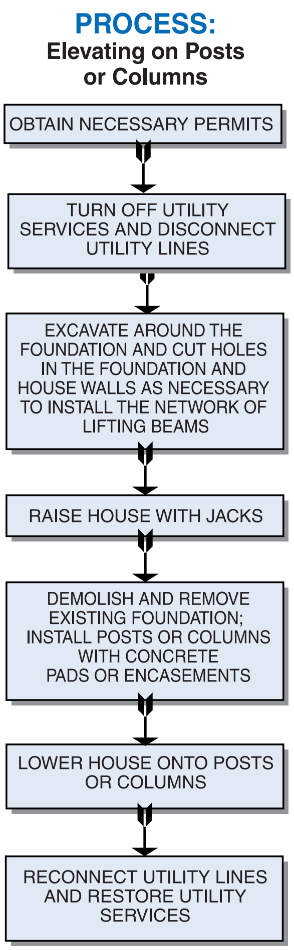
An existing basement would have to be filled in with dirt and graded. An old basement slab would usually be left in place and covered with fill dirt. But the slab would be broken up so that it would not be forced up by the buoyancy effect of flood waters. The house in Figure 5-11d, has been elevated approximately one full story, and a new concrete slab has been poured at ground level below it. The open area below the house can be used for parking, storage, and access.

Piers can be constructed of cast-in-place concrete as well as masonry block. However, regardless of the construction materials used, piers are designed primarily for vertical loading imposed by the weight of the house, including its contents and any exterior loads such as those imposed by snow. Because the forces associated with flooding, wind, and earthquakes can impose horizontal loads, piers used in retrofitting must be adequately reinforced with steel bars. The connections between the piers and the original foundation and elevated house also must be able to resist the expected horizontal and vertical loads on the house.




***Figures 5-11a through 5-11d. Elevating a basement or crawlspace foundation house on piers.***




## Posts or Columns

Posts are usually placed in drilled or excavated holes. Each post or column is either encased in concrete or anchored to a concrete pad. The house elevation process is the same as that described for piers; however, the existing foundation must be removed so that the posts or columns and their concrete encasements or pads can be installed. Figure 5-12 shows a house elevated on two types of post or column foundations.

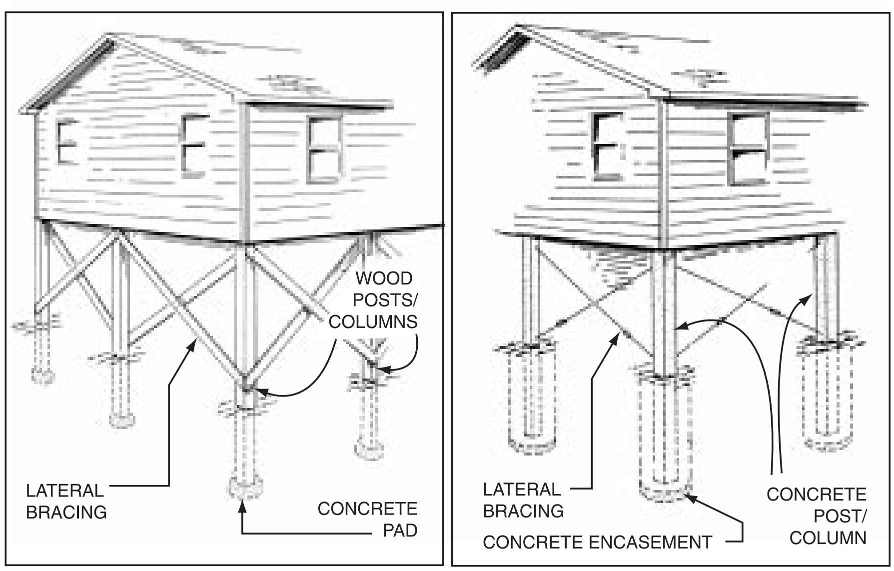



***Figure 5-12 House elevated on posts.***

## Pilings

Elevating on pilings is a more involved process. Pilings are usually driven into the ground or jetted in with a high-pressure stream of water. They are not supported by concrete footings or pads. Unlike the construction of wall, pier, or post or column foundations, the pile driving operation, which requires bulky, heavy construction machinery, cannot be carried out under a house that has been lifted on jacks. Instead, the house is usually lifted and moved aside until the pilings have been installed. Because the existing foundation is not used, it must be removed. Figure 5-13 shows a house elevated on a piling foundation.

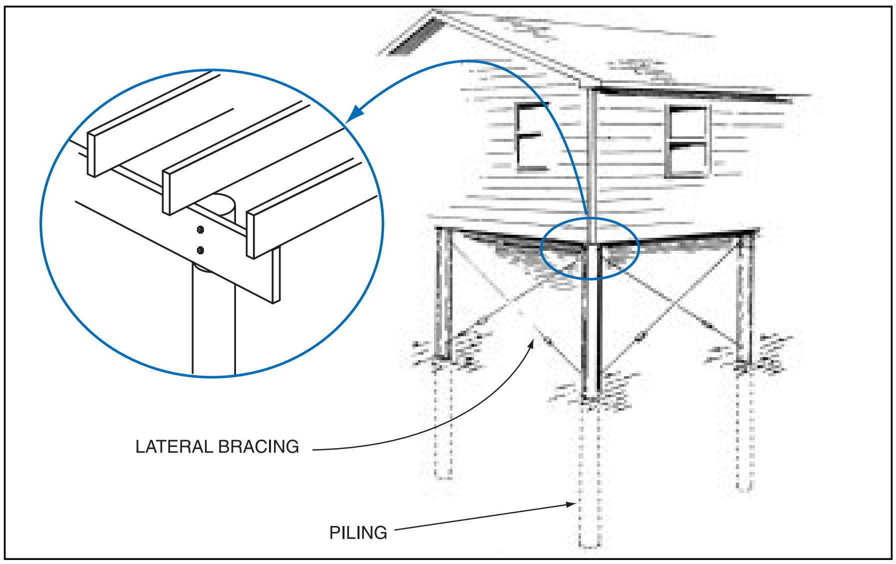



***Figure 5-13 House elevated on pilings.***

**PROCESS:**
**Elevating on Pilings**

OBTAIN NECESSARY PERMITS
↓
TURN OFF UTILITY SERVICES AND DISCONNECT UTILITY LINES
↓
EXCAVATE AROUND THE FOUNDATION AND CUT HOLES IN THE FOUNDATION AND HOUSE WALLS AS NECESSARY TO INSTALL THE NETWORK OF LIFTING BEAMS
↓
RAISE HOUSE WITH JACKS AND MOVE IT OFF SITE TO A TEMPORARY LOCATION
↓
DEMOLISH AND REMOVE EXISTING FOUNDATION; INSTALL THE PILINGS
↓
MOVE THE HOUSE BACK TO THE SITE AND LOWER IT ONTO THE PILINGS
↓
RECONNECT UTILITY LINES AND RESTORE UTILITY SERVICES