

SUBSTANTIAL IMPROVEMENT EXAMPLES

Example 1. Minor rehabilitation

A rehabilitation is defined as an improvement made to an existing structure which does not affect the external dimensions of the structure.

If the cost of the rehabilitation is less than 50 percent of the structure's market value, the building does not have to be elevated or otherwise protected. However, it is advisable to incorporate methods to reduce flood damage, such as use of flood-resistant materials and installation of electrical, heating and air conditioning units above the BFE.

Figure 8-2 shows a building that had a small rehabilitation project. Central air conditioning was installed and the electrical system was upgraded. The value of the building before the project was \$60,000. The value of the project was \$12,000:

$\$12,000 = 0.2$ (20 percent) The project costs less than 50 percent of the \$60,000 building, so this is not a substantial improvement.

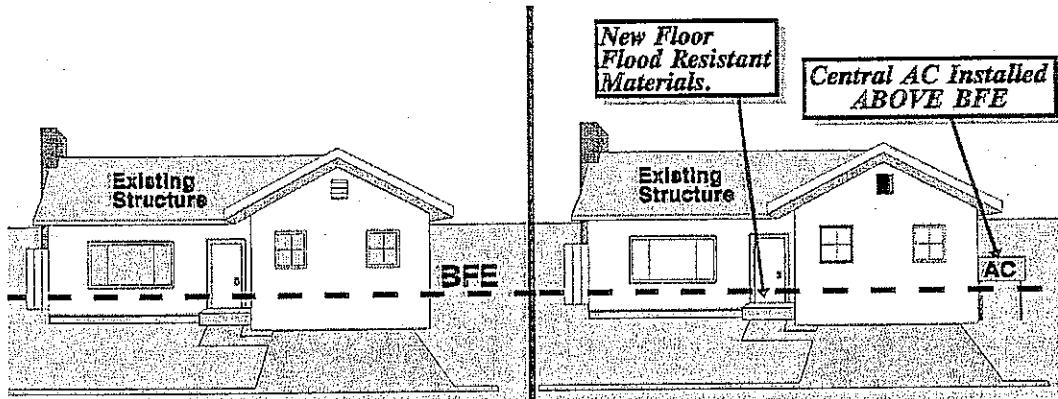


Figure 8-2. Minor rehabilitations use flood-resistant methods and materials

Neither structure would benefit from post-FIRM flood insurance rates because they are not elevated.

Note: To gauge what happens to flood insurance premiums if a substantially improved building is not brought up to post-FIRM standards, see Figures 7-7 through 7-12.

Example 2. Substantial rehabilitation

If the rehab costs more than 50 percent of the value of the building, your ordinance requires that an existing structure be elevated and/or the basement filled to meet the elevation standard.

Figure 8-3 shows a building that has been allowed to run down. Its market value is \$35,000. To rehab it will require gutting the interior and replacing all wallboard, built-in cabinets, bathroom fixtures and furnace. The interior doors and flooring will be repaired. The house will get new siding and a new roof. The cost of this rehab will be \$25,000:

$\frac{\$25,000}{\$35,000} = 71.4$ percent Because total cost of the project is greater than 50 % the rehab is a substantial improvement

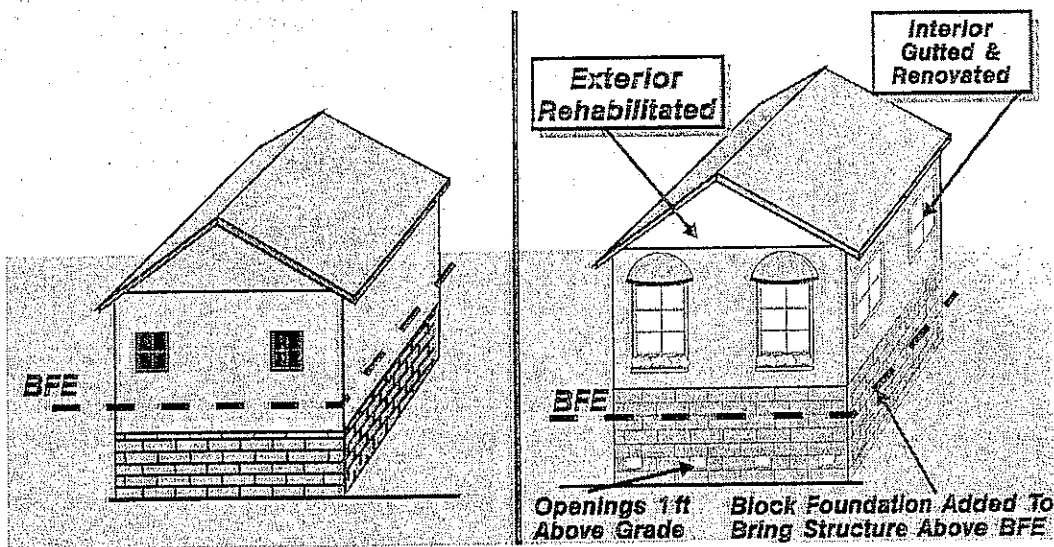


Figure 8-3. substantially rehabilitated building elevated above the BFE.

In A Zones, elevation may be on fill, crawlspace, columns, etc. In V Zones, only pilings, columns or other open foundations are allowed. The new structure would benefit from post-FIRM flood insurance rates.

Example 3. Lateral addition—residential

Additions are improvements that increase the square footage of a structure. Commonly, this includes the structural attachment of a bedroom, den, recreational room garage or other type of addition to an existing structure. Note that if one building is attached to another through a covered breezeway or similar connection, it is a separate building and not an addition.

When an addition is a substantial improvement, the addition must be elevated or floodproofed, providing that improvements to the *existing* structure are minimal. Figures 8-4 and 8-5 illustrate lateral additions that are compliant.

Depending on the flood zone and details of the project, the existing building may not have to be elevated. The determining factors are the common wall and what improvements are made to the existing structure. If the common wall is demolished as part of the project, then the entire structure must be elevated. If only a doorway is knocked through it and only minimal finishing is done, then only the addition has to be elevated.

In A Zones only, if significant improvements are made to the existing structure (such as a kitchen makeover), both it and the addition must be elevated and otherwise brought into compliance. Some states and many communities require that both the existing structure and lateral additions be elevated in all cases.

In V Zones, the existing structure always has to be elevated, placed on an engineered foundation system, etc., when an addition is proposed that constitutes a substantial improvement. This is due to the "free-of obstruction" standard whereby the lower existing structure would obstruct the storm surge, causing damage to the addition.

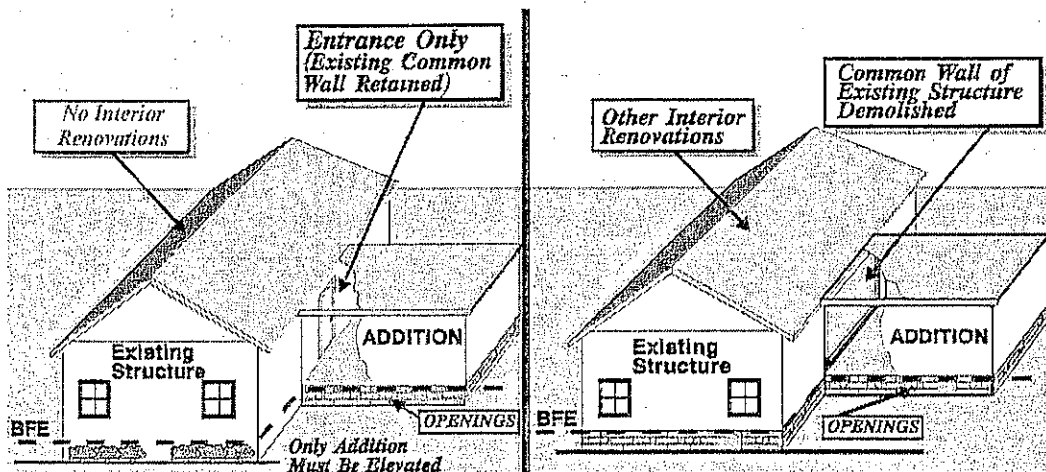


Figure 8-4. Lateral additions to a residential building in an A Zone.

In V Zones, the entire building must be elevated on pilings, columns or other open foundations. The structure on the left would not benefit from post-FIRM flood insurance rates because it was not elevated.

Example 4. Lateral addition—nonresidential

A substantial improvement addition to a nonresidential building may be either elevated or floodproofed. Otherwise, all the criteria for residential buildings reviewed in Example 3 must be met.

If floodproofing is used, the builder must ensure that the wall between the addition and the original building is floodproofed. Floodproofing is not allowed as a construction measure in V Zones.

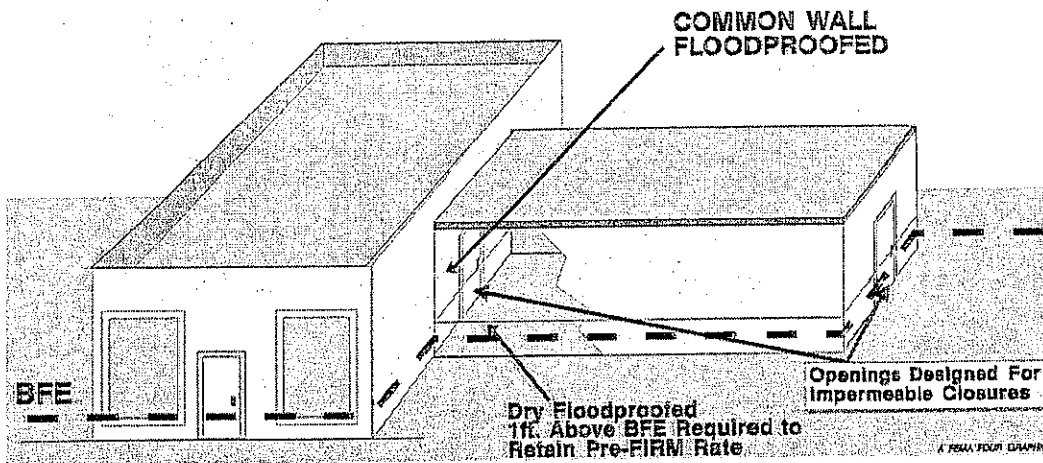


Figure 8-5. Lateral addition to a nonresidential building in an A Zone.

This approach is not allowed in V Zones. The structure would *not* benefit from post-FIRM flood insurance rates because the original building was not elevated or floodproofed.

Example 5. Vertical addition—residential

When the proposed substantial improvement is a full or partial second floor, the entire structure must be elevated (Figure 8-6). In this instance, the existing building provides the foundation for the addition. Failure of the existing building would result in failure of the addition, too.

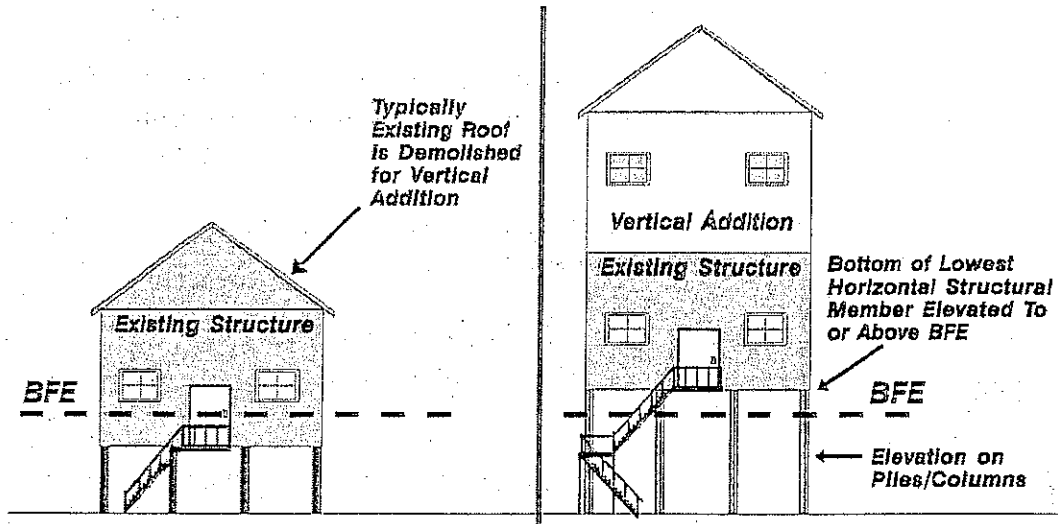


Figure 8-6. Vertical addition to a residential building in a V Zone.

The new structure would benefit from post-FIRM flood insurance rates.

Example 5. Vertical addition—residential

When the proposed substantial improvement is a full or partial second floor, the entire structure must be elevated (Figure 8-6). In this instance, the existing building provides the foundation for the addition. Failure of the existing building would result in failure of the addition, too.

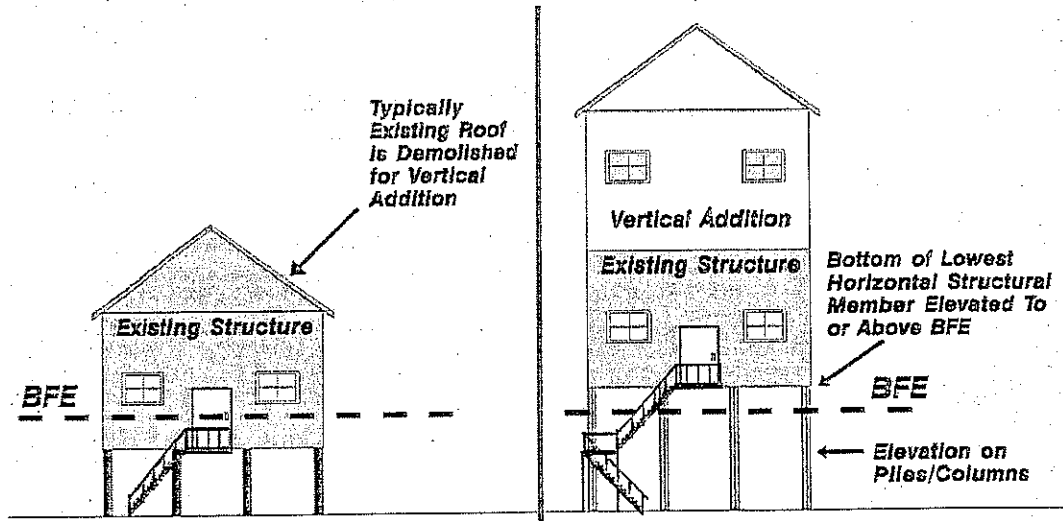


Figure 8-6. Vertical addition to a residential building in a V Zone.

The new structure would benefit from post-FIRM flood insurance rates.

Example 6. Vertical addition—nonresidential

When the proposed substantial improvement is a full or partial second floor, the entire structure must be elevated or floodproofed (Figure 8-7).

The owner could obtain post-FIRM rates on the building if it is floodproofed to one foot above the BFE and he has a floodproofing certificate signed by a registered engineer. An optional approach is to elevate the entire building and obtain an elevation certificate.

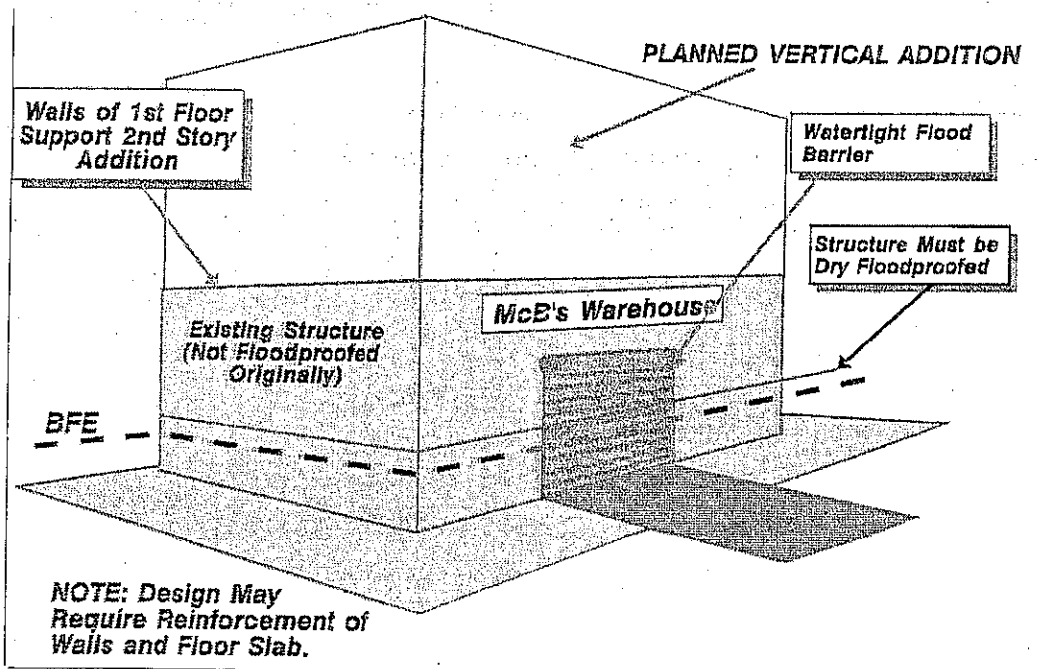


Figure 8-7. Vertical addition to a nonresidential building in an A Zone.

The new floodproofed structure would benefit from post-FIRM flood insurance rates.

Example 7. Post-FIRM building—minor addition

ALL additions to post-FIRM buildings are defined as new construction and must meet the requirements of your floodplain management ordinance regardless of the size or cost of the addition (Figure 8-8). A small addition to a residential structure that is not a substantial improvement must be elevated at least as high as the BFE in effect when the building was built. Minor additions to nonresidential structures can be floodproofed to the BFE.

If a map revision has taken place and the BFE has increased, only additions that are substantial improvements have to be elevated to the new BFE or floodproofed (nonresidential buildings only).

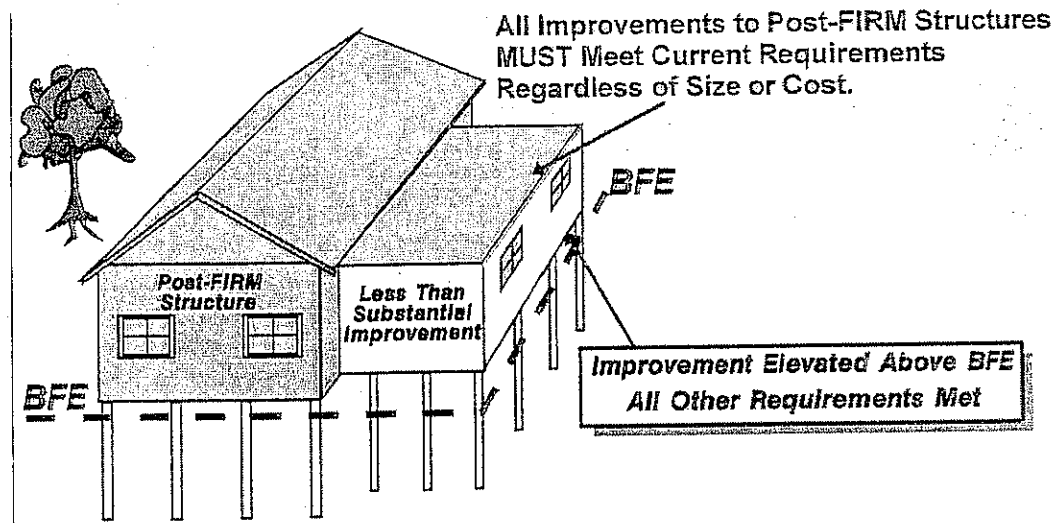


Figure 8-8. Small additions to post-FIRM buildings must be elevated.

Example 8. Post-FIRM building—substantial improvement

Substantial improvements made to a post-FIRM structure must meet the requirements of the current ordinance. Figure 8-9 shows a lateral addition made after a map revision took place and the BFE was increased.

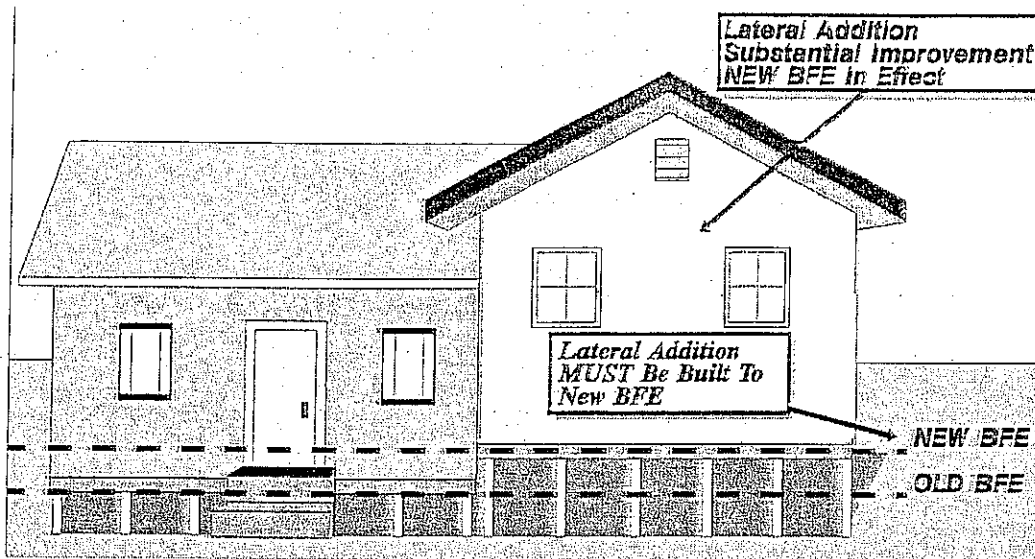


Figure 8-9. Substantial improvements to post-FIRM buildings must be elevated above the new BFE. Nonresidential buildings may be floodproofed