



Section 3

How to Determine Substantial Improvement and Substantial Damage

This section addresses general questions about making SI/SD determinations. Questions in Section 4 typically arise after disasters.

10. What is the basis for determining whether a building or manufactured home is substantially damaged? Is the basis for making a substantial improvement determination different?

When making a substantial improvement or substantial damage determination, the calculation is the same: the cost of the improvement (or the cost to repair to pre-damage condition) is compared to the pre-improvement or pre-damage market value of the structure:



See Chapter 4 of the *SI/SD Desk Reference*.

$$\frac{\text{Cost of Improvement or Cost to Repair to Pre-Damage Condition}}{\text{Pre-Improvement or Pre-Damage Market Value of Building}} \geq 50\%$$

When improvements to a building are proposed, the cost of the work must include all labor and materials necessary to perform the work. Minimum costs necessary to correct previously cited health, sanitary, or safety code violations may be excluded. The market value of the structure is the market value before the improvements are performed.

When repair of substantial damage is necessary, the cost of the work must include all labor and materials necessary to fully restore the structure to its pre-damage condition, even if the owner proposes to perform less work or do the work over time. In addition, the value of volunteer labor (including work performed by owners) and donated materials must be estimated. The market value of the structure is the market value before the damage occurred.



Who Makes SI/SD Determinations?

See Question 3.

Determining Market Value

See Question 12.

Costs to Include & Exclude

See Questions 16 and 17.

Existing Violations

See Question 18.

11. What level of accuracy is required when determining whether a building or manufactured home is being substantially improved or has been substantially damaged?

Local officials are responsible for reviewing the validity of all cost estimates provided by applicants, whether prepared by licensed contractors, engineers, architects, professional cost estimators, or property owners. When applicants submit professional appraisals of market value, local officials should examine the documentation to determine whether the appraisals reflect the specific characteristics of the buildings. Local officials also should inspect damaged buildings and manufactured homes to verify that the proposed costs include all work necessary to restore the structures to pre-damage condition.



See Sections 4.2, 4.4, 4.5 and 7.4 of the *SI/SD Desk Reference*.

Estimates may be used for both costs and market values. To be consistent, local officials should decide and document in advance the estimation methods that will be used, especially in post-disaster situations when many damaged structures may need to be evaluated to determine whether they have been substantially damaged.

When using estimates, the closer the ratio of estimated costs to estimated market value is to 50 percent, the greater the accuracy needed to make the SI/SD determination. Especially in the post-disaster period when using estimates to focus attention on the structures for which additional data are needed, local officials may decide that if the ratio of estimated costs compared to estimated market value is less than 40 percent, no further evaluation is necessary because the work obviously does not constitute SI/SD. Using that same logic, the community may decide that if the ratio is greater than 60 percent, no further evaluation is necessary because the work obviously does constitute substantial improvement. However, when the ratio falls between 40 percent and 60 percent, the local official may require the applicant to provide a detailed list of costs or to obtain a professional appraisal of the structure's market value.

12. For purposes of making SI/SD determinations, how should the market value of a building or manufactured home be determined?

Market value refers to the price that a seller of real property can expect to receive from a buyer in a fair and open negotiation. For SI/SD determinations, only the market value of the building or manufactured home is important (land, land improvements, and accessory structures are excluded). In addition, the market value must always be based on the condition of the structure before the improvement is undertaken or before damage occurred. If structures have not been maintained and have deteriorated over time, then the pre-improvement or pre-damage market values are the values as of the date applications for permits are submitted.



See Sections 4.5 and 7.4 of the *SI/SD Desk Reference*.

Many communities require permit applicants to obtain appraisals of market value prepared by qualified professionals who are licensed to perform appraisals in the State or community where the properties are located. In addition, three other methods can be used to estimate market value:

- Values developed for property tax assessment purposes, adjusted to approximate market value
- Estimates of a structure's actual cash value, including depreciation
- "Qualified estimates" based on the professional judgment of a local official

Local officials may need to use other methods to estimate market value after disaster events that damage many structures, when it is important to quickly and efficiently focus attention on those structures most likely to have sustained substantial damage.



Post-Disaster Permitting

See Questions 26, 27, and 28.

13. If property appraisals used for tax assessment purposes are used to determine market value, what are some of the limitations that should be considered?

Property assessment values determined by a State or local taxing or assessment authority can be used if the values are adjusted to reasonably represent market value. The assessor's office should provide an adjustment factor that, when applied to assessed value, yields the "adjusted assessed value," which can be used as an estimate of market value.



See Section 4.5.2 of the *SI/SD Desk Reference*.

Local officials who elect to use adjusted assessed values for making SI/SD determinations should consult with the authority that prepared the assessment values to understand the limitations on use of the data. These limitations are the length of the appraisal cycle (how old are the data), whether land value is listed separately, and the assessment level (an established statutory ratio between the assessor's estimate of value and the true fair market value). If not considered and accounted for, those limitations can produce erroneous estimates of market value.



Post-Disaster Permitting

See Questions 26, 27, and 28.

In post-disaster situations when no other market value estimates are available or the number of permit applications is overwhelming, unadjusted assessed values may suffice as the estimate of market value.

14. Can actual cash value or replacement cost value be substituted as estimates for market value?

If depreciated to account for physical conditions, then actual cash value (ACV) or replacement cost value (RCV) can be used to estimate market value.



See Sections 4.5.3 and 7.4.3 of the *SI/SD Desk Reference*.

ACV is the cost to replace a structure on the same parcel with a new structure of like kind and quality, minus depreciation due to age, use, and neglect. ACV does not consider loss in value due simply to outmoded design or location factors. Depreciation accounts for the physical condition of a structure. The concept of ACV is used in both the insurance industry and the construction industry. In most situations, ACV is a reasonable approximation of market value, provided depreciation is accounted for.

RCV is the cost to replace a structure on the same parcel with a new structure that is intended for the same purpose and using comparable materials and quality (at the present day cost of materials and labor). The concept of RCV is also used by both the insurance industry and the construction industry. Definitions may vary from State to State.

RCV can be estimated easily, even when a large number of damaged structures must be assessed. Therefore, local officials may find it useful to use RCV to estimate market values during the post-disaster period. However,

the older and more deteriorated a structure is, the greater the potential for a difference between RCV and market value. Thus, local officials who use RCV estimates for screening are advised to set a low threshold for the ratio of cost to repair to RCV, such as 30 percent. In that case, any structure that the screening indicates has a ratio value of greater than 30 percent would be examined carefully to ensure that valid cost estimates and market values are used in the substantial damage determinations.

15. How are the costs of improvements and costs to repair determined?

“Costs of improvements” include the complete costs associated with all of types of work being done. “Costs to repair” include the costs of all work necessary to restore a damaged building or manufactured home to its pre-damage condition. Both include the costs of all materials, labor, and other items necessary to perform the proposed work. Most costs must be included, although certain costs may be excluded.

Applicants for permits must provide estimates of the cost of the proposed work. Acceptable sources of cost information include:

- Itemized costs of materials and labor, or estimates of materials and labor that are prepared by licensed contractors or professional construction cost estimators.
- Building valuation tables published by building code organizations and cost-estimating manuals, and tools available from professional building cost-estimating services.
- “Qualified estimates” of cost prepared by the local official using professional judgment and knowledge of local and regional construction costs.
- Structure owners may submit cost estimates that they prepare themselves. Owners should submit as much supporting documentation as possible.

Costs can also be estimated by using the FEMA *Substantial Damage Estimator* (SDE) software. The program is most effective in the post-disaster period, when many estimates of repair costs and many substantial damage determinations must be made.

16. What items must be included in the cost of improvements or repairs?

Items that must be included in the costs of improvement are those directly associated with the work being done on a building or manufactured home. The costs of repairs must include all work necessary to restore a structure to its pre-damage condition. Whether determining costs of improvement or costs of repairs, the determination must include costs associated with complying with any other regulation or code requirement that is triggered by the work. Any list of costs that must be included cannot be exhaustive; however, the following list characterizes the types of costs that must be included:



See Section 4.4 of the *SI/SD Desk Reference*.



Included Costs
See Question 16.
Excluded Costs
See Question 17.
Donated and Owner Labor Costs
See Questions 21 and 22.



Substantial Damage Estimator (SDE)
See Question 29.



See Section 4.4.1 and a sample Notice to Property Owners, Contractors, and Design Professionals in Appendix D of the *SI/SD Desk Reference*.

- Materials and labor, including the estimated value of donated or discounted materials and owner or volunteer labor
- Site preparation related to the improvement or repair, such as foundation excavation or filling in basements
- Demolition and construction debris removal
- Labor and other costs associated with demolishing, moving, or altering structure components to accommodate improvements, additions, and making repairs
- Costs associated with complying with other requirements and codes that may be triggered by the work
- Construction management and supervision
- Contractor's overhead and profit
- Sales taxes on materials
- Structural elements and exterior finishes, including:
 - Foundations
 - Monolithic and other types of concrete slabs
 - Bearing walls, tie beams, trusses
 - Joists, beams, subflooring, framing, ceilings
 - Interior non-bearing walls
 - Exterior finishes
 - Windows and exterior doors
 - Roofing, gutters, and downspouts
 - Hardware
 - Attached decks and porches
- Interior finish elements, including:
 - Floor finishes
 - Bathroom tiling and fixtures
 - Wall finishes
 - Built-in cabinets
 - Interior doors
 - Interior finish carpentry
 - Built-in bookcases and furniture
 - Hardware
 - Insulation
- Utility and service equipment, including:
 - Heating, ventilation, and air conditioning (HVAC) equipment
 - Plumbing fixtures and piping
 - Electrical wiring, outlets, and switches
 - Solar panels and equipment
 - Light fixtures and ceiling fans
 - Security and fire, smoke, and CO2 warning systems
 - Built-in appliances
 - Central vacuum systems
 - Water filtration, conditioning, and recirculation systems

17. What items can be excluded from the cost of improvements or costs of repairs?

Items that can be excluded are those that are not directly associated with the structure. The following list characterizes the types of costs that may be excluded:

- Clean-up and trash removal
- Costs to temporarily stabilize a structure so that it is safe to enter to evaluate and identify required repairs
- Costs to obtain or prepare plans and specifications
- Land survey costs
- Permit fees and inspection fees
- Carpeting and recarpeting installed over finished flooring, such as wood or tile
- Outside improvements, including landscaping, irrigation, sidewalks, driveways, fences, yard lights, swimming pools, pool enclosures, and detached accessory structures (e.g., garages, sheds, gazebos)
- Costs required for the minimum necessary work to correct existing violations of health, sanitary, or safety codes
- Plug-in appliances, such as washing machines, dryers, and stoves



See Sections 4.4.2 and 4.4.7, and a sample Notice to Property Owners, Contractors, and Design Professionals in Appendix D of the *SI/SD Desk Reference*.



Existing Violations
See Question 18.

18. The NFIP definition of substantial improvement states: “the term does not, however, include any project for improvement of a structure to correct existing violations of State or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions.” What does this mean?

To be excluded, the costs must be the minimum necessary to correct a violation or condition that pre-dates the application and was previously cited by an official who has the authority to enforce the community’s health, sanitary, and safety codes. If substandard conditions are identified by the owner or are discovered in the course of deciding what work to perform, the costs to bring those substandard conditions up to code must be included. In addition, the mere presence of a condition that does not conform to current codes does not qualify as a violation.



See Section 4.4.8 of the *SI/SD Desk Reference*.

19. When a building or manufactured home is completely destroyed and a new structure will be built on the old foundation or slab, is it considered a substantial improvement or new construction?

A building or manufactured home that is totally destroyed, or so significantly damaged that it cannot be repaired, is a substantially damaged structure. However, any project that involves complete reconstruction, even if rebuilt on the same foundation, is new construction and must comply with all applicable floodplain management and building code requirements. Sometimes owners elect to demolish structures located in flood hazard areas. In these circumstances, if the decision is to reconstruct using an existing foundation, the reconstructed structure (including the existing foundation) must meet the requirements for new construction.



See Section 6.4.6 of the *SI/SD Desk Reference*.

20. What happens if damage is determined not to be substantial damage and during repairs, the owner wants to make other improvements to the building or manufactured home?

Local officials often see applications for combinations of improvements and repairs. In these cases, the combined costs of all work must be used to make the SI/SD determination. For example, property owners who make necessary repairs to damaged structures may elect to add improvements at the same time. Applicants must provide the combined estimated costs for all costs to repair buildings and all costs of proposed improvements. The combined total cost is compared to the pre-damage or pre-improvement market value of the structure to make the SI/SD determination.



See Sections 5.6.1 and 5.6.2 of the *SI/SD Desk Reference*.

If damage is initially determined not to be substantial damage or proposed improvements are initially determined not to be substantial improvements, and the owner subsequently wants to add more work, the permit must be modified. The cost of the additional work must be added to the costs used in the initial determination and the local official must reevaluate the SI/SD determination. If the combined repairs and improvements constitute substantial improvement, then the structure must be brought into compliance. Local officials should ensure proposed work is a complete project that does not depend on subsequent work, and should discourage deliberate phasing to circumvent the substantial improvement requirements.

21. What if a building or manufactured home is substantially damaged but not fully restored, or is repaired using donated or discounted labor and/or materials, such that the amount actually spent on repairs is less than 50 percent of the structure's market value?

By definition, a building or manufactured home is substantially damaged if the cost to restore all damaged aspects to pre-damage condition equals or exceeds 50 percent of the structure's market value, regardless of how much work the owner plans to do right away. Sometimes owners decide to undertake restoration and repairs over time. Sometimes the initial work is only the minimum necessary to make the structure safe enough to reoccupy (provided such occupancy is allowed by the community). Sometimes the owner's financial situation does not allow all of the repairs to be done at the same time. Even if an owner elects to perform less work or delay repairs, the substantial damage determination must be made using the estimate of all costs to fully restore the structure.



See Sections 4.4, 5.6.2, and 5.6.3 of the *SI/SD Desk Reference*.

When repair work is done by owners or volunteers, or when labor costs are discounted by contractors, and when materials are donated or discounted, the full costs must be estimated and included in substantial damage determinations.

22. How are estimates for donated or discounted materials and the owner's labor or volunteer labor determined?

The value placed on all donated or discounted materials should be equal to the full actual or estimated cost of such materials and must be included in the total cost. Where materials or service equipment are donated or discounted below market values, the costs should be adjusted to amounts equivalent to normal market costs.



See Sections 4.4.4 (materials) and 4.4.5 (labor) of the *SI/SD Desk Reference*.

When property owners do their own work, or if volunteer labor is used, then the normal market value or “going rate” for labor must be included in cost estimates. The value of labor should be estimated based on applicable minimum hourly wage rates for the skill and type of construction work that will be done. Wage rates can vary geographically.

In both cases, local officials should verify the estimates based on professional judgment and knowledge of local or regional material costs and construction industry labor wage scales.

23. What requirements apply when a substantially improved or substantially damaged building or manufactured home is located in a coastal high hazard area (Zone V)?

Coastal high hazard areas are areas of special flood hazard extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high-velocity wave action from storms or seismic sources. SFHAs where the waves are predicted to be 3 feet or higher are labeled Zone V on FIRMs.



See Section 5.6.9 of the *SI/SD Desk Reference*.

In Zone V, substantially improved and substantially damaged buildings and manufactured homes must be brought into compliance with the following requirements:

- Be elevated on open foundations (pilings or columns) that allow floodwater and waves to pass beneath the elevated structures (floodproofing is not allowed)
- Be elevated so that the bottom of the lowest horizontal structural member of the lowest floor is at or above the BFE
- Have foundations anchored to resist flotation, collapse, and lateral movement due to the effects of wind and water loads acting simultaneously on all structure components
- Have areas beneath elevated structures free of obstructions that would prevent the free flow of floodwater and waves during a base flood event
- Have utilities and structure service equipment elevated above the BFE
- Have the walls of enclosures below elevated structures designed to break away under base flood conditions without transferring loads to foundations

24. What requirements must be met if a substantially improved or substantially damaged building or manufactured home is located in a floodway?

A floodway is the channel of a river or other watercourse and the adjacent land areas that must be reserved (kept free of encroachments) to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. Floodways are delineated along most waterways that are studied using detailed engineering methods.



See Section 5.6.8 of the *SI/SD Desk Reference*.

If a building or manufactured home is located in a floodway, bringing it into compliance may involve having a floodway encroachment analysis prepared if there is any increase in the footprint, such as a lateral addition or increase in earthen fill. The NFIP regulations require this analysis to be performed for any work that

encroaches into a floodway. If the analysis indicates any increase in BFE, the local official must not allow the proposed work. Using open foundations such as piers or columns may minimize the floodway impacts.

25. How are historic structures treated when they are substantially damaged or when improvements are proposed?

Floodplain management regulations give special consideration to the unique value of designated historic structures, which include structures listed or preliminarily determined to be eligible for listing in the National Register of Historic Places, structures certified or preliminarily determined as contributing to the historical significance of a registered historic district, or structures individually listed on a State inventory of historic places or on local inventories in communities with certified historic preservation programs. Note the NFIP has a specific definition for historic structures. It does not include structures that are merely old, those that are referred to as historic, or those that happen to be located in historic districts.



See Section 6.5.1. of the *SI/SD Desk Reference*.

Provided historic structures retain their designations as historic structures, the requirement to bring them into compliance does not apply if they will be substantially improved or have been substantially damaged. Although compliance is not required for substantial improvement of historic structures, owners should carefully consider the benefits of implementing measures to minimize flood damage. Guidance for minimizing the impacts of flooding on historic structures is found in *Floodplain Management Bulletin: Historic Structures* (FEMA P-467-2).

Permit applications for improvements (including additions) or repairs of historic structures should be accompanied by two pieces of evidence: (1) documentation that confirms the structure is designated a historic structure, and (2) documentation that confirms the proposed work will not preclude the structure's continued designation.

Communities may elect to use one of two approaches to handle historic structures. One approach is to grant variances, requiring evaluation of individual requests and consideration of conditions to make the structures more resistant to flood damage. The other approach is to exclude historic structures from the definition of substantial improvement. Whichever approach is selected, it should be used in all cases when improvements or repairs are proposed for historic structures.