FEMA - 213 / May 1991

Federal Emergency Management Agency
Federal Insurance Administration

Answers to Questions About Substantially Damaged Buildings

National Flood Insurance Program

Community Assistance Series

Graphic design based on the Japanese print, The Great Wave of Wanagawa,
by Katsushika Hokusai (1760-1849),
Asiatic collection, Museum of Fine Arts, Boston.

Answers to Questions
About
Substantially Damaged Buildings

FEDERAL EMERGENCY MANAGEMENT AGENCY
Federal Insurance Administration
March, 1991

Table of Contents

PART - 1 Introduction 1
1 The NFIP 1
2 The Purpose of this Document 1
3 Potential Users 1
4-6 Additional Information 1-2

PART - 2 Definitions and Regulations 3
7 "Substantial Improvement" Defined 3
8 Intent of Substantial Improvement 3
9 Compliance with the Regulation 3
10 Insurance Rate Implications 3
11 Applicable Structures 6
12 Types of Substantial Improvements 6
13 "Substantial Damage" Defined 6
14-16 Compliance with the Substantial Damage Regulation 8-10

PART - 3 How to Determine Substantial Damage 9
17 Basis for Determinations 9
18 Responsible Party 9
19 Level of Accuracy 9
20 Determining "Cost of Repair" 9
21-23 Determining "Market Value" 10-11
24 Additional Improvements during Repair 12
25 Less than Full Repair 12
26 Estimates for Donated or Discounted Material 13
27 Estimates for Self or Volunteered Labor 13
28 Excludable Items 13
29 Local Health, Safety and Sanitary Codes 13
30 Rationale for Requirements 14
31 Cumulative Permit Tracking 14

PART - 4 The Post-Disaster Permitting Process 15
32-33 Development Permits 15
34-35 Building Permits 15
36-38 Prioritizing Permits in Post Disaster Situations 16-17
39 Disseminating Information to Owners and Contractors 18
40 Waiving Permit Requirements 18
41 Variances 19
42 More Restrictive State and Local Laws 19

APPENDIX A - FEMA Regional Offices (Address and Telephone) 20

APPENDIX B - FEMA Publications 21-24

APPENDIX C - Other Publications 25-28

PHOTOGRAPHY CREDITS 29

PART - 1

INTRODUCTION

1. Q. What is the National Flood Insurance Program (NFIP), who administers it, and how does the substantial improvement of structures relate to a community's participation in the NFIP?

A. The NFIP is a Federal program enabling property owners to purchase flood insurance. The Federal Emergency Management Agency (FEMA) administers the NFIP in communities throughout the United States. The NFIP is based on an agreement between local communities and the Federal government which states that if a community will implement floodplain management measures to reduce future flood risks to new construction and substantially improved structures in flood hazard areas the Federal government will make flood insurance available within the community as a financial protection against flood losses that do occur.

2. Q. What is the purpose of this booklet?

A. The enforcement of the substantial improvement requirement as defined in the NFIP regulations (44 Code of Federal Regulations, 59.1) frequently becomes a major concern for local officials after a community has experienced serious damages as a result of a flood or other disaster. In particular, many questions are asked by community officials concerning permits issued for the repair of damaged structures. The purpose of this document is to answer many of the questions regarding FEMA regulations and policy on substantial improvement as it applies to damaged structures.

3. Q. Who should read this booklet?

A. The questions and answers in this booklet are guidance materials designed for local building inspectors, zoning administrators, and other permit officials that enforce the floodplain management requirements of a community participating in the NFIP. Although this booklet is designed primarily for community permit officials, in certain situations the booklet's usefulness may be enhanced if it is also made available to owners of damaged structures. Therefore, community permit officials may choose to make some or all of the information in this booklet available to affected citizens immediately after a damage event.

4. Q. If I have other questions after reading this booklet, where can I go for answers?

A. For additional guidance on this document or other issues related to substantial improvement and NFIP requirements, call or write the FEMA regional office serving your community. A list of the addresses and telephone numbers of the ten FEMA regional offices and the states within their jurisdictions are listed in Appendix A at the back of this booklet.

5. Q. What types of additional publications on the NFIP are available?

A. Appendix B provides a list of the floodplain management publications available from FEMA. They may be obtained free of charge by writing to the address provided.

6. **Q. What types of other information relative to substantial improvement are available to assist local permit officials?**

A. Appendix C provides an extensive list of contacts for the three national building code organizations and other publications that may be useful to local officials in determining substantial improvement.

7. Q. What is substantial improvement?

A. Substantial improvement, as defined in 44 Code of Federal Regulations 59.1 means:

"any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the "start of construction" of the improvement. This term includes structures which have incurred 'substantial damage', regardless of the value of or actual cost of repair work performed. The term does not, however, include either (1) 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 or (2) any alteration of a 'historic structure', provided that the alteration will not preclude the structure's continued designation as a 'historic structure'."

8. Q. Why was the 50% figure chosen as the substantial improvement threshold?

A. The 50% threshold was chosen as a compromise between the extremes of 1) prohibiting all investment to structures in flood hazard areas which does not meet minimum FEMA floodplain management requirements and 2) allowing structures to be improved in any fashion without regard to the hazard present. In the first alternative there is the potential for causing hardship to those who have located in flood hazard areas without knowledge of the risk because the structure was constructed prior to the designation of the area as flood prone. These individuals could not improve their structures as damage or age contributed to their deterioration. The second alternative provides no mechanism to ensure that increased investment in flood hazard areas will receive needed protection from the flood risk, thus contributing to the increased peril to life and property. The threshold is thus a compromise at a half-way point and was chosen because it conforms with similar building code and zoning standards that also use a 50% threshold.

9. Q. In terms of NFIP regulations, if a structure is determined to be a substantial improvement, what must happen to that structure?

A. A substantially improved structure must be brought into compliance with NFIP regulations and other requirements in the local ordinance for new construction; that is, the structure must be elevated (or floodproofed if it is a non-residential structure) to or above the level of the 100-year or base flood, and meet other applicable requirements (see Figure 1).

10. Q. If a structure is substantially damaged and is not brought into compliance with community floodplain management regulations, how will that impact on flood insurance rates and premiums?

A. If a structure is substantially damaged or otherwise substantially improved, it becomes a Post-FIRM building and is actuarially rated based on its risk of flooding. The rate is established based on the elevation of the structures lowest floor in relation to the base flood elevation (BFE). If the lowest floor is elevated to or above the base flood elevation (or floodproofed if non- residential) in accordance with the community's floodplain manage-

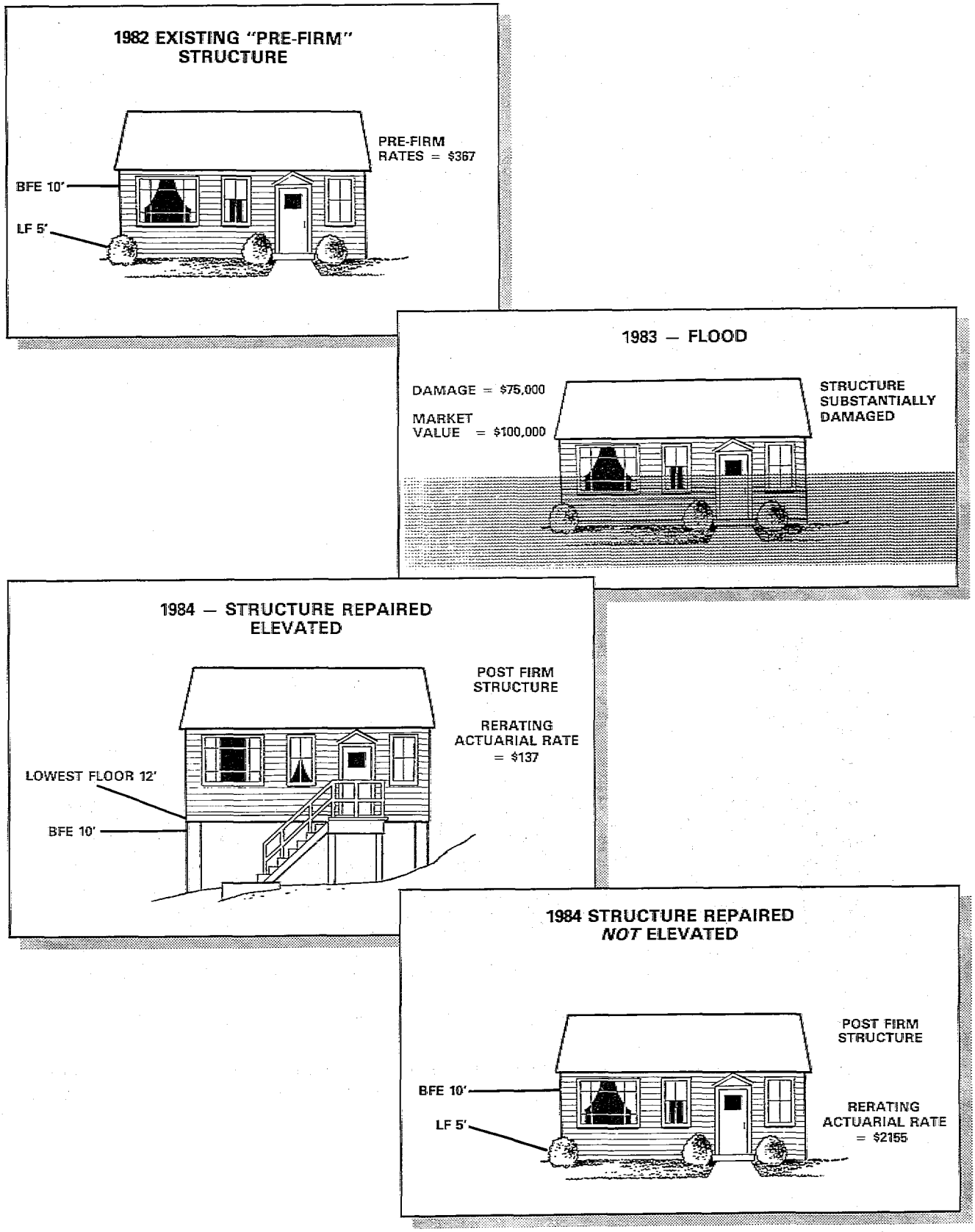
ment regulations, the resulting premium in an A-zone will generally be lower than a premium calculated based on Pre-FIRM rates.

If the structure is rebuilt in violation of the community's floodplain management regulations and not elevated to or above the base flood elevation (or floodproofed if non-residential), the Post-FIRM rates and premiums will be significantly higher than Pre-FIRM rates and premiums. For substantially damaged structures which have their lowest floors several feet or more below the base flood elevation, the annual premium could increase to thousands of dollars (see Figure 2).

FEMA has established a procedure for the flood insurance policies directly written by the NFIP called Post Flood Underwriting. Under this procedure, if a building claim is 50 percent or more of the building's value, the claim is referred to the NFIP's underwriters. At renewal time, the policyholder must submit a new flood insurance application with a elevation certificate. The building is then rated as a Post-FIRM building. The Write Your Own (WYO) Companies that participate in the NFIP are required to have similar underwriting procedures.

Figure 1. Photograph of a Pre-FIRM structure located on Sullivan's Island, South Carolina which was substantially damaged during Hurricane Hugo. NOTE: The structure has been repaired and is in the process of being elevated to or above the base flood elevation in accordance with NFIP requirements for substantial improvement (Refer to Question No. 9).

Figure 2. Implications of the Substantial Improvement Requirement on Insurance Rates (Refer to Question No. 10).



11. Q. What types of structures do the substantial improvement requirements apply to?

A. The substantial improvement requirements apply to two different types of structures:

1) All existing (or pre-FIRM) structures; These structures were already present at the time a community adopted a floodplain management ordinance and a Flood Insurance Rate Map (FIRM) allowing it to enter the Regular Phase of the NFIP. Many existing structures do not meet Program building requirements but are "grandfathered" into the program.

2) New construction (post-FIRM structures) in communities that have undergone map revisions resulting in areas with more restrictive zone designations (e.g., A-Zone to V-Zone) or increased BFEs. Substantially improved post- FIRM structures located in areas affected by map revisions must be brought into compliance with regulations applicable for the zone designations and BFEs which became effective after the structure was built.

12. Q. What are some examples of the ways in which structures can be substantially improved?

A. Generally, structures are substantially improved in one of four ways: 1) Rehabilitations - improvements made to an existing structure which do not affect the external dimensions of the structure; 2) Additions - improvements that increase the square footage of a structure. Commonly this includes the structural attachment of a bedroom, kitchen, den, recreational room, or other type of addition to an existing structure; 3) Reconstructions - cases where an entire structure is destroyed by damage or is purposefully demolished or razed and a new structure is built on the old foundation or slab; 4) Substantial Damage - structures that are considered substantial improvements when they incur substantial damage (Although this document primarily addresses substantially damaged structures, it should be noted that substantial improvement more commonly occurs in non-disaster, everyday situations through the rehabilitation of, or addition to structures).

13. Q. What is a substantially damaged structure?

A. As defined in 59.1 of the NFIP regulations, a building is considered to be substantially damaged when:

"damage of any origin is sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred."

14. Q. In terms of NFIP regulations, if a structure is determined to be substantially damaged, what must happen to that structure?

A. All structures that are determined to be substantially damaged are automatically considered to be substantial improvements, regardless of the actual repair work performed. In other words, if the cost necessary to fully repair the structure to its before damaged condition is equal to or greater than 50% of that structure's market value before damages, then the structure must be elevated (or floodproofed if it is non-residential) to or above the level of the base flood, and meet other applicable program requirements (see Figure 3).

15. Q. In terms of NFIP regulations, what happens when a substantially damaged structure is located in a coastal high hazard area (V-Zone)?

A. If a substantially damaged structure is located in a coastal high hazard area (V-Zone) it not only must be elevated to or above the base flood elevation, but it also must comply with additional requirements contained in 60.3(e) of the NFIP regulations. These requirements call for the elevation to be on pilings or columns so that the bottom of the lowest horizontal structural member of the lowest floor is elevated to or above the base flood level. This pile or column foundation supporting the structure must also be anchored to resist flotation, collapse and lateral movement due to the combined effects of wind and water loading forces which equal the 100-year mean recurrence interval. Before the permit to repair or rebuild a substantially damaged structure in a V-Zone is granted, a registered professional engineer or architect must develop, review and certify that the structural design, specifications and plans for the construction are in accordance with accepted standards of practice for meeting the above requirements for V- Zone foundations and anchoring.

Figure 3. Photograph of a Pre-FIRM structure located on Sullivan's Island, South Carolina which was substantially damaged during Hurricane Hugo. NOTE: The structure is in the process of being repaired and has been elevated to or above the base flood elevation in accordance with NFIP requirements (Refer to Question No. 14).

16. Q. When a structure is completely destroyed and a new structure is to be built on the old foundation or slab, is that structure considered a substantial improvement or new construction?

A. It is considered a substantial improvement and termed a "reconstruction" since the old foundation has a residual value. However, it really does not matter whether it is referred to as new construction or a substantial improvement because in either case the structure will have to be elevated (or floodproofed if non-residential) to or above the elevation of the base flood, and meet other applicable program requirements.

PART - 3

HOW TO DETERMINE SUBSTANTIAL DAMAGE

17. Q. What is the basis for determining a substantially damaged structure?

A. The criteria for determining substantial damage is the ratio of the cost of repairing the structure to its before damaged condition to the market value of the structure prior to the damage (Note: The cost of the repairs must include all costs necessary to fully repair the structure to its before damage condition).

18. Q. Who is responsible for making the determination whether a structure has been substantially damaged?

A. Ultimately, it is the responsibility of the community permit official to assure that market value estimates are reasonably accurate and that the cost estimate reasonably reflects the actual costs to fully repair the damage and make any other improvements to the structure. However, the local permit official may require that the permit applicant or owner of the building supply the information necessary (e.g., appraisals, construction costs estimates, etc.) to make the determination. There are numerous publications and reference materials (see Appendix C) to assist a community official in making an objective decision on this matter. These materials provide practical guidance on estimating both the cost of improvement and market value and in verifying that estimates submitted on permit applications are reasonably accurate.

19. Q. How much accuracy is needed in determining whether a structure is substantially damaged?

A. The closer the level of improvement or damage appears to approach 50% of the market value of the structure, the greater the precision needed in determining substantial improvement. For example, if the damage sustained (or cost of full repair) relative to market value is thought to be minor (less than 40%) or extensive (greater than 60%), then more approximate methods for determining substantial improvement may suffice. In contrast, if the ratio is suspected to be between 40% and 60%, then detailed, itemized estimates for the cost of repair and definitive estimates of market value must be used.

20. Q. In post-flood disaster situations, many permits for repair due to damage must be processed in a relatively short period of time. Given this, what does FEMA accept as reasonable sources for determining the cost to fully repair a damaged structure?

A. Acceptable estimates of "cost of repair" or damage sustained can be obtained from the following sources:

1) Itemized estimates made by licensed contractors or other professional estimators in the construction industry (Note: all estimates should be submitted to the local building permit department for review and must be itemized for both materials and labor).

2) For insured structures damaged by floods, the monetary damage estimated by the NFIP claims adjustor (structure only, not contents). Claims estimates of the damage sustained should be used primarily as a screening method to determine if a structure has been substantially damaged.

3) "Qualified estimates" of the amount of damage sustained or cost of repairs can be made by the local building permit department using professional judgement and knowledge of local and regional construction costs in the case where an unmanageable number of permits must be processed in a major post- disaster situation. Methods for making "qualified estimates" are prescribed in handbooks (see Appendix C) published by several building-cost information services such as Marshall and Swift (NOTE: Although this technique may be less accurate than formal appraisals, in chaotic post-disaster situations it may be the only practical alternative).

4) Building code valuation tables published by the major building code groups (BOCA, SBCCI, ICBO). These tables can be used for determining estimates for particular replacement items if the type of structure in question is listed in the tables. These tables should not be used for structures that are architecturally unique, exceptionally large, or otherwise different from the classes of structures that are listed in the tables (see Appendix C for pertinent publications produced by these building code groups).

5) Damage assessment field surveys conducted by building inspection departments, emergency management or tax assessment agencies, or other professional State or local officials. Such damage assessments should estimate the total monetary damage sustained to the structure.

21. Q. How should the market value of a structure be determined?

A. For the purposes of determining substantial improvement, market value pertains only to the structure in question. It does not pertain to the land, landscaping or detached accessory structures on the property. For determining substantial improvement, the value of the land must always be subtracted.

Acceptable estimates of market value can be obtained from the following sources:

1) Independent appraisals by a professional appraiser.

2) Detailed estimates of the structure's Actual Cash Value (used as a substitute for market value based on the preference of the community).

3) Property appraisals used for tax assessment purposes (Adjusted Assessed Value: used as a screening tool; see Question # 22).

4)The value of buildings taken from NFIP claims data (used as a screening tool).

5) "Qualified estimates" based on sound professional judgement made by staff of the local building department or local or State tax assessor's office.

As indicated above, some market value estimates should only be used as screening tools to identify those structures where the substantial improvement ratios are obviously less than or greater than 50% (e.g., less than 40% or greater than 60%). For structures that fall between the 40% and 60% range, more precise market value estimates should be used.

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

A. FEMA promotes the use of adjusted assessed value as a screening technique for separating out structures that are obviously less than or greater than 50% damaged. This screening technique is applicable for cases where the ratio of cost of repair to market value (adjusted assessed value) is significantly less or greater than 50%. However, in post-disaster situations where no other market value estimates are available or where permit applications are overwhelming, adjusted assessed values may have to suffice as the definitive estimate of market value.

The use of assessed value has some limitations that, if not considered and accounted for, can produce erroneous estimates of market value. These limitations are:

1) Appraisal Cycle: How often are the appraisals done and when was the date of the last appraisal? Market value estimates can be grossly outdated if the cycle is long and the community happens to be in the latter stage of its cycle and has not been appraised for many years.

2) Land Values: In most cases, land values and the value of improvements (structures) thereon will be assessed separately and listed as such on the tax roles. In cases where they are not distinguished, a determination of the value of the land will have to be made and subtracted from the total assessed value.

3) Assessment Level: States and local taxing jurisdictions vary in assessment levels (an established statutory ratio between the assessor's estimate of value and the true fair market value). For example, many states use an assessment level of 90%. In this case the assessed values will under estimate market values by 10%.

In cases where the assessment level is unacceptably low or where the projected ratio of cost of repair to market value is close to 50%, adjustments for assessment level must be made. If the use of assessed value is questioned, an appeal is warranted, but the burden of proof can be placed on the permit applicant who can be required to submit an independent appraisal by a qualified appraiser.

23. Q. Can replacement cost be substituted for market value when determining whether a structure was substantially damaged?

A. No. Replacement cost is the cost of replacing a structure with a structure of a like kind using present day costs for labor and materials. In the majority of cases, replacement cost is much greater than the market value of a structure. The use of replacement cost would make the substantial improvement definition much less restrictive (because it increases the second number in the ratio, it effectively raises the threshold to greater than 50% of market value). Therefore, replacement cost should not be used as a simple substitute for market value. Replacement cost may be used to estimate market value if the value of the depreciation of the structure is subtracted to determine the structure's actual cash value.

24. Q. What happens when a structure is damaged, but not substantially, and during the repair the owner also makes an addition, rehabilitation or other improvement to the structure?

A. It is not uncommon for a homeowner who has sustained damage to his/her structure to decide to simultaneously improve the structure while repairs are being made. For example, the owner of a building which was 30% damaged in a flood will, while repairing the damage, have an additional room (30% improvement) constructed. Under circumstances where two types of improvements (e.g., an addition and repair due to damage as given above) are made to a structure, and the combined total of these improvements is equal to or greater than 50% of the structure's pre-damage market value, the structure is considered a substantial improvement (see Figure 4).

25. Q. What if a building is substantially damaged but not fully restored, or is repaired using donated or discounted labor and/or materials such that less than 50% is actually spent on repairs?

A. By definition, the term substantial damage refers to the repair of all damages sustained and cannot reflect a level of repairs which is less than the amount of damages suffered. Thus, a building which sustains damages equal to or exceeding 50% of its market value is a substantial improvement, even if the "out-of-pocket" expenditures for the repair are reduced below the 50% threshold or if the structure is not fully repaired.

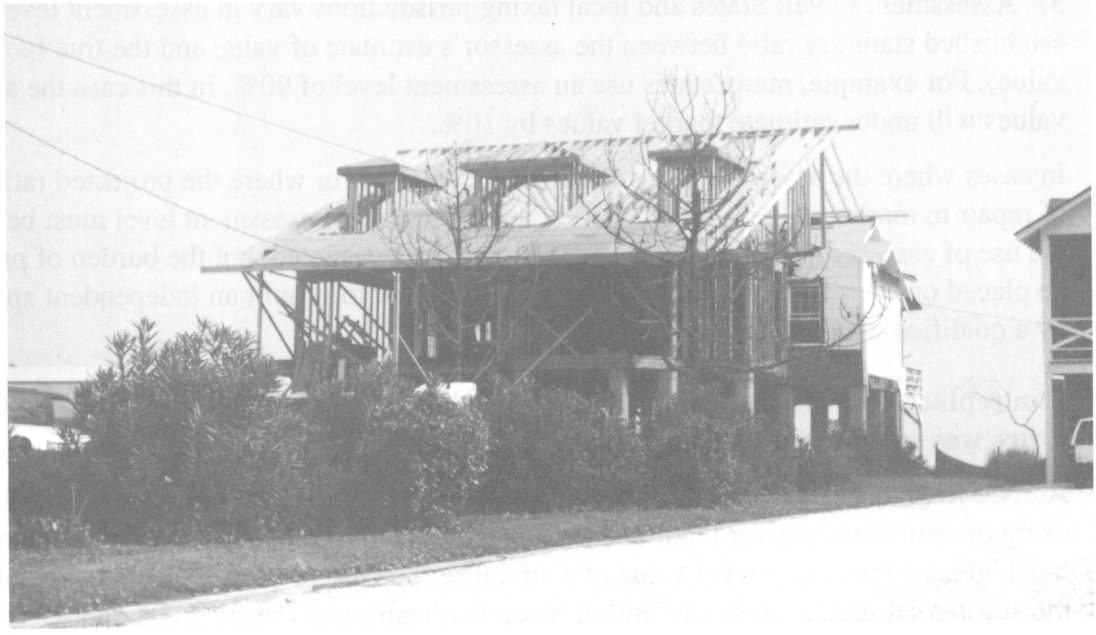


Figure 4. Photograph of a Pre-FIRM structure located on Folley Island, South Carolina which was damaged during Hurricane Hugo. NOTE: Both the damaged structure and the subsequent improvements (the adjoining addition) have been elevated to or above the base flood elevation in accordance with NFIP requirements (Refer to Question No. 24).

26. Q. How are estimates for donated or discounted materials determined?

A. The value placed on materials should be equal to the actual or estimated cost of all materials to be used or considered necessary in repairing all damages sustained by a building, and should be no less than that required to restore the building to its pre-damaged condition. Where materials or servicing equipment are donated or discounted below normal market values, the value should be adjusted to an amount which would be equivalent to that estimated through normal market transaction. These adjustments and estimates should be made by the local permit official based on his professional judgement and knowledge of the local or regional cost of construction materials and servicing equipment.

27. Q. How are estimates for self or volunteered labor determined?

A. The value placed on labor should be equal to the actual or estimated labor charge for repair of all damages sustained by the structure. Where non-reimbursed labor is involved, the value of the labor should be estimated based on applicable minimum-hour wage scales for the type of construction work that is done. This estimate should be made by the local permit official based on his professional judgement and knowledge of the local or regional wage scales for various types of construction work.

28. Q. What items can be excluded from the cost of repair?

A. Items that should not be counted toward the cost of repair include plans, specifications, survey and building permits, and other items which are separate from or incidental to the repair of the damaged building.

29. Q. The substantial improvement definition 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?

A. Cost of repairs required to remedy health, safety, and sanitary code deficiencies can be deducted from the overall cost of an improvement, but, only if 1) an appropriate regulatory official such as a building official, code enforcement officer, fire marshal, or health officer was informed about and knew the extent of the code related deficiencies and 2) the deficiency was in existence prior to the damage event or improvement and will not be triggered solely by the fact that the structure is being improved or repaired.

In addition, for any repair required to meet health, sanitary, and safety codes, only the minimum necessary to assure safe living conditions should be deducted. Costs of repairs that are in excess of the "minimum necessary" for continued occupancy or use will be counted toward the cost of the overall improvement. For example, assume that a single stair tread on a stairway was in a defective condition prior to a damage event (flood, fire, etc.) or improvement (rehabilitation or addition) and in violation of a local safety code. Only the cost of repairing or replacing that item (the tread itself) with a like-kind is deductible. If the owner, for aesthetic or other personal reasons, chooses to spend more money to completely

replace the entire stairway, then the additional cost should be counted toward substantial improvement. If, in this example, the owner chooses to use unnecessarily expensive materials to repair or replace this or any other code deficient item, then the additional cost should also be counted toward the substantial improvement.

30. Q. Why should an owner suffer what seems to be a penalty for upgrading and improving a structure?

A. The underlying principal for counting the extra costs associated with more expensive materials, labor, or design is the added real property that would be located in flood hazard areas and that would be at risk to flood damage. It should be noted that in some form, the Federal Government (the NFIP or various Federal disaster assistance programs) would likely be obligated to pay a portion of or all future damages to these more expensive improvements. In addition, structures located in flood hazard areas which are not elevated to or above the base flood elevation pose threats to the health and safety of the occupants of these structures. Over time it is not only important to protect the property of existing structures through substantial improvement, but also to protect the health and lives of the public citizens that occupy them.

31. Q. If a community has adopted a cumulative permit tracking system for administering substantial improvement, what are the implications for substantially damaged structures in a post-disaster situation?

A. Some communities have adopted ordinances which contain substantial improvement definitions that require all improvements to be added in a cumulative manner over the life of the structure or some other set period. When the combined total of all previous improvements or repairs made during the specified time equals or exceeds 50% of a structure's market value, that structure is considered a substantial improvement. In such a system, structures do not necessarily have to be substantially damaged to be considered substantial improvements. For example, a structure with a market value of $100,000 which had previously accumulated $30,000 of improvements would only have to incur $20,000 of damage to become a substantial improvement.

PART - 4

THE POST-DISASTER PERMITTING PROCESS

32. Q. For activities in flood hazard areas, what does the NFIP require in the way of permits?

A. Section 60.3(a)(1) states that communities participating in the NFIP shall "require permits for all proposed construction or other development in the community, including the placement of manufactured homes, so that it may determine whether such construction or other development is proposed within flood-prone areas. For the purposes of this requirement the NFIP definition of "development" found in Section 59.1 "means any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials." Thus, under the NFIP a community is responsible for requiring permits for all development, not just structures.

33. Q. How does this development permit procedure relate to substantial improvement?

A. Section 60.3(a)(3) states that NFIP communities, as part of the development permit process, shall "review all permit applications to determine whether proposed building sites will be reasonably safe from flooding." And, "if the proposed building site is in a flood-prone area, all new construction and substantial improvements shall ... meet all of the floodplain management requirements of the NFIP such as proper anchoring and elevation or floodproofing of structures to or above the BFE."

34. Q. How do development permits relate to building permits?

A. In some communities, permits for general development and permits for the construction of structures are handled by separate departments. Commonly, departments such as planning and zoning are responsible for development permits, and building inspection departments are responsible for construction permits on individual structures. For the proper permitting of new construction, substantially improved structures, and all other development under the NFIP, these two departments must closely coordinate their procedures. Because a substantially improved structure constitutes both development and building construction, both local agencies may need to review and approve the permit(s) for the structure. However, the final determination of whether a structure is a substantial improvement will usually rest with the building inspection department.

35. Q. In post-disaster situations involving permit applications for the repair of damaged structures, what type of permit is needed and which local agency is responsible?

A. Because the repair of damaged structures obviously deals with construction, the local department responsible for building permits would take the lead role in approving permits and making determinations of whether a structure was substantially damaged. However, for the purposes of sound floodplain management and hazard mitigation, other agencies involved in water resources, planning and zoning, environmental issues, etc. should also be involved in the overall post-disaster permitting process. Input provided by other agencies can assist communities in evaluating various causes of the disaster and can offer suggestions to reduce future damages.

36. Q. Given that, in a post-disaster situation the number of permit applications may be overwhelming, what should a permit official focus on for the purposes of assessing potential substantially damaged structures?

A. Ideally what is needed is a coordinated method for rapidly processing large numbers of permits while still being able to accurately separate those structures that are not substantially damaged (less than 50%) from those that are. Although it is important to issue permits which allow homeowners with less than substantial damages to make repairs to their homes as soon as possible after the disaster, it is equally important to enforce elevation requirements for those structures that are substantially damaged. In general, permit applications can be divided into three logical groups:

1) Those cases where it is readily apparent that the structure was not substantially damaged. This will usually be the case where no structural damage was experienced and the depth of flooding was less than three feet. Permits for the repair of damage in these cases will probably involve replacement of saturated items such as insulation, wall board, and damaged electrical units, not the repair of structural damage. These type permits can probably be hurried through the system to allow owners to repair and reoccupy their structures as soon as possible.

2) Those cases where it is debatable from both field inspection and review of the permit application whether a structure is substantially damaged. These "borderline" cases commonly occur where structural damage was experienced and/or the depth of flooding was in excess of five feet. These are the hardest cases for the purpose of determining substantial damage and are the ones that local permit officials should focus on after the disaster. In these cases, very accurate estimates of cost of repair and market value will probably be necessary.

3) Those cases where it is readily apparent that the structure has been substantially damaged. If extreme structural damage (structure dislodged from its foundation, roof ripped off, collapsed walls, etc.) has been experienced, it is highly probable that the structure is substantially damaged. It is less important that permit applications for these structures be hurried through the system. In most of these cases, a structure cannot be immediately reoccupied because repairs will take a long time, funds for these repairs will not be readily available or immediately forthcoming, and safety codes will not allow reoccupation until such repairs are made. These permits should be less of a priority than the "borderline" cases.

It cannot be over emphasized that when permit applications for repair of substantially damaged structures are reviewed, any approved permit must include plans for the elevation (or floodproofing if non- residential) of that structure to or above the BFE.

37. Q. For assessing the number and location of potentially substantially damaged structures, what options are available to a permit official for dealing with an overwhelming number of permits after a disaster?

A. The governing body or presiding political authority of the community, upon advise of the local permit official, may chose to impose a moratorium for issuing permits immediately

after the flood until such time that the magnitude, scope and distribution of potentially substantially damaged structures is ascertained through community-wide field surveys. If the majority of the community was severely impacted, the moratorium may be community-wide; if damages were concentrated in discrete areas, the moratorium may be applicable for only those areas.

However, the community may chose a structure-by-structure approach, instead of a blanket or subdivision moratorium. For example, if only the damage assessments made during a field survey can be obtained, and market value estimates can not be obtained immediately, repair permits for those structures with damages exceeding a certain monetary threshold should be held up until more detailed information can be collected. The threshold chosen should reflect the general values of structures in the damage area. For example, if the general value of homes ranges from $50,000 to $80,000, the appropriate damage threshold for delaying permit requests should be conservatively chosen at $25,000.

Besides the field survey, another method of ascertaining the severity and location of potentially substantially damaged structures is through the use of NFIP claims data. In cases where the flood insurance claims payment or damage sustained estimate is in excess of 50% of the structure's actual cash value (as recorded for flood insurance purposes), the structure will likely be a substantial damage and subject to elevation or floodproofing requirements. (NOTE: Although the use of claims information is only applicable for structures with flood insurance, it will allow a permit official to get a handle on the problem, pinpoint the areas hardest hit, and thus determine the areas where the number of substantial damages is likely to be the greatest, and where extensive field inspection is necessary).

38. Q. What other options can a permit official use in dealing with an overwhelming number of damaged structures?

A. The community may wish to establish a mutual aid agreement with building permit officials and similar professionals in other communities in the state or region. Generally, this can be accomplished through close communication with local and state chapters of the three national building code organizations (ICBO, BOCA, SBCCI). A list of building officials and other appropriate professionals (engineers and architects) that are willing to cooperate in a mutual aid agreement should also be developed. Professional registries maintained by the three national building code organizations and other professional registries will be helpful in compiling this list. The International Conference of Building Officials provides a model mutual aid agreement (Appendix C — Uniform Disaster Mitigation Plan). This is a legal document describing areas of cooperation in post-disaster situations between two or more groups which may include local, state, and Federal agencies and other professionals such as appropriate local and state chapters of the three national building code groups.

Through this mutual aid agreement experienced professionals from other communities can be assembled as a building inspection team to assist permit officials of the stricken community. This team can carry out both initial assessment of damages and assist in defining boundaries of the damaged area. Following the initial assessment, the mutual aid team, divided into smaller groups, can do site-by-site inspections. From these inspections, structures that are obviously substantially damaged can be officially placarded and the owners

notified of the NFIP requirements for elevation or floodproofing. Structures that are on the borderline of substantial damage (i.e., in the 40%-60% damage range) should be placarded and owners notified that detailed, itemized damage appraisals will be required prior to the approval of permit applications for repair. If the damage appraisal indicates substantial damage, the permit official should notify the owner that the structure will have to be elevated (or floodproofed if non-residential) to or above the BFE.

39. Q. What options are available to local officials for disseminating information about the post-disaster permit process to contractors and owners of damaged structures?

A. Immediately after the damage event, the community may wish to release a statement through local newspapers and/or other media that informs contractors and owners of damaged structures about NFIP regulations governing substantially damaged structures. Such a press release should also inform local contractors and owners wishing to engage in repair or reconstruction work that damage inspection and appraisal forms may be required as a requisite for obtaining a permit to repair a damaged structure (it should be stressed that this will be especially true in the case of buildings suffering structural damage and/or deep flooding). The press release should also state that under no circumstances should repairs begin before the issuance of a permit.

40. Q. Because of the trauma and inconveniences which occur to victims during and after a disaster, can permit requirements for the repair of damaged structures be suspended in post-flood situations?

A. No. Despite pressures from citizens and local politicians after a disaster, under no circumstances should permit officials suspend permit requirements for the repair of damaged structures. Only through proper permitting procedures can compliance with local and state codes and regulations, including those of the NFIP contained in a community's floodplain management ordinance, be assured. Substantially damaged structures repaired without a permit could jeopardize a community's standing in the NFIP and possibly result in a community being placed on probation and suspended from the program. In addition, residences located in flood hazard areas which are not elevated to or above the BFE pose threats to the health and safety of the occupants of these structures. Over time it is not only important to promote the protection of the property of existing structures through the enforcement of substantial improvement, but also to protect the health and lives of the public citizens that occupy them. The suspension of permit requirements would seem to be a personally compassionate gesture during a flood victims' time of distress. By not requiring compliance with existing health and safety requirements (such as elevation to or above the BFE as required by substantial improvement) communities only set the stage for similar and probably worse damages and safety threats to occur during the next disaster.

However, in order to appear responsive to the needs of the citizenry which requested suspension of permit requirements, local officials may choose to waive permit fees in a post-flood situation. Although permit fees are seldom a significant cost of repair, suspension of these fees often makes the permit requirements somewhat more palatable to the victims.

41. Q. Because of the trauma and inconveniences which occur to victims during and after a disaster, can variances be issued for substantially damaged structures?

A. The burden of determining that an applicant qualifies for a variance rests with the community. But, absolutely no variances should be issued for substantially damaged structures unless the following FEMA variance criteria contained in 60.6(a) of the regulations are met:

1. The applicant has good and sufficient cause for requesting a variance.

2. The applicant will suffer exceptional hardship should the variance be denied.

3. The variance will not cause increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances.

4. The variance is the minimum necessary, considering the flood hazard, to afford relief.

It should be noted that the exceptional hardship referred to in criteria number two above applies to the physical characteristics of the property in question, not to economic or other personal hardships of the owner or inhabitants of the structure. Though standards vary from state to state, in general, a properly issued variance is granted for a parcel of property with physical characteristics so unusual that complying with the community's floodplain management ordinance would create an exceptional hardship to the owner or surrounding property owners. Those characteristics must be unique to that property and not be shared by adjacent parcels. The unique characteristic must pertain to the land itself, not to the structure, its inhabitants, or the property owners.

It should also be noted that the standards listed above are the same variance standards that must be met in all other non-disaster variance situations. The fact that it is a post-disaster situation does not lessen or change the variance standards. On the contrary, where structures have suffered severe (substantial) damage, FEMA considers it highly unlikely that variance requests can meet the above criteria.

42. Q. What happens if State or local laws mandate a threshold percentage that is lower than 50%?

A. The NFIP criteria, including the 50% substantial improvement threshold, are minimum standards for the adoption of floodplain management regulations by communities. Any community may exceed the minimum criteria by adopting more restrictive regulations such as a lower substantial improvement threshold. Any floodplain management regulations adopted by a State or community which are more restrictive than NFIP minimum criteria are encouraged by FEMA and shall take precedence. Thus, if a community, of its own volition, or as required by State law, adopts a more restrictive threshold (e.g., 40%) in its floodplain management ordinance, then that threshold takes precedence and must be adhered to by the community.

APPENDIX A

FEMA REGIONAL OFFICES

REGION I (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont)
J.W. McCormack Post Office and Courthouse Building, Room 442 Boston, Massachusetts 02109
(617) 223-9561

REGION II (New Jersey, New York, Puerto Rico, and Virgin Islands)
26 Federal Plaza, Room 1338, New York, New York, 10278
(212) 238-8203

REGION III (Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, and West Virginia)
Liberty Square Building (Second Floor) 105 South Seventh Street, Philadelphia, Pennsylvania 19106
(215) 931-5750

REGION IV (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee)
1371 Peachtree Street, N.E., Suite 700, Atlanta, Georgia 30309
(404) 853-4400

REGION V (Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin)
175 West Jackson Blvd. (4th floor) Chicago, Illinois 60604-2698
(312) 431-5533

REGION VI (Arkansas, Louisiana, New Mexico, Oklahoma, and Texas)
Federal Regional Center, 800 North Loop 288, Denton, Texas 76201-3698
(817) 898-9127

REGION VII (Iowa, Kansas, Missouri, and Nebraska)
2323 Grand Blvd., Suite 900, Kansas City, Missouri 64108-2670
(816) 283-7003

REGION VIII (Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming)
Denver Federal Center, Building 710, P.O. Box 25267, Denver, Colorado 80225-0267
(303) 235-4830

REGION IX (Arizona, California, Hawaii, and Nevada)
Presidio of San Francisco, Building 105, San Francisco, California 94129
(415) 923-7177

REGION X (Alaska, Idaho, Oregon, and Washington)
Federal Regional Center, 130 228th Street, S.W., Bothell, Washington 98021-9796
(206) 481-4682

APPENDIX B

The following publications are available free of charge from the
Federal Emergency Management Agency
Mitigation Directorate

Mitigation Directorate Publications:

Item No.	Publication	
3-0107	FEMA-15	Design Guidelines for Flood Damage Reduction General information on flooding and how to properly design and build in floodprone areas.
8-0390	FEMA-54	Elevated Residential Structures Proper design and construction methods for elevated buildings.
8-0373	FEMA-55	Coastal Construction Manual Design and construction techniques for construction in coastal high hazard areas.
8-0497	FEMA-85	Manufactured Home Installation in Flood Hazard Areas How to properly install a manufactured home in a flood hazard area with emphasis on design of elevated foundations.
3-0125	FEMA-100	Unified National Program for Floodplain Management A conceptual framework to guide local, State, and Federal decisionmakers toward a balanced consideration of alternative goals, loss reduction strategies, and tools.
3-0126	FEMA-102	Floodproofing Non-Residential Structures Describes a variety of floodproofing strategies for commercial and industrial structures.
3-0127	FEMA-114	Design Manual for Retrofitting Flood-prone Residential Structures Presents floodproofing techniques that can be used for existing residential structures.
3-0131	FEMA-116	Reducing Losses in High Risk Flood Hazard Areas: A Guidebook for Local Officials A guidebook to help local governments improve their floodplain management programs for high risk flood areas.
3-0142	FEMA-165	Alluvial Fans: Hazards and Management A booklet describing flood hazards on alluvial fans and suggested approaches to hazard management.
3-0147	FEMA-186	Mandatory Purchase of Flood Insurance Guidelines A booklet that briefly describes the National Flood Insurance Programs guidelines on the mandatory purchase of Flood Insurance.
3-0163	FEMA-209	Reducing Losses of Life and Property through Model Codes A twelve-page brochure on the mitigation activities throughout FEMA that relate to the nation's model codes.

Item No.	Publication	
3-0164	FEMA-213	Answers to Questions about Substantially Damaged Buildings Guidance on NFIP regulations governing substantially damaged structures
3-0178	FEMA-234	Repairing Your Flooded Home Repair manual for homeowners on how to repair your home after a flood.
3-0180	FIA-22	Building Performance: Hurricane Andrew in Florida Recommendations, observations, solutions to building problems incurred during Hurricane Andrew.
3-0181	FIA-23	Building Performance: Hurricane Iniki in Hawaii Recommendations, observations, solutions to building problems incurred during Hurricane Iniki.
3-0183	FIA-TB-0	Technical Bulletins: User's Guide with Key Word and Subject Index Provides a list of available technical bulletins, a key word/subject reference index for all the bulletins, and information about how to obtain copies of the bulletins.
3-0184	FIA-TB-1	Technical Bulletin 1: Openings in Foundation Walls Guidance on the NFIP regulations concerning the requirement for openings in below-Base Flood Elevation foundation walls for buildings located in Zones A, AE, A1-A30, AR, AO, and AH.
3-0185	FIA-TB-2	Technical Bulletin 2: Flood-Resistant Materials Requirements Guidance on the NFIP regulations concerning the required use of flood damage-resistant construction materials for building components located below the Base Flood Elevation in Special Flood Hazard Areas (both A and V Zones).
3-0186	FIA-TB-3	Technical Bulletin 3: Non-Residential Floodproofing - Requirements and Certification Guidance on the NFIP regulations concerning watertight construction and the required certification for floodproofed non-residential buildings in Zones A, AE, A1-A30, AR, AO, and AH whose lowest floors are below the Base Flood Elevation.
3-0187	FIA-TB-4	Technical Bulletin 4: Elevator Installation Guidance on the NFIP regulations concerning the installation of elevators below the Base Flood Elevation in Special Flood Hazard Areas (both A and V Zones).
3-0188	FIA-TB-5	Technical Bulletin 5: Free-Of-Obstruction Requirements Guidance on the NFIP regulations concerning obstructions to floodwaters below elevated buildings and on building sites in coastal high Hazard Areas (Zones V, VE, and V1-V30).
3-0189	FIA-TB-6	Technical Bulletin 6: Below-Grade Parking Requirements Guidance on the NFIP regulations concerning the design of below-grade parking garages beneath buildings located in Zones A, AE, A1-A30, AR, AO, and AH).

Item No.	Publication	
3-0202	FIA-TB-7	Wet Floodproofing Requirements Guidance on the NFIP regulation concerning the design of wet floodproofing which is not recognized for residential homes, only for non residential structures.
3-0132	L-153	Retrofitting Flood-prone Residential Structures (Brochure) A companion brochure summarizing FEMA-114
3-0174	L-197	Unified National Program for Floodplain Management (Brochure) A companion brochure summarizing FEMA-100
3-0179	L-198	After a Flood: The First Steps (Brochure) A brochure that pulls pertinent first step information from FEMA-234.
6-0137	TS-28	Implementing a Floodplain Management Program (Slide Presentation)
6-0138	TS-29	The Need for Floodplain Management (Slide Presentation)
6-0250	TS-31	Wetlands are not Wastelands (Slide Presentation)
6-0136	TS-32	Flood Hazard Management: Three Stories (Slide Presentation)
3-0172	FF 81-78	Residential Basement Floodproofing Certificate (7/92) A form provided to communities that have been granted a basement exception through FEMA Headquarters.
	FF 81-31	Elevation Certificate A form provided to communities participating in the NFIP for proper recording of elevated buildings.
	FF 81-65	Floodproofing for Non-Residential Structures A form provided to communities participating in the NFIP for proper recording of floodproofing non-residential buildings.

Federal Insurance Administration Publications:

Item No.	Publication	
3-0147	FEMA-186	Mandatory Purchase of Flood Insurance Guidelines A booklet that explains the ins and outs of the requirement to buy Flood insurance.
8-0864	L-107	Hurricane-Floods: Safety Tips for Coastal and Inland Flooding (Brochure) A brochure of safety tips and kits.
3-0139	L-162	Purchase of Flood Damaged Property (Brochure) A brochure describing the FEMA 1362 Program.
3-0002	FIA-2	Answers to Questions about the National Flood Insurance Program A question and answer booklet on the NFIP.

Item No.	Publication	
3-0182	FIA-11	Appeals, Revisions, and Amendments to Flood Insurance Maps: A Guidebook for Local Officials
3-0138	FIA-14	Guide to Flood Insurance Rate Maps A How-to booklet for reading Flood Maps (FIRMs).
3-0160	FIA-16	Federal Regulations and Instructions on Flood Insurance Compliance for Lenders and Servicers
3-0167	FIA-17	Floodplain Management in the U.S.: Assessment Report Summary A summary of the findings on Floodplain Management by the Floodplain Management Task Force.
3-0169	FIA-18	Floodplain Management in the U.S.: Assessment Report Volume 2 The full findings on Floodplain Management by the Floodplain Management Task Force.
3-0170	FIA-20	Converting the National Flood Insurance Program to North American Vertical Datum
3-0124		NFIP Regulations for Floodplain Management and Flood Hazard Identification 44CFR Regulations that pertains only to the Floodplain Management Program.

To Order:

Federal Emergency Management Agency
P.O. Box 70274
Washington, D.C. 20024
ATTN: Publications

APPENDIX C

OTHER PUBLICATIONS

Several other publications are available for a fee from various sources. These publications contain information on determining "cost of improvement" and "market value" and may be useful in other ways to local permit officials in making substantial damage determinations in post-disaster situations. The prices and addresses for ordering these publications at the time this Q&A was prepared are also given.

BUILDING OFFICIALS CODE ADMINISTRATORS (BOCA) INTERNATIONAL

- National Building Code/1987 ..... Soft cover = $40.00 ea.
  Loose leaf = $46.00 ea.
- National Existing Structures Code/1987 ..... $20.00 ea.
- Code Enforcement Guidelines for Residential Rehabilitation ..... $4.00 ea.
- Why a Building Permit? (Public Service handout brochure) .... $20.00 per 100
- Four-part Disaster Damage Inspection Report ..... $32.00 ea.

TO ORDER:

BOCA International, 4051 West Flossmoor Road
Country Club Hills, Illinois 60477-5795.

For further information regarding publication orders, call BOCA's Publications Order Department at 312/799-2300.

NOTE: Minimum order $5.00. Prices listed above are for single orders and non- members. Cost savings can be realized for quantity orders and for current BOCA members; call BOCA's Publications Order Department for details.

SOUTHERN BUILDING CODE CONGRESS INTERNATIONAL (SBCCI

- Standard Building Code - 1985 Ed. ..... Loose leaf = $35.00 ea.
  Paper cover = $35.00 ea.
- Standard Codes Interpretation Manual ..... $10.00 ea.
- Standards for Floodplain Management - 1985 Ed. ..... $3.00 ea.
- Standards for Walls in Hurricane Force Winds - 1984 Ed. ..... $8.00 ea.
- Hurricane Manual ..... $45.00 ea.
- Hurricane Resistant Construction ..... $45.00 ea.

TO ORDER:

SBCCI, 900 Montclair Road
Birmingham, Alabama 35213-1206

For further information regarding publication orders, call SBCCI at 205/591-1853.

NOTE: Prices listed above are for non-members and single orders. Price reductions can be realized for quantity orders and for SBCCI members.

INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS (ICBO)

- Uniform Building Code Provides complete regulations covering all major aspects of building design and construction relating to life and fire safety and structural safety.
  ..... Soft cover = $53.30 ea.
  ..... Loose leaf = $61.20 ea.
- Uniform Housing Code Provides complete requirements affecting conversion and rehabilitation of housing ..... $9.10 ea.
- Uniform Code for Abatement of Dangerous Buildings Covers repair, vacation or demolition of dangerous buildings and reflects latest court decisions in such matters.
  ..... $9.10 ea.
- Uniform Code for Building Conversion A building conservation guideline providing means of preserving existing buildings while achieving appropriate levels of safety.
  ..... $25.15 ea.
- Uniform Disaster Mitigation Plan An aid to building departments in coping with major disasters such as fires, floods, and earthquakes ..... $8.20 ea.
- Guidelines for Manufactured Housing Installations A guideline to regulate the permanent installation of a manufactured home on a privately owned non-rental site.
  ..... $3.15 ea.
- Building Codes — Who Needs Them? A video tape tracing the history of building regulation and the role played by the modern building regulatory agency in the protection of public safety. ..... $15.00 ea.

TO ORDER:

ICBO 5360 South Workman Mill Road
Whittier, California 90601

For further information regarding publication orders, call ICBO's Publications Order Department at (310) 699-0541.

NOTES: Prices listed above are for single orders and non-members. Cost savings can be realized for quantity orders and for current ICBO members..

NATIONAL ASSOCIATION OF HOME BUILDERS

- Estimating for Home Builders Addresses all components of cost estimates: estimating from incomplete plans, subcontracts, material, labor, equipment, job site, and mark-up: contains many useful tables and a glossary ..... $22.00 ea.
- Construction Cost Control Builders methods for reducing construction costs.
  ..... $13.00 ea.
- Construction Dictionary Contains 14,000 terms and 15,500 definitions; tables for estimating quantity, volume, percent, and weight of various materials. ..... $22.00 ea.

- Construction Principles, Materials and Methods Provides a basic understanding of construction quality standards. Includes 45 topical sections and companion work files of industry specifications and standards. ..... $61.50 ea.
- Means Building Construction Cost Data 1988 Contains reliable, up-to-date prices for over 20,000 unit cost entries. Can be used for complete, finished estimates or for periodic checks and comparisons ..... $47.95 ea.
- Means Graphic Construction Standards Includes over 1,000 illustrations and plans to help builders meet design, budget, and scheduling goals. ..... $59.95 ea.
- Means Illustrated Construction Dictionary Defines over 12,000 slang and contemporary terms and abbreviations ..... $59.95 ea.
- Means Repair and Remodeling Cost Data 1988 - Commercial / Residential Comprehensive estimating guide for commercial and residential renovations. Contains renovation unit costs for 16 major construction divisions. Includes typical crew, man hours, materials, labor, and equipment. $49.95 ea.
- Means Residential Cost Data 1988 Use this book for developing estimates for residential construction quickly and accurately. Includes costs for more than 100 building systems, square-foot costs for 46 typical buildings, work sheets, examples, and location factors for adjusting the costs for cities in the U.S. and Canada. ..... $48.95 ea.

TO ORDER:
Publications Orders, NAHB Bookstore
National Association of Home Builders
15th and M Streets, N.W., Washington, D.C. 20005

For further information on ordering NAHB publications call the NAHB Bookstore at 800/223-2665, or 202/822-0463.

NOTE: Prices listed above are for non-members; savings can be realized for NAHB members.

CONSUMER REPORTS BOOKS

- Home Improvement Cost Guide (Copyright 1985 by R.S. Means Company, Inc.) Detailed estimates of costs and materials, labor, and time requirements for 74 major improvements — attics, basements, baths, kitchens, fireplaces, garages, decks, porches, room additions, hundreds of smaller projects ..... $18.00 ea.

TO ORDER:
Consumer Reports Books
540 Barnum Avenue
Bridgeport, CT 06608

For further information on ordering call 1-800/234-1645.

AMERICAN SOCIETY OF APPRAISERS (ASA)

- Principles of Appraisal Practice and Code of Ethics ..... No charge.
- Appraisal Principles and Procedures ..... $20.00 ea.

TO ORDER:
ASA
P.O. Box 17265
Washington, D.C. 20041

MARSHALL & SWIFT, INC.

- Residential Cost Handbook Provides both square foot and segregated methods for calculating the actual cash value of residential structures. Also included are physical depreciation tables and local cost multipliers. ..... $49.00 ea.
- Marshall Valuation Service Provides both square footage and segregated methods for calculating the actual cash value of both residential and commercial structures. Also included are unit-in-place costs and local cost multipliers. ..... $99.00 ea.
- Commercial Estimator Program Residential and commercial software programs for personal computers which provide quick, easy-to-use square foot methods, local cost multipliers, depreciation tables and other functions.
  ..... Commercial Estimator = $495.00 ea.
  ..... Residential Estimator = $395.00 ea.
- The Repair and Remodel Quarterly Provides a comprehensive source book for residential and light commercial construction. Contains 10,000 component costs. Labor and material unit costs include all major interior/exterior components. ..... $60.00 ea.
- The Digest of Building Contract Awards Contains actual bid prices on nearly 1,000 residential and commercial structures. Historical and local multipliers allow adjustments for unit costs. Architectural renderings, photographs, floorplans, etc., for comparable sales. ..... $125.00 ea.

TO ORDER:
Marshall & Swift
1617 Beverly Boulevard
P.O. Box 26307, Los Angeles, CA 90026-9954

(213) 683-9000 or 1-800-421-8042

PHOTOGRAPHY CREDITS

Cover - Michael G. Mahoney, Office of Loss Reduction, Federal Insurance Administration. A building located in Sandbridge, Virginia which was substantially damaged during a northeaster in April, 1988.

Page 4 - A. Todd Davison, Office of Loss Reduction, Federal Insurance Administration. A Pre-FIRM structure located on Sullivan's Island, South Carolina which was substantially damaged during Hurricane Hugo.

Page 7 - Do. A Pre-FIRM structure located on Sullivan's Island, South Carolina which was substantially damaged during Hurricane Hugo.

Page 12 - Do. A Pre-FIRM structure located on Folly Island, South Carolina which was substantially damaged during Hurricane Hugo.

Issued by FEMA in furtherance of the Decade for National Disaster Reduction