

Preventing Disaster Damage to Your Historic Building

The following information will assist those who own and care for older and historic buildings that are at risk of damage from storms and floods.

Alabama Historical Commission
468 South Perry Street
Montgomery, Alabama 36130-0900
334-242-3184
www.ahc.alabama.gov

Basic safety rules to follow in the event of flood or storm damage:



- Do not walk through flowing water.
- Do not drive through a flooded area.
- Stay away from power lines and electrical wires.
- Check to be sure your electricity is turned off. If any wiring was submerged, have it inspected before turning the power back on.
- Look before you step. Floods deposit mud which may be slippery. Floors may have been weakened. Snakes may be hiding under buildings or in upper floors that were not flooded.
- Smell the air for gas leaks.
- Vent electrical generators, heaters and charcoal grills properly if you use them. Carbon monoxide exhaust kills.
- Clean everything that got wet. Get inoculations and wear rubber gloves as part of your protective clothing. Hose-down concrete and masonry walls. Scrub other surfaces with disinfectant. Discard any food and medicine that came in contact with flood water. Flood waters carry infections sewage and hazardous chemicals.

Homeowners

Your home is more than the house where you live. It is your safe haven. It represents security from the outside world for you and your family. Your home and belongings represent memories of the past and hopes for the future.

During times of disaster you may lose basic necessities such as shelter, food and clothing. These losses cause emotional stress that can make it hard to see clearly and make decisions. There are three simple techniques that will help focus your thoughts for a more objective view of your house in these times of emotional difficulty.

- Call on a friend or relative from outside the disaster area to help you review the situation and to advise you.
- Keep written notes on what you see, what you plan to do, and a journal or diary of what you actually do.
- If you are having trouble deciding what to do, describe two possible actions at the top of a sheet of paper and list the pros and cons of each.



Section 1: PREVENTION



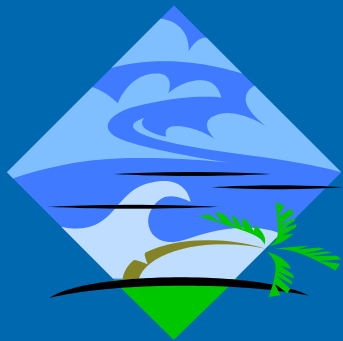
It is critical to identify those specific features that need to be protected at your site and its buildings. For historic buildings, an inventory of key building features is needed. This may seem like a time consuming unnecessary task, but it is far easier to design protective measures when it is clear what needs to be protected.

Photographs of existing conditions and key historic features are an important form of documentation that will be invaluable when developing a recovery work plan.

This survey work might be coordinated with a more detailed comprehensive conditions assessment as part of an historic structures report, preservation plan or maintenance program.

Hurricane Vulnerability Issues

Identify the most probable disaster risks, and determine in what ways your property is most vulnerable to these risks.

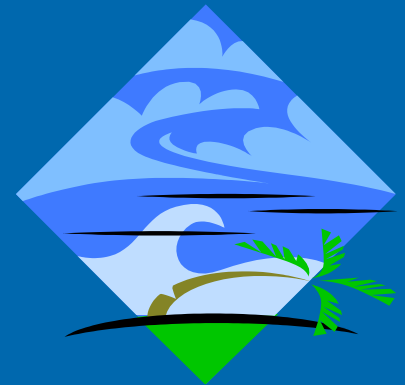


- Sites, structures or parts of structures located at or below the 100-year flood level are at particular risk of flood damage.
- Insecurely fastened elements (porches, chimneys, signs, exterior lights or doors, gutters, railings, shutters) may give way and become projectiles.
- Tall structures (towers, flag poles) at particular risk.
- Failure of doors, windows, roofs allow rainwater to penetrate interiors.

- ✓ Identify past emergencies, type of events, and type and level of damage.
- ✓ Determine which types of natural events are particular threats for your site.
- ✓ Determine what type of damage could occur to your building from the natural disasters found to be of medium or high probability in your area.

Potential Hurricane Damage

- Total or partial building destruction. Roofs, balconies, or overhangs blown off, building moved off foundation, collapsed walls.
- Insecurely fastened roofs or parts may give way and become airborne projectiles.
- Wind-driven water damage to building, interior furnishings, plaster, wood flooring, collections, equipment, mechanical and electrical systems, records.
- Loss of power, telephone, utilities.
- Loss of climate control for valuable belongings.
- Exposure to rain due to failed windows, doors, roof hatches. Salt water damage in coastal areas.
- Looting.
- Glass breakage.
- Flood damage.



Flood Vulnerability Issues

Identify the most probable disaster risks, and determine in what ways your property is most vulnerable to these risks.



- Flooding of basement utilities, furnaces, fuel tanks pose safety risks and costly clean-up.
- Inundation of interior walls, flooring, carpeting, furnishings and collection creates conditions for mildew and fungus growth after flood waters retreat. Salt water damage can occur in coastal areas.
- Sewer or septic system may back sewage into building.
- Velocity of rising waters may overturn objects not securely fastened to ground.

- ✓ Identify past emergencies, type of events, and type and level of damage.
- ✓ Determine which types of natural events are particular threats for your site.
- ✓ Determine what type of damage could occur to your building from the natural disasters found to be of medium or high probability in your area.

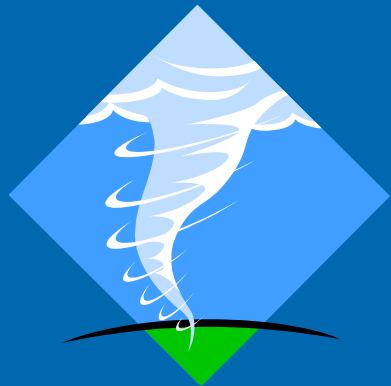
Potential Flood Damage

- Collapse and structural damage to building from erosion, settlement, water pressure, water velocity or debris impact.
- Overturned, leaking, or floating fuel tanks which in turn become moving projectiles in water.
- Insecurely anchored building parts such as porches, stairs, etc. that become moving projectiles in water.
- Inundation of basement utilities, furnaces and fuel tanks.
- Loss of power and utilities, damage to heating and air conditioning systems.
- Contamination from bacteria and mold brought by flood waters.
- Sewage backup in building.
- Glass breakage.
- Release of hazardous chemicals.
- Pollution of water systems.
- Damage from water or humidity to everything inside. Types of water damage include: warping, splitting, rotting of wood and organic materials, metal corrosion, eroding mortar and masonry, dissolving of pigments and finishes, deposits of chemicals and fuels onto objects.



Tornado Vulnerability Issues

Identify the most probable disaster risks, and determine in what ways your property is most vulnerable to these risks.

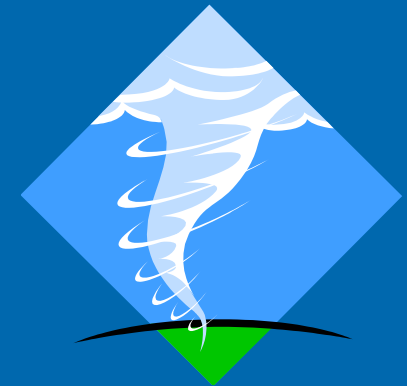


- Any building is susceptible. Some regions or locals have tornadoes more frequently.
- Hurricanes frequently spawn tornadoes.
- Short warning times do not allow for much preparation.
- Failure of doors, windows, roofs allows rainwater to penetrate interiors.

- ✓ Identify past emergencies, type of events, and type and level of damage.
- ✓ Determine which types of natural events are particular threats for your site.
- ✓ Determine what type of damage could occur to your building from the natural disasters found to be of medium or high probability in your area.

Tornado Potential Damage

- Major or complete above-ground destruction is possible.
- Window glass breakage is very likely.
- Rainfall after the tornado may damage interior furnishings, plaster, wood flooring, collections, equipment, mechanical and electrical systems, records.



Preventative Measures vs. Preservation Sensitivity

Many standard preventive measures are not preservation sensitive.

For example, raising foundations out of the flood plain are a good preventive measure, but houses that are 3 feet off the ground can look pretty strange at 10 feet off the ground.

Ask yourself: How will this proposed action affect the historic character of my house? Is there another way to achieve the same goal?



The Cycle of Effective Maintenance

Initial Assessment

- Inspect buildings & grounds
- Report findings in writing
- Set goals & objectives

Assess the building

- Inventory
- Inspection
- Condition

Plan the work

- Treatments
- Priorities
- Funding

Maintain the building

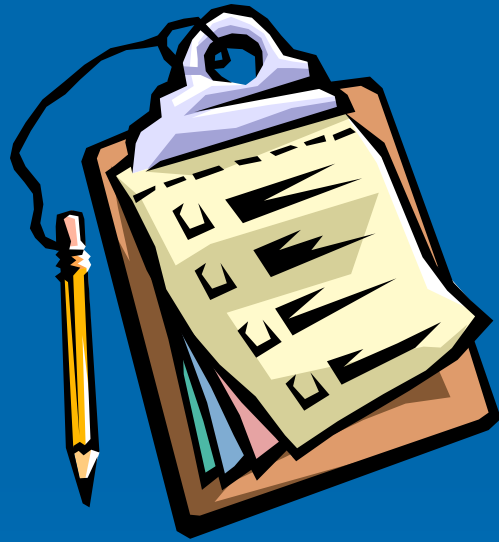
- Management
- Supervision
- Documentation

Evaluate results

- Program
- Costs
- Goals

Begin to develop a formal maintenance program with an initial assessment. Then repeat the four-step cycle again and again to assure effective maintenance.

Preventing Disaster Damage to Your Historic Building Checklist



1. Identify Emergency Needs
2. Inventory Historic features & content
3. Compile a list of Preservation Specialists
4. Build an Emergency Response Network
5. Develop a Job Plan & Chain of Command
6. Write an Emergency Response Checklist
7. Link with Local Emergency Management
8. Assemble Supplies & Equipment
9. Plan for Response & Recovery

1. Identify Emergency Needs

Emergency planning should take place long before a disaster strikes. Think through and write down the steps to take to safeguard your site, personnel, visitors, and yourself when a flood or storm is imminent. Think of supplies and materials that need to be assembled, networks of helpers to be organized, and policies and procedures which need to be thought through and decided ahead of time. Write these down. These steps are an important part of an emergency plan for your site.

2. Inventory Historic Features and Contents

Make a list of the key historic features and contents. Measure and map building and room layouts. Note, photograph and shoot video of the location of key items. Describe the type of construction materials used and date of construction. Where cost figures or dollar values are available, record these for insurance and replacement purposes. Enter this information into a computerized database if possible. When you complete the inventory, store it in a secure waterproof and fireproof container. Make a duplicate copy and store in a secure place away from home.

3. Compile a List of Preservation Specialists

These are the people who can assist in restoring or replacing damaged historic features. They may be the same people who have already helped you assess risks and develop preventive measures. Select those who will be most helpful in your time of need. Contact them and discuss if you can depend on them in case of an emergency. Also identify a backup person in case your first choice is not available.

4. Build an Emergency Response Network

This network would include friends and family, and outside resources, such as police and fire departments. Identify and recruit individuals, and alternates, to be a part of a “preparedness group” responsible to read your home and neighborhood in the face of imminent disaster, and who will be on hand immediately following a disaster event to help stabilize and secure from more damage.

5. Develop a Job Plan and Chain of Command

This plan should identify who is in charge of what and whom, the specific tasks to be carried out, in what order, and the specific responsibility of each person. Write these down.

6. Write an Emergency Response Checklist

Develop checklists of emergency response tasks for each person. The lists must clearly identify the sequence and priority of tasks. For example, a typical list for an historic home might include:

- Move valuables of highest priority to a secure location.
- Turn off power and unplug all equipment.
- Shut off utility lines.
- Install temporary storm shutters on windows and doors.
- Move furniture to the center of each room to avoid damage from debris flying through windows.
- Secure outside items that could become projectiles, like lawn furniture.

7. Link with Local Emergency Management

Ensure that adequate local emergency warning and notification procedures exist, and that you are part of the network. Investigate the emergency notification system in your community by contacting municipal officials. Learn how the notification procedure works, for which types of disasters, and when and if it is tested. Assure that every one in your home understands what to do when a disaster warning is received.

8. Assemble Supplies and Equipment

Store supplies and equipment where they will be readily available before, during and after an emergency. Pack them so the contents can be checked periodically, with more perishable items on top for easy replacement as needed.

Typical protection supplies and equipment:

- Tarpaulins
- Rolls of polyethylene sheeting
- Duct tape
- Plywood
- Lumber: 1x4's, 2x4's
- Carpentry tools
- Carpentry supplies: nails, wallboard screws
- Cordless electric screwdriver, batteries charged
- Window and door covers, pre-made and tested

Typical response supplies and equipment:

- Battery operated radio and extra batteries
- Supply of food and water
- Flashlight and extra batteries
- Fire extinguisher
- First aid kit
- Cellular phone

9. Plan for Response and Recovery

The response process immediately following a major emergency will be far easier to manage if you have already considered the steps to take. In making a response plan think about the resources, equipment, and supplies needed to stabilize and repair damage. Use the Response and Recovery sections in this series as a guide. Prepare a list of the actions which should be taken in the days and weeks following a natural disaster.

Examples of the elements in a recovery plan are:

- A damage assessment procedure and checklist.
- A salvage and storage plan for valuables.
- A policy about demolition of historic structures or features.
- An economic recovery plan.

Storage of Plan

Keep one copy of your plan and all building documentation at home, and one at the home of a key person. Keep another copy away from the site so it is available if you cannot get to your site during the emergency. Offer to exchange storage services with other institutions or people who have the same need for off-site storage of these important documents.

Resources

Further Reading

Emergency Preparedness: Historic & Older Buildings

Safeguarding your Historic Site, Sarah James. Boston: FEMA Region 1, 1992.

Basic preparedness and recovery measures for natural disasters. Available from FEMA Region 1 office. 617-232-9540

1991 Disaster Preparedness Seminar Proceedings, Southeastern Museums Conference, 1991.

Emergency Preparedness and Response. NIC. Washington, D.C.. 47 pages. 1992.

Museum planning for emergencies and disasters. Available from the NIC.

Emergency Preparedness and Response. NIC-IMS. Washington, D.C.. 16 pages. 1992.

Pocket sized booklet with key emergency and funding programs and agencies in the Federal Government.

Emergency Preparedness: Standard Buildings

Design Manual for Retrofitting Flood-prone Residential Structures, by Dewberry & Davis. FEMA #114, 1986.

Flood Proofing Systems & Techniques, Flood Plain Management Services Program. US Army Corps of Engineers, Washington, DC: 1994.

Repairing Your Flooded Home. FEMA #234. Washington, DC: 1992. (Also available from the American Red Cross as ARC #4422.)

Step-by-step, detailed instructions for what to do immediately after flooding, including proper drying procedures, clean up, as well as general repair and flood proofing techniques. Geared to residential property owners but much material of use for historic buildings.

Alabama Preservation

Silent in the Land, Cooper, Knopke, Gamble. Tuscaloosa, AL: CKM Press, 1993.

Photographs and essays provide impressionistic comments on the 19th century Alabama landscape and its buildings.

The Alabama Catalog, Robert Gamble, Montgomery, Alabama, University of Alabama Press, 1987.

General Preservation

The Architectural Legacy of the Lower Chattahoochee Valley in Alabama and Georgia, by D. Gregory Jeane and Douglas Purcell. University of Alabama Press, 1978.

The Secretary of the Interior's Standards for Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings. Washington, DC: US Dept. of the Interior, 1995. Available from Government Printing Office.

Preservation Briefs, NPS Preservation Assistance Div., Washington, DC: 1975-present. Available from Government Printing Office.

Conserving Buildings, A Guide to Techniques and Materials, Martin E. Weaver. New York: John Wiley & Sons, Inc., 1993.

Old-House Journal Magazine. Gloucester, MA: 1973-present.

Some back issues available, with comprehensive index up to 1989. Phone 508-283-3200.

Practical Restoration Reports, John Leeke, Preservation Consultant. Portland, ME: 1989-present.

Titles: Exterior Woodworking Details, Mouldings, Exterior Wood Columns, Epoxy Repairs for Exterior Wood, Wood Gutters, Managing Maintenance. Available from the publisher, 207-773-2306.

A Field Guide to American Houses, Virginia and Lee McAlester. New York: Alfred A. Knopf, 1985.

Architectural Graphic Standards, Charles George Ramsey and Harold Reeve Sleeper. New York, NY: John Wiley & Sons, Inc.

Any of the first five editions are of special interest: 1932, 1936, 1941, 1951, 1956. The recent 8th and 9th editions have a 28 page Historic Preservation chapter.

Dictionary of Architecture and Construction, Cyril M. Harris, editor (1975). New York, NY: McGraw-Hill, 1987.

Historic Architecture Sourcebook, Cyril M. Harris, editor (1977). New York, NY: Dover, 1983.

Recreating the Historic House Interior, by William Seale. Nashville, TN: American Association for State and Local History, 1985.

The Restoration Manual, by Orin Bullock, Jr. Norwalk, CT: Silvermine Publishers, 1966 Reprint—New York, NY: Van Nostrand Reinhold, 1983.

The Technology of Historic American Building, H. Ward Jandl, editor, Washington, DC: Foundation for Preservation Technology, 1983.

What Style is It? A Guide to American Architecture, by John Popperliers, S. Allen Chambers, Jr., and Nancy B. Schwartz. Historic American Building Survey, 1977. Revised edition—Washington, DC: Preservation Press, 1983.

Recording Historic Structures, John A. Burns, editor. Washington, DC: The American Institute of Architects Press, 1989.

Preservation Specialists

These are the people who can assist you with any step along the path of prevention, response and recovery at your site. The following agencies and directories will have names of preservation consultants, building conservators, architects, engineers, landscape architects, archaeologists, craftspeople, contractors, trades people, construction and rehabilitation specialists, collections and document conservation professionals. These professionals can advise you on the special measures most appropriate for your site.

Alabama

Alabama Historical Commission
468 South Perry Street
Montgomery, AL 36130-0900
334-242-3184
www.ahc.alabama.gov

Alabama Emergency Management Agency
5898 County 41
PO Drawer 2160
Clanton, AL 35046-2160
<https://ema.alabama.gov/>

AIA Alabama American Institute of Architects
P.O. Box 240757 / Montgomery, AL 36124
1045 Ambassador Court / Montgomery, AL 36117
334-264-3037
<https://www.aia.org/alabama>

Ask for referrals to architects with historic preservation experience.

Alabama Department of Economic and Community Affairs
PO Box 5690
Montgomery, AL 361030-5690
334-242-5100
<https://adeca.alabama.gov/>
<https://adeca.alabama.gov/cdbg-disaster-recovery/>

Ask for the number of your nearest Regional Planning Commission or its historic preservation contact person.

Local authorities are usually associated with county, city or town governments and their planning departments, engineering departments, or codes enforcement offices.

General

FEMA Federal Emergency Management Agency
Region IV

1371 Peachtree St., NE / Suite 700

Atlanta, GA 30309

404-853-4200

404-230-4230 (fax)

<https://www.fema.gov/assistance>

NTHP National Trust for Historic Preservation

National Trust for Historic Preservation

600 14th Street NW, Suite 500

Washington, DC 20005

202-588-6000 / 800-944-6847

<https://savingplaces.org/>

info@savingplaces.org

<https://savingplaces.org/disaster-recovery>

OHJ Old House Journal

2 Main St.

Gloucester, MA 01930

508-283-3200

Restoration Directory and bi-monthly magazine

<https://www.oldhouseonline.com/>

<https://www.oldhouseonline.com/category/old-house-directory/>

APTI Association for Preservation Technology
International

PO Box 8178

Fredericksburg, VA 22404

703-373-1621 or 1622

Referral Service and Membership Directory

<https://www.apti.org/>

National Park Service

Preservation Briefs

<https://www.nps.gov/orgs/1739/preservation-briefs.htm>

Secretary of the Interior's Standards for the Treatment of
Historic Properties

<https://www.nps.gov/orgs/1739/secretary-standards-treatment-historic-properties.htm>

Federal Tax Incentives for Preserving Historic Properties

<https://www.nps.gov/subjects/taxincentives/index.htm>

- "The activity that is the subject of this presentation has been financed in part with Federal funds from the National Park Service, U.S. Department of the Interior. However, the contents and opinions do not necessarily reflect the views or policies of the Department of the Interior, nor does the mention of trade names or commercial products constitute endorsement or recommendation by the Department of the Interior.
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Office of Equal Opportunity
National Park Service
1849 C Street, N.W.
Washington, D.C. 20240