



U.S. Fire Administration
Working for a fire-safe America

Basic Evaluation Procedures for Abandoned and Vacant Buildings

April 2018



FEMA

Mission Statement

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Basic Evaluation Procedures for Abandoned and Vacant Buildings

Collecting property data

The evaluator should be provided with basic information regarding the property they are assigned to inspect. That information will almost always include the address of the property. However, there may be times when the evaluation is driven by an incident or event involving the building, then the first responder will have to gather as much of the basic information listed at the top of the evaluation form as possible. In situations where the owner is not known, the evaluator may be able to obtain information from neighbors or materials found during the inspection.

Right of entry

Under nonemergency conditions, the evaluator must have permission from the owner prior to entering the property to conduct the inspection. The authority to inspect is typically outlined in the codes and ordinances adopted by the jurisdiction. The evaluator should know the right of entry procedures applicable to the jurisdiction and should carefully follow them. Where permission cannot be obtained from an owner, many jurisdictions have the ability to obtain administrative warrants that allow legal entry to properties.

Where permission to enter a property has not been granted, and an evaluation is deemed necessary, basic information should be collected without trespassing — by making observations from the public way or from adjacent properties that the evaluator has been granted entry.

Conducting the evaluation

The evaluator should keep in mind that the purpose of the inspection is to obtain basic information that can be used by emergency responders and in the decision-making process regarding the disposition of a specific property. The International Association of Arson Investigators/U.S. Fire Administration Vacant/Abandoned Building Evaluation Form is designed to serve as a guide to the collection of essential information regarding the vacant property. The amount of time required to complete the evaluation will depend on the size and complexity of the structure. The evaluation process outlined in this manual is primarily a survey of the property. It is not intended to provide an engineering analysis of the structure. The evaluator is looking for obvious indications of problems involving the site, the building, and its contents.

The objectives of the evaluation are as follows:

- ❖ Determine that the building is secure.
- ❖ Identify hazards that require immediate corrective action.
- ❖ Evaluate the fire growth potential of the building.
- ❖ Evaluate the potential for structural collapse.
- ❖ Identify conditions that could be hazardous to personnel entering the building under emergency conditions (fire, police, Emergency Medical Services).

The evaluation should begin with a walk around the outside of the building to determine the general layout, security and condition of the structure. Other information, such as the type and status of utilities, as well as signs of unauthorized entry, should be noted during the initial walk around. If the evaluator determines that the structure is safe to enter, and they have permission to do so, the interior of the structure should then be examined.

As part of the evaluation, a simple diagram of the building should be drawn. The diagram should include a floor plan of the building with the location of hazards, utility entrances, fire suppression system control valves and connections, and other potentially useful information.

Based on the procedures of the local jurisdiction, the evaluator may also elect to use a camera to document conditions and hazards found during the evaluation. Photos are very useful in developing preplans for emergency responders, as well as tracking the deterioration of a property that remains unoccupied for a long period of time. If photos are taken, the location photographed should be noted on the diagram for future reference.

Safety

Personnel conducting evaluations on vacant and abandoned properties should be aware that these structures are inherently more dangerous than occupied properties. Evaluators should use extreme caution while working in and around these properties. Potential hazards that the personnel should consider include the following:

- Unstable structure.
- Unprotected holes or shafts.
- Fall and trip hazards.
- Standing water in basements.
- Vermin and potentially dangerous animals.
- Hazardous materials abandoned on the property.
- Unauthorized occupants.
- Ongoing criminal activity in, or adjacent to, the property.

Evaluations of vacant and abandoned properties should be conducted by teams, not individuals. The teams should have a means of emergency communication, and their location should be known by a responsible party, such as a supervisor or dispatcher.

Personnel entering buildings should have personal protective equipment, including the following:

- Flashlight.
- Hard hat.
- Work boots.
- Gloves.
- Eye protection.
- Radio or mobile phone.

Prior to entering a building to conduct an evaluation, the team should use information from the exterior survey to identify potentially dangerous areas that should be avoided during the interior survey. While in the structure, the team should constantly evaluate its stability and safety. Any area that appears to be unstable should be avoided. If the stability of the structure is questionable, the team should not enter the building.

Building security

Upon evaluation of a building, it should be classified as:

- Secure.
- Open/Unsecured.
- Signs of recent activity.

The security of the building being evaluated is a key factor in the evaluation process. Buildings that are open to the elements with unauthorized access will degrade more rapidly than those that are intact and secure. While a vacant property is waiting for demolition or re-use, it must be properly secured to prevent unauthorized entry. The importance of proper security is demonstrated by the National Fire Protection Association's estimates: more than 72 percent of fires reported in vacant or abandoned structures are of incendiary or suspicious origin. An additional 5 percent of the fires result from children playing with matches.

A structure that is located in a reasonably stable neighborhood may be secured by simply closing and locking all exterior doors and windows. Where unauthorized entry is an issue, more stringent security measures, including fencing and board up, may be required to prevent entry.

During the evaluation, it should be easy to determine the security of the building during the initial walk around. The evaluator should be looking for open, broken or missing doors and windows, or holes in the exterior walls that can be used to gain access to the building. If the building is boarded up, the evaluator should look for openings where the security measures have been breached or damaged.

When conducting the interior assessment, the evaluator should be alert to signs of recent entry into the building: trash and litter, furnishings in an empty building, and signs of recent heating or cooking fires. Looking at dates on empty food or drink containers found in a building can be an indication of when the unauthorized activity has occurred.

Utilities

Determine the status of utilities connected to the building. During the exterior survey, observe the status of utility meters and valves on the outside of the building. During the evaluation of the interior, the status of the remaining utilities should be determined.

The importance of collecting information regarding utilities is to determine if these are potential sources of ignition in the building from heating or power distribution systems and to document the location of devices that emergency responders can use to control the utilities. Additionally, if fire detection and suppression systems are provided, it is important to know if there is electricity and water available and if the building is heated to prevent freezing.

The point of entry of each utility provided should be noted on the building sketch.

Building use

The original use of a structure and/or how it was last used will provide the evaluator with clues to potential hazards that may be present. For example, when inspecting an industrial building, the evaluator can expect to find pits or shafts for machinery, as well as hazardous materials, including asbestos, polychlorinated biphenyls in transformers, or oil contamination.

If the building has had other uses prior to becoming vacant, the evaluator should look for modifications to the structure or interior finish that could create a hazard, such as removal of fire barriers and walls, removal of equipment that creates unprotected pits or fall hazards, the addition of combustible interior finishes, or the storage of materials that could be hazardous in the event of a fire.

Building construction

Building construction is a key component in the evaluation of a vacant or abandoned building. The primary objective of the evaluator is to document the observable construction elements of the building. The information collected will be used in the evaluation of the potential for the building to withstand fire impingement, and the potential for structural collapse as a result of fire or the deterioration of the structure. This evaluation is not intended to be an engineering analysis of building construction.

The information collected during the exterior survey should include the following:

- ❖ The number of floors and indications of basements and sub-basements.
- ❖ The type of construction used for the exterior walls of the building.
- ❖ Components that could lead to early structural failure in the event of a fire (e.g., metal tie rods with star anchors).
- ❖ The type and number of openings in the exterior of the building (for use in evaluating security, potential for fire exposure, and firefighting operations).

Once the initial observations are made on the outside of the structure, the evaluator should attempt to collect and record the remainder of the information detailed in the building construction section of the form. If the building is safe to enter, additional information should be collected during the interior survey. If it is determined that it is too dangerous to enter the building, collect as much information as possible from the outside.

The second element in evaluating construction of vacant and abandoned buildings is the assessment of the condition of the structural components. The evaluator should look for indicators of deterioration or instability, such as deformed walls or obvious deterioration of structural members. Conditions that lead to deterioration in these properties include the following:

- ❖ Exposure to the elements.
- ❖ Damage done during the removal of contents, such as machinery.
- ❖ Removal of pipes, wiring and other building systems — urban mining.
- ❖ Intentional damage by vandals and unauthorized occupants, such as cutting holes in the floors and walls.

Fire protection systems

When buildings are evaluated early in the vacancy cycle, there is a good chance that installed fire protection systems will be found intact. Many local codes and ordinances require that existing systems be maintained by the building owner. The evaluator should determine if there are fire detection, alarm or suppression systems in the building and if they are operational. If there are operational systems, are the alarms they generate monitored or local only?

This portion of the evaluation will relate to the availability of utilities and building services, such as electricity, water and heat in the case of automatic sprinklers.

Where automatic sprinkler systems are installed, it should be determined by visual inspection if the system is intact. If the supply valves are closed, could it function by feeding the fire department connection? This information could be critical in the decision-making process in the event of a fire in the structure. Where sprinkler and standpipe systems are not intact, and a fire department connection is provided, marking the connection as out of service should be considered as a follow up to this evaluation.

Fire growth potential

This portion of the evaluation is designed to collect information about the potential for a fire to be ignited and grow within the structure. Keeping in mind that a fire needs an ignition source, as well as fuel and oxygen to grow and develop, the evaluator should collect information that will assist in determining the fire growth potential of the building.

The term “fuel package” is used to describe the fuel that is available in a space or compartment. A fuel package is a discreet unit of fuel that will generate energy in the form of heat and light, as well as smoke and fire gases, if it is ignited.

A typical fuel package in a living room of an occupied dwelling would be a sofa. In a compartment fire where the sofa is the first item ignited, the material it is constructed of, where it is located, and the proximity of other fuel packages will determine the fire growth in the space. It is common to find unusual fuel packages in vacant and abandoned buildings, including large accumulations of debris or trash, furniture, and mattresses used by unauthorized occupants. When buildings are not secure, the potential for unauthorized disposal of hazardous materials also exists. Trash accumulation in a compartment is not a normal fuel arrangement. Should these materials be ignited, fire growth and development may be more rapid and larger than normally expected.

Other fuels that the evaluator should watch for during the evaluation include combustible interior finish or exposed structural components. These components may have been covered when the building was in use and will add to the available fuel in the building. Watch for exposed insulation or other materials, such as plastics, that may ignite and burn rapidly.

Collecting information on room size is important when evaluating the fire growth potential, as it will impact the magnitude of a fire in the building. Compartmentalization plays an important role in limiting the growth of a fire in occupied buildings. Large noncompartmented spaces that are part of the building design, or the result of the removal of walls, floors, doors and other structural components, can allow a fire in one part of the building to rapidly travel to other rooms or spaces.

The last element in this section is to estimate the potential for a delay in the notification of the fire department in the event of a fire. Time is a critical factor in fire growth and development. The longer a fire is allowed to burn, the more fuel it will consume. Delays in alarm often result in large fires that challenge the ability of the fire department to control and may require significant resources to fight.

Exposures

This element of the evaluation is closely related to the fire growth section. This section asks the evaluator to look at potential exposures, should the building burn. This information can be used to evaluate the potential for a fire to extend to adjacent structures. The identification system used is based on the fire service’s common system of identifying sides of a fire building.

Information regarding the distance between exposures is used to evaluate the potential for fire extending to the exposed building. The greater the separation, the better chance that the fire will not extend to the exposed structure. The number and types of exposures and openings in the exterior walls determine the potential for an exposure fire.

Fire suppression operations

This element of the evaluation is designed to collect information regarding conditions in and around the vacant or abandoned structure that could present a hazard to firefighters in the event of a fire.

As the exterior and interior surveys are conducted, the evaluator should identify potential hazards in the structure, such as holes in floors, missing stairs, and open shafts and pits. These conditions are hazardous whenever the building is entered, but they present a significant hazard to firefighters operating with very low visibility due to smoke and steam.

The building access data provides basic information regarding the deployment of personnel and equipment, as well as the ability to get rescue personnel into the structure, should firefighters require assistance.

Evaluating the interior layout is also related to the ability of firefighters to navigate through a building when visibility is reduced as a result of a fire. Be alert for unusual or maze-like layouts that could cause firefighters to become disoriented.

The available water supply is included in this section, as it is an important prefire planning consideration. The evaluation of the adequacy of the water supply should include the volume of water required to control the maximum potential fire at this location, including exposures. The location of fire hydrants or other water sources should be indicated on the sketch of the building site.

Hazardous materials

Vacant and abandoned properties are frequently used as a dumping spot for hazardous materials. Additionally, when a property is vacated, the owner or former occupants may leave behind potentially hazardous materials. Should potentially hazardous or dangerous materials be observed during the evaluation, the findings should be documented so that corrective action can be taken.

Evaluators should expect to find potentially hazardous materials in these buildings and should operate accordingly during the evaluation process. That includes the use of proper personal protective clothing, adequate lighting during the evaluation, and avoiding contact with any material that could prove hazardous.

Conditions that require immediate action

Once the evaluation is complete, conditions that require immediate corrective action should be identified. Conditions flagged for immediate action include the following:

- ❖ Serious collapse potential.
- ❖ Accumulations of trash or debris in or near the structure that could serve as an initial fuel package for an intentionally set fire.
- ❖ Hazardous materials located on the site.
- ❖ Lack of security that permits unauthorized access to the building.
- ❖ Indications of criminal activity on the site.

Any condition on the property that could put civilians or emergency responders at risk should be identified in this section. Checking the yes box for this item serves as a flag for the evaluator that immediate action should be taken. The jurisdiction should implement a procedure to address these circumstances.

Analysis of the building

The analysis section of the form provides the evaluator with the opportunity to use the information collected to rate the building. The ratings of **high**, **moderate** and **low** are assigned to each of the listed conditions based on the knowledge and experience of the evaluator. A **high** potential assigned to any of the conditions should trigger an in-depth review of the property and implementation of precautions to reduce the threat to the safety of emergency responders and the public.

Completing the evaluation

To complete the evaluation form, the evaluator should write a brief narrative that describes the property and any hazards found. The narrative provides the evaluator with an opportunity to address issues that are not included on the evaluation form and to expand on issues that are identified but require additional information.

The final stem in the process is developing a readable sketch of the property to be included with the evaluation form. This is not intended to be a building plan, but a simple sketch that shows the basic layout of the property. Information needed to develop a fire operations preplan or to make decisions regarding the disposition of the building should be included on this diagram. Where the evaluators have access to computer-based drawing programs, the rough sketch can be used to create a clean diagram that is annotated. Based on the jurisdiction, the diagram or building file may also include photos of the structure and property that can be used in the preplanning and decision-making process.