Securing Vacant/Abandoned Buildings Presentation

Support Slides

Developed as part of the:

IAAI/USFA Abandoned Building Project

This presentation is intended to support presentations to personnel assigned to secure vacant and abandoned buildings. Additional information related to the presentation is found in the project background package and lesson plan that accompanies the presentation.

Securing Vacant and Abandoned Buildings

IAAI/USFA Abandoned Building Project

The "Broken Windows" Theory of Social Disorder

From one broken window, you can lose a street

George Kelling and Catherine Coles describe the relationship between abandonment and crime as the "Broken Windows theory of social disorder" in their publication *Fixing Broken Windows: Restoring Order and Reducing Crime in Our Communities*[1]. The following quote is from the books Forward written by James Wilson

"If a factory or office window is broken, passersby observing it will conclude that no one cares or no one is in charge. In time, a few will begin throwing rocks to break more windows. Soon all the windows will be broken, and now passersby will think that, not only is no one in charge of the building, no one is in charge of the street on which it faces. Only the young, the criminal, or the foolhardy have any business on an unprotected avenue, and so more and more citizens will abandon the street to those they assume prowl it. Small disorders lead to larger and larger ones, and perhaps even to crime."

[1] Kelling, George L. and Catherine M. Coles. *Fixing Broken Windows:Restoring Order and Reducing Crime in Our Communities.* New York:Touchstone, 1996.

Target Properties

- **Secure and well maintained properties are not the problem**
- **Problem properties**
  - ✓ **Vacant**
  - ✓ **No viable owner**
  - ✓ **Unsecured**
  - ✓ **Accessible**

Properties that are secure and well maintained, even though they are unoccupied, are not the problem. Communities should monitor all vacant properties, but those that have no viable owner and are unsecured and accessible to unauthorized entry are the properties that require immediate attention to prevent fires and other criminal activity.

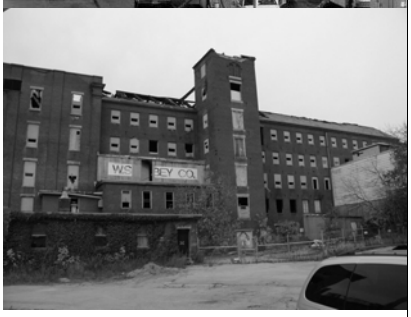
Vacant Properties

It is estimated that 18% of urban structures in the United States are unused

The ISO estimates that there are more than 21000 idle properties of over 15000 square feet in the United States

The Problem

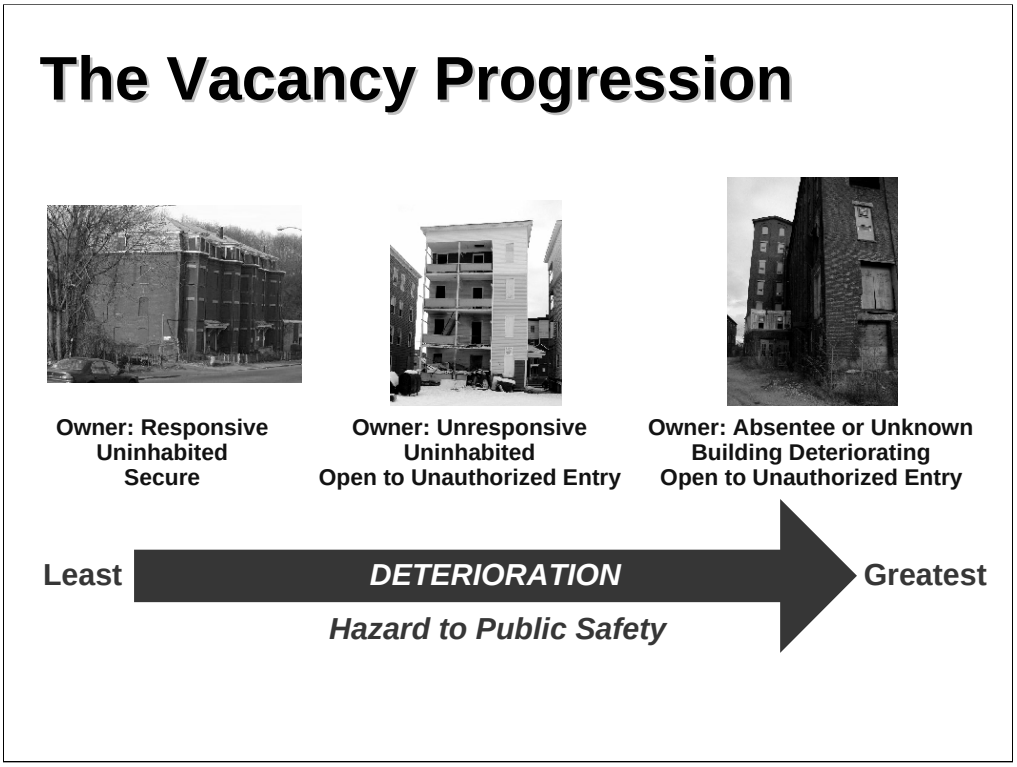
- **Thousands of fires annually**
- **Civilian injuries and deaths**
- **Fire Fighters are more likely to be injured fighting fires in vacant properties than any other property type**
  - ✓ **More than 6000 fire fighter injuries every year**
  - ✓ **From 1990 to 1999 - 23 fire fighters died while operating at fires in vacant/idle properties**



Every fire firefighter knows that vacant or abandoned buildings are a significant public safety issue. Vacant or abandoned structures are unsightly, attract criminal activity, and are a threat to public safety wherever they exist. These buildings also attract vandals, the homeless, and children.

The National Fire Protection Association (NFPA) estimates that more than 6000 firefighters are injured while fighting fires in these properties every year. NFPA statistics show that more firefighters are injured while operating at fires involving vacant or abandoned properties than in any other property classification. Fires in vacant and abandoned properties cause an average of 10 civilian fatalities each year. The loss of six fire fighters operating in a vacant property in Worcester, Massachusetts, in December of 1999, was a tragic example of the hazards these buildings pose to communities.

As part of the discussion for this slide, the instructor should ask the participants why these buildings are more dangerous than occupied buildings. The point should be made that the injuries to firefighters can be linked to the hazards that are inherent to vacant and abandoned properties that are not secure. Building deterioration due to elements, urban mining, accumulation of combustible materials (trash), etc., are all reasons for the dangerous conditions. Stress that unsecured vacant or abandoned structures are inherently more dangerous than occupied structures.



Discuss the progression shown on this slide. Point out that deterioration of buildings results from age, vandalism, and being open to the weather. The more deterioration, the more dangerous and unsightly the building becomes. This condition is made worse if the building is also occupied or used by unauthorized occupants for shelter, to hide and play in, or for criminal activity.

The Impact on the Community

- Crime
- Safety
- Community image

Abandonment is a contagious phenomenon

"Abandonment of property is the most striking indication of neighborhood decline. Large-scale abandonment threatens the stability of neighborhoods and undermines the value of investments made by other property owners. The literature indicates that abandonment and decline of property can be considered as a contagious phenomenon. Fire is intertwined with abandonment as both a cause and an undesired side effect.

Abandonment usually signals the end of a building's productive life. Real estate market conditions, difficulty in obtaining financing for renovation or repair, withdrawal of fire insurance, and declining economic fortunes of tenants all contribute to abandonment. In declining areas, the use value of a building will frequently exceed its market value. Any damage to the building sufficient to vacate it can lead to abandonment by the owner."[2]

The issues that Charles Jennings describes in the quote above are those that resulted in significant fire problems in cities such as Detroit; Houston; New Haven, Connecticut; Utica, New York; and Lawrence, Massachusetts. For commercial or industrial properties the issue may be that the building has reached the end of its useful lifecycle and that it would cost more that it is worth to improve it for continued use. Many industrial buildings in the Northeast fit this category. Environmental pollution and the high cost of mitigation are also factors in the abandonment of commercial properties. Whatever the cause, these rapidly deteriorating buildings in communities become havens for the homeless and vandals, as well as magnets for criminal activity.

[2] Urban Residential Fires: An Empirical Analysis of Building Stock and Socioeconomic Characteristics for Memphis, Tennessee. Dissertation by Charles R. Jennings, Cornell University, August 1996.

Why Building Security is Essential

- **Of the more than 12000 fires in vacant structures every year**
  - ✓ **Nearly 72% are of incendiary or suspicious origin**
  - ✓ **More than 5% are caused by children playing with matches**

In view of the significant number of intentionally set fires in these buildings, it stands to reason that, if access to the buildings is denied, intentionally set fires can be prevented.

Securing Buildings

- Prevents unauthorized access
- Reduces exposure to elements
- Must be done well
- Requires regular monitoring to make sure security measures are not breached
- Slowing down deterioration of the structure from weather and vandalism

Security is a temporary measure

It is critical that unauthorized access to vacant and abandoned building is prevented either by proper security or high visibility surveillance.Where physical security is required, it must be done well to be effective. Once secured, the building must be patrolled with some frequency to make sure it remains secure.

An added benefit to boarding up an entire structure, or “mothballing” it, is that deterioration due to weather exposure is also reduced.

Discuss the last point – Security is a temporary measure – While a building may remain boarded up for some time, in the long term it must be reused/rehabilitated or demolished to truly mitigate the problem.

Is This Security?

Review each photo with the group.

Securing Vacant and Abandoned Buildings

Security = Crime Prevention
Fire Prevention

Keeping unauthorized occupants out of vacant and abandoned buildings is a key method of preventing fires in the properties. Boarding a building up is one of the most effective ways to accomplish this objective. Another method might include high visibility police patrols. Whatever methods are selected by your jurisdiction, they should be actively enforced.

The Process

- **Identification – What buildings in your jurisdiction are vacant?**
- **Evaluation – Determine the potential hazards to public safety**
- **Preparation – What must be done prior to securing the building and what materials will be needed?**
- **Action – Securing the building**

Many communities do not have an up to date list of properties that are vacant or abandoned. This is an essential element of the process necessary to mitigate the hazards these buildings pose to the safety of the community and the firefighters who are faced with fires in the buildings.

When a building is known to be vacant/abandoned, it should be evaluated by the fire department to determine if there are any potential hazards. A building evaluation form and educational program is available as part of the IAAI/USFA Abandoned Building Project materials.

Once the building is evaluated, the jurisdiction should have sufficient data to determine if it is properly secured or requires additional security measures to prevent unauthorized access. If additional security is required, an assessment should be made as to what level of security is required and the preparations necessary prior to securing. Preparations will include removal of combustible/hazardous materials, disconnecting utilities, and determining what materials will be required to properly secure the structure.

When the building is properly prepared, it can be secured. The security process should included a final walk through to verify that combustibles and hazardous materials are removed and that there are no unauthorized occupants.

Each point on this slide will be expanded as the presentation continues.

Building Security Methods

- **Normal – Locks on windows and doors**
- **Board Up**
  - ✓ **Simple**
  - ✓ **HUD**
  - ✓ **HUD Reinforced** (USFA National Arson Prevention Initiative method)
- **Fencing**
- **Intensive Surveillance**
- **Security Guards**
- **Intrusion Alarm**

There are several methods that can be used to secure buildings. The focus of this presentation is the reinforced method that is recommended by the USFA's National Arson Prevention Initiative.

The other methods are introduced in the following slides and should be discussed with the group.

Normal Security

This is the typical security provided an occupied building.This includes locks on doors and windows and no unsecured openings in walls. Additional measures may include fencing and gates. This method will work for some buildings in low threat locations. Additional security measures must be taken immediately if signs of vandalism or unauthorized entry begin to appear.

Simple Board Up

This slide shows an example of a non-reinforced board-up of a historic structure. Note vents and light panels on upper floors. This is the least complex and lowest cost method for securing a structure. It is also the easiest to breach.

HUD Board Up

The HUD board up procedure uses plywood covers for window and door openings that are held in place using carriage bolts and 2 x 4 braces on the interior. While it is more secure than plywood attached to windows or doors with nails or deck screws, it can be breached by driving the bolt through the plywood.

HUD Reinforced Board Up

This method is the method of choice for high threat locations. It is the most secure type of board-up and also the most costly. The installation for windows and doors is discussed in more detail later in the program.

Fencing for Security

Simply fencing in a property is a method of securing it. As with other methods, it is only as effective as the quality of installation. The photo on the right of the slide shows a property where the fence has been pulled aside and is accessible.The use of razor wire in the photo on the left may work, but creates a significant hazard if firefighters are not aware of its use.

Other Methods

- **Intensive Surveillance by police and fire department**
  - ✓ **Regular building sweeps to remove occupants**
- **Security Guards**
  - ✓ **24 hour guard service on premises**
- **Intrusion Alarm**
  - ✓ **Monitored and supervised alarm system**
  - ✓ **Police or guard service response to alarms**

Other methods of providing security include intensive surveillance of properties by police. This method requires frequent sweeps of vacant/abandoned buildings and the identification and removal of unauthorized occupants. While it is a very effective method, it requires constant attention by the police and can be time consuming.

The use of security guard services is an effective security method, but is very costly. This method would be useful for buildings that are vacated for short periods of time and are slated for rehabilitation or rapid demolition.

Buildings that still have utilities may be candidates for intrusion alarm systems that are properly installed, supervised, and monitored on a 24-hour per day basis.

Pros and Cons of Board Up

- **Pros**
  - ✓ **Provides a high level of security**
  - ✓ **Reduces criminal activity**
  - ✓ **Reduces fires**
  - ✓ **Is easily monitored**
- **Cons**
  - ✓ **Expensive materials**
  - ✓ **Complex installation**
  - ✓ **Difficult for fire department to gain access**

Many communities reject the idea of boarding up properties as too difficult or costly. The instructor should discuss this with the participants and develop a list of methods they might use to counter this reaction.

Also, discuss how to respond to the fire official who dismisses securing properties as being a hindrance to suppression activities.

Security = Crime & Fire Prevention

If you can prevent access, the potential for crime and intentionally set fires is significantly decreased. Security also reduces the potential for anyone being in the building in the event of a fire. With this in mind, operations on well secured building where there are fires should be largely defensive operations.

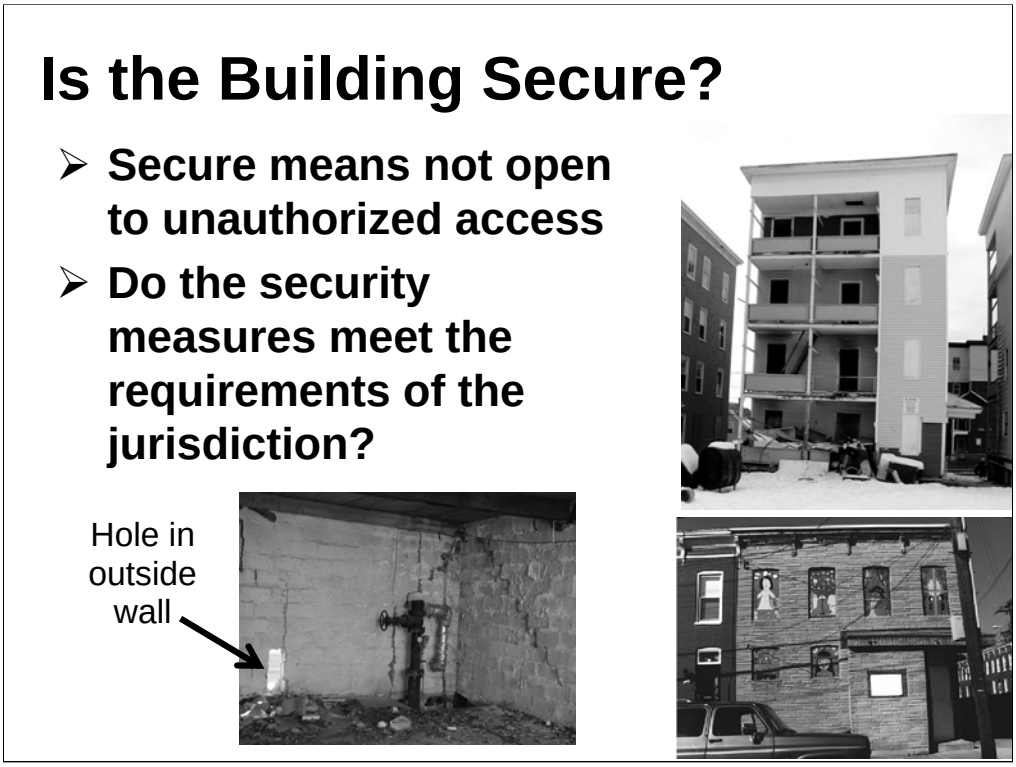
Building Evaluation

Objectives

- ✓ **Determine that the building is secure**
- ✓ **Identify hazards that require immediate corrective action**
- ✓ **Evaluate the fire growth potential**
  - **Exposure fires**
  - **Available fuel packages**
  - **Compromised fire barriers**
  - **Location and type of hazardous materials on site**
- ✓ **Evaluate the potential for structural collapse**
- ✓ **Identify conditions that will be hazardous to fire fighters in the event of a fire**

Prior to securing a vacant/abandoned building, it should be evaluated to identify potential hazards and determine what must be accomplished before being boarded up.

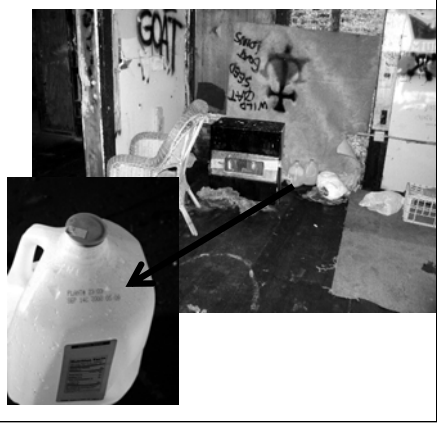
Additional information on building evaluation is provided in the Building Evaluation Lesson Plan and Support Slides Package developed as part of the IAAI/USFA Abandoned Building Project.



Discuss the requirements for security that are enforced by the jurisdiction. On this slide, the doors and windows of the building shown in the lower left corner were secured, but a masonry block wall has been breached, making it accessible.

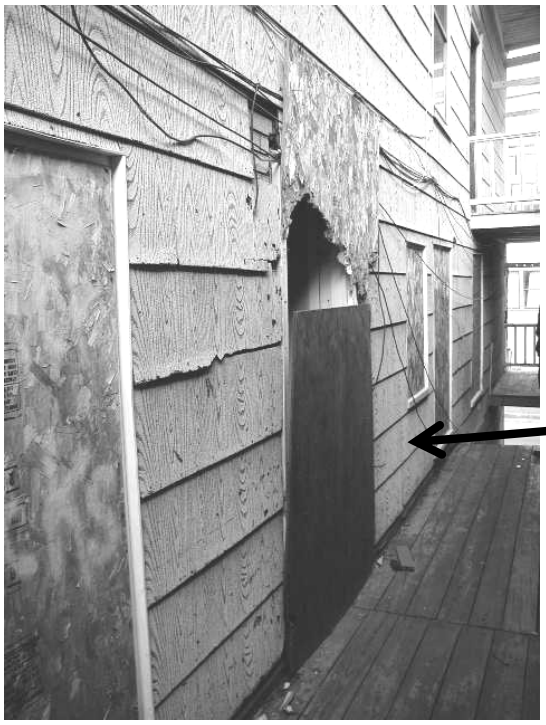
Signs of Recent Entry

- Trash/litter
- Furnishings in an otherwise empty building
- Signs of recent fires for heat or cooking



Date on milk container was within a month of the inspection.

Securing Vacant and Abandoned Buildings



The building was boarded well on street level. On the 2nd floor, wood was easily pulled away without tools.

More problems are found with security. This slide shows the need for regular patrol to determine the integrity of the security measures. When problems are found, they must be repaired.

The sledge hammer (universal key) was found on a roof adjacent to the openings shown on this slide during a building evaluation. Whatever security measures are taken, they must be able to withstand this type of assault.

Fix it Now

Are there conditions that should be remedied immediately?

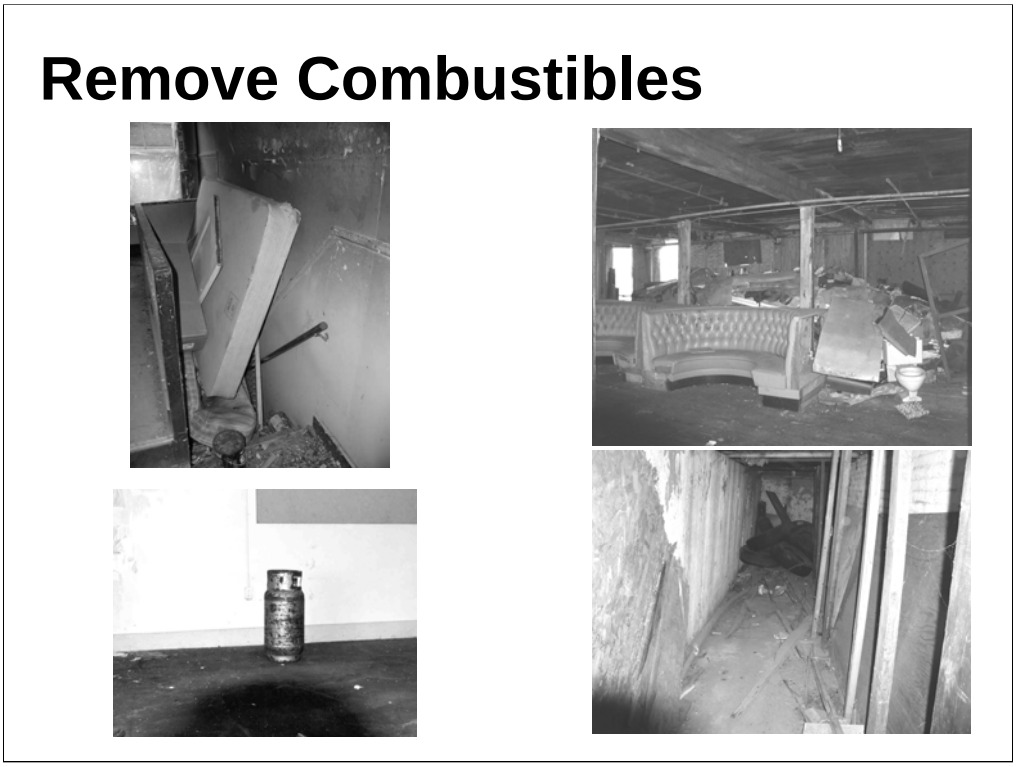
- ✓ Significant fire hazards
- ✓ Lack of security
- ✓ Trash accumulations
- ✓ Life safety hazards
- ✓ Potential for collapse

As with any inspection, the evaluator should identify any areas found that may require immediate action. Trash accumulations in or near the structure, unsecured openings into the building that could be used for unauthorized access, and serious collapse potential are all examples of items that would require immediate attention.

Preparation

- Remove combustibles and hazardous materials
- Disconnect utilities
- Determine what materials are needed for board-up

The next three slides expand on each of these points.



Combustibles and hazardous materials should be removed prior to securing the building. This process should be completed well before the actual board up. Just prior to actually securing the building, a walkthrough should be made to locate and remove any material that may have been brought in between the removal effort and the actual board-up.

This step in the process eliminates potential fuel packages from the building and reduces the potential for fire after it is secured.

Utilities

- **Turn off water and drain plumbing system**
  - ✓ **Open all faucets**
  - ✓ **Put anti-freeze in traps**
- **Arrange for power company to disconnect electricity**
- **Arrange for natural gas shut off or disconnect and remove LPG tanks**
- **Empty fuel oil tanks**

Disconnecting utilities reduces the potential for fire, makes the building less attractive to vagrants, and reduces the potential for damage or contamination due to leaks.

What is Needed for Board-Up?

- **Count and measure openings that require board-up**
- **Determine the quantity of materials required to accomplish the job**
- **Order materials**
- **Pre-cut and drill if possible**

Prior to the board-up, the building should be evaluated and all openings that are to be secured measured so that materials can be ordered and pre-cut.

The worksheet provided with the lesson plan for this program is an aid to determining the materials that will be needed for the job. When securing buildings with masonry or unusually thick walls, verify that 12-inch carriage bolts will be long enough to pass through the plywood, both braces, and the wall.

Board-Up Materials

WINDOW ASSEMBLY
MATERIALS REQUIRED PER WINDOW

- 1 1/2" CDX PLYWOOD SHEET - CUT TO DIMENSIONS OF WINDOW FRAME (WEATHER SIDE
- 4 2X4 BRACES - CUT TO WIDTH OF PLYWOOD
- 4 CARRIAGE BOLT ASSEMBLIES

DOOR ASSEMBLIES
MATERIALS REQUIRED PER DOOR

- 1 1/2" CDX PLYWOOD SHEET - CUT TO DIMENSIONS OF DOOR FRAME (WEATHER SIDE)
- 1 1/2" CDX PLYWOOD SHEET - CUT TO OUTSIDE DIMENSIONS OF DOOR FRAME TRIM (INSIDE)
- 6 2X4 BRACES - 3 CUT TO WIDTH OF OUTSIDE PLYWOOD, 3 CUT TO WIDTH OF INSIDE PLYWOOD
- 1 2X4 BOTTOM BRACE - CUT TO WIDTH OF DOOR TRIM (OPTIONAL)
- 6 CARRIAGE BOLT ASSEMBLIES

CARRIAGE BOLT ASSEMBLY

- 1 12' X 3/8" CARRIAGE BOLT - COURSE THREAD
- 1 1/2" USS STANDARD FLAT WASHER (WEATHER SIDE)
- 1 3/8" USS STANDARD FLAT WASHER (INSIDE)
- 1 3/8" CONSTRUCTION GRADE NUT - COURSE THREAD

NUMBER OF WINDOWS TO BE SECURED (N_w): _____

NUMBER OF WINDOWS BRACES REQUIRED: (N_w X 4) _____

CARRIGE BOLT ASSEMBLIES REQUIRED (B_W): (N_w X 4) _____

NUMBER OF DOORS TO BE SECURED (N_D): _____

NUMBER OF DOOR BRACES REQUIRED: (N_D X 6) _____

NUMBER OF BOTTOM BRACES REQUIRED: (N_D) _____

CARRIGE BOLT ASSEMBLIES REQUIRED(B_D): (N_D X 6) _____

TOTAL CARRIGE BOLT ASSEMBLIES REQUIRED:(B_W + B_D) _____

USFA National Arson Prevention Initiative
Board Up Procedures
MATERIALS LIST
IAAI/USFA Abandoned Building Project

Which Openings Need Securing?

- **Within 10’ of grade**
- **Accessible from porch, fire escape, roof, or climbing point**

Discuss the requirements for securing buildings to prevent access listed on this slide. Point out that other openings in the building should be covered to prevent exposure by elements and the potential for throwing incendiary devices through them.

Board Up Materials

- ½” CDX plywood to cover openings
- 2” X 4” construction grade lumber for braces
- 3/8” X 12” carriage bolts with nuts and washers
- Nails or deck screws to secure plywood covers

The materials required to install a reinforced board-up are listed on this slide. Point out that cutting corners and using lesser grade materials or not installing the carriage bolts will diminish the level of protection provided. The actual assemblies will be discussed in detail later in the presentation.

This slide shows the importance of doing the job well with the proper materials. Particle board is ineffective as a security measure. It deteriorates rapidly when exposed to weather and is easily breached by anyone who wants to gain access to the building.

Securing the Building

- Search Building
- Remove doors and storm windows
- Post the building with "No Trespassing" signs
- Install barriers
- Mark the building for firefighting operations

This slide begins the portion of the presentation dealing with the installation of the security assemblies for a reinforced board-up. Each point on this slide is addressed by the slides that follow.

Search Building

A complete search should be conducted immediately prior to boarding up any building. Any unauthorized occupants should be identified and removed.

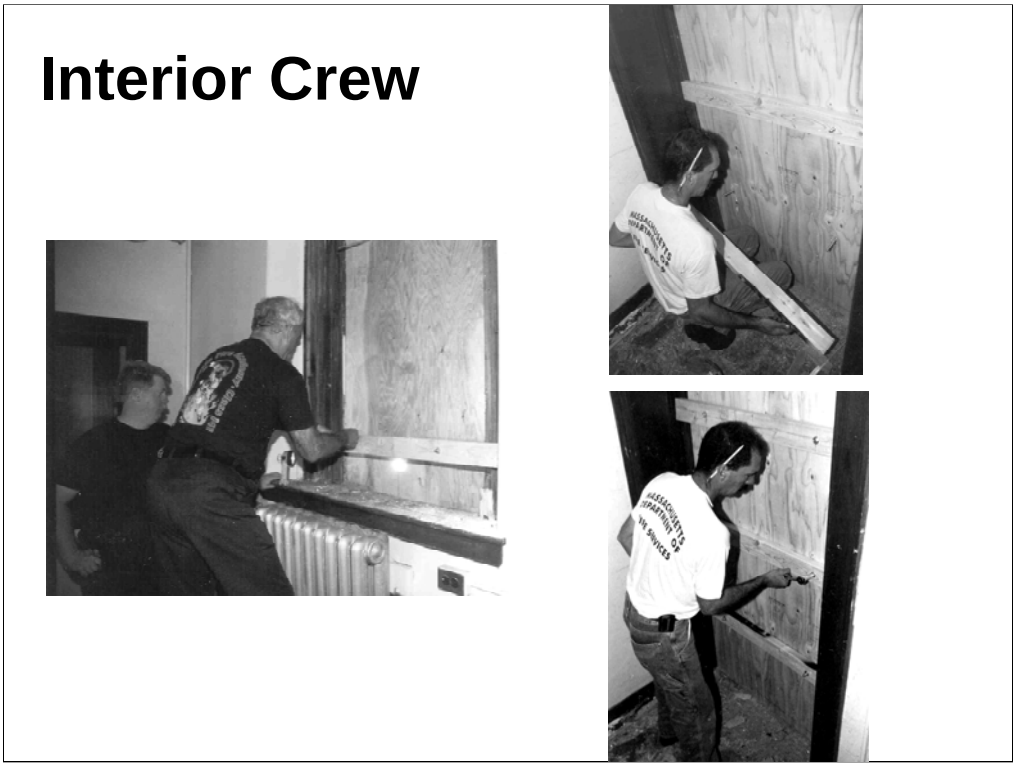
A uniformed police officer should be available to assist in this effort. Many jurisdictions use K-9 teams in larger buildings.

The search is critical when a complete reinforced board-up is to be accomplished since any occupants remaining in the structure would be trapped.

Preparation

- Remove doors
- Remove window screens
- Position double hung windows in center of opening to allow bolts to be passed through

Discuss the steps for preparing for board-up listed on the slide.



A crew of workers is assigned to the inside of the building to complete the installation of the interior braces and tighten the carriage bolts.

When the process is complete, the interior crew will have to be removed from an upper floor of the structure using a ladder. The opening used is then secured with plywood and nails or deck screws.

If egress can not be accomplished using a ladder, one opening will have to be secured from the outside after the interior crew exits. This opening should be in the front of the building so that is visible. Every effort should be made to make entry through this opening as difficult as possible. At a minimum, apply plywood over the opening and nail at 12 inch intervals around the perimeter. If a solid door is used it should be secured with a hasp that is bolted through the door and a lock.

Exterior Crew

Monitor installation and avoid pry points on braces and bolt assemblies

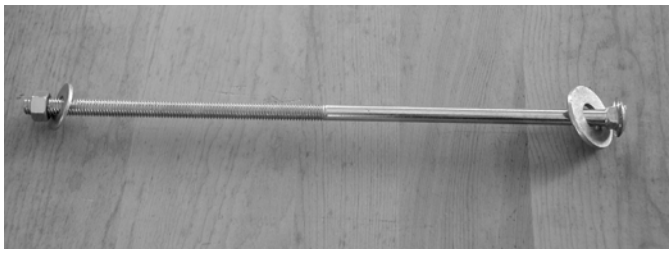
The exterior crew positions the plywood covers, braces and carriage bolts in each opening accessible from grade. They should monitor the assembly as the bolts are tightened by the interior crew to make sure the bolts are tightened sufficiently to eliminate any pry points on the braces or bolt heads. Handheld radios may assist in communication between the interior and exterior crews.

Reinforced Board-Up

Installation Details

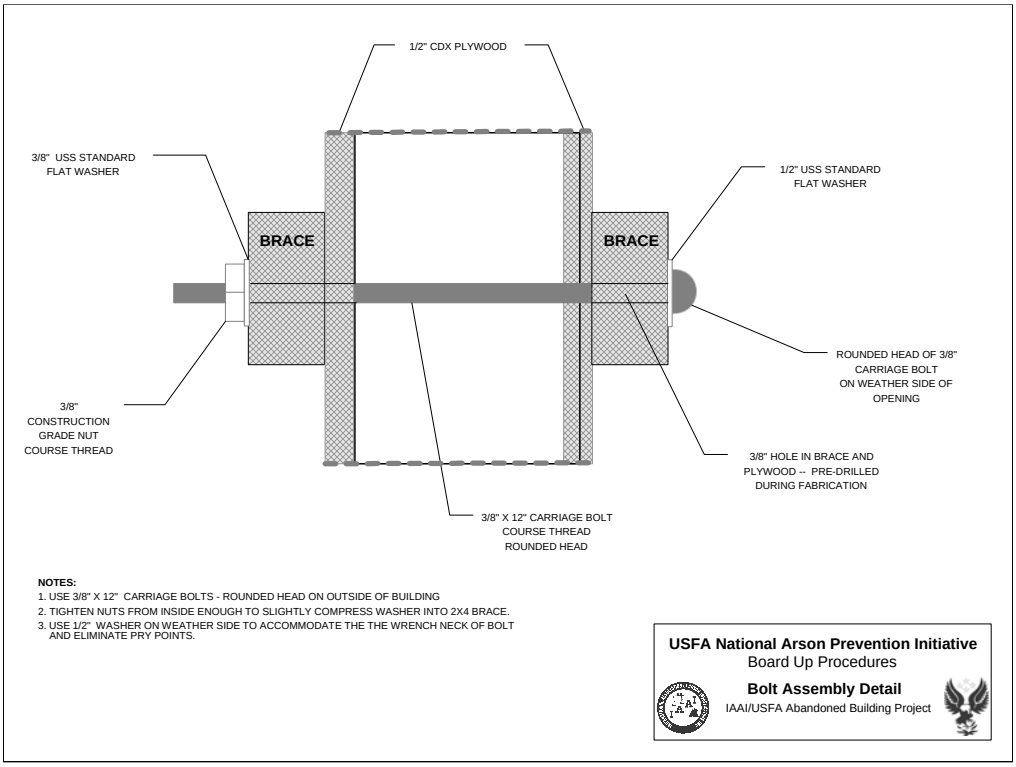
The following slides provide a detailed overview of the assemblies that make up the reinforced board-up.

Carriage Bolt Assembly



1 – 12” X 3/8” Carriage bolt – coarse thread
1 – ½” USS Standard flat washer – weather side
1 – 3/8” USS Standard flat washer – inside
1 – 3/8” Construction grade nut – coarse thread

The carriage bolt assemblies provide strength to the board-up unit. While some buildings may allow the use of shorter bolts, proper installation of the bracing system will, more often than not, require the 12-inch bolts. Experience has shown that 12-inch carriage bolts are not always an easy item to locate. An adequate supply should be on hand when attempting to complete a board-up.



The braces and carriage bolts are the key to the reinforced board-up method. The assembly, when properly installed, is very difficult to breach. It provides a significant level of security in high risk areas. It is, however, an expensive option due to the additional materials required.

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Interior and exterior photos of the carriage bolt assembly are shown. Avoid pry points on the outside surfaces as shown on the left slide.

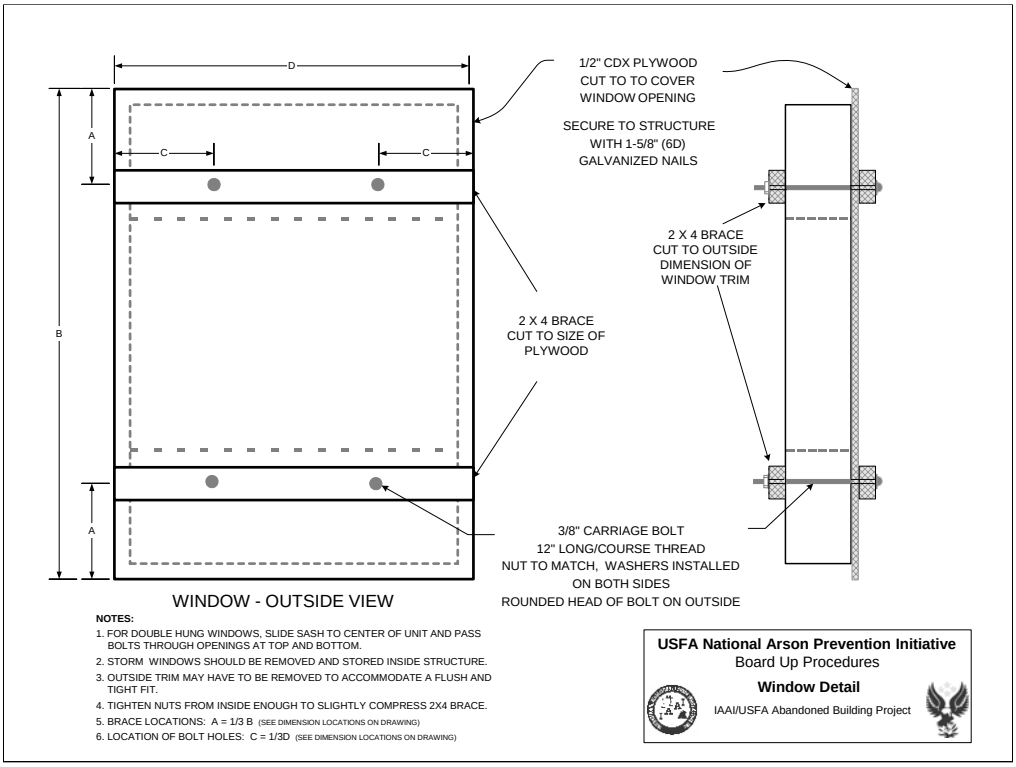
Window Assembly

Materials Required per Window

- **1 – ½" CDX Plywood sheet cut to dimensions of window frame installed on weather side**
- **4 – 2 X 4 Braces cut to width of plywood**
- **4 – Carriage bolt assemblies**

Review the materials and construction of the window assembly.

Securing Vacant and Abandoned Buildings



This slide shows window assembly detail. While there are many methods available for securing properties, the USFA National Arson Prevention Initiative Board Up (HUD Reinforced) system is one of the most effective. Done correctly and coupled with a surveillance program, buildings secured using this method are very difficult to enter. The system is also resistant to deterioration due to weather or the elements.

This drawing is available in the lesson plan. Participants should be provided a set to reference during discussion.

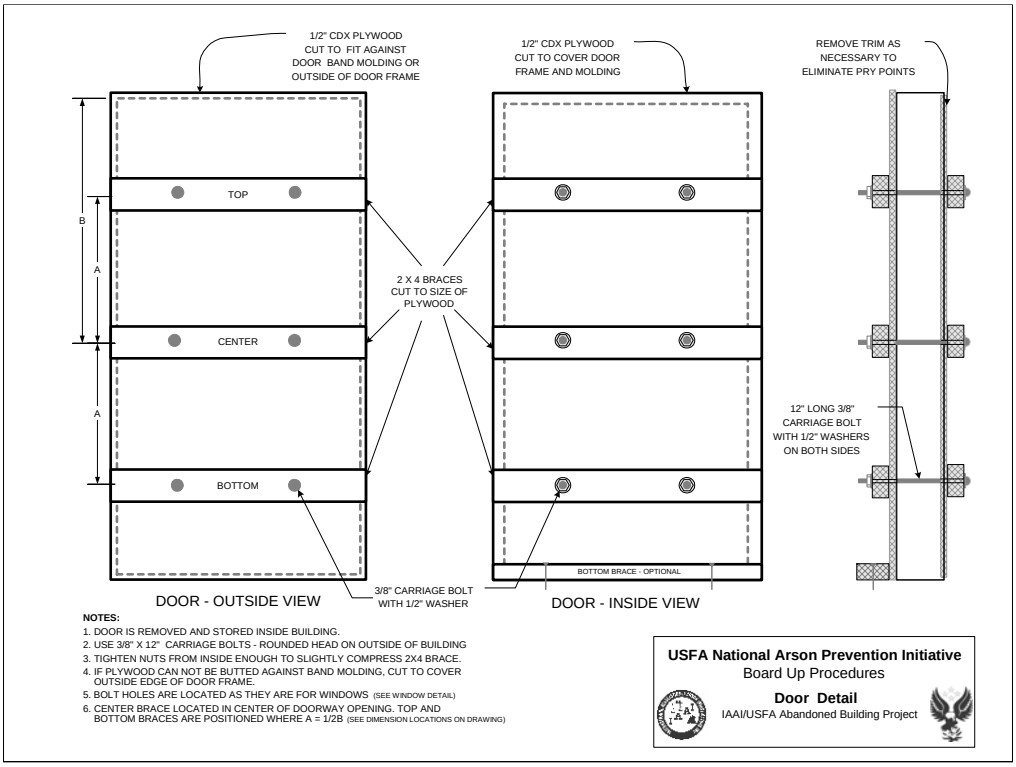
Door Assembly

Materials Required per Door

- **1 – ½" CDX plywood sheet cut to dimensions of weather side of door frame**
- **1 – ½" CDX plywood sheet cut to outside dimensions of interior door frame**
- **6 – 2 X 4 Braces – 3 cut to width of plywood of each sheet of plywood**
- **6 – Carriage bolt assemblies**
- **1 – 2 X 4 bottom brace – cut to dimension of interior door frame (Optional)**

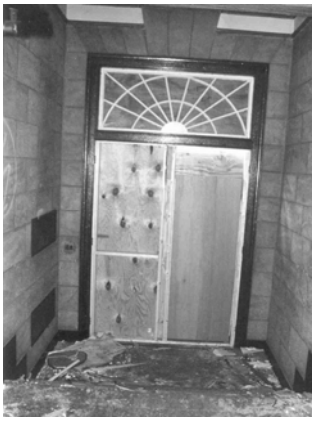
Review the materials and construction of the door assembly.

Securing Vacant and Abandoned Buildings



Review door assembly detail with group.

Large Openings



Discuss the method for dealing with large openings. Many times a 2 x 4 frame will have to be constructed and the plywood and braces attached to the frame and building. For openings that the through-bolt compression method is not practical, the opening should be covered using plywood that is secured to the structure using 3-inch wood screws applied on 4-inch centers around the circumference of the opening.

Securing Vacant and Abandoned Buildings

Examples of securing large openings in a vacant factory.

Allowing Authorized Entry

- Utilize a solid core door of wood or metal construction
- There should be NO openings in the door
- Secure using padlock and hasp
- Hasp should be installed using bolts that pass through the door

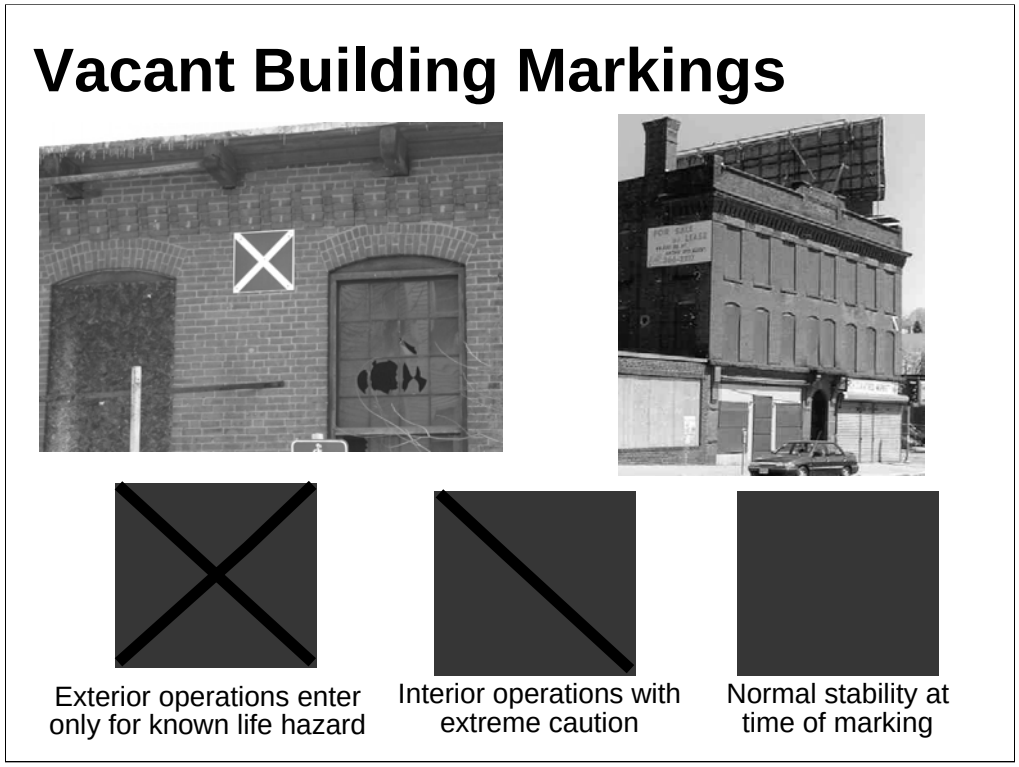
For buildings that require access by authorized personnel, a door opening may be secured using a solid core entry door assembly without windows or other openings. The locking arrangement may be a lock and hasp as shown on this door, or a dead bolt lock installed on the door and frame.

Hasps should be through-bolted and the loop assembly secured to the structure using long heavy-duty screws.

Precautions for Doors

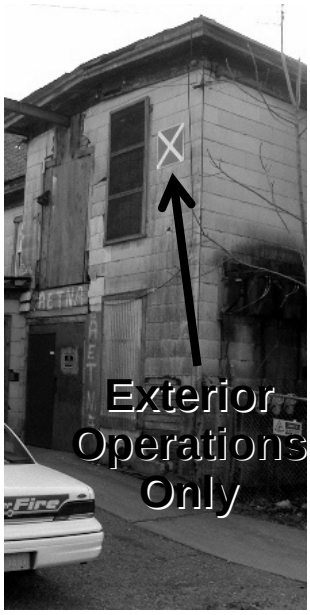
- **Openings in security doors allow devices to be dropped into the building**
- **Flammable liquids could also be poured through them**

Note that the door in this photo has a hole through it for placement of a door knob. This opening has been used to drop fireworks or burning combustibles into the building. Doors used for this purpose should be without openings, or they should be securely covered when installed.



These markings are based on the system used by FDNY in New York City. Other jurisdictions may utilize different marking systems. In Massachusetts, the X and \ markings are used. The blank was not included in the modifications to the state fire prevention code.

Marking Buildings



- Severe structural or interior deficiencies
- Operations should be conducted from outside except for life safety
- If interior operations are required
  - ✓ Approval of Incident Commander
  - ✓ Modification of tactics
  - ✓ Examination before units are committed
- Time of any interior operations must be limited

This is an example of the marking system established in Worcester, Massachusetts, after the loss of the six firefighters in the Cold Storage building. This system is an adaptation of the one used in New York City and other major metropolitan cities. Marking systems are intended to provide firefighters responding to a fire with a visual cue that the property is vacant and that it has been evaluated and found to contain hazards to firefighters.

Legal Posting on Buildings

Codes and ordinances enacted by jurisdictions may require that building be posted with specific notices when inspectors find violations. This slide shows several examples from the Neighborhood Services Department in Champaign, IL.

No Trespassing

- **Secured buildings should be posted with NO TRESSPASSING signs**
- **This assists the police in taking action against individuals who enter buildings without authority**

Posting buildings with NO TRESSPASSING signs will assist police in taking action against individuals who enter the properties without permission. The application of these signs should be required by local Board-up ordinances if they are enacted.

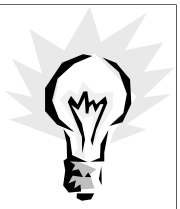
When Do You Placard?

Some communities placard vacant or abandoned buildings after they have been evaluated and secured. The rationale for placarding after securing is to reduce the possibility of vandals setting fire to the building if they still have access but know that the fire department considers it a hazardous building to enter.

Marking of vacant/abandoned structures determined to be hazardous is a significant step toward improving firefighter safety. If it is delayed until a building is secured, then every effort should be made to provide security as soon as possible after a building is vacated or abandoned. In Worcester, Massachusetts, the city now requires board up within 48 hours after notification of a hazard due to vacancy or abandonment.

Questions

Activity



- **Assess the assigned building**
  - ✓ **Identify all openings that require boarding up using the HUD Reinforced method**
  - ✓ **Develop a materials list for boarding up the building using the HUD reinforced method**
- **Complete a reinforced board-up of the assigned opening using the materials provided**

The assistance provided by Massachusetts State Fire Marshal Stephen D. Coan and the staff at the Massachusetts Department of Fire Services in the production of this presentation is greatly appreciated.

IAAI/USFA Abandoned Building Project