

# Evaluating Vacant and Abandoned Buildings

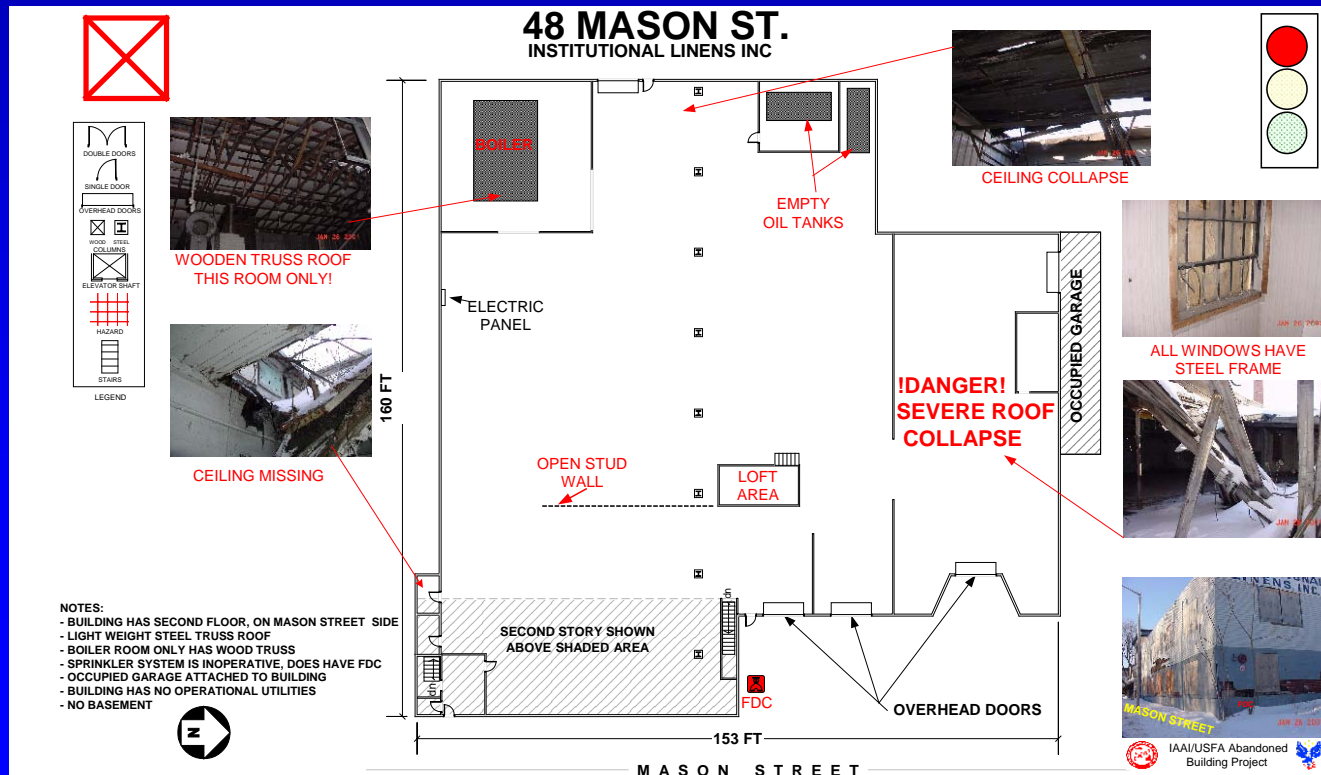


**IAAI/USFA Abandoned  
Building Project**



# Inspection and Evaluation

- Determine just what the hazards are
- Document the findings
- Use data to determine the proper action for the building



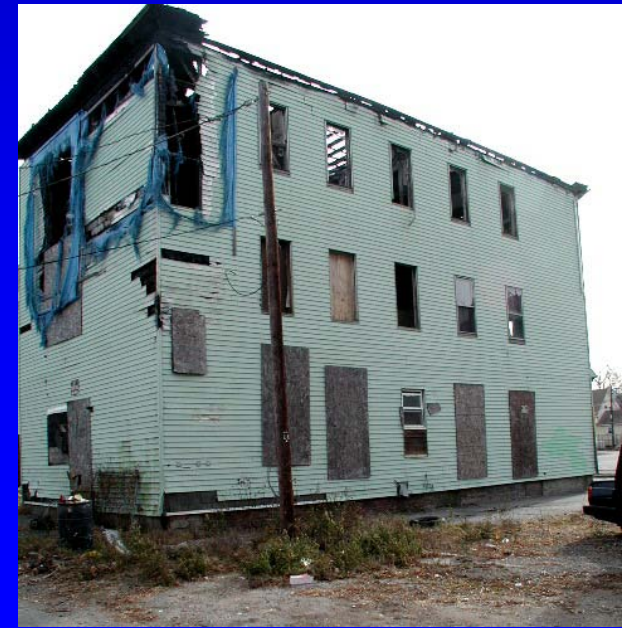
# Vacant or Abandoned?

## ➤ Vacant buildings

- ✓ Owner is known
- ✓ Taxes are current
- ✓ Building is “unoccupied”

## ➤ Abandoned buildings

- ✓ No viable owner
- ✓ Taxes not paid
- ✓ Building is not legally occupied

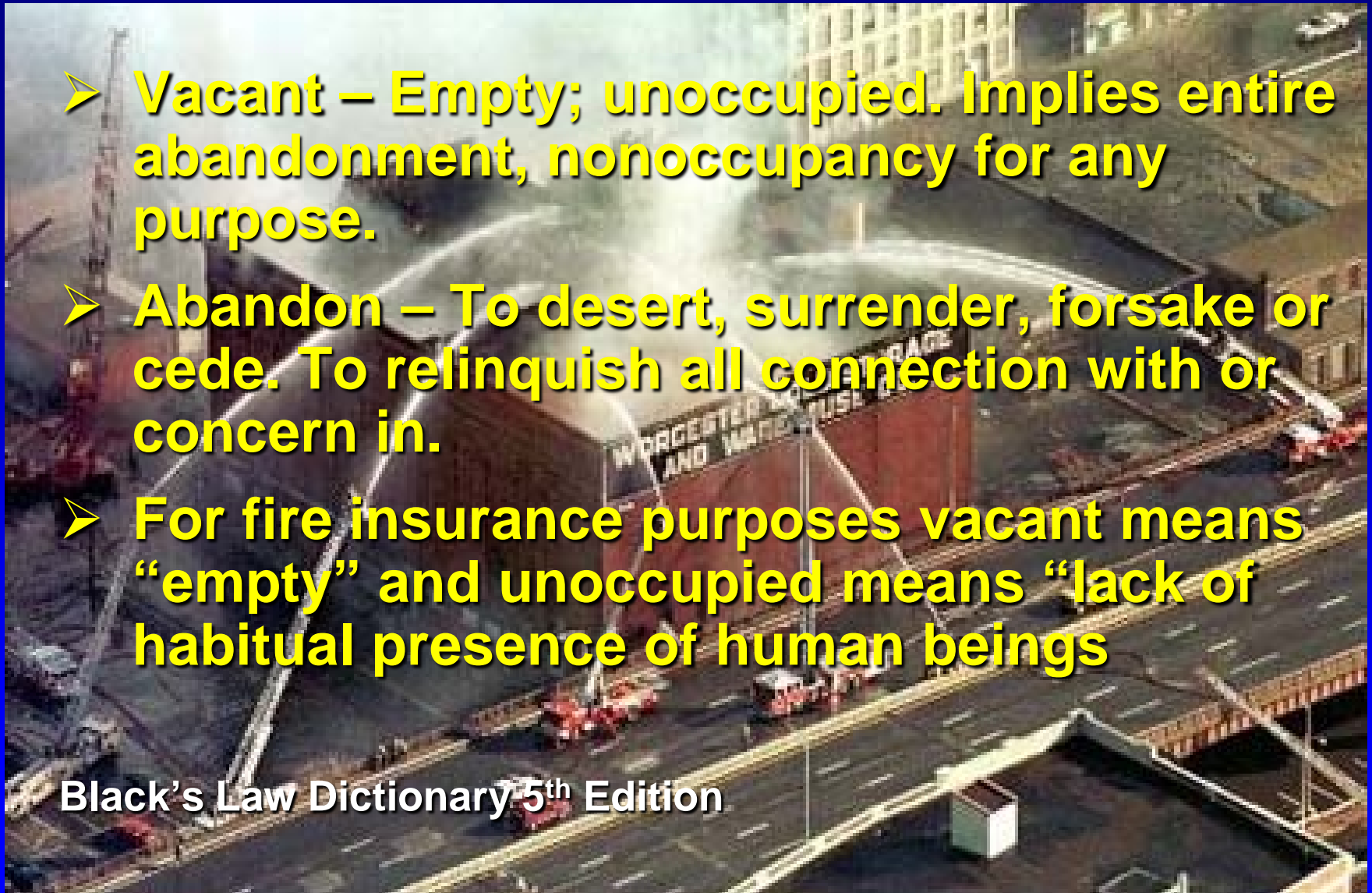




# Vacant or Abandoned?

- **Vacant – Empty; unoccupied. Implies entire abandonment, nonoccupancy for any purpose.**
- **Abandon – To desert, surrender, forsake or cede. To relinquish all connection with or concern in.**
- **For fire insurance purposes vacant means “empty” and unoccupied means “lack of habitual presence of human beings**

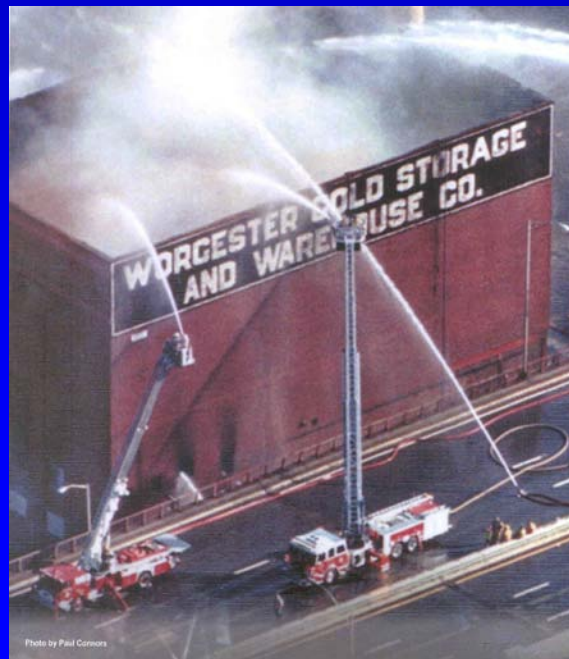
Black's Law Dictionary 5<sup>th</sup> Edition





# Target Properties

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



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





# The "Broken Windows" Theory of Social Disorder



***From one broken window, you  
can lose a street***

# The Impact on the Community

- **Crime**
- **Safety**
- **Community image**

**Abandonment is a  
contagious  
phenomenon**



# The Vacancy Progression



Owner: Responsive  
Uninhabited  
Secure



Owner: Unresponsive  
Uninhabited  
Open to Unauthorized Entry



Owner: Absentee or Unknown  
Building Deteriorating  
Open to Unauthorized Entry

Least



Greatest



# Can you inspect the building?

- **Authority to inspect comes from**
  - ✓ Fire Prevention code
  - ✓ Local ordinances
- **For private buildings get permission from the owner prior to entry**



# Right of Entry

- **Do you have the right to enter the property to conduct the evaluation?**
- **Where permission to enter is not available conduct evaluation from a public way**





# Safety

## Potential hazards

- ✓ Unstable structure
- ✓ Fall and trip hazards
- ✓ Standing water in basements
- ✓ Vermin
- ✓ Hazardous materials on property
- ✓ Unauthorized occupants
- ✓ Ongoing criminal activity

Evaluate the safety of the structure from the outside before entering





# PPE

- **Hard hat/helmet**
- **Safety shoes/boots**
- **Gloves**
- **Flashlight**
- **Radio**



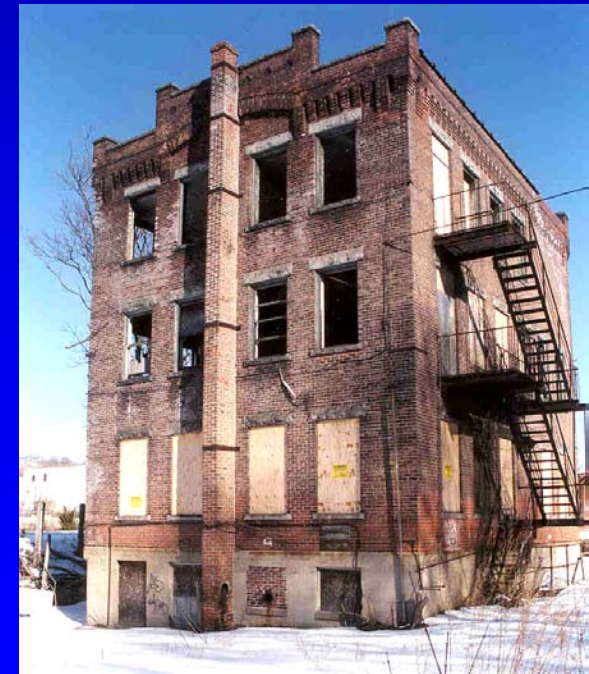
# Why Building Security is Essential?

- **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**



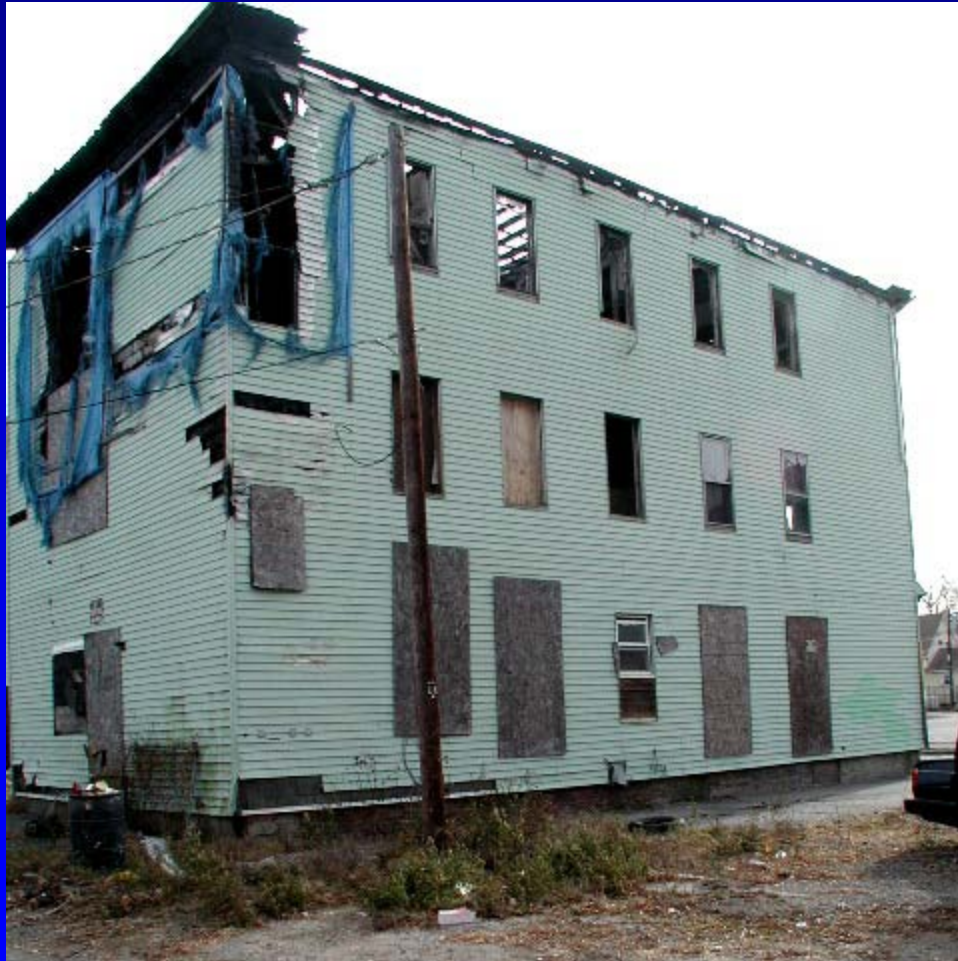
# Securing Buildings

- The objective is to prevent unauthorized access
- Must be done well
- Slows down deterioration of the structure
- Security = Fire Prevention



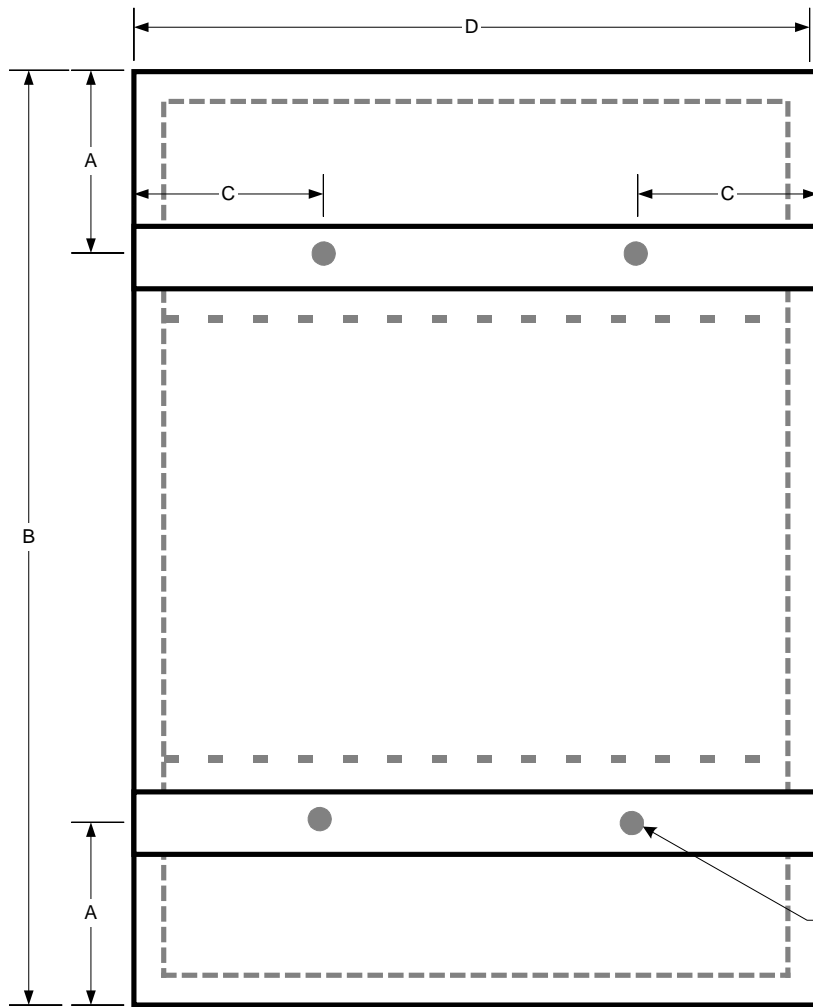


# Particle Board Doesn't Work!





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



**WINDOW - OUTSIDE VIEW**

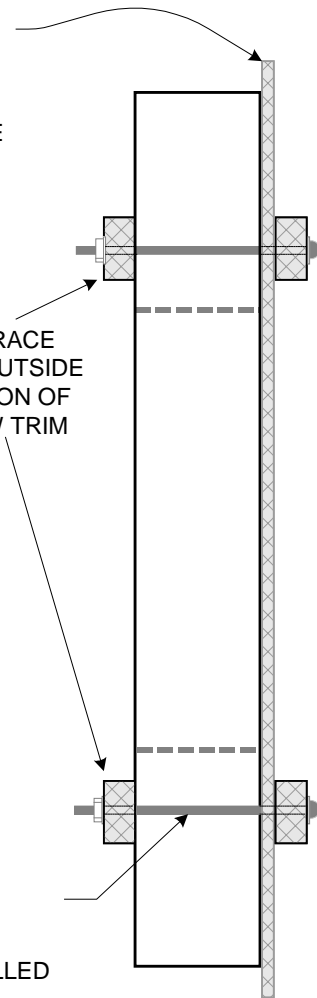
1/2" CDX PLYWOOD  
CUT TO TO COVER  
WINDOW OPENING

SECURE TO STRUCTURE  
WITH 1-5/8" (6D)  
GALVANIZED NAILS

2 X 4 BRACE  
CUT TO SIZE OF  
PLYWOOD

2 X 4 BRACE  
CUT TO OUTSIDE  
DIMENSION OF  
WINDOW TRIM

3/8" CARRIAGE BOLT  
12" LONG/COURSE THREAD  
NUT TO MATCH, WASHERS INSTALLED  
ON BOTH SIDES  
ROUNDED HEAD OF BOLT ON OUTSIDE



**NOTES:**

1. FOR DOUBLE HUNG WINDOWS, SLIDE SASH TO CENTER OF UNIT AND PASS BOLTS THROUGH OPENINGS AT TOP AND BOTTOM.
2. STORM WINDOWS SHOULD BE REMOVED AND STORED INSIDE STRUCTURE.
3. OUTSIDE TRIM MAY HAVE TO BE REMOVED TO ACCOMMODATE A FLUSH AND TIGHT FIT.
4. TIGHTEN NUTS FROM INSIDE ENOUGH TO SLIGHTLY COMPRESS 2X4 BRACE.
5. BRACE LOCATIONS:  $A = 1/3 B$  (SEE DIMENSION LOCATIONS ON DRAWING)
6. LOCATION OF BOLT HOLES:  $C = 1/3D$  (SEE DIMENSION LOCATIONS ON DRAWING)

**USFA National Arson Prevention Initiative**  
Board Up Procedures

**Window Detail**

IAAI/USFA Abandoned Building Project





# Security = Crime Prevention Fire Prevention



# Marking Buildings



- **Severe structural or interior deficiencies**
- **Operations should be conducted from outside except for life safety**
- **If interior operations are required:**
  - ✓ **Approved by Incident Commander**
  - ✓ **Tactics modified**
  - ✓ **Examined before units are committed**
- **Time of any interior operations must be limited**

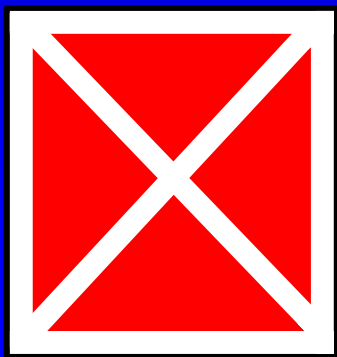
# Identification Process

- **Used to alert fire fighters of the potential hazards in a vacant/abandoned building**
- **Makes public aware of problem properties**
- **Allows for increased surveillance**

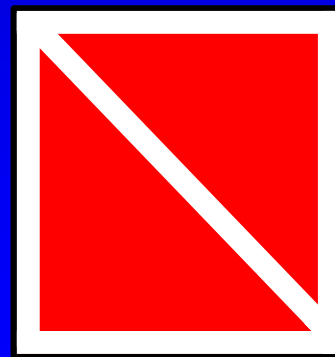




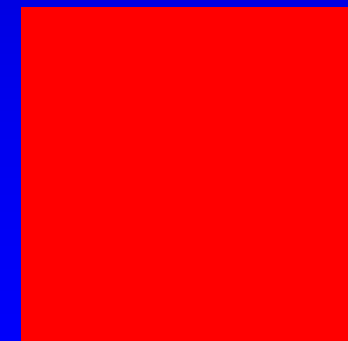
# Vacant Building Markings



Exterior operations Enter for known life hazard



Interior operations with extreme caution

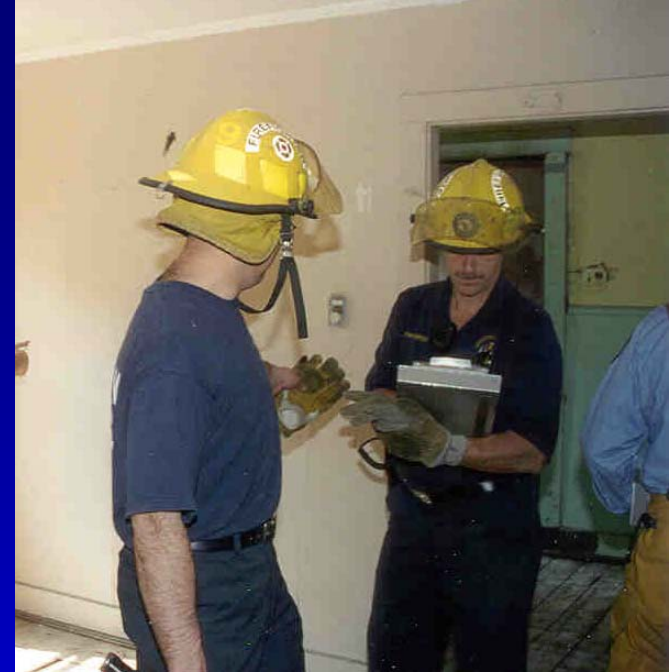


Normal stability at time of marking

# 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





# Property Data

- **Owner information**
- **Is the building secure?**
- **Status of utilities**
- **Property use**
  - ✓ **Original**
  - ✓ **When last occupied**



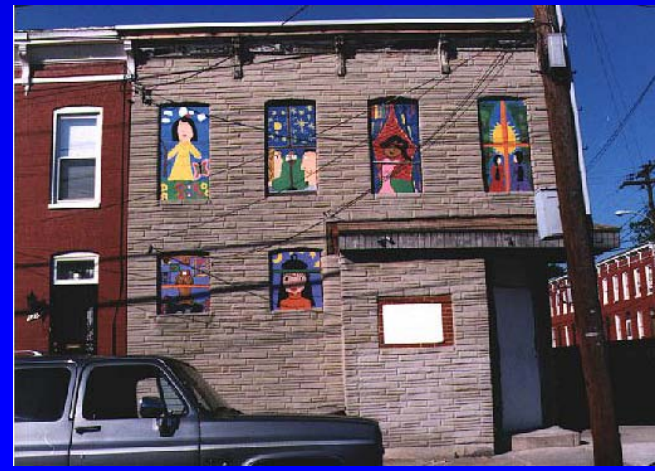


# Owner Information

- **Property name**
- **Owner**
  - ✓ **Name**
  - ✓ **Address**
  - ✓ **Telephone**
- **This information is essential for developing an accurate contact list for vacant properties**

# Is the Building Secure?

- **Secure means not open to unauthorized access**
- **Do the security measures meet the requirements of the jurisdiction**



Hole in  
outside  
wall



# Signs of Recent Entry

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





# Utilities

- **Make note of all utilities that are still provided in building**
  - ✓ **Gas**
  - ✓ **Electricity**
  - ✓ **Water**
  - ✓ **Oil – for heat**



# Building Use

- What was the original use of the building?
- Was it used for other purposes before becoming vacant?





# Building Construction

- **Evaluate the construction of the building and determine potential for fire impingement on structural members and collapse**
- **Document the height and type of construction**
- **This is a cursory review – Not a complete structural analysis**

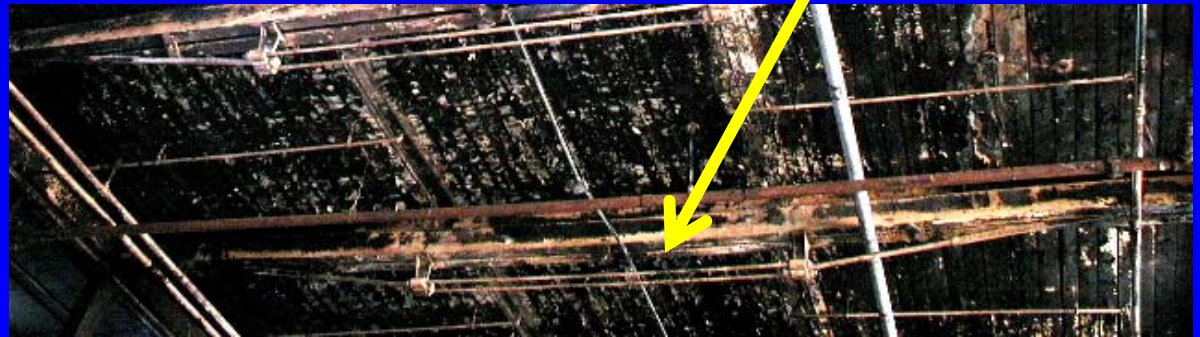


# Exterior Walls

- Type of construction
- Indications of instability
  - ✓ Cracks
  - ✓ Use of metal ties and stars or plates on the exterior



Tie rods and turnbuckles



# Exterior Walls

- **Number and type of openings in the walls**
  - ✓ **Potential for exposure fires**
  - ✓ **Cause for delay in alarm**





# Structural Members

- **Determine the materials used in the structural framing**
  - ✓ **Steel**
  - ✓ **Concrete**
  - ✓ **Wood**
  - ✓ **Mixed – Where more than one material is used, describe in detail**



# Truss Construction

- **Truss construction**
  - ✓ Wood
  - ✓ Steel
- **Roof framing**
- **Floor framing**
- **Explain where multiple types are used**



# Exposed Structural Members

- Identify locations where structural members are exposed
  - ✓ By design
  - ✓ Due to deterioration
  - ✓ Intentional damage
  - ✓ From previous fire





# Ceiling Type

- Type of ceiling system
- Condition





# Condition of Structure

## ➤ Interior Walls, Floors and Ceilings

- ✓ Deterioration
- ✓ Penetrations that would allow fire spread



# Condition of Structure

## ➤ Roof system

- ✓ Deterioration that would make it unsafe to operate on during a fire





# Condition of Structure

## ➤ General condition of structure

- ✓ Will it fail rapidly when exposed to fire
- ✓ Is there a potential for unexpected collapse





# Fire Protection Systems

- If there are fire detection or suppression systems, are they operational
- Could a drained sprinkler system be fed using the fire department connection



# Fire Potential

- **One of the critical factors that should be evaluated is the potential for a significant fire in a vacant building due to the available fuels**
  - ✓ **Accumulations of trash and debris**
  - ✓ **Storage in the building**
  - ✓ **Combustible interior finish**





# Fuel Packages

- What is in the building that will burn and how is it arranged





# Fuel Packages

- **Trash accumulations outside of the building**
  - ✓ **Unsightly**
  - ✓ **Easy to ignite**



# Room Size

- Room size
  - ✓ Large
  - ✓ Medium
  - ✓ Small
- Confusing layout
- Determine the potential impact on fire growth and development



# Fire Potential

- Is there a potential for a significant delay in discovery once a fire is started?
  - ✓ No neighbors
  - ✓ No windows





# Exposures

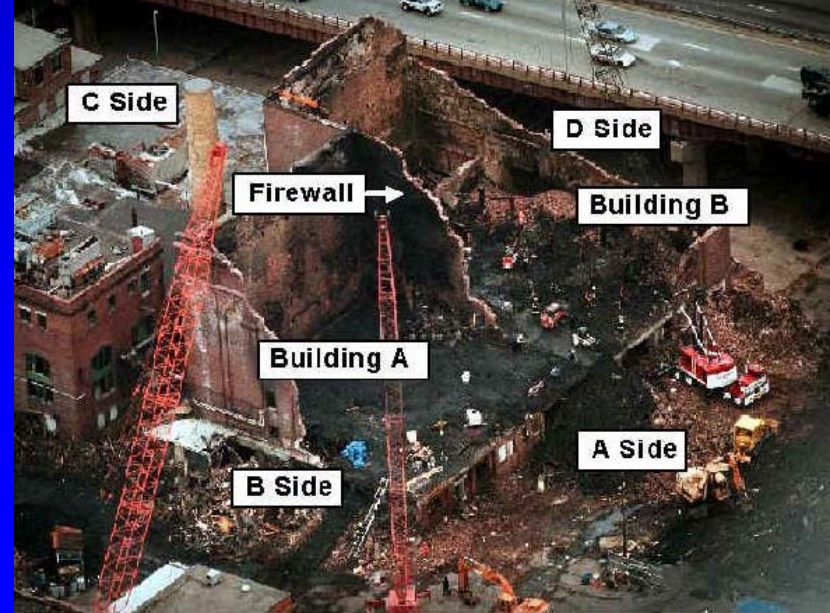
- Hazard increases when exposures are also uninhabited
- Distance between buildings



# Hazards to Fire Fighters

Evaluate the potential hazards to fire fighters who might enter to attack a fire in the building

- ✓ Look for maze like room layouts
- ✓ Unusual layouts





# Potential Hazards

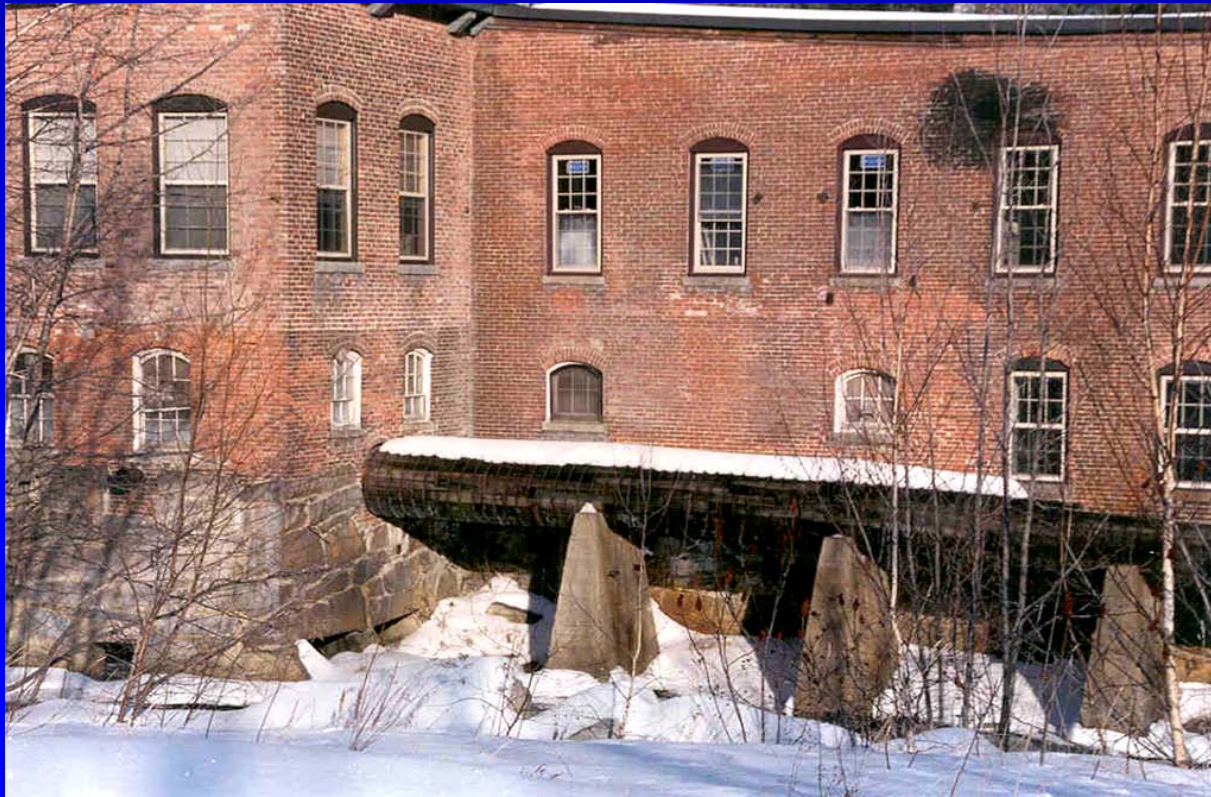
- **Open shafts/pits**
  - ✓ Stairs removed
  - ✓ Removal of equipment
  - ✓ Urban mining
- **Serious fall hazards when smoke is present**





# Fire Department Operations

- **What type of access does the fire department have?**
- **Is there adequate water to fight a fire?**



# Hazardous Materials





# 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**







# Pulling it All Together

- **Analysis – based on your knowledge and experience**
- **Explain your findings – documentation of what you found**
- **Draw a sketch – will assist in interpreting your observations**
- **Make sure report is readable**



# Your Analysis

- **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**

# Posting Recommendation





# Activity



**As a team complete the evaluation form for the assigned building.  
Develop a report for the group and discuss your findings with other teams who evaluated the same structure.  
Identify areas where the groups disagree and come to a consensus.**



# Questions

