

State of Connecticut

Department of Emergency Services and Public Protection

Commission on Fire Prevention and Control



Model Procedures for Fire Department Response to Collapse or Potential Collapse of Buildings due to excessive roof loads

*For Public Safety
Use Only*

Version 1.1

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Purpose

The purpose of this guide is to provide guidance to Connecticut's chief fire officers in establishing a policy for response during building collapse or potential collapse due to excessive roof loads, primarily from heavy winter storm precipitation, to minimize the risk to fire/EMS personnel and to protect the human, physical and business infrastructure critical to safeguard a community before, during and after a building collapse.

This guidance provides a common framework on which departments may build a local protocol tailored to a specific community.

Introduction

One of the most difficult decisions for an incident commander in these types of incidents is to determine structural stability of the building. It is the culture and nature of the fire service to go into any situation in order to save the lives of those they serve, even if it means sacrificing themselves.

Disaster rescue, by its very nature is a high-risk activity. Safety must always be foremost in your mind. Rescue sites will often be unstable and hide many dangers: broken glass, protruding nails, weakened floors or stairs, downed electrical wires, escaping gas, broken sewer and water pipes. Structures that appear to be solid may not be. The dust generated by a collapse may contain dangers and possibly cover-up hazards, wounded or dead victims.

The time has come to evaluate various policies in place and recommend a model policy. The following model procedure, based on existing practices and sound principles, centers on the safety of personnel, complements the concepts of unified command and mutual aid and generates a standard framework of operating guidelines that all departments will recognize.

The emergency response community continues to maintain an exceptional level of service, despite the recent challenges posed by natural disasters and fiscal restraints.

Model Baseline Policy¹

During a collapse or potential collapse of a building, the fire department will maintain a safe work environment for its firefighters and EMS personnel and will provide essential emergency and rescue services to the public as long as the safety of the responders is not endangered by the incident.

Model Operational Guidelines

Incident Priorities

As with all responses the following incident priorities will be safely achieved:

1. Life Safety
2. Incident Stabilization
3. Property Conservation

Incident Command

Upon arrival the Incident Commander should consider additional resources for response:

- Addition Fire Department resources needed
- Building Inspector (structural issues)
- Police Department (scene Security)
- Elimination of Utilities (Natural gas, water, electricity, LPG, oil)

Size-up and Information gathering:

- | | |
|---------------------------------------|---|
| ▪ Collapse – Partial or full | • Non-Collapse – Compromised structure/roof |
| ▪ Number of persons missing | • Structural stability |
| ▪ Probable victim locations | • Weather conditions |
| ▪ Collapse or potential collapse zone | • Cause of collapse |
| ▪ Building plans/blueprints | • Additional hazards |

¹ When developing a specific department policy/procedure, all departments should use the NIMS model for incident command including the use of incident action plans (IAP), which will ensure proper documentation is done as the event occurs, greatly easing the recovery process.

MODES OF OPERATION:

1. RECOVERY MODE – Pace and level of risk is such to virtually eliminate any injury or threat of loss of a rescue worker during the recovery of a body/bodies. Based on improbability of survival from mechanisms of injury, down time, and apparent hazards in a building collapse.
2. RESCUE MODE – Pace and level of risk is that which is reasonable and prudent to recover a viable or potentially viable victim of a collapse incident. Based on probability of survival from mechanisms of injury, level of consciousness, down time, and apparent hazards in the collapse zone.

Additional Scene Considerations:

- USAR staging area
- Media Staging Area
- Command/Communication Vehicle
- Restroom Facilities
- Public Information Officer
- Structural engineer
- Rehab/Food

Comments or Recommendations regarding this document should be sent Bill Higgins at StateFirePlan1@ct.gov .

Appendix A: CT USAR Activation Information

In the case of a collapse with potential or known victims the Incident Commander should call for CT Urban Search and Rescue:

To request and active the **CT US&R** call the following numbers
DESPP Message Center (24hrs) - 1-800-842-0200
State EOC - 860-566-3180
Duty Officer Pager - 860-708-0821

Please have available the following

- 1) Location of incident
- 2) I/C name and immediate contact info (cell phone)

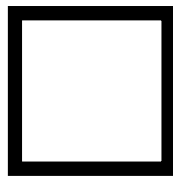
Appendix B: FEMA Structure Marking System²

FEMA STRUCTURE MARKING SYSTEM

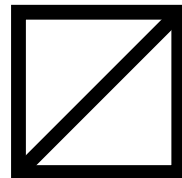
Structure/Hazards Evaluation Marking

- A 2' X 2' square box is outlined at any entrance accessible for entry into any compromised structure.
- Aerosol cans of spray paint (International Orange color only) will be used for this marking system.
- It is important that an effort is made to mark all normal entry points to a building under evaluation to ensure that TF personnel approaching the building can identify that it has been evaluated and discern its condition.
- Specific markings will be clearly made inside the box to indicate the condition of the structure and any hazards at the time of the assessment.
- Normally the square box marking would be made immediately adjacent to the entry point identified as safe. An arrow will be placed next to the box indicating the direction of the safe entrance if the Structure and Hazards Evaluation marking must be made somewhat remote from the safe entrance.
- The TIME, DATE, and SPECIALIST Identification (ID), will also be noted outside the box at the upper right-hand side. This information will be made with pieces of carpenter's chalk or lumber crayon (as noted in the Structure Specialist's Equipment List).
- All TF personnel must be aware of the possibility of, and look for other Structure and Hazards Evaluation markings made on the interior of the building.
- As each subsequent assessment is performed throughout the course of the mission, a new TIME, DATE, and SPECIALIST ID entry will be made (with carpenter's chalk) below the previous entry, or a completely new marking box made if the original information is now incorrect.

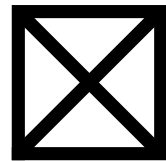
The depiction of the various markings is as follows:



Structure is accessible and safe for search and rescue operations. Damage is minor with little danger of further collapse.



Structure is significantly damaged. Some areas are relatively safe, but other areas may need shoring, bracing, or removal of falling and collapse hazards. The structure may be completely pancaked.



Structure is not safe for search and rescue operations and may be subject to sudden additional collapse. Remote search operations may proceed at significant risk. If rescue operations are undertaken, safe haven areas and rapid evacuation routes should be created.

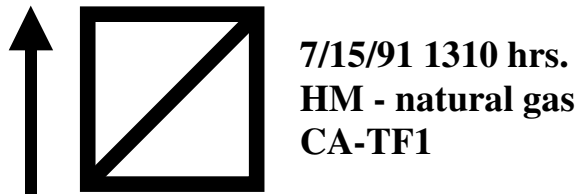


Arrow located next to a marking box indicates the direction to the safe entrance to the structure, should the marking box need to be made remote from the indicated entrance.

HM

Indicates that a HAZMAT condition exists in or adjacent to the structure. Personnel may be in jeopardy. Consideration for operations should be made in conjunction with the Hazardous Materials Specialist. Type of hazard may also be noted.

- The TIME, DATE, and TF ID, are noted outside the box at the upper right-hand side. This info is made with carpenter's chalk or lumber crayon. An optional method is to apply duct tape on the exterior of the structure and write the information with a grease pencil or black marker.

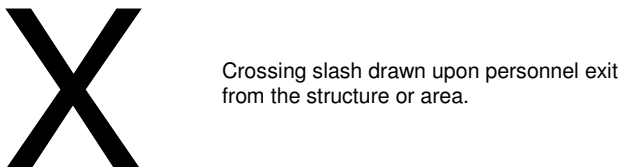
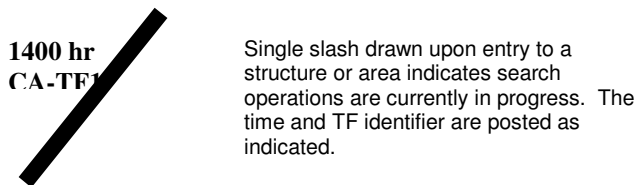


The example indicates that a safe point of entry exists above the marking (possibly a window, upper floor, etc.). The single slash means the structure may require some shoring and bracing. The assessment was made on July 15, 1991, at 1:10 PM. There is an apparent indication of natural gas in the structure. The evaluation was made by TF #1 out of the State of California.

- All TF personnel must be aware of the possibility of, and look for other Structure and Hazards Evaluation markings made on the interior of the building.
- As each subsequent assessment is performed throughout the course of the mission:
 - ◊ A new TIME, DATE, and TF ID entry will be made below the previous entry; and/or
 - ◊ A completely new marking box made if the original information is now incorrect.
- Marking boxes are also placed in each of the specific areas within the structure (i.e., rooms, hallways, stairwells, etc.) to denote conditions in separate parts of the building.

Search Assessment Marking

- A separate and distinct marking system is necessary to conspicuously denote information relating the victim location determinations in the areas searched.
- The Search Assessment marking system is designed to be used in conjunction with the Structure and Hazards Evaluation marking system.
- An "X" that is 2' X 2' in size will be made with International Orange color spray paint. This X will be constructed in two operations:



- Distinct markings will be made inside the four quadrants of the X to clearly denote the search status and findings at the time of this assessment.
- The marks will be made with carpenter chalk, lumber crayon, or duct tape and black magic marker.

NOTES: