

## **Preventing Injuries and Deaths of Fire Fighters due to Truss System Failures**

### **WARNING!**

**Fire fighters may be injured and killed when fire-damaged roof and floor truss systems collapse, sometimes without warning.**

**Fire fighters should take the following steps to minimize the risk of injury and death during structural fire-fighting operations involving roof and floor truss systems:**

- Know how to identify roof and floor truss construction.
- Immediately report the presence of truss construction and fire involvement to the incident commander.
- Use extreme caution and follow standard operating procedures when operating on or under truss systems.
- Immediately open ceilings and other concealed spaces whenever a fire is suspected of being in a truss system:
  - Use extreme caution, as opening concealed spaces can result in a backdraft.
  - Always have a charged hose line available.
  - Be positioned between the nearest exit and the concealed space to be opened.
  - Be aware of the location of other fire fighters in the area.

- Understand that fire ratings may not be truly representative of real-time fire conditions and that truss systems' performance may be affected by fire severity.



**Figure 1.** Typical lightweight truss construction. (Photo courtesy of Vincent Dunn.)

## Fire departments should take the following steps to protect fire fighters:

- Conduct pre-incident planning and inspections to identify structures that contain truss construction.
- Ensure that fire fighters are trained to identify roof and floor truss systems and that they use extreme caution when operating on or under truss systems.
- Develop and implement standard operating procedures to safely combat fires in buildings with truss construction.
- Ensure that the incident commander conducts an initial size-up and risk assessment of the incident scene before beginning interior fire fighting.
- Evacuate fire fighters performing operations under or above trusses as soon as it is determined that the trusses are exposed to fire and move to a defensive attack.
- Use defensive overhauling procedures after extinguishing fire in a building containing truss construction. Use outside master streams to soak the smoldering truss and prevent rekindles.
- Use a thermal imaging camera as part of the size-up to help locate fires in concealed spaces.

For additional information, see ***NIOSH Alert: Preventing Injuries and Deaths of Fire Fighters due to Truss System Failures*** [DHHS (NIOSH) Publication No. 2005-XXX]. Single copies of the Alert are available from the following:

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