

FIRE FIGHTERS GUIDANCE NOTE # 6-18

ISSUE: UNPROTECTED LIGHTWEIGHT BUILDING CONSTRUCTION

Firefighter fatalities and injuries have occurred as the result of rapid structural failure. Buildings constructed using lightweight materials that are not sufficiently protected by sprinklers or effective non-combustible structural protection systems may collapse much sooner than expected and without the warning signs that are commonly present in fires that involve legacy construction. Lightweight construction is a common present day construction type.

Incident Commanders and firefighters should have knowledge of how unprotected lightweight trusses, fastening systems, wooden “I” beams, lightweight steel frame construction and other engineered construction components are quickly compromised when exposed to heat and flame.

Incident Commanders should:

- Consider the type of construction, the presence of protective sprinkler systems, and to what extent the structure may have been damaged by fire before initiating firefighting efforts and continually evaluate the risks during operations in buildings that contain unprotected lightweight construction;
- Assume that unprotected lightweight construction is present, if unable to determine the type of construction in a building involved in fire;
- Consider employing defensive fire attack strategies where no threat to human life exists within buildings that contain unprotected lightweight construction.

The following items should be included in a review of fire department SOPs/OGs:

- The special hazards associated with buildings built with unprotected lightweight construction. Firefighter safety and the likelihood of an early unpredictable collapse should be stressed;
- Use a thermal imaging camera, if available, to help locate fires burning below or within floor systems; but recognize that the camera cannot be relied upon to assess the strength or safety of the floor. Firefighters should be trained on the use of thermal imaging cameras, including limitations and difficulties in detecting fire burning below floor systems;
- Firefighters should use extreme caution when operating on or under an unprotected lightweight truss roof or floor and firefighters should evacuate as soon as it is determined that the unprotected trusses are exposed to fire;

- Develop and practice regularly, emergency warning procedures for evacuating a building in danger of collapse.