

# FIREHOUSE®

## Weekly Drill

### DRILL #90: BUILDING COLLAPSE

#### Introduction

We all know that firefighting is a very dangerous profession that places firefighters in harm's way. While fires can be unpredictable, a good fireground size-up and analysis can help with predicting the outcomes. There are a number of reasons why a building will collapse during firefighting operations. While it is very difficult to predict a collapse, it is not totally impossible.

There are two basic types of building collapse that we can encounter at a fire – interior collapse and exterior collapse. The interior collapse involves the floors, ceilings, walls and roofs of structures. Exterior collapses, in general, include the exterior portions of the structure – exterior walls, overhangs and building cornices.

#### The Wall Collapse

Wall collapses are the most commonly recognized collapse by firefighters because they have seen them before, either in person or on film. Interior collapses are generally not observed or caught on film like the exterior ones, but can be more serious to firefighters. There are basically three types of wall collapse – the 90-degree angle collapse, the inward-outward collapse and the curtain collapse.

With the 90-degree angle collapse, one can assume that the wall will fall outward its entire height. Therefore, any individual or equipment located within this area is in danger of being struck by the collapsing wall. In actuality, the momentum of the falling wall allows parts of the wall to extend beyond the actual height distance, meaning the danger zone may be a bit larger than you think.

The inward-outward collapse will not project out as far as the 90-degree, as the top part of the wall actually falls into the building. This inward momentum has a tendency then to push the lower section of wall outward and away from the building. The exact distance that the wall will fall away from the building is difficult to determine.

Then there is the curtain collapse. It derives its name because it resembles a curtain falling straight down, much the same as one would see at a theater.

If a wall collapse is considered to be a possibility, a safety zone needs to be established. There is no excuse



for anyone to be in this safety zone once it has been identified and established. If you are the safety officer do not accept a comment like “I’ll only be a second” and allow someone in the zone. Have you heard of Mr. Murphy?

#### Warning Signs

Here are some of the key indicators of a potential building collapse:

1. Heavy fire conditions
  - a. Two or more floors fully involved
  - b. Heavy fire for more than 15-20 minutes
2. High heat and heavy smoke conditions with little to no ventilation
3. The type of construction materials
4. Unprotected steel exposed to heavy fire
5. Lightweight construction
6. Smoke puffing through cracks in the wall
7. Bulging or leaning walls
8. Presence of wall spreaders
9. Previous fires in the building

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