No. 2008-41 October 7, 2008

U.S. Fire Administration / National Fire Academy

Coffee Break Training

Topic: Part III: Recognizing Modular Construction

Learning objective: *The student shall be able to explain how to recognize a structure built using modular construction.*

If you didn't see a structure built, and if you don't have the plans available, how can you tell whether it was built using a modular method? It's not easy. Modular building manufacturers go to great lengths to assure that most people cannot tell the difference between their product and traditional site-built buildings. Identifying them is best done during prefire planning and/or inspections, rather than during an emergency response.

Since each module typically has four walls, a ceiling, and a floor, the joints where two modules fit together provide the best visual indication that you are looking at a modular building—they will be wider or thicker than similar building elements built using traditional methods.

Looking at doorways or the edges of short walls, you may notice that the wall is wider or thicker than the other walls in the building. Instead of a typical 4-1/2-inch (114 mm) wide wall (3-1/2-inch [90 mm] studs with 1/2-inch [13 mm] drywall on each face), you may notice a wall that is 8 or 8-1/2- (203 to 216 mm) inches thick. This is a very good clue that this wall is the joint between two modules.

Don't be fooled by pocket doors that require thicker walls—check the wall thickness at other openings in the wall. Also, look to see if the location of the wall in the building makes sense for it to be the edge of a module. If the wall runs from perimeter wall to perimeter wall, this can be a confirming clue. The wall may be interrupted by large openings that are spanned by a beam as wide or thick as the wall at the ceiling, and this beam may or may not be visible (it could be above the finished ceiling).

Photo courtesy Acushnet Fire Department, Massachusetts.

The large combustible void between the first and second floors is common in modular construction.

Identifying a multistory modular building is more difficult. To do this, you will need to look for openings between the floors—stairwells, stairways, elevator shafts, or other vertical penetrations. At the edge of these openings, you can look at the depth or apparent thickness of the floor. In traditionally framed buildings, a floor may be 10 to 12 inches (254 to 305 mm) deep. In modular buildings, because each module has an independently supported floor and ceiling, the depth will be larger. In dwellings, the floor depth may be as much as 24 inches (710 mm).

Don't use this as your only clue, though, because parallel-chord trusses or manufactured wood I-joists often are used to support floors in newer buildings constructed using traditional construction techniques, and these often result in a floor with a depth or thickness similar to a modular building.