

# Fire Engineering®

## Construction Concerns: Combustible Building Exterior Article by Gregory Havel

*January 8, 2013*

When we arrive at a working structure fire, the flames and smoke attract our attention, and we are sometimes distracted from noticing the exposures with combustible exterior finishes (photo 1). A large body of fire produces enough radiant heat to easily melt vinyl siding at a distance of 40 feet (12.19 m) (photo 2, next page), and even to ignite it. Aluminum siding will soften and sag similarly, but will not ignite. Wood siding will ignite at a temperature higher than that which will damage aluminum and vinyl siding, but it will not melt.





At the structure fire shown in photos 1 and 2, the fire started on the first floor of a two-story, balloon-framed farm house, and developed and spread so rapidly that by the time the smoke and smoke detectors awakened the second-floor residents, they were forced to exit through the second-floor windows rather than by the stairway and exit door. By the time the fire department arrived, the house was fully involved, and the exposure's siding was already damaged.

We are not only concerned with combustible siding and trim that radiant heat can damage or ignite. We must also be concerned about the combustible materials that enclose the building behind the siding.



Photo 3 shows a 1960s platform-framed house that is undergoing exterior renovation.

- The original aluminum siding (still in place on the dormer) has been removed, exposing the combustible asphalt-impregnated low-density fiberboard sheathing that is visible on the gable.
- At the first floor level, this original sheathing has been covered with polystyrene insulating board and a layer of polyolefin structure wrap, which will be extended up to the gable.
- The new exterior will be vinyl siding.
- Although the polystyrene insulating board, the structure wrap, and the vinyl siding include a fire retardant, they will still burn rapidly in a vertical orientation, with a continuous source of ignition.

Radiant heat from a fire in an adjacent building will not only damage the exterior finish of a combustible building, but can easily cause the extension of the fire into it.

A fast-moving structure fire requires sufficient resources on scene to accomplish a variety of tactics and tasks, including search and rescue, ventilation, extinguishment, overhaul, investigation, and *exposure protection*; and an incident command structure that is the right size to manage these resources.

If we do not have enough resources (or incident management) to take care of all of these tactics and tasks, the neglect of exposure protection can result in additional fires in one or more of the exposure structures, each of which will require as many or more resources as the original fire; and any one of which can block an escape route noted by our teams when they made entry.



**Gregory Havel** is a member of the Town of Burlington (WI) Fire Department; retired deputy chief and training officer; and a 30-year veteran of the fire service. He is a Wisconsin-certified fire instructor II, fire officer II, and fire inspector; an adjunct instructor in fire service programs at Gateway Technical College; and safety director for Scherrer Construction Co., Inc. Havel has a bachelor's degree from St. Norbert College; has more than 30 years of experience in facilities management and building construction; and has presented classes at FDIC.

- [CLICK HERE](#) for more 'Construction Concerns' articles!