



Pennsylvania Fire Safe Construction Advisory Council

Promoting Non-combustible Concrete Construction

Fire Safe Construction Necessary and Affordable

Providing life and property protection is a significant part of the design and building process as well as the focus of the International Building Codes now in place in Pennsylvania and throughout the United States. The Codes were developed using a minimum requirement for the building of all residential and commercial structures. **There is concern that the minimum requirements for fire safety especially for multi-residential structures – townhouses, dormitories, assisted living facilities, small hotels, etc... - may not provide adequate protection for elderly, college students, disabled and families dwelling in these units.**

A movement is underway to increase the level of fire protection in the Codes for these multi-residential structures by using the balanced design approach to construction which considers three components: “Containment” with structural walls, floors and ceilings of masonry and concrete products that will not burn and will provide 2 to 4 hours of protection; “Detection” with smoke detectors to alert residents to evacuate and “Suppression” using sprinklers to control the fire until the emergency responders arrive on the scene. Each component is very important but work under different systems. Detection and Suppression are *active* systems that require a water source and a mechanical and/or electrical system that may, in some circumstances, fail.

Containment with compartmentation is a *passive* system that does not require anything to activate. Containment with concrete based products that will never burn and will maintain their structural integrity is a vital part of the equation. **If a fire were to start within a given room or compartment of a building, the non-combustible walls, floor and ceiling would contain the fire by a *passive* protection measure to allow for fire fighters to arrive or for *active* protection such as sprinkler systems to deploy to extinguish the flames.**

Currently, the Codes provide for detection and suppression but they do not require non-combustible compartmentation between dwelling units. A significant argument made for not using compartmentation has been the misperception that it is cost prohibitive. In order to clarify and accurately document the actual cost of constructing with non-combustible concrete based products vs. wood, gypsum and steel for interior separation walls, floors and ceilings, a study was commissioned by groups who have

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as their mission to improve life and property protection through non-combustible construction. With this new study there is now documentation that the cost difference is much lower than perceived. **In many cases, the cost differential was 3 - 5% or less and, indeed, in one instance it was actually less for non-combustible concrete construction.**

The minimal increase in construction cost will also help pay for itself over the life of the structure. Materials like concrete masonry, precast concrete, and cast-in-place concrete have many other advantages beyond their inherent fire performance including resistance to mold growth, resistance to damage from vandalism, and minimal damage caused by water and fire in the event of a fire in the building. In many cases, with this type of construction the damage outside of the fire compartment is minimal. This provides for reduced cleanup costs and quicker reoccupation of the structure.

More information and report summaries are available through the Pennsylvania Fire Safe Construction Advisory Council, P.O. Box 4, 813 Chestnut Street, Lebanon, PA 17042-0004 or by calling Jan Boyer (717) 279-6346. More information is available at www.pafscac.org.

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