[BOND BEAM HEAT TRANSFER]

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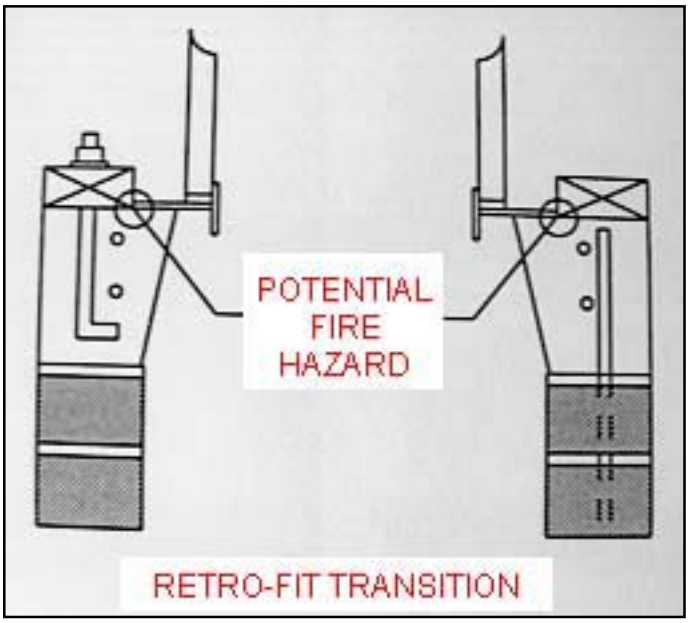
Subsequent to the Northridge Earthquake in 1994, the City of Los Angeles provided an emergency fireplace repair detail. This detail inadvertently allowed the use of pressure treated wood in direct contact with the top of a newly constructed concrete bond beam. Unfortunately this detail was rapidly adopted by many surrounding Jurisdictions.



The bond beam is located between the existing masonry chimney or smoke chamber, and the approved metal chimney system. This new bond beam constitutes part of the chimney structure and must therefore conform with all current code requirements. The 1991 edition of the Uniform Building Code, as adopted by the City of Los Angeles, was in use at the time that the emergency repair detail was adopted. The 1991 U.B.C required a two inch clearance around the fireplace, smoke chamber and chimney walls of a masonry fireplace.

The use of wood framing on the earthquake damaged chimney repairs is of growing concern. As the fireplace is used, the possibility of fire increases.

The problem is located at the contact point between the wood sill plate and the newly constructed bond beam. Attempting to build the framed chimney shaft the same width and depth as the existing masonry chimney produces a very small bond beam. In many instances the bond beam is so small that the bottom wood plate is trimmed in order to meet the clearance requirements of the listed metal chimney pipe. Under most conditions the thickness of the bond beam that the heat is to travel through may be as thin as two inches. This condition will allow the heat to transfer through the bond beam to the wood sill plate. In time, pyrolysis to the wood may occur, and eventually fire, therefore defeating the purpose of the clearance requirements.

This process of heat transfer through the bond beam is increased by the reduction in air speed of the heated gases at the transition from smoke chamber to listed round flue pipe. This is again compounded by the fact that many of the transitions are more than 45 degrees from vertical and do not conform to the "uninterrupted" requirement stated in L.A. City details.

Since the training and the bond beam are of new construction, they must @ meet current code requirements. With the conflict arising between an existing code and the emergency repair detail,... the most restrictive shall apply as stated in the U.B.C.

U.B.C 1991 Edition Scope. Sec. 103. *Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern.*

It is estimated that approximately ten thousand permits had been issued to replace damaged chimneys under these original details. A change in the detail to steel framing, occurred approximately eight months after the Northridge earthquake. Most jurisdictions again followed the City of Los Angeles in the change to steel framing. There are however, remaining jurisdictions that still offer the option of wood or steel framing.

In Chapter Thirty-Seven of the 1991 edition of the Uniform Building Code states:

Masonry and Concrete Fireplaces and Barbecues Sec. 3707. (a) General. *Masonry fireplaces, barbecues, smoke chambers* and fireplace *chimneys shall be of masonry or reinforced concrete and shall conform to the requirements of this section.*

Sec. 3707. (h) Clearances to Combustible Materials. *Combustible materials shall not be placed within 2 inches of the fireplace, smoke chamber or chimney walls.*

This two inch requirement is again stated in: **Table 37-B Construction, Clearance and Termination Requirements for Masonry and Concrete Chimneys.**

Regardless of the potential hazards that exist, discovery of these incorrect installations may continue for years to come. When a homeowner chooses to sell their property, there will be numerous inspections performed in several key areas. One of those key areas will be the fireplace. When a private inspector examines the chimney and finds that the wood framing is in contact with the chimney bond beam, he will address this condition as a potential hazard. If the inspector fails to do so, he may become legally liable for the improper installation and repair of the fireplace. The Homeowners may again be faced with this issue.

Based upon all of the experience that has contributed to the development of the Uniform Building Code, we should not blindly ignore the knowledge of the past. This is especially true when this action may cause harm to life or property.

A fireplace or chimney system should be considered a high hazard structure.

The requirement for a steel “only” chimney shaft would eliminate this potential fire hazard.