Designing for torch safety

by **Mark S. Graham**

This month, the NRCA/CNA Group Safety Program is implementing a number of changes to its underwriting guidelines that will affect roofing contractors' ability to obtain insurance coverage for torching operations. These changes are intended to promote safer use of open-flame rooftop torching equipment, such as that used for installing torch-applied polymer-modified bitumen sheet products.

Although many consider safe application of roof products and systems to be roofing contractors' responsibility, roof system designers also share this responsibility by properly specifying the use of torch-applied, polymer-modified bitumen sheet products in their roof system designs.

Following is an explanation of some factors roof system designers should consider and implement when designing roof systems using torch-applied polymer-modified bitumen sheet products.

NRCA bulletin

In March 2000, NRCA issued Technical Bulletin 2000-2, "Fire safety considerations in the design of roof systems utilizing torch-applied polymer-modified bitumen sheet products." In this technical bulletin, NRCA provides specific guidelines addressing combustible decks, cant strips, flashing design and flashing installation. These are summarized as follows:

- *Combustible decks.* NRCA suggests thermal barriers be incorporated into roof system designs using torch-applied polymer-modified bitumen sheet products installed over combustible roof decks, such as wood planks or panels. NRCA suggests using a layer of noncombustible insulation as a thermal barrier over a combustible deck and beneath a membrane system. When a layer of noncombustible insulation is used as a thermal barrier, NRCA recommends the modified bitumen membrane specification be considered an "insulated substrate" roof system configuration.
- *Cant strips.* At detail conditions where a cant strip is used, NRCA suggests the use of a noncombustible cant strip. NRCA does not consider lumber or wood fiberboard cant strips to be noncombustible. NRCA suggests the use of noncombustible perlite or other similar noncombustible material for cant strips.
- *Flashing design.* Over combustible flashing substrates where torch-applied flashings are to be installed, NRCA recommends the use of a two-layer backer membrane before the installation of torch-applied polymer-modified bitumen sheet flashings to prevent open flames from directly contacting the combustible substrate. Such a two-layer backer membrane could consist of a layer of a base sheet or ply sheet fastened to the combustible substrate and a layer of ply sheet adhered to the first sheet layer using solid moppings of hot asphalt.
- *Flashing application.* For combustible flashing substrates, NRCA does not recommend flashing installation specifications that require preheating the substrate with a torch or using a direct torching method of flashing application for polymer-modified bitumen sheet products. Instead, if torch-applied flashing application is required, NRCA suggests the back-torching application method—sometimes referred to as the "torch-and-flop" method.

Considerations

In many instances, project specifications have called for shutting down or sealing off buildings' air-intake systems during roofing operations as an attempt to control rooftop fumes from entering occupied buildings. When using open-flame torching equipment, such manipulation of buildings' mechanical systems can have an adverse (and possibly catastrophic) effect because the reduced amount of intake air can create negative air pressure inside a building, which can result in open flames from rooftop torching operations being drawn into buildings' interiors (below-deck ceiling plenum spaces).

Because of the potential negative effect of shutting down or sealing off buildings' air-intake systems can have, I recommend such measures not be specified without consulting a building's maintenance and operations personnel and possibly the mechanical systems and controls contractor. In many instances, if rooftop air-intake systems temporarily are shut down or sealed off, provisions may need to be made for additional air intake elsewhere in the building to prevent the creation of negative air pressure.

Closing thoughts

Torch-applied polymer-modified bitumen sheet products have been used safely in the United States since the late 1970s; however, in a limited number of situations, rooftop fires have occurred. Roof system designers, manufacturers and roofing contractors share the responsibility of providing for the safe use of torch-applied polymer-modified bitumen sheet products.

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