

FIRE SAFETY CONSIDERATIONS IN THE DESIGN OF ROOF SYSTEMS UTILIZING TORCH-APPLIED POLYMER-MODIFIED BITUMEN SHEET PRODUCTS

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NRCA is concerned with fire safety during the installation of torch-applied polymer-modified bitumen sheet products. 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 during the installation of these products. In some instances, these fires have resulted in catastrophic building and personal property losses.

A number of these rooftop fires resulted from the use of torch-applied polymer modified bitumen sheet products in direct contact with combustible substrates, such as wood decks, wood blocking or wood fiberboard roof insulation.

To minimize the risk of fire during the application of torch-applied polymer-modified bitumen sheet products, NRCA recommends designers consider the following.

- NRCA now suggests a thermal barrier be incorporated into roof system designs using torch-applied polymer modified bitumen sheet products over combustible substrates. NRCA suggests using a layer of noncombustible insulation as a thermal barrier.

When a layer of noncombustible insulation is used as the thermal barrier, NRCA recommends the modified bitumen roof membrane specification be considered an “insulated substrate” roof system configuration. The low-slope specifications section of *The NRCA Roofing and Waterproofing Manual, Fourth Edition*, pages 503-556, has specific recommendations for insulated substrate roof system configurations.

- At detail conditions where a cant strip is used, NRCA now 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.
- Over combustible substrates where torch-applied flashings are to be installed, NRCA has recommended the use of a “backer sheet” consisting of a minimum of one layer of a base or ply sheet installed over the substrate prior to the installation of torch-applied polymer-modified bitumen sheet flashings. This recommendation already is depicted in the low-slope membrane roofing construction details section of *The NRCA Roofing and Waterproofing Manual, Fourth Edition*, pages 745-852.

For combustible flashing substrates, NRCA now suggests designers consider specifying a two-layer backer sheet prior to the installation of torch-applied polymer-modified bitumen sheet flashings. Such a two-layer backer sheet could consist of a layer of a base 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.

- 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 method—sometimes referred to as “torch-and-flop” method—of application.