Construction
Roof Traffic ...

...and Its

Effect on

Spray-Applied

Fire Resistive

Materials

To maintain the required hourly fire-resistance rating of a roof assembly, the bond of the spray-applied fire resistive material must not be weakened during or after application. Unfortunately, there are too many cases where this does occur. By far, the predominant reason for delamination of spray-applied fire resistive materials is Construction Roof Traffic, typically resulting from condensed or out-of-sequence work-schedules.

“Construction Roof Traffic” refers to the activity of walking, installing or working with equipment on the roof of a building. Roof traffic above areas where the SFRM has already been applied, especially to steel roof deck, is a major concern for SFRM manufacturers and building team members. The adhesion between the material and substrate is often compromised by impact forces and deflection which cause the SFRM to fall off or “bridge.”

Bridged material refers to material essentially separated from the substrate but held in place cohesively by adjacent material. Bridged SFRM may fall off weeks, months or even years after the initial damage, resulting in an unsafe condition. SFRM delamination or bridging not only jeopardizes the hourly fire-resistance ratings required to meet governing building codes, but can also delay the construction work schedule, increase overall costs and present a hazard to building occupants.

All members of the building team should recognize this industry concern and with the assistance of the fireproofing manufacturers should offer precautionary measures or guidelines to help prevent SFRM delamination and the resulting consequences. These guidelines are as follows:

1. Proper sequencing and coordination between trades is the most important guideline. All roof work, including work on the perimeter and installation of the roofing membrane, should be complete prior to the SFRM application. The statement referenced below is an example of how this precautionary measure can be stated in the project specification.

“The application of sprayed fire protection to the underside of roof deck shall not commence until the roofing is completely installed and tight, all penthou-
es are complete, all roof-top mechanical units have been placed, and after construction roof traffic has ceased.”

2 The design specifications for roof deck gauge and spans should be in accordance with the Steel Deck Institute recommendations for construction and maintenance loading.

3 Roof assemblies consisting of gypsum wallboard and insulation (polyisocyanurate, polystyrene, mineral fiberboard, etc.) above the metal deck is preferred instead of insulation only. The layer of wall-board (5/8 inch) provides a more rigid roof system and helps distribute loads more effectively.

4 The SFRM manufacturer’s recommended adhesive or bonding agent should be applied to all steel roof decking (without concrete topping) prior to the application of the SFRM. Bonding agents enhance the ability of the SFRM to adhere to the substrate.

5 When roof traffic is anticipated, as in the case of periodic maintenance, roofing pavers should be installed as a walkway to distribute loads.

6 Although several painted roof decks are classified in certain UL roof designs, galvanized roof deck is a better substrate for bonding of SFRMs. Painted roof decks increase the risk of delaminations.

Following these guidelines will help minimize problems associated with fireproofing delamination due to construction roof traffic. However, proper scheduling and coordination between trades can’t be overemphasized.