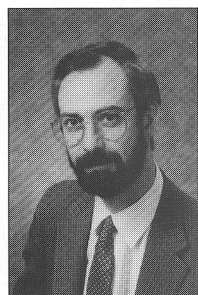


TECH TRANSFER

When reroofing, should you tear off or recover?

by Thomas L. Smith, AIA, CRC

When reroofing, there are two basic options for both low- and steep-slope roofs: either tear off the existing membrane and insulation down to the roof deck, or leave the



existing roof covering in place and add a new membrane (and perhaps insulation) over it.

While the recover option is not new, there appears to be some disturbing trends

appearing in articles in other industry trade publications advocating this approach. The recover option is now cited as an answer to minimizing waste disposal costs. And there appears to be a re-emergence of the concept of leaving insulation with a high moisture content in place.

Recovering the roof

A recent article in another roofing trade publication indicated that there are many considerations related to recovering, including "...economic aspects, environmental aspects, and probable success and efficiency of recovering versus tearing it off..." The author equated the economic and environmental aspects to waste disposal, and stated, "as disposal problems increase, recovering looks better than ever."

Before considering the economic/environmental aspects of reroofing, it is recommended that *life-safety issues* be evaluated by the designer. If the deck has deteriorated, a tear-off (at least in the problem area) and deck replacement or repair is needed. Or, if the structure lacks

the capacity to carry both the existing and new roof, tear-off is required. After life-safety issues have been satisfied, the prudent designer can then consider other aspects in the recover versus tear-off decision-making process.

Regarding recovering over moist substrates, in the 1970s and early 1980s, some single-ply membrane manufacturers stated that moisture could drive upwards through their membranes. It is now generally recognized that if upward drying occurs, it is insignificant. However, research is still underway on downward drying.

When this work is complete, the recover versus tear-off question should be able to be approached on a scientific basis. However, until the new methodology is completed and adequately evaluated in practice, designers should use caution when recovering.

It is recommended that wet insulation be removed, but it can be hard to find. And the difficult question is what to do with insulation that is moderately or extremely damp. The answer to this question requires judgment by an experienced roofing professional. In part, the question depends upon the type of insulation, the type of deck, the climate and whether or not there is a vapor retarder.

In considering the type of insulation, be aware that most types are not conducive to drying (fiberglass and mineral wool are exceptions). In addition, moisture relief vents or perimeter vents should not typically be relied upon to dry out insulation in a compact system.

In considering the deck, realize that most decks can deteriorate when in contact with wet insulation or wet roofing materials. Depending upon a variety of conditions, the deterioration can be quite rapid and is often not easily detectable from visual observation of the underside of the deck.

When non-destructive evaluation (NDE) methods can be employed, it is suggested that designers

recommend that the building owner have an NDE survey made when recover is being considered.

If damp insulation is detected, there are a few papers that can be consulted to assist in the recover/tear-off question. From the *1985 Second International Symposium on Roofing Technology*, there is a paper by Richard Anderson and another by Carl Cash. From the *1991 Third International Symposium on Roofing Technology*, there is a paper by Wayne Tobiasson. Tobiasson's paper presents a strategy for determining a "go" or "no go" condition, but only as it pertains to the suitability of retaining the insulation from a thermal performance viewpoint.

A variation of the normal recover is to remove the membrane and retain the insulation. The advantage to this approach is that wet or very damp insulation will more likely be detected, and appropriate action taken.

Roof tear-offs

Recovering offers many advantages, including cost savings due to lack of tear-off, retainage of the existing R-value, potentially less dust release into the building's interior and greater building protection from storm damage during the reroofing work. When solid technical evaluation indicates that the recover risk is minimal, the building owner may prudently opt for this approach.

However, the tear-off option offers conservatism. By removing the existing roof covering, there is no guesswork about what harm damp insulation may cause. And because the entire deck is exposed, it is much more likely that if the deck has deteriorated, it will be found.

Quite simply, though recover can be a viable option and has been successfully used on numerous jobs, it involves greater risk than tearing-off. **PR**

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