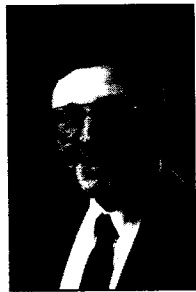


## Slope may be too great for coal-tar BUR

by Donald A. Berg, PE

**Q:** *The owner of a building we are re-roofing wants to install a BUR with coal-tar bitumen. The slope of the roof is 1/8 inch per foot. The NRCA Roofing and Waterproofing Manual recommends that the slope for coal-tar bitumen be less than 1/4 inch per foot. Should we use coal-tar bitumen on this roof?*

**A:** The reason for the low slope requirement for coal-tar products is that they are essentially "dead level" materials. The material's softening point is so low that the heat of the sun, along with gravity, will cause it to flow to the low areas of the roof.



ASTM D-450 Type I coal-tar pitch has a softening point range of 126 F to a maximum of 140 F. Type III coal-tar bitumen has a softening point range of 133 F to 147 F. The membrane temperature on an aggregate-surfaced roof can reach 160 F. This is higher than the maximum softening point of the coal tar, or 147 F, and would be considerably higher than a coal-tar bitumen produced at the minimum softening point of the range, or 133 F.

At least one manufacturer of coal-tar materials allows a slope of up to 1/8 inch per foot. This would permit the 1/8-inch slope of your roof to be a candidate for a coal-tar BUR. However, the problems that can result from membrane slippage are not easy to correct.

The NRCA recommends a maximum slope of 1/4 inch per foot as a conservative guide to coal-tar BUR installation. With the right

conditions—low summer temperatures, sufficient light-colored aggregate and good control of the mopping rates of the bitumen—the system might function at the higher slope. Considering the potential problems, however, this installation is not recommended.

**Q:** *Our local building department requires substantial upgrading of roof air conditioner supports when the building is re-roofed. We installed a cap sheet over an existing roof and the building department is considering this a re-roof. Are they right?*

**A:** As defined in the Glossary of the 3rd edition of the *NRCA Roofing and Waterproofing Manual*, re-roofing is "the process of recovering or replacing an existing roofing system (see Recovering and Replacement)."

Recovering is "the process of covering an existing roofing system with a new roofing system," according to the manual. NRCA recommends that this should include the installation of a layer of re-cover board, standard roof insulation or other means to ensure that the new membrane is not directly adhered to the existing membrane.

Replacement is "the practice of removing an existing roof system and replacing it with a new roofing system," according to the manual.

Neither of the above definitions should be confused with maintenance procedures for increasing the life of an existing roof by means of resurfacing with flood coats, extra plies, cap sheets, cold-process coatings or other, similar methods.

Your building department may be attempting to upgrade the air conditioning supports to NRCA recommended heights when major roof work is being accomplished. This goal seems desirable, although the cost can be considerable. Requiring this of small residential and commercial structures might cause owners to delay re-roofing because of the added expense. This would appear to be counterproductive.

Regarding your question of whether the building department is "right" in requiring the air conditioner upgrade because of a cap sheet installation, that is solely the decision of the local building department. If the building department

## Building departments choose the definitions.

ment were using NRCA definitions as a guide in implementing the rule, it would appear that the air conditioner upgrade would not be required at this point. Installation of a cap sheet is considered a protection of the existing roof—not a new roof in itself. However, the building department may use any definition it chooses for implementing its policies, assuming the department applies its definitions consistently.

**Q:** *We want to install insulating concrete over an existing structural concrete deck but understand that NRCA doesn't recommend this practice. What are the potential problems?*

**A:** Lightweight insulating concrete contains considerable moisture when installed, and it retains this moisture for a period of time. Ideally, this moisture is vented downward through slots in the supporting steel decking. In the case of a concrete deck, the moisture has nowhere to go but up. The use of roof vents might eliminate some of the moisture, but there is a potential for damage to the roofing membrane because the roof vents have limited effectiveness on drying. **[PR]**

*Each month in this column, NRCA's deputy director of technology and research, Donald A. Berg, PE, will answer readers' technical questions. If you have a specific question you would like answered in this column, send it to Q&A, Professional Roofing, O'Hare International Center, 10255 W. Higgins Road, Suite 600, Rosemont, Ill. 60018-5607.*