Do test cuts indicate roof quality?

By Bob LaCosse

This month's article further explains NRCA's position on test cuts. It was prepared by Bill Cullen, NRCA research associate, with Bob LaCosse's assistance.

The debate continues between owners, contractors, manufacturers, design professionals and the specification writing community over the use of test cuts for evaluating the quality of new or replacement BUR membranes. Some organizations insist on their use while others depend on different means to assess and ensure the quality of a roofing application.

Those who support the use of test cuts claim the procedure offers certain advantages. Some say that test cuts may motivate foremen and roofing crews to demonstrate their professional skills when applying membrane components. Organizations that base their quality control measures on test cut evaluations claim the practice leads to improved overall roof performance.

However, the many limitations of test cut sampling far outweigh the advantages. One objection often raised is that test cut procedures were not developed to evaluate new work. Many also question the precision of the test results, which are often influenced by laboratory biases. Furthermore, the accuracy of the procedure described in the American Society for Testing and Materials (ASTM) standards for test cuts has not been established. It is also nearly impossible to ensure that the samples tested are truly representative of the job because the bias of the sample taker is a factor when selecting the areas to be tested.

NRCA objects to cuts

NRCA's position on test cuts has been summarized in the document *Quality Control in the Application of Built-Up Roofing.* In *Quality Control,* the Association discourages the use of test cuts. NRCA believes that test cuts do not provide an adequate picture of overall roof quality. According to the Association, test cuts do not address the quality of flashings, penetrations, expansion joints and rooftop equipment mounts, which are components NRCA believes are more critical to a roof's watertight integrity than the weight and uniformity of the interply mopping asphalt. The booklet emphatically states that the most effective means to evaluate quality installation is by continuous visual inspection.

Quality Control does acknowledge that test cuts are sometimes required by job specifications. The document recommends that, when test cuts are necessary, they should be prepared in accordance with ASTM Standard D-3617, "Sampling and Analysis of New Built-Up Roof Membranes."

Quality Control condemns the use of the laboratory test procedure ASTM D-2829, "Sampling and Analysis of Built-Up Roofs," a procedure that calls for the preparation of 1-foot-square samples. NRCA objects to the use of this test procedure because it was not developed to evaluate the installation of new roof membranes, a fact that is stated in the ASTM standard describing the test.

In spite of these objections, a number of organizations continue to require ASTM D-2829 or similar laboratory tests to evaluate the watertight integrity and projected future performance of a new BUR, even after the surfacing bitumen and aggregate have been applied. Frequently, these test results are employed to make major and costly decisions about the acceptability of a roofer's workmanship.

The current NRCA position on test cuts can be summarized in three brief statements:

- Continuous visual inspection by a person knowledgeable in roofing technology and good workmanship practices is strongly recommended as a means of quality control.
- When job specifications require test cuts to complement visual inspection, the use of ASTM D-3617 for on-site evaluation is recommended.
- NRCA categorically states that laboratory analysis procedures for test cut evaluation are not acceptable for quality control purposes for new or replacement BUR membrane installation.