



# NDT&E Tech Brief

## Sampling Guidelines

An advantage of non-destructive testing is the option to perform multiple tests or even survey an entire area without disturbing the building fabric. The design of a non-destructive test program should be based upon the conditions of the particular building system under investigation and the purpose of the test. Here are some guidelines on sample size:

**Leak investigation:** Buildings over fifty years old have been exposed to varying weather conditions including prevailing winds and multiple freeze-thaw cycles. As a result, similarity will not pertain – four corners of the same building can fail in four different ways. A newer building with leak problems probably has a common design or construction flaw, and using similarity is acceptable. However, don't scatter the water tests; identify typical representative leak locations, and schedule sequential tests – with masking, if needed.

**Roof moisture survey:** Surveying limited portions of a roof will not save much on cost, due to preparation, transportation, mobilization, setup, and pre-marking. Also, with 100% testing, areas which are failing but haven't resulted in interior damage will be identified, allowing for preventive maintenance. The exception to the rule is when pavers, ballast, or IRMA insulation must be removed to perform the survey.

**Structural investigation:** When gathering data for load calculations, representative sampling, even at a single location, may be acceptable. When gathering data on damage, significant mapping, perhaps even 100% testing, may be necessary.

**Probe Placement and Clearance:** Use non-destructive testing prior to destructive testing to find – or avoid – embedded objects and conditions. Thinking beyond cores, bores, and probes, we routinely perform 100% mapping and marking of reinforcement prior to waterproofing injection, giving the contractor the freedom to select the injection drill sites.

For specific guidance on the design of your test program, feel free to contact me. (For a list of all of the tests that SUPERSTRUCTURES provides, click [here](#).)

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