

TECHNICAL BULLETIN

TARGET MARKET ROOFING



BUILDING TRUST



Subject: Electronic Leak Detection Testing Limitations

#15-8

Sika Corp. – Roofing Division requires and specifies the use of electronic leak detection (ELD) testing as the main quality assurance (QA) method over completed, exposed membrane on all waterproofing projects. This test is required to help confirm the water tightness of the system prior to overburden placement so that a warranty can be issued. Although no test can be 100% accurate, we believe that ELD is the best QA method currently available for this application. While this is its primary function for our purposes, it can also be used as a tool to locate leaks through the overburden.

ELD has limitations in both QA testing (exposed membrane) and troubleshooting situations (testing through overburden). The success of the tests relies on a path for electricity between the top of the membrane (QA test) or top of the overburden (troubleshooting), and a conductive medium (common) below. The conductive medium can be the structural deck or a material, such as stainless steel mesh, installed below the membrane. This connection is made by water that travels through a breach in the membrane (a leak) to the conductive medium below. If this path is not complete, the breach will not be detected.

The main factors that affect the accuracy a QA test are the amount of water (usually in the form of rain) the membrane has been exposed to and the size of a breach. Leaks cannot be detected if the membrane has not been adequately exposed to water. The quality of the conductive medium is also important, but it is usually addressed prior to installation of the waterproofing system.

The main factors that affect the accuracy of the test in a troubleshooting situation are more complicated. The type and thickness of the overburden, as well as the types of layers within it can affect the success and accuracy of locating a leak. Certain interferences within the overburden can also have an adverse effect. The membrane must insulate the electricity used for the test except at the location of the breach. If a path for the electricity to common other than a breach in the membrane exists, interference may occur. Examples of material that may interfere with the test include:

- Lightning protection systems.
- Steel reinforcement for concrete topping slabs that are tied to the building.
- Metal counter flashing that is connected to the overburden layers.
- Electrically insulative protection membranes.
- Thick layers of foam insulation that do not allow water to completely contact the membrane over the area being tested.

- Thick layers of soil overburden that prevent moisture from being evenly distributed over the surface of the membrane in the area being tested.
- Conductive components that are connected to the building and in contact with the overburden such as metal conduits, slot drains in paver systems, drains, etc.
- Layers within the overburden such as drainage composites and protective or moisture management felts in contact with the structure
- Very thick concrete, soil, growth media, or other hardscape, especially in combination.

Please note that this is not a complete list and other limiting factors may exist.

With the exception of single source vegetated roof systems, the overburden design, selection and installation is outside of the scope of Sika's involvement. If ELD is intended to subsequently be used for troubleshooting on a project, the designer must insure that the overburden design is ELD "compatible" (i.e. that it will not interfere with any testing to be completed once the overburden is installed). Additionally, any subsequent modifications, additions or other alterations to the overburden and/ or waterproofing system must also be designed and installed accordingly.

ELD as specified and required by Sika is intended for waterproofing QA purposes prior to overburden installation. A potential added benefit for the owner, subject to the limitations noted above, is the possibility of using this method to locate leaks through the overburden. Sika makes no claims with regard to its effectiveness for troubleshooting, and, as with overburden removal, all associated costs are the owner's responsibility.