

TECHNICAL BULLETIN

LEAK DETECTION OPTIONS



Subject: Leak Detection Options 25-01

Historically, the only meaningful way of testing a new or existing Monolithic Membrane 6125® (MM 6125®) roofing or waterproofing membrane installation was by flooding the area with water. Utilized for many years in Europe, an electronic means of detecting breaches and potential leaks in a completed membrane, like MM 6125, is now also available in the United States. Whichever method is chosen, Hydrotech agrees that it is good practice to conduct leak testing on a completed membrane assembly prior to the installation of subsequent overburden.

Two Acceptable Methods – Pros & Cons

Flood Testing

Flood testing typically requires that a system of watertight bulkheads be constructed over the completed MM 6125 membrane assembly. At least 2 inches of water must then be flooded over the membrane and allowed to sit for 24 to 48 hours. A visual inspection must then be made from the underside of the structural deck to determine if any leaks have developed. If water infiltration is found below the deck, the water must be drained, the source of the leak must still be located, the area dried out, the membrane repaired, and the flood test repeated.

Pros

- Conducted/controlled by authorized membrane installer
- Cost effective
- Coordination of installer's schedule/job sequencing is easier

Cons

- Requires time to construct bulkheads, flood for 24-48 hours, inspect, repair, retest
- Minor breaches go undetected
- Difficult on irregularly shaped or sloped areas

Electric Conductivity Testing

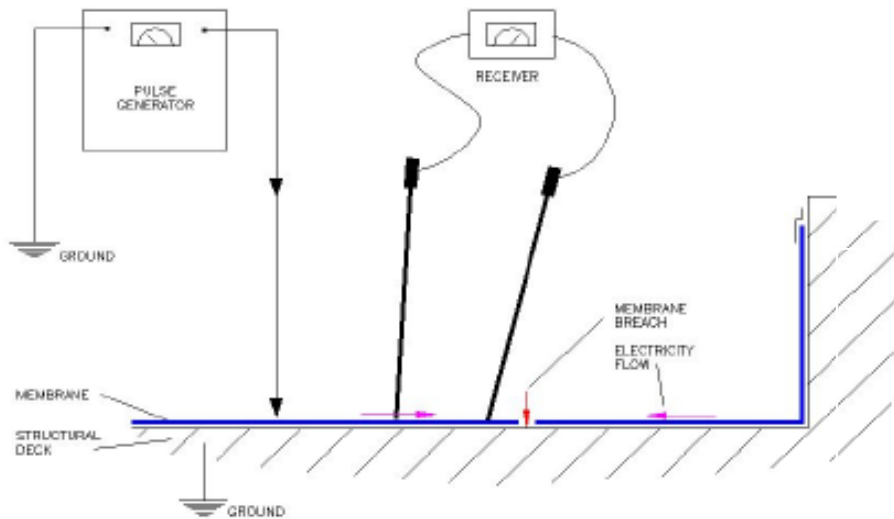
One of the means of electrically detecting breaches through the membrane is electric conductivity testing. This method locates breaches through a waterproofing membrane by measuring, or more accurately, following electric current across the surface of the membrane.

A wire loop, to act as a conductor, is placed directly on the membrane's protection course around the perimeter of the area to be tested. One of two leads from a pulse generator is connected to this wire loop conductor. A second lead from the pulse generator is grounded to the structural deck. The surface of the waterproofing must then be wetted (not flooded) to provide an electrically conductive medium.

Every few seconds a low-volt potential is delivered from the pulse generator for one second. As a result, an electrical potential difference is set up between the roof surface, which is wet, and the roof deck, which is "earthed" or grounded – essentially producing two electric plates. If there are any "leaks" or breaches through

the waterproofing membrane, which acts as an electric insulator, the small electric current will flow across the membrane surface and down through the breach, completing the circuit between the two “electric plates”.

A technician uses a receiver (a potentiometer), connected to probes or other scanning devices, to identify the direction of the electric current. By moving the probes, the technician is able to systematically follow the flow to even the smallest breach or leak through the membrane. Once located, the breach in the membrane can be repaired and quickly retested.



Pros

- Locates even the smallest beaches/defects
- Requires less time – immediate results
- Equally effective on sloped areas
- Repairs can be re-tested same day

Cons

- Moderately expensive
- Not conducted by authorized membrane installer
- Coordination of installer's schedule/job sequencing may be more difficult

Availability & Cost

There are several companies that Hydrotech is aware of that can provide electric breach detection testing here in the United States. The cost and specific means and methods of the service provided by each company can vary greatly and may be affected by factors such as the project location and distance the technician is required to travel, the number of trips required, project size, the amount and density of penetrations, and the level and types of service(s) that the individual company provides.

Interested parties can contact the following for more information and quotations:

International Leak Detection (ILD), (905)428-8283 (general US/Canada);

Detec Systems 1-855-75DETEC (general US/Canada);

Honza Group, Inc., (301)953-7210 (East/Central US);

Progeo, (603)286-1942 (general US);

Vector Mapping/IR Analyzers, (800)879-1964 (general US/Canada)

Technical Testing Technologies, (800) 385-6065 (Western U.S., CA, OR, WA, NV, AZ)

CDC, Inc., Lisa Palacio, lpalacio@cdc-usa.com (general US, Mexico and other international locations)

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