



SPECIFICATION

SPECIFICATION FOR MANUAL ELECTRONIC LEAK DETECTION OF ROOFING AND WATERPROOFING MEMBRANES USING ATLANTIC LEAK DETECTION LV (ELECTRONIC FIELD VECTOR MAPPING) and HV PROCEDURES

5 pages

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I. DEFINITIONS

- A. ALD: Atlantic Leak Detection
- B. Electronic leak detection (ELD): Leak location techniques that rely on the non-conductive properties of roofing and waterproofing membranes in which current flows through breaches in the membrane to identify leakage by completing an electrical circuit.
- C. ALD LV (Electronic Field Vector Mapping): manual low voltage vector mapping procedures as outlined below.
- D. ALD HV: manual high voltage membrane mapping procedures.
- E. Boundary Cable: the conductive loop which forms the test area and is attached to and powered by ALD's impulse generator. The cable can be manufactured from several conductive materials.
- F. ConDucttm Mesh: a conductive mesh which is installed in the roofing or waterproofing envelope in cases where the structure or the roofing assembly is not able to conduct the current generated by the impulse generator.
- G. E-Leak: an electrically active point placed in the field encircled by the boundary cable that imitates a leak in the membrane being tested.
- H. Technician: a person trained and certified by Gaussian Technologies Inc. to perform electronic leak detection on all types of buildings, and roofing and waterproofing construction.
- I. Compatibility:
 - 1. The compatibility of the electronic leak detection technique with specific roofing or waterproofing systems and materials must be established by Atlantic Leak Detection.
 - 2. NON-CONDUCTIVE ROOT BARRIERS, ETC.: Compatibility for testing after overburden is installed must also be established by ALD technicians on site. For example, wide sheet root barriers which are composed of non-conductive materials such as PVC or Polyethylene liners and which are used in vegetated

roofing systems will prohibit all future electronic EXACT location testing from above the roofing assembly after the vegetated roof is installed.

II. MATERIALS FOR ELECTRONIC LEAK DETECTION

- A. Boundary cable: Recommended and/or supplied by ALD and composed of an assortment of conductive materials such as bare galvanized steel or stainless steel wire rope, or polypropylene reinforced stainless steel stranded cord.
- B. Reference screen: Stainless steel mesh or intrinsically conductive glass or polymer-based felts supplied by ALD. The mesh shall be compatible for use in the particular roofing or waterproofing system installed.
- C. Reference bolts or lugs: Depending upon the structure and the availability of reference points, reference bolts or lugs that are fastened into the structure of the building might have to be supplied to support the ALD HV and LV leak detection methods.
- D. Insulated cable: used to build the connections to electrical screens and E-Leaks.

III. PROCEDURES

- A. Test the integrity of the roofing membrane installation utilizing ALD LV (Electronic Field Vector Mapping) or ALD HV (High Voltage Testing) electronic leak detection methods provided by ALD qualified technicians. Atlantic Leak Detection or its qualified agent will determine the appropriate testing method based on the roofing system layout, materials and type of overburden:

B. General:

1. Inform ALD of the characteristics of the following building elements before any testing is done:
 - a. Supply scaled drawings and details of the areas of the roofing or waterproofing areas that will require testing.
 - b. Describe the type of structure upon which the roofing or waterproofing will be placed.
 - c. Indicate type of deck upon which the roofing or waterproofing will be installed.
 - d. Indicate configuration and manufacture of each component in the roofing envelope, including any underlayment.
 - e. Describe the type and construction of any proposed overburden.
 - f. Indicate the number of distinct roofs, roof segments or waterproofed areas (different levels, areas separated by expansion joints or parapets, etc.)
 - g. Provide an inventory of roofs or waterproofing areas which have the same construction.
 - h. After installation of the membrane is completed and before overburden is placed, the roofer or waterproofer shall verify the finished condition of any and all seams, patches and penetrations, including drains, by localized testing using manufacturer and industry approved methods

2. Provide ALD HV and LV testing to verify that the membrane is free of holes, open seams or capillary defects that will allow water to penetrate the building envelope and contact the structure or the reference mesh. NOTE: If water from leakage does not touch the structure or reference mesh, the system will not identify it as a leak.

C. Electronic Leak Detection Testing Procedures for ALD LV - Electronic Field Vector Mapping

1. Prior to testing, verify integrity of any and all seams and patches already present in the membrane system, and connections at drains and penetrations by localized, non-electrical testing such as probing.
2. Install the boundary cable directly on the membrane approximately 1-3 inches (25mm – 75mm) from the perimeter of all roof areas to be tested. The Technician will determine the size and shape of the areas. Secure the boundary cable with anchors or tapes compatible with the membrane to prevent movement or damage to the cable. Place and secure so as not to create a tripping hazard.
3. Wet the entire roofing membrane test area with water prior to the start of each test and maintain the wet condition for the duration of testing. Ponding water is not necessary and may sometimes interfere with the accuracy of the test.
4. Attach the impulse generator to the boundary cable with removable connectors and reference the other side of the generator to the building structure or conductive mesh within roofing system.
5. Test to find any anomalies in the membrane.
6. If an anomaly is detected, the technician shall mark the area of the anomaly and report to the roofing contractor immediately.
7. Defects found shall be immediately repaired by roofing contractor and retested by testing Technician using either LV or HV (High Voltage), whichever is deemed more appropriate by the testing Technician.
8. The Technician providing the testing shall provide a test report documenting the initial status of the roofing membrane, testing procedures, daily activity and a schematic drawing indicating the location of defects and the stationary boundary cable.
9. After testing and repair of all membrane breaches, protect the membrane immediately by placing the specified overburden (if applicable). Exercise care in placing overburden so as not to displace or damage the conductor wires or cause damage to the roofing membrane.
10. Eliminate construction traffic on the newly tested and accepted membrane system other than that which may be required to install the overburden. Do not store construction materials on unprotected membrane surfaces.

D. Electronic Leak Detection Testing Procedures for ALD HV - High Voltage ELD Testing

1. The waterproofing membrane must be dry.
2. Proceed to test the roofing membrane using ALD HV High Voltage testing procedures. Sweep the entire roof surface being careful to overlap individual swept areas by a minimum of 3 inches to ensure that every square millimeter of the surface has been tested.
3. If an anomaly is detected, the Technician shall report to the roofing contractor immediately.
4. Defects found shall be immediately repaired by roofing contractor and retested by the Technician.

IV. FINAL DOCUMENTATION

The Technician shall provide a test report documenting the initial status of the roofing membrane, testing procedures, daily activity and a schematic drawing indicating the location of defects.

END OF SPECIFICATION