

SECTION 07 59 00

ELECTRONIC LEAK DETECTION - HIGH VOLTAGE ELD

PART 1 - GENERAL

1.1 SUMMARY

- A. Engage an Independent Testing Agency to provide a Certified ELD Technician to perform Electronic Leak Detection to verify that membrane is free of any holes, open seams or capillary defects that will allow water to pass. Electronic Leak Detection shall include:
1. High Voltage Electronic Leak Detection for roofing and waterproofing membranes.
 2. When required, a permanent Electronic Leak Detection System (ELDS) for roofing and waterproofing membranes.

1.2 SUBMITTALS

- A. Field Quality-Control Reports: Prepare and submit hard copy and digital reports with a description of the ELD techniques employed, summary of findings, and CAD scaled drawings of the tested areas with the locations of all defects (and trace wire and connection boxes if provided) accurately mapped on the drawing.

1.3 QUALITY ASSURANCE

- A. Installing and Testing Firm Qualifications: The approved Independent Testing Agency shall have a minimum three year record of satisfactory experience providing High Voltage ELD services on projects of similar size and scope.

1.4 BREACH-FREE CERTIFICATION

- A. Breach-Free Certification of Membrane Integrity: At the conclusion of the testing, the testing agency shall provide a Breach-Free Certification of Membrane Integrity, provided the following conditions are met:
1. Contractor provides personnel and materials to repair any defects located with the testing.
 2. Repair materials have sufficient time to set up to allow the ELD Technician to utilize High Voltage ELD to retest any problem areas.
 3. All repairs pass retesting.

PART 2 - PRODUCTS

2.1 ELECTRONIC LEAK DETECTION

- A. Independent Testing Agency, Basis of Design: **IR Analyzers / Vector Mapping** (1-800-879-1964) High Voltage ELD - Nondestructive Testing.

2.2 HIGH VOLTAGE ELECTRONIC LEAK DETECTION

- A. Scope: Perform a High Voltage ELD Survey on all testable membrane areas in the Contract; includes all horizontal membrane areas and all vertical surfaces such as parapet walls, flashings and curbs, and transitions from the horizontal surfaces to the vertical surfaces. High Voltage Electronic Leak Detection shall be performed on a dry membrane surface.

2.3 PERMANENT ELECTRONIC LEAK DETECTION SYTEM (ELDS)

- A. Scope: At areas where the membrane will be covered with overburden, the ELD Technician will install a permanent on demand Electronic Leak Detection System to facilitate future Low Voltage Vector Mapping with the overburden in place. The ELDS will consist of trace wire loops installed on top of the membrane in area increments not to exceed 7500 sf, and low voltage connection boxes to provide access to the trace wire loops. Trace wire loops to be installed by ELD Technician. Connection boxes to be installed by Contractor.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. The ELD Technician will meet with the Installer and review the sizes and locations of areas to be tested.

3.2 TESTING PROCEDURES - HIGH VOLTAGE ELECTRONIC LEAK DETECTION

- A. Test equipment shall consist of conductive phosphor bronze brush electrodes and a portable battery powered generator capable of providing variable DC current from 1000-30,000 volts at low amperage.
- B. Connect one terminal of the generator to a ground in the assembly (typically a steel or concrete deck, or alternative grounding medium such as a conductive primer or metal grid). Connect the other terminal to the phosphor bronze brush. Calibrate the voltage level to the thickness of the membrane being tested.
- C. The ELD Technician shall methodically pass the brush electrode over all testable horizontal and vertical membrane surfaces in the contract. Successive passes will overlap previous passes by a minimum of 3 inches. Breaches will be identified when an audible alarm indicates that the electric current has passed through a defect and grounded to the conductive material beneath the membrane.
- D. ELD Technician shall mark breach locations on the membrane with spray paint, chalk, tape or other approved method.
- E. The ELD Technician shall maintain communication with the Contractor's representative regarding the number and locations of breaches detected.

3.3 PERMANENT ELECTRONIC LEAK DETECTION SYTEM (ELDS)

- A. When required, install a permanent on demand Electronic Leak Detection System of top of the membrane. The ELDS will consist of trace wire loops installed on top of the membrane in area increments not to exceed 7500 sf, and low voltage connection boxes to provide access to the trace wire loops. Trace wire loops to be installed by ELD Technician. Connection boxes to be installed by Contractor.

3.4 FIELD QUALITY CONTROL

- A. Contractor shall repair or remove and replace components of membrane system where test results indicate holes, open seams or capillary defects that will allow water to pass.
- B. After repairs are complete as per roofing or waterproofing membrane manufacturer's requirements, retesting in repaired areas will be performed at Contractor's expense to verify the integrity of the membrane.

END OF SECTION