SECTION 07 50 00 – MEMBRANE ROOFING

1.1 VERIFITCATION OF MEMBRANE INTEGRITY

A. SUMMARY

1. Engage a qualified Independent Testing Agency to perform Electronic Integrity Testing after installing the membrane and before placing overburden. Provide testing to verify installed membrane is waterproof and free of any holes, open seams or capillary defects that could allow water to pass. Electronic Integrity Testing shall include:
    a. Low-Voltage Electric Integrity Testing (LVIT) (Vector Mapping)
    b. When required, an alternative grounding medium installed above a nonconductive deck or any nonconductive materials between the waterproofing membrane and the conductive deck.
    c. When required, a permanent On-demand Electronic Leak Detection System (ELDS) installed above the waterproofing membrane.

B. SUBMITTALS

1. Field Reports: Prepare and submit reports with a description of the techniques employed, summary of findings, and scaled drawings of the tested areas with the locations of all defects.
2. Qualifications: Proof of testing company qualifications

C. QUALITY ASSURANCE

1. Qualifications: The approved Independent Testing Agency shall have a minimum five-year record of satisfactory experience providing both Low Voltage Integrity Testing and High Voltage Integrity Testing on projects of similar size and scope.

D. PRODUCTS

1. Basis-of-Design: Provide membrane integrity test system and service by Atlantic Testing Services, 1-888-696-6429, service@atlanticleak.com, or comparable system and service from a manufacturer approved by Architect prior to bidding.
    a. Low-Voltage Electric Integrity Test: Perform a Low Voltage Vector Mapping Survey on all horizontal membrane areas in the contract. Low Voltage Vector Mapping shall be performed on a wetted membrane surface.
    b. Alternative Grounding Medium: In assemblies where the deck is not electrically conductive or there are nonconductive materials installed between the waterproofing membrane and the conductive deck, e.g. insulation, coverboards, vapor retarders, etc., an alternative grounding medium must be installed under the membrane to accept the electronic integrity test currents.
    c. Permanent On-Demand Electronic Leak Detection System (ELDS): In assemblies where the membrane will be covered with overburden, the

LVIT Technician will install a permanent On-demand Electronic Leak Detection System to facilitate future Low Voltage Vector Mapping with the overburden in place.

E. EXECUTION

1. Low-Voltage Electric Integrity Testing

a. The LVIT Technician will meet with the Installer and review the sizes and locations of areas to be tested.

b. Installation of LVIT conductive boundary wire around the perimeter of all areas to be tested. Isolated areas shall not exceed 7,500 square feet. The boundary wire (1.5mm in diameter) will consist of stainless-steel strands with a total tensile strength of not less than 250 lbs.

c. Boundary wire shall be placed in direct contact with the membrane and secured 3 inches from the perimeter of all areas to be tested. Wire will be secured with anchors or tape compatible with the membrane to prevent movement, damage, or a tripping hazard.

d. Isolation of the membrane field from contact with any metal items, grounded soil, or other grounded part of the structure by installation of conductor wire around items, or by temporary removal of items if possible, to isolate them from the field and prevent unintended grounding (false positives).

e. One terminal of a LVIT pulse generator shall be attached to the boundary wire loop with a removable connector, the other terminal of the generator will be connected to a ground within the assembly, such as the building structure or conductive mesh within the roofing system.

f. The contractor shall wet the entire test area with water sufficient to create an electrical "plate" on the surface of the membrane. Contractor shall maintain wet for the duration of the testing.

g. A one second long 40-volt electrical impulse will be delivered to the conductor wire at an average rate of one impulse every three seconds.

h. Utilization of a LVIT potentiometer and two probes placed on the surface of the membrane to detect the presence or absence of electrical flows.

i. If no current flow is detected after a methodical search, then the certified inspector shall report the installed membrane within the tested area is free of holes, or seam and capillary defects, and is therefore waterproof at that time.

j. If there is current flow detected during the test then it indicates that current has grounded through a breach. The certified inspector shall work to trace the current vectors to their source and locate the breach(s) in the membrane. The inspector shall report to the contractor immediately the exact location of any defects on the installed membrane in the area tested.

k. Defects found shall be repaired by the contractor and retested by the inspector.

l. The Agency providing the LVIT testing shall provide a report documenting each days' test results including a written description of the testing procedures, status of the membrane, daily activity, and a schematic drawing indicating location of the stationary boundary wire and of any defects found in testing. This report shall be submitted to the Contractor, and Architect if required.

m. After testing and repairing all membrane breaches, the membrane should be immediately protected by the placement of the specified overburden (if applicable). Care to be exercised in placing the overburden so as not to displace or damage the conductor wires or cause damage to the roofing membrane.

n. Construction traffic and the storage of construction materials should be avoided on the newly tested and accepted membrane system if possible until the installation of overburden.

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