This is a sample specification for a leak location survey on a bare geomembrane over a conductive material. It should be used as a guide and not verbatim. Ausenco Vector will review your specific application and recommend changes to the specification as needed. Contact Ausenco Vector personnel at (530)272-2448 or abigail.beck@ausencovector.com.

SECTION 02778

GEOMEMBRANE LEAK DETECTION TESTING – EXPOSED GEOMEMBRANE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. This section includes a description of the leak location testing using the water puddle method on the exposed geomembrane.

1.2 RELATED SECTIONS

A. Section XXXXX – _____

B. Section XXXXX – _____

C. Section XXXXX – _____

D. Section XXXXX – _____

1.3 REFERENCES

A. ASTM D6747 – Standard Guide for Selection of Techniques for Electrical Detection of Potential Leak Paths in Geomembranes

B. ASTM D7002 – Standard Practices for Locating Leak on Exposed Geomembranes Using the Water Puddle System

1.4 SUBMITTALS

A. Prior to commencement of the leak location survey, the leak detection consultant shall submit a Work Plan to the CONTRACTOR. The Leak Location Survey Work Plan shall include:

1. Qualifications of the proposed leak detection consultant including the number of years the leak detection consultant has performed the proposed survey method.

2. Description of the proposed survey method, procedures, site preparations, estimated duration of survey, and quality control and field calibration procedures.

3. A Statement of Qualifications meeting the requirements of Section 2.1, Paragraph A.

B. If necessary, the leak detection consultant shall provide any permanent electrodes, wires, and installation instructions to the CONTRACTOR prior to the installation of the geomembrane.

C. The leak detection consultant shall report the general results of the survey to the CONTRACTOR and OWNER during the daily progress of the field work.

D. Prior to the demobilization of the survey personnel from the site, the leak detection consultant shall submit a list of locations of the leaks detected to the OWNER, CONTRACTOR, and INSTALLER.

E. The leak detection consultant shall submit a letter report documenting the field work and results of the surveys to the OWNER within fourteen (14) days after completion of the field work signed by a Registered Civil Engineer in the state where the work was performed.

PART 2 PRODUCTS

2.1 LEAK LOCATION CONTRACTOR AND SUPERVISOR QUALIFICATIONS

A. The leak detection consultant shall have a qualifications and experience in conducting geoelectric surveys including having tested a minimum of 10,000,000 square feet of geomembrane liner and a minimum of 5,000,000 square feet of the proposed survey method on at least five projects. In addition, the leak location survey shall be supervised by a professional or technician with a minimum of 2,000,000 square feet of liner testing experience using the proposed method on at least three projects.

PART 3 EXECUTION

3.1 INFORMATION REQUIRED

A. The leak detection consultant shall be provided with drawings showing:

1. All layers constituting the lining system and details of all liner penetrations.

2. Plan of the survey area.

3. Peripheral details, including welds to adjacent lining systems.

4. Structures and obstructions above the liner.

5. Electrical equipment above the geomembrane.

3.2 PREPARATION AND SUPPORT

A. The CONTRACTOR is responsible for preparing the survey area cell for the leak detection surveys. The preparation consists of, but is not limited to, the following:

1. Provide the leak detection consultant the liner installation schedule.

2. Provide a water truck and driver with water as a continuous water source for the water lance leak detection testing.

3. Provide one laborer per leak detection equipment operator to assist with the water puddle leak detection testing.

4. Remove and dispose of residual water, as needed.

5. Render the geomembrane clean and uncluttered. Remove all standing water from the surface of the geomembrane and provide electrical isolation at the perimeter of the survey area.

6. The survey area must have a low point where water is allowed to collect. As the survey progresses, water is sprayed onto the liner. If the water exits the survey area and touches the surrounding ground, the survey cannot be performed. Often features such as rain flaps and berms are required to keep the water restrained to the survey area.

7. The subgrade must contain sufficient moisture to conduct the survey. One percent by weight is usually adequate. It may be necessary to wet the subgrade if it has desiccated before deployment of the geomembrane; however the surface tends to rehydrate after several days by wicking up moisture from the underlying soil. The Client may also wet the installed geomembrane with approximately 0.1 inches of water (2,700 gallons per acre) several days before the performance of the leak location survey. An equivalent recent rainfall would also suffice.

8. Calibration requires drilling holes in the geomembrane. The Contractor must be prepared to have these holes repaired.

3.3 SURVEY

A. The water puddle leak detection survey shall be performed after the installation of the primary HDPE geomembrane.

B. The leak detection consultant is responsible for calibrating equipment utilized to achieve optimum data quality and sensitivity for the site conditions. This usually involves drilling some holes in the geomembrane which may be required to be repaired by the Contractor.

C. All testing shall be performed in accordance with current industry and ASTM standards.

D. The survey works best when the geomembrane is in intimate contact with the subgrade. Wrinkles are an impediment to conducting a good survey. Defects on wrinkles may not be detected. Therefore, it is usually in the interest of the project to conduct the survey when the liner system is cool and flat, such as in the morning or during the night.

E. Working on slopes with smooth geomembrane can create safety hazards with slippery surfaces, and may require additional harnessing and slower production rates.

F. Leak locations shall be logged, visibly marked, and reported for repair.

G. The leak detection consultant shall report the general results of the survey to the Lead CQA Monitor and CONTRACTOR during the daily progress of the field work.

H. Prior to the demobilization of the survey personnel from the site, the leak detection consultant shall submit a list of locations of the leaks detected to the Lead CQA Monitor and CONTRACTOR.

I. The leak detection consultant shall submit a letter report documenting the field work and results of the surveys to the CONTRACTOR within fourteen (14) days after completion of the field work.

END OF SECTION