MICHIGAN

DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

FOR

**SOIL ABSORPTION SYSTEM**

UTL:CJD 1 of 3 APPR:DMG:NJM:04-12-21

**a. Description.** This work consists of constructing a soil absorption system (mound type) as shown on the plans including coarse aggregate Class 6A, 2NS sand backfill, manifold pipe, lateral pipes, orifice shields, flushing valves and valve boxes, distribution valves and enclosures, inspection ports, weep holes, geotextile liner, suitable earth fill (including that which is necessary to provide the 10 foot buffer around the 6A aggregate bed), and all other work shown on the plans and necessary to complete the item as described herein.

**b. Materials.** Provide 2 inch diameter polyvinyl chloride (PVC) manifold pipe and 1¼ inch diameter perforated PVC pipe for the laterals. Ensure the manifold and distribution piping is Schedule 40 PVC and is in accordance with *ASTM D2665*. Glue all PVC joints in accordance with the manufacturer’s instructions. Ensure all joints are watertight. Ensure perforations are 5/32 inch diameter and as specified in *ASTM D2729*. Drill perforations 4 feet on center on the bottom of the laterals (in the non-drain back configuration) and protect with slotted orifice shields. Provide Orenco, GAG-SIM/TECH, Zabel ZOS-150, or approved equal orifice shields. Drill the 5/32 inch diameter orifices with a drill press or drill guide using a new 5/32 inch drill bit. Ensure orifices do not have any visible burrs.

Provide coarse aggregate Class 6A for the lateral bedding and natural 2NS sand media material in accordance with section 902 of the Standard Specifications for Construction. The use of recycled crushed concrete is not permitted for the lateral bedding or the sand media material.

Furnish two distribution valves to distribute flow to each of the two cells of the soil absorption system. Ensure each valve automatically distributes flow to one of the four dosing zones per cell. Ensure the valve automatically advances one position to the next zone after completion of a dosing cycle. Ensure valve material is high strength, non-corrosive, acrylonitrile butadiene styrene (ABS) polymer. Ensure valve assembly is complete with PVC inlet isolation ball valve, a section of clear pipe for flow observation and union connections. Ensure valves are Orenco Systems Model series V6404A. Provide PVC valve enclosures complete with lid and insulation for each valve assembly. Ensure the distribution piping is Schedule 40 PVC in accordance with *ASTM D2665*. Ensure insulation is waterproof and secured in waterproof bags fitted around the valve assembly. Ensure the insulation fills the volume of the valve chamber as completely as possible. Insulation similar to solid packaging peanuts will be acceptable. Ensure materials and placement are approved by the Engineer.

Provide non-woven geotextile liner with the following physical properties:

1. maximum weight of two ounces per square yard,

2. minimum trapezoidal tear strength of 10 pounds,

3. minimum puncture strength of eight pounds.

Ensure flushing valves are quarter-turn PVC Schedule 80 Full-Bore design Utility Ball valves rated for a working pressure of 150 pounds per square inch (psi). Ensure o-rings are ethylene propylene diene monomer (EPDM). Ensure valves are approved by the Engineer.

Ensure valve boxes and lids are high-density polyethylene (HDPE). Ensure lids are a twist to secure, pest-free style. Ensure valve boxes and lids are approved by the Engineer.

**c. Construction.** Ensure the Contractor is licensed to conduct work in Lapeer County and secure all necessary permits to perform this work. Direct questions regarding the construction permit to the Lapeer County Health Department:

Ray Strasser, Sanitarian

Lapeer County Health Department

Environmental Health Division

1800 Imlay City Road

Lapeer, MI 48446

(810) 667-0392 or (810) 245-5804 (cell)

Minimize disturbance of the existing ground and avoid damage to existing vegetation when excavating and installing the soil absorption system.

Remove the limits of unsuitable material as shown on the plans. Obtain approval for the limits of removal and the bottom of the excavation from the local health department sanitarian and the Engineer before the 2NS sand backfill material is placed. Leave suitable existing sand in place where possible.

Maintain the bottom of the excavation clean and free of any traces of surface wash or other debris. Protect the open excavation from surface runoff to prevent the washing of silt and debris into the trenches. If "smearing", compaction, or silting does occur, rake, loosen, or re-excavate the soil face of the excavation before placing the 2NS sand backfill material.

Place a level six inch lift of 6A aggregate and lay each lateral pipe at a constant elevation as shown on the plans. Place a level grade lift of 6A aggregate above the laterals as shown on the plans to complete the 12 inch layer. Contact the Lapeer County Health Department and EGLE to witness a squirt test and inspect and approve the final placement of the 6A aggregate. Once the aggregate layer is approved, install the geotextile liner with a minimum of two foot overlap. Place suitable backfill material over the 6A aggregate and geotextile liner as shown on the plans and approved by the Engineer.

Place flushing valves and 10 inch diameter valve boxes at the end of each lateral as shown on the plans. Connect laterals to the flushing valves utilizing a 45 degree PVC sweep fitting as shown on the plans. The use of 90 degree or 45 degree elbows is prohibited.

Construct inspection ports as shown on the plans.

Submit shop drawings in portable document format (PDF) for all components associated with the Soil Absorption System. Ensure shop drawings are reviewed and approved prior to beginning work on the Soil Absorption System.

Complete the slope restoration in accordance with the section 816 of the Standard Specifications for Construction as soon as possible following completion of the backfill but no longer than the time limitations specified in section 208 of the Standard Specifications for Construction. Slope the finished grade as shown on the plans to divert surface water.

**d. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price using the following pay items:

**Pay Item Pay Unit**

Soil Absorption System Lump Sum

Sand Media Cubic Yard

Slope restoration will be paid for separately in accordance with the section 816 of the Standard Specifications for Construction.