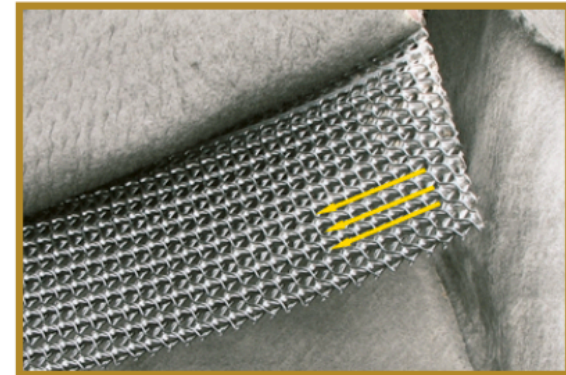


Use of 3D Geocomposite for Added Synthetic Subsurface Drainage Layer (SSDL) in Asphalt Cement (AC) Pavement

In the fall of 2016, the Department chose to install the Tensor RoaDrain 5 (TD-5) as an experimental feature on US 287 (P-87) in Gallatin County. The SSDL is a multilayered geotextile tri-planer geonet core with a non-woven geotextile (or fabric) that is laminated (heat welded) to the top and bottom of the core. RoaDrain is used when subsurface moisture is in sufficient quantities to affect the performance of the roadway structure.

Although difficult to see in the image to the right, the construction of the geonet core creates a channel

conduit which runs perpendicular to the placement in the roadway offering a path of least resistance to upward moisture migration (yellow arrows).



Fabric peeled back to expose the core construction



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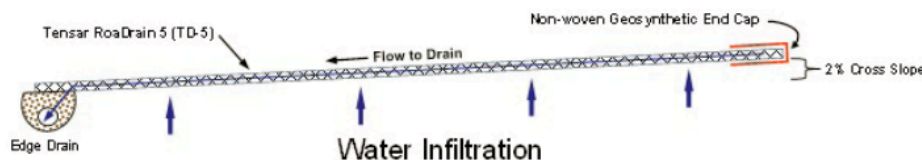
The section of highway in question, as of four years ago, had deteriorated to the point an excavation was performed and treated using usual methods of rehabilitation (geotextile, special borrow, base course, and asphalt pavement resurfacing). The section has failed again since then, and the Department chose to install the Tensar SSDL at the subgrade under the assumption that water retention within the pavement layers deteriorated the structural base course, which contributed to the premature failure of the pavement.

The project involved the installation of the SSDL geocomposite on an approximate 700 ft. (0.13 mile) section of the affected roadway. The graded slope has an 8" perforated HDPE pipe installed edge drain to aid in the SSDL system.

As subsurface water migrates through the filter fabric and into the geonet composite core, it channels the moisture to the edge drain, following the path of least resistance and funneling the water down-slope to the drain outlet.

The following illustration describes how the SSDL performs:

Cross Section of RoaDrain Design Properties



The edge of the SSDL away from the drain is covered (or capped) by a section of geosynthetic fabric (as seen in the diagram as a red box) to prevent any intrusion of sediment which may clog the internal channels of the core.

SSDL installed on the northbound lane



SSDL traversing both lanes and ready for base course application

To learn more about this project, visit the [research project website](#). If you have questions, please contact Craig Abernathy (cabernathy@mt.gov or 406.444.6269).