Transportation

STORM WATER DETENTION BASINS
Storm water run-off from roadways and parking areas usually contains some level of oil-related pollutants and salts. An uncontrolled release of these pollutants to ground water can adversely affect the quality of water supplies making them unfit for human consumption or agricultural use. Run-off water is, therefore, collected in adjacent storm water detention basins.

The lining of such basins with GSE geomembranes and geosynthetic clay liners (GCLs) reduces water loss and potential groundwater contamination to a small fraction compared to that of unlined basins. The use of geomembranes and GCLs to line run-off water basins improves the quality of our water supplies by preventing pollutants contamination of ground water.

SWALES, MANHOLES AND SKINHOLES
GCLs are used along roadways to line swales, manholes and sinkholes. Because of their low permeability and ease of placement, GCLs provide an effective solution to the loss of water and associated damage. The traditional solutions in these cases include concrete barriers which are significantly more expensive compared to GCLs.

GEOMEMBRANES IN PAVEMENTS
In certain cases, pavements are built on embankments reinforced using steel mesh. The performance of the pavement depends on the performance of steel reinforcement. However, infiltration of water through the pavement surface, which can be polluted by oils and salts, can adversely affect the performance of steel reinforcement. By using a GSE geomembrane under a roadway, the impact of surface infiltration on steel reinforcement can be completely eliminated.
**TEMPORARY WALLS**
Roadways being built on embankments may require keeping one or more lanes open to traffic during construction. To accomplish this, usually the embankment being built must be temporarily retained on one side to keep the flow of traffic open. Fabric encased walls using GSE nonwoven needlepunched geotextiles are ideal for this purpose. Depending on wall height and soil type, such walls can be built with or without reinforcement. Temporary fabric-encased walls are used to construct surcharge embankments and construction pads. The use of GSE nonwoven needlepunched geotextile-encased walls has brought down the cost of temporary retaining walls down compared to traditional options.

**PAVEMENT REFLECTIVE CRACKING, SEPARATION AND STABILIZATION**
An asphalt concrete pavement typically consists of (from top to bottom) a course surface, base layer and subgrade. A concrete pavement, on the other hand, consists of a reinforced concrete slab, placed on base course, which in turn rests over subgrade. GSE nonwoven needle punched geotextiles can be placed at the subgrade-base interface to achieve separation of coarse base layer soil from fine subgrade soil. Such separation is considered necessary to maintain the long-term drainage function of the base layer. It is generally accepted that the lack of adequate drainage is the most common cause of pavement failure. The use of GSE geotextiles at the subgrade-base layer interface ensures the long term drainage function of the base layer thus prolonging pavement life.

At a certain period in the life of asphalt pavements, a new surface layer will be added due to cracking of the existing surface. By placing a GSE nonwoven needlepunched geotextile at the interface between the existing and new layers, reflective cracking of the new surface layer can be minimized. The geotextile effectively absorbs the crack propagation energy between the bottom and top layers.

**ENGINEERING SUPPORT**
The GSE Engineering Support Staff is comprised of multidisciplinary product professionals to support you across a range of project requirements. This includes knowledge in geomembrane, geosynthetic clay liners, geonet, geocomposite, nonwoven geotextile and concrete protection products and application solutions. Rely on our technical staff to help you solve your project issues.

**CUSTOM FABRICATION**
The GSE Custom Fabrication Group builds products to your exact specifications. We have extensive experience in prefabricated polyethylene products and components. A few examples of our custom fabricated products are Aqua Tanks, Quick Containment, concrete protection liners, boots, sumps, pads, pipes, daily covers, temporary containment, containment boom and other products to fulfill your fabrication needs.

**INSTALLER NETWORK**
The GSE Installer Network leads the industry with the most experienced, large, and flexible crews available around the world to meet your installation requirements. Each installer is equipped with state-of-the-art welding and testing equipment to ensure a successful installation. Selecting a qualified installer with the right product knowledge is critical to your success. Let GSE connect you to the right installer to handle your installation project of any size from start to finish.