Water retention within a pavement layer is a primary cause of pavement failure. Without adequate underlying drainage, a pavement section is likely to fail prematurely. When an open-graded aggregate base layer is specified, there can be challenges with the migration of fines from the subgrade. The RoaDrain™ Roadway Drainage System from Tensar International Corporation is the engineered solution that consists of a synthetic subsurface drainage layer (SSDL) providing a flow rate up to five times greater than a typical open-graded base layer. The product features a tri-planar geonet core with durable, nonwoven geosynthetic filters laminated to the top and bottom sides. The result is a SSDL that maintains a flow void and outperforms open-grained base layers in terms of drainage longevity, ease of installation and cost.

ROADRAIN IS AN INNOVATIVE SUBSURFACE DRAINAGE SYSTEM THAT IS ENGINEERED TO:
- Quickly remove subsurface water
- Provide an economic alternative to open-graded drainage aggregate
- Produce high in-plane flow rates resulting in increased drainage time
- Successfully control moisture in a weak subgrade
- Provide a void-maintaining structure
- Provide excellent compressive stiffness that resists deformation
- Prevent migration of fines through synthetic separation
- Install quickly and easily to reduce the construction schedule
- Works with less processed structural fill for lower material cost
- Allows for installation parallel to center line of the road due to 45° channel orientation
- Provides a capillary break

ROADRAIN IS AVAILABLE IN DIFFERENT GRADES SUITABLE TO FIT A VARIETY OF APPLICATIONS:
- Roadways, parking lots and paved walkways
- Under aggregate base course
- Bridge approach fill
- Capillary break (beneficial in northern climates)
- HIC joint repair
- Embankments and pipe drainage (beneficial in areas with a high water table)
- Alternative to granular blanket drains
- Channel drains
- Drainage ponds
- Under collocated utilities
- Airport runways and taxiways
- Railway facilities
- Where aggregate drainage material is used

Enhance Pavement Performance with Synthetic Aggregate
Engineered for Better Drainage

By providing excellent drainage, the RoaDrain™ System is the solution that greatly extends the life of pavements and reduces maintenance costs. Easily installed, the RoaDrain System can be placed under the base course or beneath Portland Cement Concrete (PCC) to eliminate the need for additional frost protection in Northern climates.

**DRAINAGE BENEATH PAVEMENT SURFACE**

Placed directly beneath the pavement surface, the RoaDrain System rapidly removes water from the pavement. The RoaDrain System provides excellent drainage as defined by AASHTO (50% of the water is removed from the pavement structure within two hours).

**DRAINAGE BENEATH BASE COURSE**

Installed under the base course, the RoaDrain System shortens the drainage path, requiring less select base material. Drainage provided by the RoaDrain System allows for an increase in the structural support design values of the pavement system through modification of the drainage coefficient or “m” values on PCC and asphalt pavement applications.

**CAPILLARY BREAK BENEATH FROST-SUSCEPTIBLE SOILS**

The RoaDrain System acts as a capillary break at lower depths beneath frost susceptible soils to help eliminate frost heave.

**RoaDrain™ drainage geocomposite**
The RoaDrain™ product is a synthetic subsurface drainage layer (SSDL) comprised of a tri-planar structure with thermally bonded nonwoven geotextile filters on both sides.

- Nonwoven geotextile offers separation and filtration
- Tri-planar geonet core ensures a void-maintaining structure with high compressive strength

Under aggregate base course
- Under concrete slabs
- Capillary break (beneficial to Northern climates)
- PCC joint repair

Specifications for RoaDrain 5 (RD-5) and RoaDrain 7 (RD-7)

<table>
<thead>
<tr>
<th>Property</th>
<th>RD-5</th>
<th>RD-7</th>
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<tbody>
<tr>
<td>Net Core Thickness</td>
<td>6 oz/ly</td>
<td>8 oz/ly</td>
</tr>
<tr>
<td>Geotextile Weight</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Permeability</td>
<td>5,000 psf</td>
<td>15,000 psf</td>
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<tr>
<td>Water Flow Rate</td>
<td>110 (4481) gpm/ft</td>
<td>90 (3675) gpm/ft</td>
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<tr>
<td>Transmissivity</td>
<td>1,000 mD</td>
<td>15,000 mD</td>
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<td>Pavement Fatigue</td>
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*Flow rate at 2% gradient

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Tensar is the leader for geosynthetic products created especially for roadway improvement. We have developed products and technologies that have been at the forefront of the geotechnical industry for nearly three decades. As a result, you can rely on our systems and design expertise. Our products are backed by the most thorough quality assurance practices in the industry. And, we provide comprehensive design assistance for every Tensar system.

For more information about the RoaDrain™ System, please call 800-TENSAR-1, visit www.tensarcorp.com or e-mail info@tensarcorp.com. We are happy to supply you with additional system information, complete installation and design guidelines, product specifications, preliminary cost estimates, summaries of completed projects, and much more.
Featured Projects

SHELL CANADA AIRPORT STRIP, ATBASCA SANDS, CANADA
The Challenge: The airport strip was built on top of problematic silty soils. Due to the presence of a high groundwater table and low temperatures, frost heave was a significant concern.

The Solution: RoaDrain™ RD-7, a high strength drainage geocomposite with a tri-planar structure, was selected for its ability to support heavy loads and its long-term high drainage capacity. RoaDrain RD-7 was installed to provide separation between the subgrade and base course. The project was completed ahead of schedule and below budget.

HIGHWAY 35 ROAD RECONSTRUCTION, OWATONNA, MINNESOTA
The Challenge: Significant deformation and rutting of the roadway surface was observed shortly after the initial construction of this roadway section. Limited excavation revealed that underground springs and perched water within sand lenses were saturating the subgrade and road base materials, thereby compromising the structural integrity of the roadway.

The Solution: The RoaDrain product was specified due to its ability to efficiently collect water and provide total coverage of the road section. Limited excavation revealed that the collection capacity and high flow rate of RoaDrain would be sufficient to keep the base aggregates dry, and the compressive strength of RoaDrain would be sufficient for long-term serviceability and short-term installation stresses.

BODEGA HIGHWAY, SONOMA COUNTY, CALIFORNIA
The Challenge: Bodega Highway is located half a mile west of the Bohemian Highway in Sonoma County. The roadways in this area are prone to water intrusion in the winter; the road tends to freeze causing a serious hazard.

The Solution: The Sonoma County Public Works Department decided to use the engineered solution of RoaDrain. The RoaDrain layer between the aggregate base and the subgrade soil provided an excellent drainage path. It also provided separation and strength to the pavement section. The RoaDrain product effectively removed the water from the roadway, thus creating a safe road.

SOUTHWEST PARKWAY, AUSTIN, TEXAS
The Challenge: A six lane stretch of Southwest Parkway underwent a major redesign and reconstruction. A 2,940 foot section in the middle of the problematic roadway was exposed to underground water that saturated its structural base course. This situation contributed to premature failure of the pavement.

The Solution: The RoaDrain Roadway Drainage System was specified under the base course as a drainage conduit to characterize groundwater to a collection system. The RoaDrain product was proven to deliver a valuable performance aspect to the reconstructed highway design section.