



GSE

ENVIRONMENTAL™

RoaDrain™ Geocomposite

A wide-angle, low-angle shot of a two-lane asphalt road on a foggy day. The road is wet and highly reflective, mirroring the overcast sky and the surrounding trees. A white car is visible in the distance, centered in the lane. The road is flanked by grassy shoulders and trees. The overall atmosphere is misty and somber.

“If it does not drain it is not a road, at least not for very long.”

— *John McAdam,*
Scottish engineer and founder of modern road design



PROTECTING ROADS FROM MOISTURE DAMAGE

Water on pavements is the primary cause of premature damage. It can shorten the service life, reduce the load transfer mechanism, and require costly repairs. Many engineers consider adequate drainage of both the surface and the subgrade to be the most important element in ensuring the long-term performance of a pavement and minimizing the damaging effects of water.

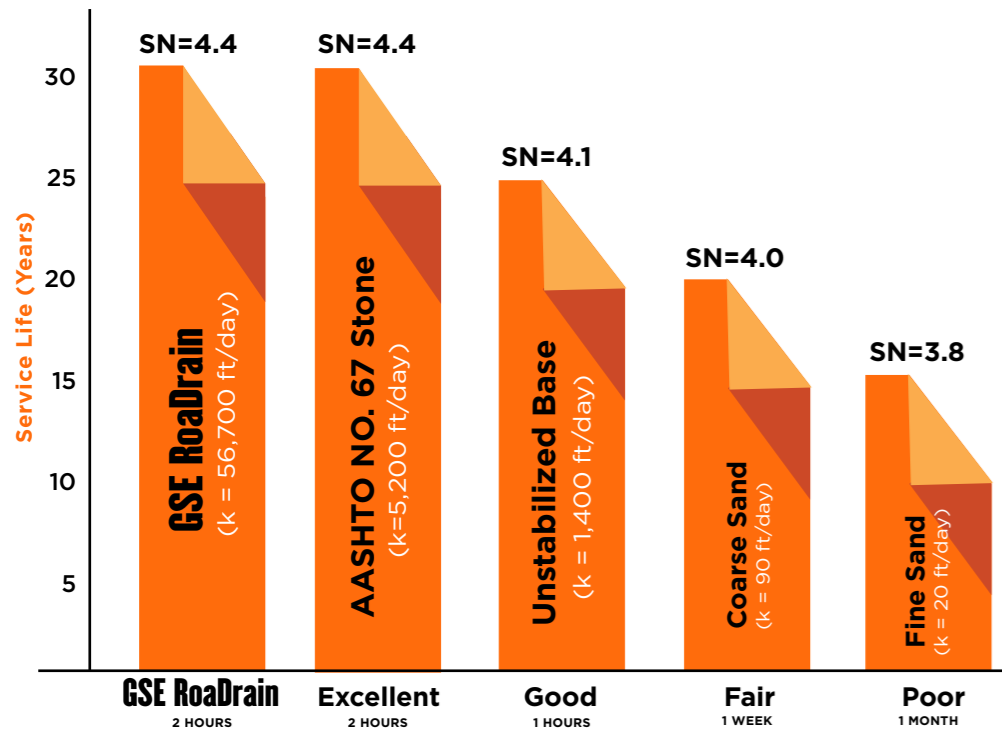
GSE RoaDrain™ is the engineered solution to problems associated with drainage in roadways, parking lots, paved walkways, airports, railway facilities, embankments, and dike drainage. By providing excellent drainage, GSE RoaDrain greatly extends their service life and reduces maintenance costs. Plus, GSE RoaDrain is easy to install and readily available.



SATURATION AND IMPACT TO SERVICE LIFE

If a roadway is saturated only 10% of the time, its service life may be reduced by half.

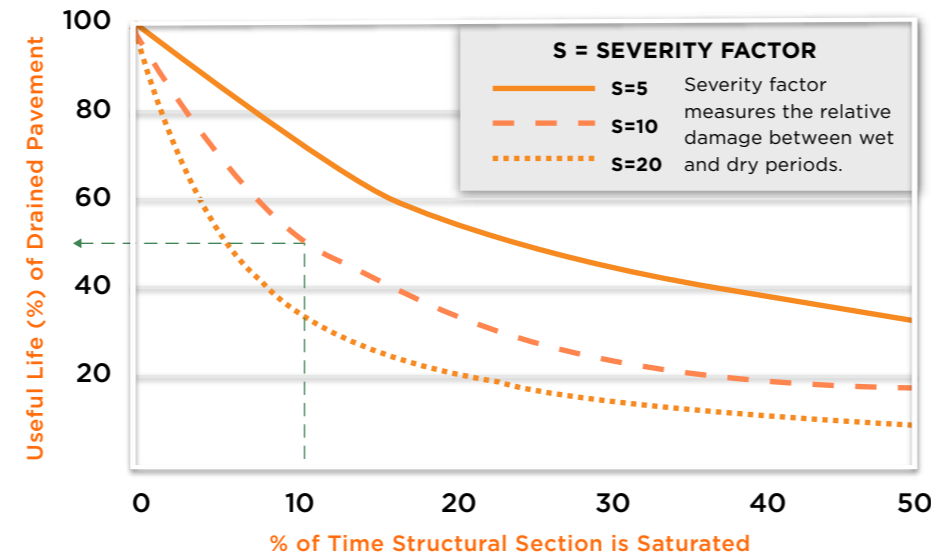
Time to Drain Impacts Service Life



Drainage Condition (AASHTO time to drain)

Service life and drainage condition per AASHTO 1993 Pavement Design. Design Example: 7" acc., 8" aggregate base, CBR= 3.0, pavement width 45'. Structural Number for pavement section is: $SN = a_1 \times d_1 + a_2 \times d_2 \times m_2 + a_3 \times d_3 \times m_3$

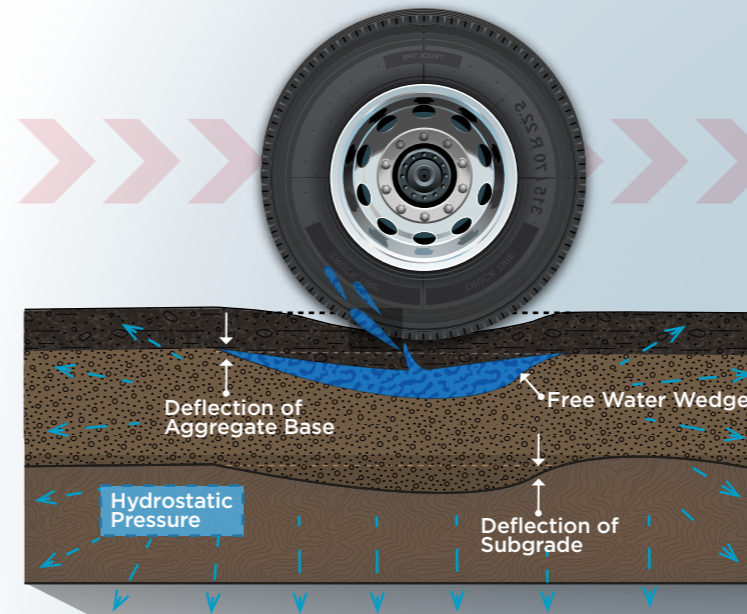
Percent Of Time Structural Section Is Saturated



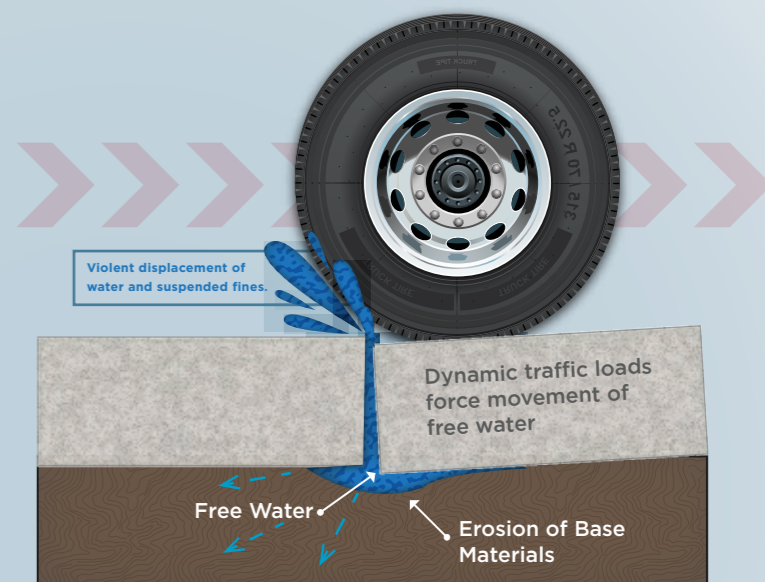
For a pavement section with a moderate severity factor (10), the pavement service life could be reduced by half if the pavement is approaching saturation just 10% of time.

Cedergren, H.R. Drainage of Highway and Airfield Pavements. Robert E Krieger Publishing Co, FL, 1987.

Loaded Flexible Pavements



Loaded Rigid Pavements





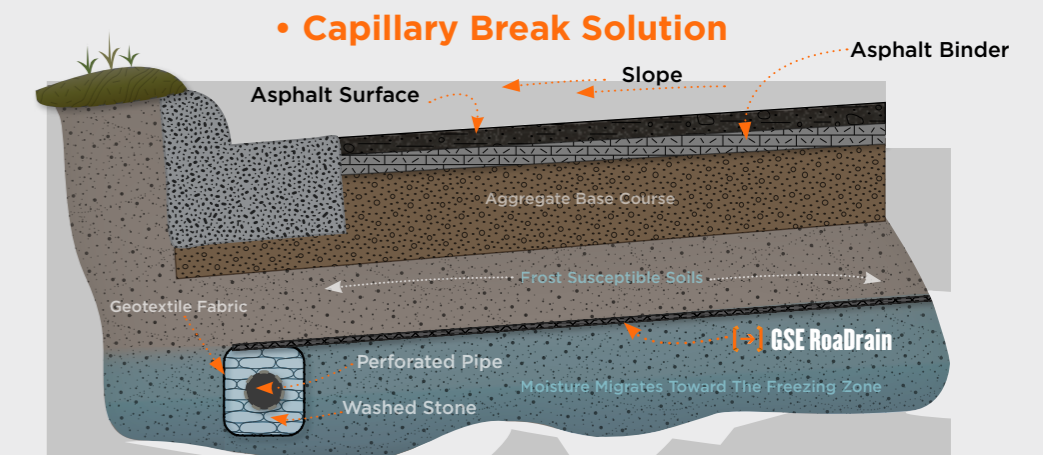
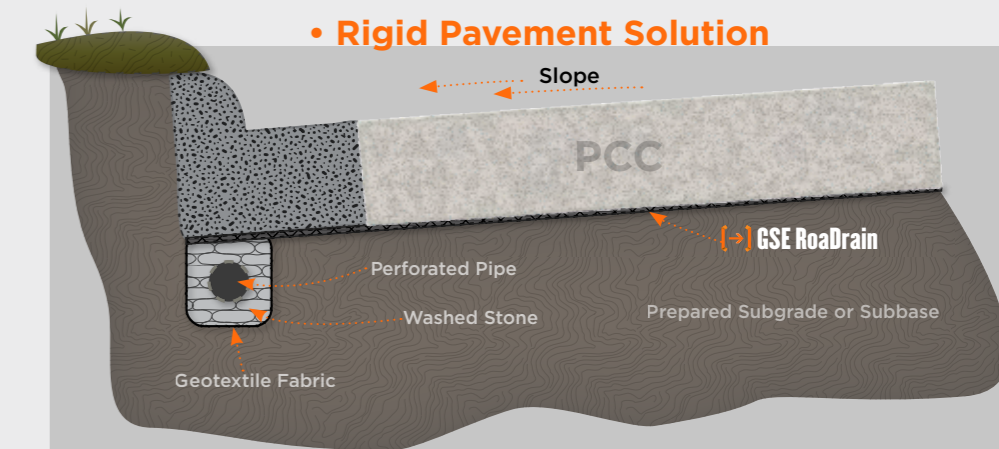
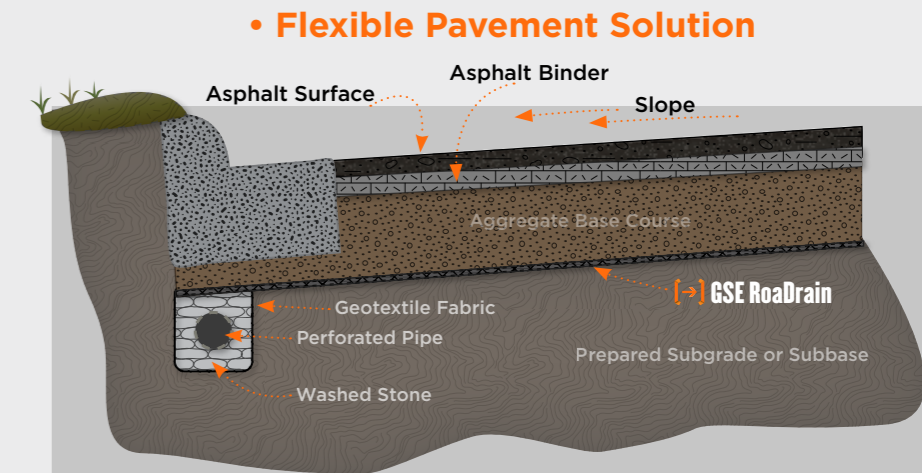
GSE RoaDrain

Horizontal Subsurface Drainage System

GSE RoaDrain is a high strength HDPE geocomposite comprised of a triplanar geonet core, heat bonded on both sides with geotextile filters that prevent clogging and provide unobstructed linear flow channels. Compared to natural stone drainage layers, GSE RoaDrain provides a compressive strength of > 50,000 psf and a permeability of ten times that of drainage stones and forty times that of an untreated permeable base. In addition, the void maintaining triplanar core prevents the top and bottom geotextiles from touching, even under extreme loads.

GSE RoaDrain is engineered to simplify the toughest drainage challenges in both flexible and rigid pavements.

- [→] Integrated geotextile filters laminated on top and bottom provide separation and stabilization.
- [→] The void-maintaining tri-planar drainage core provides a proven capillary break and limits clogging.
- [→] Expedited Construction – RoaDrain unrolls and requires no added excavation.
- [→] 1 truckload of RoaDrain equals 58 truckloads of #57 stone (4”).
- [→] RoaDrain provides >50,000 lbs/sf compressive strength.
- [→] “Excellent” drainage as defined by AASHTO.
- [→] Vertical stress absorption minimizes stress on the subgrade.
- [→] Consistent and stable surface offers more efficient paving operations.





GSE RoaDrain JD

Expansion Joint Drainage Strip for Rigid Pavements

GSE RoaDrain JD is placed directly beneath the concrete pavement at only the expansion joint locations. Reducing the area of coverage lowers the overall cost by focusing on the most critical entry point of water into the pavement system. In field testing, RoaDrain JD has proven to be an effective alternative to drainable bases, even collecting moisture from sealed expansion joints.

GSE RoaDrain JD

- [→] RoaDrain's void-maintaining triplanar core.
- [→] Open flow channels to direct water out past the edge of the pavement.
- [→] Rapid evacuation of water that virtually eliminates any pore pressure.
- [→] More effective performance than geotextiles alone: >75 times under static condition and >150 times under traffic.





THIS IS WHAT WE'RE MADE OF.

Multiple Layers Of Reliability

GSE geosynthetic products are known throughout the world as a mark of quality and reliability. And that's not a reputation you get by chance. All GSE products are backed by extensive manufacturing quality assurance (MQA) testing performed at our own GAI-LAP accredited laboratories. Our MQA program starts with testing specially formulated resins and other raw materials to guarantee they are of the highest quality. Our rigorous testing continues throughout the manufacturing process, all the way to the job site.

Collaboration And Support

At GSE, we believe success is always a collaborative effort. Our engineering support staff is comprised of multidisciplinary product professionals to support every aspect of your project design, from concept to installation. They will listen to your needs, and do whatever is necessary to provide a purpose-fit solution.



WORLDWIDE LOCATIONS

Our business is global because our customers are global. Headquartered in the U.S. and with manufacturing facilities in Germany, China, Thailand and Egypt, as well as engineering and sales professionals around the world, GSE can provide local service to our worldwide customers.

[→] *Houston - United States*

[→] *Bangkok - Thailand*

[→] *Santiago - Chile*

[→] *Hamburg - Germany*

[→] *Cairo - Egypt*

[→] *Shanghai - China*



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For more information on this product and others, please visit us at GSEworld.com, call 800.435.2008 or contact your local sales office.

[DURABILITY RUNS DEEP]