

GSE ROADRAIN™ PROVIDES SIMPLIFIED DRAINAGE BASE

[DURABILITY RUNS DEEP]

County Highway 34/NW 26th Street

The long, cold winters of Minnesota can be detrimental to pavements.

Location:

Owatonna, MN

Product:

RoaDrain Triplanar Geocomposite

Owner:

Steele County, MN

Engineers:

Steele County Highway Dept.

Date:

2005



Case Study

Background

As the city of Owatonna, MN continued to grow, so did the demands on the aging pavement structure of Steele County Highway 34 which also serves as the community's NW 26th street. With direct access to Interstate 35, NW 26th street is the primary route in and out of the city's north side which is home to the area's largest stone quarry. With the high volume usage and heavy loading, the county sought a solution that would serve the community for many years to come.

Recognizing the demands of growing traffic, the county opted to reconstruct NW 26th Street with PCC. While they understand the value of a drainable base layer under PCC pavements, there was reluctance to include one. Along with added cost, there were concerns regarding a lack of stability and long term effectiveness of stabilized open-graded base. Several studies cast doubt as to how long the hydraulic conductivity of open-graded bases can be maintained due to upward migration of subgrade soils into the open graded layer, as well as infiltration of fine particles through fractures in the pavement surface. Adding to the cost are a granular or geotextile filters as well as the use of an asphalt or cement stabilizer to aid stability. These materials are also shown to strip or erode away over time, becoming less effective and provide cause for environmental concerns.

Solution

Just a few years earlier, GSE RoaDrain, a void-maintaining synthetic subsurface drainage layer, provided an efficient and effective solution to a problem area of Steele CH-35. Drawing on this previous success, the County explored the use of RoaDrain for the reconstruction of NW 26th Street.



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GSE RoaDrain is a synthetic subsurface drainage layer (SSDL) several times more permeable than a typical open graded base layer. Durable geotextile filters are laminated to the top and bottom of a triplanar geonet core engineered to maintain a void between layers of soil or pavement. This results in a subsurface drainage layer that out performs natural stone in longevity, ease of installation, and cost. Beyond providing superior drainage, utilizing RoaDrain allowed operations not available with natural open graded layers. GSE RoaDrain was placed directly over a prepared base and connected to a conventional edge drain. Load transfer dowels were pinned through the RoaDrain into subgrade. Concrete trucks, operating directly on the RoaDrain were able to back up directly to the paver eliminating the need for extra equipment or adjacent lane access. The entire operation proved efficient and cost effective.



Project Update

These photos, taken in 2016 show just how well the roadway is performing. The surface remains crack free and smooth riding. The joints are flush with little evidence of having undergone eleven years of freeze thaw and ever increasing traffic.

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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.

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