



Case Study

application | Base Reinforcement
location | Bellville, TX
product | Mirafi® HP770

job owner | Valmont Industries
engineer |
contractor | H.R. Ueckert Co., Inc.

TenCate™ develops and produces materials that function to increase performance, reduce costs and deliver measurable results by working with our customers to provide advanced solutions.

THE CHALLENGE

Valmont Industries is the self proclaimed industry leader in spun pre-cast concrete. Their Bellville, TX plant has been in existence for over a decade. The plant manufactures pre-cast light poles that are shipped all over the country. The pre-cast light poles can be up to 60 feet long and weigh up to 40,000 lbs. The pre-cast poles are manufactured within their enclosed facility and then moved to the outside storage yard by a four wheel rubber tire gantry crane. Currently, the gantry crane transports the light poles by traversing down dual gravel and concrete wheel paths to deliver the pre-cast poles to their storage location. The storage location is “half moon” shaped to maximize the land space. Over years and years of service, the gravel and concrete wheel paths have experienced rutting and potholes, which routinely require maintenance to allow the gantry crane to operate efficiently. After years of service, the gravel and concrete wheel paths rutted and developed potholes, that required excessive maintenance to allow the gantry crane to operate efficiently. The new storage area will have the same function as the old one. However, the owners are taking a proactive approach to the design of the new unpaved system to reduce the amount of maintenance they have to perform.

THE DESIGN

The project engineer considered various products for subgrade reinforcing in the design of the new unpaved storage location. The engineer wanted a product that has high tensile strength at low strains that would help reduce maintenance issues over the service life of the storage area by reinforcing potential soft subgrade areas. The subgrade consisted of unstable clay silt and silty clay soils.



Pre-cast plant with gantry crane inside.



Previous pre-cast light pole storage area.

Protective & Outdoor Fabrics | Geosynthetics
Aerospace Composites | Industrial Fabrics
Armour Composites | Synthetic Grass

Ultimately, the engineer chose Mirafi® HP770 as a reinforcing and separation layer within the pavement section. The overall pavement section consisted of 8 inches of a TXDOT Grade 1 base course material overlying the Mirafi® HP770 overlying 8 inches of cement treated subgrade. The engineer specified that the Mirafi® HP770 would be placed in the proposed gantry crane wheel paths only due to the specific loading conditions in these areas. The wheel paths were each about 1800 feet in length.

THE CONSTRUCTION

The storage area subgrade was initially treated with cement. The 15 feet by 300 feet rolls of Mirafi® HP770 were placed on the cement treated subgrade. The Mirafi® HP770 was overlapped 2 feet at the end of each roll and the product was slit and overlapped in certain areas to accommodate for the shape of the storage location. The TXDOT Grade 1 base course was placed and compacted on top of the Mirafi® HP770.

THE PERFORMANCE

Utilizing the Mirafi® HP770 allowed the design engineer to reduce the amount of base course that was originally proposed, without compromising the structural integrity of the design. Proofrolling of the storage area that is reinforced and separated with the Mirafi® HP770 showed little to no deflection after construction. The owner, engineer, and contractor have been satisfied with how the Mirafi® HP770 has performed to date.



Newly constructed gantry crane wheel path area where Mirafi® HP770 was installed.

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