

Multilayer Geogrid MS330 Replaces 6" of Imported Aggregates in Base Reinforcement Application of Intermodal Yard

PROJECT NAME: Rosenberg Intermodal Center

LOCATION: Kendelton, TX

PRODUCTS: Multilayer Geogrid MS330

ENGINEER: Kansas City Southern Railroad

DATE: 2009



Problem

With seaports along the USA west coast becoming more congested, vessels carrying goods across the pacific are being forced to wait longer to unload their cargo. The long waits have more vessels opting to unload in Mexico. KCS Railroad operates a main line that connects the heartland of the United States with the heartland of Mexico. The addition of an intermodal facility, located near Houston, will alleviate truck traffic and congestion on the south Texas highway system and increase the speed and efficiency that freight can travel. Shipping containers offloaded in Mexico can now travel entirely by rail well into the United States and very near an important industrialized hub.

The 60 plus acre facility was constructed just north of Kendelton, TX, in what had previously been agricultural land. Shipping containers can weigh upwards of 30 tons each, placing enormous strains on the pavement system. Furthermore, the facility will eventually serve several trains a day, with several hundred containers being handled from each train. To deal with the excessive demands, a robust pavement system was planned.

Solution

The cross section included 12" PCC over 24" of aggregate base placed on 8" of lime stabilized

subgrade. With limited supply of local aggregates, all of the aggregate base material was to be imported. It was believed the most cost effective solution was to ship the aggregate from Mexico by rail, which they operated.

After further evaluation, the owner selected MS330 geogrid to replace 6" of aggregate base. Tenax MS geogrids incorporate high tensile strength and high junction efficiency to establish an effective stress transfer mechanism between the geogrid and the surrounding soil. Therefore, lateral movement of the base course is prevented and applied loads are distributed to a wider area. As a result, the required thickness of the base course can be significantly reduced. The reduction in required base thickness further reduced construction costs and save valuable time on the project.

Conclusion

With such a large area to cover, our representatives worked with the general contractor to determine the most efficient way to place the first 6" lift of aggregate over the geogrid, with available equipment. Prior to the geogrid alternative, the contractor had intended placing the base aggregate with belly or bottom dump trailers. They were pleased to learn that the same method could be used with the geogrid, paying careful attention not to turn or make sudden starts or stops while on the geogrid. The contractor was very pleased at the rate in which they could get the geogrid covered.