



KIEWIT OFFSHORE SERVICES INGLESIDE, TEXAS

Application: Kiewit Offshore Services (KOS), a subsidiary of Kiewit Corporation, needed a stable and durable 400-acre yard for their world-class fabrication facility located along the La Quinta ship channel in Corpus Christi Bay.

The Challenge: The site is characterized by high plasticity soils and shallow groundwater, creating challenging foundation conditions for both the heavy loads imposed during construction and

particularly throughout the service life of the facility. The site would host a virtual fleet of Manitowoc 2250 crawler cranes maneuvering massive and complex steel structures on critical-path timelines. KOS simply couldn't afford distortions or break-ups. They needed a cost-effective and durable working surface solution that would prove to be both reliable and low-maintenance.

Alternative Solutions: A consultant recommended lime stabilization but Kiewit Engineering Company (KECo) became concerned when the Corpus Christi District of the Texas Department of Transportation (TXDOT) reported evidence of lime solubility in some of their roads that were less than 10 years old. KECo decided that it simply could not rely on lime stabilization alone to achieve optimal long-term performance of the KOS yard.

The Solution: The final design relied on Tensar® Geogrid to overcome the challenges specific to the long-term stability requirements at the site. Tensar was chosen because of its ability to extend service life of unpaved permanent working surfaces by retaining the stiffness of unbound aggregate base over time. The relatively simple installation process also offered a more economical construction solution since geogrid is placed quickly, saving on overall labor expenses.



KOS under construction in 2001 (note Tensar® Geogrid in foreground).

PROJECT HIGHLIGHTS

Project:

Kiewit Offshore Services Fabrication Facility

Location:

Ingleside, Texas

Installation:

Mid-to-Late 2001; Expansion in 2007

Design Section:

8-10 in. TXDOT Type A, Grade 1 crushed limestone aggregate base; Tensar® Geogrid; 12 in. Lime-Treated Subgrade

Quantity:

460,000+ square yards

Owner/Developer:

Kiewit Offshore Services, Ltd.
(a subsidiary of Kiewit Corporation)

Design Engineer:

Jim Morrison, Kiewit Engineering Company

Geotechnical Engineer:

Trinity Engineering Testing

General Contractor:

Gilbert-Texas

CASE STUDY



The structural section consisted of a 12-in. thick lime-treated subgrade topped with Tensar Geogrid and granular fill. Originally, KECO wanted 10–12 in. of granular fill on Geogrid; the final solution was 8–10 in. atop Geogrid. This particular design marked the first time Kiewit had employed lime-treated subgrade in conjunction with geogrid for the purpose of long-term serviceability—a practice largely pioneered by TXDOT with great success, especially in controlling reflective cracking within flexible pavements. Subsequent expansion of the facility has also employed Tensar Geogrid.



Installation of Tensar Geogrid at the site of Kiewit Offshore Services in 2001.

the granular surfacing and treated subgrades were structurally stable, and observations confirmed that trafficked areas were even and unyielding. This post-construction, in-service assessment substantiated that stiffness of the design section has been retained since construction in 2001. On-site Kiewit personnel responsible for operational oversight have rated the working surfaces at KOS very highly since the facility went into production.



Working surfaces have held up well to heavy, live loads.

Post-Construction: In August 2007, Tensar personnel mobilized to the KOS facility to perform on-site testing of the unpaved aggregate fill surfacing and underlying subgrade to confirm the support anticipated by KECO had indeed been achieved. Armed with a Dynamic Cone Penetrometer (DCP), test results revealed that



In 2007, DCP testing was conducted at the site to determine section stability.



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