PROJECT PROFILE

TriAx®

Stillwater, Oklahoma

PROJECT
Payne County Road Reconstruction

LOCATION
Stillwater, Oklahoma

PRODUCT
TriAx® TX130S Geogrid

QUANTITY
18,700 square yards

OWNER
City of Stillwater

CONTRACTOR
A-tech Paving

ENGINEER
Lochner

INSTALLATION DATE
September – October 2014

PROJECT DETAILS
The City of Stillwater needed to reconstruct roadways and intersections in three areas around the city. The engineering company provided optimized designs for both concrete and asphalt pavements using Tensar's TriAx® TX130S Geogrid. The City of Stillwater elected to reconstruct all three areas with 6 inches of P.C. concrete underlain with 6 inches of ODOT Type A aggregate base reinforced with Tensar TX130S Geogrid. Original plans included supporting P.C. concrete on 8 inches of aggregate and a separator fabric. The city saved over $50,000 in initial material costs (approximately $2.70/sq yd) by using the geogrid reinforced design. Geogrid reinforcement provides uniform support conditions and better long-term drainage when used below rigid concrete pavements.

Tensar®

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tensarcorp.com

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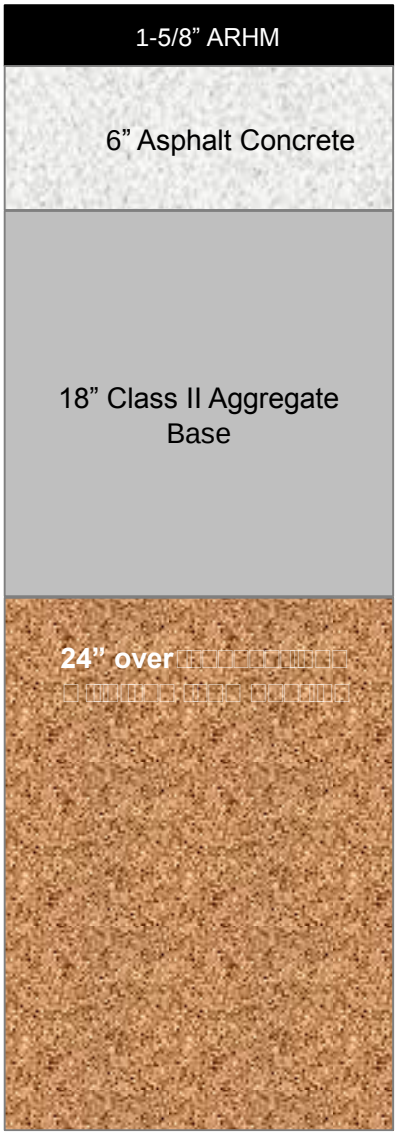
PROJECT PROFILE

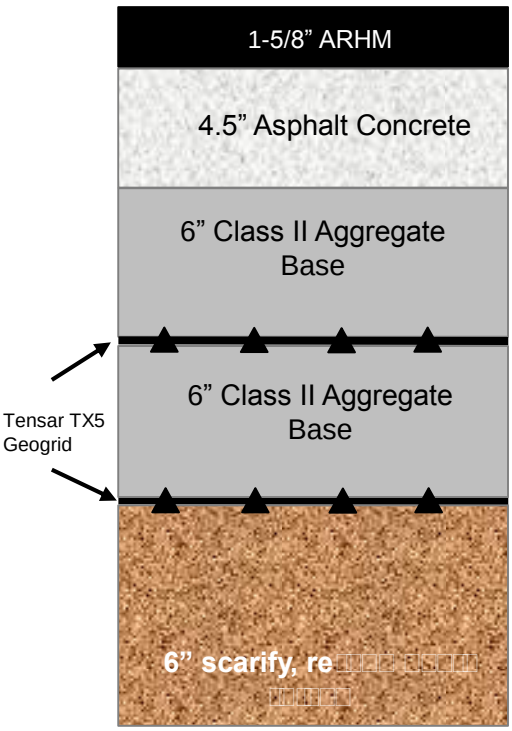
SPECTRA®
ROADWAY IMPROVEMENT SYSTEM

Agoura Hills, California

Original Design
R-Value: 16
Traffic Index: 9.5
Gravel Equivalent: 2.6



Tensar Value Engineered Design
R-Value: 5
Traffic Index: 9.5
Gravel Equivalent: 3.1 (2.9 Required)



PROJECT
Agoura Hills Road Widening, from Westerly City Limit to Cornell Street

LOCATION
Agoura Hills, California

PRODUCT
TriAx® TX5 Geogrid

QUANTITY
50,000 square yards

OWNER
City of Agoura Hills

CONTRACTOR
CA Rasmussen, Inc.

ENGINEER
Kimley-Horn – Civil Engineer
Leighton – Geotechnical Engineer

INSTALLATION DATE
April, 2016

PROJECT DETAILS
C.A. Rasmussen proposed a value engineering pavement section meeting the Greenbook Standard Specifications (2015), Multi-Axial Geogrid Table 213.52E. The project grading recommendations for Tensar pavement section reduced the two foot scarification down to ½ foot, reducing costs, improving reliability, and increasing speed of construction by avoiding utilities.

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PROJECT PROFILE

TriAx®

Bartonville, Texas

PROJECT
TxDOT FM 407 at Tudor Lane

LOCATION
Bartonville, Texas

PRODUCT
TriAx 160

QUANTITY
10,000 square yards

OWNER AND/OR DEVELOPER
TxDOT

CONTRACTOR
Lane Construction

ENGINEER
TxDOT Denton Office

INSTALLATION DATE
July 10, 2012

TYPICAL PAVEMENT SECTION
Unpaved – aggregate stabilization over saturated sugar sands

PROJECT DETAILS
During construction, Lane Construction uncovered about 5000 LF of saturated sugar sand. Due to the location of the sand, there was no possibility to drain the site. Lane presented TxDOT with an option to remove the 7-8 ft of sugar sands and replace with boulders and flexible base. TxDOT contacted Tensar for a solution. After performing site testing with a dynamic cone penetrometer, Tensar proposed: 2 layers of TX160 with 17 inches of flexible base. The first layer would be covered by 11" and the second layer by 6". Since this option was 1/3 the cost of the alternate option, TxDOT chose to move forward with Tensar's recommendation. The installation went very well.

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TriAx®

CF Industries Port Neal Nitrogen Complex Plant Expansion

Sergeant Bluff, Iowa

APPLICATION: Located on 1,700 acres fronting the Missouri River, approximately 15 miles south of Sioux City, CF Industries' Port Neal Nitrogen Complex is undergoing a $2 billion, 325-acre expansion, the largest economic development project in state history. Scheduled for completion in 2016, the expansion will triple the facility's ammonia production capacity and launch its production of granular urea.

THE CHALLENGE: Massive excavation loads, oversized plant components and tens of thousands of truck passes required an all-weather haul road, heavy haul road, laydown/staging areas and parking areas capable of sustaining more than two years of ongoing construction traffic.

Pressure vessels and other plant components were transported from river barges to the heavy laydown area along a heavy haul road stabilized with Tensar TriAx TX160 Geogrid.

SITE CONDITIONS: Soil analysis completed by Certified Testing Services revealed poor soils (CBR 1.0%) at the river exhibiting low shear strengths. Coupled with a fluctuating water table, soil conditions suggested excessive rutting in the absence of any stabilization measures.

ALTERNATIVE SOLUTIONS: An additional system was investigated but found not to provide an adequate and cost-effective remedy.

THE SOLUTION: "We used three methodologies to develop solutions for the project," said Nick Nuttbrock, Tensar International Corporation regional manager. Pavement-Transportation Computer Assisted Structural Engineering (PCASE) software was used to design the all-weather construction access haul road, the laydown areas, and the heavy haul road, built to transport pressure vessels (see photo) and other plant components from river barges to the heavy laydown area. Giroud-Han Design Methodology was used to design the parking areas. AASHTO Flexible Pavement Design standards (AASHTO 1993) were used for spot-paved areas on the site.

The heavy haul road incorporated two layers of Tensar® TriAx® TX160 Geogrid. Both the all-weather haul road and laydown areas utilized one layer of TriAx TX160 Geogrid, while Tensar TriAx TX140 Geogrid was installed in the parking areas.

PROJECT HIGHLIGHTS

Project:
CF Industries Plant Expansion

Location:
Sergeant Bluff, Iowa

Installation:
Sept. 2013 – Sept. 2015

Product/System:
Tensar TriAx TX160 Geogrid
Tensar TriAx TX140 Geogrid

Quantity:
1,250,100 square yards

Owner/Developer:
CF Industries

Geotechnical Engineer:
Certified Testing Services, Inc.

Design Engineer:
Tensar International Corporation

General Contractor:
Performance Contractors, Inc.

Installation Subcontractor:
Lieber Construction, Inc.

Materials Supplier:
Coleman Moore Company

Tensar TriAx Geogrid stabilized the laydown area and ensured the site could sustain and support massive plant components and ongoing construction traffic.

In total, 1.2 million square yards of TriAx Geogrid were installed. Every inch of reduced aggregate depth saved approximately $1 million in construction costs.

In addition to the cost savings, there was also an installation advantage by using Tensar Geogrids. "Being so close to the river and with fluctuating water tables, I was literally able to go over swamp with the TX160," said Jerry King, Lieber Construction Site Supervisor.

"I'm confident that we required less aggregate, simplifed logistics and lowered costs on this project because of the geogrid," remarked Tony Moeller, CF Industries senior project engineer.

THE TRIAX® GEOGRID ADVANTAGE:

More owners, engineers and contractors are selecting Tensar TriAx Geogrid to:

- Simplify and speed construction while increasing the performance of unpaved and pavement structures
- Lower labor and equipment costs
- Reduce aggregate fill thickness
- Decrease undercut, overexcavation and removal requirements
- Conquer the most challenging site conditions and turn previously unusable tracts into productive acreage

ADDITIONAL INFORMATION AND SERVICES:

Tensar International Corporation, the leader in geosynthetic soil stabilization, offers systems for improving structures such as roadways, rail yards, construction platforms and parking lots. Our products and technologies, backed by the most thorough quality assurance practices, are at the forefront of the industry. Highly adaptable, cost-effective and installation-friendly, they provide exceptional, long-term performance under the most demanding conditions. Our support services include site evaluation, design consulting and site construction assistance.

For innovative solutions to your engineering challenges, rely on the experience, resources and expertise that have set the industry standard for three decades.

TriAx Geogrid enabled the heavy haul road to withstand continuous large loads.

For more information on Tensar TriAx Geogrid or any Tensar System, visit www.tensarcorp.com, email info@tensarcorp.com, or call 800-TENSAR-1.

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