Tensar®

TriAx®

Life Cycle Cost Benefits of Tensar® TriAx® Geogrids

SAVE MONEY OVER THE LONG HAUL

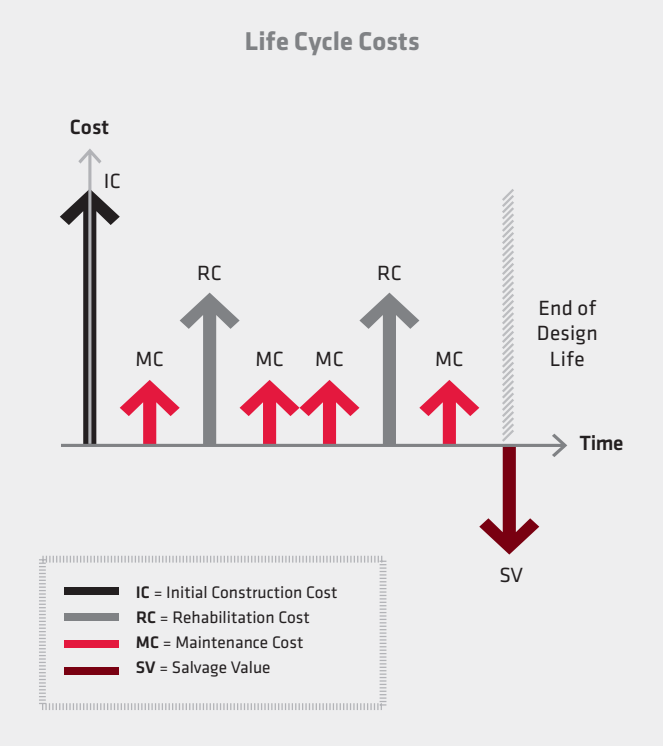
Have you recently purchased new tires for your car? As you know, all tires are not created equally. Tires warranted for 70,000 miles will certainly cost more than tires warranted for 30,000 miles. But given their significantly longer service life, the higher-priced, higher-quality tires may ultimately provide the more cost-effective strategy.

The same principle can be applied to roadway construction. For years, Tensar Geogrids have saved on the initial construction costs of flexible pavements by reducing the required pavement components' thickness, including aggregate and asphalt. But Tensar TriAx® Geogrid can provide long-term, life cycle cost savings by extending a pavement's service life as well. How much savings? For new construction and rehabilitation projects, a life cycle cost analysis (LCCA) provides the answer.

STABILIZED COMPARISON

LCCA is used by pavement design engineers to compare the present worth of roadway sections with differing construction costs and performance expectations over a specified period of time. An analysis can demonstrate that the additional expense of specifying TriAx Geogrid (typically less than 5% of a pavement structure's total in-place cost) can yield significant life cycle cost savings when compared to unstabilized pavements of equivalent thickness.

In the simplest terms, LCCA demonstrates that by spending a little more in upfront construction costs, it's possible to save more over the long haul. By stabilizing your pavement structures with Tensar TriAx Geogrid, it is possible to save not only on aggregate and asphalt requirements, but also on future roadway maintenance and repair. Because of the unique, mechanical interlocking mechanism of TriAx Geogrid, the stiffness of the unbound granular layers is increased and retained over time, creating a more reliable and longer lasting pavement. Life cycle cost savings resulting from performance enhancement make the investment in TriAx Geogrid money well spent!



The primary life cycle costs of a flexible pavement include initial construction costs plus periodic rehabilitation and maintenance costs, offset by the pavement's salvage value at the end of its design life.

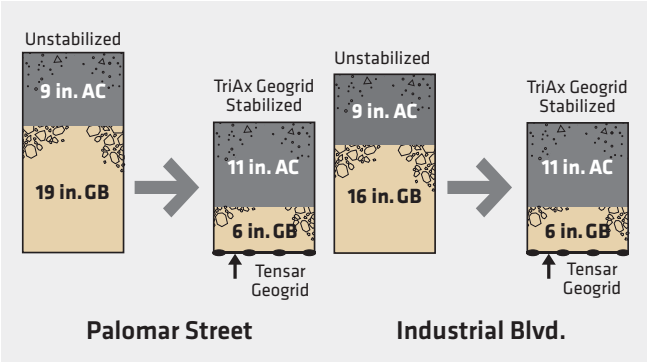
BASE REINFORCEMENT FIELD STUDY: CITY OF CHULA VISTA, CALIFORNIA

Two roadway projects completed in 2003 provided an opportunity to compare the performance of Tensar TriAx Geogrid stabilized pavements to unstabilized pavements, that were designed to be structurally identical, after five years of service.

The structures were installed in Chula Vista, California, a city of more than 225,000 people located in southern San Diego County. When a 50-year-old steel water line was found to be shallower than expected, Tensar engineers specified the installation of Tensar Geogrid over sections of the shallow utility to avoid relocating it. Combined with 6 in. of crushed aggregate base (AB) and 11 in. of asphalt concrete, installation of the geogrid reduced total pavement thickness by 8 in. on one section and 11 in. on the other. This saved $250,000 in costs to relocate the line and $51,000 in aggregate purchase and transport expense.

Geogrid-reinforced sections of Palomar St. and Industrial Blvd., two high-volume roadways in Chula Vista, outperformed comparable unreinforced sections over a five-year period.

In 2008, tests were conducted to determine the in situ California bearing ratio (CBR) of the aggregate base course and subgrade at the geogrid-reinforced and unstabilized sections. Dynamic cone penetrometer (DCP) data analyses revealed that the unstabilized sections required 10 to 13 in. of additional aggregate to achieve the same base layer stiffness of the 6 in. sections stabilized with Tensar Geogrid. Further analysis revealed that after five years, the 6 in. geogrid-stabilized section was continuing to outperform the 16 in. and 19 in. unstabilized sections at a higher calculated traffic volume (as measured in ESALs). Based on the recorded stiffness from the field for each of the AB sections, the 11 in. of AC in the stabilized Tensar Geogrid sections could have been reduced to 9.5 in. of AC in Palomar Street and 8.5 in. in Industrial Boulevard while still providing the same level of performance as the unstabilized sections. A city engineer speculated that the geogrid-stabilized sections have a potential service life of 30 years.



After five years, the thinner TriAx geogrid stabilized sections had demonstrated a reduced life cycle cost compared to the unstabilized sections.

SPECTRAPAVE™ SOFTWARE SHOWS YOU THE TRUE VALUE AND COST SAVINGS

Predict performance and value-engineer comparisons of stabilized and unstabilized flexible pavements with the Life Cycle Cost Analysis tool, found within the Paved Applications module of SpectraPave design software. The LCCA tool quantifies life cycle cost savings for each proposed solution.

For more information on TriAx® Geogrid or SpectraPave™ design software, call **800-TENSAR-1**, visit **www.tensarcorp.com** or email **info@tensarcorp.com**.

We are happy to supply you with additional information on our geogrid products, installation guidelines, system specifications, design details, conceptual designs, preliminary cost estimates, case studies, software and much more.

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