Large Retail Store Developments

Using Tensar® TriAx® to Create a Uniform Subgrade Elevation

THE CHALLENGE

Generally speaking, pavement sections around retail stores are designed for both heavy and light duty trafficking conditions. Consequently, the additional thickness of asphalt and base rock in the heavy duty section results in thicker sections than the adjacent light duty sections as shown in Design Scenerio 1.

This causes a number of problems, the most significant being that water entering the pavement tends to accumulate in the "bath tub" created by the heavy duty section. The subgrade strength decreases and the base becomes saturated resulting in a weaker pavement in the area where the greatest strength is required

THE TENSAR ADVANTAGE

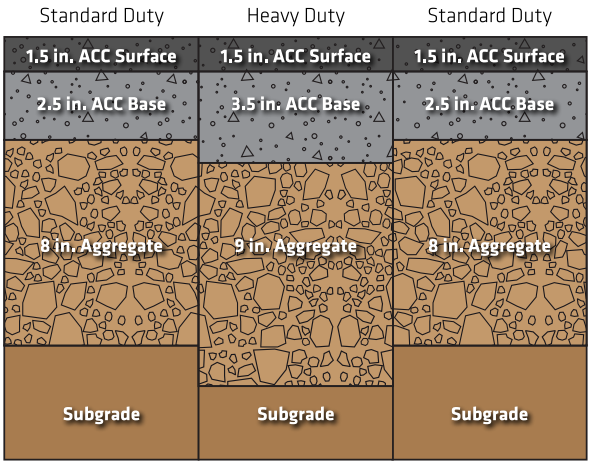
When used in base stabilization applications (i.e. reasonably firm subgrade conditions), Tensar TriAx provides one or both of the following benefits

- **Increased Speed of Construction:** The installation process for Tensar TriAx is extremely straightforward. Using less aggregate leads to quicker installation when compared to other solutions that use conventional soil stabilization techniques.
- **Increased design life for a given pavement section**
- **Reduced pavement thickness required for a given required traffic level**

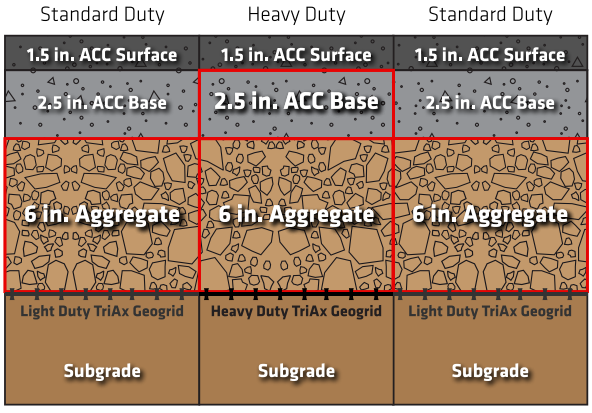
The enhanced performance of pavements stabilized with Tensar TriAx derives from the positive interaction between TriAx and surrounding aggregate. Penetration of the coarser particles through the openings of TriAx results in "mechanical interlock". This increases the stiffness of the base course layer and prevents lateral spreading of the aggregate during traffic loading.

TENSAR TRIAX CREATES UNIFORM SUBGRADE ELEVATIONS

When applied to the pavements constructed to carry traffic in the areas around large retail stores, this technology can be used to create a scenario whereby the heavy and light duty sections are the same thickness. Consider the two sets of designs illustrated below and make note of the highlighted reductions in pavement and aggregate sections resulting from the integration of Tensar TriAx.



Design Scenario 1 - Proposed Pavement Section



Design Scenario 2 - Stabilized Pavement Section

In Scenario 2, the stabilized heavy and light duty pavement sections each carry at least as much traffic as their unstabilized counterparts in Scenario 1. The big difference however, is that the stabilized heavy and light duty pavements, both have the same thickness and therefore the underlying subgrade will be at the same level.

ADVANTAGES OF UNIFORM SUBGRADE ELEVATIONS

There are many advantages to creating a uniform subgrade elevation for both the heavy and light duty pavement sections

- Drainage challenges due to migration of water into low lying areas are avoided, thus the pavement strength is maintained.
- Elimination of water trapped in the heavy duty section reduces its freeze-thaw susceptibility.
- Deviation from delivery paths by trucks onto light sections could normally cause premature degradation of the pavement – the use of TriAx results in a "built-in" safety factor whereby even the lighter section will hold up better.
- The use of a uniform subgrade elevation provides a much simpler method of construction–less stake out procedures.
- The site can be graded to one level, resulting in less excavation, disposal of existing soil and time savings.
- Cost savings can be maximized from the use of less material and a quicker construction time.
- Overall project schedule savings.

CASE STUDY – KROGER, ARBOR SQUARE DEERFIELD TOWNSHIP, OHIO

The Kroger Company was planning to construct a grocery store in the new Arbor Square retail complex outside Cincinnati, Ohio. Ground conditions at the site consisted of loamy soils overlying glacial till.

The use of Tensar within the heavy-duty pavement section reduced the required thickness of dense graded aggregate by four inches. This change in aggregate thickness meant that the heavy and standard duty pavements were of equal thickness and the subgrade was able to drain more uniformly.

Both the contractor and the owner realized significant savings in time and overall project costs due to the simplified construction method.

Following 18 months of continuous service, the performance of the TriAx stabilized sections has been outstanding.

Tensar TriAx offered cost savings for this Cincinnati area Kroger.

EXPERIENCE YOU CAN RELY ON

Tensar International, the leader in geosynthetic soil stabilization, offers a variety of solutions for paved surfaces and roadway projects. Our products and technologies, backed by the most thorough quality assurance practices, are at the forefront of the industry. Our support services include site evaluation, design consulting and site construction assistance.

For more information on Tensar TriAx or other Tensar Systems, please call **800-TENSAR-1**, e-mail **info@TensarCorp.com** , or visit us online at **www.TensarCorp.com**.

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