



**KROGER AT ARBOR SQUARE  
DEERFIELD TOWNSHIP, OHIO**

**Application:** Base course reinforcement and subgrade improvement solutions for a new retail development.

**The Challenge:** The Kroger Company was opening a grocery store in the new Arbor Square retail complex outside Cincinnati, Ohio. Cost-effective solutions were needed for the project's heavy-duty pavement section and heavy trafficked haul roads.

**Site Conditions:** The land contained loamy soils over glacial till (typical of this region).



*Tensar BX Geogrids offered a dual approach to cost savings for this Cincinnati area Kroger.*

**Alternative Solutions:** Tensar® Biaxial (BX) Geogrids were the only solution considered for this project.

**The Solution:** Tensar BX Geogrids were used to reduce overall project costs and improve the strength and durability of the site's paved and unpaved roadways.

In the heavy-duty pavement section design, using Tensar BX1200 Geogrids reduced the thickness of the dense-graded aggregate (DGA) base layer by four inches. This depth change gave both the heavy trafficked and standard pavements equal overall thicknesses with no loss in performance.

Because of heavily laden truck traffic, soil rutting was also a likely problem on the site. To solve this, Tensar BX1300 Geogrid was also used to reinforce the construction entrance and the haul roads. The BX Geogrids increased the design life of the temporary haul road by reducing the stress on the underlying subgrade.

**The Spectra System Advantage:** The Spectra System offered several advantages in the design and construction of the Kroger store at Arbor Square. Site work was simplified since both standard and heavy-duty pavement

CASE STUDY

**PROJECT HIGHLIGHTS**

**Project:**  
Kroger at Arbor Square

**Location:**  
Deerfield Township, Ohio

**Installation:**  
September 2003

**Product/System:**  
Spectra® Roadway Improvement System

**Quantity:**  
8,500 SY of Tensar BX1200 Geogrid  
3,000 SY of Tensar BX1300 Geogrid

**Owner/Developer:**  
Kroger Company

**Geotechnical Engineer:**  
H.C. Nutting Company

**Civil Engineer:**  
Thomas Graham and Associates

**General Contractor:**  
The Arnel Byrnes Company  
Don S. Ciscle Contractor, Inc.



## BASE REINFORCEMENT SUBGRADE IMPROVEMENT

CASESTUDY



*Initial site conditions at Arbor Square.*

sections could be graded the same way. The subgrade was able to drain more uniformly in all areas. This enhanced the roadway service life by preventing the development of soft spots and local settlement. Most importantly, the construction process was made simple, making it less expensive and much faster to complete.

After 18 months of continuous use, the endurance and efficiency of the geogrid-reinforced sections were evaluated. To date, the performance of all sections is outstanding and continues to stand the test of time.

**Additional Information and Services:** Tensar Earth Technologies, the leader in geosynthetic soil reinforcement, offers a variety of solutions

for foundation and roadway projects. 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 more than two decades.



*Tensar BX Geogrids helped these pavements handle both light and heavy-duty traffic.*

For more information on the Spectra System or other Tensar Systems, call **800-TENSAR-1**, e-mail [info@tensarcorp.com](mailto:info@tensarcorp.com) or visit [www.tensarcorp.com](http://www.tensarcorp.com).

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