



## PROJECT BRIEF

# Geosynthetic Reinforced Soil Integrated Bridge System

## PROJECT PROFILE

CLIENT:  
Tencate

Colorado Department of  
Transportation

Federal Highway Administration

LOCATION:  
Aurora, CO

### VALUE:

- Help verify stress distribution through reinforced layers at various depths
- Confirm design assumptions and validate modeling
- Provide real-time data to show how system performance changes over time

### SERVICES PROVIDED:

- GeoDetect® Synthetic with fiber sensing
- Remotely positioned Micron Optics Interrogator with on-board computer
- Remote access through IP phone communication

“The GeoDetect® Sensors are permanently wired to a remotely positioned MOI interrogator data collection unit for continuous monitoring of soil performance.”



## GEOSYNTHETIC REINFORCED SOIL INTEGRATED BRIDGE SYSTEM

Through experience and training in fiber optics and as system integrator with Micron Optics (MOI), Geocomp has become Tencate’s installer for their GeoDetect® fiber optic geosynthetic product line. In this application, thirteen strips of the GeoDetect® geosynthetic were placed in multiple lifts during the construction of the GRS Bridge abutments to document stress distribution in layers down the depth of the abutment. The GeoDetect® sensors are permanently wired to a remotely positioned MOI interrogator data collection unit for continuous monitoring of soil performance. The technology offers unique advantages in the construction of small bridges, including: reduced time and cost from conventional construction methods (25-60%), easy to build and maintain, and flexible design that can be easily modified in the field.



## BACKGROUND

A bridge replacement project on I-70 over Smith Road and the Union Pacific Railroad in Aurora, Colorado, will be the first in the country to use a Geosynthetic Reinforced Soil - Integrated Bridge System (GRS-IBS) for a multi-span bridge on an Interstate. Instead of conventional bridge support technology, GRS-IBS technology uses alternating layers of compacted granular fill material and fabric sheets of geotextile reinforcement to provide support for the bridge. GRS also provides a smooth transition from the bridge onto the roadway, and alleviates the “bump at the bridge” problem caused by uneven settlement between the bridge and approaching roadway. Colorado received a \$2 million grant for the groundbreaking project.