

Presto Geosystems

GEOWEB® Retaining Wall Eliminates Track Instability and Reduces Maintenance

Wet Soils Cause Site Problems, Embankment Stability

An area along a medium-tonnage route that had a minimum of 14 freight trains per day (at typical speeds of around 81 kilometres per hour) had been an ongoing maintenance challenge for years. The section of track was on a mainline curve beneath overhead electric wires, which not only complicated maintenance efforts due to limited overhead clearance, but below grade, the track was experiencing settlement issues and profile problems that reportedly coincided with wet weather periods.

During one flood event in May 2010, a portion of the west slope was washed out. Local crews temporarily repaired the area with riprap and dumped rock on the east slope. The problems subsided for a while, but eventually, the same issues resurfaced, leading to continuous and costly maintenance.

The cause of the instability

appeared to be the steep inclination of the fill embankment and periods of wet weather contributing to the base of the fill becoming saturated and losing strength. Cross-level settlement of the rail resulted as the shoulder dropped and ballast was lost from head of tie, down the slope. Prior attempts by local crews to address the historic instability at this site included driving rail pile, which did not solve the problem.

Additionally, work from track level to drive additional piling would have been disruptive and required substantial co-ordination and site preparation efforts to facilitate equipment access, including temporary removal and rerouting of overhead electric lines.

GEOWEB Geocells Earth Retention Solution

After considering several options, project engineers determined that a passive crib wall system along the toe utilising the GEOWEB® Earth Retention System was the preferred option. The engineers based their decision on the GEOWEB system's

ability to be constructed less expensively and more quickly than the alternatives, with the added benefit of not disturbing train operations. The GEOWEB system was selected as the facing of the wall due to the system's ease of installation, tolerance to settlement and ability to minimise downtime.

The design was completed using the **GEOWEB® MSE Wall Design Software** – a complementary design programme offered by Presto Geosystems that allows users to create vegetated and non-vegetated wall designs for reinforced slopes, as well as gravity and geogrid-reinforced walls.

The software – developed by Dr Dov Leshchinsky, Ph.D., a world-renowned expert on MSE walls and associated design procedures – contains specific algorithms that capture the unique interaction between the GEOWEB® system, infill and backfill soil, and geogrid reinforcement and specific factors of safety. A complementary copy of the programme can be obtained upon request by visiting the [Presto Geosystems website](#).

New ATRA® Wall Key Provides Strong Connection & Enhanced Aesthetics

Following several years of product testing and development, a new advancement to the GEOWEB® Retaining Wall System was released in July 2022. The ATRA® Wall Key is a specialised geocell connection device used to connect adjacent GEOWEB Retaining Wall sections. The ATRA Wall Key includes an integrated washer at the base of the handle for coverage of the I-slots when connecting adjacent wall sections, frictional barbs for an improved interlock with the GEOWEB sections, and an ergonomic handle with S-shaped contouring for ease of installation.

Made of non-reactive, chemically inert high-density polyethylene, the ATRA Wall Keys provide a more secure and permanent



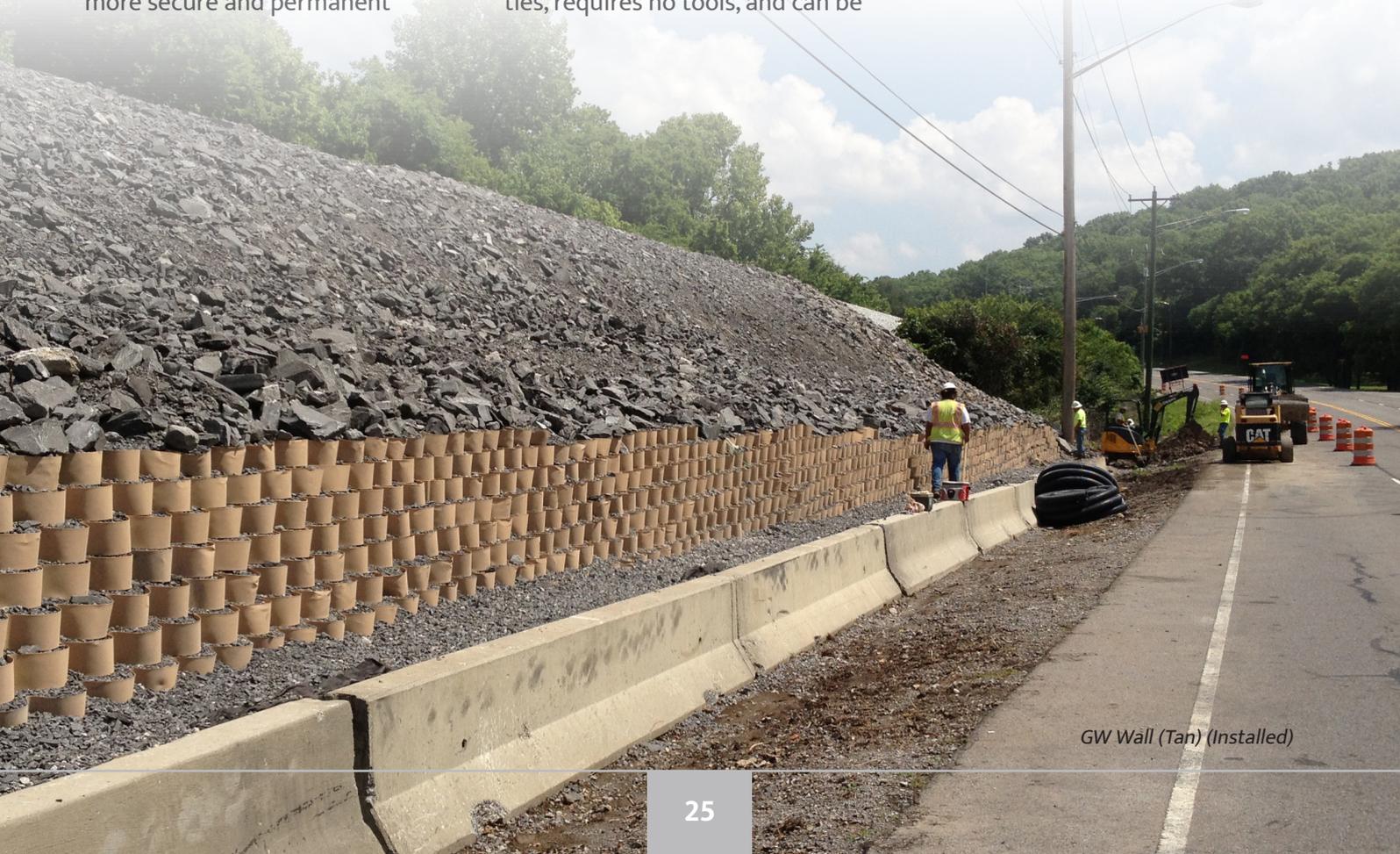
ATRA Wall Keys

mechanical connection over staples or zip ties, and they are the only geocell connector specifically designed for use in exposed wall face applications. Formulated to withstand weathering and ultraviolet radiation, the ATRA Wall Keys will not corrode or photodegrade, even when exposed to harsh environments. Securing sections with the ATRA Wall Keys is faster than using staples or zip ties, requires no tools, and can be

completed by one installer with one easy turn. The new ATRA Wall Keys offer a natural-looking aesthetic by blending seamlessly into green or tan fascia options.

prestogeo.com

PRESTO | **GEOSYSTEMS®**
STRENGTH. FROM THE GROUND UP.
 Since 1979



GW Wall (Tan) (Installed)



PRESTO | **GEOSYSTEMS**[®]

STRENGTH. FROM THE GROUND UP.

Since 1979

COMBAT RAILWAY EMBANKMENT CHALLENGES

GOWEB[®] Retaining Walls

Instability of fill embankments with steep slopes and wet weather exposure can cause saturation, settlement and loss of strength at the base of the fill. The result is a high-maintenance slope requiring frequent repair.

GOWEB Retaining Walls keep fill materials stable and are free draining to prevent the negative impacts caused by saturated soil.

Vegetated or hard-armored fascia.



FREE Project Evaluations
www.prestogeo.com