

# FULL SPEED AHEAD

Erosion is minimized during construction of California high-speed rail system

By Scott Harrison



The high-speed rail project, which has been in planning and design phases for decades, finally broke ground in early 2015.

**C**utting costs and adhering to environmental regulations are primary goals in many industries, but they are of essential importance in public works projects like the California high-speed rail system that require long-term planning, development and funding from taxpayers.

For decades, the California High Speed Rail Authority (CHSRA) has been in the planning and design phases of

the nation's first high-speed rail system, which is intended to alleviate some of the most congested roadways in the state. Estimated for completion in 2029 at a cost of \$68 billion, the rail system will provide transportation by electric trains that can reach speeds of up to 220 mph and are powered completely by renewable energy. This project is a massive, long-term undertaking that requires CHSRA to have proper erosion control

solutions in place to protect the earth and keep surfaces stable during ongoing construction. For this project, CHSRA selected EarthGuard Fiber Matrix, an environmentally safe dust and erosion control product developed by Bakersfield, Calif.-based company Terra Novo Inc.

After years of prevailing in court challenges and political discussions addressing social, environmental and budgetary concerns, the CHSRA broke ground

Jan. 6, 2015, as a Southern California construction firm began excavating in downtown Fresno, Calif., in preparation for new pipeline.

Storm drains and sewer and water lines play an important role in providing solid infrastructure to any construction project and require evaluation and verification before permits are issued. In order to comply with strict storm water restrictions and federal Clean Water Act regulations, the CHSRA relied on EarthGuard Fiber Matrix to establish an environmentally safe soil stabilization process along a flat stretch of Highway 99 running through downtown Fresno and will continue to apply the product throughout the various phases of the CHSRA project.

“As part of our commitment to the [San Joaquin] Valley’s air and water quality, we have a proactive groundwater contamination and dust prevention policy that is implemented through our design-build contracts.

EarthGuard helps us maintain that commitment,” said Scott Jarvis, chief engineer for CHSRA.

### Minimizing Accelerated Erosion During Construction

While natural erosion is an important contributor to landscape formation, it only accounts for 30% of all sediment erosion; the remaining 70% is the result of acceleration due to agriculture, surface mining, forestry and construction projects. Manmade land-disturbing activity causes soil to detach and merge into waterways, degrading streams. Even after construction has finished, the potential for erosion may be increased by storm water as it strikes exposed surfaces and dislodges soil particles. Once dislodged, soil particles easily can be transported by water flowing over a site and become sheet erosion. Raindrops falling on disturbed soil are responsible for at least 90% of total soil erosion.

EarthGuard Fiber Matrix is a

combination of Terra Novo’s EarthGuard emulsion and wood/cellulose fiber that, when applied as an aqueous slurry, creates a “liquid net” that holds the soil in place and allows more water to penetrate the soil to allow plants to thrive—which is especially beneficial in areas facing drought. This also helps to recharge groundwater resources and minimizes runoff.

The product works like a magnet, grabbing soil particles and binding them together. Consistently performing, even during heavy rain, it is scientifically engineered to be effective at low rates while absorbing the impact of raindrops and providing immediate dust control, erosion control and soil stabilization until permanent vegetation is established or construction has resumed. It utilizes an extremely high-molecular-weight blend, which results in its high charge density and soil stabilizing ability. It is designed to work directly with soil to maintain its stability, both by

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The product can provide immediate dust and erosion control and soil stabilization until permanent vegetation is established or construction has resumed.

preserving existing soil structure and flocculating fine sediment dislodged by storm water or wind. Recently, the American Association of Highway Transportation Officials deemed EarthGuard compliant with work plan requirements through its National Transportation Product Evaluation Program. As a result of the evaluation, EarthGuard received one of the best scores ever reported for an erosion control product.

### The Greener Good

CHSRA approved the use of EarthGuard Fiber Matrix primarily due to its track record within the storm water and erosion control industries and its ability to provide a cost-effective and environmentally safe approach to a project that will benefit future generations. The California Department of Transportation (Caltrans), Los Angeles County Metropolitan Transportation Authority, San Bernardino Associated



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Governments, Orange County Transportation Authority and San Diego Association of Governments have been using the product throughout their more than \$100 million freeway improvement and expansion projects. With safety as its primary concern, Caltrans minimized costs, hazards and delays to both the motoring public and road construction crews by proactively addressing potential challenges and concerns regarding erosion control, particularly for slopes along access roads.

While complying with the strict regulations and laws in place to protect wildlife, native vegetation and waterways, CHSRA also sought to develop plans that incorporated safety, environmental compliance and sustainability in order to avoid heavy fines and penalties, as well as costly construction errors. **SWS**

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