

# Advanced Soil Stabilization Technology for the Biggest Train in the World



Increased Bearing Strength  
Higher Density Field Compaction  
Improved Construction Productivity



**Application of EMC SQUARED® System Stabilizer Solution with Subballast Soil Materials**



**Mixing of EMC SQUARED System Stabilizer Solution with Subballast Soil Materials**



**for more information on the  
EMC SQUARED System Product,  
see [www.stabilizationproducts.net](http://www.stabilizationproducts.net)**

**Compaction of the EMC SQUARED System Stabilized Subballast Layer**

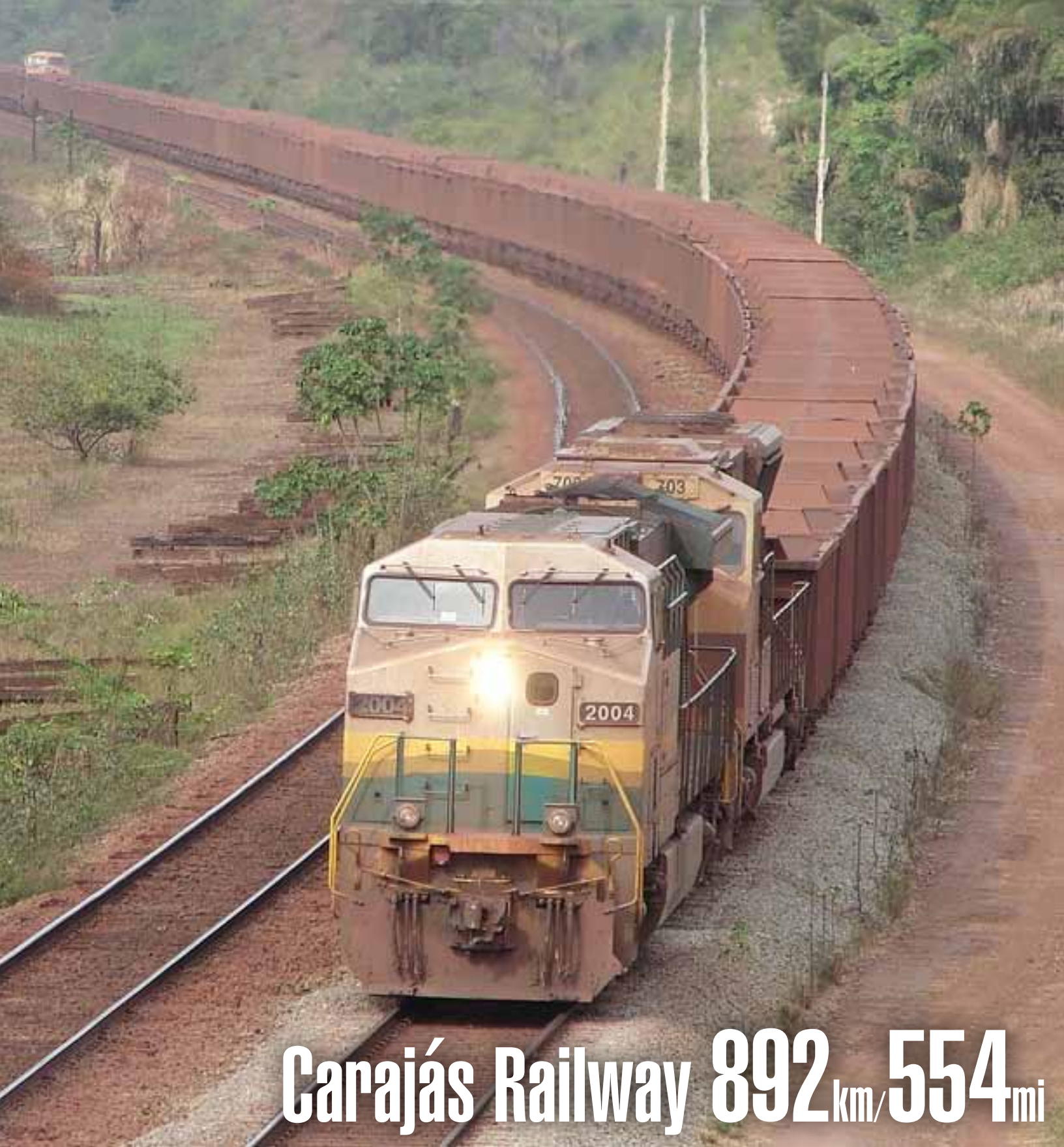


**Mixing of EMC SQUARED System Stabilizer Solution with Subballast Soil Materials**



**Compaction Testing of EMC SQUARED System Stabilized Subballast Layer**

**VALE**, the largest iron-ore producer in the world, and the second largest mining company, operates the world's most extensive iron-ore mine, located in northern Brazil, for which they are developing what is described as the biggest train in the world, stretching almost three kilometers in length with four engines and 330 iron ore cars. The company plan is to incrementally increase axel loads in order to add to the productivity of their Carajás Railway by increasing the trailing weight of the train by 40.8% to 44,160 tonnes. VALE, with an investment of \$11.3 billion, is currently developing a new mine that will increase the total annual iron-ore production to be shipped by rail from 100 million tonnes to 230 million tonnes by 2016. Over half the new investment will be to expand infrastructure and improve the logistics of the railroad and port operations. The Carajás Railway, which runs from the state of Pará to the Ponta de Madeira Marine Terminal in the state of Maranhão, will be extended 100 kilometers in length to the location of the new mine facility, while 129.9 kilometers of the existing 892 kilometer railway will be duplicated, increasing transportation capacity to 150 million tonnes annually. When this work is completed, about 470 kilometers of duplicate railway tracks will remain to be built by 2016. Operating a super heavy train three kilometers in length required construction of longer passing loops and new yards, new piers at the port, new ship loaders and use of the most advanced technology. Innovative technologies include new signaling systems and advanced soil stabilization systems to improve the strength of the native soils used in construction of the subballast layer that will support the track structure for the super heavy train. Subballast soils are stabilized with the EMC SQUARED® System product technology from Stabilization Products LLC. The economical and environmentally friendly concentrated liquid stabilizer products are added to the compaction water and incorporated with the subballast soils using standard soil mixing and compaction procedures, offering broad spectrum effectiveness in stabilizing a wide variety of soil and aggregate materials, and increasing strength and reducing their susceptibility to fluctuations in moisture content. This is an excellent match of product technology and application of state-of-the-art stabilization technology incorporated in the subballast layer supporting the track structure for the Biggest Train in the World, which will be state-of-the-art in rail freight productivity.



# Carajás Railway 892<sub>km</sub>/554<sub>mi</sub>



**Stabilization Products LLC**

[www.stabilizationproducts.net](http://www.stabilizationproducts.net)

Ph: (209) 383-3296 or (800) 523-9992 Fax: (209) 383-7849

E-mail: [info@stabilizationproducts.net](mailto:info@stabilizationproducts.net)

Canadian Sales: Milieu Road Technologies (780) 875-9159

