TRAIL T-LINE GEOTECHNICAL
Kenny Construction Company
Washington, Pennsylvania

The new $960 million, 500-kV Trans-Allegheny Interstate Line (TrAIL) runs approximately a couple hundred miles from Southwestern Pennsylvania to West Virginia to Northern Virginia. Approved by PJM Interconnection (PJM), the regional transmission organization that coordinates movement of wholesale electricity in 13 Mid-Atlantic States, TrAIL will meet the region’s electricity needs and reduce overloading of the current transmission system.

THE CHALLENGE
The TrAIL line crosses rugged terrain and required ingenuity in locating the tower structures by balancing human and environmental needs with engineering constraints. Unlike traditional projects where the data collection and assessment phase is followed by final design and construction, this project required concurrent planning, data collection, design, and construction. A strong collaboration among the owner, program manager, and the design team was essential to meet the accelerated project schedule mandated by PJM.

KLEINFELDER’S SOLUTION
Kleinfelder provided geotechnical engineering, engineering geology, rock mechanics, limited civil and structural engineering, and construction-phase engineering services for tower construction. By establishing critical geological and geotechnical risk factors, Kleinfelder created intelligent, targeted data collection processes for various subsurface conditions and measured the sensitivity of the solutions. This targeted approach and monitoring during foundation installation allowed significant reduction in data collection and design time, helping to meet the demanding project schedule. Using design nomographs and their calibration during construction allowed real-time foundation depth adjustments which reduced design conservatives. Among the few thousands of drilled shafts installed, the average predicted depths were within 10% of the actual installed depths. The Kleinfelder team safely completed more than 70,000 service hours on the project.

CLIENT BENEFIT
Kleinfelder’s innovative foundation design concepts and collaboration with other team members resulted in value-engineering, provided efficient foundation installation, and prevented potential construction delays and costly changed-condition issues. TrAIL was energized on May 19, 2011, almost two weeks ahead of the schedule.

Kleinfelder is an employee-owned science, architecture, and engineering consulting firm providing solutions to meet our world’s complex infrastructure and natural resource challenges. Working as a team, our bright people will deliver the right solutions.