



HARDENING CRITICAL INFRASTRUCTURE IN EXTREME TERRAIN

SUPPORTING A HISTORIC UNDERGROUND GRID MODERNIZATION PROJECT IN THE GRAND CANYON

Modernizing Critical Infrastructure in One of North America's Most Challenging Environments

Replacing aging electrical infrastructure deep within the Grand Canyon required far more than a standard underground installation. With no road access, extreme elevation changes, and helicopter-supported logistics, project teams faced one of the most demanding utility construction environments in North America.

The project focused on upgrading underground electrical infrastructure serving critical power and water systems located within the canyon. To support successful execution, TE Connectivity provided medium-voltage cable accessory solutions, application engineering expertise, customized splice configurations, and hands-on installer training



1.5-2 miles

Underground
installation supported

No road access

Helicopter-supported
logistics

2 days Hands-on
installer training

**Critical
infrastructure** Power
and water systems
served

Project Facts

 Application	Underground medium-voltage distribution infrastructure
 Location	Grand Canyon, Arizona
 Project Environment	Remote canyon terrain with no road access
 Installation Conditions	Extreme elevation changes and challenging logistics
 Infrastructure Served	Critical electrical and water infrastructure
 TE Connectivity Support	Medium-voltage cable accessories, heat shrink splice technology, application engineering, installer training
 Field Training	Two days of hands-on installation training
 Underground Installation Length	Approximately 1.5 to 2 miles

The Challenge

The underground installation route extended from the canyon rim to the canyon floor, traversing steep terrain, narrow access corridors, and significant elevation changes. Construction activities included installing underground conduit along the Bright Angel Trail to support the new distribution network.

Unlike conventional utility projects, the site offered no road access for equipment or installation materials. Components had to be transported into the canyon by helicopter, while field crews operated for extended periods in a remote environment. Steep pathways, restricted work areas, and difficult access conditions required careful coordination among utility personnel, contractors, and engineering teams.

Because access to the project site was limited, maintaining installation quality was especially important. Any installation issue or material shortfall could have resulted in significant delays and additional logistical complexity.



The Solution

TE Connectivity supported the project with medium-voltage cable accessory solutions, heat shrink splice technology, application engineering expertise, and installer training designed to improve field readiness before construction activities began.

The project included approximately 1.5 to 2 miles of underground cable installed beneath the Bright Angel Trail. While the cable itself was supplied as part of the broader project scope, TE's role focused on supporting efficient and reliable cable splicing operations in the field.

To help reduce installation risk, TE specialists worked with the project team to configure splice kits for project-specific requirements before deployment. This preparation helped ensure compatibility with field conditions and minimized the potential for delays once materials reached the canyon.

TE also conducted two days of hands-on training in Flagstaff, Arizona, providing field crews with practical instruction on cable preparation, splicing procedures, and installation best practices before deployment to the project site.

Delivering Readiness Before Deployment

Successful execution depended on preparation long before installation activities began. Through early engineering collaboration, customized product configuration, and practical field training, project stakeholders were able to improve installation readiness in an environment where access to replacement materials, additional resources, and technical support was inherently limited.

This proactive approach helped reduce uncertainty and support efficient field execution under demanding conditions.

Results

The project successfully supported modernization of critical electrical infrastructure serving essential operations within the Grand Canyon.

Despite challenging terrain, restricted access, and complex logistics, crews completed the underground installation while benefiting from engineered cable accessory solutions, application expertise, and installer training throughout project execution.

Key Outcomes



Successful support of a critical underground infrastructure modernization project in a remote canyon environment



Approximately 1.5 to 2 miles of underground installation supported through engineered cable accessory solutions and application expertise



Project-specific splice kit configurations prepared prior to installation to improve field readiness



Two days of hands-on installer training completed before field deployment



Engineering collaboration that helped support consistent installation quality under demanding site conditions

Lessons for Utilities

The project highlights the importance of combining proven products with constructability planning, installer readiness, and engineering support. In remote environments where corrective action can be difficult and costly, preparation before installation can play a critical role in reducing execution risk.

The Grand Canyon project demonstrates how standardized cable accessory solutions, application expertise, and focused installer training can help utilities and contractors improve installation consistency during complex underground infrastructure projects.

Supporting the Grid of Tomorrow

The Grand Canyon project provides a practical example of how careful planning, installer preparation, and engineered cable accessory solutions can help utilities execute complex underground infrastructure projects where access, logistics, and reliability requirements leave little margin for error.

By addressing constructability, field readiness, and installation quality together, utilities can improve confidence in project execution while supporting long-term infrastructure reliability.

Connect With Us

We make it easy to connect with our experts and are ready to provide all the support you need.

Visit [TE.com/energy-contact](https://te.com/energy-contact) to chat with a Product Information Specialist.

TE Connectivity

Energy

[TE.com/underground](https://te.com/underground)

TE, TE Connectivity, TE connectivity (logo), and EVERY CONNECTION COUNTS are trademarks owned or licensed by the TE Connectivity plc family of companies. Other product names, logos, and company names mentioned herein may be trademarks of their respective owners.

The information given herein, including drawings, illustrations and schematics which are intended for illustration purposes only, is believed to be reliable. However, TE Connectivity makes no warranties as to its accuracy or completeness and disclaims any liability in connection with its use. TE Connectivity's obligations shall only be as set forth in TE Connectivity's Standard Terms and Conditions of Sale for this product and in no case will TE Connectivity be liable for any incidental, indirect or consequential damages arising out of the sale, resale, use or misuse of the product. Users of TE Connectivity products should make their own evaluation to determine the suitability of each such product for the specific application.

© 2026 TE Connectivity. All Rights Reserved.

10-26