

N-Connex

HIGH-SPEED MODULAR NETWORK



THERE'S NO TUNNELING

**NETWORK
SOLUTION**

EASIER TO DEPLOY & SUPPORT

N-Connex

The most versatile, rugged IP67-rated high-speed networking solution for tunnel construction, maintenance and repair operations.

VoIP Radio or Phone Communications

Personnel & Asset Tracking

Video Monitoring

Data Communications

Outstanding Service & Support

- Modular design and pre-terminated cables allow easy network advancement by existing workers
- Ideal for harsh, wet environments
- Fully compatible with 802.3 and 802.11 Ethernet and Wi-Fi devices for voice, tracking, atmospheric monitoring (AMS), data and video systems
- Monitors personnel and tracks contractors entering and exiting job sites
- Connects to any Ethernet or Wi-Fi-enabled device, including laptops, smart phones, sensors and smart tags
- Designed for current and future control and automation needs
- Readily expandable so that tunnels can start with the basics and then extend or add features when needed

**LOWEST INSTALLATION
COST PER MILE**

Three Mining Stations – Communication, Tracking & Video Monitoring System

Crosslinx Transit Solutions Eglinton Crosstown Toronto, Ontario, Canada

Eglinton Crosstown is one of North America's largest infrastructure projects. When complete, the line will cover 19 kilometers and 25 stations with surface and "cut-and-cover" construction.

Project Summary

Crosslinx' first goal was to provide a communications solution to its three "mining" stations. Each station has multiple work sites separated by busy Toronto streets. NLT deployed a point-to-point radio link mounted on cranes to get line-of-site. N-Connex was also integrated with an existing VHF-based radio system for crane operations.

The project includes monitoring face activities with sensors, video/CCTV and retrieving real-time data from construction equipment. The first phase implemented a Wi-Fi-based communications system to monitor 24/7, even when work activities were not taking place. Each of the three sites required a custom solution supported by its own team, but oversight is managed centrally.

This custom N-Connex solution includes:

- Local servers for network monitoring
- Phone system controllers
- Edge rugged Ethernet switches
- Bolt wireless Wi-Fi access points
- Complete Wi-Fi communications solution, including 5GHz Wi-Fi signals on surface to assure signal clarity in a signal congested area.
- Wireless link between shafts at the surface
- Pre-terminated IP67 Cat6 Ethernet cable
- Commissioning and support services

Largest Rail Tunnel Project in the World – Communications & Tracking

Brenner Base Rail Tunnel Innsbruck, Austria and South Tyrol, Italy

Project Summary

Stretching 34 miles through the base of the Eastern Alps, Brenner Base is the largest rail tunnel project in the world. Connecting Innsbruck, Austria and South Tyrol, Italy, the tunnel is part of a larger line connecting Berlin, Germany and Palermo, Italy. The tunneling phase of this project required a rugged network that could handle the tunnel's communication and tracking. Every supplier in the industry, including two large Austrian firms, bid on the job. N-Connex's versatile, reliable and cost-effective modular system won the business.

This custom N-Connex solution includes:

- Wi-Fi communication using Distribution Modules and Bolt wireless access points which allows IP phone communication throughout the tunnel operation
- Personnel and vehicle tracking using Bolts and NLT Digital Mine Software
- Support technologies, such as gas monitoring with Trolex Mine Monitoring Solutions, video monitoring with IP cameras, emergency telephones and evacuation modules



In projects where Tunnel Boring Machines are used, they can directly connect to the N-Connex network so their critical on-board systems can be monitored and controlled.

Pipe Jacking Operation with Portable 2-Way Voice Communications

John Holland, Amaroo Sewer Tunnel - Melbourne, Australia

Project Summary

Pipe Jacking operations are a difficult environment for reliable voice communications making the use of traditional RF radio or wired solutions undesirable. This problem is mitigated with NLT's NetPort-able, a fully portable self-contained 2-way Wi-Fi voice communications solution. The project engineer was tasked with sourcing a solution that could be easily deployed, provide reliable high-quality communications and be more cost effective than traditional methods.

The NLT Portable Solution:

After visiting the site, NLT determined a portable wireless solution was required and NetPort-able Wireless Access Point was selected to provide Wi-Fi for more than 800m of tunnel and shaft entries.

NetPort-able is a completely wireless, rapidly deployable wireless access point. With the transmitter, receiver, rechargeable batteries and antenna all housed in a rugged carrying case, deployment and installation to extend the WLAN through the tunnel was simple. NetPort-able WAPs wirelessly mesh together to establish the WLAN and extend the coverage to longer tunnel sections as required to complete the project. NLT finalized the solution by supplying IP 2-Way radio handsets and an Icom Terminal to operate on the wireless network.



RAIL TUNNEL MAINTENANCE & REPAIR

FAST, EASY INSTALLATION WITH MINIMAL PERSONNEL

Epping-Chatsworth Rail Tunnel Sydney, Australia

This N-Connex installation included 27km (full redundant loop) of fiber (mainly in 400m pre-terminated lengths) with 23 Nodes, 140 Bolt wireless access points and 22km of cat6. The average workforce was two teams of two people. The N-Connex system was installed in 18 days and fully finished in 25.



FOR MORE INFORMATION OR TO SET UP A DEMONSTRATION



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