



Cross-Band Repeater (Highband/Lowband)

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Description:

Limited range and signal dead zones with NX-1200 high-band radios created communication challenges for flagging operations and field personnel. To solve this, Gene developed a mobile cross-band repeater system that links local high-band frequencies to a long-range low-band radio, greatly improving coverage while allowing crews to continue using their standard NX-1200 radios. The system is portable, quick to deploy, and can be easily moved between job sites as needed. Specialized cable construction, system testing, and field data collection by the project team helped validate the system's reliability and real-world performance.

How does this Innovation benefit SCDOT:

This system improves communication in South Carolina paving zones by overcoming terrain obstacles, extending radio range across long work areas, and reducing communication dead zones. It provides reliable coordination between crews, pilot cars, and flaggers, helping improve safety, maintain compliance with SCDOT and OSHA requirements, and reduce traffic delays. By placing the repeater on a high point or work vehicle, crews can maintain clear communication even in high-speed or low-visibility areas.





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BEFORE

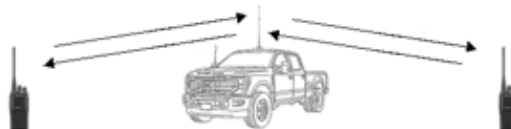


Flagger Radios have a maximum 2 Mile coverage
Also only Flagger can receive and transmit communication

AFTER



Cross-band Repeater installed inside a Foreman's vehicle
High Band and Low Band Radios install in the back
Control Head Unit installed on the front console



This allows the Flagger radios to transmit and receive through the Foreman's vehicle
Not only does this increase the radio coverage to a maximum 10 miles
It also enables all work zone personnel to monitor the flaggers' communications