

Texas School District Elevates Connectivity for Emergency Communication with CEL-FI QUATRA Cellular Coverage Solutions



Case Study courtesy of
Wytec International
San Antonio, TX

Challenge

Staff and students in the Laredo Independent School District (LISD) require reliable cellular service to maintain communication, particularly in emergency situations

Solution

CEL-FI QUATRA Active DAS Hybrid

Installation

Off-air solution that doesn't require a retransmission agreement for deployment and activation

Results

- Enterprise-grade system providing consistent communications for LISD staff and students
- Cost-effective solution with fast installation, improving cellular coverage within weeks
- Real-time system monitoring

Challenge

Texas-based LISD is comprised of 33 educational institutions – elementary, middle, and high schools – with roughly 24,000 students and more than 4,500 employees annually. The district sought in-building cellular coverage solutions to solve coverage challenges and ensure reliable connectivity across its facilities.

"Our students' safety and security are paramount. Having reliable communications through their mobile devices is now a basic need at our campuses for emergency communications and mass notifications," says Miguel Munoa, Assistant Superintendent of Technology Services at LISD.

In accordance with guidelines set by Safer Buildings Coalition, LISD wanted to ensure that staff and students could make 9-1-1 calls from anywhere within its facilities. For example, in scenarios where staff and students are instructed to shelter-in-place, they need connectivity to call 9-1-1 and communicate their location to first responders. However, the schools' building materials – cinderblock and brick walls – blocked cellular signals from penetrating the facilities, causing those on campus to experience dead zones.



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Solution

“The district wanted a solution that could receive signal off-air from the cellular towers and amplify the signal for all major U.S. carriers. They also required the least amount of intrusive cabling and wanted a system that could be monitored in real-time,” explains William Gray, chairman and CEO of Wytec. “With CEL-FI QUATRA, we were able to design a cellular enhancement solution that cost-effectively met all of the ISD’s current technical and safety requirements.”

CEL-FI QUATRA is a carrier agnostic, active DAS hybrid that delivers uniform, in-building cellular coverage. It specifically addresses the challenges of poor voice quality, dropped calls, and dead zones in large buildings and offers a coverage footprint up to 3x larger than traditional wideband repeaters. QUATRA uses category cabling with Power over Ethernet, eliminating the need to install additional power outlets for the internal remote antennas.

LISD selected Nixon High School, Lamar Middle School and its two-story gym, and Ryan Elementary School as the first properties for Wytec to deploy the Nextivity systems. Those campuses range from 10,000 to 200,000 ft².

Installation

Meeting LISD’s off-air requirements, Wytec installed four donor antennas outside every building to capture macro signal for the mobile operator networks. Those signals are transmitted over coax cable to the CEL-FI QUATRA Network Unit (NU), which is the head end of the system. From there, the NU digitally re-transmits the signal with zero loss via category cable to QUATRA Coverage Units (CUs) – the intelligent internal antennas that uniformly rebroadcast the signals throughout the building. The systems also include passive antennas from the CUs to deliver signal into areas with internal obstructions, such as walls. Each solution includes four to 10 CUs depending on size of the property, while Nixon High School was the only building with multiple NUs.

Results

“We saw a 90% improvement in the signal throughout the facilities,” says Gonzolo Loera, Network Engineer at Wytec. “From the get-go, this design covers all areas and delivers a future-proof solution.”

Wytec’s team of three completed the installations in only three weeks. After the initial campuses were finished, LISD immediately realized the benefits of this new system. According to Munoa, the positive feedback from students, staff, and families prompted the district to outfit all of its elementary, middle, and high school campuses with Nextivity solutions.

“CEL-FI QUATRA is a cost-effective and smart solution. It doesn’t just take what’s outside and simply blast and boost it indoors. There’s a lot of technology behind it,” says Gray. “QUATRA allows us to install a system, remotely monitor it, and make adjustments if we need to. It’s a smarter solution that fits into our smart DAS product offerings.”