

Cel-Fi Increases Safety at Texas School District

Summary

Challenge

- School district requires reliable cellular coverage in multiple buildings ranging from 10,000 to 200,000 square feet to meet safety guidelines
- Building materials block cellular signals from penetrating campus facility walls
- Solution must meet strict technical and safety requirements

Solution

- Cel-Fi QUATRA 4000

Results

- Peace-of-mind for staff and students
- Future proof solution

The Challenge

Laredo Independent School District (ISD) is made up of 33 educational institutions including elementary, middle, and high schools, and has an annual average enrollment of 24,000 students and more than 4,500 employees. For the safety of its students and staff, the Texas-based school district sought an in-building cellular coverage solution to alleviate inadequate cellular service and provide coverage into and throughout its facilities.

“Laredo Independent School District, like many other institutions, has recognized a need to fortify communications for staff and students within our 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 the Laredo, Texas-based school district. Laredo ISD is a member of the South Texas Purchasing Alliance (CTPA).

In accordance with guidelines set by the Safer Buildings Coalition for location accuracy when emergency calls are placed from a mobile phone from inside buildings, Laredo ISD wanted to ensure that staff and students could make 9-1-1 calls from anywhere within its facilities in the event of an emergency. For example, in a scenario where staff and students are instructed to shelter-in-place, they must be able to call 9-1-1 to communicate their location to first responders.

Wytec International (Wytec), a member of the Safer Buildings Coalition, was selected by Laredo ISD to deploy a cellular enhancement solution designed to meet all of the school district’s technical and safety requirements.

The Solution

Laredo ISD was experiencing dead zones in its facilities due to building materials that were obstructing cellular carriers’ macro signals from penetrating into and throughout campus buildings. This included sheet metal roofs and, in some cases, double layers of roofing from when a new roof was built on top of an older roof during recent renovations. Laredo also added new cinderblock outer walls to the original brick walls as part of the renovation. Cinderblock is a common construction material for school facilities and is known for blocking cellular signals.

“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 4000 is a hybrid Distributed Antenna System (DAS) that delivers uniform in-building cellular coverage. It specifically addresses the challenges of poor voice quality, dropped calls, and dead zones in large buildings. QUATRA delivers a cellular signal that is up to 1000x stronger than solutions based on older analog technology, offering a much larger coverage footprint. QUATRA uses CAT 5e cabling with Power over Ethernet so there is no need to install additional power outlets for the internal remote antennas.

Future proof

The areas that required coverage in the initial project range in size from 10,000 to 200,000 square feet, and include Lamar Middle School and its separate, standalone gym with two floors; Nixon High School; and, Ryan Elementary School.

One Cel-Fi QUATRA Network Unit (NU) – the head end of the system – was placed in each of the buildings with the exception of the largest building, Nixon High School, which covers 200,000 square feet and where two NUs were installed. Four donor antennas were placed on the outside of each building to capture the macro signal that is then transmitted over coax cable to each of the NUs. The NUs digitally re-transmit the signal with zero loss via Cat 6 cables to the QUATRA Coverage Units (CUs) – which are the intelligent internal antennas that amplify and rebroadcast the signals from each carrier uniformly throughout the building. Wytec installed between four to 10 CUs in each building depending on their square footage, plus extended passive antennas from the CUs to deliver signal into areas with internal obstructions, such as walls. .

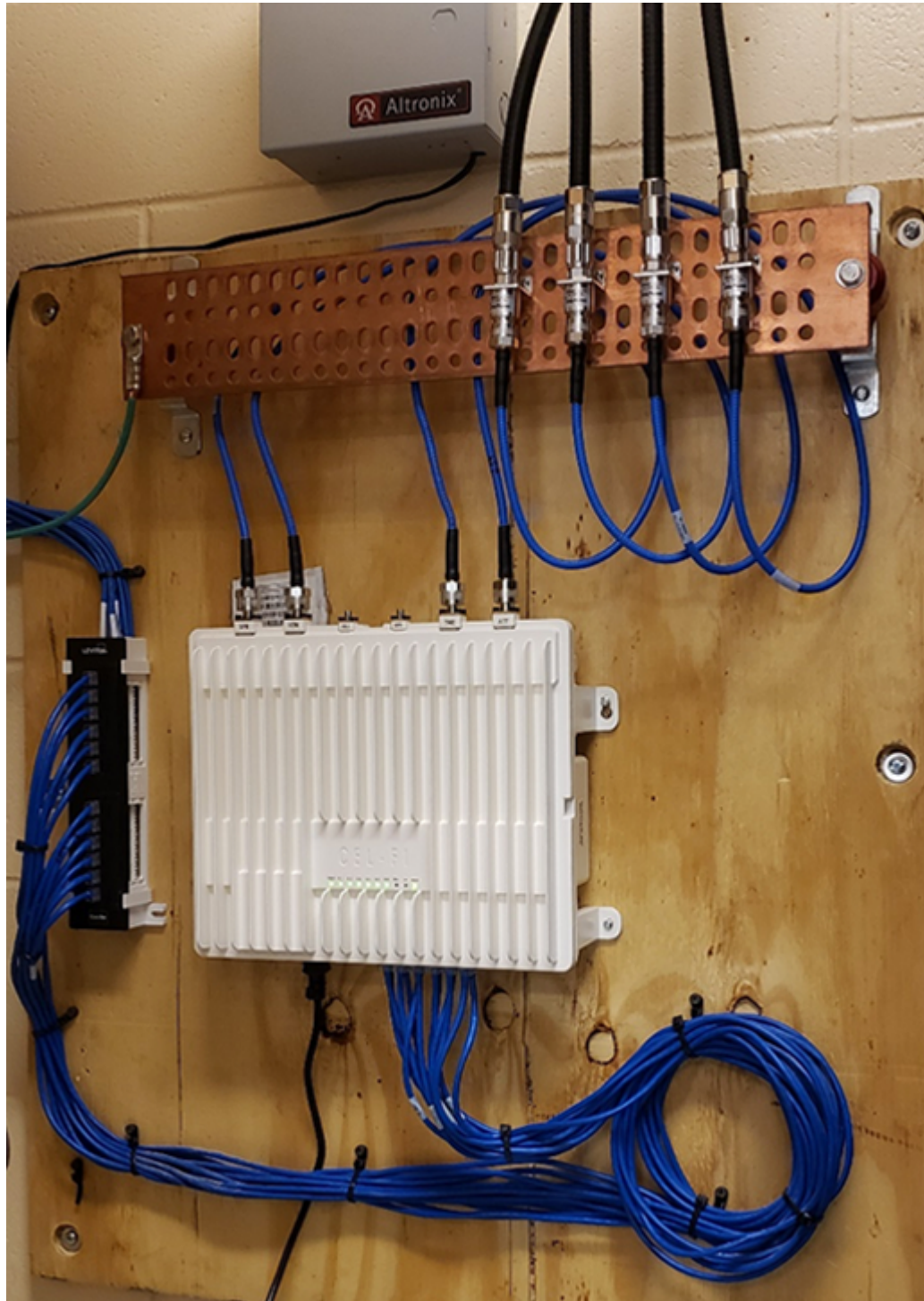
“We decided to use the CUs with antenna extensions because this configuration enabled us to get in all of the areas that needed to be covered. We saw a 90% improvement in the signal throughout the facilities,” says Gonzolo Loera, Network Engineer at Wytec. “From the get-go, this design covers all areas and delivers a future-proof solution.”

The Results

The installations took Wytec three weeks to complete with a team of three. After the initial campuses were completed, the ISD immediately realized the benefits of this new system. According to Munoa, the feedback from students, staff, and families has been positive. The district is now focused on complete deployment at all elementary, middle, and high school campuses which are tentatively scheduled for completion by December 2022.

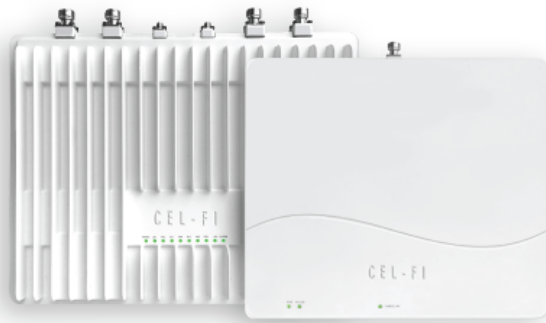
“The Cel-Fi QUATRA solution offers a simple, manageable system that is scalable, reliable, and carrier agnostic. The result is enterprise grade service delivery that provides consistent communications for all of our students and teachers while giving them peace of mind as they carry out their day-to-day activities at our campuses,” says Munoa.





“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.”

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