



Case Study | Virginia Tech Lane Stadium

Advancing Cellular Connectivity at Virginia Tech: MCA Deploys State-of-the-Art DAS Antenna Solutions to Elevate Service at Lane Stadium and Throughout Campus

OVERVIEW

Network Capacity and Coverage in Stadiums and Arenas

Situated in Blacksburg, Virginia, with six additional campuses throughout the state, Virginia Tech (VT) serves a diverse student population of nearly 35,000.

The university offers an extensive range of over 280 undergraduate and graduate degree programs, particularly noted for its robust engineering, business, and agricultural disciplines.

VT embodies a strong commitment to service, guided by its motto, "Ut Prosim" (That I May Serve), which enriches its vibrant campus life and distinguishes it as a significant institution in the United States.

Additionally, VT is famous for its Hokies football team, which competes in the Lane Stadium.

During games, the stadium becomes a hub of activity with up to 65,000 fans using their mobile devices to call, text, and stream live footage, leading to high bandwidth consumption and potential network congestion.

Compounding the complexity of the stadium's RF environment, each game is regularly broadcasted live across ESPN's family of networks, adding extra layers of RF interference from additional equipment and signals.

The convergence of intense fan usage and professional media operations makes maintaining clear and reliable communication networks particularly challenging during these high-energy events.

Enhancing Connectivity for Over 65,000 Fans to Ensure Uninterrupted Experience

Cutting-Edge Mating Spherical LENS Antenna Deployment within DAS Applications

Superior Network Performance

Enhanced Voice Clarity and Cellular Coverage

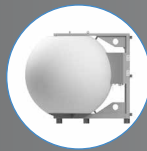
Cost-Effective Implementation

System Flexibility and Scalability

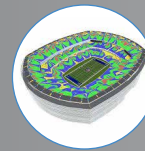
Future 5G Expansion Capabilities



Distributed Antenna System Maintenance



MatSing Multi-Beam Spherical Lens Antenna



iBwave RF Engineering and Design Services

“The new MatSing Ball antennas that have been placed atop the west side suites of Lane Stadium are part of an upgrade to improve cellular service in the stadium during football games. We completed the MatSing lens installation in close collaboration with AT&T, Verizon, and MCA.” — Angela Correa, *Director of Communications*

CHALLENGE

Enhancing Cellular Connectivity for Over 60,000 Fans at Lane Stadium

Lane Stadium, hosting over 60,000 attendees for regular season football games and significant annual events like commencement ceremonies, has long faced challenges with cellular service. Despite the thrill of the games and events, fans and visitors frequently experience frustration due to inadequate cell service.

Constructed predominantly from signal-blocking materials like concrete and steel, the stadium's architecture significantly hampers radio and cellular signal penetration. Additionally, the open-air design of the stadium, lacking a ceiling or substantial overhangs, complicates the installation of conventional antenna systems necessary for distributed signal coverage.

This limited cellular connectivity does not just inconvenience guests; it poses operational hurdles for stadium staff and, crucially, safety risks. Inadequate service means that in emergencies, attendees might struggle to communicate for assistance or reunite with friends and family amidst the large crowds. Similarly, first responders

can face significant challenges in coordinating their efforts effectively due to unreliable signal reception.

SOLUTION

The Latest MatSing Lens Spherical Antennas Boost Cellular Signals

In recent years, the Virginia Tech Foundation has collaborated with major wireless carriers and the University to significantly enhance the campus-wide cellular network. In a strategic move, MCA, together with AT&T and Verizon, deployed advanced lens antennas on the west side of Lane Stadium. Additionally, they upgraded the existing distributed antenna system, initially installed by MCA, located behind the stadium.

The installation of a state-of-the-art spherical MatSing Lens antenna on the stadium's west side now directs signals efficiently across the field to the east stands. This upgrade not only boosts signal strength and capacity within the stadium but also extends improved cellular service to various other parts of the campus. This comprehensive enhancement of cellular infrastructure supports better connectivity for both day-to-day operations and large-scale events at Virginia Tech.

MatSing Lens antennas typically installed at elevated locations use a “*proprietary dielectric polymer that mirrors the human eye’s capacity to refract light and apply it to radio frequency transmissions.*” By positioning the antennas on an elevated location, the signal can be targeted to serve the specific areas and needs of any given venue. The antennas also allow individual cellular carriers to customize their needs and provide optimized performance to their customers.

Some features of MatSing Lense antennas include:

Multi-Band Antenna

Supporting the full sub-6 GHz spectrum, including C-Band

Most Advanced

Optimal for dense urban, rural, and indoor applications

High Scalability

With antennas accommodating up to 48 radios and sectors

Super-Cell Capability

A single MatSing site can replace 14 conventional cell sites



Superior Performance

Proven solution mobility, bandwidth, and capacity

RESULTS

Enhanced Network Performance and Future-Ready Infrastructure

The upgraded network now delivers stronger cellular signals and greater capacity not only within Lane Stadium but also throughout its vicinity. This enhancement extends to six residence halls on campus, ensuring robust coverage for AT&T, T-Mobile, and Verizon subscribers. Moreover, the system has been designed with future advancements in mind, laying a solid foundation for a seamless transition to 5G technology when upgrades become necessary, thereby securing a state-of-the-art communication infrastructure for Virginia Tech.

Our In-Building Wireless Team

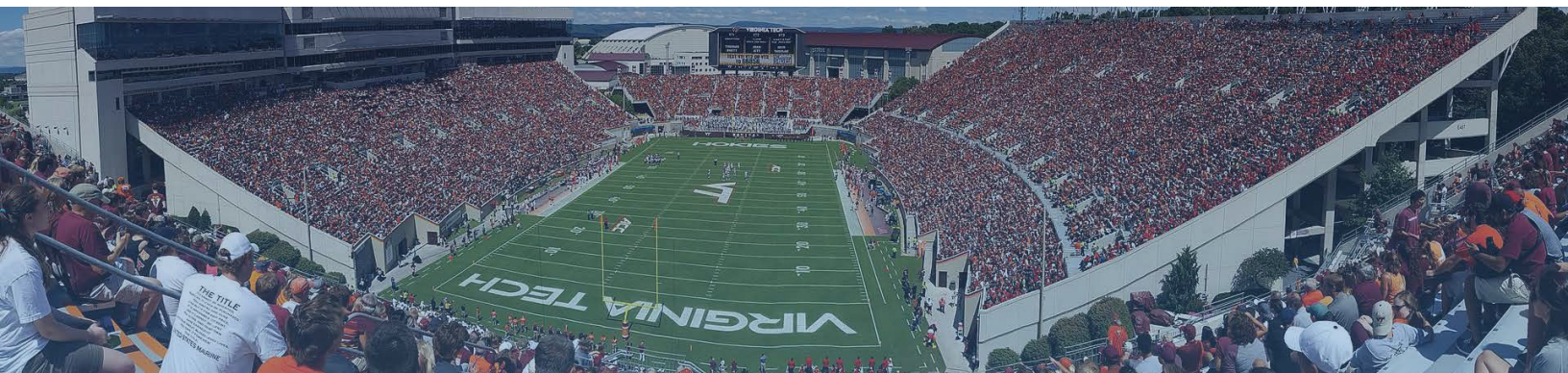
20+ Years of Experience with 10,000 +Successful DAS Deployments

At MCA, our In-Building Wireless Solutions (IWS) team excels as a top-tier integrator of in-building and expansive campus wireless solutions. We offer unparalleled engineering design, project management, implementation, commissioning, and maintenance services. Our expertise encompasses engineering and installing Commercial Distributed Antenna Systems (DAS), Private LTE/5G systems, Public Safety ERRCs, Wi-Fi, and both multi- and single-operator systems within diverse public and private venues.

Our team's deep knowledge and innovative approach empower us to design customized, future-ready solutions that effectively address our clients' wireless coverage and capacity requirements. Leveraging a carrier-neutral strategy, we deliver cutting-edge, multi-operator DAS networks for corporate offices, hospitals, universities, airports, shopping centers, and more throughout the United States.



A large crane hoists the colossal MatSing Lens antennas to the apex of Lane Stadium's primary structure for installation by our expert team.



About MCA

MCA is one of the largest and most trusted technology integrators in the United States, offering world-class voice, data, and security solutions that enhance the quality, safety, and productivity of customers, operations, and lives.

More than 65,000 customers trust MCA to provide carefully researched solutions for a safe, secure, and more efficient workplace. As your trusted advisor, we reduce the time and effort needed to research, install, and maintain the right solutions to make your workplace better.

Our team of certified professionals across the United States delivers a full suite of reliable technologies with a service-first approach. The MCA advantage is our extensive service portfolio to support the solution life-cycle from start to finish.

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The MCA logo is displayed in white on a dark blue background. The letters 'M', 'C', and 'A' are in a clean, sans-serif font. The letter 'C' is stylized with a blue circular graphic element inside it, resembling a signal or a network node.