

DAS / Nodes / Small Cells

Tectonic

PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.



www.tectonicengineering.com/teleco

ABOUT US

Tectonic was founded in 1986 and is a multi-disciplined engineering and professional service firm, employing a staff of over 500 professionals. Tectonic has over 40 years experience, with a reputation for offering professional quality services to its clients, earning a ranking in the ENR Top 500 Engineering Design Firms since 2001.

Tectonic's success stems from a philosophy of providing clients with superior service through a staff of quality-minded professionals. When you choose Tectonic, you work with some of the finest professionals in the business; professionals who will earn your trust and confidence, every day, every project.

MISSION STATEMENT

TECTONIC'S GOALS, MISSION STATEMENT AND PHILOSOPHY

Tectonic has been guided by a focused philosophy and goals since the firm's beginning - vision, integrity and technical expertise. Simply put, Tectonic's goals are to:

- Maintain the highest standard of quality on each and every project.
- Complete projects within budget and on-time.
- Exceed our Client's expectations.

"Practical Solutions, Exceptional Service"



DAS AND SMALL CELL CAPABILITIES

Tectonic provides a full range of site acquisition, leasing and design services for the programming and development of both interior and exterior Distributed Antenna System (DAS) and Small Cell installations throughout the nation. We have provided a multitude of services ranging from site surveys, feasibility evaluation and due diligence, drawings, documentation and permitting to construction compliance which has enhanced and extended localized wireless coverage and provided seamless voice and data signals for users within a structure. Our extensive experience with numerous wireless carriers, venue managers, and wireless asset management firms, enables Tectonic to deliver and execute these projects effectively and efficiently from concept to completion.



Bonsecours Wellness Arena

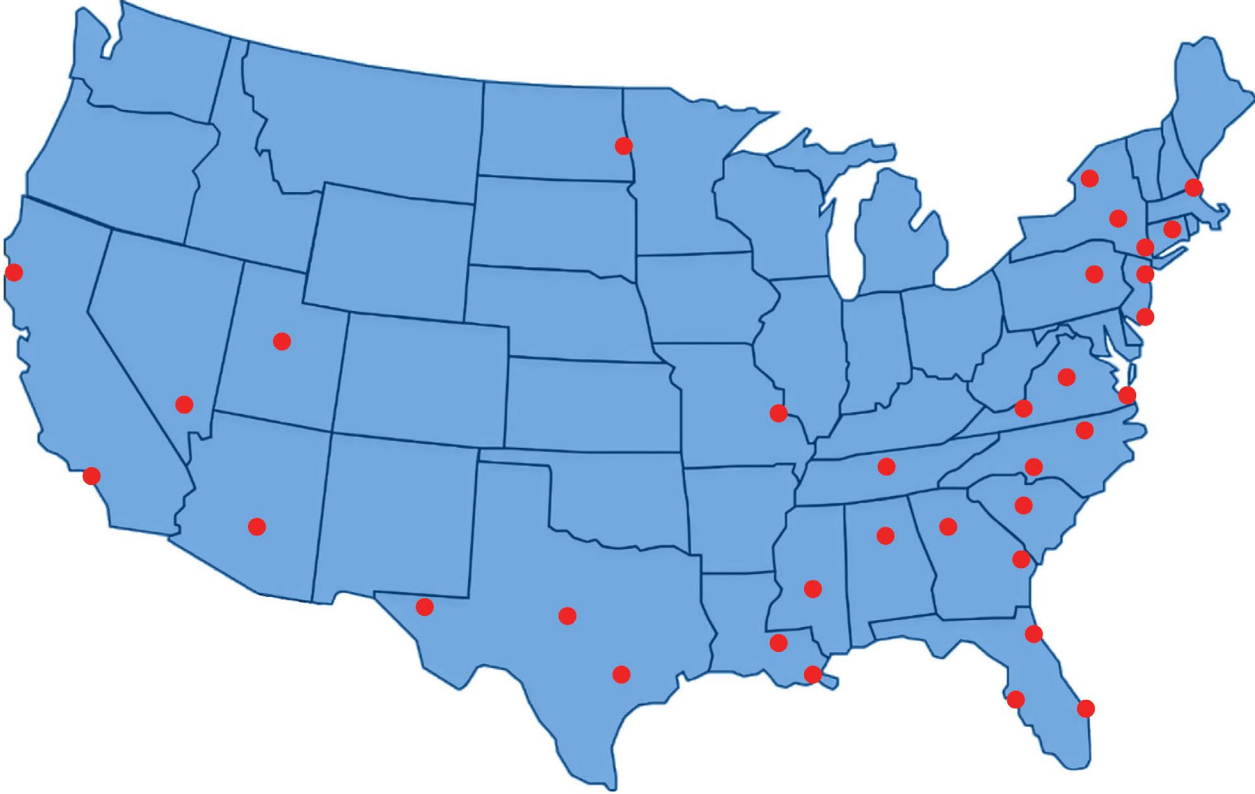
DAS and Small Cell venues include the following:

Colleges and Universities
High Rise Commercial Office Buildings
Hotels and Casinos
Hospitals
Mass Transit Systems
Airports

Municipal Solutions
Stadiums
Shopping Malls
Tunnels
Warehouses



DAS/SMALL CELL - PROJECT LOCATIONS



Small Cell - Phoenix, AZ





SITE ACQUISITION SERVICES MANAGEMENT

Tectonic provides site acquisition and real estate support services to DAS and Small Cell clients in the public and private sectors comprised of carriers, tower companies, public utility companies and municipalities. Tectonic's turnkey solutions include services associated with all aspects of DAS and Small Cell network systems nationwide.

Site Acquisition Services

Site Identification

Site Audits

Leasing

Zoning Analysis

Municipal Permitting

Due Diligence

Municipal Coordination / Permitting

Program Management

A&E Coordination

Building and Electrical Permits

Regulatory Compliance

Third Party Vendor Management

Utility Coordination / MSA's





Smith Ball Park - Salt Lake City, Utah

A/E AND PROFESSIONAL SERVICES

Tectonic’s technical staff maintains multiple professional engineering registrations nationwide.

A/E Services

- Program Management
- Construction Management
- Edge Technologies
- Site Due Diligence
- Site Visits / Audits
- Tower and Mount Analysis
- Zoning and Construction Drawings
- Structural Assessment / Design
- Fiber Routing / Make Ready Design
- Foundation Investigations
- Photo Simulations
- Permitting
- NEPA / Phase I and II Studies

Professional Services

- Civil Engineering
- Geotechnical Investigations
- Structural Engineering / Analysis
- Environmental Studies
- Surveying
- Electrical Engineering
- HVAC Engineering
- OSP Fiber Planning / Design





CONSTRUCTION SERVICES

Tectonic offers a practical experience and proven approach managing and constructing projects from concept to completion. The firm tailors its resources to meet the demands of each client. Tectonic's professionals provide turnkey construction management solutions for telecommunication projects nationwide.

Construction Services:

Project Status Reporting

Owner and Contractor Meetings

Bid Packages and Bid Walks

Estimating / Bill of Materials

Contractor/Subcontractor Installation

Construction Oversight / QA/QC

Shop Drawing Review

Change Order Compliance

Construction Procurement

Materials Storage / Inventory Management

Small Cell Construction

OSP Fiber Installation

Implementation Planning

Project Coordination with Design, Permitting & Special Inspections

Project Scheduling & Budgeting

Development and Maintenance of Project Tracker Schedules

Coordination of Professional Services

Project Close Out Packages





REFERENCES

Gene Fassett

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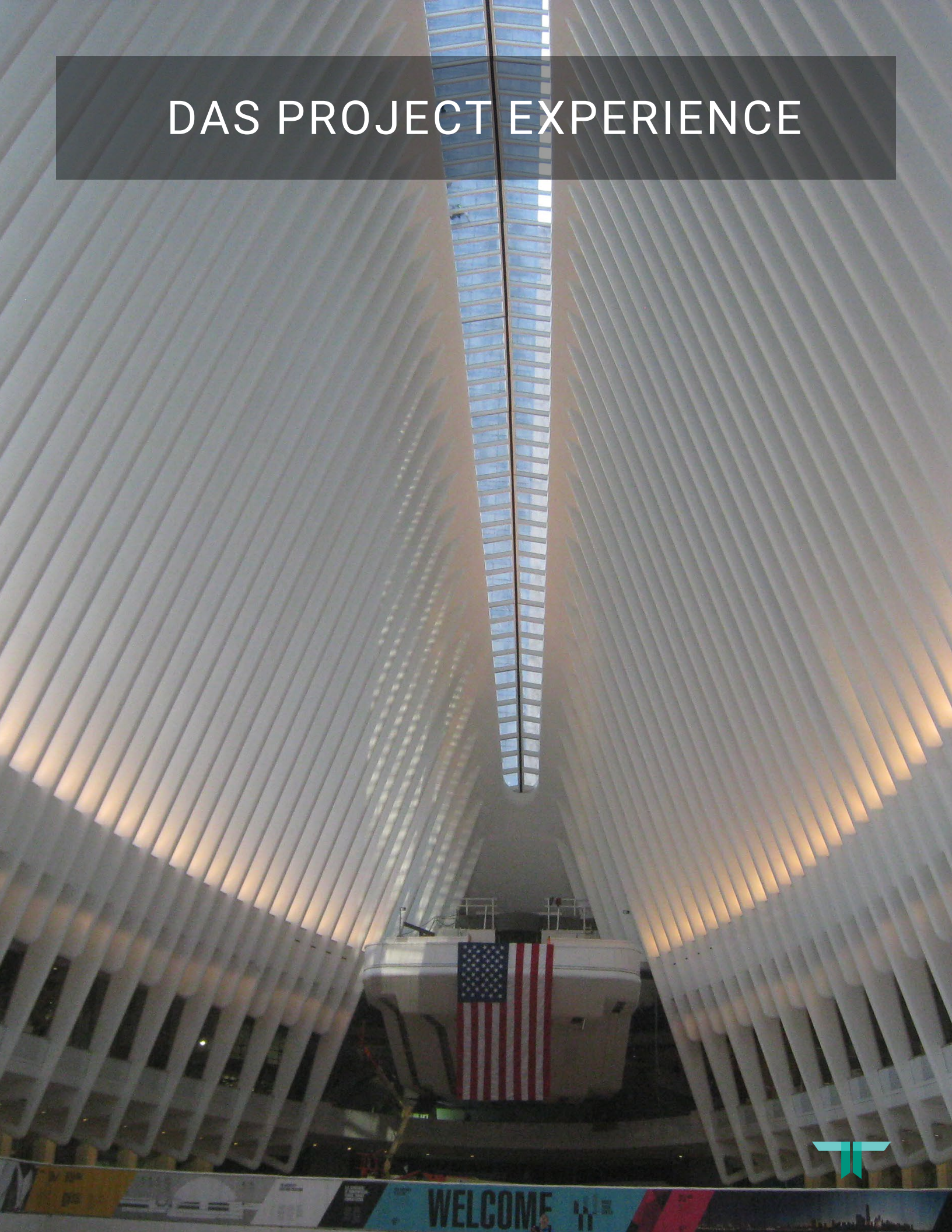
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DAS PROJECT EXPERIENCE



WELCOME

DAS PROJECTS

Tectonic has provided services for numerous carriers, venue managers and wireless asset firms on the following projects:

World Trade Center, Building 7, New York City, New York

Hudson Yards, Towers A & E, New York City, New York

IBM Corporate Office Building, New York City, New York

Good Samaritan Hospital, Suffern, New York

Grand Central Terminal, New York City, New York

Newark-Liberty Airport, Newark, New Jersey

Red Bull Stadium, Harrison, New Jersey

Palisades Mall, West Nyack, New York

CBS Broadcast Center, New York City, New York

Holland, Lincoln, Queens Mid-Town and Brooklyn Battery Tunnels, New York City, New York

The Resorts Casino & Hotel, Atlantic City, New Jersey

PNC Center, Holmdel Township, New Jersey

PATCO Tunnels, Philadelphia, Pennsylvania

XFINITY Theatre, Hartford, Connecticut

Massport Seaport, Boston, Massachusetts

Rhode Island Convention Center/Amica Mutual Pavilion, Providence, Rhode Island

Medical College of Virginia, Virginia Commonwealth University, Richmond, Virginia

Lane Football Stadium, Virginia Tech, Blacksburg, Virginia

Veterans United Home Loans Amphitheater at Virginia Beach, Virginia

Jiffy Lube Live, Prince William County, Virginia



DAS PROJECTS

Tectonic has provided services for numerous carriers, venue managers and wireless asset firms on the following projects:

Coastal Credit Union Music Park at Walnut Creek, Raleigh, North Carolina

Charlotte Metro Credit Union Amphitheatre, Charlotte, North Carolina

Bon Secours Wellness Arena, Greenville, South Carolina

Savannah/Hilton Head International Airport Savannah, South Carolina

Alerus Center Arena, Grand Forks, North Dakota

Nashville International Airport, Nashville, Tennessee

State Bank Amphitheatre at Chastain Park, Atlanta, Georgia

Coral Sky Amphitheatre, Palm Beach County, Florida

MIDFLORIDA Credit Union Amphitheatre, East Lake-Orient Park, Florida

Oak Mountain Amphitheatre, Pelham, Alabama

Baptist Health Care, Jackson, Mississippi

Lander Center Arena, Southaven, Mississippi

Louis Armstrong New Orleans International Airport, Kenner, Louisiana

Raising Cane's River Center Arena, Baton Rouge, Louisiana

META Data Centers, Altoona, Iowa

META Data Centers, Fort Worth, Texas

Austin-Bergstrom International Airport, Austin, Texas

Dallas Lovefield Airport, Dallas, Texas

Smith's Ballpark, Salt Lake City, Utah

Shoreline Amphitheater, Mountainview, California



DAS VENUES, MUNICIPAL, CAMPUSES

Tectonic has provided services for numerous carriers, venue managers and wireless asset firms on the following projects:

Red Bull Stadium, Harrison, NJ - Tectonic provided services including site meetings and inspections, feasibility evaluation, structural and framing design, construction drawings and documentation, including Antenna layouts and routing, permitting as well as construction compliance inspections.

Newport News Shipyard, Newport News, VA - Tectonic provided head-end design and technical support services for installation of a shipyard-wide Distributed Antenna System (DAS).

Lane Football Stadium Virginia Tech, Blacksburg, VA – Tectonic provided professional engineering services including coordination with the DAS network supplier at each location; pre-program planning to develop the overall DAS system network including backhaul availability; engineering of utility and fiber optic systems; Carrier and DAS power distribution to all equipment; grounding designs; and civil & structural systems including cable trays and steel framing.

ODAS Network, Los Angeles, CA - Tectonic provided the design of 5-node Distributed Antenna Systems (DAS) in the residential neighborhoods of Eagle Rock and Encino. The scope of work included site design and preparation of construction drawings, wind loading analyses of each pole, and preparation of traffic control plans at replacement pole locations.

Campus-Wide DAS System for the University of Virginia, Charlottesville, VA - Tectonic provided professional engineering services including coordination with the DAS network supplier at each location; pre-program planning to develop the overall DAS system network including backhaul availability; engineering of utility and fiber optic systems; Carrier and DAS power distribution to all equipment; grounding designs; and civil & structural systems including cable trays and steel framing.

Jiffy Lube Live, Prince William County, VA - Tectonic provided a multi node DAS system for the Jiffy Lube Live Amphitheatre. Jiffy Lube Live is located in Bristow, Virginia, is an outdoor amphitheater in suburban Prince William County, about 35 miles west of Washington, D.C. that can seat 25,262 sf. Tectonic provided Electrical, Structural, Civil and Permitting Services.

University of Houston, TX - Tectonic performed installation of head end equipment, remote radio equipment, and interior and exterior DAS antennas at the Memorial Hermann Football Operations Center. The TDECU Stadium is currently under construction.

University at Buffalo, NY - Tectonic produced an as-built survey of a previous installed in-building DAS network. Installation included head end equipment, remote radio equipment, and interior antenna.





DAS TRANSPORTATION PROJECTS

REPRESENTATIVE PROJECTS

Port Authority Holland and Lincoln Tunnels Carrier Equipment Installation New DAS Site Builds - Tectonic provided construction management and design services to multiple carriers for integration into the existing Neutral Host DAS. In addition, Tectonic provided TAA (Tenant Alteration Application) submission, equipment platform structural design, and close out/final inspection with Port Authority Facilities and Resident Engineering departments.

Port Authority Holland and Lincoln Tunnels, New York & New Jersey, LTE & AWS Upgrade Project - Tectonic provided architectural & engineering, construction management & monitoring, TAA (Tenant Alteration Application) submission, design & construction management services for fiber optic cable runs, and close out/final inspection with Port Authority Facilities & Resident Engineering departments.

Port Authority Trans Hudson Carrier Fiber Upgrade Newport PATH Station - Tectonic provided architectural & engineering services, TAA (Tenant Alteration Application) submission & approval support, and close out & final inspection with Port Authority Facilities and Resident Engineering departments.

Port Authority Trans Hudson Carrier Fiber Upgrade 33rd Street PATH Station - Tectonic provided a full range of design services for the upgrade of the network backhaul, including,

Design Services, - TAA (Tenant Alteration Application) submission and approval support, and close out & final inspection with Port Authority Facilities and Resident Engineering departments.



DAS TRANSPORTATION PROJECTS

REPRESENTATIVE PROJECTS

MTA Queens Midtown Tunnel and Brooklyn Battery Tunnel, New York City, NY

- Tectonic provided design and review of the construction drawings, and MTA submittal package, daily field representatives for construction management, close out & final inspection/sign off with the MTA and Resident Engineering Department and construction management services for fiber optic cable runs.

Grand Central Station, New York City, NY - Tectonic provided architectural & engineering services including mechanical, electrical and fire protection design for the new Grand Central Station multi-carrier DAS head-end and antenna system.

Grand Central Terminal Wireless Project, New York - Tectonic was asked to repackage & streamline the design of the Grand Central Terminal wireless project involving the installation of three simultaneous wireless systems including “neutral host” and first responder systems. Tectonic is providing site surveys & verification and full project construction drawings.

MTA Queens Midtown Tunnel and Brooklyn Battery Tunnel, New York City, NY - Tectonic provided design & construction management services.

New York Penn Station, New York, NY - Tectonic provided design & consultation services including coordinating safety training, preparation of Amtrak permit submittal packages, detailed scope of work documents, site surveys & design drawings. DAS layout and planning to extensive construction drawings including existing condition survey, coordination with the local IBM authorities, antenna layout and cable routing through the building floors.



DAS COMMERCIAL BUILDINGS & MALLS

REPRESENTATIVE PROJECTS

World Trade Center, Building 7, New York City

- Tectonic provided a full range of engineering services, including design, planning, permitting including New York City approval along with Port Authority approval, programming and construction compliance for the development of Distributed Antenna System (DAS) installations that covers over 1.6 million square feet.

Palisades Center Mall, West Nyack, NY

- Tectonic provided a full range of design services for the development of the Distributed Antenna System installation at the 2-million square foot Palisades Center Mall. Tectonic's services included site planning and inspections, feasibility evaluation, construction drawings and documentation including antenna layouts throughout the mall building, utility & power systems and grounding design.

CBS Broadcast Center, New York City

- Tectonic provided services for the interior DAS system at the 800,000 square foot CBS Broadcast Center including site meetings and inspections, construction documentation and drawings, neutral-host network design, backhaul and utility systems, grounding design, construction compliance inspection and as-built drawing preparation.

Medical College of Virginia, Virginia Commonwealth University, Richmond, VA

- Tectonic provided services for the DAS deployment, in the 8 story 200,000 square foot facility, including pre-program planning to develop the overall DAS system network including backhaul availability; engineering of utility and fiber optic systems; carrier and DAS power distribution to all equipment; grounding designs; civil and structural systems including cable trays and steel framing / foundations for all specialty systems.

Empire State Plaza, Albany, NY

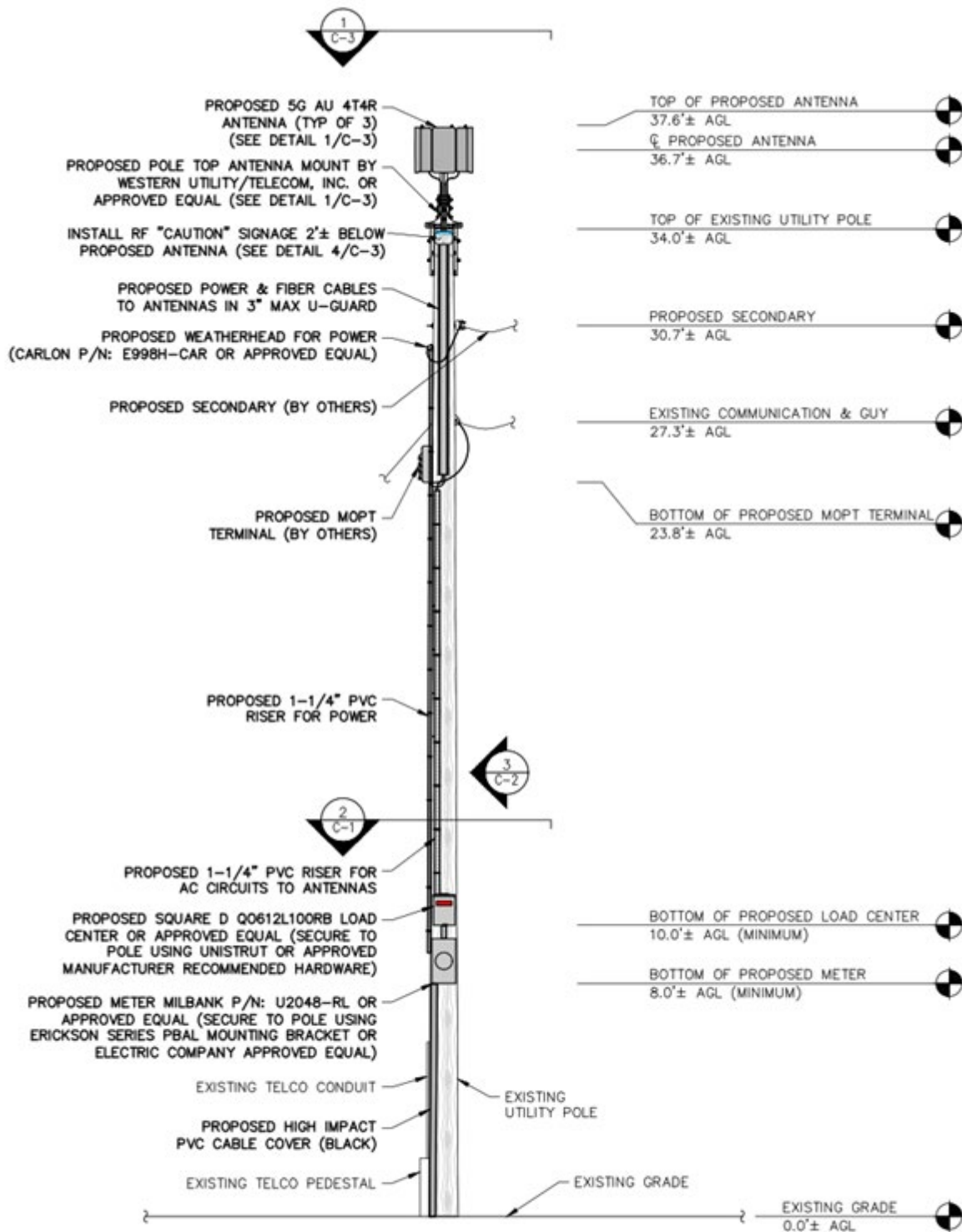
- Tectonic's scope of services for the 12 building DAS deployment consisted of documenting existing conditions at the head end equipment shelter locations, steel frame design for all equipment shelters, routing & design of power & fiber conduit feeds, electrical circuit routing & design for the DAS radio equipment, construction drawings, and post construction inspection.

Hudson Yards, New York, NY

- Tectonic performed an FDNY ARCS installation for three buildings at Hudson Yards. This included 20 Hudson Yards (11 stories), 30 Hudson Yards (103 stories), and 35 Hudson Yards (92 stories).



SMALL CELL PROJECT EXPERIENCE



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UTILITY POLE ELEVATION

SCALE: 3/16" = 1'-0" (11x17 SIZE)
3/8" = 1'-0" (22x34 SIZE)



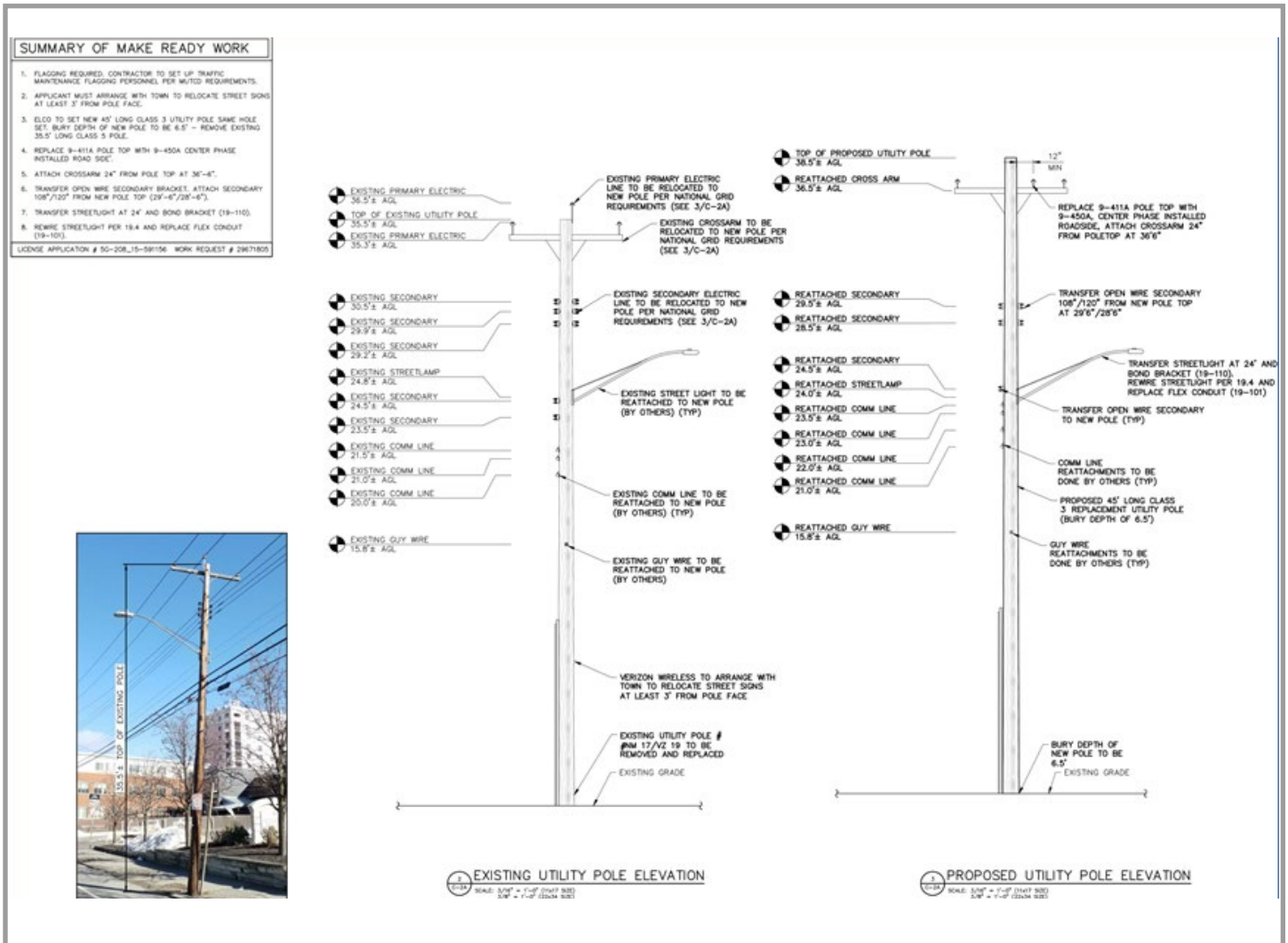
SMALL CELL / NODE PROJECTS

Tectonic has provided services for numerous carriers, venue managers and wireless asset firms on the following projects:

Tectonic is currently providing site acquisition and A/E Services for Verizon Wireless Small Cells in Schenectady, NY for 300 Sites.

Tectonic provided Site Acquisition and A/E services for 40 critical small cell sites for Verizon Wireless to support the 2015 XLIX Superbowl in Phoenix, AZ.

Tectonic provided Site Acquisition, Survey and A/E Design services for 200 Verizon Wireless Small Cell sites in the Southern California market. (Los Angeles and Irvine, CA)



SMALL CELL / NODE PROJECTS

Tectonic has provided services for numerous carriers, venue managers and wireless asset firms on the following projects:

For Verizon Wireless in New York Metro and New York State, we are currently providing 5G turnkey services for a 450 node project that includes real estate and A/E services. (New York State)

Provided AT&T / Bechtel with survey services, underground utility mapping, bore right of way design and assigned as Point of Contact to coordinate utilities to all 5G sites for 175 Small Cells. (Phoenix, AZ)

Provided Verizon Wireless with A/E services for 40 Small Cell Nodes for power transmission towers, utility poles and rooftops within their Virginia market. (Hampton Roads, Newport News and Richmond, VA)

Provided Site Acquisition Services and Small Cell Design Services to AT&T in their Southern California market. (Los Angeles, CA)

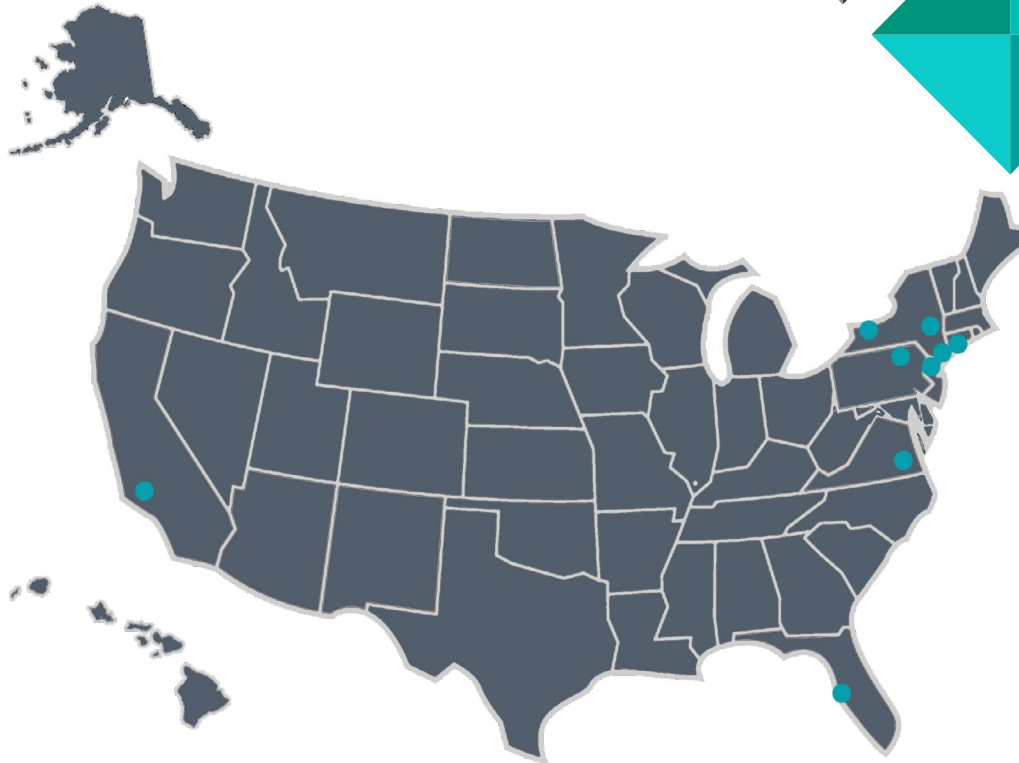
Tectonic provided Site Acquisition, Utility Coordination and A/E Services for 60 Small Cell sites within the Verizon Wireless Southwest Market. Assisted Verizon Wireless to develop their small cell design needs including equipment, power, light pole specifications and stealth sites on designated private property. Provided site and boundary surveys, coordinated power installation and located fiber to all sites. Additionally, Tectonic provided guidance to town planners and power companies with development of standard construction documents for their review processes. (Phoenix / Tempe / Tucson, AZ and El Paso, TX)

Provided 5G Make Ready services for municipal owned utility poles for Crown Castle Nodes in the Los Angeles market. (Los Angeles, CA)

Verizon Wireless New England Market – For 75 sites, Tectonic provided A/E Services for both 4G and 5G Small Cell Utility Poles. (Connecticut, New Hampshire)

Since 2014, Tectonic provided 4G LTE small cell rooftop, utility pole, and private pole designs for Verizon Wireless that included real estate and A/E services for over 600 sites. (Upstate New York Market)





TECTONIC Office Locations.

California | Connecticut | Florida | New Jersey
New York | Pennsylvania | Virginia

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Tectonic