

CONGRUEX TRANSFORMS AGING TOWER WITH CODE COMPLIANT WRAP SOLUTION, SAVING TIME & MONEY FOR TIER-1 U.S. OPERATOR



New tower base foundation installed encasing existing foundation

INTRODUCTION

Steel telecommunication towers are engineered for durability and longevity, designed to withstand a range of tough environmental conditions. Yet, continuous exposure to the elements can lead to corrosion, compromising their structural integrity.

Deterioration can weaken a tower's load-bearing capacity and reliability. When the tower is then analyzed for additional loading, it may not meet the code and standards required to support new communications equipment, thus limiting a Mobile Network Operator's (MNO) ability to offer premier communications services to businesses and consumers.

CHALLENGE

When a Tier 1 U.S. Mobile Network Operator (MNO) faced a challenging situation with a 220 ft. guyed tower in Nantucket, Massachusetts, they reached out to the experts at [Congruex](#).

The 50-year-old tower's significant corrosion reduced its capacity to support current and future loads, as determined by a code-compliant analysis. Furthermore, the location's strict permitting and zoning regulations made a complete removal and replacement (drop and swap) infeasible.

The MNO considered temporary repairs such as patching the aging tower, but understood these would require ongoing and costly maintenance.

The experienced team at Congruex quickly introduced a tower wrap solution, effectively providing the operator with a new tower through a code compliant maintenance event that also modified the structure to support additional loading.



First sections of new tower being installed around existing tower

SOLUTION

The Congruex team designed and provided engineering support for a tower wrap solution, essentially constructing a new steel tower around the existing structure.

This technically complex project began with a foundation modification and installation of guy anchors that encapsulated the existing tower's foundation to support new angle legs and bracing. The rigging attached to the existing tower was then used to raise and install new tower legs and other components piece-by-piece around the old tower. Using this method, the numerous existing coaxial cables and antennas attached to the old tower did not need to be removed or replaced.

The wrap solution, completed in the spring of 2024, encapsulated the old tower in its entirety, and resulted in a maintenance event that brought the capacity to the level of a new steel tower. This innovative approach saved the MNO significant time and money while meeting building code and regulatory requirements.

RESULTS

By implementing a tower wrap solution, the operator achieved several benefits, including:

- **Lowered Costs:** Congruex's tower wrap solution saved the operator approximately \$200K over its original plan to repair and modify the existing tower. The wrap also negated the ongoing costs to maintain the aging tower.
- **Reduced Site Downtime:** The tower wrap solution minimized off-air time to just a few hours, providing almost no disruption to cellular connectivity for local businesses and consumers.
- **Increased Capacity:** Because the tower wrap incorporated the original tower into the new structure, the result was increased support for more loading. This allowed the operator to install additional equipment, improving the tower's data capacity and overall quality of service.

ABOUT CONGRUEX WIRELESS ENGINEERING SOLUTIONS

The Congruex team consists of experts in solutions that address some of telecom's most challenging cell site deployments. With decades of experience in telecom structural engineering, Congruex is the leading provider of tower wrap solutions in the U.S.

As a true design-build firm, Congruex is committed to innovation, and it is transforming how cell site infrastructure is designed, built and maintained. With Congruex Wireless Solutions, mobile network operators, tower companies and others can more efficiently construct and manage cell site infrastructure assets, automate operations and make better data-driven decisions.

To learn more about Congruex's Wireless Engineering Solutions, visit <http://www.congruex.com/tes>.