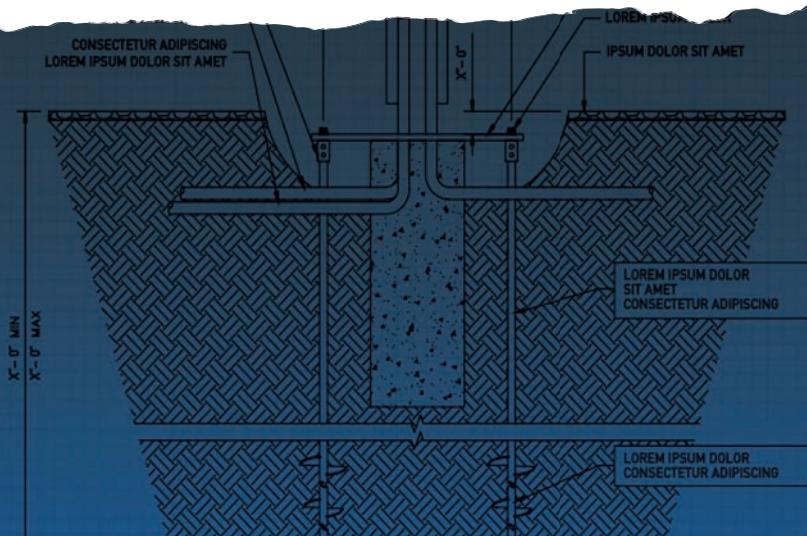




HELICORE

DISRUPTING NETWORK DEPLOYMENT FORWARD



How Helicore LLC is building the foundation to accelerate 4G/5G network deployment & densification with its **Helical Anchor Foundation System™**

INTRODUCTION

Deploying a 4G/5G network across an urban population center or one-traffic light town can only be as fast, efficient, and cost effective as the pace of innovation allows.

For the longest time, when it came to network deployment and densification across carefully engineered streetscapes, the approach has been the same: uproot streets lights, and wait. Replace them with node-bearing poles, and wait. Pour a new concrete foundation, and wait some more. There are also a multitude of resource-intensive steps hiding in the cracks, from regulatory protocol to geotechnical investigations.

Simultaneously, utilities are being rerouted and traffic is off the rails. The lights are off, creating blind spots for public safety. All the while, the meter is running.

It's the paradox that the telecom industry often finds itself in: building state-of-the-art networks with tools that would be found beside a rotary phone and dial-up modem in a museum exhibit. There has to be a better way, a change that's rooted in innovative engineering and lays a solid foundation for tomorrow's 4G/5G cities.

Helicore LLC's Helical Anchor Foundation System™ is that change. Helicore, a team of telecom industry experts that joined up to disrupt the industry, is evolving traditional network deployment with an entrepreneurial system.

The company's groundbreaking system for light pole replacement is a quantifiably superior method compared to legacy options, resulting in expedited 4G/5G network deployment that's friendlier to the bottom line and the greater community.

This White Paper is designed to prove just that. But before exploring the innerworkings of the Helicore solution — or sharing the manifold benefits reaped by Carriers, CLECs, and municipalities — it will define the present-day problem and dig into the drawbacks of existing approaches.



THE PROBLEM

First things first: how did the industry get to a point where changes to existing methods of light pole replacement could become a powerful pivot point?

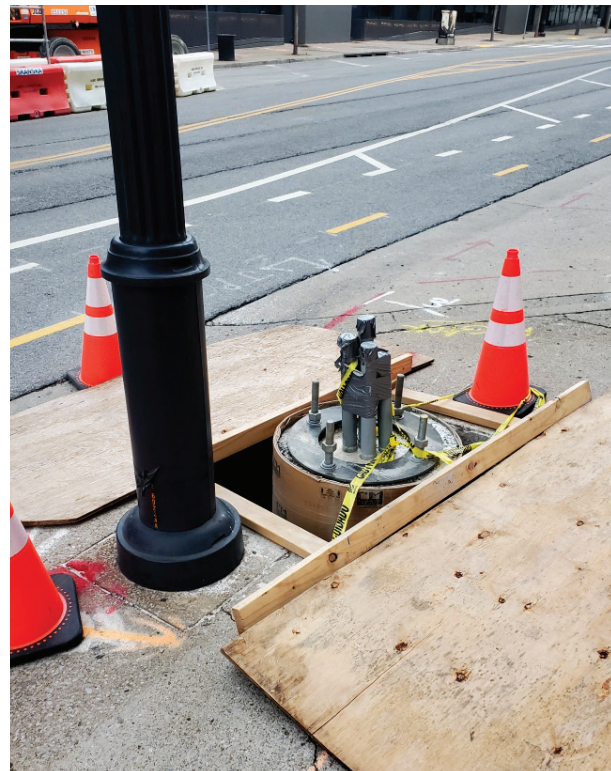
Light poles are critical infrastructure that do much more than illuminate streetscapes and sidewalks. Because of zoning and regulatory leniency, light poles are also prime real estate for deploying 4G/5G nodes, doing the heavy lifting for network densification.

But replacing a light pole isn't as simple as flipping a switch. It takes more than a ladder and a screw driver. Because pole foundations aren't designed to structurally support the added load of 4G/5G nodes they need to be replaced from the ground up to meet entirely new engineering standards.

EXPLORING THE STATUS QUO

Unfortunately, current approaches to light pole replacement are also antiquated, relying on new concrete foundations and inefficient processes. They include:

Removing the light pole and replacing it near the original location.



These options neither show creativity nor present a strong business case. Instead, they pose a quagmire of obstacles, including:



PUBLIC SAFETY CHALLENGES:

Numerous studies underscore the importance of street lights in deterring crime. And with these approaches to light repair, municipalities can expect to be left in the dark from 3 – 10 days. (See *The Importance of Streetlights In Deterring Crime*)

EVERYDAY DISRUPTIONS:

From traffic detours to utility rerouting, light pole replacement can cause a municipality's familiar rhythm to fall out of sync. (And what can be minor inconveniences can quickly become major headaches, as utility locators operate within a 6%-8% margin of error.)

BIG LIFTS:

Geotechnical Investigations and other regulatory hoops can greatly widen the project scope, causing even more complications to cascade down. (See *By the Numbers*)

And then there's this: if the second approach is taken, which involves the relocation of poles, streetscapes that were painstakingly designed to meet a specific aesthetic standard are permanently altered.



This collective fallout doesn't solely occur when light poles are proactively replaced; they also follow knock-down events and broken conduits, whether they're caused by Mother Nature or human error.

Ultimately, both of these methods leave budgets in the red and cities in the dark for weeks. It's a four-way stop stuck in park. What could be a win-win for Carriers/CLECs and communities quickly becomes a lose-lose.



QUANTIFYING THE GROWING NEED

Current approaches to transforming and replacing light poles as a means of network deployment are not built for speed. Far from it. But that's exactly what Carriers, CLECs, and municipalities are calling for to meet a growing demand for reliable 4G/5G network availability.

Specifically, our nation's networks will need to support an estimated 31B connected devices by 2023, according to the CTIA. Nodes, in particular, will play a starring role, with 80% of future deployments predicted to be Small Cells. (1) But these sub-optimal, legacy approaches will fail to meet growing demand for connectivity from consumers and businesses. The industry needs a spark — the first in a series of changes that will lay the groundwork for rapid growth.

ANSWERING THE CALL FOR DISRUPTIVE INNOVATION

Today, every new business model and breakthrough claims to be an example of disruptive innovation.

While it's become a buzzword, very few innovations are actually disruptive within the context laid out by Harvard Business School's Clayton Christensen when he coined the term in the '90s. Disruptive innovations are not just bright and shiny new things; they're specifically defined as advancements that make a product or service more accessible and affordable to the public. Think ride-sharing services, DIY tax software, and 3D printers. (3)

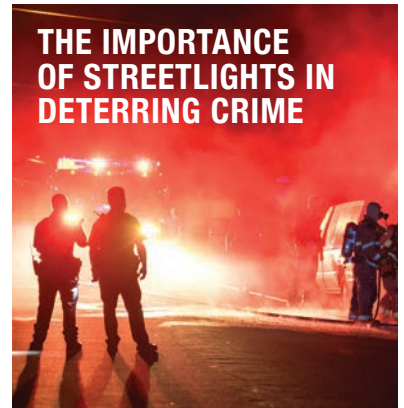
This kind of disruption is exactly what Carriers, CLECs, and municipalities need to deploy 4G/5G networks more efficiently and cost effectively as the industry adapts. More specifically, this breakthrough needs to strategically occur where the bottleneck is most pronounced: the construction phase of network deployment.

While companies are already seeking out novel ways to introduce fresh innovation into the telecom ecosystem — for example, expanding the broadband capability of nodes — post-construction enhancements can only move the needle so much. Scaling from 154,000 total U.S. nodes to the millions that single Carriers say they need by the end of the decade requires foundational changes. Even making marked improvements year over year requires game-changing innovation. (1)

Such a tectonic shift within the industry doesn't solely help Smart Cities get smarter. It will help bridge the digital divide, too, bringing broadband access for the 6% of the nation's population on the wrong side of the gap. (4)

1. <https://www.ctia.org/the-wireless-industry/infographics-library?topic=60>
2. https://urbanlabs.uchicago.edu/attachments/e95d751f7d91d0bcfeb209ddf6adcb4296868c12/store/cca92342e666b1ffb1c15be63b484e9b9687b57249dce44ad55ea92b1ec0/lights_04242016.pdf55ea92b1ec0/lights_04242016.pdf
3. <https://hbsp.harvard.edu/inspiring-minds/the-essential-clayton-christensen-articles>
4. <https://www.fcc.gov/reports-research/reports/broadband-progress-reports/eighth-broadband-progress-report>

THE IMPORTANCE OF STREETLIGHTS IN DETERRING CRIME



- When streets lights are sidelined for network densification, the public can be left in the dark up to 10 days.
- Their absence is much more than an inconvenience. It's a public safety hazard.
- Numerous credible studies have shined a light on the issue, and they share the same conclusion: When you light up the streets, crime goes down. And conversely, when the lights dim, the rates spike.
- This growing body of national research includes a study conducted by Crime Lab — along with the New York City Mayor's Office of Criminal Justice, the New York City Police Department, and the New York City Housing Authority — which found that increased lighting decreased serious felonies and property crimes by 36% outdoors at nighttime. (2)
- While temporary street lights may appear to be a solid back-up plan, they're cumbersome to move in and out of a worksite and fail to light an area as effectively as permanent fixtures specifically engineered to do so. Because they require connection to a generator, they also produce noise and air pollution.



INTRODUCING THE HELICAL ANCHOR FOUNDATION SYSTEM™

Helicore LLC's patented Helical Anchor Foundation System™ is expediting light pole replacement from multiple weeks to less than two days. By taking concrete out of the mix, the system fast-forwards the regulatory process and eliminates the need for what can be a costly geotechnical investigation. It keeps the lights on, the thoroughfares open, and the poles up, which preserves the original streetscape aesthetic while reducing costs by up to 40%.

There's nothing like it on the market today, as Helicore is the only company that's sought to make a concrete change within the industry.

IT'S ABOUT TIME

That's what the Helical Anchor Foundation System™ does, but how does it work?

Because of the innovative engineering behind it, the Helical Anchor Foundation System™ allows for the replacement or new placement of a wireless integrated pole in the Right of Way in one day.

The foundation system employs helical anchors to soundly secure the poles. It's built over the existing foundation, which makes the need for concrete obsolete. Not only that, but the flexible design of the system allows for work to occur over and around existing buried utilities.

Here's what it looks like — before and after light pole replacement via Helical Anchor Foundation System™





With the Helicore light pole replacement system, Carriers and CLECs benefit from significant cost and time savings, as well as built-in efficiencies that make for more seamless deployments. Municipalities avoid lengthy delays and disruptions, keeping streetscape aesthetics in place while maintaining control of future deployments in the event that reactive replacement is required.

For many, the benefits of the Helical Anchor Foundation System™ are clear and obvious. But we've also taken the time to crunch the numbers, which highlight the substantial advantages that the Helicore system has over concrete. It's about cost, safety, and convenience. But above all else, it's about time.

MAKING THE CASE FOR HELICORE — BY THE NUMBERS:

| | | CONCRETE | HELICORE | SAVINGS | |
|--|-------|-------------|----------|---|--------|
| CONSTRUCTION PER NODE | COST: | \$25,000 | \$21,000 | \$4,000 | 16% |
| | TIME: | 5 DAYS | <2 DAYS | 3 DAYS | 60% |
| GEOTECHNICAL INVESTIGATION (IF NEEDED) | COST: | \$2,000 | N/A | \$2,000 ELIMINATES NEED FOR GEOTECHNICAL INVESTIGATION | 100% |
| | TIME: | 7 DAYS | N/A | | |
| REGULATORY | COST: | \$3,000* | N/A** | \$3,000 REGULATORY PROCESS SIGNIFICANTLY DECREASED | 100% |
| | TIME: | 30-180 DAYS | <10 DAYS | | 95% |
| TRAFFIC DISRUPTION | COST: | \$10,000 | \$4,000 | \$6,000 | 60% |
| | TIME: | 5 DAYS | 2 DAYS | 3 DAYS | 60% |
| OVERALL PROCESS | COST: | \$40,000 | \$25,000 | \$15,000 | 37.5% |
| | TIME: | 47-197 DAYS | 14 DAYS | 33-183 DAYS | 70-93% |

*National average based on engineering and construction sources

**Assumes internal management due to speed and mechanics of Helicore system

The bottom line makes the conclusion clear: the only true competitor to the Helicore system is change. While change aversion has a long history of slowing down acceptance of disruptive innovations, the Helical Anchor Foundation System™ is already creating strong proponents within the industry who point not just to its potential, but the real-world results.

“This is how it’s supposed to be done; the Helicore team has created an innovative solution to fill a gaping need within the industry. This system is best in class — every Carrier and municipality should be incorporating it into their playbooks today.”

— **LINDON HAYES**, CEO of Essentia, named a 2019-2020 Telecom Tech Outlook Top 10 Small Cell Consulting/Services Company



WHAT'S NEXT?

The mobile data demands of tomorrow and the current approach to network deployment simply don't add up.

S&P Global Market Intelligence projections call for 800,000 Small Cells to be deployed by 2026, which is a near impossibility given the constraints of current tools and technology. (1)

Substantial innovation will need to take place at all phases of network deployment in order to put our nation's ambitious 4G/5G availability goals and needs within reach. Helicore is laying the foundation for this evolution with the Helical Anchor Foundation System™ — illuminating the way forward for the entire industry.

DISRUPT THE 4G/5G STATUS QUO

Put Network Deployment Disruptions in the Past.

Are you a Carrier or CLEC that's ready to leave behind legacy approaches to 4G/5G network deployment? Or do you represent a municipality that desires less downtime, fewer disruptions, and the ability to keep control of future deployments in your hands? Contact Josh Dotson at **567.277-1977** or Josh@Helicore.co today.

KEVIN RUSS, PGMP & PMP *Chairman & CEO at Helicore LLC*



Kevin is a seasoned executive with over 30 years of experience in program/project management in the wireless communication and aerial tramway industries, both domestic and internationally. Kevin is a hands-on, lead-from-the-front executive who is extremely passionate about developing America's telecommunications infrastructure. Kevin has extensive experience leading and building internal and external relationships, project teams (large & small), and partnerships on complex regional and nationwide projects from \$5MM to \$100MM.

JOSH DOTSON *VP Corporate Development at Helicore LLC*



Josh leads Helicore customers in overcoming the challenges they face today in 5G network densification. With a global perspective, the entrepreneurial-minded Dotson is a recognized expert in business processes related to telecom, with several national speaking credits to his name. His career has focused on practical applications and optimization with a highlight on developing technology that disrupts the status quo. As a National Business Development Lead at GPRS, Dotson created a sales focus for specific market verticals such as telecommunications, power transmission, power generation, and the environmental field. He launched his career with GPRS in project management, eventually handling sales on a national level with consistent +100% year over year growth.

1. <https://www.ctia.org/the-wireless-industry/infographics-library?topic=60>