RAYCAP CASE STUDY

Raycap Delivers 5G Integrated Poles Over the Goal Line

Our customer needed integrated 5G small cell poles engineered and delivered to Miami, FL in a narrow window between the tourist season and 2020 Superbowl activities. Raycap's engineering prowess and manufacturing experience overcame challenging technical requirements while meeting the city's aesthetic regulations, all in a short time frame: six weeks from initial design to prototype.

Complex carrier requirements

A large wireless infrastructure construction contractor gave us a demanding opportunity: a relatively large order for supporting a multi-operator, multi-node deployment for 4G and 5G service in the Miami area. All equipment including small cell radios, power distribution, lightning protection and fiber distribution equipment were required to be mounted inside of the integrated street light poles. With no exterior components or cables, this integrated look is popular in municipalities that have strict aesthetic requirements. Furthermore, the poles had to have a very specific color and finish to match the rest of the existing street architecture.

We also faced a difficult schedule challenge. The approaching Superbowl activities made the deadline a non-negotiable date. We rolled up our sleeves and met the structural, electrical, thermal and aesthetic requirements using a multi-disciplinary approach.

Overcoming structural challenges

Designing a street lighting pole for the Southeastern part of the country presents tough environmental challenges. Most importantly, there was a 170 mph maximum wind load requirement. We adapted our standard integrated pole design to use a thicker wall pole and stronger steel to reinforce the light pole against any inclement tropical weather.

At the same time, the project required three doors to support the multi-carrier mission. We cut the door frames into the sides of the poles very precisely, making use of Raycap's state of the art plasma cutter (only one of two such cutters in the United States). The door openings took away some of the inherent strength of the pole, so we reinforced them in specialized ways, which further complicated the design.

The 14" pole diameter presents a challenge when you consider all the 4G and 5G radios and support electronics that need to fit inside. As we designed the mechanical systems for installation, maintenance and upgradeability, we also engineered and analyzed thermal characteristics to have the pole perform well in Miami's tropical environment.

Ensuring multi-carrier compatibility

Our infrastructure customer also needed the pole to accommodate many equipment configurations for each tenant. For example, one location may need to house equipment for carriers A, B and C, while another site would

house A, C and D. To keep the 14-inch diameter specification intact, we created multiple variations on the pole designs that were very similar, designed for specific combinations of equipment. That necessitated managing separate model numbers, repeating thermal analyses and taking other steps to complete each configuration.

Meeting city aesthetic regulations

We worked closely with our customer and the municipality to ensure that the pole design would satisfy aesthetic regulations. For example, the city specified a particular silver color that required a multi-step powder coating process, as well as an anti-graffiti coating. We did multiple tests to arrive at the desired color and finish on the new pole. Our more than 20 years of experience working with various paints and finishes proved invaluable in this process.

Another requirement concerned mounting the 5G radios at the top of the pole. The pole design tilts the radios between 15 and 20 degrees for better coverage at the ground level, a requirement that is becoming more common in our projects. It takes extra effort to design shrouding that goes between the radios to improve the aesthetics of the top of the pole. In the end, our team and the customer were happy with the results.

Rapid, efficient installation

Raycap met a very tight installation window with a custom-designed product that allowed our customer to maintain the overall project schedule and improve trust and relationship with the city.

To deliver prior to a construction moratorium period imposed by the municipality, the poles were built during October and November in 2019 at our STEALTH Concealment facility in North Charleston, South Carolina. We delivered the first round of poles on time before the end of the year, and today about one-third of the approximately 70 integrated poles have been delivered and installed in Miami Beach and South Beach.

To save the municipality time and money, Raycap designed the base of the integrated poles to match the structure of the existing base foundations of the poles they were replacing. Our attention to installation details allowed the contractor to install each pole in only 30 minutes. The coordination of the outside entities—for road closures, traffic control, utilities and safety—is often more time consuming than actually raising the pole. By planning ahead, the team was able to minimize those delays to allow the customer to install three poles in a day.

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The most important part is listening

One of the key lessons from this project has been to rely on the fundamentals that we use when we deploy any sites around the country. We listen to what the customer needs, and listen to what the city has to say about what site must look like. Then we focus on the engineering principles that we know and trust to make these deployments a success.

We're ready to listen to your requirements for any upcoming projects. Contact Raycap to find out how we can deliver the right 5G solution, on time, for your next challenging deployment.

Learn more about Raycap's solutions for small cell concealment at www.raycap.com or sales@raycap.com

About Raycap

Raycap is an international manufacturer and technology leader with decades of experience providing innovative infrastructure solutions for customers in the telecom, energy, defense, transportation, and other industrial markets. Its solutions protect mission-critical applications and ensure the best possible system availability. The company's product portfolio includes lightning and surge protection technologies, structured cabling and connectivity solutions, power management systems, custom enclosures, cabinets, and wireless network concealments. Since its founding in 1987, the company has experienced continuous growth. Its engineering expertise, test laboratories, and multiple manufacturing facilities guarantee quality, reliability, and innovation. Product design, testing, and approval processes comply with all international safety standards. Raycap operates in the United States, Germany, Greece, Cyprus, Slovenia, and Romania.

Talk to Raycap about integrated small cell concealment options.

Contact us today at info@raycap.com

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