Case study: Ultra-Lightweight Composite Pole vs. steel

Crown Castle site in Birmingham, AL

On April 18, 2023, a crew installed an EasyStreet Systems ultra-lightweight composite small cell tower at a Crown Castle site in Birmingham, AL, USA. The specifics are shown in comparison with the costs of installing a steel tower. In this case study, a direct bury foundation was used. The tower is a 35-foot EasyStreet Ultra-Lightweight Composite 4G/5G Tower, with 7 feet below grade and 28 feet above grade.

Pole site at Rickwood Field, oldest professional ballpark in the United States, where 107 Hall of Famers have played.

Total time of installation, including foundation and tower, was 2.5 hours. Installation labor time and cost for the EasyStreet Ultra-Lightweight Composite Tower was found to be **half that of a typical steel tower installation** and required only 2 people instead of 4 for a steel pole install. This is due to the more compact footprint of the foundation, as well as the relative ease of lifting the ultra-lightweight tower into position.

Equipment cost for the EasyStreet tower is greatly reduced vs. a steel tower. The hole for the tower was vacuum excavated and a lightweight lift truck was used to set the pole, at approximately $75 per hour. By contrast, a steel tower demands a 24” digger/derrick (at upwards of $300 per hour), and also typically requires a heavy crane unit.

For the composite tower foundation, a small hole and foam offset eliminates the need for trucking soil out and bringing fill gravel into the site. This makes a significant difference for multiple-site steel tower installations where a gravel staging area must be set up with equipment, operators and temporary fencing.

Composite tower installation means less disruption to traffic flow, reduced noise and fewer emissions. This is a significant consideration when applying for permitting, particularly in communities which are committed to clean air and groundwater, lower emissions and quieter streets. In addition, the exterior coating of composite towers can be customized to conform to the aesthetic requirements of most neighborhoods.

Composite towers are considerably easier to locate and install than steel, in any customization or adaptation scenario, regarding site access, terrain, traffic and right of way. In another recent installation at Peachtree Corners, GA, USA, (see separate Case Study and video) EasyStreet Systems poles were installed in hard to access areas in close proximity with other structures, and achieved the tight fit without harm to other infrastructure, including even the flowerbeds, and zero traffic disruption. All of this means lower environmental impact and greater flexibility after the install.

Smaller borehole requirement in the EasyStreet tower means installers can work in more restrictive spaces and make more precise placements. Having no predetermined access ports (aside from the covered hand hole near the base) is an advantage for mounting external components. Cable openings or through-bolts can be placed virtually anywhere on the tower, using common hand tools, giving field crews improved flexibility.

In the case of overhead power connection, **the EasyStreet tower allows installers to eliminate the ugly and cumbersome “cobra head” normally used to protect the wire splices** – since the splices can be placed inside the pole with a normal wire grommet/hole seal.

Additional Considerations

Composite towers have been found to be the more sustainable solution. They create less emissions to build, ship, transport and install than steel. They last longer and are more easily recycled if and when needed. This is documented in a white paper by Mary Chase, PhD, available here: easystreetsystems.com/sustainability

Composite towers have a superior lifespan to steel, particularly in coastal climates with high moisture and salinity, or northern climates which use de-icing salts on the roads.

The EasyStreet Systems tower represents an overwhelming savings over shipping an equivalent length steel tower, due to difference in weight; typically 90 percent less per tower. In upstream volume shipments, EasyStreet has the ability to double the load per shipment.

Summary

Ultra-lightweight composite towers demonstrate these significant advantages over steel:

- Half the time, and half the crew size
- Considerably lower equipment costs
- More than twice the speed of deployment
- Highly adaptable and flexible for all small cell installations

Specific advantages to the Installer include:

- Benefits typically tight cost margins
- Equipment fleet can be reduced by at least a third, and utilize smaller types of equipment
- Requires half the crew per site; particularly important in a challenging labor supply market
- Simple and safe installation
- Confidence in adapting to any scenario
- Ability to service space-constrained and difficult right-of-way sites
- Placement of cable-routing openings and through-bolts virtually anywhere in the tower, on-site, as needed
- On-time delivery

Specific advantages to the Carrier include:

- Fast, easy and clean
- Deploy more sites faster
- Extend site lifespan with lower maintenance and replacements costs
- Happy neighbors
- The benefits of sustainability

Installation Costs for EasyStreet Systems Ultra-Lightweight Composite Tower vs. Steel

Costs shown are for installing the foundation and setting the tower.

Installation Item*	Steel Tower	EasyStreet	Details
Backfill incl logistics and equip	$ 700.00	$ -	Foam backfill included in EasyStreet base kit
Labor for foundation hoisting and install**	$ 2,000.00	$ 500.00	Crew of 4 for 5 hr for steel tower foundation Crew of 2 for 2.5 hr for EasyStreet foundation
Excavation & hoist equipment required	$ 1,200.00	$ 600.00	Digger derrick for steel base and tower vs. mini-skid steer/excavator for EasyStreet (a bucket truck can also lift EasyStreet tower)
Traffic control†			
Shipping‡			
	$ 3,900.00	**$1,100.00**	***$2,800 savings per install***

**Estimates based on latest available information. Will vary based on carrier, site and region.*

***Assuming loaded labor rate of $100 per hour, per employee. Will vary.*

†Traffic control not needed at this site but typically budgeted at $1,100 with conventional installation. Traffic control requirements are typically less or not needed using EasyStreet methods.

‡30-60% in savings in shipping cost for EasyStreet towers vs. steel

Installation cost savings:

50 sites = $140,000

100 sites = $280,000

500 sites = $1.4 million

More information at easystreetsystems.com

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