

## Why Poles Matter

Although much of today's rich discussion about broadband deployments centers around fiber-optic technologies, the real treasure when doing a broadband deployment is pole ownership. If you do not own the poles, you must evaluate what it will cost you to gain access, including make-ready (the process of reworking cables on utility poles to safely accept a new cable), and how quickly all that can happen. Poles matter because, as a general rule, aerial placement of your fiber lines will be significantly less expensive than burying them underground.

In an environment where time spent is also money spent, having quick access to your perspective service areas pole data plays an important role in the viability of your project.

The good news is that Icon Engineering has figured out how to automate, digitize and visualize pole data and make-ready analytics (and storage), saving time, money and quickening your pole assessment.

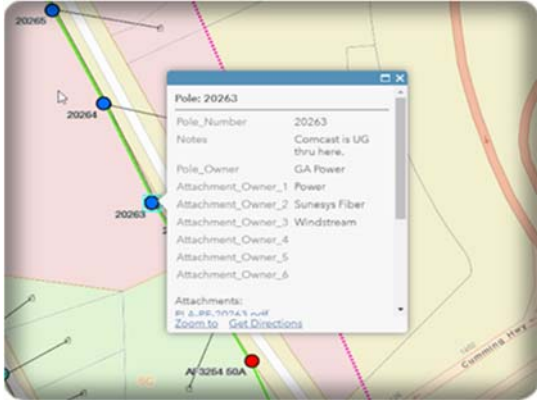
First, the context-- traditional pole data acquisition, still in use by many companies, consists of technicians using 40+ foot rulers (called Hastings Sticks), handheld GPS units, cameras, compasses, distance measuring wheels, paper and pen, to measure the location of each utility pole, the distance between adjacent poles, and the height of each cable. This handwritten data is entered manually into a spreadsheet and then again into pole loading software to generate the loads (cable weight and bending stresses) each pole carries. The software is then usually rerun to show how the load changes when a new cable is added and whether the revised condition is still safe. This traditional process is always laborious, and for a large build, the significant amounts of paper and photographs become unwieldy to store and retrieve.

Icon Engineering's automated and visual process is more efficient and less expensive on all fronts. Pole GPS locational data is either prepopulated, or added on-site, into our workers' tablets, where each pole appears immediately on a digital Web Map for viewing. Each pole location (each one a feature on the map) serves, in essence, as a data hub into which new data is inserted as the work progresses. When that data is entered, it embeds into a spreadsheet for Make Ready Engineering (MRE). From there, the results are immediately exported to a Pole Loading Analysis program (PLA) where the load analysis takes place, with the final reveal showing both the as-is condition, and the reworked positioning of your new cables. Additionally, we video the entire pole route and then pull out 360-degree still footage every 10 feet, so your service area can be viewed remotely and in detail.

The visual nature and electronic immediacy of Icon's Web Map process makes your pole data fast and easy to access, and much easier to validate, particularly when compared to traditional manual methods that rely solely on the field technician's training and experience. Not only is our resulting work product for each pole attached to the pole as a visual feature, but you can view the Web Map with PLA results as the process progresses.

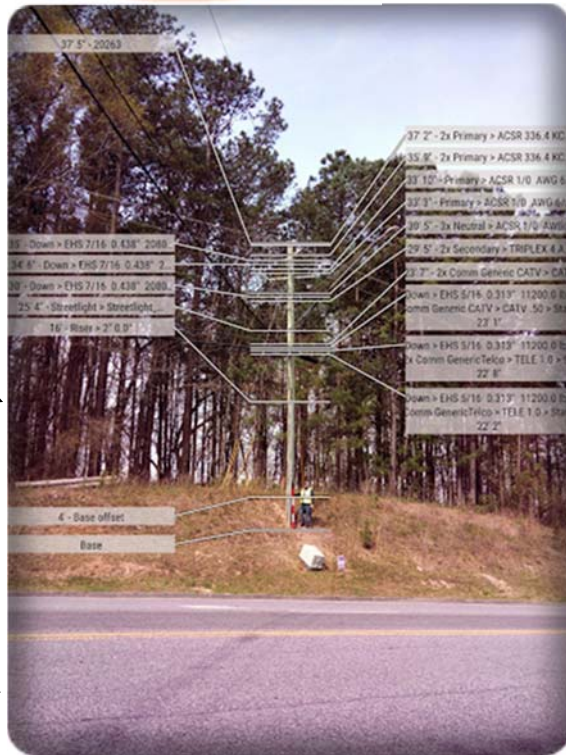
Poles matter, and gaining efficient access to electronic, visual, digitized data, and make-ready analytics about each pole in your perspective or actual service area, is where Icon Engineering excels.

Technician locates Each Georeferenced Pole, Collects Data into WebMap using Automated Techniques



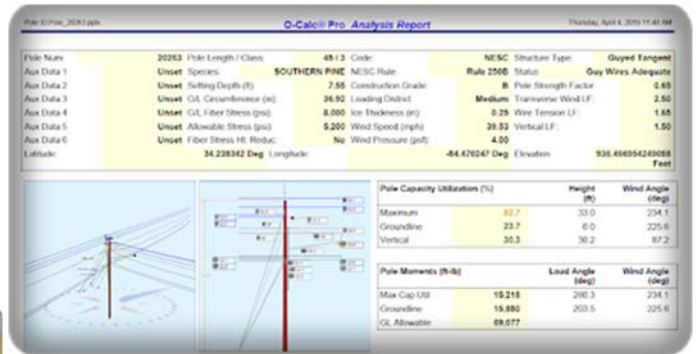
All Data available to Icon customer 24-7 in WebMap

Pole is Annotated with Data Required for Pole Loading Analysis (PLA)



Icon Automated Pole Data Acquisition and PLA process

In the Back Office, Reconfiguring of Pole is Analyzed, Documented and Exported into a PLA program (e.g. OCalc)



Demo Pole Inventory Report

Pole Count	Pole ID	Class	Material	Height	Code	Notes
1	27957	30' S	Pole	3-Comms	40-00010	40-00010 Pole
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PLA performed on pole. Results can be submitted to Utility and data Attached to each pole in the WebMap