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WHY QUALITY CONTROL CAN MAKE OR BREAK YOUR FIBER NETWORK

"Quality", a term used in fiber construction to indicate how well your network is constructed, is critically important to the lifetime viability of your fiber optic network. Substandard construction practices lead to safety hazards, increased outages (*e.g*. fiber and utility cuts), unpredicted maintenance and repair costs, and generally a less viable and more vulnerable network. This is why quality controls are often required by grant providers, like the Federal Government.

There are two well-known methods of monitoring construction quality to ensure your final network is built to high standards: Quality Assurance (QA) and Quality Control (QC).

Quality Assurance (QA) is the process of working with the contractors **during** the construction process to make them aware of deficiencies in their work so that these problems can be corrected while the work is still in progress. This approach minimizes the overall impact on forward progress, but requires that Quality technicians be present in the work area for most or all of the time.

Quality Control (QC) takes place **after** the construction is complete. QC technicians examine the completed work, take photographs, and generate reports that are provided to the contractor, who must then correct the deficiencies before the work is considered complete. QC is more prevalent than QA because the QC technician does not have to shadow the contractor throughout the process, and in fact, QC reports generated and provided to the contractor are often received a considerable time after the contractor has completed an area. The problem with such a delayed approach is that it ripples down the line: additional network construction, final system activation and even payments to contractors are all put on hold as problems are remedied after the fact.

By comparison, Icon Engineering's Quality Assurance and Quality Control services happen in real-time. Our QA/QC technicians use tablets linked in real time to our Web Map. When a problem or deficiency is discovered during construction, photographs of the problem are taken with the tablet in real time, are geocoded, and are uploaded to our Web Map along with notes that include the name of the reviewer who is analyzing the installation. The data can be shared, in real time if desired, with the network owner and the contractor, allowing them to see the problem installations much more quickly and without having to visit the location.

This same approach allows us to add field changes to network designs in real-time. Traditionally, field changes, which are design changes that come to light during field construction, are written down by hand on as-built sheets and only later entered into the design software back at the office. Not only does this delay the completion of the construction, but it is prone to mistakes when field notes are misinterpreted as they are translated from written notes into the software. In comparison, because our QA/QC technicians are entering data into tablets, and uploading this data in real-time into our Web Map, changes can be added to the design **as the work progresses.** This significantly simplifies the as-built drawing process. Also unique to Icon Engineering is that our system also offers a live review of the field changes once made, by adding pictures into our Web Map that provides the network designer with an instant look at the completed modification. This means time and costs are saved, while accuracy improves tremendously.

The usefulness of our real-time recording approach goes further. Icon validates the work Contractors have listed in their "Dailies" (Dailies or daily reports are the underlying documentation used by contractors as the basis for their invoices). Icon compares our on-the-ground georeferenced records of work completed, to the details in the contractor's submitted Dailies verifying what has actually been completed. The process can be taken one step further with reviews of contractor billed quantities compared to Icon's digital records of actual work completed in the field. To no one's surprise contractors tend to be big supporters of our real-time, digital approach because it reduces the time from completion of work to dollars into the vendor's pocket.