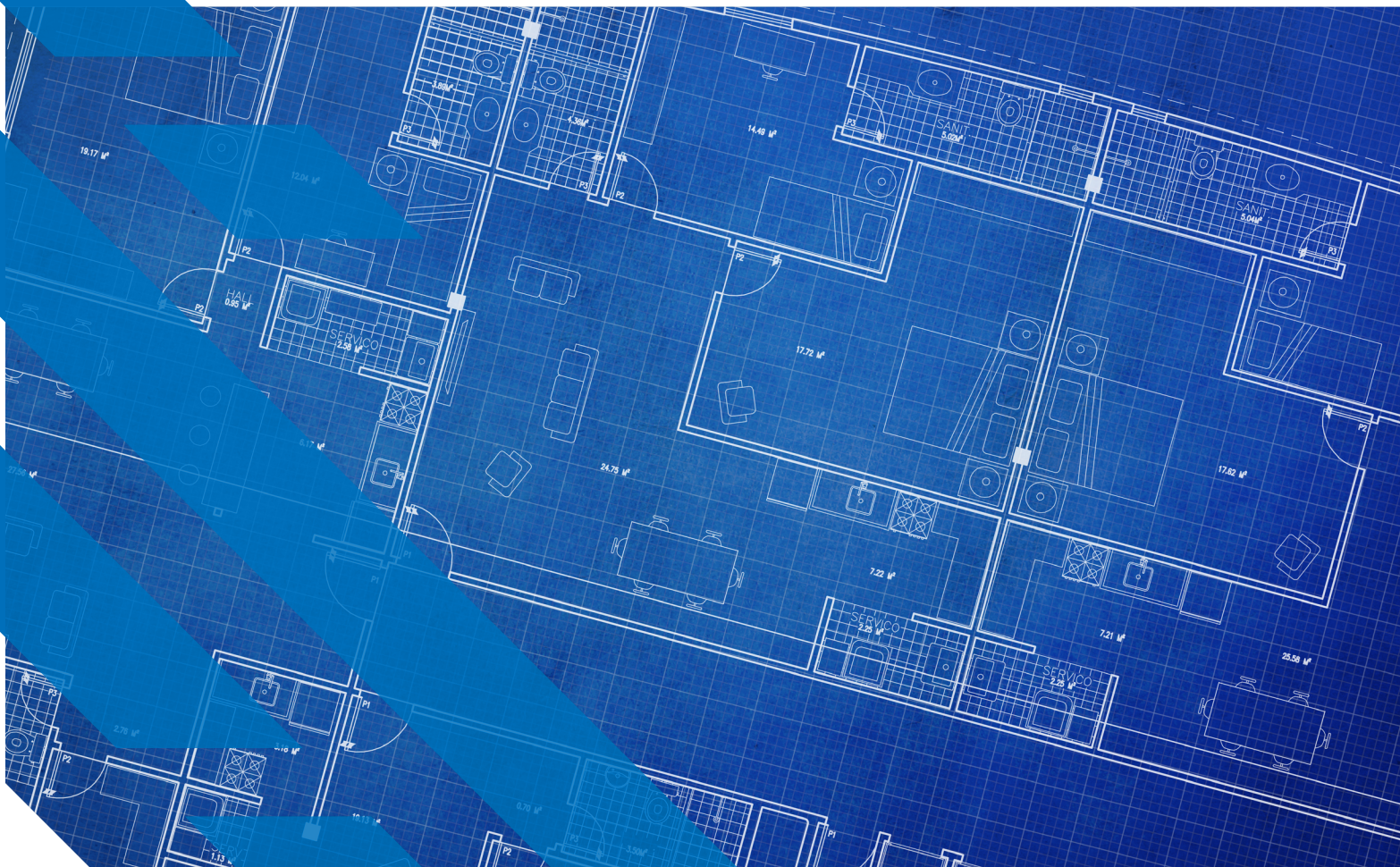


DIGITIZATION CREATES EFFICIENCIES FOR PACIFIC NORTHWEST ELECTRIC UTILITY

Having accurate, comprehensive drawings to reference can be vital to utility operations and maintenance. Central Lincoln People's Utility District turned to Burns & McDonnell for complete revisions of computer-aided design (CAD) standards to prepare these vital documents for new digital formats.



CONSISTENT STANDARDS SET A FUTURE COURSE FOR CLPUD

Pre-set templates, automation and 3D scanning are at the heart of a new digital documentation system.

PROJECT STATS

CLIENT

Central Lincoln
People's Utility District

LOCATION

Oregon

START DATE

2018

COMPLETION DATE

2023

270+
DRAWINGS TO DATE

31
SITES

CHALLENGE

In early 2018, Central Lincoln People's Utility District (CLPUD) — an electric utility serving portions of Western Oregon along the Pacific Coast — had reached a point where its telecommunications system was in need of an upgrade to accommodate new devices.

Burns & McDonnell was initially engaged to assist with development of technical requests for information (RFIs) for the telecom upgrade. Following this phase, we were contracted to provide engineering support.

At this point, it became apparent that system documentation, engineering drawings, and a range of other records created in computer-aided design (CAD) formats needed to be re-created in a new digital system that would provide more user functionality, ease of access and consistency with current standards widely used by the utility industry.

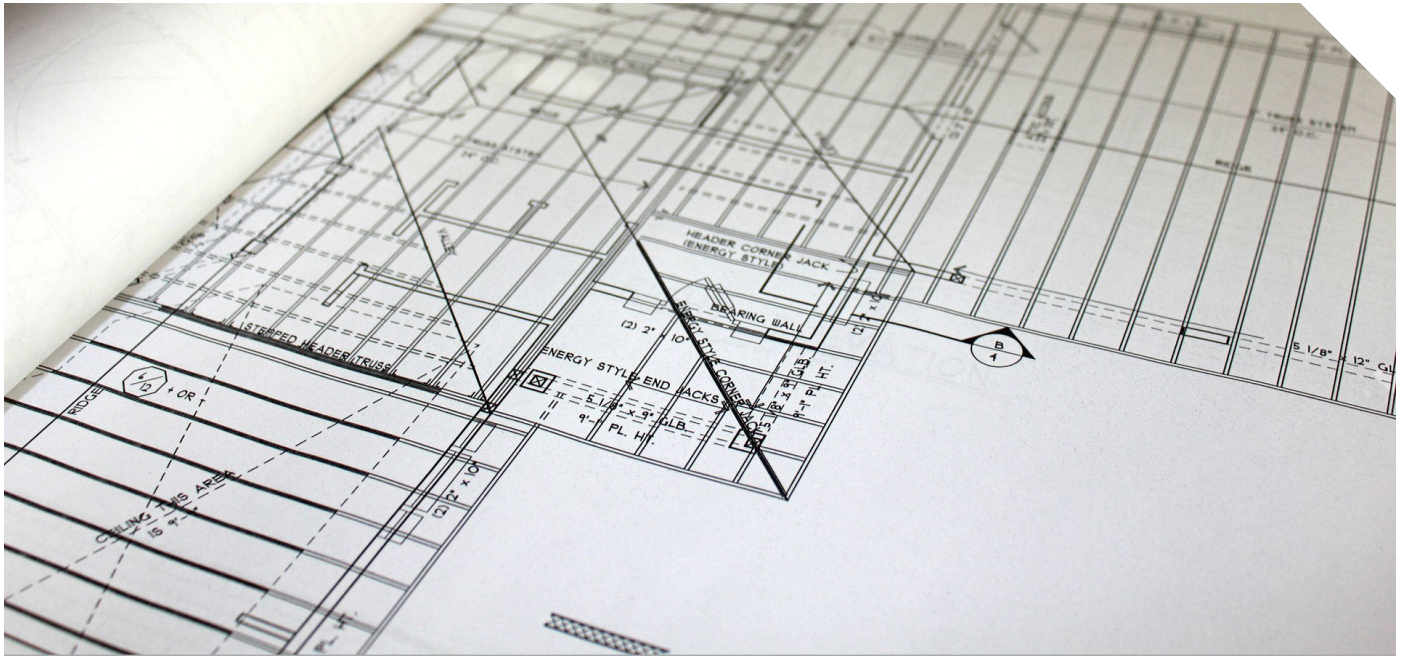
SOLUTION

Revising standards for drawings was the first area of focus for the documentation upgrade. The goal was to increase efficiency of design time by transitioning to digital files that would be better aligned for future automation.

This effort involved reconfiguring and updating all AutoCAD drawings. This effort essentially required re-creating all drawings from scratch following site visits to verify conditions. The goal was to see that there are consistent standards for title blocks, thus making all of these highly technical and detailed documents much easier to update and manage. AutoCAD is a trademarked commercial CAD application, developed by Autodesk.

Specifically, the process involved reducing individual chassis drawings in favor of network one-line diagrams. Templates were created and preset with everything needed to create a drawing. Settings were established for cells, title blocks and even text styles. Additionally, the equipment chassis drawings were consolidated into one centralized drawing, enabling the utility to update the digital file as equipment is added or removed. This step will reduce the hours needed for documentation while reducing the potential for errors to be propagated because of limited contact with other drawings.

A legend and symbology also let the user know which template is being used, accommodating multiple discipline areas that might need access to the digital files. In short, as long as the template is used as preset, there will be consistency throughout all the documents.



Under the previous system, unique blocks often were used for various specific devices. For example, a table block might have been created that looked like the actual device. This system worked fine until the specific device was replaced. At that point, the block was outdated and would no longer work until updated with another digital block representing the new device.

Standardizing the blocks creates efficiency in keeping drawings up to date and saves a great deal of time for CLPUD. This became an iterative process during the conversion because with each drawing in the system, a certain amount of legacy information needed to be carried forward. However, this introduced some complexity. When too much information is put into a drawing — for example, a network block diagram that may have 20 devices or more — the process of updating digital files becomes more cumbersome, especially as network changes are made and new devices are installed.

Because Matterport 3D scanning technology was utilized in the project, CLPUD has gained the added benefit of a 360-degree perspective of buildings, structures and facilities within the network. The 360-degree imaging allows users to take a virtual walk through an area of the system while reviewing the digital drawings. Matterport also provides significant added value for the CLPUD project team by allowing sites to be revisited virtually via Webex connectivity, eliminating long drives in a service territory that stretches more than 100 miles.

RESULTS

The basic organizing principle for the conversion was: “Everything in its place, and a place for everything.” This consistency results in significant improvements in workflows and improving accuracy by simplifying the CLPUD blocks. Users now have clear pictures of which devices are connected together, rather than simply static replications of how the devices look.

Consistent quality in drawings will be of increasing importance as network designs are updated in the future. This also helps constructability as crews gain consistent specifications and know where equipment, devices and materials are located. All these elements will enable more efficient workflows.

Though this conversion was only one portion of a larger project scope for CLPUD, it has greatly improved consistency and efficiencies in retrieving documentation needed for ongoing operations and maintenance. The data in this system can be easily updated and modified over the coming years with CLPUD knowing that all assets are accurately documented in clear and simple drawings that can be used by field crews and engineers alike. The end result has been to deliver a clear and consistent documentation framework that CLPUD can utilize with confidence for many years to come.

