COMPANY
Miller Electric Company

LOCATION
Jacksonville, Florida, United States

SOFTWARE
Autodesk® AEC Collection

Complex hospital project requires just-in-time delivery

Miller Electric Company relies on BIM to meet prefabrication challenges

The construction industry is changing, and we saw a real need to invest in the advancement of innovative concepts and procedures. The Autodesk AEC Collection allows us to take advantage of BIM, so we can coordinate with other contractors and streamline our prefabrication process.

– **Alan Creel**
Vice President of Preconstruction Services
Miller Electric Company

An iconic building

Baptist Health and MD Anderson have teamed up to build a state-of-the-art cancer center in downtown Jacksonville, Florida. The hospital will bring world-renowned oncology care to Northeastern Florida. The building itself, a 600,000 square foot facility that will open in 2018 and take up an entire city block, is a cornerstone of a revitalized downtown. Miller Electric Company was hired to build a complex electrical grid throughout the building - including lighting and power for critical cancer treatment equipment.

Dense, complex jobsite

The location of Baptist MD Anderson Cancer Center is one of the project's biggest challenges, according to Alan Creel, Vice President of Preconstruction Services for Miller Electric Company. The density of the neighborhood leaves no room to build electrical conduits on site, store materials, or even execute daily deliveries. According to Creel, Miller Electric Company builds the entire electrical infrastructure in an off-site prefabrication shop where it is pieced together and shipped modularly to the site. This "just-in-time" workflow requires immense coordination between the engineer, the general contractor, subcontractors, other trades, and equipment vendors.

BIM coordination prior to construction

Miller Electric Company subscribes to the Autodesk® Architecture, Engineering and Construction (AEC) Collection—giving its preconstruction and BIM personnel a rich set of software and innovative technologies to help them design, engineer, and construct electrical systems in building projects across multiple markets. The foundation of their workflow is Autodesk® Revit® —a Building Information Modeling (BIM) tool that allows Miller Electric Company to create 3D models of a building's electrical infrastructure in advance of construction.

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The AEC Collection helps Miller Electric Company to connect design and fabrication to speed delivery

The AEC Collection enables real-time coordination—both internally between the office, the fabrication shop and the worksite, and between Miller Electric Company and the engineer, general contractor, and other trades. According to Creel, everyone on the Baptist MD Anderson project is using Revit to draft the entire mechanical, electrical, plumbing, architectural, and structural features of the building, sharing the models via Autodesk® Navisworks® Manage. This gives each stakeholder access to a real-time 4D model of every detail down to each piece of conduit or pipe. Using Navisworks, they are able to understand spatially how it will all fit together, and understand when each piece of equipment will be fabricated and installed. The entire project can be charted in real time in the cloud using Autodesk® BIM 360 Glue, from breaking ground to testing the lights—ensuring everyone is on the same page and delivering on time.

"Our modelers are modeling at the same time as everyone else, and the data is being pushed to the cloud in real time, so the other trades can see exactly where our systems are being run and the space that we're consuming," Creel said. "That way there's no surprises when we actually get to the construction jobsite."

"Just-in-time" workflow

Once a 3D model of a floor or area of the building is finalized by the engineer in Revit, Miller Electric Company is able to remove the other trades in the model (such as plumbing and HVAC) and view just the electrical infrastructure that needs to be fabricated. Engineers can analyze the gear panels' loads and conduits and create a shop drawing package for each component. This allows them to segment out the infrastructure and create buildable modular assemblies. Build sheets then go to the shop floor for fabrication, and the assemblies come out of the shop palletized, banded, and identified individually. Each pallet is then delivered to the jobsite "just-in-time" where it is lifted directly off the truck by a tower crane and dropped at the appropriate workplace and installed within minutes.

"It's really a wonderfully crafted workflow," Creel said. "Nothing is built or stored on site, and there are no wasted trips or motions. Conduits arrive pre-built and go directly where they're supposed to go. There are absolutely no modifications after it leaves the fabrication facility."

Working smarter, safer

The "just-in-time" workflow enabled by Revit and Navisworks allows Miller Electric Company to work efficiently—meeting timelines while guaranteeing the consistency and quality of the installation. Most importantly, according to Creel, the streamlined workflow creates a significantly safer, more environmentally-friendly workspace due to the elimination of fabrication and excess materials on site, and the reduction in the number of times that an installer has to climb a ladder. In addition, because Miller Electric Company is so coordinated, electric is often installed first before the other trades—a break from the norm where electric is typically installed last.

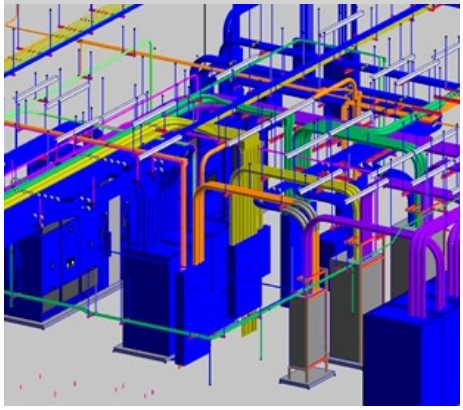
"Other trades have seen us work smarter, and we've become a leader on the jobsite," Creel said. "We go in, make our installations, and are out of there quickly and safely. Rather than playing catchup, we can push the timeline."

Beyond the project

Miller Electric Company has since scaled its "just-in-time" workflow to other projects, creating a best practice for how to run electrical at any worksite. BIM and prefabrication are closely integrated, enhancing the value each brings to the company's productivity, safety, reputation, and bottom line.

"We're not going to BIM anything that we don't prefab, and we're not prefabbing anything that hasn't been BIM'ed. This allows us to completely model an area and then easily communicate visually about our expectations. Prefab now has a near 100 percent success rate, simply because the information that is feeding into our build sheets is clear, concise, and ultimately, contextual."

> We have a 100% success rate on all of our units that we're delivering to the jobsite. And the only way that we're able to have that high level of success rate is by having the information and the tools available to us delivered by Autodesk and BIM.
>
> — **Alan Creel**
> Vice President of
> Preconstruction Services
> Miller Electric Company



Model courtesy of Miller Electric Company

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