

Ace Award Submission for Meeting the Challenge of a Difficult Job – Specialty Contractor
AECOM/ Millennium Plaza, 6200 S. Quebec Street, Greenwood Village, CO 80111
Project Cost: \$6,123,171

“The Ship in the Bottle”
By: Ludvik Electric Co.

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It was mid-June of 2015 when Ludvik Electric was asked to propose on AECOM’s future new home and single largest AECOM office in the World. AECOM had recently acquired URS Corporation which initiated the need to consolidate three offices into one. The challenge was to renovate the existing 330,000 square foot Millennium Building located in Greenwood Village for the consolidation. In just 8 short months there would be 1,100 AECOM employees convening on their new digs and nothing had been completed, including the design. By early July, Ludvik was awarded the project and the race was on. In addition to an overwhelming schedule, there were several design challenges that had not been thought through and needed to be addressed immediately in order to meet the schedule.

While the design was still in flux and the Owner was still working with the Architect on space planning and finishes, the demolition began in earnest. The entire space had to be completely gutted and cleared using selective demolition. Not everything could be removed in order to maintain some continuity with the existing building systems. Each discipline had to be on the demolition team dropping their own work to the floor so the debris could be separated and removed from the project. This included major equipment such as existing generators, remote generator radiators, UPS systems, batteries with racks, and other existing major electrical gear. The location and size of the generators were such that there was only one 260 Ton crane in all of Denver large enough to remove the existing generators from their pads.

The first major challenge was how to remove and replace a 30 year old 2500 KVA transformer weighing over 10,000 pounds. The transformer was housed in a substation switchboard and was located in the basement of the building with virtually no access to the equipment. The substation had been installed while the original building was first built, so it was dropped in its place and then built around similar to a “ship in the bottle”. Ludvik thoroughly assessed the situation and effectively developed a solution to this challenge. This was accomplished by developing a plan on how to remove the transformer core from the switchgear, take it out through a vent in the wall, up through an areaway to the outside of the building, and then transporting the new transformer back in the same way. Of course, this would be performed in the dead of winter when power had to be turned back on in hours to maintain the heat needed to keep the drywall mud from freezing.

Another challenge was how to rework the existing electrical room full of switchgear and bus so dense that a moth would have trouble navigating through the ceiling. Taking the initiative to determine the best design layout for the space provided, Ludvik developed a solution to remove elements of the existing bussing and isolate services to make the entire system less complicated. In addition, each electrical room had to be reworked and brought up to code. Panels were added, changed, moved, and updated to meet the requirements of the new space.

Then near the end of the project another obstacle raised its head. The South Metro Fire Department had performed its final review of the design and now dictated that there had to be additional smoke control requirements. Beam Detectors were added, Zones in the Fire Alarm Control Panel were reconfigured, Exhaust Fans were integrated, and the Authority Having Jurisdiction was finally pleased. We now had less than a week before the troops moved in. Through excellent planning and pre-testing, the final test was in the bag.

Oh, and then there was the standard stuff. 330,000 square foot of stuff. That’s a lot of light fixtures, lighting control systems, power outlets, floor boxes, kitchen equipment, mechanical equipment, security, audio visual, communication raceways, and decorative lighting inside and out. And the clock never stopped. Not even for a minute. Peaking at 90 craft on the project, Ludvik worked as many as 7 days a week and 12 hours a day to accommodate daily changes,

box walks, and other interruptions. As the days, hours, and minutes ticked by, Ludvik had to coordinate with the State Electrical Inspectors to provide daily inspections so ceilings could be closed up and electrical power turned on. Ludvik formulated a team specifically to deal with minute by minute interruptions and requests by other disciplines to add, move or change elements of the work. Daily coordination with the State Inspectors and South Metro Fire Department were key in obtaining a certificate of occupancy. As soon as the inspection for that day was complete, our Superintendent was placing a call for the following day. But finally and just in time, a Certificate of Occupancy was issued.

Through it all, Ludvik focused on quality and safety. When there are 90 craft on a project and there is little time to complete, there is a lot of activity. Providing a safe work place is crucial to Ludvik's culture. With one of the best EMR's (.61) in the industry, Ludvik addressed safety continuously through weekly tool box safety meetings, and daily Pre-Task Planning. And in the end, AECOM moved in on time with the perfect ship in the bottle.



10,000 lb Transformer



Dropping transformer into areaway.



Dropping transformer into areaway.



Vent Opening



Moving transformer through vent opening.



Moving transformer into Substation.



Where a moth can't fly.



Where a moth can't fly.



AECOM Main Entry



AECOM Conference Room