

Saint Joseph Hospital 'Heritage' Project

Saint Joseph Hospital was originally built in downtown Denver by the Sisters of Leavenworth Charity (SLC) in 1910. Saint Joseph Hospital is home to one of the most established heart care programs in the region and is Denver's oldest private teaching hospital. In June 2011, to keep up with the growing Denver population, SLC knew it was time for a major expansion.

Unlike other local hospitals that moved to the suburbs, Saint Joseph's ties to the community are so deep, they had to figure out a way to expand in the center of the city where they are located. This created a whole new list of challenges in constructing a new state-of-the-art facility in the middle of a historical neighborhood. SLC appealed to the community and with their input created a plan for this amazing new hospital (see photo #1).

The new facility provides 826,143 square feet of new diagnostic, treatment and patient care spaces. Thirty-nine new rooms designed for surgery and interventional procedures will increase the hospital's ability to deliver efficient, state-of-the-art, surgical and interventional care. 348 single occupancy patient rooms throughout the facility will improve patient outcomes and create an environment for family centered care. 2,442 total parking spaces, including 2 new parking garages, provide convenient access to the hospital for patients, visitors and staff. In addition, a 20,000 square foot central utility plant west of Downing Street will provide emergency power; chilled water and steam for the new facilities with all utilities ran under Downing Street.

In order to create space for the new hospital, SLC purchased the old Children's Hospital facility located directly west of the Saint Joseph Hospital. In July 2011, demolition of Children's Hospital, two medical office buildings and an existing 900-car parking garage began. Seven months were spent realigning Downing Street to its 1973 configuration, totally rebuilding 20th Street, and building a completely new 19th Street. The project required extensive wet and dry utilities relocation while maintaining uninterrupted access to three of Denver's largest hospitals (see photo #2).

There were noise ordinances to adhere to; no storage on-site available and demolition and construction, all happening simultaneously. This project was beyond typical fast track; the only chance for success was complete collaboration by all trades involved. The entire project was to

Saint Joseph Hospital 'Heritage' Project

be completed in just 36 months; start to finish. Preconstruction, BIM Coordination and Prefabrication had to be elevated to the next level.

Encore was awarded this \$56.2M (electrical) project based on the capabilities of target value design and budget solutions. A dedicated Senior Preconstruction Manager and Senior Estimator were assigned to Saint Joseph Hospital because of size and schedule. Beyond providing the typical 20-25 Division 26000 electrical cost breakdowns, our team maintained over 480 specific system breakdowns to support a detailed target value design process. We also provided alternative cost solutions to the team at every pricing milestone worth over 15% in savings to the overall electrical budget. For three years, our preconstruction team cohabitated with our operations team to ensure all commitments made during preconstruction were integrated into our construction plan. During preconstruction we worked with other trade contractors to provide over a quarter of a million dollars associated with multi-trade prefabrication.

Encore had two full-time and one part time Building Information Modeling Specialists on-site, coordinating daily with Mortenson Construction as well as all other trades. Headwalls, bathroom pods, and multi-trade hallway racks for this \$623M hospital were all coordinated through BIM prior to prefabrication. For a project of this magnitude, changes normally take 1-2 weeks but this was not an option because of the schedule. Our team spent one day a week meeting at US Engineering's office for hands-on coordination with all other trades making changes on the fly. Because the schedule was so fast, our BIM Specialists were coordinating multiple areas on multiple floors prior to construction. Encore's BIM team was awarded Mortenson's 2013 Subcontractor Star Award for Outstanding Building Information Modeling. (See photos #3 & #4).

Encore's long history serving the Colorado healthcare industry, we recognize the importance of taking our commitment (and our craftsmen) to another level. We developed a program called 'Encore Healthcare Certified'; training and mentoring our craftsmen to be prepared to meet the unique demands of working in this industry. Training includes: Facility and Infectious Control, NEC Articles 517, NFPA 99, detailed instruction on Essential & Life Safety Electrical systems, specific healthcare equipment training (x-ray, MRI's, OR's, etc.), Healthcare Facilities 2006

Saint Joseph Hospital 'Heritage' Project

ICRA Training and special system training. All craftsmen working on a healthcare site, must complete classes listed above. Our program also requires a minimum of 1,000 hours of logged experience on healthcare projects. This program is contiguous to our Service Technicians providing post project needs. Our goal is to continue to develop and raise the bar of servicing our healthcare partners. Our team is committed to becoming part of the state-of-the-art medical services and healing process that takes place at Saint Joseph Hospital.

Safety was critical to the success of this project. Encore had a full-time, dedicated safety manager on-site. Of the total 521,558 Encore man-hours, we had ZERO lost time accidents! This was highly accredited to daily safety job walks, weekly tool box talks and the implementation of a Behavior Based Safety program. A process designed to influence employee actions toward safer outcomes, ideally by preventing an accident or injury before it occurs.

To accomplish this fast track schedule, prefabrication was key! Encore prefabbed from two environmentally controlled locations:

- Encore's 5,000 square foot warehouse located 8 miles from the jobsite
- Mortenson's 60,000 square foot, multi-trade prefabrication warehouse located 4 miles from the jobsite

Encore dedicated 14,940 hours to prefabrication. We stored 16,863 fixtures in an off-site material warehouse that supported our just-in-time delivery efforts for after-hour material staging. Encore also provided a Prefabrication Foreman and craftsmen to the multi-trade shop to ensure on-time installations (see photo #5). Electrical, mechanical, and plumbing collaborated with Mortenson to create assembly line type prefabrication. 376 patient room headwalls (see photos #6 & #7), 440 prefabricated bathroom pods, 346 exterior panels, and 166 multi-trade racks were built. This was the first time that they were able to roll out fully "trimmed" headwalls to this level. With all trades working together in prefabrication, Saint Joseph project benefitted by:

- 18% schedule compression and reduced site congestion, resulting in fewer safety incidents and higher overall quality
- Almost 30K hours of reduced required labor
- Original 36-month schedule compressed to 29.5 months

Saint Joseph Hospital 'Heritage' Project

- Common corridor multi-trade racks cut installation from months to weeks
- \$2.6M in job productivity loss avoided
- 7 safety incidents avoided
- \$4.3M of indirect cost savings

Due to the size and schedule of this project, Encore committed: four Project Managers, one General Superintendent, eight Superintendents, nine Engineers, two and a half BIM Specialists, Encore's only Professional Engineer, and topped at 180 craftsmen. At the end of the project, the construction team compiled over 3,500 RFI's, 153 Architectural Supplemental Information, 702 Construction Change Documents, 241 pricing requests and laid 1.64 **million** feet of pipe. A dedicated fulltime document control engineer tracked all changes in the field. Electronic tablets were used to review plans and documents connected to an on-sight server to make these changes instantly.

Quality was a major focus by all. Between City of Denver, Hospital Facilities Team, and the IT department there were over 1,800 inspections performed during the course of the project. Encore was able to maintain its fast-paced schedule in spite of inspections by the owner, commissioning agent and contractors. Encore's sole Professional Engineer was placed on-site for 2-1/2 years to assist with technical questions and Denver fire alarm code issues. Mortenson, US Engineering, and all other trades coordinated their efforts with him. Approximately 800 hours of fire department inspections were performed and no re-inspections were required!

12.13.14 - This day was specifically chosen by the hospital as there would never be another in history. On this Saturday, electricians were present as patients moved from the old hospital into the new facility. Within minutes of transporting the first patient, an expectant mother, St. Joe's welcomed their first baby. Simultaneously, another expectant mother gave birth in the old hospital. For the past 30 years, Saint Joseph Hospital has delivered more babies than any other hospital in Colorado.

All new innovative equipment was installed at this state-of-the-art hospital (see photo #8). In honor of the SLC giving spirit, all old equipment was donated to charity. The new hospital design

Saint Joseph Hospital 'Heritage' Project

adds more than three acres of parks and green areas to the neighborhood, in addition to preserving historic landmarks. Saint Joseph Hospital has provided service and care to the Denver community for more than a hundred years. With their new facility and partnerships, Saint Joseph Hospital will be here for generations to come. Encore Electric is proud to be a part of the team that built this historical award winning hospital in the heart of Denver (see photo #9 & #10).

Saint Joseph Hospital 'Heritage' Project

Photo #1

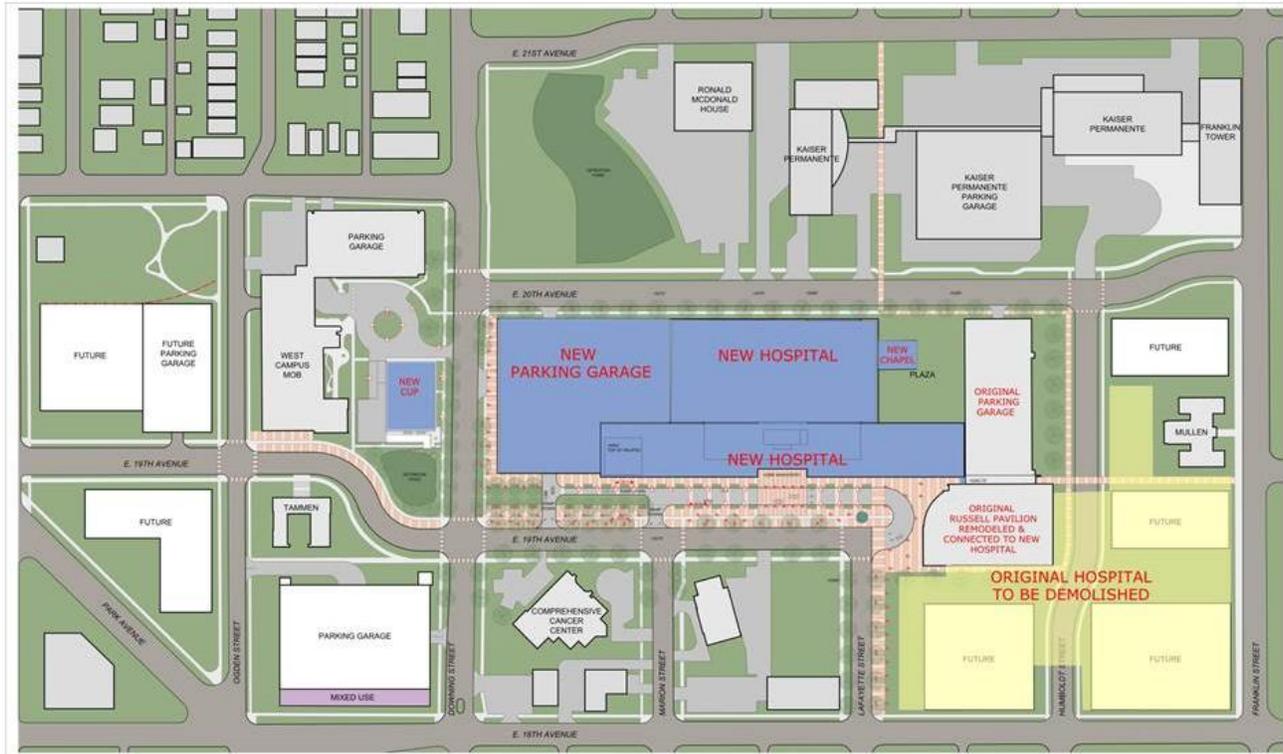
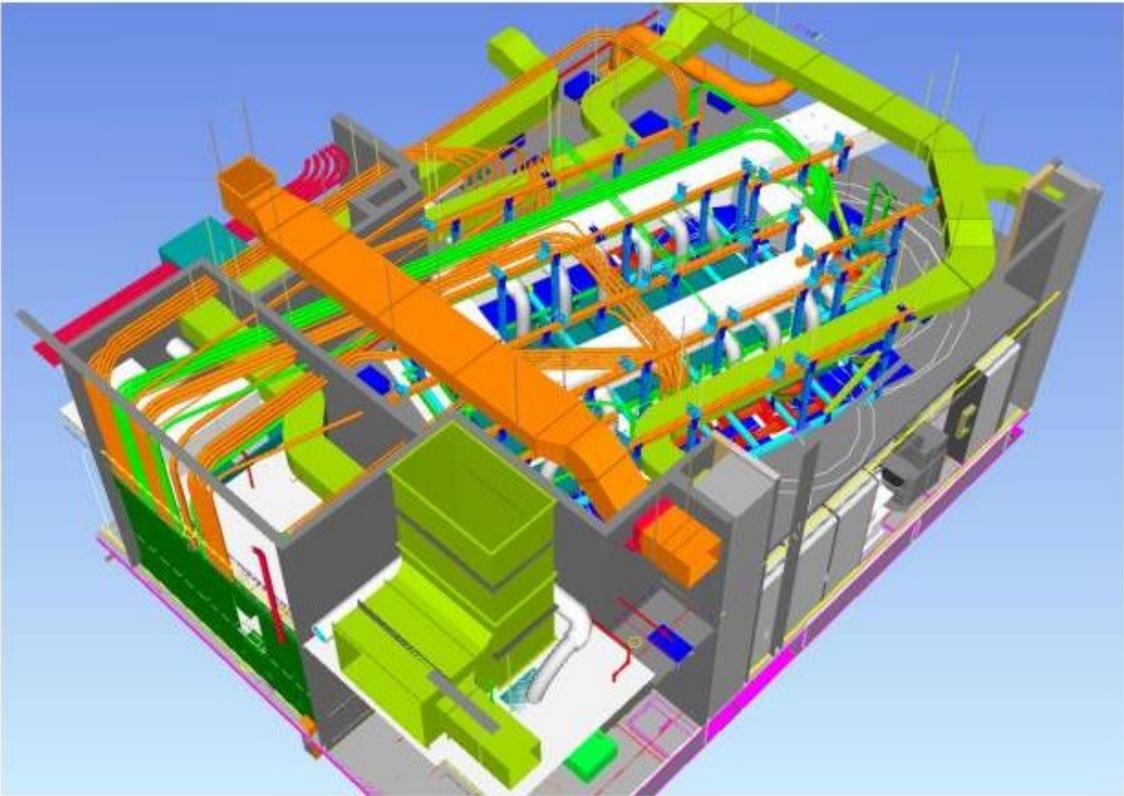
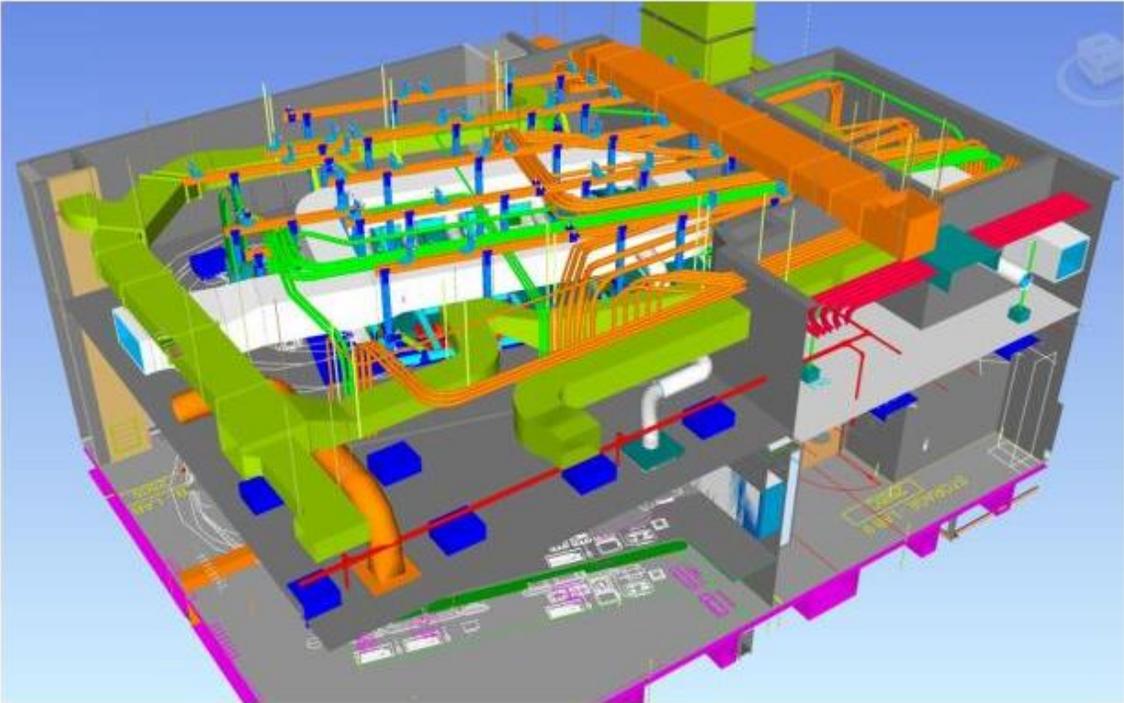


Photo #2



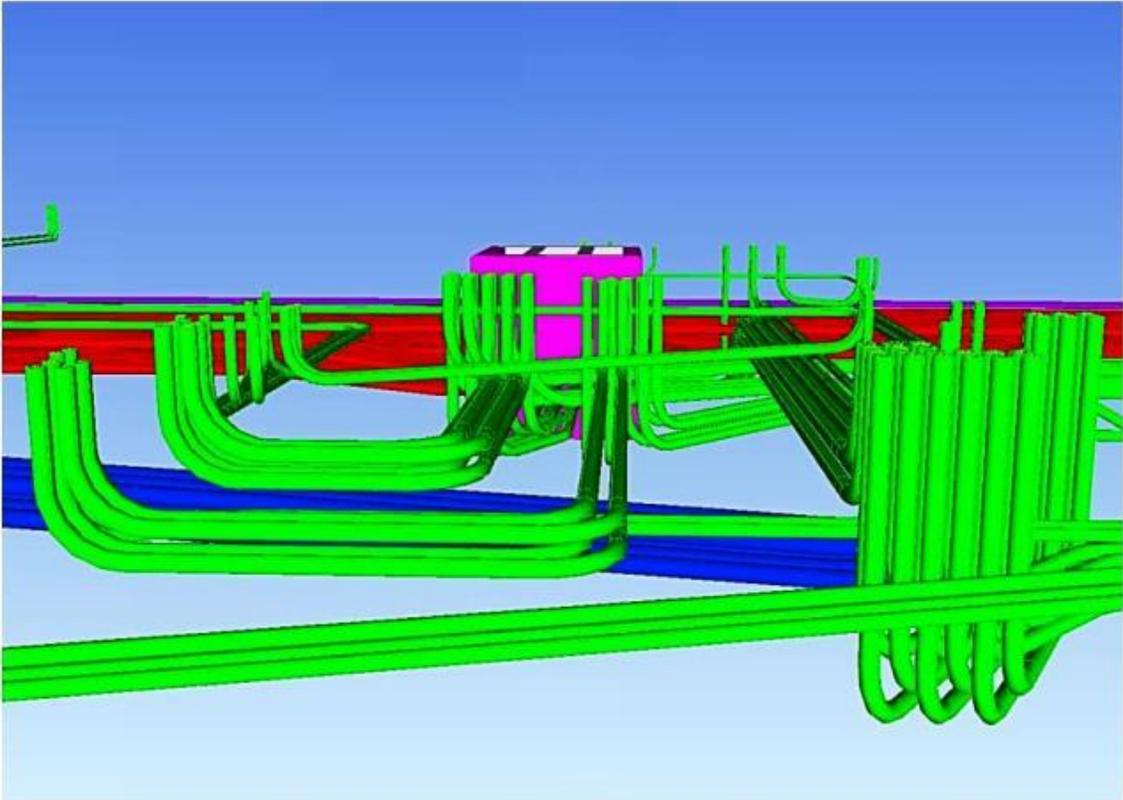
Saint Joseph Hospital 'Heritage' Project

Photo #3



Saint Joseph Hospital 'Heritage' Project

Photo #4



Saint Joseph Hospital 'Heritage' Project

Photo #5



Photo #6



Photo #7



Saint Joseph Hospital 'Heritage' Project

Photo #8



Photo #9



Photo #10

