

**Category: 7 - Best Building Project - Specialty Contractor (Over \$10 Million)**

**Contractor: MTech Mechanical**

**Project Name: Children's Hospital Colorado, Colorado Springs**

### **A Place Just for Children**

A visit to the hospital can be scary for anyone, especially kids. The new Children's Hospital Colorado, Colorado Springs is now helping put both children's and parent's minds at ease with their state-of-the-art hospital designed just for kids! MTech Mechanical was a key team leader in being able to contribute to the success of the project by finishing their scope of work on schedule and under budget. This new facility brings kid-friendly services to the community of Southern Colorado and surrounding states. This 294,000-square-foot facility is the region's first pediatric-only hospital and the only dedicated pediatric emergency department in Southern Colorado.

### **Joining the Team & Perfecting Design**

MTech was approached by GE Johnson Construction in early 2016 to provide initial concept budgets for an Integrated Project Delivery RFP process. The process included submitting a letter of interest, an A3 proposal document, and a team project interview. This was the second IPD project MTech was able to be a part of and truly aligns with the corporate values, focus on collaboration and the "spirit of the deal".

Following award of the project in Fall 2016, MTech was heavily immersed in working through the design and budgeting process. The entire design, construction, and owner teams met on-site for bi-weekly "big room meetings" to discuss coordination, pricing, and strategic decisions for construction. During this process, MTech found a way to reduce cost not by modifying mechanical scope of work, but by heavily reducing the structural impacts to the building, budget, and schedule. By having consistent and open communication amongst both design and construction teams, the project was able to come in line with an aggressive yet cost affective budget.

Another way that MTech was able to directly increase collaboration and impact the budget was through the virtual construction process. MTech's team was proactive by setting up a colocation desk at Cator Ruma's office so that our designers could work alongside the engineer of record. By doing this, MTech changed the traditional process and ultimately eliminated the emails, RFIs and back and forth communication regarding constructability between the groups. This reduced the time and money spent by both parties through an iterative design process.

### **Best of the Best – Operations**

One challenge that was quickly identified in the project was the location of the mechanical room in the basement. This would mean that the six custom air handlers and steam system would have to be procured quickly in order to be placed in their home as soon as the slab-on-grade was poured and prior to the structural steel starting above them. During the big room meetings, MTech was able to confirm design criteria and funding by the team for procurement of these critical items well before construction documents were ready. By erecting the building with the equipment already set, it allowed MTech to save time and labor.

Due to the size and scope of the project, the entire team knew that scheduling and manpower would be crucial. MTech's field teams peaked at 42 sheet metal and 32 pipefitting team members during the 14-months on-site. Each of the six floors was broken into separate work zones which all had a pull-plan session to identify activities occurring within the spaces. Understanding each of these smaller work zone schedules was critical to seeing the big picture because the MTech team had to be working in as many as 10 areas at a given time.

Reaching the manpower needs necessary for a project that is 90 minutes south of MTech's main office was a challenge the team had to solve. Field team leaders were able to identify that prefabrication was an area of opportunity to be more efficient with limited labor resources. Not only did MTech prefabricate all steam and hydronic water piping in its Westminster shop, but the team created an 800-square-foot shop known as "MTech Town" located approximately 150 feet

away from the new hospital front door. With a prefabricated roof overhead and utilizing multiple conex containers as walls, MTech's first onsite prefab shop was created.

Within this shop, all 339 VAV zone boxes were pre-assembled as a collaborative effort between both mechanical trades and temperature controls. This process included sheet metal, pipefitting and controls to work together for assembly of ductwork, coil connections and control devices. This assembly was transferred as a "just in time delivery" and hung as a fully assembled unit in all 111 patient rooms. This efficiency of pre-assembling the VAV boxes was beneficial from a safety standpoint as well as reduce the overall labor required on the floor plate.

Each patient room is positioned to the exterior of the building to give ambiance and daylight during a family's stay. 75% of those rooms are dedicated to neonatal and pediatric intensive care patients and their comfort level is essential. MTech was able to collaborate with the design team to meet the climate needs of the patients while staying within budget. The team came up with a two-stage heating system for additional space control and patient comfort. Each room had a dedicated radiant heating panel near the exterior window, a VAV box, and a thermostat to allow individual temperature control. The radiant heating panel minimized exterior influences while the dedicated VAV box satisfied space and air temperatures.

Patient rooms were not the only spaces that needed temperature monitoring. The entire hospital serves patients ranging in age from premature babies to teenagers and specialty spaces such as operating rooms had to stay between 60 and 85 degrees based on body weight of the patient. Since a newborn has not developed to the point where their body can regulate its body heat, these rooms must be able to meet temperature requirements prior to starting any procedure. The design criteria required that the room could meet its temperature setpoint within 30 minutes prior to surgery. During start-up, MTech was able to meet the 85-degree requirement within 20 minutes, allowing the hospital staff to adapt very quickly to emergency procedures on even the smallest of patients.

Safety was a major factor on the project, and MTech is proud to say the team logged over 84,000 field hours in 14 months between the sheet metal and pipefitting trades with only one minor injury! MTech's approach to safety can be summed up as Safe Thinking + Safe Action = Safe Performance. Each morning began with toolbox talks and daily task plans. In addition to the safety program implemented by the trade partners, MTech also performed our own independent jobsite orientation for all of its team and subcontractors. This ensured that the safety message was heard throughout the process and uniting every worker as a team.

### **“Fear Is an Illusion”**

When the project first started, it was clear that all partners were committed to do more than complete another hospital. The “Kid-of-the-Quarter” program was created with the goal of uniting the construction and hospital teams. Each quarter, a different contractor adopted a kid from Children's ambassador program to give purpose to the construction teams. During MTech's quarter, Markus Jacobs became the newest MTech team member. Markus was diagnosed with Osteosarcoma and had to have his leg amputated at the knee at Children's Hospital in Aurora. Markus and his family traveled over 70 miles one way for treatments so a local facility would have made a big difference in their family's life.

Markus was able to join us for several visits during summer 2018. Like most 13-year-olds, he wasn't going to miss an opportunity to take a scissor lift up 35-feet to the main atrium ceiling to sign a steel beam. He knew exactly what to write: *“Fear is an Illusion, Cancer Survivor, Markus”*. Later, he installed some ductwork and piping in the basement mechanical room while being cheered on by his family and the construction teams. On his final visit, MTech fed the entire 500+ field team members on-site while Markus was there to thank everyone for their hard work. It was not only a fun experience to host Markus and his family, but we truly saw the impact the new hospital will make on local children and families in the future.

## **Here, It's Different™**

Children's Hospital Colorado, Colorado Springs opened for patients on May 28, 2019. Overall the project exceeded expectations of the hospital and community.

Recognition received from GE Johnson Construction Manager, Scott Bonner stated, "MTech's performance from the day you were selected, to project completion has been exemplary. MTech proved themselves as a true trade partner by working with the entire Trade Partner Team to meet every challenge successfully and with minimal conflict."

Children's Hospital is now one of MTech's core organization charities with our team participating in the Courage Classic bike ride, blood drives, blanket making and building 50 red wagons for the opening of the new hospital at our all-employee meeting in December 2018. Like it states on the Children's Hospital website, "This is an extraordinary place" and MTech is so proud to be a part of the team.









