

2017 ACE AWARDS

UC Health Longs Peak Hospital

Category 6: Best Building Project
(Specialty Contractor (\$6 - \$10 Million))

PROJECT TEAM

SPECIALTY CONTRACTOR	Drake Williams Steel
GENERAL CONTRACTOR	Haselden Construction
OWNER	UC Health
OWNERS REPRESENTATIVE	Project One
STRUCTURAL ENGINEER	Datum Engineers, Dallas TX
ARCHITECT	WHR Architects, Dallas TX

Is it possible that a stunning architectural feature on a successful construction project can create a recognizable logo and brand identity for an entire healthcare organization? Drake Williams Steel was an integral part of accomplishing this feat on the UCHealth Longs Peak project.

The owner provided a vision for an aggressive construction schedule on a 3 story 220,000 square foot hospital to serve the Longmont market. The signature design element included an arched Flying Roof structure spanning 209 feet that clearly differentiated this medical facility from other competitors. Five months after the official topping out ceremony and job-site celebration, the arc feature, “symbolic of life’s journey”, was incorporated into a comprehensive re-branding effort for the UCHealth organization. The arc can now be seen in the new UCHealth logo, on signage for all facilities, on doctor, nurse and healthcare provider uniforms and as a similar architectural feature for 4 additional UCHealth hospitals currently under construction.

With a rush to market for this exciting new facility, the incomplete Schematic Design documents posed a challenge for managing the design, construction schedule and budget constraints. Constructability solutions and final design recommendations were created by Drake Williams Steel to make this project a reality. A pro-active project management approach and unique pre-fabrication techniques provided a successfully project completion for a general contractor partner Haselden Construction and a satisfied repeat owner UCHealth.

Management / Team Approach

Drake Williams Steel accepted an “Integrated Management Partner” contract with Haselden Construction to build this facility. The partnering concept was truly manifested in attitude and action with a commitment to transparent open-book pricing and pro-active project management.

Preconstruction meetings with Haselden Construction and the Engineer of Record, Datum Engineers, allowed for discussions of early schematic design challenges and alternative material choices. The flying roof structure is a good illustration of this process. The initial roof plan, essentially shown as unidentified lines forming a rectangle, called for a #/square foot allowance for the flying roof structure with no structural design details.

The first proposed structural design thereafter explored use of heavy 2” fabricated plate to create the signature arched look, however this proved to be too labor intensive as well as being too heavy to lift. Weekly pricing updates and trend logs supported on-going design analysis. With involvement of Drake Williams Steel preconstruction and project management team members, continuous design changes were incorporated into the final contract drawings.

The completed Flying Roof design utilized a mix of 44” deep wide flange beams rolled to a radius, 12” pipe and channel members fabricated into sections to create a single 209’ roof structure when fully assembled. Completion of detailed 3-D shop drawings and more than 21,000 man-hours of structural steel fabrication in the shop allowed us to ship material in sequences and support the aggressive field erection schedule.

Overcoming the continuous pressure to meet and accelerate the schedule, Drake Williams Steel/LPR team rose to the challenge with unique and efficient scheduling concepts. Two Manitowoc conventional crawler cranes were used simultaneously to support two different structural raising gangs, thereby doubling production of the structural steel frame being erected in place. The benefit provided with this strategy allowed other interior trades, such as mechanical and electrical, into the building envelope to begin their work sooner.

Mark Coza, Senior Project Manager for steel erector LPR Construction, commented on the cooperative culture of the jobsite “It was an awesome environment, with no micro-management and everybody working toward the same goal”.

Construction Innovations / State-of-the-Art Advancement:

Two examples of innovative and successful construction methods applied to this project are the complex assembly/erection of the flying roof and the cooperation between trades in creating pre-fabricated exterior building panels.

An ingenious plan was created to pre-fabricate sections of the massive flying roof structure on the ground before erecting into place. This involved two levels of pre-fabrication

- 1) Shop fabrication into the largest shippable components and
- 2) Fabrication and assembly on the ground at the job-site.

Individual wide flange steel members were 4' deep and weighed 290 pound per foot. The complicated ground assembly involved connecting 12" pipe and other members together with bolted and welded connections to create two monstrous roof sections. Access to the structure on the ground enabled 360 degree access in a safe environment for precise fit up, efficient welding of complex joints, increased quality, easier inspection and faster assembly.

The size & scale of these two sections is evident when viewing a photo with a full size pick-up truck in view as well as seeing the close-up of the 12" pipe prior to welding in place. As assembled on the ground, the first section was 82 feet in length and weighed 110,000 #. The second section was 125 feet in length and weighed 160,000 #.

As an entire assembly, the flying roof weighed 270,000 pounds and spanned 209 feet. As an indication of magnitude, when full erected in place, there is room to park 44 Chevy pick-up trucks on top of the roof structure!

A capable and experienced specialty contractor performing on a project can have a positive impact. This effort is magnified significantly when two or three trades are simultaneously cooperating to achieve additional efficiency. An additional pre-fabrication system was developed to accelerate manufacturing exterior panel assemblies on-site.

After the light gauge frame contractor created an exterior panel frame, the steel erector LPR Construction welded heavy 8 x 8 x ½ angle in place for brick support. This was followed by exterior sheathing and a waterproof membrane to complete the pre-fabricated panel. The entire assembly was flown into place, thus eliminating the dangerous handling of a 530# angle on the side of the building. Three trades working together on the ground allowed for safer working condition, elimination of man-lift rental and reduction of field welding "in the air". With faster placement of these panels, the building therefore "dried in" sooner with other interior trades allowed to perform their work.

Environmental / Safety

Working on a hospital construction project, the health & wellbeing of our tradespeople is ever-present. A site specific safety plan, industry leading 100% tie off fall protection and significant pre-planning are hallmarks of a successful safety plan that resulted in zero lost time and zero OSHA recordable accidents.

Additionally, a significant effort was made to engineer and safely execute the “critical picks” for the flying roof segments. OSHA defines a “critical pick” as one requiring two cranes (tandem) or a crane hoist that exceeds 75% of the rated crane capacity. Affirmative on both elements.

Extensive weight calculations, crane certification and pre-planning was undertaken to ensure the success of this important phase of steel erection. Experienced crane operators, certified riggers and safety personnel monitored every aspect of these hoists as the cranes walked the heavy loads 50’ toward the building and precisely placed them into their final position.

Excellence in Client Service:

The successful culmination of the entire steel fabrication/erection plan for the project came together as a demonstration of exceptional client service. The “Topping Out” lunch celebration was hosted by Haselden Construction on September 1st, 2016. It was a momentous occasion under a classic Colorado blue sky with local government dignitaries, owner representatives, design team members and hundreds of craft tradespeople in attendance.

This was made possible by the flawless execution of setting the two sections of flying roof prior to the planned ceremony. The critical tandem (two cranes) pick for the first section of the flying roof was completed on August 29th. One day later, on August 30th, the second section of the flying roof was set in place and bolted together. It was rewarding for our entire team to see the successful results celebrated by everyone in attendance.

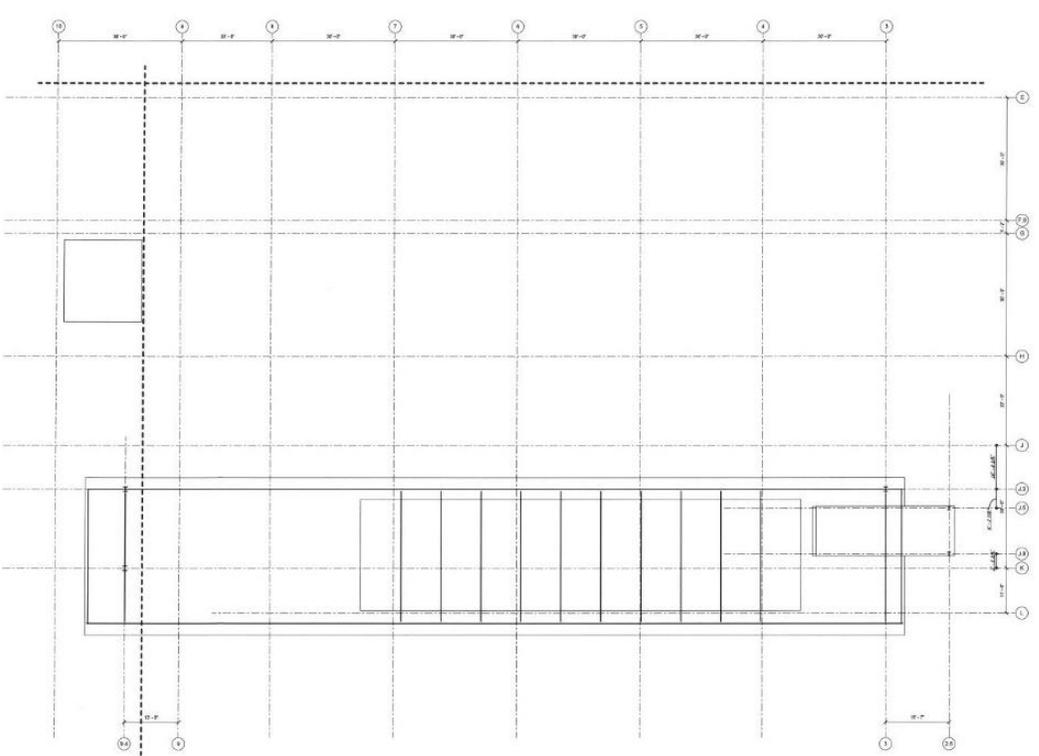
Conclusion

When construction is done right, the results are far more significant than putting up a new building. In this case, a visionary owner created a premier healthcare facility that will provide state-of-the-art care for an entire community. With the bold design concept and successful execution of an innovative steel roof system, UHealth has created a new logo and memorable architectural feature. This new brand identity and flying roof structure will be an important part of hospital facility expansion and future company growth. There are currently four projects under construction for UHealth, Colorado Springs, Greeley, Highlands Ranch, and Inverness that are utilizing some form of this flying roof feature.

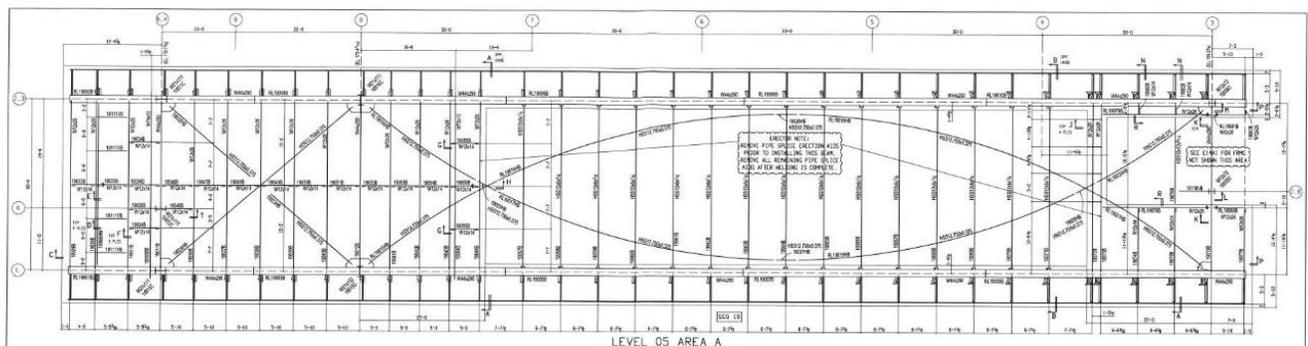
Drake Williams Steel takes pride in our unique contribution to this successful project and will utilize this experience as a benchmark to apply to future projects.



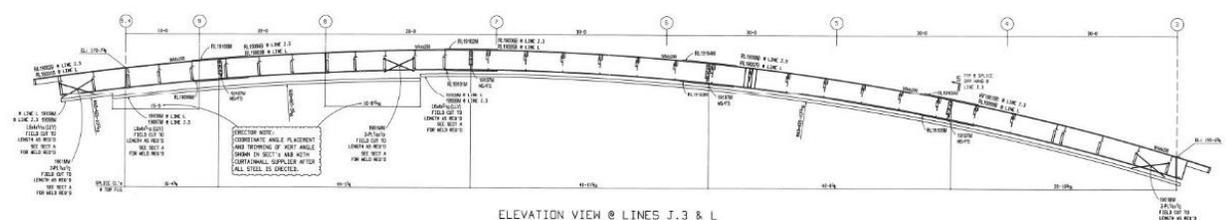
uhealth



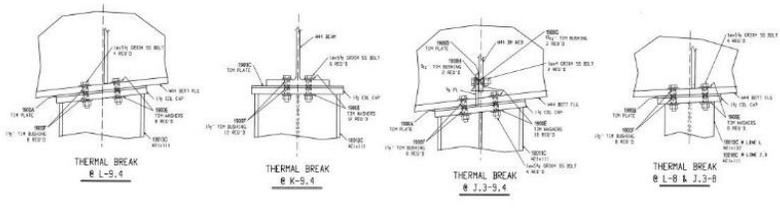
S1 ROOF FRAMING PLAN - LEVEL 05 - AREA A



LEVEL 05 AREA A
Elevation: AS NOTED



ELEVATION VIEW @ LINES J.3 & L



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DRAWING RECORD

NO.	DATE
1	4-15-18
2	4-22-18

For Field Use
08/08/2018

DRINKER, J. L. DATE: 4-15-18
CHECKED BY: DATE: 4-22-18
JOB: LDR LINDS PEAK HOSPITAL
SHEET NO. SHEET NO.
COURTESY: HANDELSON CONSTRUCTION 4414 616

