



## **2014 AGC Colorado ACE Awards**

**Category: 02 – Meeting the Challenge of a Difficult Job – (Subcontractor)**

**Contractor: Murphy Company**

**Project Name: Royal Gorge Bridge & Park Visitor Center**

Difficult jobs present exciting challenges and opportunities to shine for the Murphy Company team of professionals. The opportunity to shine burned brightly for Murphy Company when a wildfire, fueled by winds over 50 miles per hour, allowed the fire to jump across the 1,600 foot chasm of the Royal Gorge and destroy 48 of 52 buildings in the park in less than a half hour.

The Murphy Company embraced the opportunity and met the many challenges of providing the unique Royal Gorge Bridge and Park with HVAC, plumbing, design-build and design-assist services to help restore the 85 year old Colorado landmark to its better-than-ever status. Since 1929, more than 26 million visitors have enjoyed the park. The work Murphy Company has provided, under very challenging conditions, will allow millions of visitors to once again enjoy the park for years to come.

The Murphy Company team faced many challenges in their work on the new 14,000 square foot visitor's center, water treatment and wastewater treatment buildings, and a new restroom building. The challenges faced and accomplished included working at a remote site with no utilities, adverse weather conditions - snow, high winds and rain, working within 10 feet of a 1000 foot drop into the gorge on one side of the project, many significant changes in the scope of work and responsibilities, and extremely tight timelines and budget parameters. Their innovative ideas and solutions, can-do approach and collaboration with many other subcontractors on the project aided greatly in delivering the project elements on time and built to perfection.

Collaboration with The Beck Group helped Murphy Company meet the underground plumbing needs working through the sloping worksite challenges and requirements for blasting and infilling due to the area primarily consisting of bedrock.

Coordination with Stewart Environmental was crucial to the successful installation and completion of the new local water and wastewater processing and treatment plants. Murphy Company foreman Troy Lee and his team worked with the Stewart Environmental team to install all of the process piping and plumbing within a three week period in order to receive the final inspection from the health department just one week prior to the job completion and park opening deadline. They met the time challenge of all the equipment skids arriving just 4 weeks prior to job completion and the configuration of all the tanks, skids, chemical racks, pipe, valves and fittings turned out great.

Significant scope-of-work changes occurred and were met by the Murphy Company team during this project. The largest and most demanding change was an added make-up air unit for the kitchen. This challenge required a significant amount of work that needed to be accomplished within a very tight timeframe and accomplished out of sequence. Meeting the challenge started with Murphy Company alerting The Beck Group that a source of make-up air would be required for the kitchen exhaust hoods for their grills. The solution was for The Beck Group to have their engineering firm design the make up air source. They called on Murphy Company to purchase the 14-foot long, 2500 lb. unit and have it expedited from the supplier. Once the unit was manufactured and delivered, other challenges that were met by Murphy Company included installing the unit in a ceiling of a nearly finished kitchen, necessitating the need to route all utilities in less than two weeks. An additional issue to address was the creation of a separate fresh air intake. Architectural and space requirements prohibited the intake from being installed in the sidewall or the roof. The Murphy Company solution included installation of a 16'x2' intake louver in the narrow clerestory between two roof elevations and the inventive use of an interior plenum and duct routing that allowed connection to outside air. The specially made unit also required two separate combustion air and exhaust outlets that were minimized into two penetrations rather than four with the use of concentric vent units. Additionally, rerouting of water supply, drains, L.P. gas, controls wiring and logic was required to make it work. The building gas regulator was upgraded to handle additional demand and a few walls and plumbing

lines were removed and reinstalled to shoehorn this unit into the ceiling. The Murphy Company sheet metal foreman, Tom Berridge, created an inventive way to retrofit the evaporative cooler filter media rack enabling filter replacement when required to accommodate the lack of room above the ceiling to fully pull the rack out. Tom's solution consisted of cutting a hinged door in the rack just large enough to remove one filter at a time and replacing it in a similar fashion to loading a pistol magazine.

The Murphy Company rose to the challenge presented by the owner of the park to create a separate restroom building and took on full design-build responsibilities. Their solutions included redesigned plumbing and mechanical on the building and brought this project into acceptable budget levels.

Architectural and aesthetic requirements mandated zero roof penetrations, and Murphy Company was able to meet this tough requirement with the help of an experienced and dedicated CAD team. The building was designed with lots of floor to ceiling glass windows which left little room for sidewall penetrations. Murphy Company's CAD Lead Larry Blasco skillfully designed the sheet metal ductwork system to accommodate this and other architectural requirements as well as numerous trades' systems. The CAD design was adjusted over the course of a month with the input of multiple entities and their requirements. A series of virtual GoToMeetings was led onsite from Murphy Company Headquarters to facilitate this dialog and active collaboration between The Beck Group, Electrical, Plumbing, Mechanical, IT, Controls, Sprinkler, Structural and Architectural. Each trade representative at the meetings could point out collisions, routing, and problem areas that were remotely adjusted on the fly in the 3D CAD program by Murphy Company. The result was a very logical and efficient routing for all trades which saved time and conflicts in the field.

Another challenge conquered was the task of hiding a massive 43-foot long air handling unit that was placed by the front door entrance. The solution included coordination with The Beck Group on placement of the unit behind a screen wall including the massive supply and return ducts between the wall and the building and were stacked on top of each other to minimize space requirements.

Pre-planning was required to meet tight timeline challenges by the Murphy Company plumbing team led by foreman Jared Bledsoe. They completed the entire kitchen equipment install, including gas appliances, hand sinks, 3-comp and 2-comp sinks, dishwasher, icemakers, coffee-tea makers, food warmers, soda machines, etc. in 9 days.

Murphy Company demonstrated numerous examples of excellence in project execution and management. They worked with The Beck Group closely to push through a very difficult schedule and logistical coordination issues throughout the duration of the project. They proactively reached out to other subcontractors to share both intellectual and physical resources to maximize their ability to complete the project on time and to perfection including sharing heavy equipment, adjusting micro schedules, sharing CAD documents, and O & M information.

Murphy Company also provided up-front design-assist services on this project resulting in \$109,000 in savings on the project from suggestions from Murphy Company lead engineer Dorian Ross.

Additional construction innovations created by Murphy Company for this project include extensive use of the Gripple duct hanger system that decreased the visibility of duct hangers in exposed areas and are versatile enough to hang from roof decking rather than add additional unsightly and expensive roof beam spanning supports. They also helped speed up the install. The beautiful exposed ductwork in the visitor's center was created by Murphy Company sheet metal workers for the high ceiling dining areas and entry/merchandising areas. Sheet Metal Connectors, Inc. barrel flange connectors were used to avoid unsightly exposed sheet metal screws. Additionally, the Murphy Company design-assist team redesigned low profile spiral duct taps and dampers in exposed areas for aesthetic reasons as requested by The Beck Group. These taps were custom made in the Murphy Company sheet metal shop under the direction of Foreman Mark Roupe.

Safety was addressed in weekly jobsite meetings with the entire construction team under The Beck Group and was supplemented by weekly safety meetings conducted by Murphy Company project manager, Sean Kute. The Behavior Based Safety system was continually kept up-to-date and routine foreman safety audits were also conducted. Additionally, daily Pre-Task Planning

was conducted by each foreman on site. The Murphy Company team of professionals is honored to help bring a very important piece of Colorado back to life. Their work on the project will help bring precious tourist dollars back to the community and help revitalize the economy of the region. Murphy Company is proud to play a role in bringing the Park back to a better-than-ever status. Their creative and innovative application of services helped to preserve the unique views of the Royal Gorge.











