

**Category:** 11 – Best Building Project – GC (\$70M) **Actual Cost:** \$555,090,880

**Contractor:** Mortenson / WELBRO (joint venture)

**Project Name:** Gaylord Rockies Resort & Convention Center

Mortenson/WELBRO, a Joint Venture, built the Gaylord Rockies Resort & Convention Center, in Aurora, CO for RIDA Development Corporation. This 85-acre development was the largest hotel under construction in the western U.S. in 2018 and includes a 1,500-room hotel, more than 1.9 million square feet of hotel, restaurant, and retail space, indoor/outdoor recreational park, and convention facility. Recreational facilities include: 800-foot Lazy River, expansive event lawns, resort-style outdoor pool, 22,000-square-foot indoor pool venue with slides, tennis courts, pool bar, putting course, and a basketball court. The Grand Lodge serves as the epicenter for access throughout the resort and convention center. This space provides theming elements such as an authentic railroad caboose and mountain lake with a geyser, and a 95-foot-high roof at its peak. The convention facility is connected to the hotel lobby by a wide walkway that is lined with retail, a marketplace, and coffee shop. The convention center incorporates three levels of exhibit space that are served by a banquet kitchen, employee facilities, laundry support, and truck loading bays. This project created nearly 10,000 construction jobs, 1,500 permanent jobs, and will attract more than 450,000 net new visitors to the state each year.

With a tight schedule to turn over 1,501 guestrooms within the multi-wing hotel building, getting the structure enclosed and water tight was critical to our success. With over 443,000 square feet of enclosure area, the Mortenson/WELBRO team developed a process and plan to prefabricate the exterior balloon-framed enclosure system. Together with our enclosure trade partners, built an on-site prefabrication facility where over 85% of the exterior wall framing, sheathing, air-barrier and windows were assembled into large prefabricated wall panels. This was done with a small crew, working in a controlled environment well ahead of when the enclosure work was scheduled to begin. With plenty of room to store the prefabricated panels on-site, this process allowed the work to be accomplished with a significantly smaller labor force working on the ground where both quality and safety were much easier to manage and control. Panels were erected with the four tower cranes used on the hotel building and were always within two floors

of the structure construction. Once the panels were flown into place, the joints were sealed, and the floor was effectively enclosed at that time.

By pre-fabricating the enclosure system, we reduced the overall construction duration by over 2 months, significantly reduced the amount of peak workforce needed to install the enclosure system and exceeded quality expectations for all aspects of the enclosure installation. All of this was done using BIM as the primary means to coordinate the structural, architectural, and enclosure details in 3D prior to assembling panels to ensure a smooth and trouble-free installation process. The scale of this effort and the valuable lessons learned has paved the way for standardizing prefabricated enclosure techniques used by Mortenson/WELBRO and our subcontractors on future projects.

Teamwork was essential to overcoming the sheer size and complexity of this Rocky Mountain themed, high-end hotel and convention space. Mortenson/WELBRO was selected early, before the conclusion of the schematic design documents phase. Together with HKS Architects, we worked collaboratively for over two years in a preconstruction role to ensure the budget was maintained from schematic design through the completion of construction documents and the establishment of the Guaranteed Maximum Price contract. Because of the size of the project, we implemented component teams each focused on a specific aspect of the project.

In the Grand Lodge, a top down approach was used from installing the hard wood tongue and groove ceilings above, to the roaring rapids, waterfall, and lake below. While finalizing design, numerous mockups were created to replicate the exact finish product of this grand space including chiseled stone stairs, faux railroad tracks, a massive carved cave wall, faux carved logs and boulders complete with realistic looking moss. The Mortenson/WELBRO team also utilized 4D scheduling techniques (overlaying the 3D BIM with the CPM schedule) within the inside of the Grand Lodge to maximize trade contractor installation efficiencies. This included 3D modeling the scaffolding and the numerous manlifts that would be required within this space. By incorporated the scaffolding and lift time within the CPM schedule we could run 4D simulations that would show the movement of equipment and scaffolding throughout the space over time. This was instrumental in coordinating the maximum amount of equipment in a relatively tight space and visually showing the trade partners how and when they needed to be installing their work and still be able to reach the finishes that were over 95' above the ground floor in the upper ceiling areas.

By breaking the project into manageable pieces, it was easier for smaller teams to maintain accountability to a budget, schedule, and deliver on the overall design vision for the property. These component teams consisted of a construction operation lead and estimator, a design lead, and usually involved the chosen design/assist subcontractor who was brought on early to provide constructability feedback and budget certainty, prior to the start of construction. As the team transitioned into construction, we maintained the component teams, each focusing on their smaller piece of the project. We even took this a step further by breaking up the subcontracts into even smaller components to spread out the workload. We simultaneously employed four different drywall subcontractors, four different flooring and tile subcontractors, a multitude of painting and wallcovering subs, as well as two different electrical subcontractors. All of this was to overcome the size of the project and allow component teams to focus their energy on a smaller, more manageable section of the project. This paid off as the entire facility was delivered on-time, to the day, and on budget, even in an extremely busy construction market where available labor was scarce.

At the exterior of the hotel, the project team chose to pre-fabricate and panelize the exterior walls controlling the quality of the framing, sheathing, air-weather barrier, and window installation. This work was on the ground in a controlled environment, which once installed expedited the enclosing of the building and provided certainty in the quality and performance of the primary weather barrier.

The Mortenson/WELBRO team used value analysis, value engineering and target value design techniques throughout the preconstruction process. Mortenson/WELBRO was selected and brought on board between concepts and completion of SDs. We worked extensively for over two years in collaboration with HKS Architects to maintain the Owner's desired budget.

The team used a combination of Trend logs and Value Engineering logs throughout the design process. Trend logs were used in between milestone estimates to monitor any impacts to the budget, both up and down, as design evolved from schematic design through construction documents. The preconstruction team kept track of any trends in the design that were having an impact on the budget. At any time throughout the preconstruction process the entire team always knew the status of the design against the budget as the trend log was continuously updated.

Further to this, whenever a major design milestone was met - SD, DD, 60% CD/GMP and 90% CD, a milestone estimate was created to establish a new budget baseline and, as is often

the case with all extremely budget conscious projects, value engineering and value analysis became the tool that the team used to provide material or system options to save cost and keep the project on budget. Throughout the life of preconstruction hundreds of value engineering ideas were priced and proposed to maximize the aesthetic and guest experience elements of the facility but still maintain budget.

Safety was viewed as an integral part of the success of this project as we totaled 4,945,227 total man-hours for all disciplines included in our contract throughout the duration of the project! We required every new craft worker conducting work on the site was required to attend 1st day/ 1st hour orientation and training prior to going to work on the project. Subsequently, all craft workers were also required to attend 2nd and 3rd orientation training sessions within 3 weeks of attending the 1st day orientation. Project safety work rules, material handling procedures, 'Speak up / Listen up' program and hazard recognition training was provided at these follow-up orientation sessions. In addition, all Mortenson craft workers also attended a full day Mortenson Zero Injury training course as part of the required safety training on the project.

At numerous points throughout the project, and no less than bi-monthly, specialized safety training was provided to all craft workers. For all significant near misses and any injury or safety incident that occurred on the project, specialty contractors were required to report the incident, investigate the cause and report their findings. Mortenson/WELBRO had full time safety managers on the project to assist in the investigation and reporting. In addition, the project was under an Owner Controlled Insurance Program (OCIP) that all specialty contractors were required to participate in. This also required extensive involvement by the contractors in injury case management and thorough incident reporting to the OCIP manager.



Photo 1: Mortenson\_Gaylord\_1

Caption: Gaylord Rockies Resort and Convention Center overall exterior  
Photo Credit: Caleb Tkach



Photo 2: Mortenson\_Gaylord\_2

Caption: Gaylord Rockies Resort and Convention Center guest room  
Photo Credit: Caleb Tkach

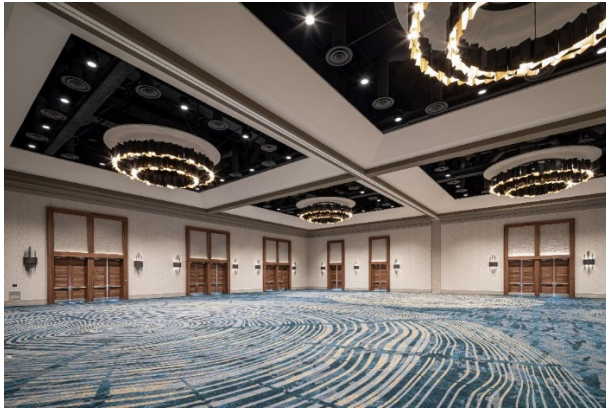


Photo 3: Mortenson\_Gaylord\_3

Caption: Gaylord Rockies Resort and Convention Center ballroom  
Photo Credit: Caleb Tkach

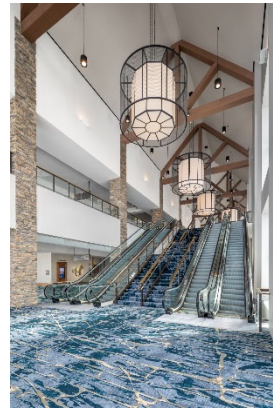


Photo 4: Mortenson\_Gaylord\_4

Caption: Gaylord Rockies Resort and Convention Center common space  
Photo Credit: Caleb Tkach

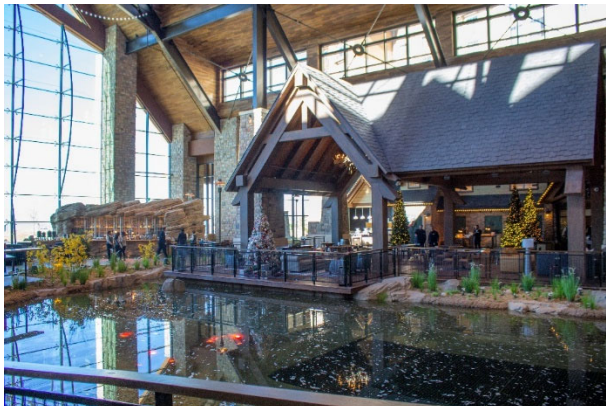


Photo 5: Mortenson\_Gaylord\_5

Caption: Gaylord Rockies Resort and Convention Center theming  
Photo Credit: Caleb Tkach



Photo 6: Mortenson\_Gaylord\_6

Caption: Gaylord Rockies Resort and Convention Center sports bar TV  
Photo Credit: Caleb Tkach





Photo 7: Mortenson\_Gaylord\_7

Caption: Gaylord Rockies Resort and Convention Center aerial

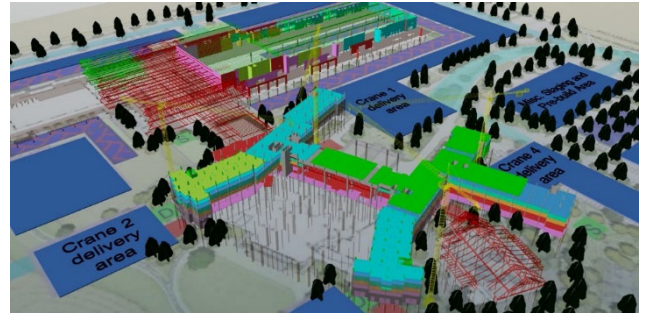


Photo 8: Mortenson\_Gaylord\_8

Caption: Gaylord Rockies Resort and Convention Center 4D Model



Photo 9: Mortenson\_Gaylord\_9

Caption: Gaylord Rockies Resort and Convention Center under construction



Photo 10: Mortenson\_Gaylord\_10

Caption: Gaylord Rockies Resort and Convention Center mockups for quality