## ACE Entry Project Information:

Project Team:

Construction Manager/General Contractor: Saunders Construction, Inc.

Design Architect: Davis Partnership Architects

Structural Engineer: S.A. Miro Inc.

Civil Engineer: Martin & Martin

MEP Engineer: RMH Group

Building Construction Start Date: October 2012

Substantial Project Completion: March 2014

Total Construction Cost: $53,000,000

Saunders Construction, Inc. is submitting the University of Colorado Boulder Student Recreation Center Expansion and Renovation project in Category 3: Meeting the Challenge of a Difficult Job – General Contractor.

## Overview

The more than $53 million renovation to the University of Colorado Boulder's student recreation center presented its fair share of challenges, both middling and uncharted, at almost every turn. From complex logistics at the highly active occupied facility to a 100-year flood, Saunders Construction's ability to maintain construction excellence would be the difference between success and failure.

## Come Rain or Shine: CU Boulder Student Recreation Center

Much like the pursuit of higher education, where dedication and continuous improvement are paramount, a firm's ability to deliver a successful project takes skill, adaptability, long hours and the confidence to overcome challenges.

Known for its Tuscan vernacular-style architecture, the University of Colorado Boulder is often voted one of the most beautiful campuses in the nation. It's also recognized for paving the way to sustainable, energy efficient solutions — both inside the classroom and out. However, the heart

of the campus, the Student Recreation Center, was failing to meet the high demands of the student body. As a result, students approved and will ultimately pay for the $53 million renovation of the 42-year-old structure.

In order to provide a state-of-the-art facility, every square foot of the existing building— 235,242 to be exact — required complete renovation. The renovation also included complete replacement of the building's mechanical and electrical systems to address deferred maintenance needs.

In addition to the renovation, Saunders built new construction in excess of 70,000 square feet, providing space for expanded strength and conditioning areas, a new ice arena, a three-story rock climbing wall, roof-top tennis courts, and a new indoor turf multi-activity gym. The addition required an excavation of approximately 18 feet deep (33,000 cubic yards of dirt) and nearly five months of campus utility relocations. Additionally, the facility required structural enhancements to meet current seismic requirements.

During the entire construction phase, the Recreation Center remained operational. This required a complex phasing plan, extensive partition systems to keep construction operations away from users and continuous monitoring of noise, temperature and dust to ensure comfort of students and faculty. Additionally, extensive site work included an outdoor pool area, entry courtyard, service yard, green space and parking areas.

The aquatics area, including competition swim lanes, received a complete renovation including a new corrosion-resistant roof, as well as updated and code-compliant pool equipment.

The Recreation Center is seeking LEED Platinum Certification.

From excavation in fall of 2012 to building completion in the spring of 2014, the Rec Center had no shortage of obstacles to overcome, as it was subject to numerous challenges including Mother Nature, complex logistics and renovation to an occupied facility.

As Saunders was nearing its one-year mark of construction the skies opened — and stayed that way for eight days. Known as the 100-year flood, the storm that rolled through Boulder County in September of 2013 brought more than just 17 inches of rain. At the Rec Center, construction was 73 percent complete, and as luck would have it, roof installation was in progress as the first raindrop fell. Saunders had little time to come up with a solution, as Mother Nature stole 25 percent of Saunders' remaining schedule. However, the project finished on time.

Over the next eight days, as the campus was ordered to evacuate, Saunders continued construction and mitigation efforts. Removal of water infiltration, protection of installed MEP systems, and appropriate management of changed site conditions were just a few of the steps taken to ensure the Rec Center was kept safe. It's important to note, as this was a multi-phased project, Saunders began construction on phases not affected by the flood in an effort to alleviate schedule constraints down the road.

The challenges brought by the flood didn't end with the Rec Center facility. Damage to the surrounding area constricted access to the site – hampering the delivery of materials and disposal of construction debris. Local suppliers also felt the impact, dealing with damaged material from flooded quarries – among other issues.

It was only through constant communication, a tremendous amount of teamwork and dedication that Saunders' mitigation efforts were successful in preventing significant damage to the building by providing protection to mechanical and electrical equipment, which ultimately limited the total cost and schedule impacts to the overall project.

Construction, by default, can be full of surprises. But it's when you add in the occupied remodel component that the process of managing these "surprises" can become a deal breaker to the successful delivery of the project. So in order to accurately account for the human factor and the amount of activity surrounding the project, Saunders created a multi-faceted phasing plan.

Student and faculty safety was at the top of the priority list so prior to commencing with each phase of construction to the existing facility, Saunders generated a Method of Procedure

describing, in detail, our planned process to cut, cap and make safe existing services in the space to be renovated without impacting services in occupied spaces. At every stage, partitions were built, then removed, then built and removed again. The process ensured students, and other general users of the facility, were always separated from ongoing construction. Clear and concise communication was vital in this effort, and while challenging, proved to be a tremendous success, as the Rec Center never spent one day unopened due to construction.

The University understood in order to continue attracting students, as well as satisfy the needs of current students, this particular Rec Center had to be anything but average. So one of the country's most energy efficient student rec centers was born. Saunders was responsible for ensuring that construction was completed in an efficient manner as to achieve LEED Platinum Certification, while bearing in mind project budget, schedule and scope. Among the most sustainable features within the facility are:

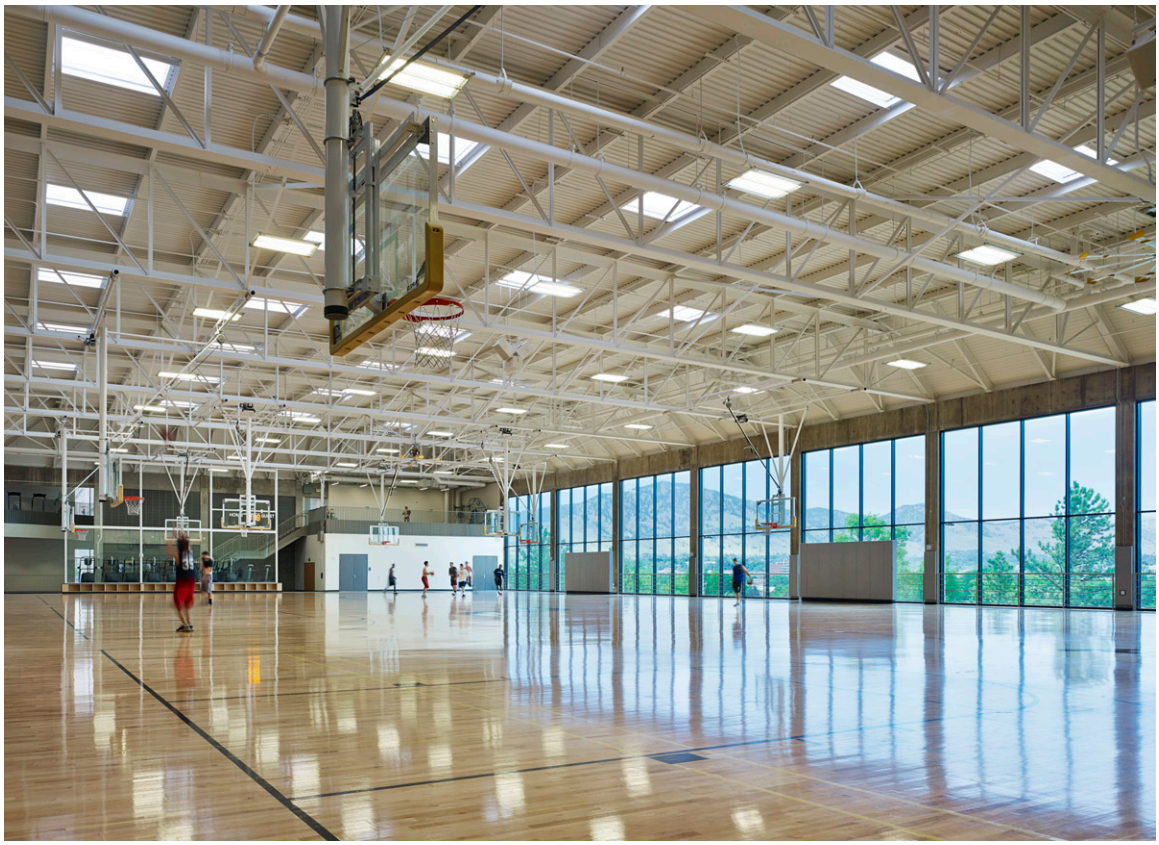
- Direct/indirect evaporating cooling system - Created with the help of RMH Group's 3-D software, the system is used for both heating and cooling, and is textbook perfect for energy efficiency. The system is relatively simple; the excess heat generated by the ice arena's cooling system is used to warm the water in the indoor and outdoor swimming pools, as well as tap water and shower water.
    - The building is also temperature controlled throughout — distributing heat where it's needed, and displacing it when it's not. Students will find the rec center is constantly at a comfortable temperature, wasting little to no energy in the process.
- Lighting and electrical - Saunders installed a new roof, 101 skylights, LED lighting, two large destratification fans in the indoor pool and six fans total to the gymnasium spaces — capable of producing 365,000 CFM and 74,100 CFM, respectively.

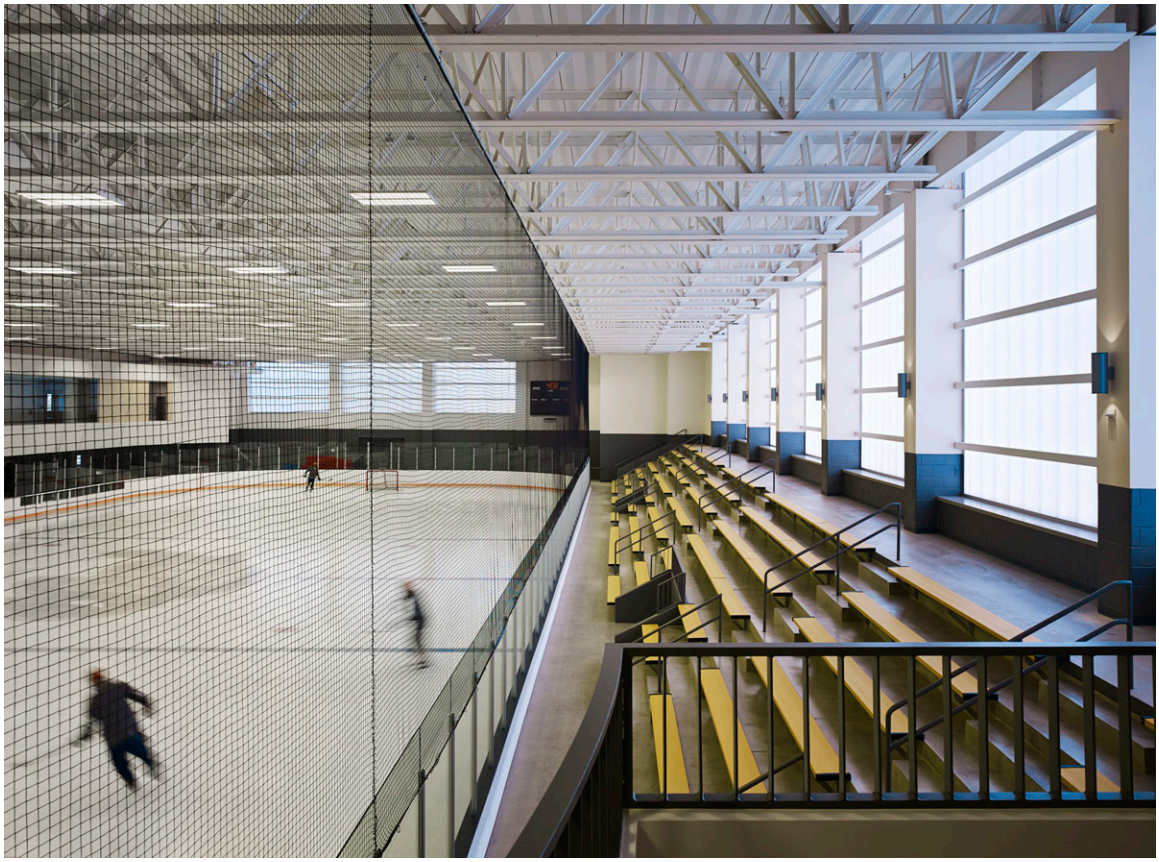
As with any project Saunders builds, safety is on the top of the priority list. From day one, Saunders implemented a Safety Program to ensure all occupants of the building were informed and aware of ongoing construction through signage, communication with the Facilities Department, etc. This program also includes in-house safety training program for Saunders employees and subcontractors that exceed OSHA requirements, as well as daily pre-task meetings and safety walks to identify any potential hazards. The Safety Program did its job, as

there were more than 700,000 total manhours clocked on the project and not one lost time incident.

In addition to safety, Saunders also holds its quality craftsmanship to a higher level. Quality was ensured under the guidance, supervision and direction of our Superintendent and our Project Manager. Our highly experienced project engineers were responsible for successfully developing, updating and maintaining our quality assurance process and documentation. In addition to in-depth reviews of the construction documents during the design and bidding phases; our Quality Control process continued through subcontractor scope buyout, submittal reviews, pre-installation conferences and documented initial and follow up inspections of the work installed on site. Our engineers verified materials delivered to the project site were consistent with the approved submittals, and supported our field supervision in reviewing the quality of the installation.

Walking through the campus, you'd never know the Rec Center underwent a major renovation riddled with unforeseen challenges. New and old come together as if nothing had changed. And when the students need a break from the occasional challenges they're sure to encounter, they can take a swim in the CU mascot-shaped "Ralphie" pool, hit the ball back and forth on the roof-top tennis courts, lace up their ice skates for a lap around the ice arena or climb the three-story indoor rock climbing wall. Whatever they choose to do, the students can all agree on one thing — their new Student Rec Center definitely makes the grade.



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