



News Release

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FOR IMMEDIATE RELEASE

MSU Denver's Regency Athletic Complex an All Star in Eyes of Engineering Community *Great Projects Win Colorado Engineering Council's Top Awards*

DENVER (Nov. 2, 2015) – The American Council of Engineering Companies (ACEC) of Colorado today announced the winners of its 2016 Engineering Excellence Awards, placing the spotlight on 13 Colorado firms with projects that were considered by judges as engineering innovations.

A Grand Conceptor Award for the overall best engineering project was presented to **CTL|Thompson, Inc.** for the Regency Athletic Complex at Metropolitan State University of Denver.

Excellence Awards were presented to **KL&A, Inc.** for Aspen Art Museum; **FEI Engineers, Inc.** for St. Vrain Sanitation District Wastewater Treatment Facility Expansion; **RMG – Rocky Mountain Group** for the Broadmoor Cloud Camp; **Merrick & Company** for the Data Fusion to Predict Habitat Quality; and **Olsson Associates** for the Aerial Survey of Kokopelli Trail.

"Engineering innovations are transforming communities, rehabilitating urban brownfields with relevant purpose and preparing our state's infrastructure to manage the unprecedented growth that Colorado is currently experiencing," said Marvinetta Hartwig, PE, ACEC Colorado 2015-16 president. "It takes strong leadership and creative thinking to effectively address infrastructure stability, and is foundational to commerce and economic prosperity. It also takes a savvy business approach to create solutions that support Colorado's vision for its future and building strong collaborations between the public and private sectors that are beneficial to both.

"Each year, as we celebrate great engineering feats, we see firsthand the impact of successful collaboration and planning, and the efforts required to engineer Colorado's future. It is important for our citizens to understand what it takes to maintain our state's quality of life and how engineers are protecting resources and solving complex issues to infrastructure that will sustain well into the future," Hartwig added.

Projects by Colorado engineering firms are rated by a panel of industry professionals who judge each project on the criteria of uniqueness and innovative applications; future value to the engineering profession; perception by the public; social, economic, and sustainable development considerations; complexity; and successful fulfillment of client/owner's needs, including schedule and budget.

Colorado's Grand Conceptor and Engineering Excellence Award project winners will advance to the national ACEC competition, which will be held April 19, 2016, in Washington, D.C.

Honor Awards were presented to **Merrick & Company** for Calumet Montana Refining Crude Unit #2; **Tsiouvaras Simmons Holderness, Inc.**, for Boulder Junction Transportation Improvements; and **Burns & McDonnell Engineering Company** for the City of Westminster's Lowell Boulevard Waterline Rehabilitation Project.

Recipients of Merit Awards were **Shaffer Baucom Engineering & Consulting** for Redefining Possible: Engineering the Craig Way, Craig Hospital Renovation; **The RMH Group, Inc.**, for Breckenridge Brewery and Farm House Restaurant; **Hatch Mott MacDonald** for the City of Westminster's Standley Lake Raw Water Bypass; and **Engineering Analytics** for Georgetown Lake Outlet Improvements.

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About ACEC Colorado

ACEC Colorado (www.acec-co.org) is the business association of more than 220 member firms employing approximately 10,000 employees in the independent private practice of consulting engineering. The organization is a primary resource for accessing engineering information, expertise and business ethics practices. ACEC Colorado provides leadership and direction by developing practical, feasible options and solutions based upon technical collaboration to achieve enduring outcomes to benefit society.

EDITOR'S NOTE: A "Project Description Addendum," which includes photos of the Grand Conceptor and Engineering Excellence Award recipients is found on the preceding pages.



AMERICAN COUNCIL OF ENGINEERING COMPANIES
of Colorado

THE VOICE OF COLORADO'S ENGINEERING INDUSTRY

PROJECT DESCRIPTIONS

2016 Grand Conceptor and Engineering Excellence Award Recipients

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2016 Grand Conceptor

Regency Athletic Complex at Metropolitan State University of Denver
Engineer: CTL|Thompson, Inc.



Redeveloping a major brownfield into a new sports facility complex with athletic fields for baseball, softball and soccer teams, as well as tennis courts and running paths for Metropolitan State University of Denver was a major challenge – economically and environmentally. An onsite environmental inspection revealed asbestos and chemical contaminants on the former industrial complex property, which in the past had housed truck fleets, cold-storage facilities, a rail yard for coal and an adjacent

chemical storage company. Instead of excavating and removing contaminated soils and replacing the property with imported fill materials, CTL|Thompson, Inc. used Deep Dynamic Compaction, a ground-improvement technique that densifies soils, compacting fills in-place by using a drop weight. This viable alternative made the project economically feasible. A 100-foot crane with a 30-ton weight was used for the compacting process and to promote public safety and environmental stewardship, measures were taken to monitor air quality and vibration from the impact. The process revitalized the property and saved the client up to \$3 million in disposal costs, allowing the university to transform its vision into a reality and complete the \$23.6 million sports complex, enhancing the student experience at this evolving urban campus.

Editor's Note: Attached for use is a photo (RegencyAthleticComplexMSU.jpg) with the suggested caption: Completed football field at Metropolitan State University of Denver's Regency Athletic Complex.

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2016 Engineering Excellence Awards

Data Fusion Predicts Habitat Quality, Edwards Air Force Base, Calif.

Engineer: Merrick & Company



Edwards Air Force Base is located in California's Mojave Desert, which is home to unique and threatened species such as the desert tortoise, the Joshua tree and desert springparsley. The Air Force monitors impacts of its operations on habitats using multispectral satellite imagery and traditional aerial and field approaches. Hyperspectral imagery and Light Detection and Ranging (LiDAR) remote-sensing technologies are being used as more cost-effective

methods to collect and analyze spatial data related to habitat quality. Merrick & Company, the primary mapping consultant, was responsible for overall technical implementation, aviation coordination, sensor integration, LiDAR acquisition and point cloud post-processing. Fusing and modeling discreet remotely sensed data from several digital sensors is used to assess habitat quality for inventory and preservation of unique desert species, enabling systematic comparisons to be made over time for effective management of the desert ecosystem. The data also helps to substantiate that operations on Edwards Air Force Base do not degrade habitat quality that may result in the loss of sensitive species in the region.

Editor's Note: Attached for use is a photo (EdwardsAFBDesertTortoise.jpg) with the suggested caption: Desert tortoise (*Gopherus agassizii*) is a threatened species found on Edwards Air Force Base, which has greatly benefited from the conservation efforts using remote sensing data and technologies.

Aspen Art Museum, Aspen, Colo.

Engineer: KL&A, Inc.



The Aspen Art Museum is a 33,000-square-foot iconic venue in Aspen designed by Pritzker Prize-winning architect Shigeru Ban and that features a two-way, wood space frame floor structure above the top floor terrace, which is unique in the world in terms of its form, use of innovative wood materials, and its fabrication and construction. Ban's intent was to make wood structure of sustainable material and building systems, tying the look to the local landscape. KL&A, Inc., worked collaboratively with an international team challenged by competing demands of

high snow loads and Ban's desire for long spans with strict limits on structural depth.

The final solution used a combination of spruce and micro-laminated birch plywood with a custom layup to optimize wood grain direction relative to local stresses, and members were connected almost entirely with fully threaded wood screws that remain invisible from below. The museum is a warm and well-lighted popular destination that reflects "new design thinking" in terms of successfully blending a futuristic vision with the character of a pristine natural environment.

Editor's Note: Attached for use is a photo (AspenArtMuseum.jpg) with the suggested caption: Designed by KL&A, Inc., Structural Engineers and Builders with Creation Holz of Herisau, Switzerland, and fabricated by Spearhead from Nelson, British Columbia, the roof structure is visible from the street through the transparent woven, wood screen.

St. Vrain District Wastewater Treatment Facility Expansion, Firestone, Colo.
Engineer: FEI Engineers, Inc.



Design and construction of a new state of the art regional wastewater treatment facility to meet the needs of the Towns of Firestone and Frederick, the City of Dacono and surrounding areas positioned the St. Vrain Sanitation District to meet future regulatory wastewater compliance. FEI Engineers, Inc. incorporated design solutions that were efficient, ecological and sustainable. The facility is one of the first in Colorado to install screw-press dewatering technology, a ready means of converting stabilized biosolids into a usable and marketable product. The facility also incorporated a second generation Autothermal Thermophilic Aerobic Digestion biosolids system, which yields Class "A" biosolids available for reuse by landscapers and homeowners; a raw sewage pumping system that handles difficult solids with ease; and an advanced jet aeration oxidation ditch with multi-point instrumentation and controls for increased flexibility and long-term energy efficiency. Along with minimizing the risk to public health and the environment caused by harmful pathogens and nutrients, the 6-million-gallon-per-day facility provides additional capacity needed, which will benefit the district and surrounding areas for decades to come.

Editor's Note: Attached for use is a photo (StVrainWastewater.jpg) with the suggested caption: The newly expanded St. Vrain Sanitation District Wastewater Treatment Facility serves as a regional treatment facility for the Town of Firestone, City of Dacono, Town of Frederick, and surrounding areas.

Aerial Survey of Kokopelli Trail, Fruita, Colo.
Engineer: Olsson Associates



The City of Fruita wanted to connect its residents to the world-class Kokopelli Trail network. This project would also boost tourism and economic diversity through its focus on health and the outdoors, but funding the effort was a major obstacle. Olsson Associates was contacted to discuss performing a survey of the proposed trail connection and the timing was auspicious as the firm was looking for pilot projects to test its new Unmanned Aerial System (UAS). The City hired Olsson Associates to stake survey control points, which Olsson then used to guide its pro bono UAS survey of the five-mile project area. UAS technology not only required less manpower and fewer resources than a traditional ground team survey, but also delivered an accurate and "workable" product that allows city staff to view and interact with the survey, editing data to remove trees and other blockages to produce a realistic, 3D vision for the trail plan. This saved the city approximately \$20,000 in fees, which it plans to put toward future design and construction of the trail.

Editor's Note: Attached for use is a photo (AerialSurveyKokopelliTrail.jpg) with the suggested caption: A Multirotor Unmanned Aerial Vehicle (UAV) from 3D Robotics was selected for the mission due to its redundancy and ease of use in confined terrain.

**Broadmoor Cloud Camp, Colorado Springs, Colo.
Engineer: RMG – Rocky Mountain Group**



The Broadmoor Hotel's Cloud Camp, the latest addition to the five-star resort's "wilderness experience" theme, located at 9,200 feet on the top of Cheyenne Mountain, posed many unique engineering challenges. RMG – Rocky Mountain Group provided structural engineering for the camp's new cabins, lodge and fire tower cabin and was charged with incorporating foundations and cement walls, remnants of the Broadmoor's original 1926 lodge and fire tower, into the new structures, while protecting the existing environment as much as possible. Lengths

of cabin support pole logs and steel frame members for the fire tower were reviewed to ensure access up the switchback road to the site; asbestos debris from the original structure was mitigated; a ramp with extensive side stairs for worker access and a cable-pulled trolley for hauling material to the fire tower was installed; numerous granite boulders were inspected for stability to avoid extensive excavations; and the fire tower's log roof framing, replicating the old log cabin look, was overframed by conventional high-strength, laminated beams to provide the rigidity needed to meet today's codes led to completion of the new buildings, restoring Broadmoor founder Spencer Penrose's vision of creating a truly unique human experience.

Editor's Note: Attached for use is a photo (BroadmoorCloudCampLodge.jpg) with the suggested caption: A granite outcropping at the south end of the lodge was to remain in place. The building was to step up with the outcropping slope, requiring strategic locating of the footprint, confirming adequate direct foundation bearing on the material and appropriate step detailing to maneuver the walls up the granite terrain. A mature fir tree was growing among the granite located within 2 feet of the east wall. This tree was saved by carefully locating the footprint and designing the foundation to bridge over the root area.

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