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FOR IMMEDIATE RELEASE

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**EIGHT COLORADO ENGINEERING FIRMS TAKE TOP HONORS  
FOR LOCAL, NATIONAL AND INTERNATIONAL PROJECTS**

**ENGINEERING COUNCIL ANNOUNCES RECIPIENTS OF ITS 2007  
ENGINEERING EXCELLENCE AWARDS**

*Innovations in mapping and mechanical technologies, architectural use of structural steel in historic building renovation, turning waste streams into a renewable and clean-burning fuel source among celebrated engineering feats.*

DENVER, CO – Twenty-nine Colorado engineering firms submitted their most innovative engineering projects to the American Council of Engineering Companies of Colorado (ACEC/CO) for its 2007 Colorado Engineering Excellence Awards program that was held today at the historic Brown Palace Hotel.

The City and County of Denver’s Quigg Newton Auditorium Theatre & Ellie Caulkins Opera House and Coors Brewing Company’s Ethanol Plant Expansion Project were among the projects receiving excellence awards at today’s ceremony. “Colorado engineering firms entered local, national and international projects that celebrate the great contributions of our industry as we work to upgrade infrastructure and engineer projects that are beneficial to the social, environmental and economic welfare of communities,” said Stu Monical, ACEC/CO president.

“ACEC/CO continues to showcase the importance of engineering as it relates to public welfare and progress. These projects also demonstrate the global opportunities that are readily available to young engineers entering our industry. It is always our intent to raise awareness of the role engineers play in our society. As you enter an amazing public place for entertainment, such as Denver’s Ellie Caulkins Opera House, or enjoy beverages from one of our state’s largest employers, we want people to understand the role engineering has played in bringing these opportunities to everyday life,” he added.

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Entries were judged by business, media and industry professionals who recognize excellence based upon five criteria: originality and innovation, meeting and exceeding client needs, social and economic value, complexity, and future value to the engineering profession. This year's judges were Jack Byers, deputy state engineer for the State of Colorado; Preston Gibson, president and CEO of the Jefferson Economic Council; Mike Haselden, vice president and COO for Haselden Construction; Dick Hinson, vice president for the Aurora Economic Development Council; Diana Murphy, editor of McGraw Hill's Daily Journal; Cheri Rodgers Gerou, licensed architect; Mark Weidhaas, P.E., president of the Professional Engineers of Colorado; and Ned Williams, director of public works and utilities for Boulder and APWA president.

The ACEC/CO competition recognizes engineering achievements that demonstrate ingenuity and significant technical, economic or social advancements by Colorado-based engineering firms. The eight top entries will compete in the national ACEC competition to be held in Washington, D.C. in February 2007.

The categories range from research and studies, structural systems, environmental, building systems, mapping and transportation to water and wastewater and special projects.

## ***2007 Engineering Excellence Awards Recipients***

### **Category: Building/Technology Systems**

**M-E Engineers, Inc.**

**TSA/Arizona Cardinals Multipurpose Facility, Glendale, AZ**

**Client: HOK Sport Venue Event**

#### ***Engineering an Oasis.***

M-E Engineers, Inc. designed mechanical, electrical, plumbing and technology systems for the new Arizona Cardinals Stadium. The mechanical system is capable of cooling 65,000 people, even when the outside desert conditions are 115 degrees and very humid. Unique systems provide maximum temperature control and patron comfort. A unique "fan wall" air handling system and a sophisticated dew point tracking control strategy automatically prevents condensation from forming on cold, bare ductwork and dripping on the patrons. Innovative use of custom Huntair Fan wall air handlers also aided in the problem of the limited space capacity for the seating air conditioners. This equipment provides a wall of multiple, small-plug fans stacked up in the front of a coil section. Failure of a single fan will go unnoticed providing great reliability on game days. This is the first time this fan system has been used in an air-conditioned stadium. The success of the Cardinals Stadium system, from operational and budgetary standpoints, demonstrates how it may be applied to other large scale, climate controlled facilities around the world, especially when the facility is geographically located where extreme weather conditions exist.

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**MKK Consulting Engineers, Inc.**  
**The Sanctuary: Energy, Environment and Economics in Harmony, Snowmass, CO**  
**Client: Aspen Skiing Company**

*Energy, Environment and Economics in Harmony through Creative Design.*

MKK Consulting Engineers, Inc. provided design for an energy efficient, environmentally friendly and cost-effective mechanical system for 23 fractionally owned condominium units – two buildings totaling 85,400 square feet. The mechanical system is located at an elevation of 9,600 feet and is currently the largest system of its type in the Rocky Mountain Region. It is only one of five in the world using an effluent pond as an energy source. The challenging parameters included protected wetlands between the two buildings, strict noise ordinances, height restrictions and limited land space. MKK proposed the use of an effluent pond, a two-acre pond that ranges from five to eight feet deep and remains relatively ice-free throughout the winter months. It is used by the water treatment facility for Snowmass Village to treat wastewater before returning it to the local watershed. Receiving approval from state and local authorities to use the pond, MKK worked with Major Geothermal, Inc., a geothermal expert, to provide an energy analysis for the pond, specifications for the equipment used in the pond-loop and analysis and reports required by governmental agencies to utilize the effluent pond. This is an innovative use of a pond-loop heat-pump system utilizing an adjacent wastewater effluent pond – an otherwise untapped energy source.

**Category: Structural Systems**

**Martin/Martin, Inc.**  
**Quigg Newton Auditorium Theatre & Ellie Caulkins Opera House, Denver, CO**  
**Client: City and County of Denver**

*The Choreography of Structure.*

Martin/Martin, Inc. performed structural engineering design that involved the complete renovation of the historic civic auditorium theatre building in the Denver Performing Arts Complex. The 1908 building's interior was demolished preserving only the historic masonry and riveted steel frame shell. The two-year renovation marked the third such major project in the building's 97-year history. The reconstructed state-of-the-art theater is home to local opera and ballet companies and features 2,100 seats, an orchestra pit, a double-warped seating bowl, three sloping and warped balcony levels, stage lifts, theatrical rigging support, seating wagon storage and several back-of-house performance and rehearsal spaces. Each of the original seven built-up steel roof trusses are supported by a pair of built-up steel columns at each end. Several of the 1908 lattice columns and surrounding bracing were incorporated as an aesthetic feature of the lobby space. Ninety-seven years of paint and refinishing were carefully removed and the in-place steel columns were re-finished to AESS standards and finely painted.

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The resulting exposed structural steel columns yield a glimpse of the structural history of the building. Structural steel was the primary material used to brace the building during construction. During demolition, steel tubes and cable were used extensively to brace the 30-inch thick, 75-foot tall historic masonry walls. Creative strengthening techniques used on a large-scale basis on this project will redefine how architectural and engineering firms approach historic buildings.

**Category: Surveying and Mapping Technology**

**Merrick & Company**

**Environmental LIDAR Applications in Colombia, South America**

**Client: Ministry of Defense, Department of Navy, Division of Marine Management (DIMAR)**

***Landmark LiDAR Mapping Project Modernizing Critical Coastline Planning.***

In 2005, a division of the Columbian Navy, the Maritime Directorate, began a multi-year program to use Light Detection and Ranging (LiDAR) and digital aerial photography to determine the geographic limits of their jurisdiction. Merrick & Company's GeoSpatial Solutions team collected and processed high-precision topographical data and imagery in four sensitive areas of the Columbian coastline using LiDAR technology. Merrick & Company executed a contract to demonstrate the feasibility of using LiDAR technologies for marine, shoreline and inland environmental applications. The project collected and processed high-precision topographic data and imagery in four sensitive coastal areas, which comprise approximately 10 percent of the 3,500-kilometer (2,400-mile) coastline. LiDAR is the only airborne technology capable of penetrating the dense vegetation, allowing high-precision flood, tsunami, and storm surge boundaries to be delineated. The aircraft-mounted LiDAR technology rapidly transmits pulses of light that reflect off the terrain and other objects it encounters. The return pulse is converted from photons to electrical impulses and collected by a high-speed data recorder. The high resolution color digital aerial photography that was captured allows DIMAR planners and scientists to identify and quantify illegal development along the coast and assess the materials used to construct these villages, locate potential water pollution sites and determine the general health and condition of estuaries and wetlands.

**Category: Water and Wastewater**

**URS Corporation**

**Metro Wastewater Reclamation District South Primary Effluent Conduit (SPEC) Rehabilitation, Denver, CO**

**Client: Metro Wastewater Reclamation District**

***Largest wastewater treatment facility in Rocky Mountain West experienced a failure in its South Primary Effluent Conduit (SPEC) in 2000 – what it took prevent another conduit collapse that would again result in significant safety, operational, environmental and regulatory impacts to Metro's Central Plant.***

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The South Primary Effluent Conduit (SPEC), constructed in 1976, is a 1,300-linear-foot, 12-foot-wide by 9-foot-high reinforced concrete box culvert that conveys up to 125 million gallons per day (mpg) from the North and South plant Primary Clarifiers to a pump stations that feeds the South Plant aeration basins. Buried with 10 feet of cover, the SPEC runs under a concrete-paved central access drive through the South Plant. In November of 2004, Metro and URS conducted a second inspection to aid in the preparation of final conduit rehabilitation plans. The inspection revealed that as much as seven inches of concrete had corroded away from the original 14-inch thick roof and the lower reinforcing steel mat had completely separated from the roof structure at one point. Selected rehabilitation alternatives were to install large diameter fiberglass reinforced plastic pipe in 800 feet of the SPEC, which is to remain in service for 50 years, and to rehabilitate the remaining 500 feet of the SPEC, which only required a 10-year design-life, with shotcrete and replacement steel. While rehabilitating the SPEC, a bypass-pumping system provided capacity to pump up to 125 mgd of wastewater around the construction. Thirteen 10-mgd diesel-powered bypass-pumping units and 20,000 lineal feet of 18-inch pipelines were necessary to bypass such large flows and provide redundancy.

**Category: Water Resources**

**URS Corporation  
Dry Creek Drainage Improvement Project, Fort Collins, CO  
Client: Fort Collins Utilities**

***Safety improvements in wake of 1997 Fort Collins flood.***

URS Corporation was selected to provide environmental permitting services, geotechnical investigations and engineering design and construction oversight for this life-saving flood control project. In 1997 a flood devastated the city of Fort Collins killing several people and causing tens of millions of dollars in damages. Declared a state of emergency, this event prompted a project to reduce the risk for loss of life and economic damages associated with severe floods. Outcomes of a detailed master planning process and risk analysis identified Dry Creek Basin as the most significant risk to lives and property. With 1,800 homes and businesses within the 100-year floodplain the City had work to do and its Council appropriated \$8.1 million for the Dry Creek Drainage Improvement project to get things moving. URS applied an engineering innovation by using a fuse plug structure (an earthen dam-like structure built into an existing spillway to provide additional water storage) and a SCADA system that monitors real-time flood risk within the 62-square-mile drainage basin and automatically turns off irrigation flows when flooding begins. The system also automatically closes the headgates at the Poudre River about one hour before the peak of the flood occurs.

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**Category: Transportation**

**URS Corporation**

Powers Boulevard North, Woodmen Road to SH83

Colorado Springs, CO

Client: Colorado Department of Transportation Region 2

***The Power of Planning.***

URS was selected by the Colorado Department of Transportation (CDOT) to conduct an environmental assessment, provide design services and perform construction management for 5.5 miles of Powers Boulevard from Woodmen Road to SH83. The ultimate plan is to connect Powers Boulevard to I-25 at both the north and south ends of Colorado Springs offering an alternate north/south route through the city. The interim ramp design is one of the most innovative features of the extension. Freeway construction typically involves building the lanes of the main road first. Interchanges and on/off ramps are usually added in a later phase when all funds are available and Right-of-Way (ROW) can be purchased. In this project, URS devised a creative plan for building the freeway using an interim ramp design in which ramp roads and necessary bridges were constructed first and perform as the main roadway with traffic signals at each of four major cross streets. This design functions like a two-lane highway northbound and a two-lane highway southbound for 3.5 miles. CDOT purchased the ROW ahead of time to accommodate this forward-thinking method. URS also used original techniques to plan and design the Kettle Creek and Pine Creek bridges, which are located in the Preble's Meadow Jumping Mouse habitat. The Kettle Creek bridges were designed using hybrid High Performance Weathering Steel to save weight for each piece. These were some of the first bridges in the state to be designed and constructed using this technology that saved thousands of pounds of steel, making the complex construction of the bridges possible without impact to the mouse habitat. Large mechanically stabilized earth walls were designed to prevent backfill from behind abutments from encroaching on the habitat as well. URS influenced the proactive purchase, preservation and restoration of 65 acres of property along Jackson Creek. This land will assist CDOT in mitigating for impacts to endangered species habitats on this and future projects. Pavement research will contribute to the sustainability of Powers Boulevard as well as all future road projects.

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**Category: Special Projects**

**Merrick & Company**

Ethanol Plant Expansion Project  
Golden, CO

Client: Coors Brewing Company

***Converting a Waste Stream to Renewable Fuel.***

Merrick and Company designed and built its original fuel ethanol plant in 1996, located at the Coors Brewery in Golden, Colorado. In November 2005, Merrick completed a \$3 million expansion, which doubled the production capacity of the plant to three million gallons per year of fuel-grade ethanol. The plant converts a variety of brewing residuals (waste streams) into fuel ethanol – enough to replace 71,000 barrels of oil each year – taking a waste stream and turning it into a revenue stream. As the lead entity, Merrick performed the project development role and secured financing, procured the new equipment and materials, constructed the new facility, and currently owns and maintains the plant and leases the land from Coors, which operates the facility. The facility is proof that alternative waste streams are viable sources of ethanol. Before this ethanol plant began operating, Coors trucked these brewing wastes off-site for composting; the trucks emitted about 75 tons of volatile organic compounds (VOCs) into the atmosphere each year. The water remaining after the alcohol is stripped from the brewing waste is now treated and discharged (roughly 23 million gallons yearly) into Clear Creek. With this plant online and utilizing the brewing waste, VOC emissions are reduced, Clear Creek water flow is improved, and three million gallons of fuel-grade ethanol are produced each year. This application of brewery residues is unique. Nationwide, there are now approximately 100 biorefineries in 19 states with the capacity to produce ethanol from corn, rather than from barley. Merrick teamed with Coors Brewery to turn beer waste streams into fuel-grade ethanol, a renewable and clean-burning fuel source.

Three firms also received Honor Awards from the Council for Colorado projects that demonstrated impressive achievements in their respective engineering disciplines.

***Honor Awards***

*Water Resources*

**Ayres Associates**

Holding Back the Sands: Sediment Diverted from Power Canal  
Horseshoe Bend, ID

Client: Horseshoe Bend Hydroelectric Company—Innergex

**Farnsworth Group, Inc.**

Sulphur Gulch Channel Improvements  
Parker, CO

Client: Town of Parker  
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*Small Projects*  
**Applegate Group, Inc.**  
Windsor Lake Automated Outlet Structure  
Windsor, CO  
Client: New Cache La Poudre Irrigating Company

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The American Council of Engineering Companies of Colorado (ACEC/CO) is the business association of 251 member firms employing more than 8,890 employees in the independent private practice of consulting engineering. ACEC/CO is founder of the national organization, American Council of Engineering Companies (ACEC), headquartered in Washington, D.C. ACEC has 5,500 member firms employing 300,000.