

NEWS



Engineering Excellence Awards 2006

DAVID EVANS EARNS PROJECT OF THE YEAR FOR BROADWAY BRIDGE REHAB

The project was completed under budget and allowed consistent flow of street, river traffic during construction.

The Broadway Bridge is a double-leaf Rall-type bascule bridge spanning the Willamette River. It was the first bascule bridge built in Portland and is the longest Rall-type bascule bridge still in existence.

To address deficiencies in the bridge, Multnomah County embarked on a rehabilitation project. David Evans and Associates was the engineering consultant and successfully managed a large team of sub-consultants on this complex rehabilitation project which included design engineering and construction support of the following:

- Replace the existing bascule span steel-grate deck with a fiber-reinforced polymer deck.
- Remove and replace portions of the existing truss span concrete decks with cast-in-place concrete and install a microsilica overlay.
- Replace the existing concrete sidewalks and resurface the east approach with an asphalt overlay.

ACEC

American Council
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photo by Julie Keefe

PROJECT OF THE YEAR: David Evans and Associates, Inc. for Broadway (Willamette River) Bridge Rehabilitation for Multnomah County Oregon Pictured, from left, are **Rick Attanasio** and **Dave Moyano**, David Evans and Associates, Inc., and **Ian Cannon** and **Chuck Maggio**, Multnomah County.

- Replace the failing paint system on the below-deck structural components and on the above-deck structural components of the bascule span.
- Repair defects to structural truss members located above and below-deck.
- Rehabilitate the stair towers near Naito Parkway.
- Install curbside traffic barriers at Lovejoy Ramp/Bridge intersection and replace pedestrian rail.
- Install a new stormwater collection and treatment system.
- Replace the existing electrical control system.

The project was completed under budget and allowed consistent flows of street and river traffic during construction. The \$25 million dollar rehabilitation extends the life of the bridge at least 30 years, a very cost-effective solution compared with estimates for a new bridge at approximately \$200 million dollars. **Congratulations, David Evans and Associates, Inc.!**



MORE ENGINEERING EXCELLENCE WINNERS AND PHOTOS INSIDE!

WHAT IS ENGINEERING EXCELLENCE?

ACEC Oregon's annual Engineering Excellence Awards (EEA) competition recognizes engineering firms for projects that demonstrate a high degree of achievement, value and ingenuity.

For more than 30 years, engineering firms have entered their most innovative projects and studies in state competitions. After participating in the ACEC Oregon EEA program, firms are then eligible to participate in the ACEC national competition.

Entries are accepted into one of nine project categories: studies, research and consulting engineering services; building/technology systems; structural systems; surveying and mapping technology; environmental; water and wastewater; water resources; transportation; and special projects.

A distinguished panel of judges is convened to discuss and critique the projects. The panel may consist of a retired ACEC Oregon member; an engineer from the U.S. Army Corps of Engineers; a School of Engineering faculty member rotating annually from either Portland State University, University of Portland or Oregon State University; a media representative from the *Daily Journal of Commerce*, *Oregonian* or *The Business Journal*; and a representative from the Portland or Oregon chapter of the American Institute of Architects.

Judges spend a day evaluating and discussing the projects before selecting the Project of the Year winner, Grand Award and Honor Award winners.

Projects are rated on the basis of: uniqueness and originality; future value to the engineering profession and perception by the public; social, economic and sustainable development considerations; complexity; and successful fulfillment of client/owner's needs, including schedule and budget.

The Engineering Excellence Awards provide firms an opportunity to obtain state and national recognition and to showcase their talent and expertise to an audience of clients, peers and decision-makers.

The annual Engineering Excellence Awards dinner celebrates the outstanding achievements of the engineering profession.

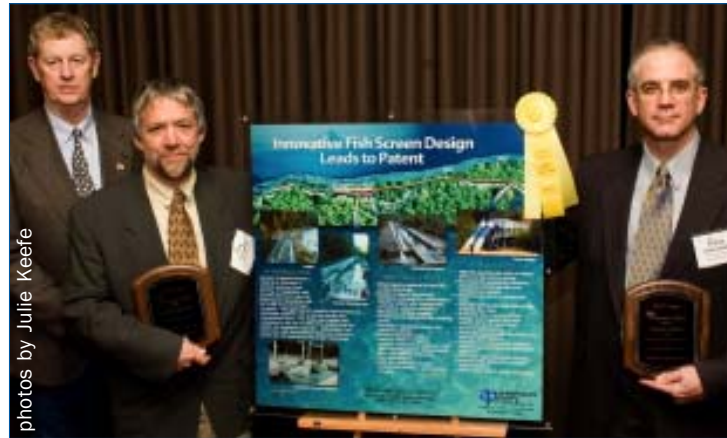


Engineering Excellence Awards 2006

EIGHT FIRMS RECEIVE GRAND AWARDS

ANDERSON-PERRY & ASSOCIATES, INC. Hood River Diversion Project

The horizontal flat plate screen design is virtually self-cleaning, provides excellent fish passage, and has dramatically reduced maintenance.



GRAND AWARD (and winner of "BEST BOARD"): Anderson-Perry & Associates, Inc., Hood River Diversion Project for Farmers Irrigation District. Pictured, from left, are Don Chandler, Ice Fountain Water District; Jerry Bryan, Farmers Irrigation District; and Robin Harris, Anderson-Perry & Associates, Inc.

The Hood River Diversion project for the Farmers Irrigation District included many challenges. The river intake built up with sediment each year, preventing full water right utilization during low river flows. The rotary drum screen required extensive maintenance,

and fish passage was marginal at best. The Lennon flume used to transmit water to the District's customers was structurally inadequate and leaked excessively. Also, any improvements would have to be phased in because of the District's short construction work window.

Through teamwork and innovative ideas, the District achieved their goals. The horizontal flat plate screen has been an overwhelming success and the Oregon Department of Fish and Wildlife and the National Marine Fisheries Service have praised the performance of the screen. In addition, the District sought and has obtained a patent for the screen design which is becoming the standard for remote site screens where maintenance and fish passage are major concerns.



GRAND AWARD: David Evans and Associates, Inc., Caldera Fish Ladder for Blue Lake Properties, LLC. Pictured, from left, are Cassie Wieden and Dan Wieden, Blue Lake Properties, LLC; Paul Spezza, Construction Management Services, LLC; Rick Attansio and Phil Boultinghouse, David Evans and Associates, Inc.; and Chuck Newport, Construction Management Services, LLC. (See story page 3.)

DAVID EVANS AND ASSOCIATES, INC. *Caldera Fish Ladder Project's environmentally sensitive construction approach is successful in reintroducing at-risk fish to native headwaters after 40-year absence.*

This fish ladder would run through the campus of Caldera, a non-profit environmental organization located in the Oregon Cascades. A series of events led to the demise of the fish ladder.

Diseased fish downstream, dams and an antiquated fish ladder prevented these species from reaching headwaters at Blue Lake for nearly 40 years. How would contractors design a fish ladder that would meet strict agency biological criteria, with minimal construction impact and be an artistic complement to the natural landscape through which the ladder would run?

Led by Construction Management Services, David Evans and Associates and artist Lee Kelly, the parties came together and designed and built the first ever

prefabricated stainless steel fish ladder in modular pieces thereby reintroducing fish to their native headwaters while simultaneously protecting the fragile riparian area along the stream banks. This process has led to a new environmentally sensitive approach for constructing fish ladders in remote areas.

Completed fall of 2005, fish have already been observed making their way back to the headwaters at Blue Lake. (See related photo bottom of page 2.)

KPFF CONSULTING ENGINEERS *New Columbia Redevelopment Portland neighborhood that has seen catastrophic floods, poverty and decay finally sees only hope.*

Built in 1942, Columbia Villa was originally designed as temporary housing for shipyard workers during World War II. Like many developments of the time, the streets were laid out in a style that attempted to emulate the sprawling, campus-like quality of more exclusive neighborhoods. Unfortunately, this style did not work for low-income, government-style housing, and effectively isolated the residents of Columbia Villa from their North Portland neighbors.

By 1988, "The Villa" was Oregon's largest public housing complex and had become notorious for gang violence and was the site of the state's first drive-by shooting. It was also showing signs of age and the Housing Authority of Portland secured a \$35 million grant to anchor the \$100 million investment needed to breathe life into New Columbia. KPFF provided civil engineering and surveying services for the project.

Sixty years after the first buildings were constructed in Columbia Villa a new future is starting for the area now known as New Columbia.

INTERFACE ENGINEERING, INC. *Lovejoy Office Building Old building renovated into energy-efficient modern structure results in 51 percent energy savings.*

Interface Engineering renovated the Lovejoy office building, a very old two-story structure into a comfortable, productive, energy-efficient modern building. The renovated building is a brick structure originally used as a warehouse and office.

The lower floor was programmed for tenant space and Opsis Architecture designed the upper floor for use as their own office space. During construction the contractors made structural improvements to allow for a future third floor. Seismic upgrading also represented a key design consideration.

As the mechanical engineers for this project, Interface took advantage of the seismic upgrade to pour a new concrete second floor with tubing to support radiant heating and cooling, with zone control. The design also provided temperature-responsive controls for occupant comfort and a natural ventilation cooling

system using operable windows and an overhead paddle fan system. The result was 51% modeled energy savings vs. the 2003 Oregon Energy Code. The solution also included demand-controlled ventilation with carbon dioxide sensors, water conserving fixtures and daylighting control of electric lighting.

Innovative features included averaging three-day temperatures to guide the slab control system in setting temperatures. In this way, the building responds well to seasonal changes in outdoor air temperatures. (Continued, please see "More Grand Awards" on page 4.)



GRAND AWARD: Interface Engineering, Inc., Lovejoy Office Building for Opsis Architecture Pictured, from left, are **Emily Foltz and John McMichael, Interface Engineering, Inc., and ACEC Oregon President Ken Wightman.**



GRAND AWARD: KPFF Consulting Engineers, New Columbia Redevelopment for Housing Authority of Portland Pictured, from left, are **Steve Murray, KPFF Consulting Engineers; and Julie Livingston, formerly with Housing Authority of Portland.**

Engineering Excellence Awards 2006

MORE GRAND AWARDS (continued from pages 2 and 3)

KPFF CONSULTING ENGINEERS Reser Stadium Expansion

Stadium's most prominent structural engineering feature is the large cantilever roof supported by roof trusses.

Originally constructed as Parker Stadium in 1953, the home of the Oregon State University Beavers football team was designed to accommodate 28,000 fans.

In June 1999 the stadium was renamed to honor Al and Pat Reser, and planning began for its renovation and expansion. KPFF Consulting Engineers served as both structural and civil engineer for the \$80 million dollar project.

The first phase of "Raising Reser: Expanding Beaver Nation" increases capacity from about 35,000 to more than 43,000.

The stadium's most prominent structural engineering feature is the large cantilever roof supported by roof trusses. A uniform, symmetrical "step" design, where pairs of trusses are clad in glass along the vertical surface, allows natural light to filter down into the seating area. The double-decker seating brings fans closer to the game.

Four concrete towers support the roof trusses. A sky bridge, which connects the upper concourses and spans over the main entrance, is suspended off the towers by three-inch-diameter rods.

Future phases involve replacing the existing visitor's side to mirror the new home side and enclosing the south end zone, bringing the total number of seats to 55,000.



GRAND AWARD: KPFF Consulting Engineers, Reser Stadium Expansion for Oregon State University Pictured, from left, are **Jason Thompson, Andrew Enriquez, Jessica Napier and Jerry Abdie**, all with **KPFF Consulting Engineers**.

KRAMER-GEHLEN & ASSOCIATES, INC. Tillamook Blimp Hangar Box Beam Restoration

Project comes in under budget and is listed on both the state and National Historic Registers.



GRAND AWARD: Kramer-Gehlen & Associates, Inc., Tillamook Blimp Hangar Box Beam Restoration for Port of Tillamook Bay Pictured, from left, are **Bill Beck, Port of Tillamook Bay** and **Doug Sarkkinen, Kramer-Gehlen & Associates, Inc.**

Tillamook is home to one of the nations most unique buildings, a former blimp hangar constructed during World War II for use as a naval base. The building is considered to be the world's largest timber structure, 21 stories high and a fifth of a mile in length.

The box beam above the hangar doors was experiencing decay and degradation, sagging so the doors below could not open. Continued decay would lead to structural instability of the box beam and eventual failure.

An innovative inverted built in-place bowstring truss with a post-tensioned bottom chord was designed and constructed. Truss members and repair methods were developed in conjunction with a historic preservation specialist, and approved through both the National Parks Service and Oregon State Historical Preservation Office. This particular design did not affect the exterior appearance of the building and had the least impact on the internal framework.

The truss design actually provided lift of the box beam and a net upward tension to counteract the initial sagging.

The project came in under budget and the hangar, listed on both the State and National Historic Registers, is currently being used as an air museum.

SEVERAL ENGINEERING EXCELLENCE ENTRIES UTILIZED QBS IN SELECTION PROCESS

Did you know? QBS (Qualifications Based Selection) was utilized in selecting the following firms to perform the work for their Engineering Excellence projects:

- AMEC Earth & Environmental, Inc. for Tar Body Removal Action Project
- CH2M Hill for North Lombard Overcrossing
- David Evans and Associates, Inc. for Broadway Bridge Rehabilitation

SPARLING Central Utility Plant

Research and innovation creates a new model for health care emergency power systems by generating peak power during an energy shortage.

Sparling teamed with CDi Engineers to complete electrical design of a central utility plant that serves an 11-story medical tower at Providence Portland Medical Center.

Through a pioneering partnership with Portland General Electric, a unique Dispatchable Standby Generation (DSG) power system was engineered that “shares power” by using the emergency generators to meet peak power requirements. As the first hospital in Oregon to synchronize the electrical generators to the utility power grid, new design criteria and testing protocols governing DSG systems in hospitals were needed. To facilitate this, Sparling engaged many experts including Portland General Electric, State Fire Marshal, the electrical code authority, Underwriters Laboratories and the owner to develop criteria for a complex control system that would automatically prioritize and immediately switch generator power to patients during any loss of hospital power.

This project is just one example of the incredible value that the engineering profession delivers to communities through research and innovation. A new model for health care emergency power systems has been created that benefits both patients and the community by generating peak power during an energy shortage.



GRAND AWARD: Central Utility Plant for Providence Medical Center Pictured, from left, are **Mark Engdall, Sparling; Karen Weylandt, Providence Medical Center; Kimberly Krull, Sparling;** and **ACEC Oregon President Ken Wightman.**



GRAND AWARD: Tetra Tech/KCM, Inc., Oregon Hatchery Research Center for Oregon Department of Fish and Wildlife Pictured, from left, are **John McGlenn** and **Mark Reiser with Tetra Tech/KCM, Inc.**

The custom designed research facilities include four simulated stream channels. They are constructed with river gravel and plentiful woody debris with a shade cloth cover. In order to minimize human disturbance, the activity of fish in the stream channels will be monitored via closed circuit video cameras mounted on traveling overhead trolleys.

Oregon Department of Fish and Wildlife staff were very pleased with the completed facility and were happy to report that two adult steelhead engaged in spawning activity within hours of being placed in the simulated streams. (*Engineering Excellence Awards continued, see page 6.*)

TETRA TECH/KCM, INC. Oregon Hatchery Research Center

With declining salmon runs and a population that prizes its fisheries for economic and recreational reasons, the Oregon Department of Fish and Wildlife wanted to “hatch” a plan for a new fisheries research center.

The shuttered Fall Creek Hatchery near Alsea was reconfigured as a state-of-the-art research facility to understand the mechanisms that may create differences between hatchery and wild salmon and steelhead. The center will study how to best manage those differences so hatchery production might protect native fish.

The Hatchery Research Center Project is located in Oregon’s Coast Range. A new river intake capable of diverting creek water to the tank farm and simulated streams was the key engineering design element. The circulatory system required initial settling of unacceptable silt loads, screening of leaves and debris, and disinfecting critical portions of fish pathogens in several areas of the facility operations.

- Kennedy/Jenks Consultants, Inc. for Woodburn Water Storage and Treatment System
- Kleinfelder for Fern Ridge Dam Emergency Repair
- KPFF Consulting Engineers for Cape Creek Tunnel Restoration, New Columbia Redevelopment and Reser Stadium Expansion

- Kramer-Gehlen & Associates, Inc. for Tillamook Blimp Hangar
- Landslide Technology for Third Avenue Extension
- PBS Engineering and Environmental for Burnt Bridge Creek Greenway Trails and Water Quality Improvement
- Sparling for Central Utility Plant
- TetraTech/KCM, Inc. for Oregon Hatchery Research Center

Engineering Excellence Awards 2006

FIFTEEN FIRMS TAKE HOME HONOR AWARDS

AMEC EARTH & ENVIRONMENTAL, INC. Tar Body Removal Action Project at PacifiCorp's Youngs Bay Site *PacifiCorp considers the project a great success and construction was completed more than a month ahead of schedule.*

CH2M HILL, INC. North Lombard Overcrossing for City of Portland Bureau of Transportation Engineering and Development *Long-term plan will improve freight mobility to and from the Rivergate Industrial District.*

DAVID EVANS AND ASSOCIATES, INC. Pyramid Lake Survey and Ordnance Removal for the Paiute Tribe *In about four weeks, 243 rockets and 182 crates of small arm munitions weighing more than 13 tons were recovered.*

GEODESIGN, INC. Armory - Portland Center Stage Shoring and Foundation for Portland Family of Funds *This project is a great example of historic architectural rehabilitation combined with careful engineering and sustainable redevelopment.*



Andy Hersey and Greg Rollins of AMEC Earth & Environmental, Inc. accept their project's Honor Award from ACEC Oregon President Ken Wightman. At right is Lotte Edgel representing their client, PacifiCorp.

GEODESIGN, INC. & MGH ASSOCIATES, INC. Progress Ridge Town Center for Polygon Northwest *By salvaging a rock quarry and developing it as an urban town center, this project demonstrates an economical and innovative approach to land development.*

HARPER HOUF PETERSON RIGHELLIS INC. Civil Tools PRO Software *Fifty calculation tools commonly used in engineering and surveying were utilized in creating this valuable software for A/E design professionals.*



Dan Layden, City of Portland, and Dave Simmons, CH2M Hill, accept their project's Honor Award from ACEC Oregon President Ken Wightman.



Mike Mutschler, left, and Jon Dasler, right, David Evans and Associates, Inc., accept the firm's Honor Award from ACEC Oregon President Ken Wightman.

Dan Trisler, GeoDesign, Inc., accepts his firm's Honor Award for the Armory - Portland Center Stage Shoring and Foundation from ACEC Oregon President Ken Wightman.



photos by Julie Keefe



Randy Rohman, City of Woodburn, left, and Travis Tormanen, Kennedy/Jenks Consultants accept their project's Honor Award from President Ken Wightman.



photos by Julie Keefe

From left, **Cam Buck, Polygon Northwest Company; Fred Garmire, MGH Associates, Inc.; and Rajiv Ali, GeoDesign, Inc.**, accept the Progress Ridge project's Honor Award from **ACEC Oregon President Ken Wightman**.

KENNEDY/JENKS CONSULTANTS, INC. Woodburn Water Storage & Treatment System for City of Woodburn *Increased treatment reliability and improved water quality help ensure enough water supply for fire protection and future drinking water.*



KITTELSON & ASSOCIATES, INC. and DAVID EVANS AND ASSOCIATES, INC. Bridgeport Village Lifestyle Center for OPUS Northwest *Primary goals were to reduce the area's existing traffic congestion and provide sufficient additional capacity to accommodate anticipated growth.*

Neil Waibel, Harper Houf Peterson Righellis Inc. accepts his firm's Honor Award from **President Ken Wightman**.



Tim Shell, KPFF Consulting Engineers, and Steve Rodolf, ODOT, accept an Honor Award for the Cape Creek Tunnel Restoration from **ACEC Oregon President Ken Wightman**.



Hermanus Steyn, Kittelson & Associates, Inc., left, looks on as **John Gordon and Mike Nichols, OPUS Northwest, LLC,** are congratulated by **ACEC Oregon President Ken Wightman** on their firms' Honor Award for Bridgeport Village Lifestyle Center.

KLEINFELDER, INC. Fern Ridge Dam Emergency Repair - Design Consultation & Construction Quality Management for Barnard Construction Company *Project was completed on schedule for the flood control season and refilling will begin in time for 2006 recreational season.*

KPFF CONSULTING ENGINEERS Cape Creek Tunnel Restoration for Oregon Department of Transportation *The tunnel restoration exceeded ODOT's expectations by opening before the start of the spring 2005 tourist season.*

LANDSLIDE TECHNOLOGY Third Avenue Extension - RCC Embankment for State of Alaska Department of Transportation and Public Facilities *An innovative feature of the design was use of roller compacted concrete believed to be the first of its kind in a roadway application. (Continued, please see Honor Awards, page 9.)*



Keith Ferguson, left, and Derek Lemieux, right, of Kleinfelder, accept their firm's Honor Award for Fern Ridge Dam Emergency Repair from **ACEC Oregon President Ken Wightman, center.**

Engineering Excellence Awards 2006

MORE HONOR AWARDS (continued from pages 6 and 7)

MILLER CONSULTING ENGINEERS Rolling Hills Community Church, Phase 1 *Complex and innovative structural engineering techniques allow for multifaceted use of column-free auditorium.*



photos by Julie Keefe

Mike Meyer, Cornforth Consultants, Inc., James Lowell, State of Alaska Department of Transportation, and Larry Pierson, Cornforth Consultants, Inc., accept their project's Honor Award from **ACEC Oregon President Ken Wightman**. For this project Meyer and Pierson represent **Landslide Technology**, a division of Cornforth Consultants, Inc.

OTAK Loto Street Bridge for City of Eagle Point

New bridge will accommodate city's growth and improve vitality of downtown with enhanced riparian context and streetscaping amenities.



Paul Osborn, Rolling Hills Community Church, and Tom Fowler, Miller Consulting Engineers, accept their Honor Award from **ACEC Oregon President Ken Wightman**.

PBS ENGINEERING AND ENVIRONMENTAL Burnt Bridge Creek Regional Trails and Greenway Restoration Project for the City of Vancouver, Washington *Project blends planning, design, science, engineering and public collaboration for the largest open space improvement endeavor by the city.*

W&H PACIFIC Aurora State Airport Runway 17-35 Rehabilitation for Oregon Department of Aviation *Recycling solution*

provides the same structural integrity as total reconstruction and saves \$1.5 million in construction costs.



Terry Song, Otak, and Gary Shipley, City of Eagle Point, accept their project's Honor Award from **ACEC Oregon President Ken Wightman**.



Victor Ehrlich, City of Vancouver, and Tim Leavitt, PBS Engineering and Environmental, accept their project's Honor Award from **ACEC Oregon President Ken Wightman**.



ACEC Oregon President Ken Wightman, center, is flanked by **Pete Murphy** and **Rainse Anderson, W&H Pacific**, on his left, and **LJ Maillet** and **Bob Hidley** of the **Oregon Department of Aviation** on his right, as he presents them with their project's Honor Award.