The Town of Lakeview Geothermal Heating Project is an inspiring example of how a small community with forward-thinking leadership can achieve an ambitious project and make a difference in community development. The project created a sustainable, zero-emission heating system that will save local public institutions millions of dollars. Since we are using heat from the water and not the water itself, this is a non-consumptive use of groundwater resources. Naturally occurring geothermal water is pumped from a constructed well to the local hospital and school buildings. The heat from the 190°F water is extracted by plate heat exchangers and transferred to the buildings' hydronic heating systems. After heating the hospital and schools, the 190°F return water can be used by businesses in the Lake County Industrial Park and a proposed Head Start Facility before being returned to the groundwater aquifer.

This project provides the Lakeview community with sustainable benefits including job creation, expanded services, and improved air quality. The money that was previously spent on fossil fuels can now be used to hire additional staff at the schools and hospital as well as create expanded health and educational programs. Area carbon emissions will be reduced by 850 tons per year, improving air quality for Lakeview residents. Heating with geothermal water is not a new concept, but is often not considered due to high capital costs and design issues. This project proves that geothermal heating is feasible for public building applications and can provide tremendous benefits for small communities.

Owner: Town of Lakeview, Lakeview, OR

Engineer: Anderson Engineering & Surveying, Lakeview, OR

The cost savings created by this project will allow the schools to hire additional teachers and expand student programs. Once drilling was complete, the production well was tested for temperature and volume. The 190°F water had to be pumped from the well through a metal trough to allow technicians to safely measure the conditions.

The distribution piping for this project was insulated to prevent heat loss during transportation from the well to the buildings. The joints between pipe sections were sealed with heat sealed seals. Since the production well was located in a culturally sensitive area, an archeological team from the University of Oregon performed a detailed site survey to ensure the project would have a minimal impact on cultural resources.

The hospital and each school building are equipped with a plate heat exchanger which transfers the heat from the incoming hot water to the building's heating system.
Levee Repairs Help Avoid Economic Hardships

When the U.S. Army Corps of Engineers (USACE) rated several miles of levees along the Walla Walla River that protect the City of Milton-Freewater as unacceptable to protect from flooding, residents were devastated to learn they would soon be required to carry expensive mandatory flood insurance. The USACE cited major deficiencies, including the deterioration of a major flood control structure, the Nursery Bridge drop structure. The drop structure is a concrete dam designed to dissipate energy in floodwaters running through the levee system. Decades of water flow over the structure had significantly eroded the face and created a significant scour hole at the base, raising doubts that the structure could withstand a major flood.

The Milton-Freewater Water Control District, the local entity responsible for the levee system, quickly rallied citizens to pass a revenue bond to fund levee repairs. The District hired Anderson Perry & Associates, Inc. (AP) to design and oversee construction of the repairs.

To be reinstated into the USACE’s inspection and rehabilitation program, the drop structure needed to be restored to its original design. This work needed to be completed within a 12-week window. AP utilized a robot to remove one foot of old concrete with an ultra-high pressure water system to avoid structural damage. AP also designed a specialized forming system to allow high strength concrete to be pumped and placed in sections.

These repairs and other $4.1 million levee improvements were completed as required by the USACE, and the levee system was reinstated into the inspection and rehabilitation program. The levee was certified by AP and accredited by the Federal Emergency Management Agency, allowing the flood maps to be redrawn to show Milton-Freewater as protected by the levee system. The overall levee improvements were completed in two years, helping Milton-Freewater’s citizens avoid ever-increasing mandatory flood insurance premiums.
BRIDGE REUSE SAVES COMMUNITY TIME AND MONEY

Cornelius Pass Road (CPR) was widened from a two-lane road that lacked pedestrian and bicycle facilities to five-lanes with two bike-lanes and sidewalks. As part of this project, the existing bridge over Rock Creek was replaced with a new 112’ concrete structure. The older bridge beams were salvaged for the purpose of replacing the substandard Johnson School Road Bridge over Davis Creek.

IN WITH THE NEW REUSE OF THE OLD

HILLSBORO, OR

CORNELIUS PASS RD

JOHNSON SCHOOL RD

BRIDGE REUSE

WASHINGTON COUNTY

American Council of Engineering Companies of Oregon
Located near the heart of Portland, the I-5 Lovejoy Street Bridge Replacement had potential to impact more than commuters. The 1000-foot tall bridge spans a canyon above Knaps Landing near the west end of Lovejoy Street. The bridge and approaches are situated along a 3-mile segment of I-5 that has seven known landslides. ODOT collaborated with Cornforth Consultants to develop stabilization plans that minimized the landslide risk in this highly traveled and densely populated area. Design features included state-of-the-art retaining walls, real-time early warning systems, and high-strength fences to prevent demolition debris from reaching residences below. The project was completed in Fall 2013 without any landslide affects to traffic or nearby neighborhoods.
The I-84: Fifteen Mile Creek - U.S. 97 Spanish Hollow Creek, Bundle 207 Project is located near the Eastern Gateway of the Columbia River Gorge Corridor overlooking the Dalles Dam. It consisted of replacing the existing Fifteen Mile Creek Bridge just east of the city limits of The Dalles, Oregon, in Wasco County.

The existing bridge was 364 feet long with a width of 67.6 feet and was sandwiched between the Union Pacific Railroad (UPRR) to the north and the historic Suefert Viaduct to the south. To the north, I-84 right-of-way (ROW) and UPRR ROW abutted each other. Temporary easements were obtained for construction; however, purchasing permanent ROW from UPRR was not allowed. Strict mobility requirements through the I-84 corridor required there be virtually no slowdown of truck traffic during construction.

The adjacent Suefert Viaduct was not allowed to be impacted during construction because of its historic nature, and because the viaduct provided the main access to farmlands to the northeast side of Fifteen Mile Creek.

The new crossing required a structure length of 300 feet, with an o/o width of 86.5 feet.

The Fifteen Mile Creek Project successfully replaced the existing, functionally obsolete bridge with a modern concrete structure to meet the growing demands of I-84 and the City of The Dalles. The UPRR and Suefert Viaduct remained fully operational throughout construction. The workmanship was superb, meeting and exceeding the requirements of the I-84 Corridor Strategy to blend with the natural rock surroundings of Fifteen Mile Creek.
PORT OF NEWPORT
International Terminal Renovation

Owner: Port of Newport, Oregon
Engineers: KPFF Consulting Engineers, Portland, OR
GRI, Beaverton, OR

Newport, Oregon - In 1948, the Port of Newport sank two WWII flat-bottom concrete liberty ships, the SS CW Pasley and SS Francois Hennebique, in Yaquina Bay to serve as wharves for cargo handling. After decades of use, the facility deteriorated to an unusable cargo dock founded on the Pasley, a damaged timber dock, an office and decaying warehouse founded on the Hennebique, and an elevated concrete dock supported by corrosion-damaged steel piles. In 1996, the Pasley released fuel into the bay, bringing the decline of the hull’s structural integrity to the Port’s attention and closing the facility to cargo. With accelerating deterioration, the Pasley hull exhibited cracking and listing with the tides, increasing concerns of another contaminant release. In 2007, the Port passed a bond for renovation of this deep port facility.

Project challenges included the existing ships, environmental concerns, fishing fleet and longshoremen requirements, maintaining Port operations, and limited funding. Project elements included remediation of both vessels; cofferdam construction around the Pasley to contain contaminants and allow demolition outside the in-water work window; flotation of the Pasley for demolition; recycling of steel reinforcement and reuse of crushed concrete; use of new and existing elements to control costs, such as incorporation of the cofferdam into the final design; use of the timber dock as formwork; modification of the RO-RO dock; incorporation of the Hennebique into the final design; and use of a CM/GC contracting method to maximize available funding. The new facility provides excellent access for existing fishing industry tenants and new industrial Port pursuits.
SCAPPOOSE-VERNONIA SLIDE REPAIR AT MILEPOST 8
COLUMBIA COUNTY, OREGON | COLUMBIA COUNTY ROADS DEPARTMENT

On March 11, 2011, a section of the Scapoose-Vernonia Highway at Milepost 8 began to fail when subsurface water caused the road shoulder to settle and cracks occurred in an aging subsurface steel culvert. The leaking culvert exacerbated the problem, and within days one lane of the highway was starting to slide down the steep hillside. The road was reduced to one-lane, weight restricted travel only. The highway is an active logging road and the most direct route between Scapoose and Vernonia. It was vital to repair the roadway as quickly as possible.

A solution was needed to ensure further damage did not occur, minimize impacts to the surrounding resource areas, and meet federal emergency funding requirements. After analyzing storm flows it was determined that a smaller culvert would work adequately. A new 24-inch HDPE solid wall pipe was inserted through the existing 36-inch culvert, minimizing excavation and associated impacts. A subsurface drainage system was added that outfalls to a lower drain area. The 20-foot deep subsurface drain pipe was bored through the embankment to avoid having to tear up the undamaged lane.

The roadway was reopened on August 24, 2011. With the exception of a 12-day closure necessary to construct the roadway embankment and culvert, one lane of the highway was open throughout construction.
BOOSES FERRY ROAD (KRUSE WAY TO MADRONA STREET)

Client: City of Lake Oswego | Location: Lake Oswego, Oregon

Lake Oswego has had difficulty addressing development in the Lake Grove District due to uncertainties in the Boones Ferry Road right-of-way location. This uncertainty was the result of many years of surveys and projects which did not have the resources to address the right-of-way location in a comprehensive manner. An accurate location was required to facilitate planning for future improvements and to provide certainty when working with adjacent land owners.

PAST

In approximately 1847, Alphonse Boone, descendant of Daniel Boone, established Boones Ferry crossing on the Willamette River near Wilsonville. His eldest son Jesse established Boones Ferry Road to move goods from the Boones Ferry crossing to Portland and Salem. This section of historic roadway, which was first legalized in 1872, had not been fully surveyed and retraced since 1913.

FUTURE

Through extensive records research, coordination, and field survey, the existing location of this important ‘historic’ roadway has been retraced and a level of confidence provided to the City that has not existed for some time. This work will facilitate the City’s goals and provide a solid basis for future projects in this area. It also provides the landowners along this road corridor with the information they need to plan their own future improvements without encroaching into the existing or conceptual public right-of-way.
The City of Astoria holds a special place in America’s maritime history. The 17th Street Dock provides a unique opportunity for interpretation of the past, while showcasing the future of waterfront structure design and construction.

The multi-purpose dock reflects the community’s working-class roots as well as its current status as a tourist destination and US Coast Guard City.

The new concrete and steel dock is home to two 219-foot cutters that patrol the Pacific Ocean from their base in Astoria. The dock also receives calls from Columbia River tour boats and small pleasure craft, and provides moorage for a permanent Columbia River Maritime Museum exhibit, the historic Lightship Columbia.

The 17th Street Dock is a literal extension of the culture of Astoria from land to sea. The local economy was once fueled by natural resources; now tourism and Homeland Security are the major drivers. The museum draws more than 100,000 visitors annually and the dock provides the public with rare access to the people and vessels that protect our coastline.

Astoria’s community and culture influenced the design of the new dock. The aesthetics complement the adjacent plaza and museum. The structure and utilities will accommodate a wide variety of current and future vessels. The timber superstructure was salvaged to repair other City-owned waterfront structures.

The old dock was used as a template for driving new piles, saving thousands of dollars and weeks of construction time.

The dock is an important source of revenue for the city, but the aging timber structure had become a maintenance burden. Now the USCG can call 17th Street home for decades to come as the new structure accommodates the current cutters as well as the next-generation Sentinel-class vessels. The facility was built by Astoria contractor Bergerson Construction, which kept the construction dollars in the community.
North Main Street Road Diet
City of Ashland, Oregon

In October 2012, the City of Ashland implemented a pilot project that reduced the number of travel lanes on North Main Street from four through lanes to two and added a center two-way left-turn lane and bike lanes in both directions. Rather than investing in expensive permanent features, the City put the new configuration on trial by restriping and adding new signage. As a result, the City has been able to collect before and after data on traffic operations and gauge public feedback while users benefit from more comfortable facilities for all modes.

Why a Pilot Project?
- Cost effective
- Test effectiveness of treatments
- Gain public support

Why a Road Diet?
- Improve traffic flow
- Reduce vehicle speeds
- Reduce conflicts and number of crashes
- Create a safer, more comfortable bicycle and pedestrian environment

From Skeptics...
“Some residents have welcomed the chance to add bike lanes to North Main Street where it enters Ashland, but others have said it will lead to traffic congestion. Some neighbors are concerned about plans...which they have said will cause more traffic in neighborhoods...”
- Mail Tribune Vickie Aldous

...to Converts
“My bike rides along the street have been pleasant and safe due to wide bike lanes in both directions, and with that, the sidewalks now feel a safe distance from flowing traffic. I have also driven along the street and observed that traffic flows freely and efficiently.”
- Ashland Resident Brad Rouppe
THE BULLITT CENTER
Seattle, WA

Client: The Miller Hull Partnership - Seattle, WA
Owner: The Bullitt Foundation - Seattle, WA
Entering Firm: PAE - Portland, OR

The Bullitt Center exemplifies how engineering ingenuity can create a truly transformative and restorative project. On track to become the world’s largest commercial building to achieve the Living Building Challenge, the Bullitt Center strives to set a new precedent for sustainable design in the built environment. Operating much like a Douglas fir forest – the Bullitt Center utilizes only nature’s abundance to provide fresh air, light, energy, and heating and cooling for its occupants. In addition to being one of the world’s most sustainable buildings, the Bullitt Center is comfortable for tenants, affordable for owners and developers, and an educational resource for the community.

Net Zero Water: Closing the Hydrological Cycle
The building will achieve Net Zero Water through a 56,000 gallon cistern which captures rainwater that will be filtered for potable uses; greywater is treated through a roof-top constructed wetland; and composting foam flush toilets that reduce water use by 96%, when compared to a typical toilet.

Net Zero Energy: The Challenge of Cloudy Seattle
With 226 gray days per year, Seattle does not have ideal conditions to create a building that will produce all its net energy with onsite renewables. However, the building’s 242 kw PV covers the entire roof which is artfully cantilevered beyond the building footprint and captures enough net solar energy to power the entire building.

Composting Toilet System
Flushed contents from the foam flush toilets are sent to the basement where 10 large composting units turn human excrement into approximately 90 tons of compost a year. The compost will be used by King County as fertilizer for local crops.

Eliminating Mechanical Systems
Designed to be 83% more energy efficient than a typical Seattle office building, PAE’s design eliminated traditional mechanical systems and reduced the need for HVAC systems throughout the building. The Bullitt Center uses a highly-efficient heating and cooling system that includes a 26-bore closed-loop, vertical geothermal heating and cooling system; radiant floors; sophisticated shading to minimize solar gain; natural ventilation; and heat recovery ventilation.

Informing Net Zero Design
As designers and tenants of the building, PAE has access to a valuable blend of performance data and occupant experience that will inform future Net Zero designs.

American Council of Engineering Companies of Oregon
NE 137TH/138TH AVENUE IMPROVEMENTS

Challenge
NE 137th/138th Avenue between NE 28th and NE 49th Streets was a two-lane rural road with 13,000 vehicles per day. With an expectation for that number to double by 2030, there was a clear need to improve safety and increase traffic carrying capacity. However, the City’s standard multi-lane section with center turn lane would have resulted in an estimated $11 million in right-of-way acquisition costs for the purchase of 34 homes. The HHPR team had to determine how to increase capacity, enhance roadway safety, provide safe access to fronting properties, and provide pedestrian and bike facilities for this urban arterial.

Solution
The team’s innovative access management solution combined a two-lane roadway section, continuous raised center median, roundabouts at ¼ mile intervals, and private access driveway/turnaround upgrades for many of the fronting properties.

1. A raised center median eliminates mid-block left turns, allowing traffic to flow freely.
2. Roundabouts limit out of direction travel, allowing residents to turn back as needed to access their homes with right in/out movements.
3. Private turnaround access upgrades eliminate the need for vehicles to stop traffic flow to back into the roadway. The roundabouts allow continuous flow along the corridor, enabling a two-lane section to provide the anticipated needed level of capacity.
4. The two-lane section, with continuous median, sidewalks, bike lanes, lighting, and stormwater/utility improvements, fits within the available space, reducing the number of total property acquisitions to only three and lessening the impacts to the remaining 79 properties along the corridor.
NORTH GOING BICYCLE & PEDESTRIAN IMPROVEMENTS

Client: City of Portland  Location: Portland, Oregon

Swan Island in North Portland is one of the state's largest employment centers, supporting over 10,000 employees, and yet multi-modal access to the surrounding neighborhoods and onto the island was limited and fragmented. Key sections of sidewalk and shared use facilities were missing, and roadways with high volumes of auto and truck traffic presented daunting obstacles to bicycle and foot traffic.

The North Going Bicycle and Pedestrian Improvements project bundled investments in bicycle and pedestrian improvements to optimize access to and on Swan Island and encourage non-auto commute trips. The project added several segments of shared use facilities and completed missing links in the bike network. The facility type and design for each segment was selected to maximize bicyclists' and/or pedestrians' comfort level while using the system. Facility types included sidewalks, narrowed street crossings, separated shared use paths, buffered bike lanes, bike boxes, and bike boulevards. Associated improvements included elements such as curb extensions, median islands, surface vegetated stormwater facilities, and street trees.

In order to meet the project's funding deadline, HHPR completed the design and environmental documentation of this federally funded, fast-tracked project in just six months.
OTIA III State Bridge Delivery Program

The Oregon Transportation Investment Act (OTIA) III State Bridge Delivery Program shows how innovative program management can provide a high return on investment for massive public infrastructure projects—without sacrificing the needs of local communities, the traveling public or the environment. The $2.1 billion program included nearly 90 projects and construction of more than 270 bridges.

The Oregon Bridge Delivery Partners developed a streamlined, big-picture plan that saved $0.05 billion more than $2 billion in costs avoided. Cost-saving measures included a simplified design exception process and working with 11 public agencies to standardize permitting. The program also stimulated the economy by creating or sustaining 22,000 jobs.

The team demonstrated exceptional outreach to inform the public and provide opportunities for community input. For example, OBDP engaged the public to develop design guidelines for bridges in the Columbia River Gorge to complement the designated National Scenic Area. OBDP also worked alongside communities to use bridge projects to enhance local parks, provide new habitat for bats, use biodiesel to power heavy equipment and restore key salmon habitat.

To minimize traffic congestion during construction, HDR developed a Work Zone Traffic Analysis tool—a measure that was so successful that ODOT implemented it statewide. Additionally, a traffic management strategy saved the traveling public more than $270 million in delays avoided throughout the program.

The program will be completed on schedule and $45 million under budget. The program exhibited sustainability by creating jobs, providing a positive return on investment for expenditures, and delivering safe, modern infrastructure.
Connecting Vancouver to its Future

BNSF RAILWAY/CITY OF VANCOUVER WATERFRONT ACCESS PROJECT – VANCOUVER, WA

The BNSF Railway/City of Vancouver (BNSF/COV) Waterfront Access Project (WAP) is the critical first step for the Waterfront Development Project—a cooperative effort between the City of Vancouver and a private developer—which is expected to be the largest development project in Vancouver’s history and spur more than $1 billion in new private investment in the city.

The $44 million BNSF/COV WAP provides access to the Waterfront Development Project. The WAP will restore the historic direct connection of downtown to the Columbia River. In addition, it will also enhance the efficiency, safety, and environmental impacts of rail traffic in and through Vancouver, and greatly improve the function and appearance of a portion of downtown Vancouver. The WAP provides the infrastructure necessary to access the redevelopment of 35 acres of former industrial land, which will provide a much-needed boost to the surrounding community and associated economy.

PARSONS BRINCKERHOFF
Entering Firm
Portland, OR

ACEC

American Council of Engineering Companies of Oregon
a cleaner environment using less water

KPF led an interdisciplinary team for this bond-funded upgrade to Oregon Zoo’s penguin exhibit filtration system, designed to fit within a small existing footprint. The new system is a model for sustainable water and energy use and animal health, reducing water use by 90 percent from 7 million gallons down to 400,000 annually.

Penguin Life Support System Upgrade, Portland, OR :: Metro Oregon Zoo :: KPF, Portland, OR
In the past, Johnson Creek flooded Southeast Portland two out of every three years, closing Foster Road and flooding homes and businesses. Since the 1930s, numerous agencies have tried to address the problem, with little success, and urban influence on Johnson Creek led to deteriorated stream water quality and loss of wildlife habitat. The City of Portland received a $2.8 million FEMA grant and obtained 53 acres of flood-prone properties in the Lents neighborhood through a Willing Seller program to restore the natural functions of the Johnson Creek floodplain.

The restoration, completed in January 2013, created flood storage and enhanced wetland and riparian habitat in the Johnson Creek floodplain through excavation and grading. The project restored 5,600 feet of stream bank using bioengineering techniques and removed bank armoring within the project area. All stormwater outfalls were retrofitted with vegetated stormwater facilities to improve water quality discharges into Johnson Creek, and three road bridges and existing gravel roads were replaced by a new “skinny” roadway and utilities. A new multi-use trail with a bridge over Johnson Creek connects the site to the Springwater Trail, and 1,400 feet of sidewalk along Foster Road enhances pedestrian safety. The site, renamed the Foster Floodplain Natural Area, is maintained by the Portland Parks Bureau.

**client:** City of Portland Bureau of Environmental Services
Portland, Oregon

**owners/Global Partner**
Portland, Oregon

Foster Road and Johnson Creek can now deliver their intended transportation and drainage functions to East Multnomah County with less conflict.
Vernonia K-12 School

Owner :: Vernonia School District  |  Entering Firm :: KPFF Consulting Engineers [Portland, OR]

Vernonia, Oregon found itself underwater when massive flooding swept through the small historic timber city, leaving its schools in disarray. The community, school district and local government needed an experienced and trustworthy team, not only to rebuild the schools, but to design a safe and sustainable learning environment that could withstand any future flooding disasters.

KPFF provided civil and structural engineering services for the new Vernonia K-12 school, on track to become the nation’s first LEED Platinum public K-12 building. Creating natural drainage systems to make vibrant new outdoor learning spaces, combining art, nature and learning, KPFF was able to help create a state-of-the-art facility that showcases how engineering and education go hand-in-hand.

1. Natural vegetated features provide stormwater treatment to remove pollutants
2. School exterior in the evening
3. Covered play area for recreational activities
4. Volunteer planting led by Boora Architects (©Boora Architects)
5. Wetland restoration: an ecosystem visible to the public

American Council of Engineering Companies of Oregon
GATEWAY TO OREGON

I-5/GREEN SPRINGS HIGHWAY INTERCHANGE, ASHLAND, OREGON

As the first urban interchange on I-5 in Oregon, the Green Springs Highway Interchange is identified as a “Gateway to Oregon” (and perhaps the Northwest), and the bridge over I-5 is classified as having a “High” Visual Exposure/Visual Approach. This interchange project is a template in how to successfully engineer a project that meets the well-defined OTIA III Bridge Program’s goals for context sensitive and sustainable solutions (CS3), as well as the expectations of the local community. The Quincy team incorporated a distinctive Art Deco architectural theme (found throughout downtown Ashland) within the design of the overall project to create a true “Gateway” experience.

Client:
Oregon Bridge Delivery Partners
Owner:
ODOT Region 3
White City, Oregon
Submitting Firm:
Quincy Engineering
Salem, Oregon

Final Results: Not only are the necessary traffic operations and safety improvements provided (meeting CS3), but the Quincy team shaped and implemented a process for working with ODOT and a diverse group representing the Ashland City Council; Historic Society; Public Arts Commission; Tree Commission; Planning Commission; Ashland Chamber of Commerce; Local Businesses; and Citizens to help ensure a judicious process for developing the aesthetic enhancements implemented throughout the project. This important “Gateway” project was delivered within a very fast-paced 16-month timeframe (within budget); implemented new engineering applications for Seismic Retrofit design; and provided new opportunities for local contractors during the construction phase.

American Council of Engineering Companies of Oregon
This elegant 825-foot-long “S”-shaped bridge over the South Umpqua River provides a critical link between Interstate 5 and the community of Tri-City, which previously had not been directly accessible from the freeway. It features weathering steel girders, powder-coated bridge rails, and architectural treatments to make it an aesthetically pleasing structure the community can be proud of.

The $17 million project added connectivity between Interstate 5 and Old Highway 99, the only significant north-south route between Myrtle Creek and Riddle, which not only improves traffic and safety in the area, but also brings the opportunity for enhanced economic development along this portion of the busy I-5 corridor.

A number of design constraints dictated the shape and placement of the structure, including the need to avoid bents in the gravels of the river channel due to the presence of Oregon coast coho salmon, hydraulic requirements for a FEMA no-rise, and archaeological sites in the area.

The project also included extensive roadway work. On the eastern side of the river, this involved reconstruction and widening of Old Highway 99, realignment of Wecks Road, and new signals and crosswalks at the intersection of Old Highway 99 and Wecks Road. Extensive retaining walls, as well as reconfiguration of Aviation Drive, completed the western connection to Interstate 5 and the existing Weaver Road.

**Entering firm**: OBEC Consulting Engineers | Eugene, OR

**Client**: ODOT / Douglas County

**Owner**: Douglas County