## TECHNICAL PROGRAM TOPICS

- Update on the Columbia River Crossing Project on Interstate 5 *(Ron Anderson, PE David Evans & Associates)*
- Innovative Designs for Aesthetics-Vancouver Pedestrian Land Bridge *(Tim Shell, PE, KPFF and Stephen Whittington, PE, KPFF)*
- Changes in the New Manual on Uniform Traffic Control Devices – MUTCD *(Ed Fischer, PE, ODOT)*
- Changes in Traffic Signing Reflectivity Requirements from the Updated MUTCD *(Nick Fortey, FHWA)*
- Rebuilding the Wimer Covered Bridge *(Mike Kuntz, PE, Jackson County Road Department)*
- Stretching Transportation Dollars *(John Dorst, City of Gresham and Bill Morgan, Lane County)*
- Portland Milwaukie Light Rail project; Willamette River Bridge *(Bob Hastings, FAIA, TriMet)*
- Overview of National Transportation Research *(Mark Vandehey, PE, Kittelson & Associates, Inc.)*
- Multi-modal Level of Service in the 2010 Highway Capacity Manual *(Mark Vandehey, PE, and Susan Wright, PE, both from Kittelson & Associates, Inc.)*
- City of Springfield Sanitary Sewer Rehabilitation Program 2009 *(Kyle McTeague, PE, and Bill Hollings, PE, both from Murray Smith & Associates, Inc.)*
- Use of Tensar Geogrid Application in LID Roadway Stormwater Systems *( Mark Lally, CONTECH and Joseph Sturtevant, PE, Tensar International, Inc.)*
- Understanding Source Water Availability in Oregon *(David Newton, PE, WRE, Newton Consultants, Inc.)*
- Driving Towards LID: Lessons in Building a Program for a Transportation Agency *(Joelle L. Bennett, PE, HDR)*
- Urban Myths associated with Street Cleaning *(Roger Sutherland, PE, Pacific Water Resources, Inc.)*
- Oregon Water/Wastewater Agency Response Network –ORWARN – Project *(Todd Simmons, Eugene Water & Electric Board)*
- Soil Media for Biofiltration *(Cedomir Jesic, PE, CFM, Cardno/WRG)*
- Water Recycling at the Oregon Zoo *(Tim Kraft, PE, Otak, Inc.)*
- Sustainable Infrastructure *(Gail Achterman, Chair, Oregon Transportation Commission)*
- Sustainability and Infrastructure Decision-Making *(Michael Magee, PE, Mackay& Sposito*
- Future Trends in Your Community *(Jeanne Nyquist, President, Nyquist & Associates, Inc.*
- Porous Pavement Performance – What, when, and why? *(Matt Rogers, PE, Century West Engineering)*
- Pacific Northwest Smart Grid Demonstration Project *(Lee Hall, Bonneville Power Administration)*
- Understanding LED Roadway Lighting *(Dana Beckwith, KDS Associates and Kristin Cook, PGE)*
- Sustainability in the Daily Operation of Public Works *(Dan Danicic, City of Newberg)*
- Trends in Sustainable Development Practices *(Mike Faha, ASLA, LEED, Greenworks PC)*

# TRANSPORTATION TRACK

### UPDATE ON THE COLUMBIA RIVER CROSSING PROJECT ON INTERSTATE 5

*Ron Anderson, David Evans & Associates*

The Columbia River Crossing (CRC) is a long-term, comprehensive project to reduce congestion, enhance mobility, and improve safety on I-5 between Vancouver, Washington, and Portland, Oregon. Today, there is up to four to six hours of congestion daily affecting passenger vehicles, transit and freight in the five-mile project area. Bridge lifts and a high collision rate contribute to the congestion. Also, a significant earthquake could cause the antiquated Interstate bridge to collapse. To address these concerns the project will replace the I-5 bridge over the Columbia River, extend light rail to Vancouver, improve closely-spaced interchanges, and enhance the pedestrian and bicycle path between the two cities.

The Oregon Department of Transportation (ODOT) and the Washington State Department of Transportation (WSDOT) jointly direct the project with the Federal Highway Administration, the Federal Transit Administration, and six local government partners. Assisting CRC are several citizen advisory groups that ensure the values and interests of the community are reflected in the project design. Recently, these advisory groups have assisted the project with decisions on a bridge design concept, bicycle and pedestrian path location, design

refinements, and interchange alignment.

After nearly five years of study, public participation and design, CRC staff will complete the NEPA process and submit the Final Environmental Impact Statement in Fall, 2010. The soonest construction could begin is 2012, with the expected completion date of 2018.

**INNOVATIVE DESIGNS FOR AESTHETICS — VANCOUVER PEDESTRIAN LAND BRIDGE**
*Tim Shell & Stephen Whittington, KPFF*

The Vancouver Land Bridge is a pedestrian bridge that spans Washington's State Route-14, connecting Vancouver's waterfront on the Columbia River to historic Fort Vancouver. The bridge is one of seven Confluence projects led by world renowned Architect Maya Lin celebrating the Lewis and Clark expedition bicentennial and incorporating Native American themes. This is a signature project for the City of Vancouver due to the aesthetic, interpretive and other unique elements. The presentation will discuss the project's challenges and innovative design ideas that were driven primarily by aesthetics. The collaborative design was developed with input from ten separate architectural and engineering firms, and approvals were required from numerous agencies including the Federal Aviation Administration, WSDOT, the National Park Service, the BNSF Railroad, and the City of Vancouver.

**CHANGES IN THE MANUAL ON UNIFORM CONTROL DEVICES &**
**CHANGES IN TRAFFIC SIGNING REFLECTIVITY REQUIREMENTS**
*Ed Fisher, ODOT and Nick Fortey, FHWA*

In December 2009, the Federal Highway Administration issued the 2009 Edition of the Manual on Uniform Traffic Control Devices, which sets the standards for signs, signals and markings for all public roads in the U.S. This presentation will provide an overview of the most significant changes in the MUTCD using slides that have been developed by FHWA. We will also discuss the process Oregon uses to formally adopt the new MUTCD and the possibility of having an Oregon supplement to the MUTCD.

The MUTCD now requires that agencies maintain traffic signs to a set of minimum retroreflectivity levels but provide a variety of maintenance methods that agencies can use to be in compliance with the new MUTCD requirements. This presentation will provide a brief history of the requirement, describe the various maintenance methods, and provide resources for further understanding and development of sign programs.

**REBUILDING THE WIMER COVERED BRIDGE**
*Mike Kuntz, Jackson County*

The Wimer Covered Bridge, a nationally listed historic structure and icon of the unincorporated community of Wimer, was due for major rehabilitation. Plans had just been completed and bids were scheduled to be opened in September 2003 for the rehabilitation, when the unthinkable happened. The bridge collapsed on July 6, 2003.

This is the story of how a small rural community convinces the County Board of Commissioners to replace their historic structure with a new covered bridge if they can raise the matching funds, how the community bands together to raise those funds, and the County (with help from State and FHWA) follows through with a new wooden covered bridge to replace the historic icon; and how through the process a partnership between the Citizens and County was forged and obstacles and challenges were overcome.

**STRETCHING TRANSPORTATION DOLLARS**
John Dorst, City of Gresham and Bill Morgan, Lane County

"Stretching the buck" in public works management and operations involves a complete organizational effort. It takes the form of a lean, adaptable, and proactive staff that is focused on results. Teams that create innovative

projects and programs that use new, sustainable, and cost effective practices are imperative to each public agency's success. In this presentation the goal is to highlight some of the actual projects and public works programs that can help your agency better succeed, along with key organizational techniques that lead to these successes.

### PORTLAND MILWAUKIE LIGHT RAIL PROJECT; WILLAMETTE RIVER BRIDGE

*Bob Hastings, Tri-Met*

Bridging over the Willamette River: "A new bridge for a new era"

Developing the design for the new Willamette River Bridge is both a technological challenge as well a community effort. Presentation will provide an overview of the process of selecting the modified cable stayed bridge that will serve light rail, street car, buses, pedestrians, and bicycles.., but not automobiles.
Key issues:

- Determining how high above the water could the structure be to allow river traffic, but not so high that it impeded the other surface modes.
- Selection of a bridge type that meets the Portland community's desire for a signature bridge, but also respects the budget constraints of the full project.
- How can a bridge serve to stimulate landside development?
- And how can a design and construction process serve to further the Portland metropolitan regional goals for mobility and livable communities.

### OVERVIEW OF NATIONAL TRANSPORTATION RESEARCH

*Mark Vandehey, Kittelson & Associates, Inc.*

There are a number of recently completed or ongoing transportation research projects that will significantly impact the way the transportation profession evaluates highway facilities. This presentation will provide an overview several national research efforts including:

- The 2010 Highway Capacity Manual
- The Highway Safety Manual
- FHWA's Roundabouts: An Informational Guide
- Strategic Highway Research Program on Capacity and Travel Time Reliability

### MULTI-MODAL LEVEL OF SERVICE IN THE 2010 HIGHWAY CAPACITY MANUAL

*Mark Vandehey and Susan Wright, Kittelson & Associates, Inc.*

The 2010 HCM will provide much greater emphasis on multimodal analysis, with pedestrian, bicycle, and transit level-of-service (LOS) procedures presented, where appropriate, alongside the automobile LOS procedures. This presentation will provide an overview of the new multi-modal LOS procedures and will demonstrate how it can be applied on an arterial facility.

## WATER RESOURCES TRACK

### CITY OF SPRINGFIELD SANITARY SEWER REHABILITATION PROGRAM 2009

*Kyle McTeague and Boll Hollings, Murray Smith & Associates, Inc.*

The City of Springfield' s Wet Weather Flow Management Program identified basins within the existing sewer system that needed rehabilitation. Excessive Infiltration and Inflow (I&J) was occurring in these aging portions of the City's sewer system. The contemplated sewer system improvement program included the rehabilitation of approximately 40,000 feet of existing 8-inch to 16-inch diameter gravity sewers, the replacement or rehabilitation of 200 manholes, and replacement of associated sewer laterals, to reduce infiltration and inflow in

the system. In addition, a 42-inch diameter interceptor sewer approximately 3,870 feet long was to be rehabilitated in place or replaced along a new route.

The City retained Murray, Smith & Associates to assist with planning and programming, alternatives analysis, preparation of preliminary and final designs and contract documents, bidding and award services, and construction phase engineering and inspection services for the program. The program proceeded on a fast track basis in order to meet a strict I&I reduction mandate deadline. Under the program, nine individual construction contracts were managed during the past construction season. Various trenchless techniques and methods were employed for improvements throughout the project, as facilities were typically located on private property and were access challenged. Structural CIPP lining was used to rehabilitate the 42-inch diameter trunk sewer, resulting in considerable cost savings over replacement.

**USE OF TENSAR GEOGRID APPLICATION IN LID ROADWAY STORMWATER SYSTEMS**
*Joseph Sturtevane, Tensar International, Inc.*

With many municipalities and regulatory agencies pushing for low impact development, there are unique challenges emerging that the design and construction community has not had to deal with in the past like how to build lasting roadways in a low impact manor. This particular challenge was addressed by the City of Olympia in Washington by supporting a perilous pavement roadway with Tensar geo grid. It is normally unacceptable to build roadways on uncompacted sub grade and allow stormwater to saturate this sub grade after construction because traffic loading would cause the roadway system to sink into and penetrate the loose and saturated sub grade. By using Tensar geo grids to support the roadway system over this sub grade, the stormwater could flow through and infiltrate directly into the sub grade without undermining the roadway system.

**UNDERSTANDING SOURCE WATER AVAILABILITY IN OREGON**
*David Newton, Newton Consultants, Inc.*

Planning to develop water for future may depend more heavily on ground water sources. Ground water maybe have appeal based on its relatively good quality and the increasingly stringent and costly treatment of surface water. Also, surface water in nearly all Oregon basins is fully appropriated under existing water rights, meaning that very little water is available for new water rights.

Availability of ground water is also subject to limitations. Some examples of limitations include regulatory affects when hydraulic connectivity exists between ground water and surface water, senior water rights, geology and regulations based on declining water tables. It is important to be aware that use of ground water could be restricted, or prevented, and that consideration for such possibilities is warranted in water supply planning.

**DRIVING TOWARDS LID: LESSONS IN BUILDING A PROGRAM FOR A TRANSPORTATION AGENCY**
*Joelle L. Bennett, HDR*

Oregon is a state with diverse political, climatic, and geologic regions, home to over 50 endangered species, and a population motivated by sustainability. In the spirit of protection and preservation of Oregon’s unique environment, the Oregon Department of Transportation (ODOT) has actively been managing stormwater runoff for over 30 years. To this end, ODOT began a collaborative relationship with state and federal resource and regulatory agencies to develop stormwater treatment goals and effective treatment techniques. Both ODOT and the regulatory agencies understood that both water quality and water quantity control are essential to preserving our fragile waterways. Low impact development improvements address both controls but currently LID documentation and use in linear transportation projects is limited, especially considering enhancing or minimizing stormwater best management practices (BMPs). During this process it was realized that several advancements were needed to supplement the standard menu of stormwater BMPs for linear transportation projects.

The development of these tools built upon the standard BMP and LID frameworks used by many DOTs across the county, but also revealed several key issues. There were few design examples available, little research to improve design standards, and limited budget for refining LID techniques. The project involved conducting interviews with agency staff and working to create tools closely tied to current practices in order to enhance discipline-specific design manuals that did not promote LID.

**URBAN MYTHS ASSOCIATED WITH STREET CLEANING**
*Roger Sutherland, Pacific Water Resources, Inc.*

The presentation (which will be a shortened version of a September 2009 APWA National Congress presentation in Columbus, Ohio) will refute the various Urban Myths associated with street sweeping. The first and foremost is that "Cleaning Streets is Not an Effective Stormwater Best Management Practice (BMP)." Learn how the myth originated from the National Urban Runoff Program (NURP) results in the early 1980's. Find out why this erroneous conclusion is no longer valid in 2010. The presentation will also address the controversy that surrounds the question of how much of the pollution found in urban stormwater runoff can street cleaning remove? An September 2009 article entitled Recent Street Sweeping Pilot Studies are Flawed written by the author and published in the APWA Reporter documented the problems associated with measuring suspended solids in stormwater runoff and the difficulties in accurately modeling the stormwater pollutant reduction effectiveness of street cleaning practices. These problems will be discussed along with the results of several state of the art studies that used an explicit sediment transport based stormwater quality model to track the processes of street dirt accumulation, stormwater washoff and the removal of accumulated material by street cleaning operations. The presentation will also cover recent real world street sweeper pick up performance testing and its surprising results.

**OREGON WATER/WASTEWATER AGENCY RESPONSE NETWORK (ORWARN) PROJECT**
*Todd Simmons, Eugene Water & Electric Board*

The Oregon Water and Wastewater Agency Response Network was created to promote statewide emergency preparedness, disaster response, and mutual assistance for public and private water and wastewater utilities.

Events such as 9/11, the 1994 Northridge earthquake, the 1996 Oregon flood, and more recently, Hurricane Katrina in 2005 identified a need for water and wastewater utilities to create intra -state mutual aid and assistance programs.

ORWARN is designed to provide quick and professional assistance ¡n any situation that overwhelms the capabilities of a water or wastewater utility. No formal declaration of emergency is needed, and assistance can take the form of personnel, equipment, materials, or services.

**SOIL MEDIA FOR BIO FILTRATION**
*Cedomir Jesic, Cardno/WRG*

In recent years bio infiltration facilities are being installed more frequently across the nation, as a part of Low Impact Development Practice (LID). Bio filters such as rain gardens and vegetated planters are effective stormwater pollutant control measures with potential to naturally infiltrate and filter stormwater. This paper will present preliminary findings with the respect to the bio filter media hydraulic capacity, pollutant removal and maintenance.

**WATER RECYCLING AT THE OREGON ZOO**
*Tim Kraft, Otak, Inc.*
In the fall of 2008, Portland voters passed a $125 million dollar bond measure to fund the renovation of exhibits at the Oregon Zoo. The bond measure also includes sustainability, including onsite energy production and water reuse projects. The zoo has completed an initial study on the development of a water reuse program.

The Oregon Zoo uses a tremendous amount of water each year, all from city potable water sources and discharged to the sanitary sewer upon completion of use. For the 2007/2008 season, the zoo used nearly 85 million gallons of potable water. Uses of water and the potential for using water for these uses is discussed.

There are numerous challenges and opportunities to implementing a water conservation and recycling program at the zoo. Criteria to consider when matching sources of water with reuse possibilities include Supply versus Demand, Collection and distribution, Treatment requirements, Regulations, and Zoo-keeper concerns

As the zoo moves ahead with a water conservation plan, several projects are under consideration for further development.

## SUSTAINABILITY TRACK

### SUSTAINABLE INFRASTRUCTURE

*Gail Achterman, Oregon Transportation Commission*

With the deterioration of all infrastructure in the United States, we have the opportunity and the imperative to rebuild and renew our nation sustainably. Sustainable infrastructure planning and development requires fundamental changes in planning and engineering practices. Key characteristics of this new approach are distributed systems, demand management, least cost planning, institutional reform and context sensitive solutions.

### SUSTAINABILITY AND INFRASTRUCTURE DECISION-MAKING

*Michael Magee, Mackay & Sposito*

Public Works management and staff make important decisions related to sustainability every day while on the job. Most of the time sustainability is in the background, and not always identified as a key factor. This presentation will help participants recognize the role that sustainability has in public works and how it affects their decision-making.

Often sustainability is the focus with new buildings or facilities. LEED certification has become a large part of the decision-making for those buildings and facilities. The concept of sustainability goes far beyond just buildings. It affects and is integral to infrastructure planning, capital improvements, operations and maintenance, and every other service that Public Works organizations provide. Communities are regularly establishing sustainability as a principal goal for the citizens and the agencies that serve them. Public Works staff already incorporates sustainability into their every day work, but they should improve how they communicate and promote those efforts. Sustainability goals are best achieved when they are understood and applied by everyone including management, supervisors, and the staff who maintain/administer those systems. Areas where sustainability is often a key factor includes:

Infrastructure master plans
Capital projects
Standards and Specifications
Operations and Maintenance Procedures
Inspection and Certification Practices

Public Works organizations already have a major role in meeting sustainability goals in their communities. This presentation will provide ideas of how sustainability can be further promoted and brought to the fore-front of the organization decision-making process.

**FUTURE TRENDS IN YOUR COMMUNITY**
*Joelle L. Bennett, HDR*

Take a look into the crystal ball. What future awaits your community? Participate with your colleagues in identifying future trends and forecasting the implications for your community and agency. Stimulate your strategic thinking in this lively interactive session.

**POROUS PAVEMENT PERFORMANCE – WHAT, WHEN AND WHY?**
*Matt Rogers, Century West Engineering*

In what seems like the distant past, stormwater management meant managing the disposal of stormwater to prevent flooding and move water from where it falls on the developed landscape as quickly as possible to the nearest drywell or water body. In recent years, stormwater management has undergone significant change due to additional regulation and increased understanding of the detrimental effects of the way stormwater was managed in the past.

Stormwater management has been improved by using tools like porous pavement, seepage trenches, bioswales, infiltration planters, and other low impact development techniques to not only provide significantly better treatment and retention/detention of stormwater, but also to attempt to more closely mimic the predevelopment hydrologic cycle for a site. Engineers and landscape architects are working with both public agencies and private developers to assess sites and develop realistic strategies to manage the stormwater runoff in a manner that improves water quality through treatment, infiltrates a portion of the runoff consistent with the infiltration capacity of the onsite soils, and slows the flow to reduce storm surge. Porous pavement is one tool that can be used to accomplish these goals.

This session will provide a brief overview of why low impact development techniques are desirable, an overview of the types of permeable surfaces that are available for use in traffic areas, the costs differences between the various materials, and lessons learned from reviewing the Port of Portland T6 project's performance since it was installed in 2006.

**PACIFIC NORTHWEST SMART GRID DEMONSTRATION PROJECT**
*Lee Hall, Bonneville Power Administration*

The Pacific Northwest Smart Grid Demonstration Project has been launched. This $178 Million dollar project, recently approved by the Department of Energy, extends across multiple utilities, five states, and many diverse vendor products and therefore will encounter challenges that are not evident to demonstrations that have lesser reach. This presentation will address the components of a Smart Grid, address the goals and objectives of the project, discuss features of the demonstration's design that facilitate accomplishment of the goals, and describe the contribution of each of the utilities and major vendors in the project, across a large region and between diverse stakeholders.

**UNDERSTANDING LED ROADWAY LIGHTING**
*Dana Beckwith, KDS Associates and Kristin Cook, PGE*

Recent studies have found that light emitting diode (LED) technology is becoming competitive for streetlight applications with the commonly employed high intensity discharge (HID) light sources. The expectation is that LED street lighting technology will not only provide more efficient light distribution and increased uniformity, but will also save energy and reduced maintenance costs.

Based on recent Seattle City Light (SOL) LED Streetlight Application Assessment Project Pilot Study, experience, LED luminaire photometric performance, energy efficiency, economic performance, and the impact of LED lights on streetlight systems will be discussed. A brief introduction to light controls will be included in the discussion.

**SUSTAINABILITY IN THE DAILY OPERATION OF PUBLIC WORKS**
*Dan Danicic, City of Newberg*

Everyone who works in Public Works wears a variety of hats and we are all used to living and breathing Winston Churchill's quote "never have so few done so much with so little". Sooner or later, the Mayor or City Manager will ask you to add another hat to your collection — the Sustainable City hat.

Sustainability improves the quality of ecological, social, and economic components. Technology has made it easier and, in many cases more expensive, to be sustainable. Larger cities have established whole departments and programs with full-time staff to tackle sustainability issues.

How can a smaller Public Works Department respond with their limited budgets and staff? By understanding that sustainability means people are investing in long-term solutions rather than opting for a short-term fix. In many cases, it means following previous generations' mottos of "Use it up, wear it out, or do without", putting waste in a recycling bin rather than the trash can, ensuring that you have all your equipment and it is in working condition before you start out for the day, or collaborating with local groups to develop public areas that promote community.

Disposable is easy; re-useable is cheaper long-term. LEED is prestigious; creating partnerships with your citizens encourages neighborhoods.

Sustainability is within the reach of smaller Public Works Departments as you will learn in this interactive session. Join Newberg in our journey to find and use a simple method to establish our current carbon footprint. Hear about some best management practices we have implemented that are economical and sustainable. Collaborate with others to create a set of sustainable practices that everyone can bring back to their city.

**TRENDS IN SUSTAINABLE DEVELOPMENT PRACTICES**
*Mike Faha, Greenworks, PC*

This session presents the latest trends in sustainable development practices that will help public works professionals create livable, sustainable communities that balance economic, ecological and social needs. Learn how creative and practical design solutions can successfully integrate urban ecology, green infrastructure and urban design in public works project.