The PROJECT of THE YEAR Awards

Inside: Driverless Cars | Preparing for Disasters | Technology for Public Works
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WHAT DOES IT DO?
EZ Street works in water, provides greater workability, and superior performance. It works in all weather conditions and requires minimal preparation.

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- Pothole repair
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WHO USES EZ STREET?
WSDOT, ODOT, ITD, AlaskaDOT, City of Seattle, Pierce County, City of Portland, City of Spokane, City of Yakima and many general and specialty contractors in the PNW.

Contact
Rick Rawlings at:
425-313-2681
rickr@lakesideind.com

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There are so many people to thank for the efforts associated with pulling off a conference, it is difficult to know where to begin. Thahn Jeffers from the City of Olympia continues to pull rabbits out of hats. I am convinced she has the ability to read minds, as more than once she knew my question before I even asked. She is supported by a cast of professional volunteers, your peers who make up the Conference Oversight Committee, truly dedicated to making the conference memorable for all attendees. Thanks to all of you for your support and dedication in producing such a powerful and meaningful event. From the moving opening ceremony, to Jake Woods and Team Rubicon’s inspirational message, the Project of the Year Banquet, to the rollout of our new conference mobile app, I thank you from the bottom of my heart.

Planning is well under way for Mission: Possible, Part 2, also known as our Fall Conference, October 4-7, at the Spokane Convention Center and the Grand Hotel. Keynote Speakers have been confirmed, technical sessions are planned, a killer pre-conference workshop is scheduled, and our usual magical networking opportunities will be worth the price of admission. Preparedness is the theme, and Mission: Possible 2 is shaping up to be the can’t-miss conference of the year! I am hoping you are making plans to attend.

In my previous message, I made reference to Homeland Security Presidential Directive 8 (HSPD-8), which identified and recognized Public Works as “first responders”. This Directive was signed by then President Bush in the post 9-11 response and recovery timeframe. While our nation continues to develop its abilities to respond and recover from the impacts of emergencies and disasters, HSPD-8 brought forth a tremendous disaster response resource not previously recognized nationally, the public works professional. As a result of our recent Chapter conference and the commitment by the 2016 Executive Committee and the Board of Directors to support our theme, conversations are beginning to take place by our membership on facilitating the creation of resilient communities and the role of the public works in community preparedness. There is not a better resource for agency preparedness than the skill-sets of a well-rounded and project-oriented public works professional.

We’ve all heard the saying that “change is the only constant” and change has occurred consistently in the realm of public works. No place is this more obvious than in our planning, preparation, response and recovery role with disasters. Every year the extraordinary events that happen seem to evolve significantly, from the types of disasters to the shifting patterns of geographical locations. True resilience comes only from a perennial ability to adapt to evolving environmental and man-made challenges of immense proportions. As public works organizations, we need to advance continuously, train extensively and collaborate repeatedly with many disciplines.
and agencies that decades ago we may have only integrated with occasionally, or from afar.

As recognized first responders, public works is an integral part of the “All-Hazards” and “Whole Community” approach to both emergency management and homeland security. It’s no coincidence then that more frequent integration is occurring between public works and emergency managers throughout Washington State. A great example of this is the recent exercise planning associated with a massive subduction zone earthquake, being called Cascadia Rising. A 9.0 magnitude earthquake along the Cascadia Subduction Zone (CSZ) and the resulting tsunami is the most complex disaster scenario that emergency management and public safety officials in the Pacific Northwest could face. Cascadia Rising is an exercise to address that disaster scenario.

During the week of June 6, 2016, Emergency Operations and Coordination Centers (EOC/ECCs) at all levels of government and the private sector will activate to conduct a simulated field response operation within their jurisdictions and with neighboring communities, state EOCs, FEMA, and major military commands. Conducting successful life-saving and life-sustaining response operations in the aftermath of a Cascadia Subduction Zone disaster will hinge on the effective coordination and integration of governments at all levels – cities, counties, state agencies, federal officials, the military, tribal nations – as well as non-government organizations and the private sector. One of the primary goals of Cascadia Rising is to train and test this whole community approach to complex disaster operations together as a joint team.

Exercises are conducted to test and validate plans and capabilities. An effective and comprehensive exercise program that includes collaboration with the whole community, including public works, is essential to the success of the National Preparedness System. By highlighting strengths and revealing shortfalls, exercises facilitate the nation’s ability to validate capabilities and evaluate progress toward meeting the National Preparedness Goal. The National Exercise Program serves as the principal exercise mechanism for examining our nations’ preparedness and measuring readiness. The Cascadia Rising 2016 exercise and related ramp-up events directly support the examination of the 14 Response Core Capabilities as identified in the National Preparedness Goal. In an effort to shape and focus the exercise, Cascadia Rising participants selected six of the 14 Response Core Capabilities as the overarching objectives for the exercise. Those six focused Core Capabilities include:

- Operational Communications
- Public Health and Medical Services
- Mass Care Services
- Situational Assessment
- Critical Transportation
- Operational Coordination

In my first message, I advised that, “you will be challenged to learn new skills.” Acknowledging that your daily working life touches all six Core Capabilities is a great first step to helping your community become resilient and I look forward to hearing from you on your involvement with your community’s participation in Cascadia Rising.
Washington State Chapter APWA
2016-17 Calendar of Events

BOARD MEETINGS
Contact Kirk Holmes at 509-312-9963 or kholmes@perteet.com

June 16, 2016:
Ellensburg, 9:00 a.m.

October 5, 2016:
Davenport Grand Convention Center, 7:00 a.m.

December 8, 2016:
Location TBD, 9:00 a.m.

COMMITTEE SUMMIT
Thursday, February 9, 2017:
9:00 a.m.-1:00 p.m.
(Morning coffee and buffet style lunch will be provided)
Pierce County Environmental Services Building - University Place

WINTER SUMMIT
December 8, 2016:
Location & Time TBD

AREA MEETING EAST
On hold for this year.

NATIONAL PUBLIC WORKS WEEK
May 21-27, 2017

ANNUAL APWA SKI DAY
February 3, 2017
Crystal Mountain Resort at 8:30 a.m.
Call Mike Roberts 206-971-2685 or mroberts@anchorqea.com

PUBLIC WORKS INSTITUTE
Call John Ostrowski 360-573-7594 or ostrowj@pacifier.com

Mark your calendars for the 2016 NWPI Workshops. All are held at the Holiday Inn in Issaquah.

Public Works Leadership Skills
September 20-23
Registration will be available January 5, 2016 for all workshops. Maximum class size is 40 students. Cost is $500 per workshop per student. Scholarships from WCIA and Enduris are available for member agencies. (Contact WCIA Member Services: 206-687-7897: katiem@wciapool.org or Rafaela Ortiz, Enduris, at 800-462-8418 or rortiz@enduris.us)

2017 NWPI WORKSHOPS
Public Works Essentials:
February 21-24

Developing Leaders:
May 9-12

Public Works Leadership Skills:
September 19-22

TRAINING EVENTS
http://washington.apwa.net/
MPAC, CM and CASC

PWX THE BEST SHOW IN PUBLIC WORKS
http://www.apwa.net
August 28-31, 2016:
Minneapolis Convention Center, MN
August 27-30, 2017:
Orlando Convention Center, FL

CHAPTER CONFERENCES:

2016
Spring: April 5-8
Vancouver Hilton

Fall: October 4-7
Spokane Convention Center

2017
Spring: April 4-7
Tacoma Convention Center

Fall: October 3-6
Three Rivers Convention Center – Kennewick

2018
Spring: April 17-20
Vancouver Hilton

Fall: October 2-5
Wenatchee Convention Center

2019
Spring: April 23-26
Tacoma Convention Center

Fall: October 8-11
Yakima Convention Center

2020
Spring: April 14-17
Vancouver Hilton

Fall: October 6-9
Spokane Convention Center

For all Chapter Conferences, please contact the following for the specialty areas:

Being a sponsor?
Contact Kiva Lints at klints@hntb.com

Being an exhibitor?
Contact Kelly Robinson at kelly.robinson@abam.com at BergerABAM

Being a speaker?
Contact Jon Davies 206-505-3400 or jon.davies@bhconsultants.com

Doing a preconference workshop?
Contact Jon Davies 206-505-3400 jon.davies@bhconsultants.com
New and Returning Members
February through April 2016

ASSOCIATION NEWS

Bassam Al-Ali, Senior Engineer, City of Redmond
Kimberly A. Angel, Coordinator, Shoreline School District No 412
Stuart Barton, EIT, Roadway EIT, HDR Inc.
Leslie J. Beaird, ROW Operations Manager, Tierra Right of Way Services
Josh Brannin, PE, Project Manager, SCJ Alliance
Zach Brown, Ashley and Vance Engineering
Christopher Martin Brunner, Supervisor, Snohomish County
Mark A. Burrus, PE, Senior Project Manager, HW Lochner
Glenn Chouinard, Engineering Manager, Century West Engineering
Don Clabaugh, Senior Engineer, Cardno Inc.
Amy Cloud, MA, Communication & Outreach Coordinator, City of Bellingham
Jody D. Conyers, PE, Engineer, City of Woodinville
John Cook, Stormwater Engineer, San Juan County, WA
Denny Dierick, Fleet Supervisor, Grays Harbor PUD
Julie Dufresne, Environmental Specialist, OTT Clean Water Alliance
Tim R. Elsea, Public Works Director/County Engineer, Lewis County
Adam A. Emerson, Civil Engineer, City of Lake Stevens
John Forba, Engineer, PACE Engineers Inc.
Martha Sam Gibboney, Environmental Services Director, San Juan County
Rebecca Gilbertson, Student, University of Washington
William F. Glaeser, NRV & FM Admin Manager, Sound Transit
Patrick L. Gruenhagen, Area Manager, MWH Global
Ms. Monica E. Guillot, City of Vancouver
Ashraf Habbak, Senior Engineer, City of Redmond
Donald Haines, Senior Engineer, Utility Mapping Services, Inc.
Brandon Hausmann, Principal Engineer, Ashley and Vance Engineering
Allen Hendy, Senior Project Manager, Otak
Tyson Housnel, Otak
Colin Hunterman, Assistant County Engineer, San Juan County WA
Jennifer M. Hushour, Senior Project Manager, Tierra Right of Way Services
David M. Icenhower, State Exercise Program Coordinator, State of Washington Military Department
Leif Johansen, EIT, Senior Engineer, Reid Middleton
Renee A. Koester, Transportation Design Engineer, David Evans and Associates Inc.
Shirley Kook, Senior Engineer – Utilities, Lewis County
Kevin Korpi, Road Maintenance, Lewis County
Renee LaCroix, Assistant PW Director for Natural Resources, City of Bellingham

Shannon M. Lambert, PE, Project Engineer, Reid Middleton
Mike Laughery, PE, Capital Programs Engineer, City of Walla Walla
Jeff Laycock, City Engineer, City of Marysville
Amber K. Liebel, Assistant Contract Administrator, Port of Olympia
Jim Lord, Ashley and Vance Engineering
Mike Lund, Public Works Superintendent, City of Poulsbo
Patti Lyter, Contract Compliance Officer, Pierce County
Melissa McFadden, PE, Engineering and Construction Manager, Mason County Public Works
Kern McGee, Student, University of Washington
Charlotte L. Mitchell, Project Engineer, City of Wenatchee
Gary A. Norris, Senior Engineer/ President, DN Traffic Consultants
Liam W. Olsen, Engineer, KFFF Inc.
William D. Orr, President, NES The Clean Tank
Lisa Marie Phair, Continuous Compliance Specialist, Port of Seattle
Rick Powell, Principal Engineer, Robinson Noble Inc.
Jim Purkey, Survey Director, Reid Middleton
Marshall Read, Collections Crew Chief, City of Ocean Shores
Kevin F. Renz, PW Director, City of Ferndale
Tyler J. Robertson, Maintenance Supervisor, Pierce County Public Works & Utilities
Raul Sanchez, Sewer Division Supervisor, City of Sunnyside
Steve Skinner, Solid Waste Manager, Lewis County
Shawn A. Smith, City Engineer/Assistant PW Director, City of Stanwood
Jonathan M. Starling, Project Engineer, HDR Inc.
Gregory Stephan, Student, University of Washington
Larry Dale Stephenson, Equipment Supervisor, Klickitat County Public Works
Michael L. Strauch, Road Maintenance Division Manager, Clark County Public Works
Chin Tang, Student, University of Washington
Bramby Tollen, Purchasing Manager, Snohomish County
Kim Tsai, Student, University of Washington
Andy Tuchsherer, City of Bellevue
Allen T. Van Every, Master Mechanic, San Juan County
Patrick Allen Wallace, Owner, Wallace Sales Group
Kirk Weets, Water Division Supervisor, City of Sunnyside
Mallory Wilde, EIT Civil Engineer, Parametrix
Karissa Witthuhn, PE, Project Manager, Perteet Inc.
Keith S. Wolf, Regional Manager, David Evans and Associates Inc.
Robert J. York, City of Issaquah
Dana Ma Zlateff, Environmental Scientist, City of Issaquah

Transitions

Otak, Inc., an award-winning engineering, urban design, architecture, and planning firm, announced recently that Charles Dewey and Lindsay Martin have joined Otak. They will be working out of the firm’s Redmond, Washington office.
This year...we had snow! Much better than the verdant fields of last year. The skies at Crystal Mountain were very promising in the morning, greeting nearly 20 participants in this year’s APWA Ski Day. Following a much-needed cup of coffee, our intrepid group set out to face the mountain. As we rode the gondola to the top of the mountain, the wind was rising and clouds were rolling in. The weather began its day of continual changes. Throughout the day, we had wind, rain, sun, snow, and sleet. It was a great test of everybody’s Gore-Tex jackets.

Following a much-needed break in the Campbell Basin Lodge for lunch, our group headed back out for the afternoon. The weather continued to change, and our group pressed on to have a great day on the snow. The best part of the day – no lift lines!

At the end of the day, we gathered in the Snorting Elk Cellar, peeled off our saturated ski gear, and were warmed by the crackling fire. There was a lot of good conversation about the day’s events, the slips, the weather, and the good times had by all. Both boarders and skiers joined us this year from the City of Sumner, City of Clyde Hill, KPG, Anchor QEA, KBA, and others. We look forward to a bigger and better ski day next year.
Our Chapter Conferences just keep on getting better! The 2016 Spring Conference in Vancouver is living proof of that. Add in some great sunny, warm weather in Vancouver, and voila!

While there, we walked over to Joe’s Crab Shack on the Columbia River, passing under the oldest bridge on the Interstate Highway system, which was the subject of the History Committee’s Thursday Luncheon presentation: Bridging the Columbia: 100 Years Young (available on the Chapter website). I’ve been reflecting on that bit of history, and also that the Chapter itself is 60 years old and that I’ve been Chapter Liaison for 20 of those years.

A bit of statistical perspective:
– 1996 Chapter Membership was 1011, which dropped to 898 in 1998.
– 2016 Chapter Membership in April is 1527.

In 1996, 150 attendees at a semiannual conference would have been considered phenomenal. We routinely have over 450 attendees now. We used to be able to squeeze into venues like the Marcus Whitman in Walla Walla and the Red Lion Inn in Longview. There are now only six larger statewide venues that can handle our conferences. Much credit for this increased attendance is due the Conference Oversight Committee, and the high quality and relevance of the technical programs that are provided by our public works professionals.

Most importantly, the Chapter has bridged Washington! What do you mean, Carpita? The chapter has always served all of Washington State! We are a much different, more inclusive, and diverse chapter now. Over the past 15 years, we have greatly increased opportunities for participation by people outside the traditional public works director/senior project manager/consulting engineer crowd.

• We have welcomed contract administrators, included maintenance workers and foremen, reinstated the Roadeo competition, attracted younger members of all trades and positions, and recruited college students (two on-campus chapters).
• We have very innovative diversity and young professional committees who are continually inventing new ways to engage women, minorities, and younger members.
• Our Government Affairs Committee spearheaded hiring a lobbyist to keep tabs on statewide legislation.
• A newly reorganized student outreach program for both high school and college levels is looking into mentoring and internship programs for agencies and companies alike.

In the near future, a committee specifically charged with increasing the Chapter’s outreach in Eastern Washington will become active.

• Our Exhibitor’s group has increased correspondingly in numbers and in variety: over 100 exhibitors is typical now, versus 40 or fewer in 1996. We even have outdoor equipment displays.

We as a Chapter have embraced social media and even used a smartphone app for our conference program at the Spring Conference! We’ve had a website since 2003, but in 2015 the Marketing Committee led the charge to revamp the website and utilize the National template – a vast improvement. In 2002, I assumed responsibility for our 16-page two-color Chapter Newsletter, which has morphed into a full-color 64-page (at times) Washington State Public Works magazine, complete with well-written articles by Chapter members, and information on products and services from our many supportive exhibitors.

Rather than writing a lengthy Spring Conference recap, I’ve elected to do picture collages. There are over 50 pictures there, which at the proverbial 1000 words per picture would be 50,000+ words. Enjoy. Individual pictures can be found at 2016 Spring Conference, which is linked from the Chapter website.
Our Social 3-on-3 Basketball Tournament has grown over the years and almost reached a record of eight teams this past spring. Participants included members of the APWA UW Student Chapter and a few other conference first-timers. With the Fall Conference being in Spokane, home of the legendary “Hoopfest” basketball tournament, we’re hoping to have a at least eight teams and possibly hold the tournament outside and nearby the hotel so more conference attendees can participate and spectate. You won’t want to miss this one!

The Champions of the Spring 2016 Social 3-on-3 Tournament were: Tim Kariel (KPFF), Craig Christensen (CHS Engineers), and Barret Burbidge (Realm Rehab). The runner-up team was: Samantha Trone (City of Port Townsend), Josh Mattson (City of Ellensburg), Jesse Thomson (Perteet), Jonathan Kreitler (WSP | Parsons Brinckerhoff).
We had a partly cloudy and almost warm day at Camas Meadows Golf Course just east of Vancouver the day before the conference for 60 golfers. The rain held off and the course was somewhat dry for our noon shotgun start. We had some fierce competition and even celebrated a special birthday for one unnamed player while enjoying socializing with our consultants, public employees, and vendor participants.

There was a new winning team this year consisting of John Klump, Scott Rood, Dave Hall, and Steve Cora with a low score of 56. Second place went to Rick Powell, Jeff Wale, Paul Randall-Grutter, and Joe Randall with a 57, and third place went to Keith Martin, Kathleen Davis, Gordon Nelson, and Dave Talcott with a 58.

We also had some fierce competition holes with Steve Brown winning the Men’s KP, Susan Bartlett won the Women’s Long Drive, and Lauren Behm took the Women’s KP. Once again the Scholarship Committee was busy selling mulligans and putting string to raise $640 for the Scholarship Fund. Also, everyone enjoyed the Dixon Golf Challenge on Hole #8 that raised additional money for the fund.

The great dinner and beverages were outstanding and lots of raffle prizes were given away thanks to our generous sponsors, JUB Engineers, Kleinfelder, APS Locates, Craig Kelman & Associates, HWA Geosciences, and EC Power Systems (who had a fun umbrella challenge on Hole #10). Please mark your calendars for Tuesday, October 4, 2016 and join us for the Fall Conference Tournament at beautiful Indian Canyon Golf Course http://indiancanyongolf.org/ in Spokane, WA.
Overview: An empty lot in Manchester has been transformed into a vibrant community open space, while also providing stormwater treatment. This park is the first of its kind in the Puget Sound region, and one of only a few such combined treatment/recreation facilities in the nation. The project was initially a stormwater retrofit to provide water quality treatment and to replace an aging and undersized outfall. As the project conceptual design evolved, Kitsap County saw a unique opportunity to treat a larger drainage area, maximize water quality treatment, correct flooding issues, and create a public open space.

The Manchester Stormwater Park treats polluted runoff to the same strict standards that the Washington Department of Ecology requires for new development under the current Stormwater Design Manual and NPDES permit, removing 91% of pollutants from runoff before they reach Puget Sound. The park accomplishes this feat through innovative Green Stormwater Solutions (GSS) using soil and plants. Treatment cells around the perimeter of the park accept storm flows into 18 distribution channels that are positioned to uniformly deliver the water to four treatment cells. The treatment cells contain an engineered filter media and plants that can tolerate periods of inundation while also cleaning the runoff using filtration and absorption processes. Another unique feature is the spiral rain garden able to treat low flows from groundwater and very light storms.
Overview: Completion of the Lyon Creek Flood Mitigation Project eliminated recurrent flooding in Lake Forest Park that had inundated the City’s only fire station, largest commercial center, over 20 homes and State Route 522 (SR 522, Bothell Way). This $6.94 million project also restored the lower reach of Lyon Creek, an urban salmon-bearing stream.

As the project was underway, the project team faced a variety of challenges including: a mid-design modification of culvert size requirements associated with a 2013 Federal court injunction regarding fish passage, a $1.7 million funding gap as construction began in June 2015, state highway closure timing coordination with WSDOT and the risk of the community flooding if the project had been delayed. The construction schedule provided 100 working days that was extended by 35 days with change orders and project additions. The last working day was December 15, 2015 while instream work was completed in September 2015.

The project successfully replaced four severely undersized, aging culverts on Lyon Creek with 20-foot wide culverts. In total, 400 feet of culverts were installed; three of the culverts were in the city’s largest commercial center, and one was a fish-barrier culvert on SR 522 that was replaced over a single weekend. Additional stream armorning and weirs were constructed, and two wetlands adjacent to Lyon Creek were re-established, with a combined area of over 15,000 square feet and an added 12,000 native plants and 17 instream refuge pools. The project also included some transportation improvements, including installation of 530 feet of sidewalk adjacent to the project with viewing areas of the stream.

Although the Lyon Creek Flood Mitigation Project was ambitious and faced seemingly ever-changing and unclear requirements for culvert design, through community support, and the collaborative effort between the city, consultant Davido Consulting Group, Inc. (DCG,) contractor KLB Construction, and the many other stakeholder groups success was achieved.
Overview: The successful completion of the newly commissioned Lynden Water Treatment Plant improves the health of the community, and lays the foundation for the continuous growth and business development in this historical and vibrant region. Although the City of Lynden’s historical filtration plant had been modified several times since the original construction in 1924 to extend its service life, it had difficulty meeting the city’s growing population and water demands. In addition, the old plant had a number of structural deficiencies that could have jeopardized the city’s water supply in a seismic event. The reliability of the city’s water supply and health of the community depended on this project.

With the vision to improve the water supply to support the community growth, the city embarked on a grand effort to replace its 90-year-old filtration plant with a new state-of-the-art facility that is robust, green, and economically affordable to the community. The city, engineer, construction manager and the contractor worked as a team to overcome a number of major challenges including avoiding the destabilization of existing structures. Excavation for the two 35-foot-deep sheet pile cofferdams occurred next to the 6 MG reservoir foundation. The risk of settlement of the reservoir, residential buildings, and major utilities due to the ground vibration from the sheet pile installation and removal also had to be carefully managed. With a high groundwater table (3-5 feet below grade), construction carried a risk of dewatering and induced ground settlement at major structures. Foundation support was also challenging, with over 500 auger cast concrete piles (full rebar cage tension piles, some over 70 feet deep) to overcome the poor soil condition, high groundwater table and potential risk of soil liquefaction during seismic events. Through successful coordination efforts between the many construction trades the City of Lynden’s new Water Treatment Plant was successfully brought to completion.
Overview: Park Lane is the “heart and soul” of downtown Kirkland, connecting the popular Lake Street retail corridor and bustling waterfront with the Kirkland Transit Center, central civic spaces and business center. The aging corridor was in great need of street and utility renovation, including replacement of a 1955 water line and stormwater conveyance system, replacement of deteriorating sidewalks, and adding Americans with Disabilities Act (ADA) access. This project required a fast-track approach to retain construction funding from the Department of Ecology, and Federal Transportation Alternatives Program (TAP) awarded to the project, and featured sustainable storm drainage and lighting features, as well as being designed to enhance the charm of the city.

A primary directive of the project was to accommodate the businesses on Park Lane during all phases of construction, which resulted in many challenges. One of the largest challenges was the mandate to permit unrestricted access to local businesses prior to the late spring business surge, which meant beginning construction during a cold, wet January. Despite weather issues, only 1.5 days were declared as unworkable due to the weather. Temporary asphalt and moveable wooden sidewalks were used to allow the public access to businesses during all stages of construction. In addition to the scheduling and access conflicts, breaks to the existing water main occurred on three occasions, disrupting the progress of the new water main installations, and it was discovered that this shallow existing pipe was asbestos cement water pipe, requiring proper care and disposal as a hazardous material.

The completed $2.4 million (construction cost) Park Lane Pedestrian Enhancements project is in-line with the City of Kirkland's 2035 vision, to make the city more walkable and livable. The resulting design and construction is a successful balance between a well-integrated infrastructure design and attractive public spaces. The project partnering between the city, business owners, design team, and contractor, made this high profile project a success.
Overview: The City of Yakima had tried several times since 1950 to gain acceptance for overpasses at MLK and Lincoln streets, but were faced with strong community opposition. However, starting in 2000, the city switched tactics and focused instead on traditional underpasses completed in an innovative way. For an overpass, the bottom of the bridge girders had to clear a train with a minimum clearance of 23.5 feet would have made a bridge taller than most nearby buildings, but an underpass only required 16.5-feet clearance (above truck height) and could maintain grade with nearby roads.

However, the project was not without problems. Lowering the roadway 23 feet put it 10 feet below the groundwater elevation. The traditional method for building an underpass below groundwater has been to excavate a large hole, pump the groundwater out of the hole, and then build a watertight concrete structure in the hole. However, at this location, none of that was practical. The excavation would undermine century-old adjacent buildings, extensive amounts of contaminated groundwater would need to be cleaned and disposed of, and an operational railway would have had to run through the middle of the excavation at all times.

To complete these difficult underpasses, the project team utilized an existing technology in an innovative, new way. The discovery of this design solution revolutionized the construction of bottom seals for high groundwater construction area. The new methodology, a system of constructing bottom seals with an overlapping grid of CFA, would come to be known by the project team as “drill and fill.” This method was much less risky than ground improvement methods because it almost totally replaced the existing soils with concrete (96% of the seal volume). This technological advancement not only created less risk of seal failure, but saved money and time. By working together, the project team created a solution that will benefit the engineering profession for a long time to come.
Overview: The iconic Saltwater State Park Bridge is a 1934, WPA-era, eight-span, 570-foot-long bridge that carries Marine View Drive South approximately 100 feet above Saltwater State Park and McSorley Creek. And when a 2009 preliminary engineering report listed the bridge as seismically vulnerable, the City of Des Moines sought BRAC (WA State Bridge Replacement Advisory Committee) funding to perform a retrofit.

After securing BRAC funding, the project team further reviewed the 2009 report, performed additional geotechnical investigation and structural analysis, and became convinced that the original second phase of the project should not be postponed for a separate funding cycle. By condensing the project to one phase they would increase seismic protection sooner, decrease overall project costs and only impact the ecosystem of Saltwater State Park once for construction (a major benefit for Washington State Parks).

The retrofit itself used several design innovations to maintain the aesthetic value of the historically-significant bridge. A three-dimensional computer model was used to analyze seismic demand, and a non-linear pushover analysis was completed to estimate the capacities of the bridge substructure components. The seismic retrofit included extensions of existing footings, with two of them being supported on micropiles to resist liquefaction. The project design also strengthened connections using Carbon Fiber Reinforcement (CFR) to increase ductility in the structure. Using the CFR instead of one foot of concrete to wrap the tall slender piers maintained the intent of the architectural design that mimics the surrounding forest pines. By focusing on displacement demand and column ductility, the Exeltech’s design forced seismic-induced hinging to occur in the portions of the structure that are above ground. Any damage from an earthquake will be detectable and easier to repair.

By using a big-picture approach the City of Des Moines and the project team were able to deliver a safe retrofit that preserved access for park-users throughout construction.
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Emergency – $5-25M
FLOOD PROTECTION PROJECT
Agency: City of Tacoma  Contractor: IMCO General Construction Inc.  Consultant: CH2M HILL

Overview: The Central Treatment Plant (CTP) is the single most critical component of wastewater infrastructure within the City of Tacoma. The CTP treats approximately 80% of the wastewater from the citizens of Tacoma. During wet weather months this facility treats an average of 30 million gallons per day of wastewater. During large winter storm events, the CTP will receive and treat over 130 million gallons of wastewater in a single day. Having experienced several close call flooding events that required sandbagging, it became clear that temporary sandbags were an unrealistic solution to on-going flood threats.

Therefore, the City of Tacoma proposed flood improvements specifically designed to protect the CTP. Working in a design partnership with CH2M HILL (CH2M), the design team refined the initial idea of a flood barrier to a steel sheet pile wall. The resulting flood protection project provided for the construction of a floodwall, ranging from two to eight feet in height above ground and around the unprotected perimeter of the CTP as well as a mobile surface water pumping station.

The project team faced many challenges from building steel sheet pile walls in extraordinarily poor soil conditions to building the floodwall across an existing railroad track and dealing with existing utilities on site. And when they had overcome the many engineering and design challenges, they still had to achieve a favorable aesthetic for the flood wall that would be viewed by many members of the community. By utilizing strong pre-project planning, detailed risk matrix, and strong team cohesion substantial completion (operational use and functionality of the flood protection infrastructure) was achieved ahead of schedule.
Overview: In November of 2012, the Washington State Bridge Replacement Advisory Committee (BRAC) awarded $2.78 million in rehabilitation funds to Whatcom County for the Dakota Creek Bridge. The BRAC award was increased to $3 million in July 2014, the maximum allowable for seismic retrofit projects, to account for project scope changes associated with both tidal fringe wetland impact mitigation and professional archaeological support due to a cultural resource discovery in the vicinity of construction operations. The project was advertised for bids in February of 2015 and the contract was awarded in April 2015.

The project faced many hurdles including removing the bridge abutments, discovering the original 1928 bridge construction debris, and a construction area that was subject to tides. During the removal of the bridge abutments, the project team utilized 100-ton jacks to keep the spans from collapsing while new abutments were constructed. These jacks were constantly monitored and adjusted ensuring that the road never settled more than .25 of an inch. Removal of the old wood and angle iron was required and the tides made removal difficult. Since the materials were buried below the creek bed, low tide conditions were required for access and for removal. This removal was accomplished through implementing additional work shifts either at night or during other times of lowest tide levels.

The success of this Historic Restoration/Preservation seismic retrofit project is evidenced by the timely completion of all aspects of work and a final construction cost that came in under budget. The project long collaboration efforts between contractor and county staff to strive toward the common goal of completing the project in the summer of 2015 also contributed to the great success of this project.
Our concern for the environment

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is more than just talk

As we continue to deliver valuable information through the pages of this magazine, in a printed format that is appealing, reader-friendly and not lost in the proliferation of electronic messages that are bombarding our senses, we are also well aware of the need to be respectful of our environment. That is why we are committed to publishing the magazine in the most environmentally-friendly process possible. Here is what we mean:

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So enjoy this magazine...and KEEP THINKING GREEN.
Who we are: The Washington State Department of Transportation (WSDOT) and American Council of Engineering Companies of Washington (ACEC) established the WSDOT/ACEC Structures Sub-Committee more than a decade ago. The sub-committee is an excellent forum for WSDOT and the consultant community to discuss and address issues of common interest related to bridge and structural engineering in the state of Washington. The purpose of this sub-committee is to provide a setting for addressing issues of common interest related to bridge and structural engineering, and to make recommendations for process improvements. This committee consists of experienced structural engineers with diverse backgrounds.

What we do: The WSDOT/ACEC Structures Sub-Committee addresses many issues related to project delivery. Project delivery methods continue to evolve in the state of Washington, and selecting the best delivery method for each individual project is challenging for owner agencies. Currently, there are three primary project delivery methods for transportation projects available to Washington agencies. They are design-bid-build (DBB), design-build (DB) and General Contractor/Construction Manager (GCCM). DBB is the traditional project delivery method in Washington, while DB and GCCM are considered alternative project delivery methods. Although the three primary delivery methods are different, many components of each delivery method are similar. The sub-committee recently reviewed the Project Delivery Method Selection Guidance (PDMSG) to assist WSDOT in the development of this tool that is an aid to help select the best delivery method for a project. This tool, which can be utilized by local agencies, is intended to provide clarity regarding the benefits of each delivery method, clarity in understanding risk and responsibility allocation with each delivery method, and assists in the selection of the best delivery method for a project with the use of project evaluation tools within the guide.

The committee also reviews proposed revisions to the WSDOT Bridge Design Manual and the WSDOT Standard Specifications. Feedback from the committee has been valuable in the continuous improvement of these and other WSDOT design and construction standards. Collaboration between WSDOT and consultant members at these meetings benefits all future Washington State transportation projects.

Sharing expertise with Washington state agencies: The WSDOT/ACEC Structures Sub-Committee provides engineering expertise and responds to specific questions regarding structural design concepts, options, and specifications. This forum will help Washington state agencies use best practices and previous lessons learned in order to deliver successful projects. Design review requests can be obtained in two formats. The first is a more formal approach where project questions are presented to the committee at a meeting and formal responses are provided. The second is more informal where a question can be asked by selecting the “Ask A Question” link on the committee’s website. These questions are emailed to the committee and a consolidated email response is returned after a committee meeting. See below for the website link.

How to contact us: The committee meets six times a year. The committee discusses issues and provides feedback at these meetings. To submit your questions for consideration at our meetings contact us here: http://www.wsdot.wa.gov/bridge/acec. Information regarding the committee’s activities can also be found on the committee’s website.
Driverless cars have the potential to change all aspects of mobility – from driver safety and insurance liability to car ownership and how Americans commute. It has the potential to disrupt both public and private transportation as we know it. As Google, Uber, the automobile industry, and other organizations continue to make rapid technological advances, it is vital that federal, state, and local governments establish policies, laws and regulations that account for these disruptions. Of utmost importance is finding a balance between guarding public safety while simultaneously regulating insurance/liability and encouraging investment in research and development of driverless cars.

Background
Driverless cars, also referred to as autonomous vehicles, are capable of sensing their environment and navigating roads without human input. They rely on technologies like GPS, LIDAR, and radar to read their surroundings and make intelligent decisions about the car’s direction and speed. Google, Uber, every major automaker, and other organizations are investing significantly in the advancement of autonomous technology. Many research institutions are partnering with automakers to provide research support and testing sites, among other things.

The potential impact of autonomous vehicles on society is vast, with both positive and negative implications. Generally, public safety is the largest positive impact cited – with the potential elimination of the majority of automobile accidents that are caused by human error. Other potential positive impacts include: more efficient land use, reduced parking requirements, and improved mobility for the elderly, disabled, and youth. Potential negative impacts include: increased vehicle miles travelled (VMT) (which could increase road congestion and travel times), increased urban sprawl, and job loss in certain sectors.

Beyond Silicon Valley and Detroit, technology development and testing is also under way in cities around the world (Gothenburg, Sweden; Bavaria, Germany; and Bristol, United Kingdom), often with the same level of government oversight (or less) as in the United States. Government officials from some of these countries have stated that they are waiting for the United States to set the precedent on regulating autonomous vehicles – all the more reason for the United States to take the lead and implement a well-balanced and effective oversight framework for the driverless industry.

Proposed local/regional/state government role in driverless cars
Driverless cars have the potential to impact states and municipalities in a number of ways: traffic congestion and tax revenues may increase or decrease, current public transit options may need to become more competitive, parking needs may decrease, and roadway infrastructure may need to be adapted (to name a few). Local governments will need to plan for these many changes.

Depending on the governance model utilized in a particular region, various local entities will have jurisdiction over driverless cars. These local, regional, and state government entities may include transit agencies, metropolitan planning organizations, air quality districts, departments of transportation, highway departments, and departments of public works.

Issues at the local level
Many factors will influence the level of congestion within and around our cities. For example:

- People may continue to own their vehicles and mostly travel alone, or the shared economy model. For instance, the Uber business model may become more prevalent.
• More people may travel due to increased mobility options for elderly, disabled, and youth populations.
• People may be willing to live farther from the jobs, resulting in increased urban sprawl.
• Cars will likely have shorter headways, roads may have more capacity, and parking circulation may be reduced.

Infrastructure, transit and revenue on the local and regional level
Depending on the evolution of autonomous cars (and connected vehicle technology), local infrastructure will need to keep pace. Specifically, local governments may need to update and reconfigure signage, speed limits, signal timing, roadways and parking spaces. As autonomous cars become more popular, everything from service coverage to vehicle types to labor requirements stands to change. Transit agencies will need to completely re-think their services and fee structure in order to stay competitive in the new transportation environment. Local governments will have significant financial consequences associated with driverless cars. Taxes, parking fees, speeding tickets, parking real estate, and incident management costs are just a few of the government revenues and costs likely to be impacted. Local governments must understand the impact of autonomous cars ahead of time and prepare accordingly.

Local and regional governments need to proactively plan for and develop policies in all of these areas. It will be vital that, in the near-term, local and regional government organizations follow both driverless and connected vehicle developments. Moreover, states will likely continue to be responsible for driverless cars’ licensing and testing requirements. This includes establishing the standard for who can “drive” (or be responsible for) an autonomous vehicle, and how and where it must be tested. In the medium to long-term, these government organizations will need to consider more significant actions, including proactively managing congestion, altering the transit service model, investing in relevant infrastructure, and updating their financial mechanisms.

Conclusion
Driverless cars are coming, with or without government involvement. Government at all levels has the opportunity to proactively establish regulations, policies, and plans that can continue to support the driverless car revolution while keeping the traveling public safe and providing a positive example for governments around the world.
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If you would like to see what’s going on with transportation projects in the City of Seattle, check out the Capital Project Dashboard. The Seattle Department of Transportation (SDOT) launched the online dashboard in 2015 with the goal of making information on large construction projects easier to access, understand and use.

The dashboard enables users to find projects categorized by the type of improvement, the current stage, and the Council District in which they are located, then drill down to gain insights into scope, costs, spending, and schedule. Projects funded by a recently passed levy are highlighted by a unique logo.

The dashboard highlights projects that are estimated to cost more than $500,000. Projects are listed in the dashboard once they hit the design phase and remain until the construction activities have been closed out. Currently, the Dashboard includes a wide range of 39 projects, from neighborhood sidewalks to arterial paving, as well as larger investments such as the $371.8 million Elliott Bay Seawall.

The dashboard complements Performance Seattle and Open Budget, the City of Seattle’s other interactive tools that use data to publish comprehensive, high-quality and timely information on performance and finances. Together, these tools bring an unprecedented level of transparency into the work that Seattle is doing to keep people and goods moving throughout a growing city.

What is the biggest challenging in creating and maintaining the dashboard?
The technology to create these types of tools has been around for a long time. In terms of technical implementation, there are a dozen different ways the dashboard could have been built. The real innovation lies in the internal processes and data-driven culture that results in monthly refreshed data sets, which is nearly real-time for large transportation projects. “What you see on the public facing website is just the tip of the iceberg,” said Lorelei Williams, Director of SDOT Capital Projects and Roadway Structures, “we leverage multiple information systems and processes to generate, collect, and review complex data.” The information is analyzed and synthesized to create performance measures that are easy to understand.

SDOT has been using strategic, data-driven systems internally to help manage scope, schedule, and budget for several years. To implement the dashboard, SDOT expanded this infrastructure and layered it with refined visual communication features, and an emphasis in public insight and consumption.

How is performance measured on capital projects?
Many dashboards report the actual project costs compared with the planned project budget. This measurement of performance, however, does not provide insight into whether the project is on-time, under-budget, or if the scope has changed. Earned Value Management (EVM), which combines measurements for scope, cost, and schedule and breaks the project down into smaller elements, is a more comprehensive and objective measurement than cost vs budget.

But EVM is not a familiar or accessible concept to the general public. Thus, SDOT designed status indicators specifically for public consumption and understanding. The performance measures depict the cost and schedule status compared to the goals established when the project entered the design and construction phases. The Schedule Status is “yellow” when a project is three months behind schedule and “red” when more than nine months behind. At the construction phase, the Cost Status is “yellow” when 10% over budget and “red” when more than 25%

What would make a better dashboard?
The City of Seattle has already begun working on future updates to the dashboard with the goal of increasing transparency and value to the public. Future upgrades could increase the breadth and depth of project information, for example, by displaying funding sources, calculating summary level information, and adding new interactive functions. The dashboard could also accommodate different types and a larger number of projects as well as increased mobile functionality.

The Seattle Capital Projects Dashboard can be accessed at capitalprojects.seattle.gov.
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Every day, headlines are filled with stories of far-away typhoons, earthquakes, tornadoes, floods, accidents and data hacks that happened to someone else. But do any of these ever happen to you? In most places, nothing catastrophic or even unusual happens from one day to the next.

What if the day comes when something bad happens where you are? Is your organization ready for an unexpected emergency?

The Pierce County, Washington, Public Works Sewer Division received a wake-up call on March 21, 2011. While working in an underground sewer main, a contractor was accidentally swept away and carried more than a half-mile toward the wastewater treatment plant. After nearly 30 minutes he was located and rescued from a manhole just outside the plant. Miraculously, he survived with only minor injuries, but the event was traumatic to those of our workers that unexpectedly became emergency responders.

The accident made us realize that we needed to take our emergency preparedness to the next level. We set out to create emergency plans and programs that would prepare us in case another serious incident or even a large disaster happened nearby.

Regardless of the types of services a public works organization provides, communities depend on us for comfort and safety. Following a disaster, it is critical that public works be able to recover operations and be as self-reliant as possible in order to restore essential services with minimal delay. An emergency program, implemented before something happens, is the key to quickly getting up and running again.

Our Sewer Division emergency program emphasizes four primary elements: planning, training, practice, and resources.

Planning
U.S. President Dwight D. Eisenhower once said, “Plans are worthless but planning is everything.” Emergencies will rarely follow a pre-developed plan, but the process of planning will lead to preparedness. Emergency planning is central to effective disaster recovery.

While it’s possible to overthink planning, there is great value in creating written safety and emergency response protocols. When staff is trained to follow written standard operating procedures for routine mishaps, they are better prepared to respond to larger or more complex events. Incident-specific protocols gain value when they are tied together in an overall emergency operations or incident management plan that directs response and notification procedures throughout the organization. An emergency plan identifies what to do, who to tell, and next steps to take when an unexpected event occurs.

A catastrophic event with widespread impacts that lead to prolonged disruption of normal operations requires a continuity of operations plan. This plan outlines how the organization will continue to operate and restore its essential functions during disaster recovery, and includes provisions for alternate worksites, succession of leadership and delegations of authority, and accessibility of vital records and resources.

Training
Safety training in public works organizations typically addresses things like hazardous materials handling, motorized equipment operation, use of personal protective equipment and first aid. But after the 2011 sewer pipe rescue, we sought out additional training geared toward public works disaster preparedness. We found FEMA’s two-day Disaster Management for Water and Wastewater Utilities class (MGT-343). Working through the Washington State Emergency Management Division (EMD), we arranged to host the training at our own facility. The instructors came free of charge and the course was opened up region-wide so others could attend.
The specialized disaster management class was just the beginning. FEMA also recommends specific Incident Management System (ICS) training courses for staff and management, and the Pierce County Public Works Department has adopted this standard as a department-wide training requirement. In January 2014, we set a division goal to bring 100 percent of our staff into compliance with their ICS training. When we started, only 16 percent of staff were in compliance, but within eighteen months 97 percent had completed their required courses. Most classes are free of charge and available online.

In an emergency, ICS is the management system most first responders use. Many parts of disaster recovery depend on the participation of public works agencies, and it benefits everyone when public works speaks the same language and follows the same procedures as the rest of the incident response team. However, unless it is frequently used, training on a new system like ICS is easily forgotten. We had to follow up our training with some exercises so that staff could practice what they had learned.

Practice
In 2014 and 2015, we began providing staff with opportunities to practice using ICS. One of the first things we did was to adapt the standard ICS-214 Activity Log form for our everyday use as the division’s incident and after-action report form.

“We when started, only 16 percent of staff were in compliance, but within eighteen months 97 percent had completed their required courses. Most classes are free of charge and available online.”

We also conducted internal training exercises. The first exercise was designed around a real project to move 90 operations staff and their equipment into a new facility. Instead of using a traditional project management system to plan and execute the move, we used ICS. The move planning team was organized according to ICS duties and functions, and over a period of six months we used ICS forms to create a move-in action plan. On moving day we set up and staffed an incident command center where we tracked the move’s progress with situation reports and scheduled briefings. The ICS approach worked, the move went well, and staff were able to experience firsthand how ICS could work during an unplanned emergency.

Six months after the move project, Pierce County hosted the 2015 U.S. Open golf tournament at the county-owned Chambers Bay Golf Course, which is located next to the Sewer Division’s administration building and wastewater treatment plant. Security for this international event was extremely high, and the administration building was temporarily repurposed as law enforcement’s Joint Operations Center. Because our division leaders and staff were familiar with ICS, they were able to effectively interface with federal, state, and local law enforcement security strategists. We created a detailed ICS event action plan to address our role in providing U.S. Open facility support during the event, which included 24-hour operation of the wastewater treatment plant, accommodation of tour bus routes through the plant, and relocation of non-essential staff to an alternate work site for ten days. Thanks to
our ICS training and practice, we were able to demonstrate our readiness to participate in complex incident management.

In 2016 we assisted our county Department of Emergency Management with planning the county’s participation in the Cascadia Rising 2016 regional earthquake exercise. We provided utility damage scenarios for a local 8.5-magnitude earthquake, held a tabletop exercise for division leaders, and conducted an all-staff test of our emergency employee accountability system.

**Resources**

Knowledge of ICS and exercises are not enough by themselves. Additional resources are needed to create and sustain an emergency preparedness program, and to support the information in written emergency response plans. Resources can include tangibles such as fuel storage, bottled water, and backup equipment. We also maintain a state of readiness with up to date information on our system and its condition, portable pumps, and contracts with reliable vendors. Service area maps are stored on portable hard drives that are updated every six months.

Resources can also be in the form of guidance tools and materials to assist staff. We developed an emergency accountability system for employees and their families so they can report their status following a widespread disaster. Once we know who is available, this information can be used to develop staffing plans for damage assessment and system recovery. Staff also receive instruction on personal and family preparedness. We regularly post division-specific information and resources on an employee intranet site so they always know where to look for important messages.

“Because emergencies don’t have deadlines, emergency preparedness work tends to be given a low priority and it can be hard to get started.”

Resources provide the behind-the-scenes support network of tools, supplies, procedures and information that ties the emergency program together and enables it to function. Without resources to back them up, written plans risk being nothing more than word on a page.

**Steps for building an emergency program**

Because emergencies don’t have deadlines, emergency preparedness work tends to be given a low priority and it can be hard to get started. Our sewer emergency program is a constant work in progress, because even as new components are developed and added, older parts need to be maintained and updated.

Considerations for building an emergency program include:

1. Propose emergency preparedness and emergency program actions to management and get their buy in. If they are not enthusiastic, find out what they will agree to in order to begin. Management must be willing to make the decisions that will guide their organization’s emergency response actions in a crisis.
2. Do what is needed to get an emergency plan in place – update old plans, solicit staff feedback, and communicate the plan throughout the organization. Practice implementing the plan to discover areas for improvement, and back it up with the resources needed for implementation.

3. Provide emergency management training to staff. At the very least, define and communicate what their emergency responsibilities will be if they are unable to perform their regular job. Disaster recovery requires the efforts of as many people as are available.

4. Conduct internal emergency exercises and participate in local or regional exercises whenever possible. Regular practice strengthens skills, adds knowledge and increases confidence, and it promotes the networking and relationship building that is needed in an actual event.

Finally, if you wait until you need it, it’s too late. Planning and preparedness needs to happen before disaster strikes. Organizations that invest in building an emergency program are able to mobilize and recover faster than those who choose to not think ahead.
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There are many new technologies available today that can improve how we perform public works operations. The focus of my career at Perteet is construction management, so I’ll focus on a few technologies that have made significant improvements within our construction management group.

For a frame of reference Perteet’s construction management division manages around 15 to 20 municipal projects in a given year ranging from half a million dollars to $20 million and up, with the typical project being a $10 million, federally funded road or transit project.

Anyone who has been part of a significant public works construction documentation effort knows that these projects entail a lot of paperwork. A few of the challenges this creates are: developing all of the paperwork in a timely manner, processing and reviewing the paper flow efficiently, and making all of that paper and the data it contains available and usable. Towards this goal, I’ll cover some technologies we’ve implemented.

Windows tablets and Bluebeam Revu: Windows tablet computer technology (not mobile tablets), along with Microsoft’s focus on pressure-sensitive digitizers has allowed one of the early game changers that our team has had in place for a number of years now. Partnered with a program called Bluebeam Revu, which provides full write control over PDF files, the tablet computers are allowing our entire construction management team to write using a pen-like stylus directly onto PDF files on the screen. This allows our field inspectors to generate field reports, sign them on the screen, save directly to our server where office staff can review, leave check marks, make corrections, and re-save for approval. All of this is done without printing or scanning the document once. Bluebeam Revu also has the advantage of being geared towards construction with its ability to scale documents for measuring lengths and areas within the document. With BlueBeam, these tablets have allowed us to move from paper records, to essentially all digital records, with a final print for the audit. In time I’m sure we’ll be able to skip the final print. We are saving time, and our records are more complete and organized, since they can now be filed as they are created.

Since we require that contractors submit their RFIs and material submittals as PDF documents, we are also able to review and respond to contractor submittals completely digitally.

Internet connectivity: Your field staff can be more effective with if they can connect to your main server from anywhere. Fortunately, much of the data challenge has been resolved by the market demand for improved cell phone data technology. A nearly unlimited data sharing plan with a cell phone that will allow an inspector to connect their laptop to the office server is easy to acquire, and worth every penny. Make sure your office server has a reliable way to connect – this is a must. We find that a plan of up to 4 GB per month typically does the job.

Mobile tablets/technology: Our next challenge was finding a device that an inspectors could bring out to the field that was easy to use in an outdoor environment. We wanted our inspectors to be able to stay out in the field, collect data, write their daily report, and not have to spend an hour in the office transferring notes to the computer after the contractor has left. A number of years ago we tried mini laptops with 3G cards, and the form factor was just not convenient enough to use in the field, and the devices were typically left in the office. Over recent years, the quality and capabilities of mobile tablets has progressed significantly. And just over a year ago we leaned of Pavia Systems’ efforts with WSDOT, MNDOT, and TXDOT to develop an iPad based application specifically made for inspectors of public works projects to collect all of the data necessary for daily inspection reports right from an iPad. Their first market being road construction, they intuitively call their app Headlight™, and last spring I was able to lead a small team from my office to help Pavia roll out their program to 100 of WSDOT’s inspectors. Perteet has since implemented Headlight
on all of our municipal inspection projects. It has become such a valuable and integral part of our inspector’s work that once when a significant update blocked inspectors from being able to log into Headlight™ (for less than an hour) some of my inspectors experienced a true panic at the idea of having to develop a daily report in Word, an activity that was part of their daily duties just a year ago.

Headlight™ combines the abilities of the latest mobile devices like GPS, photo, video, data, portability, and super bright screens into a single platform for collection of observations. All observations are geo-referenced, time stamped, taggable, and uploaded to a central server. At the end of the day the inspector simply selects “Create DCR” (Daily Construction Report) selects the observations to include in their report, and the software writes the DCR into a PDF file for filing or printing if need be. All data collected is viewable, searchable, and available on Pavia’s web interface for access by office staff, which has become a useful tool and time saver for tracking work and contractor activities.

Pavia has been making strides towards further developing functionality of the Headlight app. In coming months we’re expecting to see their new even friendlier user interface. Beyond basic interface upgrades, upcoming features that have been discussed are tracking force account, field note reckords, and material approval management.

**Flying cameras:** Call them what you want, UAVs, UASs, drones are essentially your flying eye, and the technology in this industry is moving faster than anything else I’ve seen. For around $1,000 you can get set up with a fairly stable system with a very high quality camera allowing you to pick up photo and video shots of large sites and structures from perspectives not attainable on the ground. With a little more effort you can start setting up photogrammetry capture for 3D imaging and mapping. The greater cost here is the investment in time to learn the rules and learn about the systems so that you can fly safely and within the law. We recently purchased a UAS and have been able to document construction progress, as well as provide great shots for clients and staff to see the project.

**Tips for considering new technology:**

- **Know what successful implementation will look like.** Identify the problem, then implement the solution and move forward. But first, you should have an idea of what “moving forward” will look like.

- **Weigh the cost versus returned value.** Not all technology is worth it. Consider the cost of time and money for implementation along with retail costs for any new technology. The benefits should easily outweigh the total cost.

- **Consider your users.** Even the best systems will fail if they are not adopted properly. Consider that your team not only needs to buy in to the technology, but they need to be able to understand how to implement it.

Mark Holmes is a Construction Engineering Supervisor at Perteet, Inc. in Seattle, Washington. Mark has been with Perteet for 18 years and is a registered engineer. His focus is on management, documentation, and tracking of public infrastructure projects including interchanges, arterial and local roads, utility improvements, large site grading, storm drainage design, and large transit improvements.
Northwest Public Works Institute Reaches Milestone

The Northwest Public Works Institute reached another milestone in 2016. At the Public Works Essentials class in Issaquah, WA in February, the institute had the 1,000th graduate from the program nationally.

Doug Sweyer from Vancouver, WA was the 1,000th student to graduate from the Public Works Institute.

The Northwest Public Works Institute has been formally recognized by National APWA since 2006. By May of 2016 there were 151 graduates from Washington and 148 graduates from Oregon. Nationally, the 19 Institutes recognized by APWA have had 1,077 graduates. The Northwest Institute has accounted for about 28% of the national total for several years.

Each of the Northwest Public Works Institute classes is offered annually in both Washington and Oregon.
- PW Essentials is offered in December in Oregon and February in Washington.
- Developing Leader is offered in March in Oregon and May in Washington.
- Leadership Skills is offered in September in Washington and November in Oregon.

Registration information is available under Training at both the Washington and Oregon websites.

Questions about Washington class dates can be sent to John Ostrowski at: ostrowj@pacifier.com
Questions about Oregon class dates can be sent to Maggie Vohs at: cameomag@gmail.com
The Grays Harbor Automobile Omnibus Company’s interurban bus service between Aberdeen and Hoquiam was an effort distinguished by both its entrepreneurial optimism and its speedy demise. Described as a “monster automobile” by the local press, it was delivered from San Francisco by steamer July 16, 1901. In a tongue-in-cheek report, the Aberdeen Daily World concluded, “Thus the Grays Harbor leads the country in all things, and innovations multiply with us. The next improvement will be a line of airships between Aberdeen and Westport.” Two weeks later, the steam-powered omnibus’ steering failed while returning from Hoquiam on the planked road which connected the “twin cities.” The common carrier quickly turned from the trestle and dropped to the tidelands, severely injuring two passengers. Although the service was not revived, the planked road continued to be a favorite speedway for local cyclists. Note the resting bike on the right of the crash scene.

Photos courtesy Jones Photo Company, Aberdeen.
**Neighborhood Self-Help Projects Q and A**

A number of municipalities may contract with certain groups to do neighborhood improvement projects without regard to the competitive bidding laws under RCW 35.21.278. These groups include chambers of commerce, service organizations, community, youth, or athletic associations, or other similar associations located in and providing service to the immediate neighborhood. The contracting association may make park and recreation improvements, install equipment and artwork, and provide maintenance services while being reimbursed by the city or town for its expenses.

Frequently asked questions include:

**Which municipalities can use this statute?**
- Counties
- Cities and Towns
- School Districts
- Port Districts
- Metropolitan Park Districts
- Park and Recreation Districts
- Park and Recreation Service Areas

**Who can they contract with?**
- A Chamber of Commerce
- Service organizations (Lions, Rotary, Shriners, Kiwanis, Jaycees, etc.)
- Community or Youth Association (garden club, clubs,
- Athletic Association (soccer, football, baseball, underwater basket weaving, etc.)
- A similar association located and providing service in the immediate neighborhood

**What services/improvements can a municipality contract for?**
- Drawing design plans
- Making improvements to a park, school playground, public square, or port habitat site
- Installing equipment or artworks
- Installing and maintaining landscaping
- Providing maintenance services for public facilities as a community or neighborhood project
- Environmental stewardship project

**What are allowable expenditures under RCW 35.21.278?**
- Payments under the contract must not exceed $25,000 or $2 per resident within the boundaries of the public entity, whichever is greater.
- Value of the services/improvements under the contract must be three times the payment amount. A way to evaluate whether this requirement is met is to estimate what it would cost the municipality if it contracted with a private for-profit company for everything you want an association to do.

**What are the prevailing wage implications of RCW 35.21.278?**
A contracting association may use its (association) members may also recruit and use volunteers in the project and provide the volunteers with clothing or tools; meals or refreshments; accident/injury insurance coverage; and reimbursement of their expenses. If a municipality is using genuine volunteers in accordance with Department of Labor and Industries policies, there are no prevailing wage implications. L&I has an Employment Standards Policy (ESA) #1 that addresses the use of volunteer.

**email:** AskMRSC@mrsc.org
What is reality?

The last issue of this illustrious magazine contained an article about the Interstate Bridge over the Columbia River. There was a picture from an old postcard and a quote from the old postcard which includes the following statement: “Pacific Highway Interstate Bridge length which approaches four miles, making it one of the longest steel bridges in the world.” The picture shows the bridge disappearing into the distance making it look very long indeed.

Anyone who looks at the bridge in real life can tell immediately that it’s not even a mile long. This is the same picture and quote that appears in the Building Washington history of Washington State Public Works.

A few months ago the Oregonian newspaper in Portland announced that they were publishing a coffee table book about the bridges of Oregon, so they printed some examples of its contents. There was that four-mile quote again so I wrote to them to ask them to correct the error before they published the book.

I got a reply, which was nice, but they told me that they had checked with the state engineers and the four-mile figure includes the approaches. I can’t believe that even the most generous engineer could stretch “the approaches” to more than three miles.

At that point, I dropped it. I was starting to feel like another old man of my age who yells at the kids to get off his lawn. It still bothered me though, and it bothered me again when I read the magazine article.
What bothers me is how the truth can get lost to history by a better story. I came across this problem as one of my own making when I worked for the City of Vancouver. After a meeting in which I had told a story about something that had happened in the city a few years earlier, the Finance Director, who was a very nice guy, approached me and said, “You know that’s not what really happened” and then told me the correct story. I suddenly realized he was right and told him so, but I also told him that my version has been told by me so many times that it has taken on a reality all its own.

I thought that was kind of funny at the time, but I ran across a different version of the same problem about that same time. I was at a neighborhood meeting where the city attorney was there to answer some questions about some important issue at the time. He was getting a lot of heat and I thought it wasn’t warranted. So I asked the group to raise their hands if they thought we lost $1.5 million in a recent lawsuit. I then asked for a show hands for $1 million and finally $0.5 million. Everybody voted for at least one of those options. It was a trick question and I told them it was. We actually won the lawsuit and the city attorney was the guy responsible for that success. I don’t know if I changed any attitudes, but I thought it was typical of how public life works sometimes.

All of the stories in the newspaper about the lawsuit were negative because that sort of thing usually is and makes good reading, so people read it. There may be 10 or 20 articles about the case as it plays out, but there will only be one or two about the ultimate disposition. Most people remember the 10 or 20 and may not even have read the one or two.

I’ve also been concerned about reality and history because the record that seems to survive is the one created by the stories that were popular. It’s why I shied away from historical fiction. Somehow I figured that if I didn’t read it, it didn’t happen. I think my real concern was that I’d just get irritated reading something I knew (thought?) to be wrong. That was until I read James Michener’s Poland. I know something about Polish history, and I think he got it right, and I also think he gave life to the people who lived it. One of those people was an Ostrowski who appears and is promptly killed on the same page.

I know this is a problem that can’t be solved by a cranky old man, but I worry about the many more ways we have to spread stories around today. Social media are much more effective at spreading bad information than any coffee table book. So what can we do about it?

It strikes me that the first person to tell a story has a big responsibility to get it right and make sure that a lot of people hear about it. Public works people don’t usually think of themselves as propagandists, but if the truth is important, maybe we need to think along those lines. Of course, I’m not suggesting we spread typical propaganda, which is the same lie told over and over again. Rather I think we need to tell the same truth over and over again.

This gets to be important if we’re to learn anything from history. If we think we’ve learned what causes a particular effect and we’ve got the story wrong, we’ll be able to repeat history or at least a malfunctioning version of history.

I mentioned that I was worried about all of the new ways we have to spread misinformation, so I thought I’d Google the Interstate Bridge to see what I could find out. One selection was the Wikipedia article about the bridge. If you’re thinking I found the same old four-mile nonsense, I didn’t. The article had a lot of good information including the actual length of the bridge, which is 3,538 feet. There was nothing about any phony baloney approaches. More information in an open correctable system may be just what we need. There may be hope for us yet.

Whether you agree with me or not, remember that you can state your position in future articles by sending me an email at ostrowj@pacifier.com and I’ll put you on the mailing list for advance copies of future Outlooks.
Reader Responses

Larry Southwick
What is the truth? I’ve come to see it as objective or subjective. What do I mean by that and how does it relate to public works. The objective truth is that the bridge is 3,538 feet long (I confirmed via Wikipedia) but to all the other sources you site, the subjective truth is four miles long. And the people who believe it’s four miles long are just as certain that’s the truth. That’s what we have to deal with in public opinion – what people believe to be true (subjective) as compared to the objective truth. That’s easier to accomplish when dealing with physical facts, but the example shows that’s not always adequate. It’s much more difficult when dealing with purely subjective issues, which include much of our work. It’s our training and professional responsibility to be as objective as possible, but we also have to be able to work with subjective matters as well. That’s why we have to all work together to be on the same page. We have to all understand and believe in the same truth. And our stories have to be consistent with the truth, not speculation. If you don’t know the truth, then say so and qualify your opinion.

We also have to deal with changing truth. Over the last 50 years in this business, some of the fundamental standards have changed. For example, the 1960s solution to a stormwater problem was a bigger pipe to the closest waterway. That’s obviously no longer the truth. Same with many other issues so we have to be consistent with the current standards and best practices. Case in point, 148th Avenue in east Bellevue, a three-mile UAB project to widen a two-lane street into a four-lane boulevard through residential neighborhoods. The State Environmental Policy Act was passed in 1971 and we started design on the project in 1973 with substantial public opposition. It was one of the first large projects to require a full-blown EIS and we still had to get the project out to bid in 18 months. SEPA was the subjective truth and gave authority to DOE and the industry to establish new objective standards. And we had to complete it in the court of public opinion. The successful project was the marriage of new and changing objective and subjective standards.

Best wishes to all from an old, retired engineer and friend.

Bob Moorhead
Retired, as of June 1, 2016
Perhaps the history we think is true is the one we want to be true. Surely a “four-mile bridge with approaches” is much more impressive than a “3,538-foot bridge with 3.33 miles of approach roads.”

This brings to mind another historical bridge and approach story. During the 1930s Depression in New York City, one public agency was building the Triborough Bridge, and another the Grand Central Parkway. Both agencies were chaired by Robert Moses. Funding was running low, so an application for WPA or PWA funding for the “Triborough Bridge Approach” was submitted to the federal government. It was only after approval that it became clear that the “approach” to connect the bridge and the parkway was a mile and a quarter long six-lane freeway, involving several overpasses and one 500-foot structure carrying four active railroad tracks. (The large pylons denoting the end of the Parkway and the start of the Bridge Approach are still in place 80 years later.) How many of us today would consider a “bridge approach” to be that long?

Will Rogers (1879-1935), the famous American humorist and social commentator, was well-known for his perceptive quotes. My favorite is, “Things ain’t what they used to be, and never were.” Perhaps that all too often describes our views of history today (even with Wikipedia)!

Bill Wright, PE
Thanks John. Good example of bigger-itis.

Steve Sperr, PE
As evidenced by this year’s election rhetoric, rarely is it possible to convince someone that your point is valid using facts and logic, if it is contrary to their version of reality. What you can try hard to do, and occasionally be successful at, is show why a particularly controversial capital project is the right one to do. The vocal minority (including those that may be impacted the most economically) may not like the project – but if it is clear why you are doing it, and it includes a compelling community benefit, you won’t get the same level of distrust and opposition as just using facts and figures.

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