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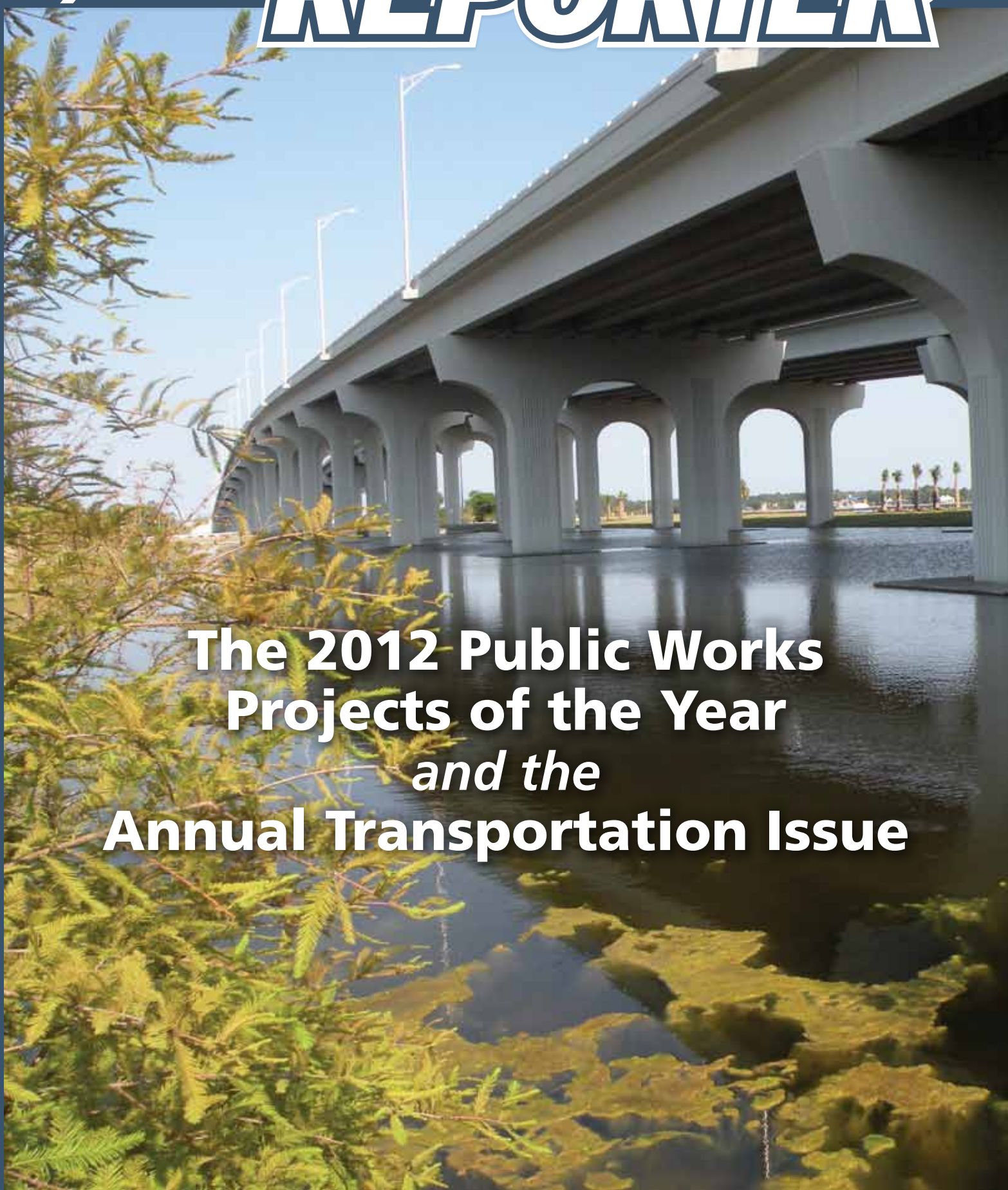
APWA REPORTER



The 2012 Public Works Projects of the Year *and the* Annual Transportation Issue

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VOLVO CONSTRUCTION EQUIPMENT

VOLVO

July 2012

Vol. 79, No. 7

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APWA REPORTER

The *APWA Reporter*, the official magazine of the American Public Works Association, covers all facets of public works for APWA members including industry news, legislative actions, management issues and emerging technologies.

TRANSPORTATION AND PROJECTS OF THE YEAR

On the cover: Beach Blvd. Intracoastal Waterway Bridge Replacement Project, Jacksonville, Florida (related article on page 58)

Working together to reauthorize our transportation future

Diane Linderman, P.E., PWLF
APWA President

I am always impressed with how our American Public Works Association volunteers and staff have worked together over the years to promote the causes that are important to our members! In this month's *Reporter* issue, we focus on transportation issues and APWA's efforts in the areas of transportation funding and project delivery.

The APWA Reauthorization Task Force, the Transportation Committee, and the Government Affairs Committee have joined together to hold two years of Transportation Summits in Washington, D.C. During these summits, teams of APWA members fanned out and visited their congressional representatives to urge them to approve a federal transportation bill, to renew certainty in the transportation funding process, and to make it less expensive and cumbersome to use federal funds to deliver projects. We believe that our efforts have raised our knowledge and our profile, but after five years of activities, national transportation funding still faces an uncertain future.

How did we get to this point: three years past the expiration of the federal bill, nine short-term extensions and a conference committee with little common ground? Let us remember back to the early 1990s, when hope (and funding) ran high…

In 1991, President George H.W. Bush signed the Intermodal Surface Transportation Efficiency Act (ISTEA) into law, changing the nature of transportation funding (and acronyms!) for the next two decades. ISTEA ("iced tea") was a landmark reauthorization of the federal transportation funding act. The chief author of ISTEA was Congressman Norman Y. Mineta (D-California), President George W. Bush's future Secretary of Transportation. ISTEA revamped the old federal funding system and distributed Surface Transportation Program monies through a newly-empowered regional planning agency: the Metropolitan Planning Organization. These metropolitan planning organizations under ISTEA would receive more control over funding of local transportation projects. ISTEA also gave new meaning to "multimodalism" by expanding the funding for bicycle, pedestrian and other non-traditional modes of transportation, supplied by the transit-flexible Surface Transportation Program, the new Transportation Enhancement program, and the Congestion Mitigation and Air Quality Improvement program for areas that did not meet federal air quality standards.

ISTEA expired in 1997 and was replaced with Transportation Equity Act for the 21st Century (TEA-21), which was replaced in 2005 by the torturously-named Safe, Accountable, Flexible, Efficient Transportation Equity Act: a Legacy for Users (SAFETEA-LU). These subsequent measures both represented slight rebrewing

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of the original "TEA." In an effort to shape the next transportation act, APWA formed its Transportation Reauthorization Task Force in 2006. John German of the APWA Texas Chapter leads the 10-member task force, which includes transportation professionals at local and state levels, representing public and private entities, from various regions of the United States.

The Transportation Reauthorization Task Force began meeting in 2007, two years ahead of the federal bill's expiration, to get a head start researching and planning recommendations for the new transportation bill. Little did the Task Force members know that they had signed up for a five-year-plus tour of duty! The Task Force's chief goal for the authorization bill was to raise money to keep the transportation trust fund solvent. Trends showed that bankruptcy was on the horizon, because expenditures (and needs) were outpacing revenues from a gas tax that hadn't been raised since 1994.

In its first year, the Task Force released a paper on reauthorization principles that made the following recommendations:

- Raise the Motor Fuel Tax and Index It to Inflation
- Explore the Establishment of Vehicle-Mileage Fees
- Expand Access to Innovative Financing Tools
- Utilize a Utility System/Enterprise Funds Model
- Provide Incentives for Local Financing

Two independent federal commissions shared the Task Force's recommendations to increase the federal gas tax and to look toward a long-term funding solution, such as a tax per vehicle mile traveled.

Fast forward to 2012 and the political gridlock of today: there have been nine short-term extensions of SAFETEA-LU. As of this writing, there is still no new federal transportation bill, although the Senate passed their two-year version and the House reported out of committee (but did not pass) their own, different five-year version of the bill. Working in tandem with the Transportation Committee, the APWA Task Force has moved from playing offense to defense, shifting its goals from seeking a new, more stable transportation revenue source, to preserving the existing levels of funding and protecting the multimodal commitment of ISTEA.

Senator Barbara Boxer (D-California) crafted a comprehensive federal transportation proposal, Moving Ahead for Progress in the 21st Century (MAP-21, S 1813), which passed in the Senate on a bipartisan vote of 74-22. Facing their inability to agree on the American Energy and Infrastructure Jobs Act of 2012 (HR 7), their own version of a reauthorization

APWA'S PRIORITIES FOR FEDERAL TRANSPORTATION FUNDING

- Protect and preserve existing transportation facilities;
- Improve goods movement;
- Enhance safety for users of the transportation system;
- Provide solutions to urban congestion problems;
- Continue energy independence through multimodalism; and,
- Enhance flexibility in the use of federal funds and increase process streamlining to maximize the efficiency of each dollar spent in the federal funding process.

Federal investment in accordance with these priorities is the key to maintaining the economic health, welfare and safety of our transportation system.

Excerpt from APWA's Position on the Reauthorization of Federal Surface Transportation Programs.

bill, the House of Representatives instead approved another 90-day extension of the existing act, just to bring both houses into conference. The current extension now expires on June 30, 2012.

Key features of MAP-21 include:

- Funding equal to current levels plus inflation—for two fiscal years.
- Consolidation of federal programs from about 90 programs down to fewer than 30.
- No earmarks.
- Project delivery expediting features, but not as extensive as those proposed by APWA.
- Expansion of large federal loans via the Transportation Infrastructure Finance and Innovation Program (TIFIA) program.
- Consolidates certain programs into a focused goods movement improvement program.

Both the House and Senate versions of the reauthorization bill have features designed to simplify the process of using federal funds, or reduce federal requirements, but the House version was more comprehensive and included an APWA-drafted provision to exempt small projects from onerous federal regulations. Despite the fact that the House bill did not gain approval and is therefore not in conference, this provision may still be considered for inclusion in the final bill. The Senate bill includes a 15% set-aside for off-system bridge improvements, which is of critical importance to local public works departments; APWA partnered with the National Association of County Engineers to add this provision to the bill. In their most recent visits to Washington, D.C., APWA members urged adoption of a bill longer than just the two years proposed in MAP-21, in consideration of how long it has taken for a new bill to be approved. However, the chance of a longer bill is considered slim, considering the difficulty in identifying sufficient funding just for the two years of the bill.

During the legislative process, APWA has been working to represent the needs of local governments throughout the country, and to ensure that the funding is in place for the long-term sustainability of transportation improvements in our cities and counties. The goal is long-term solutions (over political expediencies) but we are working to get the best funding bill possible given the current political environment. APWA and its members want more flexibility for local government projects, and streamlined environmental processes and procedures. We also want passage of a bill, not continuing resolutions.

Separate from the reauthorization process, APWA has focused on reducing the red tape involved in the delivery of federally-funded transportation projects, in order to save money and thus allow us to better live within the lower funding levels. APWA has partnered with the Federal Highway Administration on its project delivery streamlining initiative, Every Day Counts, an effort that holds promise for improving the delivery process within existing federal law. The APWA Transportation Committee has formed a new Project Delivery Streamlining subcommittee, led by John Davis of the Transportation Committee, and it is seeking new members to carry on this effort even after the transportation bill is approved.

Where do we stand today? By the time you read this column, it is still possible that the U.S. Senate and House of Representatives will have met the latest deadline for expiration of the transportation bill, agreed upon a package that meets all of APWA's goals and sent it off to President Obama for his signature—we can dream! But don't cancel that Task Force meeting yet… It is also possible that Congress will have approved a tenth extension of the existing federal measure, and delayed action until after the November election.

Regardless of which version of reality exists, rest assured that APWA will be working to protect (and someday increase!) funding for local transportation infrastructure and to make the process of using federal funds easier and less costly.

Follow President Linderman's blog at http://apwapresident.wordpress.com.

How do you respond?

Tracy L. Warner
Municipal Engineer
City of Ames, Iowa
Member, APWA Diversity Committee

Have you ever given any thought to how you respond to different people or situations? We all function from at least two levels—conscious and unconscious. Our conscious mind is our thinking mind. Our unconscious mind is what gets us to the place where we are driving while talking on our cell phone.

Sometimes in everyone's life they have a reaction to something that surprises them. They respond to an event or a person differently than they ever would have expected. While both levels of the mind are very powerful, there are times when it is beneficial to bring a thought from your unconscious to your conscious mind so that you can move past unwanted beliefs or fears and into a life of ease and joy.

Sit back and relax as you read through this list. How does your mind and body feel when reading each category below?

- A female public works director.
- An 18-year-old mayor of your municipality.
- A homeless 60-year-old Caucasian male.
- A homeless 28-year-old mother of two young girls.
- An outspoken citizen attending a public meeting.
- A quiet citizen sitting in the corner while attending a public meeting.
- A group of ten teenagers talking and laughing as they walk down the sidewalk.
- A person who has three bald spots amongst otherwise styled hair.

Recently a conference was held in Chicago, Ill., that focused on trichotillomania (trich) (hair pulling disorder) and skin picking disorder. People of all ages, ethnicities, personalities, backgrounds, and professions attended and described their inability to resist the repetitive urge to pull out their own hair or pick at their skin. This disorder impacts each person differently. Each person has episodes that are set off by different feelings. While attending this conference, I was surrounded by deeply beautiful people who were getting to know themselves on the inside instead of judging what a person looks like. This has caused me to sit back and think. How would I as a public works official respond to someone with obvious bald spots who is attending a public informational meeting? How do kids respond to classmates who come to class always wearing a hat to cover up their bald spots? How do you think you would respond to a coworker who doesn't have any eyelashes or eyebrows?

Each person impacted by trich responds in different ways. Some are good at hiding it so you don't even know that they have it. Others have been impacted so much that another person can't help but notice, yet the other person is not ready to openly talk about what they are experiencing. Another group of adults or teens are very vibrant and ready to talk to anyone who wants to listen about what they are experiencing. Whether it is trich or not, everyone is experiencing life through their own journey.

Several of the sessions during the conference focused on mindfulness. I have grown to like this term. Mindfulness describes living in the moment. Being present to what is going on around you. This does not include judgment of yourself or others. This does not include living in the past nor does it mean dwelling on something that you still feel was wrongfully done to you. It means just to be present to enjoy what is happening right now.

Confidently be yourself. March to your own drum. Learn to dance in the rain.

Tracy Warner can be reached at (515) 239-5163 or twarner@city.ames.ia.us.

Bicameral transportation bill negotiations underway

Jim Fahey
Director of Government and Public Affairs
American Public Works Association
Washington, D.C.

A conference committee to negotiate a House-Senate agreement on a long-term surface transportation reauthorization bill met for the first time in May, more than two and a half years after the last authorization, SAFETEA-LU, expired. The conference committee was established after the House of Representatives in April approved a 90-day extension of the expired law as a vehicle, a shell bill, to convene bicameral negotiations.

Progress toward convening a conference committee and end the stalled process began to gain momentum when in March the Senate approved a two-year, $109 billion reauthorization bill, Moving Ahead for Progress in the 21st Century, by a vote of 74-22. The measure stands as the only comprehensive reauthorization bill approved by either chamber and is the focal point of conference negotiations. Better known by its short name, MAP-21, the bill reauthorizes federal highway and transit programs at current funding levels plus inflation and contains a number of budgetary offsets and transfers necessary to close a $12 billion revenue gap to pay for its funding levels.

MAP-21 makes a number of changes to current programs and policies. It consolidates the number of federal programs from about 90 to less than 30, contains no earmarks, includes new provisions aimed at expediting project delivery and strengthens the Transportation Infrastructure Finance and Innovation Act (TIFIA) program. An amendment added during Finance Committee consideration provides for a five-year exemption from the state private activity bond (PAB) volume cap for water and wastewater projects and provides for a one-year AMT extension for tax-exempt bonds.

MAP-21 provides the majority of highway funds through core programs but reduces the number from seven to five. Three new core programs are established. The National Highway Performance Program consolidates the Interstate Maintenance, National Highway System and Highway Bridge programs to create a single new program. Although the Bridge program was eliminated, the Senate amended the bill to retain the SAFETEA-LU provision in law for more than 30 years that states obligate for off-system bridges 15 percent of funds apportioned for the highway bridge program in 2009.

The Transportation Mobility Program, the second new core program, replaces the current Surface Transportation Program, but retains the same structure, goals and flexibility. Activities that previously received dedicated funding in SAFETEA-LU but consolidated under MAP-21 are retained as eligible activities. The third core program, the National Freight Network Program, consolidates existing programs into a new focused freight program providing funds by formula for projects to improve regional and national freight movements on highways, including freight intermodal connectors.

MAP-21 retains two existing core programs, the Congestion Mitigation and Air Quality Improvement Program (CMAQ) and the Highway Safety Improvement Program (HSIP). CMAQ provides funds for transportation projects designed to reduce traffic congestion and improve air quality. The bill was amended during floor debate to give local governments access to its "Additional Activities" program, which consolidated Transportation Enhancement, Recreational Trails and Safe Routes to Schools programs under CMAQ. Under HSIP, MAP-21 doubles funding for safety and requires states to develop and implement safety plans. The High Risk Rural Road program setaside is eliminated but project eligibilities are retained.

The legislation includes a number of reforms intended to reduce project delivery time and cost. These reforms include expanding the use of innovative contracting methods; creating dispute resolution procedures; allowing for early right-of-way acquisitions; reducing hurdles for projects with no significant environmental impact; encouraging early coordination between relevant agencies to avoid delays later in the review process; and accelerating project delivery decisions.

MAP-21 authorizes $1 billion in fiscal year 2013 to fund major projects of national and regional

significance and $1 billion for TIFIA, which provides direct loans, loan guarantees and lines of credit to surface transportation projects. The legislation also establishes an outcome-driven approach that tracks performance.

Although the House did not pass a comprehensive bill, the House Transportation and Infrastructure (T&I) Committee did, the American Energy and Infrastructure Jobs Act, a five-year, $260 billion measure which was to be combined into one package with several bills to expand energy production to help pay for its costs. Like MAP-21, the House bill consolidates numerous programs, contains no earmarks and includes provisions to expedite project delivery. House leaders say they will negotiate on behalf of priorities reflected in the House T&I Committee bill.

In February, House leaders suspended consideration of the House bill before it reached the floor. It lacked the votes needed for passage, in part due to provisions which would have eliminated dedicated funding for transit from the Highway Trust Fund and transit's share of motor fuel tax revenues. The bill's cost and offsets also became an issue. The bill was modified and the transit provisions were dropped, but in April plans for floor consideration were abandoned a second time.

With a Senate bill already approved, pressure was growing on Congress to end the series of temporary extensions and complete a reauthorization bill. But with no prospect of bringing a House-approved bill to conference, House leaders opted to go to conference on the Senate bill. The House approved the 90-day extension with several policy riders, including a provision approving the Keystone XL pipeline, one creating a trust fund to contribute to Gulf Coast restoration, one increasing funding for port and harbor maintenance, one prohibiting the U.S. Environmental Protection Agency from designating coal ash a hazardous substance and one expediting transportation project delivery, and sent it to the Senate.

The project delivery provisions approved in the 90-day extension bill were those contained in the T&I bill. They allow federal agencies to review transportation projects concurrently, delegate project approval authority to states and establish hard deadlines for federal agencies to make decisions on permits and project approvals. In addition, they call for expanding the list of activities that qualify for categorical exclusions; classifying projects in the right-of-way as

categorical exclusions under NEPA; granting NEPA exemption for certain small projects; allowing acquisition of land during NEPA where the transaction itself does not cause a change in the area's land use or cause adverse environmental effects; and allowing detailed design prior to NEPA completion at state expense, making such work eligible for federal reimbursement only if the project is subsequently approved.

The House and Senate conference committee's size, 47 members, reflects the breadth of the policy areas under consideration. Members were appointed from seven congressional committees with jurisdiction over the bill's various provisions: funding, financing, transit, highways, safety, motor carriers and energy. The Senate named 14 conferees altogether, eight Democrats and six Republicans; the House appointed 33, 20 Republicans and 13 Democrats.

At its first meeting in May, conferees presented opening statements. Sen. Barbara Boxer (D-CA), chair of the Senate Environment and Public Works Committee and chair of the conference committee, attempted to set the tone for the upcoming negotiations by framing the issues in terms of the provisions of MAP-21: highways, bridges, roads and routes; financing; transit and safety. Many conferees made it clear, however, that certain non-MAP-21 issues stood as important priorities for them, including the Keystone pipeline and the coal ash provisions. Statements by other conferees made clear that still other issues, including funding and finance and some provisions to expedite project delivery, divided conferees and loomed as contentious points.

When conferees met that day in May, they faced a June 30 deadline for a bill to be signed into law in order to avoid the need for another extension. Conferees expressed their commitment to achieving an agreement and that they expected they would have one.

Jim Fahey can be reached at (202) 218-6730 or jfahey@apwa.net.

FHWA eliminates dozens of deadlines for replacing traffic signs

The Federal Highway Administration (FHWA) issued a final rule effective June 13 eliminating 46 regulations on traffic signs, including allowing communities to replace traffic signs when they are worn out rather than requiring signs to be replaced by a specific date.

The regulations establishing deadlines for street sign replacement came from the *Manual on Uniform Traffic Control Devices* (MUTCD), which is a compilation of national standards for all pavement markings, street signs and traffic signals. FHWA, which has published the manual since 1971, updates it periodically to accommodate changing transportation needs and address new safety technologies, traffic control tools and traffic management techniques.

In August 2011 FHWA issued a Notice of Proposed Amendments to eliminate the 46 deadlines, and a final rule was published in the May 14 *Federal Register*. The deadlines requiring certain street-name signs be replaced by 2018 to meet minimum retroreflectivity standards and requiring larger lettering on those street-name signs are among the deadlines eliminated.

The final rule also eliminates deadlines for increasing the size of various traffic signs, such as "Pass with Care" and "Low Clearance." Instead, communities will be able to replace and upgrade these signs when they reach the end of their useful life. In addition to eliminating the deadlines, FHWA will allow communities to retain historic street-name signs in historic districts.

FHWA has retained 12 deadlines for sign upgrades that are critical to public safety. These safety-critical sign upgrades include installing one-way signs at intersections with divided highways or one-way streets and requiring stop or yield signs to be added at all railroad crossings that do not have train-activated automatic gates or flashing lights.

For more information about the revisions, visit http://mutcd.fhwa.dot.gov/kno_2009r1r2.htm.

"We have to convince our leadership throughout the years that there is a strong business benefit to valuing diversity. They will be attracting the best and brightest employees. We will have better customer relationships over the long term because our employees mirror our customer demographics. As a result, there are bottom-line benefits to our shareholders."
Michael J. Critelli, former Executive Chairman, Pitney Bowes, Inc.

Diversity Awareness Corner

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Candidates for the APWA Board of Directors named

Nine nominees are on the ballot for election to the APWA Board of Directors in 2012. Five candidates selected by the National Nominating Committee include **Edward A. (Ed) Gottko**, P.E. (ret.), PWLF, Adjunct Professor, New Jersey Institute for Technology, Newark, NJ, for President-Elect; **David L. Lawry**, P.E., Director of Village Operations, Village of Wauconda, Ill., for Director-at-Large, Engineering & Technology; **William E. (Bill) Spearman, III,** P.E., Vice President, Woolpert, Inc., Columbia, S.C., for Director-at-Large, Environmental Management; **Cora Jackson-Fossett**, Public Information Director II, Public Affairs Office, City of Los Angeles, Calif., for Director-at-Large, Leadership and Management; and **Susan M. (Sue) Hann**, P.E., AICP, ICMA-CM, City Manager, City of Palm Bay, Fla., for Director-at-Large, Transportation. The President-Elect will serve one year as President-Elect, one year as President, and then one year as Past President.

Four candidates nominated by regional nominating committees as directors include **William (Bo) Mills, Jr.**, PWLF, Director of Public Services, City of Germantown, Tenn., for Region III Director; **Tommy Brown**, Superintendent of Fleet Services, City of LaGrange, Ga., for Region IV Director; **Jimmy B. Foster**, P.E., PWLF, retired, Plano, Tex., for Region VII Director; and **Jill M. Marilley**, P.E., Senior Project Manager, HDR, Inc., Shoreline, Wash., for Region IX Director.

The 11-member National Nominating Committee includes the two most recent APWA Past Presidents and one representative of each of APWA's nine regions as recommended by the Regional Directors and appointed by the APWA National President. The 2012 committee was comprised of the chair, Past President **Larry T. Koehle**, P.Eng, PWLF, President, L&N Koehle Consulting Services, Brampton, Ontario.; Past President **George R. Crombie**, MPA, BCEEM, PWLF, Senior Faculty Member, Public Works Administration, Norwich University, Northfield, Vt.; **Richard J. (Chip) Barrett**, Highway Superintendent, Town of Westford Highway Dept., Westford, Mass.; **William J. (Bill) Rafferty**, P.E., City Engineer (retired), City of Atlantic City, N.J.; **Calvin D. Clifton**, Client Services Manager, Littlejohn Engineering Associates, Johnson City, Tenn.; **Suzanne McCain**, P.E., Transportation Group Leader, HNTB, Baton Rouge, La.; **Yvonne Tindall**, Works Training Officer, Region of Durham, Whitby, Ontario; **Michael E. McGee**, Director of Buildings & General Services, City of Topeka, Kans.; **Marsha J. Reed**, Director of Public Works, City of Lubbock, Tex.; **Helena K. Allison**, Ing., PWLF, HAB International, Davis, Calif.; and **Jonathan W. Knowles**, Civil Engineer, DOWL HKM, Anchorage, Alaska.

Edward A. (Ed) Gottko, P.E. (Ret), PWLF

President-Elect

Ed Gottko's career in public works began in 1970 as the Assistant City Engineer for the City of Bayonne, N.J. In 1979 he was appointed the Town Engineer/Director of Public Works for the Town of Westfield, N.J., and in 1994 was appointed the Town Administrator at Westfield. In 2000 he retired from public service and now serves as an adjunct professor at New Jersey Institute of Technology and New York University.

Gottko has been a member of APWA since 1972 and recently served as a member of the Certification/ Education Task Force. He served as a member of the Finance Committee (2008-10) and is presently chairing the committee. He has served on a number of other committees, including the Master's Degree Task Force (Chair, 2005-06) and the Education Committee (2004). Gottko is a Past President of the New Jersey Chapter and has also chaired the chapter's Education/Training Committee. In 2002 he received the Donald C. Stone Award for Excellence in Education.

"As our member demographics change we must be in a position to recognize that newer members are utilizing technology which is constantly changing," says Gottko. "To this end we must also change how we deliver our programs and service to fit with these technological changes and make sure our technology is changing with the times."

David L. Lawry, P.E.

Director-at-Large
Engineering & Technology

David L. Lawry is the Director of Village Operations for the Village of Wauconda, Ill., and manages the departments of Public Works, Environmental Quality, Engineering and Information Technology. Prior to his role with the Village of Wauconda, Lawry worked for the City of Elgin, Ill., for more than twenty years. As the General Services Group Director, a position he held for more than ten years, his duties included the direct supervision of the departments of Public Works, Engineering, Building Maintenance and Water.

Lawry has been a member of the Chicago Metro Chapter Executive Committee since 1999, and has served in all the officer positions at both the branch and chapter levels, including Chapter President in 2007 and Chapter Delegate in 2008. He has served on various chapter committees including the 75th Anniversary Committee. He is a former member of the national Project of the Year Awards Committee as well as the Chapter Advocacy Task Force. Along with his service to APWA, Lawry is a member of the American Society of Civil Engineers, National Society of Professional Engineers, American Water Works Association and the Public Works Historical Society.

"We need to continue to strive for the recognition we deserve in the public works profession through our advocacy efforts," says Lawry. "We need to stay ahead of the changing landscape of the profession. Sustainability and how it will affect public works operations, increasing demand for potable water, increasing demand for efficient services, and competition for funding to maintain, improve and expand infrastructure are some examples."

William E. (Bill) Spearman, III, P.E.

Director-at-Large
Environmental Management

Bill Spearman's professional career has spanned 36 years, all of which have been in the public works arena. He has spent 16 years in public service (eight years with the Federal Highway Administration and eight years with the South Carolina Land Resources Conservation Commission) and 20 years in the private sector (one year with Wilbur Smith Associates and 19 years with his current employer, Woolpert, Inc.). During his 20-year period in the private sector, Spearman served four years as the Vice Chairman of the Saluda County Water and Sewer Authority and four years as the County Engineer for White County, Ga., under a contractual relationship.

Spearman has been an active member of APWA at the chapter, regional and national levels. He has served on the national Water Resources Management Committee and also the Government Affairs Committee. He led the effort to develop the Certified Stormwater Manager certification program; taught environmental short courses and Click, Listen & Learn presentations; supported APWA's advocacy staff with coalition partners on funding and regulatory issues; and led the effort to create the Stormwater Summit at APWA's annual International Public Works Congress & Exposition.

"APWA is facing the same problems that all technical and management associations are facing today—an aging membership and workforce," Spearman says. "Because of this, I believe that APWA must recognize the need to meet the needs of all of our members. We must provide value to the member in order that the member is willing to invest their time in the organization's activities and must ensure that there is a payback both to the member and the member's organization so that both can see measurable benefits to APWA and participating in the organization."

Your Vote in APWA *Does* Count

As an APWA member, you will have the opportunity to vote for members of the APWA Board of Directors between July 6 and August 3, 2012:

- APWA President-Elect;
- At-Large Director in the functional areas of Engineering & Technology, Environmental Management, Public Works Management/ Leadership, and Transportation; and
- Regions III, IV, VII and IX Regional Directors (by APWA members in those respective regions)

The ballot will be available for online voting between July 6 and August 3, 2012 on the "Members Only" section of the APWA website. There will also be a voting icon on the home page of our website. If you do not have access to a computer at home or work, you may access the APWA website at your local public library or other public access points. If you are not able to vote online, you may request a paper ballot from Cindy Long at (800) 848-APWA, ext. 5220. Additional reminders of the voting process will be sent through the infoNOW Communities and through an e-mail to every member for whom we have an e-mail address.

If you have questions, please contact Cindy Long at clong@apwa.net or (800) 848-APWA (2792), extension 5220.

Cora Jackson-Fossett

Director-at-Large
Leadership and Management

Cora Jackson-Fossett serves as Public Information Director II for the Public Affairs Office of the City of Los Angeles Department of Public Works. She serves as city and department spokesperson and has led a number of high-profile communications initiatives including public works program and service introductions, ongoing grassroots engagements, employee communications, and crisis communications response. She has been a communications leader and public servant for more than 30 years and has been a Public Information Director since 1999 serving Los Angeles and its four million residents.

Jackson-Fossett has been an active member of APWA since 2001. She chaired the Southern California Chapter's Diversity Committee, instructs classes for the Public Works Institute, and serves as publicity co-chair for the chapter's hosting of the 2012 Congress. At the national level she chaired the Diversity Committee (2004-06) and also served on the Membership Committee, the Joint Subcommittee of Finance and Membership, and the Progressive Women in Public Works Subcommittee. In 2006, Jackson-Fossett was nominated by then-President Bob Freudenthal to represent APWA on the "Water is Life & Infrastructure Makes it Happen" national outreach program co-sponsored by the Water Environment Federation. She has authored numerous articles on diversity and public outreach for the *APWA Reporter* and has presented as a speaker at the APWA Congress every year since 2003.

"I am committed to see public works agencies position themselves for success and build advocates to publicize the importance and recognition of the industry and APWA with key stakeholders groups across the county," says Jackson-Fossett. "I believe that high-profile, visible advocates and champions are key to promoting public works and APWA in a manner that will sustain and grow the field and organization."

Susan M. (Sue) Hann, P.E., AICP, ICMA-CM

Director-at-Large
Transportation

Sue Hann has worked for the City of Palm Bay (Brevard County, Fla.) for over 14 years—five as the Public Works Director; eight as the Deputy City Manager overseeing the Public Works Department, the Parks and Recreation Department, the Growth Management Department and Economic Development; and the last year as the City Manager of Palm Bay. She previously worked for Brevard County for more than eight years as the Staff Director of the Brevard Metropolitan Planning Organization. Most of Hann's 32 years of professional experience has been related to transportation either as a practicing traffic engineer, a transportation planner or a manager of transportation projects.

At the national level, Hann has recently served as a member of the Comprehensive Professional Development Group which laid the foundation for the APWA Donald C. Stone Center for Leadership Excellence in Public Works, has served on the Leadership and Management Committee (2003-08; Chair, 2004-06), and has worked on the development of a sustainable infrastructure rating system with APWA's partners. She has actively participated with the Transportation Committee and the SAFETEA-LU Task Force, and is the Board liaison to APWA's Center for Sustainability. Hann has written numerous articles on leadership topics for the *APWA Reporter*, has frequently presented at the APWA Congress, and has served APWA's Emerging Leaders Academy Program since 2008.

"The decisions we make today will influence who our members will be in the future," Hann says. "Public works professionals have an almost limitless number of choices as to which professional organization best meets their needs. APWA must understand emerging trends, proactively respond and, in some cases, be a trendsetter so that the APWA brand is recognized as the leading edge of the profession."

William (Bo) Mills, Jr., PWLF

Region III Director

William (Bo) Mills is the Director of Public Services with the City of Germantown, Tenn., and has been in that position for eight years. His duties include the direct supervision of the programs and personnel associated with the following areas: Animal Control; Parks/ROW Grounds Maintenance; State Street Aid; Stormwater Maintenance; Street Maintenance; Water Production and Distribution; Sewer Collection; and many utility-related CIP projects. Prior to becoming the Director of Public Services, Mills served the City of Germantown as Assistant Director of Public Services for seven years and Solid Waste Coordinator for six years. He has spent his entire working career with the Germantown Public Works Department.

Mills has been an APWA member since 1989. At the chapter level, he served as the Tennessee Chapter's West Branch director for six years, working through the chapter's officer positions until becoming Chapter President in 2005. He served as the Chapter Delegate from 2000 through 2010, and has also served on the chapter's Membership, Awards, Education, and Past President's Advisory Committees. Mills serves as a volunteer instructor for the Tennessee Public Works Institute. At the national level, Mills served three years on the Membership Committee and two years on the Transportation Committee, chairing the Roadway Safety Subcommittee for both of those years. He served on the Professional Development Committee which worked to facilitate the establishment of the Donald C. Stone Center for Leadership Excellence. In 2008, Mills was selected to the House of Delegates Executive Committee and was named HOD Chair in 2010-11. He was appointed as Region III Director in 2011 filling the remainder of an unexpired term.

"I want to promote the profession of public works," Mills says. "I am proud of the services we provide. I am proud of every single public works servant, supplier and support agency. It takes both public and private sector dedication to accomplish our task. Our services are so basic, so important yet so overlooked. I hope to be a voice to promote our profession and to recognize those that are in the trenches making it happen."

Tommy Brown

Region IV Director

Tommy Brown has worked in the public works sector for 39 years. He began his career in 1973 working as a mechanic for the City of LaGrange, Ga. He was promoted to Parts Manager in 1980 and to Superintendent of Fleet Services, his current position, in 1988. When Brown began his tenure as Superintendent of Fleet Services there were no computers, no automated fuel system and no charge-back rates, but he has been able to convert the shop to a modern, self-supporting internal department. He supervises a staff of 15 employees and handles all the challenges that face a city with regards to its fleet of vehicles and equipment.

Brown has been an active member of APWA for 27 years. He served as the Georgia Chapter President in 1999, chaired the chapter's Equipment Service Committee in 1995, and served as the Chapter Delegate for ten years. At the national level, he has served on the Fleet Services Committee, Education Committee, Congress Planning Committee, National Nominating Committee and Region IV Nominating Committee. He has served one term as Region IV Director.

"The most critical factor facing APWA today is the economy," Brown says. "Many municipal governments are severely cutting budgets and funding to their departments. I believe it is imperative that APWA provide its members with the information

necessary to communicate the importance of the organization and participation as an active member."

Jimmy B. Foster, P.E., PWLF

Region VII Director

Until his recent retirement, Jimmy B. Foster served as Program Manager for Jacobs Engineering Group, Inc., responsible for managing the consultancy services for the Maintenance Department of the North Texas Tollway Authority. From 1999 through 2008, he served as the Director of Public Works for the City of Plano, Tex., with responsibility for the Public Works Operations Division and the Fleet and Equipment Services Division. Foster previously served as the Director of Public Services for the City of Colleyville, Tex.; Director of Public Works for the City of Hurst, Tex.; and City Engineer for the Cities of Grand Prairie, Tex., and Greeley, Colo.

Foster began his career in international service in 1980 with his work as a community development consultant in Burkina Faso, West Africa. He has visited and worked in 57 countries, advising overseas personnel regarding humanitarian projects and assisting in the development of disaster relief plans around the world. Foster has served the Texas Chapter as the Chapter Delegate (2002-07) and as a member of several committees. He is a former member of the national Diversity Committee (2008), Government Affairs Committee (2006-08), Finance Committee (2003-06), International Affairs Committee (2001-04; Chair, 2003-04) and Nominating Committee (2001-02). He was named one of APWA's Top Ten Public Works Leaders of the Year in 2005 and received APWA's International Service Award in 2007.

"The greatest challenge facing APWA today is the bridging of the technology gap," Foster says. "Once this gap has been bridged membership in APWA will be more valuable to the younger segment of public works, thereby helping solve another problem—lack of membership among younger employees."

Jill M. Marilley, P.E.

Region IX Director

Jill M. Marilley is a Senior Project Manager with HDR, Inc. in the Seattle, Wash., area. She has over 26 years of experience as a civil engineering professional, with 20 years in the public sector. She has served in positions such as City Engineer with the City of Shoreline, Wash., and Public Works Director with the City of Mill Creek, Wash. In her current role with HDR, Inc., she is a construction project manager, currently leading the inspection team for a $100 million bascule bridge replacement in Seattle.

Marilley has been very active in APWA at the chapter and national levels. She is currently serving as Washington State Chapter President (2011-12), has been on the Executive Board for seven years, and has chaired the chapter's Awards Committee. At the national level, she served on the 2011 National Nominating Committee and is a current member of the National Awards Committee. Marilley is also very active in the Delta Zeta National Sorority at the local and national levels, where she has worked directly with college-age women and men directing, guiding, coaching and mentoring their leadership success. She previously was active at the local and national levels for the American Society of Civil Engineers and various community organizations.

Marilley is looking forward to serving the region and the organization as a whole and hopes that her commitment and vision will improve the future of public works. She looks forward to working with the delegates and chapters on volunteer management issues, integrating APWA in higher education communities, and assisting those who are early in their career in public works.

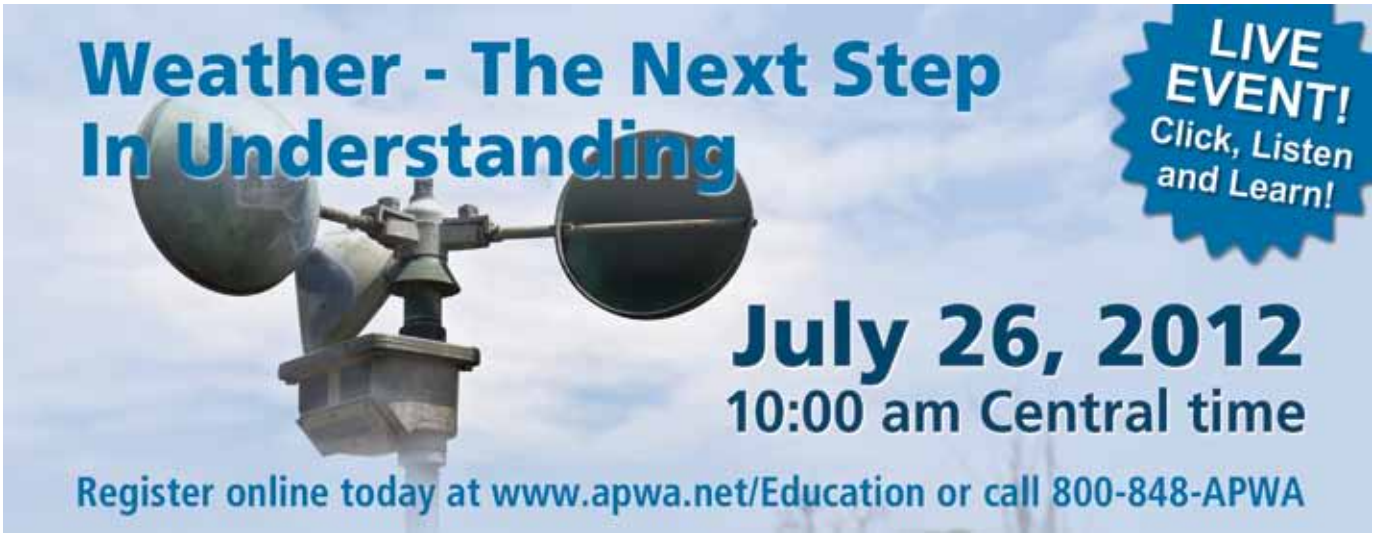
"I believe we need to transition our services [as an organization] from the needs of the current generation of public works leaders to the next generation all while remaining relevant to the needs of the entire profession."

For more information about these programs or to register online, visit **www.apwa.net/Education**. Program information will be updated as it becomes available. Questions? Call the Professional Development Department at **1-800-848-APWA**.

	2012	
	July 26	**Weather - The Next Step In Understanding**
	August 9	**Innovative Products and Practices for Pavement Markings**
	August 26-29	**2012 APWA Congress—The Best Show in Public Works Anaheim, California**

If you have expertise that you would like to share, please use the online Call for Presentations form to describe your expertise and perspective on the topic. www.apwa.net/callforpresentations/

= Click, Listen, & Learn program **= Live Workshop**



Transportation: Partnering for a better future

Carol Estes, P.E.
Professional Development Program Manager
American Public Works Association
Kansas City, Missouri

Representing the largest single sector of the APWA membership, the Transportation Committee believes strongly in partnering with other groups to improve the transportation system. One of APWA's strongest and most important relationships is with the Federal Highway Administration (FHWA).

In April this year, the Transportation Committee met with FHWA to sign an updated partnering agreement and chart a course of mutual cooperation for the coming years. At this year's Congress in Anaheim, Calif., APWA will assist FHWA with its rollout of the new Federal Aid Essentials initiative. For the first time, all of the information needed to manage federally funded transportation projects will be available in one location. New instructional videos and companion resources will be available on a user-friendly website. Detailed information will be presented at Congress.

The committee members, all volunteers and experts in the many fields related to transportation, have been busy providing members with resources for developing and exchanging ideas, knowledge and cutting-edge technologies. Through activities such as articles in this issue of the *APWA Reporter*, postings on the Transportation infoNOW Community, presentation of sessions at Congress, and partnerships with other organizations, the committee provides easily accessible, up-to-date information on current transportation-related topics. They also develop and advocate environmentally-sound, sustainable, cost-effective, and safe systems that enhance the livability and quality of life in our communities. This year the committee members helped to develop the following Click, Listen & Learn programs:

- Highway Safety Improvement Program (HSIP) Best Practices
- Recycled Materials in Construction – Divert that Waste Stream
- Low Cost Safety Improvements
- The New AASHTO Green Book
- Liquid Usage in Winter Maintenance

If you have considered participating in APWA on a national level, you may be interested in serving on one of the four active transportation subcommittees. The subcommittees are:

- **Roadway Safety** – The subcommittee focuses on ways of reducing accidents and eliminating roadway hazards through cost-effective solutions.
- **Sustainable Transportation** – This subcommittee looks at recycled materials specifications, electric vehicles and plug-in networks, porous asphalt pavement/pervious concrete, roundabouts, sustainable infrastructure rating systems, USEPA-HUD-DOT partnership, urban LID infrastructure and maintenance, and LED lighting.
- **Winter Maintenance** – The oldest of the subcommittees, Winter Maintenance focuses on all issues related to snow and ice. Each year the committee supports the educational sessions of the North American Snow Conference and also participates with other national organizations. This year the subcommittee presented the "Winter Maintenance Supervisor Certificate Program" at the North American Snow Conference in Milwaukee. More than two hundred people participated in the program.
- **Project Delivery** – This brand new subcommittee is now in the process of forming and organizing. Membership is open and anyone interested in participating is encouraged to contact the Transportation Committee.

All of the subcommittees are open to new members. Interested members may ask to join at any time and are not part of the annual nomination process. The staff liaison may be contacted for more information.

Members of the Transportation Committee are as follows:

- Debbie Hale (Chair), Executive Director, Transportation Agency for Monterey County, California
- Freeman Anthony, Project Engineer, City of Bellingham, Washington
- John T. Davis, P.E., Chief Engineer, Jacksonville Transportation Authority, Jacksonville, Florida
- Kathleen B. Davis, Director of Highways & Local Programs, Washington State DOT, Olympia, Washington
- Scott E. Nodes, P.E., PTOE, Assistant State Engineer, Arizona DOT, Phoenix, Arizona
- Jeff Ramsey, P.E., Public Works Director, City of Auburn, Georgia

Susan M. Hann, P.E., AICP, ICMA-CM, City of Palm Bay, Florida, serves as the committee's liaison to the APWA Board of Directors through her role as Director-at-Large for Transportation.

Carol Estes, P.E., serves as the liaison to three of APWA's Technical Committees: Engineering and Technology, Transportation, and Utility & Public Right-of-Way. She also serves as the point of contact for eight subcommittees: Winter Maintenance, Road Safety, Sustainable Communities, Project Delivery, Right-of-Way Management, Construction Practices, GIROW, and Damage Prevention. She can be reached at (816) 595-5222 or cestes@apwa.net.

Fighters and Fleet Find Fellowship at Fifty-second Flurry Fest

Phyllis Muder
Continuing Education Project Manager
American Public Works Association
Kansas City, Missouri

APWA conferences promote networking and fellowship and this year's North American Snow Conference was no different. The building of relationships and the nurturing of those friendships was a catalyst for this year's educational focus on fleet. We often hear that one of the best things about membership in APWA is the relationships that are created. According to Mark DeVries, Superintendent, McHenry County Division of Transportation, Woodstock, Ill., and Chair of the Winter Maintenance Subcommittee, "My best friends are the folks that I've met in this industry. It's not all just working and training with these folks, we've created long-lasting friendships."

The members of the Winter Maintenance Subcommittee are more than just colleagues; they are sounding boards, vacation friends and fishing buddies. Often on these excursions, the conversations focus on winter maintenance and the plethora of challenges facing public works agencies. One consistent challenge for most agencies is the delicate balance of fleet and operations and how to find peace and harmony among these departments. Luckily one of the longtime Winter Maintenance Subcommittee members was appointed to chair the national Fleet Services Committee and the conversations on how to marry those concerns started to move forward within APWA. According to DeVries, "John Scharffbillig, Director of Fleet Services, City of Minneapolis, Minn., was instrumental in bringing fleet concerns to the Winter Maintenance Subcommittee and vice versa. It takes having the involvement of the individuals to make something happen in any association and the same is true at APWA." John was instrumental in adding the fleet focus to the Winter Maintenance Supervisor Certificate Workshop and encouraged the Fleet Services Committee to hold its Spring Meeting at the Snow Conference in Spokane in 2011.

The Fleet Services Committee was so impressed with the conference in Washington that they decided to once again hold their spring meeting at the Snow Conference in Milwaukee with a commitment to increased involvement. This led to an entire track of education sessions dedicated to fleet topics and a combined fleet/operations General Session Talk Show, "From Shop to Storm and Back Again." Thanks to the efforts of T.J. Sorensen, member of the Wisconsin Chapter and national Fleet Services Committee, they were also able to arrange a combined meeting with the local Wisconsin Chapter's Fleet Services Committee, where they engaged in a beneficial conversation addressing APWA services to chapters and development of chapter Fleet Committees.

This year's conference opened to an early 7:00 a.m. start with the Winter Maintenance Supervisor Certificate program which was sponsored by Vaisala and Compass Minerals. After a long day of core concepts, participants knew how to write a winter maintenance plan, could explain the importance of pavement temperatures and describe how to use liquids, among other things. Two hundred thirty-one individuals attended and obtained the Winter Maintenance Supervisor Certificate bringing the total of individuals who have earned the certificate to more than 500 in its first year.

This year's presenters again were some of the best minds in winter maintenance. The presenters were: David L. Bergner, Monte Vista

More than 230 people obtained the Winter Maintenance Supervisor Certificate at this year's North American Snow Conference.

Associates, LLC, Mesa, Ariz.; R. Mark DeVries, Superintendent, McHenry County Division of Transportation, Woodstock, Ill.; Bret Hodne, Public Works Director, City of West Des Moines, Iowa; John Paul Johnson, CET, Operations Manager, Wellington County, Guelph, Ontario; John Klostermann, Street/Sewer Maintenance Supervisor, City of Dubuque, Iowa; Warren Nicholishen, Supervisor of Road Operations & Maintenance, Regional Municipality of Peel, Brampton, Ontario; Wilfrid A. Nixon, P.E., Ph.D., Professor, University of Iowa, Iowa City, Iowa; John Scharffbillig, Director of Fleet Services, City of Minneapolis, Minn.; Jon D. Tarleton, Marketing Manager, Vaisala, St. Louis, Mo.; Michael D. Kennedy, P.E., Director of Transportation – Maintenance & Repair, City of Minneapolis, Minn.; and William P. Kennedy, Senior Engineer – Street Maintenance Division, Public Works, City & County of Denver, Colo.

Meanwhile, there were plenty of educational sessions available for those folks who weren't taking the Supervisor Certificate class. There were topics that dealt with fleet – "AVL and GPS Tracking in Public Works"; emergency management – "Public Works: A Partner in Traffic Incidents and All-Hazards Emergency Management"; weather – "The Next Step in Understanding"; management – "Spending Money to Save Money (Integrating Efficiencies into Operations)"; products and technology – "Fixed Anti-icing Spray Technology (FAST) Installation and Maintenance Thoughts"; and, of course, winter maintenance – "Dealing with Back-to-Back Events – How to Prepare & Operate Successfully."

Sunday evening's exhibit opening was a welcome reprieve to long hours spent learning. The lure of free beer didn't hurt either. We had the largest exhibit floor ever, with 174 companies in 404 booths. This shattered the previous record from 2009 (Des Moines) where we had 145 companies in 294 booths. The aisles of trucks and equipment seemed endless.

Monday started off with opening remarks from the Wisconsin Chapter's Host Committee members as well as a few words from the Mayor of Milwaukee. APWA President Diane Linderman was on hand as well to welcome the crowd. She proudly announced and congratulated the winners of the APWA National Excellence in Snow & Ice Control Award: the City of Ankeny, Iowa, Public Works Department and the City of Overland Park, Kans., Public Works Department. The awards were accepted by Alan L. Olson, Public Works Administrator, City of Ankeny; Paul Moritz, P.E., Director of Public Works, City of Ankeny; Dennis R. Guillaume, Public Works Supervisor, City of Ankeny; Richard J. Profaizer, Mgr. Maintenance Operations, City of Overland Park; and Gregory L. Scharff, Superintendent of PW Maintenance, City of Overland Park.

Diane's speech was followed by the General Session Talk Show: "From Shop to Storm and Back Again" moderated by John Scharffbillig, Chair of the national Fleet Services Committee and longtime member of the Winter Maintenance Subcommittee. He was joined on stage by four panelists—two fleet specialists and two operations specialists. This year's panelists were Matt Dolan, City of West Des Moines, Iowa; John Parsons, Division Manager – Transportation, City of London, Ontario; T.J. Sorensen, Public Works Superintendent, City of Green Bay, Wis.; and Jeffrey A. Tews, CPFP, Fleet Operations Manager, City of Milwaukee, Wis.

Discussion focused on best practices for fleets and operators with tips on how to get the two groups to work together. The many audience questions kept the discussion pertinent and lively. From the ballroom, the participants poured onto the exhibit floor for a much-welcomed coffee break and to kick some tires. The conference again offered exhibitor showcases on the exhibit floor that were a big hit; many of the sessions were overflowing.

The educational sessions for this year's conference had the typical winter maintenance topics with the Winter Maintenance Subcommittee members again coming through with a multitude of topics on training, materials, processes and management. However, this year these were supplemented by increased participation and focus on other specialties such sustainability, emergency management and fleet.

Members of the Public Works Departments from the Cities of Ankeny, Iowa and Overland Park, Kans., received the Excellence in Snow & Ice Control Award from APWA President Diane Linderman.

Sustainability has been a theme throughout the conference for the last couple years. This year included a session from the Chair of the APWA Center for Sustainability, Mary J. Anderson, Director of Public Works, City of Highland Park, Ill., and Howard Killian, Public Works Director, Village of Hanover Park, Ill., titled, "Implement Sustainable Snow and Ice Control Practices and Save $$$ in the Process!"

The Emergency Management Committee also provided several sessions, with topics presented by committee members Christine Walsh, Director of Operations, City of Beloit, Wis., and David L. Bergner, Monte Vista Associates, LLC, Mesa, Ariz.

We were able to allocate an entire track to fleet this year and the sessions were successful. Again members of the national Fleet Services Committee shared their expertise. The individuals included: Ronald D. Brown, Fleet Maintenance Superintendent, City of Conover, N.C.; Dennis R. Hogan, CAFM, CPFP, Fleet Services Manager, City of Cedar Rapids, Iowa; and John Scharffbillig, Director of Fleet Services, City of Minneapolis, Minn.

After lunch on the exhibit floor, many individuals attended the roundtables for an informal networking conversation. This year's topics included: (1) How Do You Handle Sidewalks? Moderator: John Parsons, Division Manager – Transportation, City of London, Ontario; (2) New Diagnostic Tool for Snowplows. Moderators: Brian Howard, Operations Manager Fleet, City of Richmond, Va., and John Ozman, Department of Public Works, City of Richmond, Va.; (3) Using Social Media for Winter Emergencies. Moderator: David L. Lawry, P.E., Director of Village Operations, Village of Wauconda, Ill.; (4) Sustainability and Winter Maintenance. Moderator: Warren Nicholishen, Supervisor of Road Operations and Maintenance, Regional Municipality of Peel, Brampton, Ontario; (5) Getting Started with Liquids. Moderator: John Paul Johnson, CET, Operations Manager, Wellington County, Guelph, Ontario; (6) Who are the Pacific Northwest Snowfighters (PNS) and What is the Qualified Product List? Moderator: Jay A. Wells, MS, Maintenance & Operations Superintendent, Washington DOT, Olympia, Wash.; (7) Training Your Operators. Moderator: Matt Dolan, Equipment Specialist, City of West Des Moines, Iowa; (8) Aging Fleets and How to Deal with Them. Moderator: Jeffrey A. Tews, CPFP, Fleet Operations Manager, City of Milwaukee, Wis.; (9) AVL & New Technology. Moderator: Danny Turner, Street Maintenance Superintendent, City of Olathe, Kans.

After the afternoon session, many participants enjoyed the hospitality of events sponsored by Webtech Wireless Inc., SNI Solutions and Compass Minerals.

Tuesday provided a full day of educational sessions and exhibitor opportunities. The hours for the exhibit hall were extended and it appears that the extension was warranted.

The Closing General Session speaker, Mark Mayfield, CSP, CPAE, was both entertaining and insightful. His session titled "The Glass Ain't Half Empty, It's Just Too Big!" was a big hit with the audience as they happily accepted "all-in-fun" monikers of "mouth," "jerk," "nerd" and "wimp"; smiles and laughter abounded. These smiles continued on the bus and into the Harley Davidson Museum for the closing banquet. The abundance of dream motorcycles combined with real Wisconsin cheese soup made this a fantastic event.

The buses were packed and ready to go at 8:00 a.m. on Wednesday morning for the technical tours to the Milwaukee Repair Garage, the Wausau-Everest factory and Western Products site.

The 2013 North American Snow Conference is scheduled for April 7-10, 2013 at the Charlotte Convention Center in Charlotte, N.C. The national Emergency Management Committee has expressed interest in holding their Spring Meeting at the 2013 conference and wish to contribute content. Since winter events in the southeast are often considered emergencies, the fit is perfect. The call for presentations for the 2013 conference is open.

A good time was had by all during the Closing General Session as speaker Mark Mayfield was a big hit with the attendees.

Go to the APWA website; click the Learn & Grow Tab, then the Call for Presentation tab. (http://www.apwa.net/conferences/cfp/Snow) This year the selection committee is looking for topics such as clever solutions to age-old problems; best practices for winter maintenance planning and operations; anti-icing techniques and tips; chemical usage and selection; environmental impacts of winter maintenance practices; GPS/AVL uses; snowfighting equipment; effective operator training programs; community outreach/citizen interaction; winter fleet operations as well as emergency management of winter events.

We thank everyone that worked so hard to make the 2012 conference a success and look forward to seeing you in Charlotte!

Phyllis Muder can be reached at (816) 595-5211 or pmuder@apwa.net.

This year's Snow Conference boasted the largest exhibit floor ever, with 174 companies in 404 booths.

The Vuja de Moment: Create a different future

Simon T. Bailey
Founder, The Brilliance Institute
Author, *Catalyst of Brilliance*
Keynote Speaker, 2012 APWA Congress

Editor's Note: *Simon T. Bailey will be a Keynote Speaker at APWA's 2012 International Public Works Congress & Exposition in Anaheim, California. His presentation is entitled "Release Your Brilliance – How to Show Up, Be Accountable, and Drive Results" and takes place during the Closing General Session on Wednesday, August 29. For more information on our upcoming Congress, please visit our website at www.apwa.net/congress.*

A 52-year-old man called in to a radio show and said to the host, "I am out of a job and you know that no man at 52 years of age can get a job. Furthermore, I don't have any brains. I haven't had any good experiences in life. I haven't had any education and nobody likes me. What are you going to tell me to do about it?"

Dr. Norman Vincent Peale, the host of the show, asked, "How do you know you don't have any brains?" The man said, "When I was young I was told I didn't have any brains. All of the brains in the family went to my brother!" Dr. Peale then asked, "Who said that to you?" The man said, "My brother." Dr. Peale then asked, "Who doesn't like you?" The man said, "No one likes me." Dr. Peale asked, "Do you like yourself?" The man then said, "I never thought I was supposed to like myself since I didn't have any brains." This sounds like a combination of the Scarecrow, the Tin Man, and the Cowardly Lion from *The Wizard of Oz*.

Six weeks later the 52-year-old man sent a note to Dr. Peale stating that he had a job. It wasn't much of a job, but he believed that he would take what he had been given and turn it into something significant. He said that he was going to work it until it became great.

This 52-year-old experienced what I would call the Vuja de Moment. This is when you find and delete the virus from your mind-drive and heart-drive that has slowed your operating system down in the Matrix.

The Vuja de Moment is when you stop whining and complaining about the economy and decide to grow the economy of your mind. It is when you reset your internal thermostat to being brilliant and watch your life rise to the new temperature.

William James (1842-1910), one-time Harvard Professor of Anatomy, Psychology, and Philosophy, who was a contemporary of Mark Twain and Horatio Alger, Jr., taught the "as if" principle. This school of thought meant to not be afraid of life. Believe that life is worth living and your belief will help create the fact; and, if you want a quality life, act as if you already have it.

The Vuja de Moment is when you act "as if" you can create your future instead of waiting for the other shoe to drop and have it created for you. Like the 52-year-old man, something clicks inside of you and you say, "Wait a minute, I have a choice to stand up and live or lie down and die." Some people are the walking dead. The recession has sucked the life out of them and they have settled for whatever life brings them.

A recession happens when people lose confidence in the future. Many have called the last few years the worst recession since the Great Depression. Simply put, the economy shrank in five quarters, including four quarters in a row. This means that not even the Jaws of Life could pry open the wallets of consumers to spend or employers to hire. Research was limited and capital investment decreased. Thus, people began to buy into the meme (an element of a culture or behavior that may be passed from one individual to another by non-genetic means, especially imitation) that the future is bleak.

However, a Vuja de Moment occurred when Apple released the first iPad in 2010 and sold three million in 80 days. This is similar to when www.pinterest.com launched in 2010, and has become one of the top ten most visited social network sites with over 11 million total visits per week according to www.hitwise.com.

What's the point?

Everything shifted for the 52-year-old man when he decided he didn't have to live out the script of his brother anymore. Apple and Pinterest ignored conventional wisdom and read the tea leaves of the times differently and decided to create the future. What about you? Isn't it time to take control of the steering wheel of your future and drive instead of being driven by the memes of the times? How can one do it?

See Differently – Alexander Graham Bell said, "When one door closes,

another opens. But we often look so regretfully upon the closed door that we don't see the one which has opened for us." What do you see as it relates to your future? It's time to ask a different set of questions.

Harness the Power of You, Inc. – Larry Boyer, Career Coach and Personal Branding Strategist, says to think of yourself as an independent contractor or consultant and your employer is your biggest client. This is a significant shift, more than most people realize. You need to undo a lifetime of training and expectations setting. When you make this mind shift, you start to own your actions, words and attitudes in a way that you haven't before. The economy is shifting. You know it and I know it. Let's prepare for it.

Ignite a Fresh Vision – Rosabeth Moss Kanter says, "A vision is not a picture of what could be; it is an appeal to our better selves, a call to become something more." I love this quote. What are you planning to do to soar to the next level in your professional and personal life? It's your decision.

Fuel Your Mind – Dr. Howard Gardner, author of *The Five Minds for the Future*, says, "The world of the future—with its ubiquitous search engines, robots, and other computational devices—will demand capacities that until now have been mere options. To meet the new world on its own terms, we should begin to cultivate these capacities now." The capacities that he speaks of include growing the mind.

Take Control of the Wheel – Robert Kiyosaki, author of *The Business of the 21st Century*, says, "Take responsibility for your finances—or get used to taking orders for the rest of your life. You're either a master of money or a slave to it. Your choice. Taking control of the wheel is steering your future in the direction you want to go instead of always reacting to every whim of change and disruption."

I believe that you will have your very own "Vuja de Moment" and will say, "Wait a minute— something has to change and it starts with me." This will be the time when you turn your "moment" in your life into your "movement" in your life.

Simon T. Bailey is a compelling instigator and new author of The Vuja de Moment – Shift from Average to Brilliant. *Find out more at www.simontbailey.com and follow him on Twitter @simontbailey.*

Anaheim in pictures

The 2012 APWA International Public Works Congress & Exposition will take place in Anaheim, Calif., August 26-29. On these pages you'll see just a few of Anaheim's attractions you can visit before, during and after your Congress experience. For more information on each of these attractions, visit the Anaheim/Orange County Visitor & Convention Bureau website at www.anaheimoc.org.

For more information on Congress and to register online, go to www.apwa.net/congress. Why not combine business with pleasure and incorporate your Congress trip into your vacation plans?

The Bowers Museum is located in Santa Ana, Calif., in Orange County. The museum's permanent collection provides an opportunity to examine, compare, and contrast the highly diverse cultures of the world. The collection includes more than 100,000 objects focusing on several areas, such as African, South Pacific, Asian, Native American, Pre-Columbian art, and California plein-air painting. The museum has cultivated partnerships with the Smithsonian, the Nanjing Museum, the Shanghai Museum, and the British Museum, among others, to bring national and international exhibitions from the world's greatest museums to Southern California. (Courtesy of Anaheim/Orange County Visitor & Convention Bureau)

Go to the Congress educational sessions and exhibit hall during the day, and add some magic when you enjoy Disney experiences in the evening. Special discounts are available on Twilight Tickets (admission after 4:00 p.m.) to Disneyland and Disney's California Adventure parks. These special advance purchase tickets let you skip the lines at the theme park ticket windows and save money too! Tickets are valid Wednesday, August 22 through Monday, September 3 for admission to the parks after 4:00 p.m., and must be purchased before 9:00 p.m. on Friday, August 24. (Tickets can only be purchased through the Disney Ticket Store link, which you can access when you register online for Congress. These special ticket prices are not available at Disney theme park ticket windows.) (Image: ©Disney)

Pictured above is the Anaheim Convention Center campus. Anaheim first became a meetings and conventions destination in 1967 with the construction of the domed Arena which stands on Katella Avenue. Since those early days, the Anaheim Convention Center has gone through three major expansion projects plus several cosmetic renovations to update the Center. Each expansion added another major exhibit hall plus meeting space. The recently completed expansion is a complete transformation of the Anaheim Convention Center structure and surrounding campus. (Courtesy of Anaheim/Orange County Visitor & Convention Bureau; photo by Jack Readey)

Renovations to Anaheim Stadium began Oct. 1, 1996, reverting the 30-year-old structure back to a baseball-only facility. On Sept. 15, 1997, the renovated stadium's new name was announced: Edison International Field of Anaheim. On Dec. 29, 2003, the Angels announced the stadium would be renamed Angel Stadium of Anaheim. Total cost for the stadium renovation was estimated at $100 million and the project was completed in time for the Anaheim Angels Opening Day, April 1, 1998. For those of you going to APWA's Congress & Exposition, your timing is pretty sweet if you want to see a home game during your stay in Anaheim—the Angels take on the Boston Red Sox on August 28, 29 and 30. Oh, baby! (Courtesy of City of Anaheim)

Set on 160 beautiful acres in Buena Park, Knott's Berry Farm features six themed areas—Ghost Town, Fiesta Village, Indian Trails, Wild Water Wilderness, The Boardwalk and Camp Snoopy—that bring to life the Old West. Knott's Berry Farm features over 100 pulse-pounding rides, kid's rides, family attractions, live shows, shopping and dining. A high-octane family destination, Knott's features nine exhilarating coasters, including Silver Bullet, Xcelerator and Boomerang, and exciting thrill rides such as Supreme Scream and Rip Tide. The Silver Bullet is the longest inverted coaster on the west coast with 3,125 feet of track. The ride lasts two minutes and nine seconds. (Courtesy of Anaheim/Orange County Visitor & Convention Bureau)

National Public Works Week 2012: Celebrations and events across North America

Laura N. Bynum, M.A.
Media Relations and Communications Manager
American Public Works Association
Washington, D.C.

This year across North America, public works professionals and leaders in cities, towns, counties, provinces, regions, and at the federal level, celebrated with government proclamations, resolutions and events in honor of National Public Works Week (NPWW), May 20-26, 2012, with a theme of "Creating a Lasting Impression." As the Golden Gate Bridge 75th anniversary was also celebrated in May, the bridge's image was included in the NPWW artwork for the week as inspiration of the lasting impression it has provided for many generations.

Instituted as a public education campaign by APWA in 1960, National Public Works Week draws attention to the importance of public works facilities, services, and infrastructure in community life.

The U.S. Senate proclaimed the week as National Public Works Week with a resolution honoring the public works professionals who design, build, operate and maintain the transportation systems, water infrastructure, solid waste and wastewater systems, public buildings and other structures and facilities that are vital to communities' quality of life. The Senate resolution was introduced by Senate Environment and Public Works Committee Chairwoman Barbara Boxer (D-CA) and Ranking Member James Inhofe (R-OK).

The resolution, S. Res 460, recognizes that "the infrastructure, facilities, and services are of vital importance to the health, safety, and well-being of the people of the United States," and that these "could not be provided without the dedicated efforts of public works professionals, including engineers and administrators who represent state and local governments." The resolution also mentions the role that public infrastructure plays in protecting the environment, improving public health and safety, contributing to economic vitality and enhancing the quality of every community of the United States.

"On behalf of the over 28,000 public works members, APWA applauds Senator Boxer and Senator Inhofe for introducing the Senate Resolution, as well as all of the U.S. and Canadian Mayors, Governors, Premiers, and the Canadian Prime Minister for recognizing the vital importance of public works leaders and professionals in local communities through National Public Works Week," said APWA President Diane Linderman, P.E., PWLF. "As these North American governmental leaders have noted, the week is about celebrating and honoring the enormous contribution that public works professionals make in serving their communities, in providing and maintaining our transportation, water systems, utilities, emergency response operations and other essential infrastructure," Linderman said.

Over the years the NPWW observances have taken many forms—from displays of public works equipment to high school essay contests, open houses, and programs for civic organizations. In 1960, the United States Senate passed a resolution affirming the first NPWW. Presidents Dwight Eisenhower, Lyndon Johnson and George W. Bush have sent letters of acknowledgement, and a Presidential Proclamation was signed by John Kennedy in 1962.

In honor of National Public Works Week 2012, a new public awareness outreach campaign was conducted, in which APWA Media Relations planned and implemented a "Media Tour" radio campaign to augment NPWW press releases in print and online news sources. The NPWW radio campaign featured interviews with President Linderman and targeted nationally affiliated networks and large population radio stations across the country to promote public works professionals and the work they do to design, build and maintain public infrastructure.

Through a specialized radio vendor, News Generation, a succession of 13 phoned interviews were conducted the morning of May 15 with President Linderman, who recorded them back-to-back from an office line in the Washington, D.C. office that would be played the following week in honor of National Public

Increasing public works awareness with National Public Works Week Proclamations and Resolutions

This year, APWA augmented the National Public Works Week 2012 "Creating a Lasting Impression" celebration theme with one of the largest number of government proclamations and resolutions in several years. In addition to the many public awareness events that honored public works professionals across North America, APWA Government Affairs worked with many chapters again this year to request a proclamation from the governor/premier of states and provinces, in recognition of the week—resulting in great success!

From left to right: Dan Jonasson, President of the APWA North Dakota Chapter; Governor Dalrymple with NPWW 2012 Proclamation; and Chuck Abel, Executive Secretary of the APWA North Dakota Chapter.

Many states and provinces participated with NPWW proclamations, in addition to the U.S. Senate resolution, S-460, and the Letter of Greetings from The Rt. Hon. Stephen Harper, P.C., M.P., the Prime Minister of Canada, who sent National Public Works Week greetings to public works professionals in Canada.

Governors of 29 states participated and issued proclamations in the U.S., and also a Mayoral proclamation was received from the District of Columbia. State proclamations were received from Alaska, Colorado, Connecticut, Delaware, Hawaii, Idaho, Illinois, Kansas, Louisiana, Michigan, Mississippi, Missouri, Nevada, New Hampshire, New Jersey, North Carolina, North Dakota, Oklahoma, Pennsylvania, South Carolina, South Dakota, Washington, Wisconsin, Georgia, Maryland, Utah, Wyoming and Massachusetts.

Also, five Canadian provincial proclamations, from Premiers and other Ministers, were issued recognizing the week as National Public Works Week in Canada. The provinces where the proclamations were issued were from Manitoba, British Columbia, Alberta, Saskatchewan and New Brunswick. In addition, some cities and municipalities participated as well, such as the Regional Municipality of Wood Buffalo in Alberta, the Village of Keremeos, British Columbia, and the cities of Saskatoon, Prince Albert, No. Battleford, Southey, Yorkton, and Melville in Saskatchewan. Although not sent in, many other proclamations and government recognition letters were declared and issued across both U.S. and Canada.

For more information, and to view many of the National Public Works Week 2012 Proclamations and Resolutions, visit the APWA website at: http://www.apwa.net/discover/National-Public-Works-Week/NPWW-proclamations.

Contributed by Laura N. Bynum, M.A., APWA Media Relations and Communications Manager, lbynum@apwa.net

Works Week, May 20-26 across the nation.

The NPWW Radio Media Tour, titled "Honor Public Works and Infrastructure During National Public Works Week," focused on this year's theme of "Public Works: Creating a Lasting Impression" through several main topic areas including:

- Public works professionals and their infrastructure responsibilities including transportation, water and wastewater systems, utilities, fleets, design and engineering
- National Public Works Week celebrations and events with public education and celebration of the public works departments across North America
- Golden Gate Bridge 75th Anniversary – selected as one of APWA's Top Ten Projects of the Century
- Top Ten Public Works Leaders – the exceptional 2012 Top Ten public works professionals

The interviews were targeted to leading radio networks such as the Associated Press Broadcast, ABC News Network, American Urban National Network, Metro Networks Washington, D.C., and Metro Networks in Seattle/Tacoma, as well as top radio stations in Top Ten PW Leaders' cities including Seattle, Oakland/San Francisco, Washington, D.C./Hagerstown, Michigan Networks, Kansas City, North Carolina News Network and Chicago. The results were overwhelmingly successful with final report of 26 million listeners during NPWW, and over 15,000 airings on over 4,000 stations within 13 radio interviews.

Also during National Public Works Week, APWA presented the APWA Citation for Exemplary Service to Public Works award to U.S. Congressman Jim McGovern of Massachusetts. APWA's Citation for Exemplary Service to Public Works award recognizes an eminent government or other public service leader for far-reaching positive impact on local, state or national public works programs, services or policies through distinguished public service and commitment.

First elected to Congress in 1996, McGovern has been a leader in supporting federal water quality and infrastructure funding and projects. In his first two terms, he served as a member of the House Transportation and Infrastructure Committee, where he championed protecting and increasing federal funding for the Clean Water and Drinking Water State Revolving Fund (SRF) programs to help communities meet Environmental Protection Agency (EPA) mandates and upgrade their water infrastructure. More recently, he strongly urged the Obama Administration to make the SRFs a major part of the American Recovery and Reinvestment Act, and many communities in Massachusetts benefitted from interest-free loans from the SRFs as a result.

At the APWA New England Chapter NPWW luncheon, Board Director Rick Stinson (far right) presented the APWA Citation for Exemplary Service to Public Works award to Congressman Jim McGovern (second from right), accompanied by Bob Moylan and Michael Mancini, New England Chapter Past Presidents.

Currently serving his eighth term in Congress, McGovern serves as a Minority Whip and is the second ranking on the House Rules Committee, in addition to being a member of the House Agriculture Committee. "He has been a leading advocate for public works initiatives on a national scale," said APWA New England Chapter Past President Robert L. Moylan, P.E. "And, he has also been a leader in advancing a national Transportation Bill to address the nation's failing transportation infrastructure."

"On behalf of APWA, I am pleased to present Congressman McGovern with this much-deserved recognition," said APWA Region I Director, Richard F. Stinson, PWLF. "He has dedicated his career to serving the public, and has a keen awareness of the vital role that public works professionals perform in improving the quality of life for all Americans."

McGovern received the award on Wednesday, May 23, 2012 during the APWA New England Chapter's National Public Works Week luncheon in Foxboro, Massachusetts.

For more information about National Public Works Week, contact APWA Media Relations Manager, Laura Bynum, at (202) 218-6736 or lbynum@apwa.net, or visit www.apwa.net/npww.

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Community Outreach: A creative approach

Kara Taylor
Environmental Programs Coordinator
City of Lee's Summit, Missouri

SC/RC SMALL CITIES/RURAL COMMUNITIES

As with all public works departments across the nation, the City of Lee's Summit, Mo., Public Works Department is out and about in our community all day long. From infrastructure improvements to recycling, landfill, and airport facilities, our Public Works Department impacts thousands of residents every day. However, it still seems that many residents are not aware of just how much our Public Works Department does for our community.

In an effort to increase our presence in and outreach to the community, our department participates in the City's annual Emerald Isle Parade. For the past several years, our staff has prepared a simple walking entry in the parade to promote the City's environmental programs, which are the responsibility of our Public Works Department. Typically, our parade entry is comprised of staff members walking with a banner and handing out candy and small pamphlets about our environmental programs. While this has been a positive experience for both our department and the community, we really wanted to do something more impactful and unique for the 2012 Emerald Isle Parade.

Fortunately, one of our technicians is a very talented artist who has displayed an ability to artistically create just about anything.

For example, in 2010, he created the artwork for the entrance to our North Recycling Center and Outdoor Classroom out of recycled glass bottles, a recycled street sign, and some recycled rebar. The artwork consists of two bottle trees, a bottle arch, and a two-dimensional globe cut from a recycled stop sign.

The artwork for the entrance to the City of Lee's Summit's Recycling Center and Outdoor Classroom

The Public Works Department display for a local pizzeria

In 2011, he created a Public Works Department display for a local pizzeria out of a recycled wood door and recycled glass bottles.

And, over the past several years, he has painted different designs on one of our snowplow blades for our annual Snow Rodeo.

The community feedback from his artwork has been overwhelmingly positive so we wanted to find a way to merge his talent with our parade entry this year.

The original idea was to create an environmentally-themed art exhibit that could be utilized as a float for our Emerald Isle Parade entry. The ultimate goal, however, was to create the art piece out of durable recycled materials that could be placed on permanent display at our North Recycling Center and Outdoor Classroom after the parade. Although many elaborate designs and concepts were generated for the artwork, scheduling conflicts and project material complications left little time for project completion. As a result, the final project design was less intricate than originally conceptualized, but included a series of stacked rebar arches covered in recycled green glass bottles that merged at each end. A few extra details were added here and there to complete the design, including odd-shaped sections of recycled street signs anchored to the floor of the parade float.

Despite the turtle-paced two-mile trek from the City's Maintenance Facility to the parade route with nearly 100 glass bottles clanking the entire way, the community outreach was enormous. This year's seventh-annual Emerald Isle Parade was the largest such parade to date in Lee's Summit, with nearly 90 parade entries, approximately 1,100 people participating in the actual parade, and approximately 5,000 parade spectators. The feedback received not only from parade spectators, but also from patrons of the North Recycling Center, has been incredibly positive and supportive, which has encouraged our department to consider another such parade entry next year.

Members of the Lee's Summit Public Works Department with their float at the Emerald Isle Parade

The design on one of the Lee's Summit Public Works Department's snowplow blades for the annual Snow Rodeo

As with many public works departments, our department utilizes several common methods of reaching out to our community, including our website, government channel, and National Public Works Week activities. Regardless of the method or outreach activity, we are finding creativity to be one secret to success.

Kara Taylor can be reached at (816) 969-1804 or kara.taylor@cityofls.net.

Recognize Your Leaders

Vic Bianes, P.E.
Engineering Manager
San Diego County Water Authority
Member, APWA Certified Stormwater Manager Council

This seventh article in the series of Recognize Your Leaders is submitted by Vic Bianes, P.E., Engineering Manager for the San Diego County Water Authority, and the nominee is Tim Dyer, Cost Estimator with the same organization. Leadership traits for this installment include knowledge, integrity, initiative, problem solving, and dependability.

Tim is truly a public works unsung hero. He has contributed to the success of public works projects for over two decades but works modestly behind the scenes. A man of integrity, Tim is well respected by his coworkers. His vast construction knowledge and estimating prowess put him in a league of his own among his peers.

Tim frequently receives phone calls from external stakeholders, which include other public agencies, construction industry representatives and from university faculty, seeking his advice on the ever-changing bidding market and environment, local pricing trends, quotes on rates, and cost escalation and the impact it has on the construction market. Tim keeps his fingers on the pulse of the labor, material and equipment market, not only in San Diego, but throughout the world.

Tim is a self-made expert on the construction market conditions in the San Diego area. He keeps updated on current events in the world and their impacts on the local economy. For instance, Tim will tell you that the turmoil in the Middle Eastern OPEC countries, the earthquake in Japan, the Chinese government's control on inflation and the flooding in Australia have impacted both the steel market and, of course, gasoline prices. Tim uses this knowledge of world events to determine the escalation rates for these commodities. For example, he provided our Operation & Maintenance Department with predictions for the cost of fuel, which was used in the budget process for fleet operation.

Another thing that sets Tim apart is his willingness to contribute beyond what is required by his job responsibilities. He routinely mentors and coaches staff engineers and technicians, offering suggestions to improve their designs before they are finalized. Tim explains how a contractor would approach the work in sufficient detail so the areas of concern are easily understood. This is not a job requirement of his position. However, the synergy that Tim has created when teaming with the staff yields a result much greater than the sum of the parts.

A problem solver by nature, Tim can be counted on to deliver new strategies when faced with tough situations. His strategies often result in significant project savings. The recently completed San Vicente Pumping Facilities project is a perfect example. Tim identified a serious constraint of too little work area to process rock onsite. The work limits were expanded and the project realized a $500,000 savings from this idea.

In addition, Tim's recent estimate for the San Vicente Reservoir Interconnect Pipeline project was within 2.7% of the construction bid. Tim's bid estimate was amazingly close when you consider the industry standard is to be within -10 to +15 percent. Tim has a proven track record of providing cost estimates more accurate than the project consultants.

This type of accuracy comes from a lot of experience and the willingness to be innovative and implement new technology. Tim exemplified these traits by helping to develop the Water Authority's Muni-Cost Estimating Model. This model implements local cost trending information and is the basis for the cost estimates in our budgets. A number of public agencies and consultants throughout the country have contacted Tim to get a better understanding of how our model works.

In a life prior to the Water Authority, Tim was a contractor. Because of this previous experience, Tim is a

Tim Dyer

creative and effective negotiator. He has the unique ability to see the contractor's perspective. This gives him an edge, since he knows what is motivating the contractor and can negotiate a position that addresses the contractor's needs while fortifying the interests of the Water Authority—truly a win-win situation for all. Tim continues to follow contractors' means and methods to keep his knowledge base current. He is consistently reviewing our construction sites and contractors' plans to ensure he can continue to deliver an accurate viewpoint of today's contracting community.

In addition to being an excellent cost estimator and negotiator, Tim is a valuable historian for past projects. He remembers the details, such as conduit locations, pipe lay details, and a myriad of project issues and is willing to pass his field knowledge on to others. Due to this extensive construction experience, Tim can always be relied on to provide a different perspective on how a project can be built. He is a mentor to many of his coworkers. He is always willing to help and do whatever it takes to get the job done. He wants others to learn his trade and is excited about sharing it. Tim frequently orients/trains/mentors the newest staff person. He views this as doing his part to implement succession planning at the Water Authority.

Tim's special actions, activities, or events that affect others

Besides being a dedicated Water Authority employee, Tim is the epitome of a dedicated family man. He is also caregiver for his grandson and takes him on many "field trips" throughout the community. Tim obviously enjoys reading and is an avid user of his library card. He believes in participating in Water Authority and community events and utilizing the resources that are available.

Tim is an active member of the American Society of Professional Estimators (ASPE). Just recently, he wrote a news article for the organization and gave a presentation on how to provide an accurate estimate for large construction projects. Tim is a great ambassador for public works and is recognized as an expert in his field.

If you would like to recognize a leader in your organization, submit the name of the individual and a brief summary of the project you would like to recognize them for to Becky Stein at bstein@apwa.net.

Charisma that counts and Emotional Intelligence at work

George Haines, PWLF
Adjunct Instructor, Norwich University, MPA Program
Member, Small Cities/Rural Communities Committee

The APWA Leadership and Management Committee has introduced a new series of articles entitled "The Great 8" which focus on leadership traits and qualities. This is the eighth series of articles contributed by the committee over the past several years. The Leadership and Management Committee, working with a subcommittee composed of public works leaders with decades of experience, has identified a number of qualities required for success as a leader of a public works organization. The series will explore the following traits over the next eight months:

1. Vision
2. Charisma
3. Symbolism
4. Empowerment
5. Intellectual Stimulation
6. Integrity
7. Knowledge Management
8. Power of Relationships

"Charisma, plainly stated, is the ability to draw people to you." – John Maxwell, *The 21 Indispensable Qualities of a Leader*

I personally have mixed feelings about the word charisma, but I realize it is not the word that gives me the mixed feelings but the people I associate with the word. Charisma can be used for good or ill. The difference between good charisma and bad charisma is character. For those of us who aspire to be great leaders, let's discuss the charisma that counts.

Using John Maxwell's definition, the one person in my lifetime who I associate with the word charisma is

Reenlistment ceremony performed by LCDR George Haines (left) and assisted by President Reagan. (Permission by George Haines)

Ronald Reagan. As you can see from the photo, I had the opportunity to meet him on several occasions at his ranch near Santa Barbara while I was serving in the Navy Civil Engineer Corps. On this occasion I was reenlisting a chief petty officer. President Reagan took time out of his day to join us. In his wood chopping clothes he participated in the ceremony, told us some stories, and even cut the reenlistment cake with my Navy sword. What was special about this occasion was that he made us all feel like there was nothing more important on his plate than

spending time with us. It wasn't that he was there to show us that he was the most powerful leader in the world; he was there to let us know how important we were. In his book, *The 21 Indispensable Qualities of a Leader*, John Maxwell lists four pointers to be the kind of person who has the ability to attract others:

1. **Love Life** – Are you the kind of person who enjoys getting up every day? What is your attitude at work? Does your staff look forward to seeing you each day or do they wonder which person will show up that day, Jekyll or Hyde?

2. **Put a "10" on Every Person's Head** – A person with charisma sees the good in people. It is easy to see our flaws. They are there for everyone to see. A good leader looks beyond our outward flaws and helps reveal our potential. Another word for that kind of person is "mentor."

3. **Give People Hope** – Hope is a feeling that everyone wants. Hope for a better future. Hope for meaningful work where I can make a contribution. When you can give people hope, they are forever grateful. At the cancer center at the Rapid City Regional Hospital, where I have been through 36 rounds of chemo and 25 radiation treatments, there is a sign on the reception desk where you check in. It simply says "HOPE." Without hope, what is left?

4. **Share Yourself** – Think about others before you think about yourself. How can you help your employees grow and develop personally and professionally? How can you add value to the people in your organization? Recognize them, send them to training, send them to Congress, urge them to take a class, take them to lunch. It isn't that complicated.

Charismatic leadership draws you in and may even get you motivated to do things beyond the call of duty. In his text, *The Leadership Experience*, Richard Daft says:

> Charismatic leaders have a passion for their work. Charismatic leaders are engaging their emotions in everyday work life, which makes them energetic, enthusiastic, and attractive to others. Their passion for a mission inspires people to follow them and galvanizes people to action.

One person in the news these days who fits this definition for me is Tim Tebow. New York Jets star cornerback Darrelle Revis had this to say: "Some people have it. Some guys don't. He's very positive. He has passion for what he does and you could see it. You can see it on him when you have a conversation with him. He's just a leader."

Another point that Daft makes about charismatic leaders is that "their source of influence comes from personal characteristics rather than formal position of authority. People admire, respect, and identify with the leader and want to be like him or her." People who have developed the set of skills defined as charisma have an advantage. Having charisma helps you get people's attention, but you will only retain their attention as long as you can continue to connect with them and be in-tune emotionally. There is a strong emotional component to charisma and that leads me to part two of this discussion, the closely-related subject of Emotional Intelligence.

Emotional Intelligence – "the ability to manage ourselves and our relationships effectively." – Daniel Goleman

While the term Emotional Intelligence (EQ) has only been widely used since Goleman's 1995 book, *Emotional Intelligence, Why it Can Matter More than IQ*, the components of EQ are timeless. There are those of you reading this that may be starting to squirm at the thought of bringing emotions into the workplace. After all, this is public works. We deal in infrastructure. Many of us are engineers. Everything adds up. There is no gray area. Why do I need to learn about this "touchy-feely" stuff? It is because of the most important ingredient in our business, PEOPLE. People are emotional creatures. There is no formula or one-size-fits-all solution to the people part of public works. If you think you should leave your emotions at home, think about this. In a previous article called "A Leader's Legacy" (*APWA Reporter*, May 2007), I quoted Kouzes & Posner who said: "We will work harder and more effectively for people we like. And we will like them in direct proportion to how they make us feel." You may never hear this in an exit interview, but in most cases when you lose an employee, they aren't leaving the organization, they are leaving their boss. This has nothing to do with how smart someone is or how technically competent they are. It is about relationships! You will also find out that the higher you go in the organization, the more important Emotional Intelligence becomes to your success. Goleman's organizational research determined that the difference between average and top performers was two-thirds emotional competence and one-third technical skill.

When you think about it, we don't need a huge research project to figure this out. Let me briefly cover the four components of Emotional Intelligence that are also shown in the table below:

- **Self-Awareness** – This may be the foundation of all the other competencies. If you have a good handle on your emotions, understand your strengths and weaknesses, and have self-confidence, you are better equipped to deal with others.
- **Self-Management** – Still dealing with self, when you can control and manage your own emotions under difficult conditions, you will be better able to have healthy relationships with others. Self-management means being able to adapt to changing circumstances, take initiative and not let anxiety, worry, or fear cloud your judgment.
- **Social Awareness** – This is your ability to understand others. The term empathy, being able to put yourself in other people's shoes, is an important skill. Being able to read the needs of the organization and the needs of your customers/citizens are also components of social awareness.
- **Relationship Management/ Social Skill** – There are a lot of traits in this component. You know how to develop and maintain good relationships, utilize your communication skills, cast a compelling vision and inspire others, persuade and influence, manage conflict, build trust and teamwork, recognize the needs of others and help develop their skills.

To wrap thing up, let me say that having charisma will open the door for you. It gives you the positive first impression that will help you develop and then solidify your relationships with staff, customers, citizens, and elected officials. You continue to develop your own skills, self-confidence, and relationships with others by understanding the importance of Emotional Intelligence. You *can* learn and develop these skills, just as you can develop the other "Great 8" leadership traits and qualities.

"How can you have charisma? Be more concerned about making others feel good about themselves than you are making them feel good about you." – Dan Reiland

George Haines can be reached at ghaines@bresnan.net.

	SELF	OTHERS
AWARENESS	**Self-Awareness** • Emotional self-awareness • Accurate self-assessment • Self confidence	**Social Awareness** • Empathy • Organizational awareness • Service orientation
BEHAVIOR	**Self-Management** • Emotional self-control • Trustworthiness • Conscientiousness • Adaptability • Optimism • Achievement-orientation • Initiative	**Relationship Management / Social Skill** • Development of others • Inspirational leadership • Influence • Communication • Change catalyst • Conflict management • Bond building • Teamwork and collaboration

Table adapted from Richard L. Daft, *The Leadership Experience*

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APWA in Mexico

Latin American Task Force coordinates successful participation in ICLEI-Mexico National Public Works and Services Congress in Tijuana, Mexico, April 25-27, 2012

APWA through its International Affairs Committee (IAC), Latin American Task Force (LATF) and Jennings-Randolph (JR) Fellowship Program has actively supported technical and educational exchanges with Mexico and Mexican public works officials and practitioners for over 12 years, primarily through reciprocal attendance at partner conferences. Over the last several years, APWA members and officers have attended and participated in a number of ICLEI-Mexico Congresses, while ICLEI-Mexico staff have attended and participated in several APWA National Congresses. (ICLEI-Mexico is the Mexico City-based office of ICLEI-Local Governments for Sustainability, an international nonprofit membership association focused on working with local governments on issues surrounding sustainability and climate protection.)

This past April, a six-person delegation representing APWA traveled to Tijuana, Mexico to attend ICLEI-Mexico's National Public Works and Services Congress. The conference venue was the multi-story twin tower Grand Hotel, located adjacent to a golf course several miles from the border and away from the commercial/tourist center of town. Leading the delegation was Bob Kass, current Chair of APWA's Latin American Task Force, who offered welcoming comments on behalf of APWA President Diane Linderman and made a presentation to attendees about APWA and the current state of the practice of public works. Joining Bob at the Congress, and also making presentations, were:

- Jose Gamboa, Assistant General Manager, Salinas Valley Solid Waste Authority (Salinas, California)
- David Akers, P.E., Principal, Aztec Concrete, San Diego, California
- Martin Rivarola, AICP, Director of Community Development/Interim Director of Public Works, City of Mission, Kansas
- Ray Dovalina, P.E., Assistant Transportation Director, City of Phoenix, Arizona
- Miguel Aceves, P.E., Project Manager, CDM Smith Consultants, Phoenix, Arizona

Presentation topics included: Regulation and Public Policy in the Delivery of Public Works and Services (Jose Gamboa); Implementation of Technology for Total Sanitary Landfill Elimination (Jose Gamboa); Sustainable Development and Planning in Mission, Kansas (Martin Rivarola); Permeable Concrete (David Akers); Complete Streets (Ray Dovalina) and A Case Study in Sustainable Design and Construction—the Salt Lake City Airport Light Rail System (Miguel Aceves).

Throughout the conference, the APWA delegation networked with public works professionals from south of the border, discussing common challenges

Conference attendees take a minute for a photograph with ICLEI staff. From left to right: Edgar Villaseñor (ICLEI Mexico Executive Director), Miguel Aceves, Ray Dovalina, David Akers, Martin Rivarola, Itzél Alcerreca (ICLEI Program Coordinator), Bob Kass

Bob Kass, Chair, APWA Latin American Task Force, presents a general session on the State of the Practice of Public Works at the ICLEI-Mexico Public Works Conference in Tijuana, Mexico.

and exploring opportunities for future international collaboration.

Contributed by Bob Kass; member, APWA International Affairs Committee; Chair, APWA Latin American Task Force

ICLEI-Mexico 10th Anniversary National Conference to be held in Cozumel, Mexico

ICLEI-Mexico has announced that its 10th Anniversary National Conference on Sustainable Development and Practices will be held in Cozumel, Mexico, August 1-3, 2012. ICLEI has invited APWA to be a participant in this congress, and has indicated a willingness to provide time for APWA members to present workshops and/or presentations that would be of general interest to the conference attendees. Any APWA members interested in attending and/or presenting at this conference are encouraged to contact Bob Kass, Chair, Latin American Task Force, at rmkass1@gmail.com or (408) 425-4707.

The Island of Cozumel is located in the Caribbean off Mexico's Yucatan Peninsula, and is a world-class tourist destination renowned for its diving and fishing. It is a convenient point of departure for many destinations along the Mexican Riviera, such as Cancún, Tulum, and Playa del Carmen, as well as the significant Mayan archaeological sites of Cobá and Chichén Itzá.

Chankanab National Park in Cozumel, Mexico

Applied Public Works Research

The APWA Donald C. Stone Center for Leadership Excellence in Public Works

The mission of the APWA Donald C. Stone Center for Leadership Excellence in Public Works (DCS Center) is to position public works professionals for the twenty-first century. In keeping with this important goal, the *APWA Reporter* features a section dedicated to applied research in public works. This section, published quarterly, provides insight into thoughtful analysis of issues and opportunities based on applied scientific research methods as a way of further contributing to the body of knowledge.

Many of the articles appearing in this section are capstone papers written by participants in the DCS Center Level 3 Public Works Executive (PWE) Program. Other research articles are selected based on the applied nature of the paper and its relevance to public works.

Researchers interested in submitting articles should visit the website http://www.apwa.net/donald-c-stone/Donald-C-Stone-Center/Public-Works-Research to learn details of the requirements for publication. Articles submitted to the "Applied Public Works Research" section of the *Reporter* will be reviewed by the DCS Research Council, an expert group of professionals and academicians comprising the editorial board. Depending on the technical aspect of a submission, the Council may ask public works professionals to write a summary to highlight how the research can be applied. These will appear as "Research Application Summaries." The 150-word abstracts of approved articles will be published quarterly. The full-length articles, as listed below, can be accessed via the link provided with each abstract.

This issue of the *Reporter* highlights two articles that fit the requirements for this section. The first is a capstone thesis written by John P. Lawlor, Jr. for Norwich University. The second paper was presented at the Transportation Research Board's 2012 Annual Meeting. Norwich University and the University of Nebraska are currently two APWA partner universities offering MPAs with a public works emphasis.

Disclaimer: The views and opinions expressed in these papers are solely those of the authors and may not represent those held by APWA or the entities referred to in the articles.

Starting from Zero: A Case Study in Building a Proper Public Works Facility

Researcher: John P. Lawlor, Jr.

Source: Capstone Project, Master's of Public Administration

Date: August 2010

APWA URL: http://www.apwa.net/donald-c-stone/Donald-C-Stone-Center/Public-Works-Research/Applied-Research-Articles

Building a proper public works facility requires a sound design and the consensus of the community. A well-planned and constructed public works facility enhances the agency's operational effectiveness and projects a positive, professional image to the community. Too many public works agencies occupy facilities that are not designed properly for their intended purpose. Residing in such facilities does not help promote public works as a profession, rather an afterthought. In order to ensure a proper public works facility design, the agency must be properly defined, a complementary project team must be created, the site for the facility must be selected and the concept of this undertaking must be sold to all of the community decision makers. The City of Waterbury, Conn., has undergone the process to create a public works facility that is properly planned to support the agency's purpose, and properly constructed to further ensure operational functionality.

Associations between Road Network Connectivity and Pedestrian-Bicyclist Accidents
Authors: Yuanyuan Zhang, John Bigham, Zhibin Li, David Ragland, Xiaohong Chen
Source: Transportation Research Board Annual Meeting 2012 Paper #12-0478
Date: January 2012
APWA URL: http://www.apwa.net/donald-c-stone/Donald-C-Stone-Center/Public-Works-Research/Applied-Research-Articles

It has been extensively accepted that the road network connectivity can positively impact the propensity and duration of non-motorized travel. But its impact on non-motorist traffic safety is still under debate: on one side, well-connected road networks could lead more through traffic into the core area of a region so that pedestrians and bicyclists would be more frequently exposed to conflicts with cars; on the other side, it could be safer when vehicle speed is slowed down by dense intersections and drivers are forced to concentrate on surroundings by active walking and bicycling. This debate stimulates the paper to estimate the associations between road network connectivity and pedestrian-bicyclist crashes. Four commonly utilized connectivity measures including block density, intersection density, street density, and mean block length are calculated based on the road networks of 321 census tracts in Alameda County, California. Then the four measures together with other factors like traffic behavior, land use, transportation facility, and demographic feature are employed separately in a spatial statistical model called geographically weighted regression. Conclusions are: first, the decrease of pedestrian-bicyclist accidents is significantly related to higher block density, higher intersection density, higher street density, and shorter mean block length; second, compared with the other three connectivity measures, street density is better for modeling because of its higher stability and stronger explanatory ability; third, employing street network, traffic behavior, and transportation facility data into the same model can produce the best model fitness.

For more information about this special section of the APWA Reporter *dedicated to applied research in public works, please contact Mabel Tinjacá, Ph.D., APWA Director of Professional Development, at (816) 595-5214 or mtinjaca@apwa.net.*

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Testing your INVEST-ment in highway sustainability

Monterey Bay project gets the gold

Debbie Hale, Executive Director, Transportation Agency for Monterey County, California, and Chair, APWA Transportation Committee; **Lisa Reid**, P.E., PMP, Senior Sustainability Consultant, CH2M Hill, Bellevue, Washington, and member, APWA Transportation Sustainability Subcommittee

The Monterey Bay is known for its interest in preserving the environment, an environment that draws over eight million visitors a year to this scenic destination. As planners with the Transportation Agency for Monterey County, we are sensitive to the notion that our projects should be as sustainable as possible. We want to honor the three "e"s of sustainability by balancing the equity concerns for our residents, the impacts to our natural environment, and the needs of our $2.5 billion per year tourism economy. But how can a highway project be sustainable? That is where sustainability rating systems come into play. When we heard that the Federal Highway Administration was planning a pilot test of its new INVEST (Infrastructure Voluntary Evaluation Sustainability Tool) sustainable self-evaluation system for highways, we were eager to sign up. Our State Route 156 west widening and interchange project became one of just two projects in California, and 17 projects nationwide, to participate in testing of the Pilot Test Version of the Project Development module of INVEST.

INVEST identifies the characteristics of sustainable highway development via a web-based self-evaluation tool. The tool is intended to provide a method for practitioners to evaluate their transportation projects and to encourage progress in the sustainability arena. It is not required in order to receive federal funding and it is not intended to result in comparisons across transportation agencies and projects, but it is intended to encourage project managers to learn how to make their projects more sustainable, according to a set of 29 criteria that assign points to specific sustainability best practices (see chart for Version 1 criteria). Projects can reach four different achievement levels of sustainability: bronze, silver, gold and platinum. We evaluated the Project Development module, but there are also System Planning and Operations & Maintenance modules that cover the rest of the project life cycle. The Pilot Test Version of the Project Development module had basic and extended scorecards that filtered applicable criteria depending on the type of project being evaluated.

Traffic on eastbound Highway 156 as it narrows from two lanes to one lane.

The INVEST web-based tool was a good fit for our project and our team. As a small agency in a medium-sized county (425,000 people), it would be difficult to participate in a sustainability analysis that would be costly or time-consuming. Our State Route 156 project will improve safety and mobility by creating a new four-mile, four-lane highway segment, converting the existing highway to a frontage road, replacing an existing traffic signal with an interchange, and rebuilding the highway to highway connection. The project had just completed the state and federal environmental review process, so a great deal of

information was available. We were early enough in the process to be able to learn from a sustainability analysis and make incremental changes. We also had a collaborative team that was made up of local and state Department of Transportation (Caltrans) staff who could easily be assembled to participate in the pilot program.

FHWA had a very supportive six-step process for its pilot test—one that we would encourage them to utilize to guide users in their future use of the tool. First, we assembled our team, all of whom attended FHWA's orientation webinar on the features of the website and the evaluation process. Our team, led by our project manager, Mike Zeller, included our agency's engineer and executive managers, as well the Caltrans project manager, environmental manager, and lead designers. We felt that the participation of our executive managers was critical to making any sustainability improvements that would be suggested in the evaluation process.

After the orientation, our project manager navigated the website, reviewed the scoring criteria, and asked for clarifications when needed. At this point, he also made an initial assessment of where the project was likely to meet the criteria and where more information would be needed. He then developed a list of the data required to complete the scoring evaluation. He assigned team members to collect the relevant data, so that the information would be available for scoring at the evaluation workshop. After gathering the information, the Scoring Team members evaluated the criteria in each of their assigned research areas and took a first cut at determining if the project met or did not meet the scoring requirements.

Next, we held the scoring workshop. The workshop was facilitated by Lisa Reid, CH2M Hill, the lead consultant for the INVEST tool development and testing. All team members attended the workshop. This workshop was where the real evaluation of the project and the INVEST tool took place. We spent three hours working through all the criteria, answering each of the questions, clarifying the explanation, understanding the project features, and making suggestions for improving the INVEST criteria and tool. Our team worked hard to give our project a high, yet accurate, sustainability rating. The consultant recorded our comments, answered our questions, and indicated where other pilot testers and reviewers had agreed that changes were needed.

The self-evaluation is finalized with a scorecard that summarizes your score by criterion and provides feedback on how many points are needed to reach the next level. What level did our project achieve? We reached the "gold" level of 64 points, just seven points away from platinum. Our project scored well in terms of cost-benefit, mobility, and safety improvements, which makes sense since its purpose is to increase capacity and improve safety, at the lowest cost possible. We also learned that, due to a number of best practices by Caltrans, the project also does a good job of protecting the environment—including environmental tracking, habitat preservation and restoration, stormwater management, and ecological connectivity. We reviewed the areas where our scores were low and agreed to look into making improvements in the areas of public education about sustainability features, energy-efficient lighting, reduced pavement emissions, contractor warranty, and construction quality control planning. With sustainable improvements in these areas, we plan to achieve a platinum level scoring on our final project.

INVEST, Version 1

PROJECT DEVELOPMENT CRITERIA

- PD-1 Economic Analysis
- PD-2 Life-Cycle Cost Analyses
- PD-3 Context Sensitive Project Development
- PD-4 Highway and Traffic Safety
- PD-5 Educational Outreach
- PD-6 Tracking Environmental Commitments
- PD-7 Habitat Restoration
- PD-8 Stormwater
- PD-9 Ecological Connectivity
- PD-10 Pedestrian Access
- PD-11 Bicycle Access
- PD-12 Transit & HOV Access
- PD-13 Freight Mobility
- PD-14 ITS for System Operations
- PD-15 Historical, Archaeological, and Cultural Preservation
- PD-16 Scenic, Natural, or Recreational Qualities
- PD-17 Energy Efficiency
- PD-18 Site Vegetation
- PD-19 Reduce and Reuse Materials
- PD-20 Recycle Materials
- PD-21 Earthwork Balance
- PD-22 Long-Life Pavement Design
- PD-23 Reduced Energy and Emissions in Pavement Materials
- PD-24 Contractor Warranty
- PD-25 Construction Environmental Training
- PD-26 Construction Equipment Emissions Reduction
- PD-27 Construction Noise Mitigation
- PD-28 Construction Quality Control Plan
- PD-29 Construction Waste Management

Our project manager then provided a written memo giving feedback on how the tool worked and how it could better help us meet our sustainability goals. The final step was a national webinar at which the FHWA team summarized the suggestions from all the pilot studies around the country. How well did the tool score? Overall, we would rate the website as easy to use, but needing greater flexibility and clarity. We're pleased that FHWA has incorporated changes that address most of our comments and are looking forward to using the official version of the tool on our projects.

To address comments made in the pilot testing process, FHWA has made many improvements to Version 1 of INVEST, which is being launched. Some of the key changes made include:

- Revised Project Development Scorecards to be based on type of project, as well as the location (urban vs. rural)
- Addition of a custom scorecard for users who would like to choose their own criteria
- More detailed explanations of what is required to obtain scores within the criteria
- More "partial credit" rather than "all or nothing" scores
- Ability to record scoring notes and next actions, and to upload supporting documents for future reference
- Ability to collaborate on scoring with multiple people accessing same project
- Option to save a scoring "snapshot" to record scenarios or progression of scoring over time
- Opportunities for users to improve the tool over time

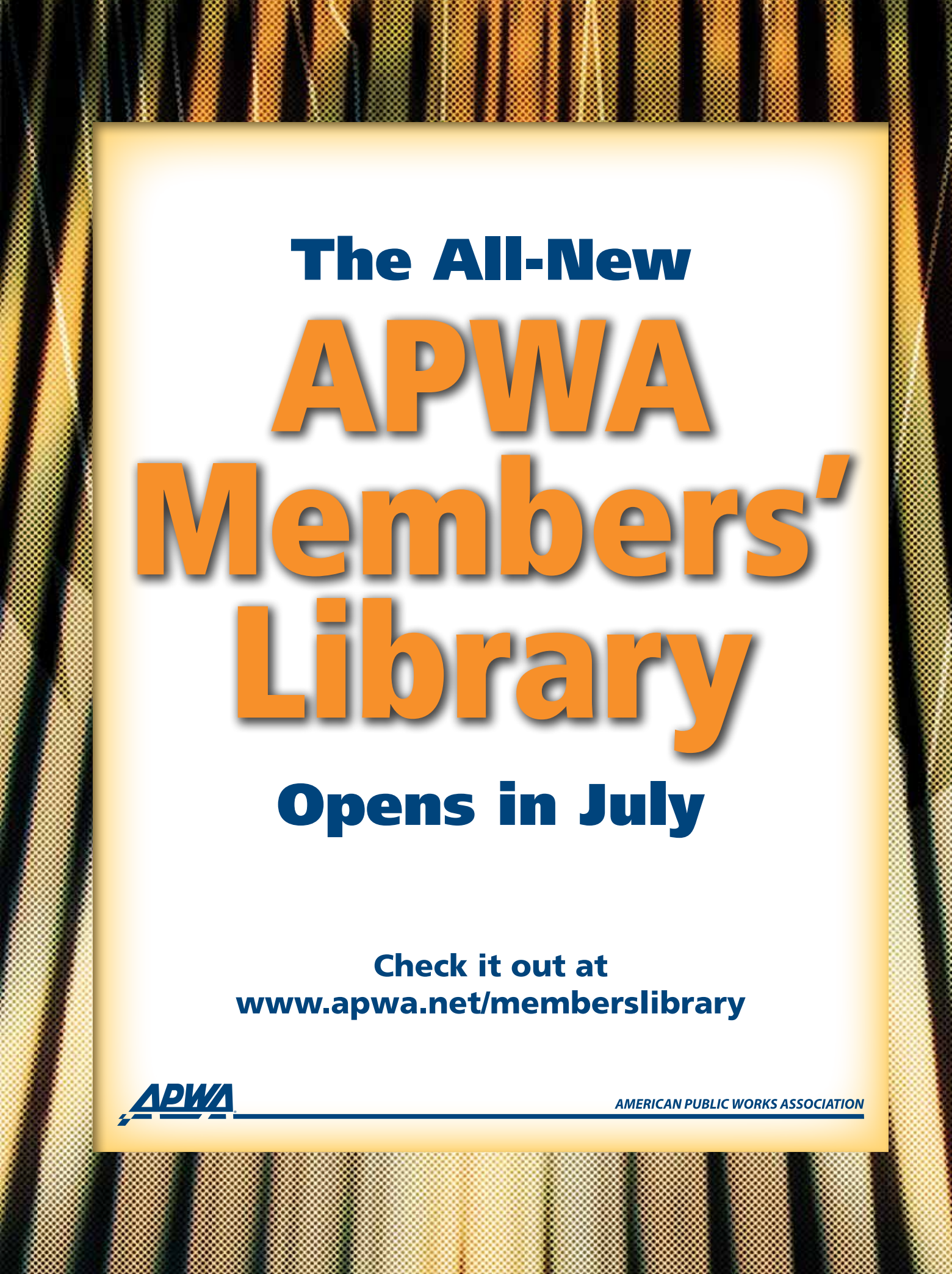
Heritage oaks lining the corridor will be preserved under the new four-lane highway alignment.

FHWA's goal for the pilot testing process was to improve the accuracy and usability of their web-based sustainability rating tool. Our goal was to learn about and improve the sustainability of our project. I would say that both agencies earned a "gold" medal in their efforts, and with future improvements can move up the podium to "platinum."

The new and improved INVEST Version 1 is being rolled out and can be found at www.sustainablehighways.org. Keep your eye out for APWA announcements of FHWA's upcoming instructional webinars.

Debbie Hale is the Executive Director of the Transportation Agency for Monterey County, California, a regional agency that plans, funds, and delivers all modes of transportation projects. She currently serves as the chair of the APWA Transportation Committee. She can be reached at debbie@tamcmonterey.org or (831) 775-4410.

Lisa Reid, P.E., PMP, is a Senior Program Manager and Sustainability Consultant with CH2M Hill, and is a member of APWA's Transportation Sustainability Subcommittee. She can be reached at Lisa.Reid@ch2m.com or (425) 233-3143.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Implementing a complete streets policy: a four-step approach

Elizabeth Sliemers, P.E.
Senior Traffic Engineer
LJB Inc.
Dayton, Ohio

To accommodate a broader traveling public, many agencies are adopting policies and design standards focused on creating "complete streets." A complete street incorporates design and operational features that create a safe and accessible environment for all users of the public right-of-way, including pedestrians, bicyclists, transit riders and motorists. After a complete streets policy is adopted the hard work of implementing these policies is often left to the individual transportation or public works agencies.

To minimize this burden, the National Complete Streets Coalition (NCSC) has defined four steps for implementing a new policy.

1. Restructure Procedures
2. Develop Design Policies and Guidelines
3. Provide Training
4. Improve and Update Performance Measures

1. Restructure Procedures

What is done

When procedures are restructured to include complete streets, agencies must reconsider how they prioritize projects. With a more pointed focus on users other than motorists, the concept of connectivity of modes is also given higher consideration.

For the City of West Carrollton, Ohio, future upgrades to a freeway interchange with Interstate 75 will usher an estimated 25,000 vehicles per day into the city's downtown business district. To capitalize on the state's infrastructure investments, officials and staff from across departments came together to create a master plan that would deliver an enhanced sense of community in the area. Goals for the transportation plan included retaining vehicular capacity and operational levels, while reclaiming excess pavement to provide bicycle and pedestrian facilities and on-street parking. During the process, the City recognized the need to increase connectivity to regional bikeway facilities and found opportunities to do so within the preferred transportation plan. While motor vehicle traffic was certainly a focus of the plan, other users were given more consideration than ever before.

Who is involved

Considering the impact that transportation projects have on residents, it is common to seek community input. The varied perspectives provided by community stakeholders become even more important for complete streets projects.

The redesign of the central business district in downtown Lima, Ohio, is an example of how involving an expanded stakeholder group can impact a project outcome. City officials were considering the conversion of the City's downtown one-way street network to two-way operation. If a traditional approach to project development was used,

Intensive stakeholder involvement for the City of Lima Transportation Master Plan

it is likely that the transportation plan would have recommended full conversion to two-way streets.

By conducting an intensive public engagement process, the values and needs of a much larger constituency were gauged and used to reprioritize the project goals and success metrics. Ultimately, City officials selected a design option that retained many of the benefits of a one-way street network, with inclusion of numerous complete street elements to create an enhanced environment for pedestrians, bicyclists and motorists.

2. Develop New Design Policies and Guidelines

Many communities have found creative design solutions within existing DOT or AASHTO standards or have opted to write or rewrite specific design standards to ensure that complete street elements are incorporated in a consistent manner.

Roadway improvements on West Broad Street just outside of Columbus, Ohio, provide an example of a project that capitalized on existing design standards to convert a traditional, urban arterial corridor into a complete street. This five- and seven-lane roadway services 40,000 vehicles per day and experienced a crash density nearly four times the statewide average.

Existing West Broad Street – without complete street amenities

Redesigning West Broad Street as a complete street provided a solution that improved safety for all users, while meeting the expectations and design standards of a traditional urban roadway. The complete street design also offered an opportunity for an enhanced sense of community in a redeveloping portion of the county. Through the work of a group of community leaders and private businesses, the DOT stands to avoid $2.5 million in commercial property right-of-way acquisition cost due to right-of-way donation along the corridor.

Table 1 compares the design elements of the original design of West Broad Street to the proposed complete street design, which maintained compliance with existing ODOT design standards and incurred no additional right-of-way impact.

3. Provide Training

To implement lasting change from a new complete streets policy, affected staff needs to understand the nuances of the policy, as well as the associated changes to design guidelines.

To ensure successful implementation of a new complete streets policy, the Miami Valley Regional Planning Commission (southwest Ohio) recognized the need to provide

Table 1: Comparison of Design Elements

Design Element	Traditional Design	Complete Street Design
Lane Width	• 12-foot through lanes	• 11-foot through lanes
Curb Type	• Combination curb and gutter	• Barrier curb to eliminate longitudinal joints in the shoulder
Bike Facilities (shoulder design)	• 2-foot paved shoulder adjacent to curb and gutter	• 5-foot paved shoulder marked as a dedicated bike lane • Paved shoulder at single consistent cross slope to eliminate cross slope breaks for improved riding surface in the bike lane
Transit Facilities	• Standard signage at identified stops	• Turnout areas for buses to exit travel lane for loading/unloading • Shelters, benches bike racks, trash receptacles
Pedestrian Facilities	• 8-foot sidewalk at back of curb	• 5-foot sidewalk with 5-foot buffer zone between curb • Two mid-block crossing locations equipped with pedestrian hybrid beacons • Rectangular Rapid Flash Beacons (RRFB) at freeway ramp crossings

technical assistance to government officials, engineers and planners in its member jurisdictions. MVRPC administered a free educational opportunity for its member agencies, including information on basic complete streets elements, design considerations, and treatments for corridors and intersections.

In addition to training public agency employees, there is also value in educating the general public. Community outreach efforts can explain the importance of a complete streets policy for transportation safety, as well as for economic development, environmental and health purposes.

4. Improve and Update Performance Measures

One of the best ways to ensure that a new policy is implemented is to measure the direct results. Traditional measures of performance are typically limited to the following:

- Cost
- Usage (vehicular traffic volumes, lane miles)
- Safety (crash frequency and severity)
- Performance (volume to capacity ratios, vehicular level of service)
- Public acceptance

The new recommendation is to identify a holistic set of performance measures that consider the full spectrum of a project's goals, needs and objectives. Possible performance measures for complete street projects include:

- Facilities
  - Cost allocated per mode
  - Miles of sidewalks, bike lanes, etc.
  - Number of upgraded intersections
  - Change in modal connectivity
- Usage
  - Change in traffic volume
  - Percentage of children walking or biking to school
  - Change in transit ridership
- Multi-modal level of service
  - Vehicular
  - Transit
  - Pedestrian
  - Bicycle
- Safety
  - By mode
- Environmental
  - Air quality/emissions
- Health indicators
  - Obesity rates
  - BMI
- Economic impacts

Miami Valley Regional Planning Commission staff training

Conclusion

Although the fundamental concepts of complete streets have become more recognized in recent years, many of the tangible benefits such as economic sustainability, improved safety, and community livability will be fully realized in the years to come. Following the implementation steps outlined by the National Complete Streets Coalition will help communities realize the many benefits that come from adoption of complete street policies.

Elizabeth Sliemers is a traffic engineer and transportation planner with LJB Inc., a consulting firm in Dayton, Ohio. Beth brings more than 10 years of experience working in collaboration with public and private agencies to create solutions to local and regional transportation challenges, with specific emphasis on complete street design and implementation. With her passion for walkable and livable communities, Beth has helped clients create visions for streets that move people, not just motor vehicles.

For more information about this topic or to discuss how you can implement a complete streets policy within your agency, contact Beth at (937) 259-5165 or by e-mail at BSliemers@LJBinc.com.

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One-stop shopping for federal funding?

Leveraging the programs of the HUD-DOT-EPA Partnership for Sustainable Communities

Theresa E. Harrison, P.E.
Senior Civil Engineer, Lawson-Fisher Associates P.C.
South Bend, Indiana
Member, APWA Transportation Sustainability Subcommittee

As stewards of public funding dollars, the environment and our nation's communities, everyone who is involved with public infrastructure is continuously struggling to balance benefits and costs. This balancing act is further complicated by the plethora of funding sources and types available for the endless stream of new projects and the upgrading and maintaining of existing facilities. For transportation infrastructure alone, there are local, state and federal funding programs: Transportation Investment Generating Economic Recovery (TIGER), Green Roads, Complete Streets, Safe Routes to Schools, Transportation Enhancement, 3R, 4R, Bridge Replacement, Highway Safety Improvement Program—just to name a few! Further complicating matters are the separate, unique and numerous criteria and applications required for each program. Who is able to track and coordinate all of the various funding grants and match programs available to local governmental entities?

On June 16, 2009, the Partnership for Sustainable Communities (Partnership) was formed by the U.S. Department of Housing and Urban Development (HUD), the U.S. Department of Transportation (DOT) and the U.S. Environmental Protection Agency (EPA) to support livable communities by coordinating *"…federal housing, transportation, and other infrastructure investments to protect the environment, promote equitable development, and help to address the challenges of climate change."*

The following Livability Principles were adopted to guide the partnership's efforts (from the Partnership's website, www.sustainablecommunities.gov):

- **Provide more transportation choices.** Develop safe, reliable, and economical transportation choices to decrease household transportation costs, reduce our nation's dependence on foreign oil, improve air quality, reduce greenhouse gas emissions, and promote public health.

- **Promote equitable, affordable housing.** Expand location- and energy-efficient housing choices for people of all ages, incomes, races, and ethnicities to increase mobility and lower the combined cost of housing and transportation.

- **Enhance economic competitiveness.** Improve economic competitiveness through reliable and timely access to employment centers, educational opportunities, services and other basic needs by workers, as well as expanded business access to markets.

- **Support existing communities.** Target federal funding toward existing communities—through strategies like transit oriented, mixed-use development, and land recycling—to increase community revitalization and the efficiency of public works investments and safeguard rural landscapes.

- **Coordinate and leverage federal policies and investment.** Align federal policies and funding to remove barriers to collaboration, leverage funding, and increase the accountability and effectiveness of all levels of government to plan for future growth, including making smart energy choices such as locally generated renewable energy.

- **Value communities and neighborhoods.** Enhance the unique characteristics of all communities by investing in healthy, safe, and walkable neighborhoods—rural, urban, or suburban.

During its first year, the Partnership made advances toward three goals (*A Year of Progress for American Communities*, The Partnership for Sustainable Communities):

- Targeted resources through grants and other programs to help states and communities create jobs and stronger economies by developing more sustainably.
- Removed regulatory and policy barriers at the federal level to make it easier for state and local governments to access federal services and resources.
- Aligned agency priorities and embedding the Livability Principles in each agency's actions so that transportation, housing, and environmental protection efforts are coordinated.

Now going into its third year, the Partnership has outlined its priority areas for 2012:

- To share examples of local successes which may be used as models for communities who wish to be healthier, more competitive and affordable.
- Continue to increase the coordination of federal investments for more efficient use of taxpayer monies and improving communities' sustainability results.
- Help communities solve problems and succeed by providing technical assistance and tools, improving the capacity of local and state partner agencies while affording improved access to national programs and resources.

The Partnership agencies periodically offer funding opportunities which are announced on their website (www.sustainablecommunities.gov/grants.html) as well as on the government grants website (www.grants.gov). Additionally, the EPA provides listings for federal and national, as well as regional, state and local funding opportunities on their site (www.epa.gov/smartgrowth/national_funding.htm and www.epa.gov/smartgrowth/state_funding.htm, respectively). While currently listed opportunities may be very near, or past, their application deadlines, the site is well worth exploring to take advantage of webinars and other tools which are helpful in preparing for future funding opportunities.

Looking to the future, the Partnership endeavors to continue expanding its base of cooperating agencies to include the Federal Emergency Management Agency (FEMA) and the U.S. Department of Agriculture (USDA), among others. By "increasing the circle of cooperation" among agencies, the nation's communities can only benefit from the coordinated efforts. While many in the public works arena consider transportation services and infrastructure as the lifeblood of the nation's economy, it is the coordination of all the infrastructure and public works elements that make communities strong, viable and sustainable. By climbing out of our silos and boxes, we will realize that transportation is not individually about pavement quality, increasing the number of vehicles per hour, bike paths or bus routes, but rather a component of a complex, inextricably interwoven, complete and sustainable community. Therefore, the HUD-DOT-EPA Partnership for Sustainable Communities is an excellent foundation for much-needed and valuable resources. For much more information the reader is invited to explore the Partnership's website at: http://www.sustainablecommunities.gov.

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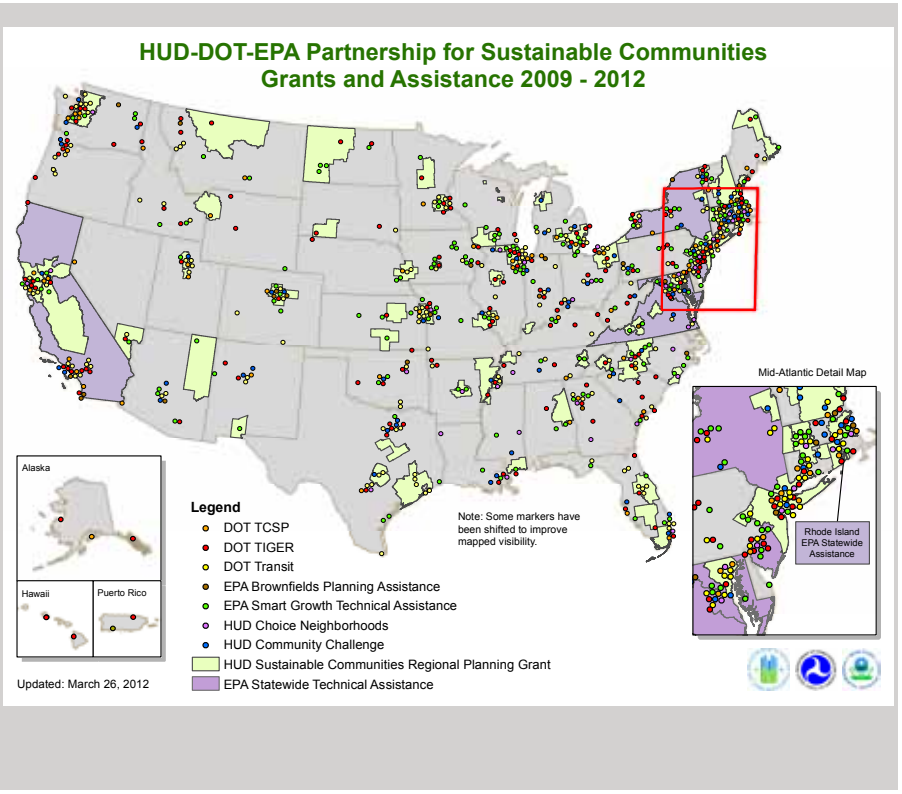

A new online resource to help local government deliver federal-aid projects

Steve Moler
Communications Specialist
Federal Highway Administration
San Francisco, California

Local public agencies (LPAs) own and operate the vast majority of the nation's highway system. Our local roads network comprises about three million miles, or nearly 75 percent, of the overall system, and more than half of the bridges. Local public agencies build and maintain the local roads network using a variety of funding sources, including the Federal-aid Highway Program. Every year LPAs administer about $7 billion in federal-aid projects, which can range from short sidewalks and bike-pedestrian facilities to pavement overlays and bridges.

When LPAs receive federal-aid funding, they begin a process of working closely with their respective state department of transportation (state DOT) to meet all federal-aid requirements, such as environmental reviews, civil rights compliance, right-of-way acquisitions, safety, and construction and contract administration. Understanding federal-aid requirements is critical to the successful delivery of federally funded projects at the local level. Non-compliance can lead to project delays and LPAs not receiving timely federal-aid reimbursements.

To help LPAs meet their federal-aid requirements, the Federal Highway Administration (FHWA) will launch a new information-sharing initiative on August 27 at the APWA Congress in Anaheim, California. The initiative, called Federal-aid Essentials for Local Public Agencies, will offer an abundance of information about key aspects of the federal-aid program on a single public website.

When the site goes live in late August, the Federal-aid Essentials website will feature a resource library

Mariposa County, Arizona, used $1.5 million in federal-aid and $2.8 million in state and local funds to rehabilitate the historic Gillespie Dam Bridge over the Gila River, shown in this photo in early 2012. In using federal-aid, the County worked closely with the Arizona Department of Transportation to meet all federal-aid requirements, such as environmental reviews, civil rights compliance, safety, and construction and contract administration. The Federal Highway Administration's Federal-aid Essentials for Local Public Agencies initiative helps local governments manage their federal-aid projects. (Photo credit: Mariposa County)

A construction worker lays concrete on the McGinnis Ferry Road extension, a typical locally administered federal-aid project involving a 1.6-mile bypass to the Lawrenceville-Suwanee Road interchange with I-85 in Gwinnett County near Atlanta, Georgia. The Federal Highway Administration's Federal-aid Essentials for Local Public Agencies initiative helps local governments manage federal-aid projects like the one shown in this photo. (Photo credit: Gwinnett County)

of more than 80 informational videos and related materials. The videos will focus on a single topic in the most critical areas of federal-aid. The videos will be relatively short at less than 10 minutes long, professionally narrated in non-technical language, and supported with engaging graphics and animation that give viewers the most essential content. The videos can be viewed in any sequence from any computer or mobile device with Internet access.

When users first enter the Federal-aid Essentials website at www.fhwa.dot.gov/federal-aidessentials, they will be greeted with a brief introductory video about the Federal-aid Essentials initiative and how to navigate the website. From there, users will have access to the resource library via a convenient drop-down menu that presents seven categories of video modules:

- Federal-aid Program Overview
- Civil Rights
- Environment
- Finance
- Right-of-Way
- Product Development
- Project Construction and Contract Administration

After choosing a category, a menu of video modules for the specific category will appear next to the video viewing screen. Users simply click on the desired video title and the presentation will begin. On the same page, users will have access to a wealth of companion materials, including a written, printable script of each video, the applicable *Code of Federal Regulations*, helpful reference information, and links to additional online resources. Another function will allow users to give feedback on a particular video, the full resource library and the website itself.

If users have questions about a particular video's content or about the federal-aid program in general, they will be able to click on a State Resources button on the main page and gain access to a list of useful information, including individual state and FHWA local office LPA coordinator contacts and web links to state DOTs, state LPA manuals, Local Technical Assistance Program (LTAP) centers, and other helpful online resources. A drop-down menu on the main page, titled "I want to know about…," will help users find information quickly and conveniently about common federal-aid topics. The site will be regularly updated and new features added to meet state DOT and LPA needs and requests.

Locally administered federal-aid projects, such as the David Kreitzer Lake Hodges Bicycle-Pedestrian Bridge in San Diego County, California, shown in this photo in May 2009, make up about 15 percent of all federal-aid projects nationwide. When local public agencies receive federal-aid funding, they work closely with their respective state department of transportation to meet all federal-aid requirements. To help LPAs manage their federal-aid projects more efficiently, the Federal Highway Administration will launch an information-sharing initiative called the Federal-aid Essentials for Local Public Agencies on August 27 at the APWA Congress in Anaheim, California. (Photo credit: Vito Palmisano)

After seeing some of the videos during a May 9 virtual "town hall" demonstration, Donna Shea, Director, Connecticut LTAP center, said: "This is really a good resource, a great way to get educational materials out to the locals. They are cleverly done so that they're short, concise and very easy to understand. We're excited to get them."

Since the modules are available anywhere there is Internet access, they can be used in a multitude of settings on any Internet-ready device. They can be shown at meetings, viewed in one's office or viewed on a job site using a laptop computer or mobile device. A project team can access the videos on a minute's notice anytime, anywhere for discussion with stakeholders and partners. After viewing the videos, viewers acquire enough knowledge to know what questions to ask their state DOT counterparts, what appropriate technical terminology to use, and how and where to get additional assistance. State DOTs and LPAs also will be able to use the videos to augment training at the local level.

"We were very excited to learn about this project," said David McBeth, P.E., Capital Projects Manager for the City of San Antonio, Texas, who also attended the May 9 virtual town hall demonstration. "From the sampling of videos and information being developed, we believe this website will be an essential resource and training tool for our staff. There are many federal-aid requirements and policies that we need to understand, so having this gateway of resources will help make our jobs much easier."

When operational in late August, the Federal-aid Essentials website will help LPAs understand their federal-aid requirements as they pursue better, faster and smarter ways of delivering the federal-aid program at the local level.

For more information on this initiative, please contact the Federal-aid Essentials for Local Public Agencies Project Managers listed below:

Rob Elliott – rob.elliott@dot.gov
Carin Michel – carin.michel@dot.gov

Steve Moler can be reached at (415) 744-3103 or Steve.Moler@dot.gov.

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Federal-aid project streamlining – what's next?

John T. Davis, P.E., PSM
Chief Engineer, Jacksonville Transportation Authority
Orange Park, Florida
Member, APWA Transportation Committee

With enactment, on August 10, 2005, of the last federal transportation authorization legislation, the "Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users" (SAFETEA-LU), Congress created a commission to study and recommend policies to provide Highway Trust Fund revenues sufficient to meet highway and transit needs. The National Surface Transportation Infrastructure Financing Commission's final report, released in February 2009, determined our nation needs to invest approximately $100 billion annually at the federal government level to maintain and improve our nation's highway and transit systems. Highway Trust Fund revenues annually provide only about one-third of the projected need and are remaining relatively flat with a slight annual decline. Now, almost three years and nine extensions after expiration of SAFETEA-LU on September 30, 2009, the U.S. Senate's proposed transportation bill would provide approximately $54.5 billion of funding annually for the next two years. (Let's hope that, by the time you're reading this article, it's not after 10 extensions.)

At this point, it's quite evident that any new federal transportation authorization legislation will not include the funding needed to maintain, repair and expand our nation's transportation facilities. Therefore, it becomes even more imperative that any new legislation includes streamlining of the project process which allows us to again, "do more with less." So, let's review what's happened with streamlining of federal-aid transportation projects over the recent couple of years and what's in the works for the next year.

New Kings Rd. Pedestrian and Transit Improvements Project, $2.0 million LPA Project (all federal funding), Jacksonville, Florida

Past streamlining efforts

The Federal Highway Administration (FHWA) launched its "Every Day Counts" (EDC) program in late 2010. EDC is Administrator Mendez's personal initiative to shorten the delivery time for federal-aid projects by 50 percent. More information on EDC can be found online at http://www.fhwa.dot.gov/everydaycounts/.

Realizing the importance of this effort to local government members of both associations, APWA and the National Association of County Engineers (NACE) have partnered with FHWA on the EDC Program since prior to its formal launch. APWA participated in FHWA's 10 EDC Regional Innovation Summits held around the nation in the fall of 2010. At the request of NACE and APWA, FHWA held four regional Peer Exchange meetings across the nation, which focused on state and local government problems in delivering federal-aid local highway projects and potential solutions to those problems and shared Best Practices.

As a result of these EDC Peer Exchange regional meetings, FHWA developed and delivered nationally broadcast video conference sessions, specifically targeted to local governments and their consultants. The purposes of these EDC Exchange sessions were to allow local and state government participants to hear from national subject matter experts about

Alta Dr./New Berlin Rd. Resurfacing Project, $4.1 million ARRA 2009 LPA Project ($3.7 million federal funding), Jacksonville, Florida

"market-ready" EDC technologies and innovative project delivery practices and to follow those sessions with discussions among FHWA Division, state DOT and local agency participants about effective project delivery practices which could be used in their states. These five sessions included "Construction Manager/ General Contractor (CM/GC)" (video of the session can be seen at http://www.fhwa.dot.gov/everydaycounts/projects/methods/cmgc/cmgcmultimedia.cfm), "Geosynthetic Reinforced Soil (GRS)" (video at http://www.fhwa.dot.gov/everydaycounts/technology/grs_ibs/multimedia.cfm), "Flexibility in ROW," "In Lieu Fees/ Mitigation Banking" and "Adaptive Signal Control (ACS) Technologies" (scheduled for broadcast August 16, 2012; check with your state Local Technical Assistance Program (LTAP) Center (http://www.ltap.org/centers/) for a session location).

APWA has provided written and oral testimony to USDOT and congressional hearings on streamlining transportation project delivery and communicated with key members of Congress, involved in developing the new transportation authorization legislation, to suggest ways to streamline federal-aid projects and offer APWA's assistance with developing and reviewing streamlining legislation.

Future streamlining efforts

FHWA has identified a two-year cycle for its EDC Program, where EDC initiatives are deployed by states and local governments over a two-year period. During the second year of deployment, FHWA would select the next group of initiatives, from suggestions provided during a solicitation process, to be implemented during the next two-year cycle. FHWA is in the process of selecting the next cycle's initiatives for implementation, beginning in October 2012 through the next EDC Innovation Summits. APWA and NACE have submitted two recommendations to FHWA for consideration: (1) Establish a formal process to ensure communications among local, state and FHWA stakeholders within each state, by forming small groups of these stakeholders to evaluate and implement streamlining processes for federal-aid local projects within their states; and (2) Have these state groups review a number of studies and reports, prepared since 2007 on delivery of local federal-aid projects and potential streamlining improvements, for improvements to be implemented within their states and recommendations for future EDC initiatives. One of the primary issues identified in the Peer Exchanges was that each state implements federal-aid requirements for local agency projects differently; therefore, many streamlining process problems and improvement efforts are state specific. NACE and APWA members in Florida are currently participating in a stakeholder committee with the Florida Department of Transportation (FDOT), which can serve as a pilot project for the format suggested to FHWA.

The Transportation Research Board (TRB) is currently developing, through its National Cooperative Highway Research Program (NCHRP), a report on "Best Practices and Performance Measures for Local Public Agency (LPA) Federally Funded Transportation Projects," as a follow-up to the previous NCHRP Synthesis 414 Report, "Effective Delivery of Small-Scale Federal-aid Projects" (a copy of the Synthesis 414 Report can be downloaded at http://www.trb.org/Main/Public/Blurbs/89c5c7aa-bd0e-434e-961a-517f58084d50.aspx?amp). Dr. Leslie McCarthy, Villanova University, will be presenting the preliminary findings of her "Best

Practices for LPA Projects" report at APWA's 2012 Congress (10:00-10:50 a.m., Monday, August 27, "Is Federal Funding for Local Transportation Projects Worth It? – Yes, If You Know How to Deliver Them, Part I").

In order to provide better information for local governments on delivery of federal-aid highway projects, FHWA has developed a series of approximately 80 short (4-7 minutes each) informational videos, entitled "Federal-aid Essentials." These web-based videos will be available in the fall of 2012 and will have companion resources text summaries of the video topic and web-links to applicable regulations and other resources, which can be downloaded and printed locally. APWA and NACE representatives have participated in webinar-based "town hall" meetings to preview and provide feedback on the proposed program. Another article within this *Reporter* issue provides more detail on this upcoming, valuable resource. FHWA will formally "roll out" the "Federal-aid Essentials" Program at APWA's 2012 Congress with a session at 2:00-2:50 p.m., Monday, August 27, "Is Federal Funding for Local Transportation Projects Worth It? – Yes, If You Know How to Deliver Them, Part II" and an exhibit in the Exhibit Hall where attendees can view the videos.

APWA continues to communicate with key Congress members, particularly those serving as transportation bill conference committee members, to urge them to support federal-aid project streamlining efforts in addition to other transportation issues important to our local agency members. APWA is urging inclusion within new transportation legislation of project streamlining provisions, which include:

- Small project exemption from federal requirements, except for accountability of federal funds, when federal funding is 15% or less of the total estimated project costs or less than $10 million and the project complies with state and local laws and regulations.
- Clarification that federal requirements become applicable on a project only at the time the USDOT funding agency notifies the affected State Transportation Agency or local government that the project has been approved to receive federal funding; that all prior project work is acceptable to federal agencies, provided the work was performed in compliance with state and local regulations; and that federal requirements are applicable only to the phase(s) of the project on which federal funds are expended and to the identified project limits.
- Without placing our natural environment at risk, require federal agencies to perform environmental permit reviews simultaneously with reviews conducted by other federal agencies and by local and state agencies and require action be taken on a permit application within a specified reasonable timeframe (possibly 90 days) of receipt.
- Expansion of identified Programmatic Categorical Exclusions to include highway maintenance, repair or replacement projects and projects constructed within existing rights-of-way.

Beach Blvd. Intracoastal Waterway Bridge Replacement Project, $77.6 million LPA Project ($0.9 million federal funding), Jacksonville, Florida

Conclusion

In today's economic and political climates, substantial increases in transportation funding will not occur. It is clear that we must utilize our available funding as efficiently as possible. One of the cost-effective ways we can achieve efficiency improvements is through improving the project delivery process. Federal Highway Administrator Mendez has committed to allowing as much flexibility to streamline project delivery as current laws and regulations will allow. Only Congress can change the laws to allow needed significant improvements in the process. We need to work with Congress to explain what laws need to be changed, why and how. This is our responsibility, as stewards of our nation's public works.

John T. Davis can be reached at (904) 630-3169 or jtdavis@jtafla.com.

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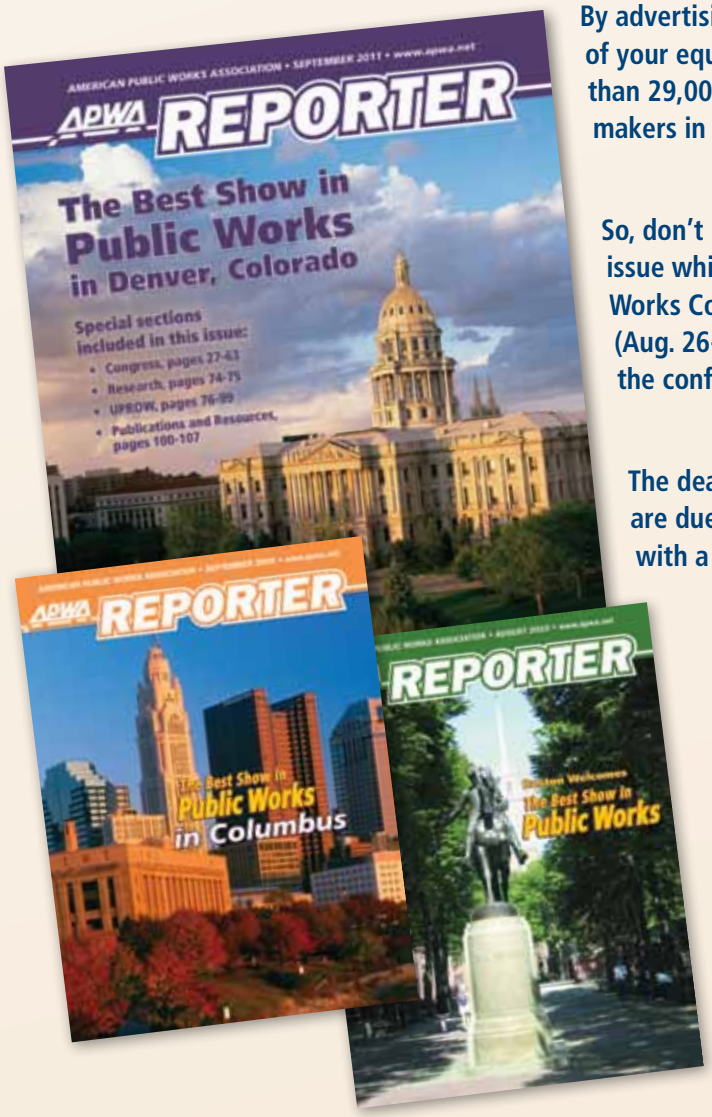

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Call Amanda or Kristen at (800) 800-0341.

In the ring with Greenroads: We got certified – so what?

Freeman Anthony, P.E.
Project Engineer, City of Bellingham, Washington
Member, APWA Transportation Committee
Chair, APWA Transportation Sustainability Subcommittee

Putting an industry-recognized stamp of sustainability on transportation infrastructure projects has been a hot topic in the sector for a few years now with pilot phases, Technical Committees, partnerships, lunch meetings, online surveys, and all the other work plan items that surround a new industry initiative. After tracking the leading systems over the last few years, the City of Bellingham Public Works Department decided to throw the Greenroads version 1.5 manual at a 2011 corridor rehabilitation project and wade into the deep, green end of the pool. The City has worked on and off with the Greenroads Foundation, a nonprofit, third-party transportation infrastructure certification system based in Redmond, Washington and initially developed at the University of Washington (with substantial industry help and input).

As a project engineer for the City's Public Works Department, I began talking with Associate Professor Steve Muench at the University of Washington in 2009 as the City of Bellingham was working on a street rehabilitation project that included its first large-scale use of porous concrete in the Lake Whatcom watershed. A former grad-student's concept of a Leadership in Energy and Environmental Design (LEED)-like certification system for transportation projects was being further developed into something real. The APWA Transportation Sustainability Subcommittee (TSSubcom) realized that the concept could have great value for the industry with the potential of LEED-like success. The success in branding and benchmarking sustainability that LEED had demonstrated over 10 years could likewise help agencies and consultants in the transportation sector to standardize progressive designs and concepts and capture a broad audience. The public relations component of such a system could help engage the public, much like LEED had, to support complex project delivery with multiple stakeholders. For the TSSubcom, sustainability rating systems have been one of our key focus areas and includes INVEST, the FHWA self-evaluation tool, and ENVISION.

Freeman Anthony (right) receives the project certification from University of Washington Professor Steve Muench and Jeralee Anderson of the Greenroads Foundation.

Our Northshore Drive project was one of the Pilot Projects for Greenroads and basically amounted to me dropping the entire construction file on Steve's desk and saying, "Have fun, it's a pretty sustainable road if you ask me." After six or so months of guiding Greenroads staff through my cryptic reports, spreadsheets, specifications and construction data, the City received a score that put us three points and a few minimum requirements shy of certification. Not bad considering we had only submitted our standard City documentation without considering what the Greenroads Manual had wanted to see and without certification as a goal.

The project included a new pedestrian footbridge over a local creek.

We had a great project with some unique, forward-thinking concepts, but our pilot project review experience really laid out the bigger picture of sustainable project delivery. As a public agency's engineering department, we document all aspects of project design and construction via design reports, permits, payment records and other related documentation. During the Greenroads review of the Northshore Drive Pilot Project, I advocated for "minimal additional bureaucracy" and that Greenroads staff utilize standard project documents for much of the review process. While "minimal additional bureaucracy" avoided redundant paperwork, it also didn't fully challenge an agency to design, spec, and build more progressively either. Therein lies the real value of the certification process.

Over the last three years, Greenroads has finished their pilot phase, developed the first complete version of the rating system (known as Greenroads v1.5), and has established itself as an independent nonprofit organization. In early 2010, the City of Bellingham began planning an interurban trail project, committed both state and local funding, added several progressive design concepts, and made the call to go for Greenroads Certification during the first call for registrations in December 2010. The Meador Kansas Ellis Trail project budget was $850,000, which is relatively small, but covers a number of typical urban transportation rehabilitation design challenges and as such was a good candidate to put the system to the test. In April 2011 the City signed a contract for Greenroads to review the project, and certify if it was up to snuff.

The City had no lead consultant, so we took the documentation into our own hands and created a master spreadsheet to track credits, submitted documents, and responses from the Greenroads review team, similar to a typical technical submittal. We initially identified which existing project documents (e.g., permits, design documents, construction reports, planning documents, correspondence) could be submitted to cover credit requirements. In some cases, supplemental memos speaking to specific design aspects and credit requirements were generated in response to feedback from Greenroads. This included

Installation of porous pavers for a parking area that manages roadway runoff

providing additional detail to support programmatic procedures, operational and planning policies, design approaches, and other similar internal documents. City staff also identified credits that wouldn't be possible given the project scope and blanked those off the credit "hit list." In June 2011, shortly after construction commenced, the first round of documents was submitted to Greenroads for the preliminary review, while information for construction-related credits was submitted post-construction under final review.

After our preliminary document review Greenroads noted where additional information or explanation was needed to show how various credit requirements had been met. There was a mix between needing more detail on the design calculations or site layout to programmatic procedures and planning policies employed by the Public Works Department. City responses amounted to everything from a brief memo explaining one procedure or another to submittal of previous departmental policies Council presentations to recalculating certain aspects of the site stormwater design and providing landscaping species information. Throughout the preliminary review, final review, and punchlist process City staff tracked the time spent submitting information to Greenroads for each credit to keep an idea of the overall certification effort.

At the end of 2011 City staff closed out the construction phase and addressed a few remaining credit requirements in time to be honored along with the City of Oak Harbor as the first certified projects.

So what did the City gain from the experience? A couple key things.

The project corridor proudly displays its certification.

First, and foremost, the system required staff to revisit a number of standard design concepts and construction techniques to look for more sustainable approaches. General specification items like the construction management plan, waste management and materials tracking requirements became more detailed and provided more information and options for City staff to consider. While much of the initial design had sustainable features, many more came about as a result of taking that second look at how our staff designs and builds its projects in relation to key credits in the system.

Secondly, we were able to use the anticipated certification as a focal point for stakeholders including elected officials, adjacent businesses, residents, and partnering agencies. This helped in championing the project through the review and construction phase. In the end the project met all the appropriate design and environmental standards and eked in under budget, while providing a high quality, more sustainable end-product that had less waste, more recycled material, and stakeholder buy-in.

In the end, the City of Bellingham Public Works Department delivered a more sustainable project with minimal budget impact (and it will be even less for our next one in 2013) by using the Greenroads system. All of our projects, regardless if they will be Greenroads certified or not or if they are water, sewer or stormwater, will be more sustainable too because of programmatic changes due to the Greenroads standard. A critical look at our system and the credit requirements detailed in Greenroads has provided a platform of systematic improvement that the City of Bellingham will continue to work with as Greenroads matures. And, the signs are nice too. We're looking forward to our second set.

Freeman Anthony can be reached at (360) 319-4642 or fanthony@cob.org.

Roundabouts: Do you want to Supersize that?

Carla P. Anderson, P.E., Traffic Engineering Associate, Kansas Department of Transportation, Topeka, Kansas, and Chair, APWA Road Safety Subcommittee; **Todd W. Thalmann**, P.E., Assistant Vice President, TranSystems, Kansas City, Missouri

Over the last few years roundabouts have popped up at intersection locations throughout the United States, and Kansas is no exception. This popularity can likely be attributed to the reduction of crash severity and improved traffic flow that roundabouts exhibit when compared to signalized or stop-controlled intersections. In Kansas roundabouts have been incorporated at several rural intersections between high-speed roadways (over 55 mph) to mitigate higher-than-average crash history. Interchanges were considered at some of these locations. The Kansas experience has shown that roundabouts address the safety issues quite well and can obviously be constructed for considerably less dollars than an interchange.

Define Oversize/Overweight Vehicles

Oversize/Overweight vehicles, sometimes referred to as SuperLoads, can make it difficult to determine what size design vehicle to use for analyzing movements through a roundabout. The challenge becomes finding ways to accommodate these large loads, many of which are related to the wind energy industry in Kansas, while still maintaining the safety and function of the roundabout design for the majority of the traveling public.

Oversize/Overweight vehicles, or SuperLoads, mean different things in different states. However, in most states it means a vehicle that requires a permit to operate on the state's highways. For example, in Kansas a SuperLoad is defined as a vehicle requiring a bridge analysis because it is transporting a non-divisible load that exceeds 150,000 pounds gross vehicle weight. The transport can move into the SuperLoad category based on various axle loadings as well triggered by single axles with over 22,000 pounds on up to quad-axles with more than 65,000 pounds.

In Indiana, the Indiana Department of Transportation (INDOT) defines a SuperLoad as any vehicle (plus its load), which exceeds 16 feet in width, 15 feet in height, 110 feet in length or weighs more than 108,000 pounds.

Roundabout Design to Accommodate the Oversize/Overweight Vehicle

While these state guidelines help define Oversize/Overweight vehicles that require permits, the primary concern with these vehicles as related to roundabout design is not weight, but length. Trucks with long loads may have difficulty traversing through many roundabout designs without some special accommodation. Ordinary truck apron designs may not be sufficient to accommodate Oversize/Overweight vehicles, but an increased truck apron width can accommodate off-tracking of long vehicles in a roundabout. A balance between the circulatory roadway width and the truck apron width must be struck since too much truck apron can reduce perceived deflection of approaching drivers.

Many Oversize/Overweight haulers have very low ground clearance as well. So when a roundabout is being evaluated for its ability to accommodate an Oversize/Overweight vehicle, the designer will need to consider the low clearance of the Oversize/Overweight for the design movements. This is critical at those points in the roundabout where the actual load, not just the wheels, encroach on the truck apron and curbs.

A larger Inner Circle Diameter (ICD), wider approach widths, and wider circulatory roadway are other accommodations that could be useful to consider. As with all roundabouts these individual components must be evaluated in a holistic way to make sure the general population is provided with a safe roundabout that also accommodates the Oversize/Overweight. To do this, it is essential that the Oversize/Overweight design vehicle be defined early in the design process, so appropriate roundabout geometry and its related operating characteristics can be established for all users.

Pooled Fund Project "Accommodating Oversized/Overweight Vehicles at Roundabouts"

The Kansas Department of Transportation is currently involved in a pooled fund project being conducted by Kansas State University for "Accommodating Oversized/Overweight Vehicles at Roundabouts." The project is to complete the research described in the NCHRP 2012 C-14 research project and is being conducted by Eugene R. Russell, Professor Emeritus and E. Dean Landman, Adjunct Professor in the Department of Civil Engineering

at Kansas State University (KSU). The study partners are the States of Connecticut, Iowa, Mississippi, Ohio, Oregon, Washington and Wisconsin with Kansas as the lead state. Also contributing are the Kansas State University Transportation Center, Mid-America Transportation Center at the University of Nebraska-Lincoln (MATC), and Transoft Solutions, Inc. This pooled fund project is expected to be completed in the summer of 2012. For more information, or to follow the progress of the project, visit the following website: http://www.pooledfund.org/Details/Study/448.

Case Study – Roundabout Project in Osage County, Kansas

A recent Kansas Department of Transportation project that illustrates the importance of accommodating large loads is located in Osage County, Kans., at the intersection along US-75, K-31 and K-258. Kansas Department of Transportation Traffic Engineering Unit recommended a roundabout be considered to enhance the safety of the intersection in a Traffic Investigation initiated in 2009 following a fatality crash. Since US-75 is a primary north-south Oversize/Overweight truck route through the state of Kansas, it was obvious at the outset that the roundabout design would also have to accommodate Oversize/Overweight loads. To ensure the roundabout would enhance safety and accommodate Oversize/Overweight vehicles, Kansas Department of Transportation had numerous meetings and discussions during the planning phase of the project in an attempt to define the design vehicle for this intersection. After raising a nearby overpass to accommodate truck traffic on US-75, Kansas Department of Transportation officials were naturally concerned and wanted to ensure that the roundabout would not become a new choke point along US-75 for commercial trucking.

To help research the appropriate design vehicle for the intersection and to ultimately design the preferred improvements for this intersection, Kansas Department of Transportation partnered with TranSystems Corporation, a national transportation consulting firm located in Kansas City. As data were collected and meetings held with various Kansas Department of Transportation units and the trucking industry, it was discovered that the Kansas Trucking Connection, the state agency through which permits are issued, currently will not issue a route permit for Oversize/Overweight trucks longer than 100 feet or wider than 12 feet, if the route includes a roundabout. In addition, because of the liability that comes with determining whether each individual truck configuration can maneuver the roundabout, a permit is

A wind generator tower navigates a roundabout in Florence, Kansas.

not typically granted until a waiver is signed by the company that they have reviewed the route and can traverse the entire route without damages.

Also, through these discussions with Kansas Trucking Connection and the trucking industry, it was determined that the design did not need to accommodate Oversize/Overweight vehicles turning on or off of US-75. The data indicated the large loads only travel north-south on US-75, especially now that the previously mentioned bridge was replaced north of this intersection. A home manufacturer in Osage, Kans., occasionally passes through the intersection travelling west-to-east, but the manufacturer indicated they did not use US-75 due to various restrictions. Based on this information it was decided that the design did not need to accommodate the larger/longer trucks turning on or off of US-75, and all other movements would accommodate the standard WB-67 truck. The final geometry would be checked to make sure it would also accommodate the manufactured homes, based on load information provided by the manufacturer.

While this data better defined the design vehicles to be used for the roundabout geometry, the actual design parameters of the Oversize/Overweight load still remained undetermined. To further refine these operating parameters, a variety of truck/trailer combinations were evaluated including 130-ft wind blade transports, a 19-axle heavy haul and a 195-ft wind blade transporter. TranSystems evaluated the turning movements of each vehicle and looked at paths using manual rear axle steering, automatic rear axle steering and no rear axle steering. This was done due to the large variety of size, shape, low clearance, weight and steering options present in the trucking industry today. Based on this analysis Kansas Department of Transportation believed that

A large 18-wheeler enters a roundabout in Florence, Kansas.

designing for the largest conceivable turning movement would diminish the integrity of the roundabout and reduce its effectiveness for most vehicles. It also led to the discussion of, "How big is big enough?" Without knowing where the trucking industry will be in 5, 10 or even 20 years, it was challenging to select a design vehicle that was "big enough." It was determined that in addition to the typical WB-67, the geometry should accommodate an Oversize/Overweight truck with an 80-foot trailer and no rear steering. All parties agreed this best represented a balance between the trucking industry and the general traveling public.

To improve the degree of confidence in this decision, TranSystems conducted a virtual drive-through of the corridor from Oklahoma to Nebraska. The intent was to see what restrictions, if any, exist along the US-75 corridor within the state of Kansas. This was done to evaluate the context in which the roundabout would operate. An inventory of each intersection between US-75 and an Interstate, U.S. or state route was compiled. In addition, several interchanges were noted with various county roads along the corridor as well. TranSystems found fifty-one access points meeting these criteria along US-75. Of the 51 access points, 47% (24 points) were at diamond interchanges and 41% (21 points) were at-grade intersections. The typical diamond interchange access point was evaluated using the same criteria as the roundabout and it was found that the roundabout could accommodate loads as well or better than the diamond interchange access points along the route. Many of the at-grade intersections would accommodate longer loads than the roundabout due to the ability to encroach on opposing lanes with appropriate traffic control during the maneuver. This evaluation gave Kansas Department of Transportation additional confidence that the roundabout would not be an additional restriction along the US-75 route.

With the operating parameters of the design vehicle established,

TranSystems was able to evaluate several location alternatives for the roundabout, including an option to offset the roundabout to the west of US-75 and one to locate the roundabout along the center of US-75.

The offset alignment allowed the existing US-75 pavement to be used to replace an existing park-and-ride facility. TranSystems also suggested the park-and-ride lot could be used as a large load bypass route. By diverting large loads off of US-75 and into the park and ride facility, less restrictive geometry could be developed and the Oversize/Overweight vehicles could continue north or south without using the roundabout. A gap of approximately 15 feet would be left in the splitter island on the east side of the intersection to allow Oversize/Overweight vehicles to cross K-268. This gap could be uncontrolled, or if desired it could be controlled via several different methods to restrict access to only permitted users. Control options ranged from hydraulically controlled bollards to movable gates. Either could allow access for the permitted user via keypad code entry, cell phone code entry, card reader or optical license plate scanning technology. The necessary codes, cards or phone numbers could be provided as part of the permit application process. This option would allow the largest Oversize/Overweight loads to bypass the roundabout, using the park-and-ride facility as a staging area, and then cross K-268 with minimal encroachment on side road traffic.

Another option was to locate the roundabout on the current US-75 alignment. To save existing farm buildings, the location was pushed slightly north of the existing intersection with K-31 and K-268. This option would not include a bypass system for larger trucks restricting truck traffic to only those able to traverse the roundabout.

Through the evaluation of these design options, Kansas Department of Transportation engineers decided they would not be comfortable with the bypass option primarily due to management and maintenance concerns. Therefore the latter option with the roundabout on existing US-75 alignment was preferred by Kansas Department of Transportation designers.

As this case study illustrates, coordination and communication is the key to addressing the multifaceted design of rural, high-speed roundabouts and their interaction with Oversize/Overweight truck traffic. The community, Kansas Department of Transportation officials, TranSystems' designers and the trucking industry have worked hard to develop a roundabout that will enhance safety at this intersection while not being overly restrictive to the trucking community. The authors concede much more research is needed related to the interaction of large loads and roundabouts to help define reasonable operating characteristics that allow the safety of a roundabout to operate in harmony with various competing sectors of the transportation industry. Further exploration of bypass alternatives may prove viable in some locations if management and maintenance issues could be resolved. In Kansas, we're on the road to making that happen!

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High-risk rural roads: what can be done to make them safer?

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Road safety is everyone's business whether you are a facility owner or just a private citizen who drives on them. However, owner and maintainer have the unique opportunity to actually address the roadway environment and features to improve safety for us all.

Rural roads have the dubious distinction of accounting for well over half of the highway fatalities in the U.S., while carrying less than 40 percent of the traffic. According to the 2009 Census, 23 percent of the U.S. population lived in rural areas; however, rural fatalities accounted for 57 percent of all traffic fatalities. Recognizing this issue the U.S. Congress established the High Risk Rural Roads Program (HRRRP) as part of the 2005 passage of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). Each state is allocated funds to their state highway agency to be used to address safety concerns on high-risk rural roadways—those roadways functionally classified as "Rural Major & Minor Collectors" or "Rural Local Roads" that are at a higher risk of having fatal or serious injury crashes, i.e., that have a higher than average crash experience.

State and local highway agencies have generally found this program difficult to implement and project funding obligations are not as high as other federal safety programs. The reasons for this are many and emphasize the general problem with addressing safety on local roadways. One of the main reasons is simply the problem with identifying sites with high crash rates, and then making meaningful improvements at these locations given the limited funds available.

This T-Symbol warning sign (W2-4) provides warning of the road ending at a cross street just beyond the crest of the vertical curve. To further define the location of the end, Type 4 Object Markers (OM4-3) are added as seen in the distance.

Locating traffic crashes accurately can be challenging for roadway owners, but this is especially so on the rural locally-owned roadway systems. Severe crash data elements (e.g., location, crash type) are usually available in most state databases; however, the report site information may very well not match the actual location of the crash.

Municipal and county roadways often do not have mile markers for police to clearly identify crash sites. Crashes are usually recorded as between intersections or at street addresses. In rural areas, intersections are far apart and property sizes are large so the precision of this data is lacking. Attempts to address seeming high crash locations on some rural roads in New Hampshire, my home state, highlighted this issue. New Hampshire uses a nodal system, like many states do, with nodes at easily identifiable sites such as intersections and major highway features. New Hampshire found that a number of high crash locations on state-owned roads reportedly

The use of a Reverse Curve Ahead symbol warning sign (W3-1) with advisory speed plaque is a simple cost-effective way to warn of a set of significant changes to the roadway horizontal alignment obscured by the crest of a hill.

happened right at town lines, which coincidentally is an easy node for police to remember.

This lack of good crash location information makes site-specific safety improvement investment decisions difficult. Trying to normalize crash distributions by considering traffic volumes is equally difficult; accurate rural road traffic volumes just don't exist in most states. Throw in the fact that crashes are generally random in distribution on the roadway and you can see why many agencies shy away from tackling this problem.

In light of these issues it often seems impossible to roadway owners to meaningfully address safety issues on these rural roadway systems; but what if the problem is approached from another direction? Instead of just trying to identify site-specific high crash locations, to specifically address the crash types occurring at those spots alone, the features often known to be a safety issue on rural roads are identified and address all the sites having similar features. This doesn't mean data isn't needed anymore to addressing safety on rural roads; it simply means some different data is used in a different way.

The systemic approach is designed to address high-risk roadway features that are correlated with particular severe focus crash types. If some of the roadway features, or possibly the lack of roadway features, can be identified that contribute to specific crash types then targeted safety countermeasures can be applied to all sites with similar features. Maybe an example will help.

The national Fatal Accident Reporting System (FARS) data shows that over 80% of New Hampshire's roadway fatalities occur on rural roads. Similarly, New Hampshire's data shows that approximately 40% of this state's fatal and severe injury crashes occur at horizontal curves. Clearly, drivers in New Hampshire are having trouble negotiating a number of horizontal curves on rural roads and end up running off the road (a crash type) with severe consequences. The next question to be asked is, what roadway features contribute to drivers leaving New

Hampshire rural roads on curves? A few possibilities come to mind: minimal radius of curvature, lack of visual indication of the curve ahead, lack of information on the sharpness of the curve, low roadway friction, etc. If the lack of a visual indication to the driver that there is a curve just ahead is a critical contributing feature to crashes, then a countermeasure of advanced curve ahead warning signs may be chosen to address the issue. With that countermeasure identified, it is a simple matter of determining which curves will receive this treatment.

Determining where to apply this countermeasure may include determination of the crash frequency or rate at each site. However, regardless of the number of crashes or the calculated crash rate at any particular site, all sites with poor visual indication of a

Chevrons (W1-8) are one of the most effective horizontal curve warning signs as they also provide clear delineation of the path as you go. Here chevrons clearly make the alignment of this road which would otherwise be very difficult to determine.

curve ahead carry a strong likelihood of experiencing this specific type of crash in the future. Therefore, a more effective way to approach this would be to simply identify all curves with similar features that lack the advance curve ahead warning signs and then applying this countermeasure to them. Identifying the specific curves meeting your criteria for applying this countermeasure can be done by reviewing roadway characteristics data or, lacking that, by a simple field review or use of mapping technology (i.e., Google maps); all can be effective.

The prior example is based on run-off-the-road crash types occurring on roadway segments, but the same approach can just as easily be applied to intersections crashes, another common high-crash location on rural roadways. One systemic tool developed by the FHWA to address safety at intersections is the *Intersection Safety Implementation Plan Process*, publication FHWA-SA-10-010. This publication describes a process that starts with the determination of a set of low-cost, effective countermeasures that the state would be comfortable deploying and searches the crash data system to identify intersections where the countermeasures can be deployed cost-effectively. This approach is not limited to the highest crash locations. Typically, it focuses on treating the 3-6 percent of the intersections at which 25-45 percent of the targeted intersection crashes exist. The countermeasures to be used may or may not specifically address crash types known at specific locations; rather they address common crash types generally known to be issues in the state or region as a whole.

As you may be thinking now, how do I afford a systemic approach that identifies so many potential mitigation sites with so many potential countermeasures? The key to achieving this is to keep the cost of the safety countermeasures you choose to implement low. Many low-cost safety treatments for roadway segments or intersections have been shown to be very effective with high benefit-to-cost ratios. It may also be the case that higher-cost solutions are required to address a specific and severe safety problem at a given location. No one is suggesting that these higher-cost safety improvements are not prudent for dealing with certain high-crash sites, but in the long run using the systemic approach to safety improvement is an effective way to address those random crashes plaguing our rural roadways and driving down the number of people seriously hurt, or worse, on them.

For more information on addressing roadway safety check out these FHWA sites:

- Proven Countermeasures webpage: http://safety.fhwa.dot.gov/provencountermeasures/
- Noteworthy Safety Practices: http://rspcb.safety.fhwa.dot.gov/noteworthy/default.aspx
- Implementing the HRRRP: http://safety.fhwa.dot.gov/local_rural/training/fhwasa10012/

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New economy trend demands innovation, courage, and more use of common sense

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One of the many goals of the APWA Transportation Sustainability Subcommittee (TSSC) is to promote use of recycled material for construction and maintenance of the nation's transportation infrastructure. Questions that come to mind are, "Why is this goal in our agenda to begin with?" and "If it is an important goal to achieve for all of us, why are public agencies not enthusiastic to recycle materials more often?"

Current buzzwords such as sustainable, green, and environmentally friendly are not really new ideas. Nowadays, we promote these approaches due to our realization of over-consumption and waste of reusable and recyclable goods and materials. For the last few decades, with little regard to possibility of reuse revenue, we disposed of old materials—pavement, concrete, or asphalt, sub-base aggregate, recyclable construction debris—by dumping into landfills. Changing old habits is a cultural change we seek; however, this will not happen overnight. It requires orchestrated efforts by those willing to lead it, identifying and accepting strategic risk, and perseverance no matter how difficult and demanding it becomes.

Why recycle?

Our economy is shifting the focus of cost savings, efficiency and innovation for higher quality, lower cost and sustainability in maintaining and rebuilding our aging transportation infrastructure for our communities. Using recycled materials has always been a hot topic when it comes to economics and life cycle. Public agencies are no exception to this economic trend. Researchers using energy life-cycle analysis have concluded that materials with large refining costs have the greatest potential for high recycle benefits. From a taxpayer standpoint, if money has been spent to generate high-quality material, that investment is lost when that material winds up in a landfill. Needless to say, using recycled materials with high-volume on-pavement construction and maintenance projects such as aggregate bases, asphalt, and concrete have a proven record of consuming less energy, requiring lower cost of construction, and in some cases such as Full Depth Reclamation (FDR) method, by recycling and reusing existing asphalt pavement onsite, the life cycle of new pavement is increased and future maintenance costs minimized.

Often, using recycled concrete, aggregate, and asphalt materials:

1. Requires less money to produce compared with raw material mining. It has lower costs associated with transporting them, and less or no cost of disposing them into landfills.
2. Conserves non-renewable resources and lessens the impacts on green fields and wildlife habitat. It also lowers the concerns of present and future aggregate shortages, which exist within most metropolitan areas.
3. Reduces landfill uses and need for new landfills that are costly, requiring lengthy permitting processes.
4. Requires less processing and reduces energy consumption with less carbon footprint, helping us to maintain a healthier environment.
5. Reduces localized greenhouse emissions generated during materials processing as well as transportation to the site.
6. Reduces off-haul and import of large amounts of material saving energy and reducing wear and tear on existing roads and impacts to the public and businesses.
7. Recycled materials have the same, and in some cases better, life-cycle expectancy and require less cost to maintain.

What are the barriers to increasing our use of recycled material for our pavement structures?

TSSC decided to survey our APWA members to find out the reasons. To make it more manageable, TSSC launched a survey in 2011 that was limited to one state—the state of Washington, rather than nationally. The survey was e-mailed to all APWA Washington members as well as members of ACEC and AGC in Washington. Below are highlights of the survey results:

- 71 members responded to our survey of which 65% were public agencies and 35% were private firms.

- When we asked them if sustainable projects are important to their agency/firm, the answer was 92% yes, but only 36% of them had written policies and procedures for reusing and recycling materials.
- They considered using recycled materials 56% of the time and not very often during the last two years.
- 86% of them relied on APWA/WSDOT specifications for recycled materials.
- When asked what kind of recycled materials were used on their projects, asphalt has the highest percentage of 80%, followed by concrete with 72% and tires/steel/wood/lumber within 15-20% range. Asphalt shingle, foundry sand, and furnace slag survey results had lower percentage use at 4-10%.
- When asked what type of materials they would be interested to use in future projects, APWA members responded that asphalt and concrete were top items in the list.

The following two questions in our survey deserve more detailed explanation. The table at top right demonstrates results of a question about concerns using recycled materials.

The top concerns in order of importance were: **lack of standards, risk due to lack of enough history of use, lack of local competition amongst local suppliers and contractors,** and **lack of technical knowledge.**

The next question we asked was how to promote use of recycled material (as seen in the next table). **Case studies,**

Please rate the following reasons for not using reusable and/or recycled materials on your next project. 1 = most important; 8 = least important

	1	2	3	4	5	6	7	8
Not knowing the benefits	13.2 %	11.8%	**17.6%**	13.2%	14.7%	2.9%	11.8%	14.7%
Lack of technical information	16.2%	**30.9%**	20.6	8.8	1.5	8.8%	5.9%	
Lack of standards	**31.4%**	27.1%	15.7%	10.0%	0.0%	4.3%	5.7%	5.7%
Risk due to lack of enough history behind it	**30.4%**	27.5%	21.7%	7.2%	2.9%	4.3%	1.4	4.3%
Lack of enough local suppliers to create a healthy competition	7.4%	**33.8%**	22.1%	10.3%	7.4%	8.8%	2.9%	7.4%
Lack of local contractors with experience	14.7%	**25.0%**	13.2%	13.2%	4.4%	16.2%	5.9%	7.4%
Lack of knowledgeable designers	7.5%	14.9%	**25.4%**	10.4%	10.4%	10.4%	8.0%	14.9%
Perception that a sustainable project requires more of an upfront budget	14.9%	17.9%	**20.9%**	6.0%	10.4%	10.4%	7.5%	11.9%

In your opinion, what would be the best way to promote the use of recycled/reusable materials? 1 = most beneficial; 8 = least beneficial

	1	2	3	4	5	6	7	8
Case studies	**44.9%**	26.1%	13.0%	7.2%	1.4%	7.5%	0.0%	0.0%
APWA Workshops	**22.4%**	23.9%	19.4%	19.4%	6.0%	6.0%	3.0%	0.0%
APWA Webinars	16.2%	**23.5%**	22.1%	14.7%	4.4%	11.8%	4.4%	2.9%
Construction Industry workshops	4.5%	21.2%	22.7%	**25.8%**	7.6%	7.6%	10.6%	0.0%
Construction Industry webinars	4.6%	16.9%	21.5%	**23.1%**	6.2%	15.4%	7.7%	4.6%
Joint APWA/Construction Industry workshops	18.2%	**25.8%**	19.7%	16.7%	7.6%	4.5%	7.3%	0.0%
Joint APWA/Construction Industry webinars	16.7%	21.2%	**22.7%**	16.7%	3.0%	7.6%	6.1%	6.1%
Technical presentations at conferences	14.9%	**32.8%**	22.4%	20.9%	3.0%	6.0%	0.0%	0.0%
Regulatory Variances	9.5%	**33.3%**	22.2%	22.2%	1.6%	3.2%	3.2%	4.8%

APWA workshops, webinars, and **regulatory variances** were the four top items listed for best ways to promote use of recycled materials.

One can relate these preferences to lack of standards, knowledge, and history of use that came up as top reasons in the first table. Perhaps "Case study" is at the top of the list, because it provides ease of mind when there are projects which already have gone through the process successfully with good history. In the world of recycled materials, there are thousands of researches, standards, specifications, and case studies, but who has the time to look at all the locations and compare the research?

There are and will continue to be many agencies and firms considering recycled and reused materials in their projects. Perhaps a lack of available tools to share experiences and knowledge of using recycled/reused materials points out a need for a sustainable approach? We believe this is an opportunity to locate knowledge-sharing tools in such a place as the APWA website (local state chapters) to link a wealth of information readily available to public agencies, designers, contractors, and suppliers, so that

experiences and success stories can easily be shared and accessed. On a national level, the "Solutions by Topic" webpage could be another method for APWA to support its members' use of recycled materials.

Those who participated in our survey raised concerns about lack of local suppliers and contractors. To start with, TSSC is working to create a page in the APWA Washington State Chapter called "Washington State APWA Recycled Materials Info-Page." We believe that local chapter pages are more useable for recycled materials since it involves local agencies, contractors and suppliers in the same region with similar regulations, resources, maintenance concerns, and guidance documents. Our intention is not to reinvent the wheel but provide links to information that already exists in other sites; information such as technical specification, case studies, and industry publications/ presentations. The success of this page is how user-friendly it becomes. This page will start as a pilot test that will be modified, revised, and reorganized as it evolves and hopefully be used by other state chapters as a model to create their own pages.

Our role as public agencies and the consultants that support them is to promote use of recycled materials for our roadways to provide economic, environmental, and social sustainability.

To convince ourselves – To promote use of recycled materials, we should create a user-friendly Internet-based line of communication that will promote exchange of ideas, sharing project experiences and lessons learned, with access to case studies. The transportation sector needs to use Internet communication learning together to minimize repeat of mistakes and accelerate our reach to better approaches and processes.

Create a policy – This will promote in-house sustainable approaches and make it a requirement to use recycled materials as often as possible. It will also encourage local suppliers and contractors to consider investment in recycling businesses since they see the policy as a long-term assurance to their business.

Create a healthy competition – Public agencies are in prime position to encourage local recycling businesses by bringing contractors and vendors together to develop policies and standards. Healthy competition that arises from these policies will encourage the supply and demand to become balanced. In turn, a competitive environment will benefit the agencies and the public they represent.

Encourage other agencies – By sharing information and experiences on successes and failures, we will be better off.

Collaboration with contractors, designers, and public agency organizations – This is a change of culture to emphasize doing business for a long run. All key stakeholders, designers, suppliers, contractors and public agencies will need to be involved in the collaboration. Public agencies are in the lead seat to bring all the players together and move forward with more progressive incorporation of recycled materials and other design aspects that represent the future of roadway construction and maintenance.

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Choosing the right technique for economical pavement repair

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Road preservation and maintenance options today have grown to involve different levels of repair, all with the same anticipated outcome of extending the life of the existing pavement. Full and partial depth concrete pavement repairs are two tried-and-true repair options that are used to address areas on a roadway where deteriorated concrete is impacting ride quality or the structural capability of a pavement. Where these types of repairs are performed—full or partial depth—depends upon the extent and the location of the damage.

Full Depth Repair

Full depth repair involves removing a portion of the existing slab and replacing it with new concrete, returning the deteriorated areas to their original state. Performing full depth repairs can improve pavement rideability and structural integrity while extending pavement service life.

A full depth repair is normally performed for the following types of distresses: blowups or corner breaks,

Deteriorated concrete is removed from a road using a carbide mill.

Nighttime full depth repair on US 52 Rivers Ave.

D-cracking, alkali-silica reactivity (ASR), full depth joint deterioration, random transverse cracking, random longitudinal cracking, and punch-outs. Whether or not a full depth repair is needed depends on the severity and location of the distress.

Full depth repairs should last as long as the adjacent concrete slabs, as long as proper design and construction procedures are followed. Many full depth repairs are made during preservation and restoration projects that include additional measures such as slab stabilization, dowel bar retrofit, diamond grinding and joint resealing. In using these procedures, the surface where the repairs took place is exposed for the life of the repair making it easier to monitor performance. Covering the distress with an overlay does not correct the cause of the problem and oftentimes the distress manifests itself again, usually as a larger, more expensive problem. This also allows the owner to maintain the existing grade so features such as curbs, gutters, bridge clearances, approach slabs and roadside appurtenances do not need adjustment.

Case Study: Full Depth Repairs on U.S. Route 52, Charleston, SC

U.S. Route 52, also known as Rivers Avenue, is a multi-lane highway that passes through South Carolina as it travels across the northern, eastern and southeast regions of the United States. The history of this concrete surface dates back to the mid-1930s, when Rivers Avenue was the main corridor to the Charleston Naval Base.

Sections of the highway had been treated with uncoordinated repairs including improperly placed joints from previous road widening over the decades and frequent asphalt patches used in place of concrete. Washouts and voids underneath the roadway were being treated like potholes and filled with asphalt, and many slabs had shifted over the years, causing joint faults.

Given the generally good structural condition of the pavement, a decision was made to rehabilitate the original concrete using a non-overlay solution. The repair consisted of 8-inch full-depth concrete patching and then diamond grinding the entire length, including crossovers and intersections, cleaning and sealing of longitudinal and transverse joints, and asphalt median milling and resurfacing.

Because of the high traffic volumes, work was performed at night between the hours of 7 p.m. and 6 a.m. to minimize the impact on the traveling public. One of the challenges for the project team was the lack of adequate quantities as bid to do all the necessary repairs. Consequently the full-depth slab replacement quantities were increased by 65 percent to allow for the repair of all intersecting concrete streets, utility cuts, and proper patch length between joints.

The final product completed in December 2010 is a smooth ride with satisfactory results.

Partial Depth Repair

Partial depth repair is a restoration technique that refurbishes localized surface distress, such as spalling at joints and/or cracks in the upper one-third to one-half of a concrete pavement. When spalls are present on a pavement surface, the ride can be rough and eventually other pavement problems can develop. Partial depth patches replace unsound concrete, restore rideability of the pavement, deter further deterioration, and provide suitable edges for effective joint and crack resealing.

One of the identifying factors in partial depth patches is that they are usually small. Each individual patch typically covers an area less than about 1.2 sq. yards and they are often only 2 to 3 inches deep. When installing a partial depth repair, the extent of the deterioration must be determined, the deteriorated concrete removed, the patch area cleaned, the patch material placed, and then the joint system reformed unless using a hot applied polymer resin for the patch material.

Partial depth repair is most commonly used for spalling, but it can also be used for small areas with severe scaling. Spalling is defined as the breaking, cracking, chipping, or fraying of the slab edges that occurs within 2 inches of joints and cracks or their corners. Cracking, on the other hand, is a fracture through most or all of the thickness of the slab. However, when several small spalls exist along a joint or crack, it may be preferable to repair the full length of the spalled area as one patch.

Workers place concrete on a partial depth repair operation.

Partial depth repair is usually not recommended for visible spalls that extend more than 6 to 10 inches from the joint and are moderately severe. With such spalls it is possible that more deterioration is taking place below the slab surface. These spalls are often caused by material problems, such as D-cracking, ASR, or by corrosion or lockup of dowel bars at transverse joints. Full depth

Backfill material is placed on a partial depth repair job.

repair is more appropriate, and recommended, for those distresses. If there is no obvious indication of the depth or cause of the spalling, coring is necessary to determine whether deterioration exists below the surface.

Case Study: Partial Depth Repair in Mosinee, Wis.

The Wisconsin Department of Transportation (WisDOT) roadway repair on U.S. Route 153 in Mosinee included a mile and a half of repairs on a four-lane divided highway. The work on the highway consisted primarily of concrete pavement partial depth repair and some full depth repair.

Repairs began in September 2010 and concluded smoothly in mid-November 2010. The quick 2½ month rehabilitation using the PDR technique was appropriate for the type of deterioration suffered by this highway. In this situation, it was a more appropriate repair than doing a full depth repair, as the remainder of the pavement was still in good functioning condition. Avoiding a full depth repair can reduce the costs involved with repairing the roadway and ease traffic control concerns through the work zone due to its quick turnaround.

The contractor milled out the deteriorated pavement sections and placed the patch mix within the removal area. The repair sections were sandblasted clean and a grout was applied prior to the concrete placement and then cure was applied. All existing joints and random cracks have to be reestablished through the full depth of the repair when using cementitious backfill materials.

The repair quickly restored structural integrity, improved ride quality, and extended the service life of a pavement with moderate deterioration at the joints. Additionally, rather than replacing or overlaying an entire road, an otherwise structurally sound road was kept intact. The speed of the repair opened the highway to traffic within a shorter amount of time, reducing the time delay to motorists.

Conclusion

Both full and partial depth repair are recommended repair techniques for a public works department's toolbox. Understanding the differences and knowing when to use one over the other is essential, in order to provide a longlasting pavement at the best cost. For more information of full or partial depth repair, contact the International Grooving & Grinding Association (www.igga.net).

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About IGGA

The International Grooving & Grinding Association (IGGA) is a nonprofit trade association founded in 1972 by a group of dedicated industry professionals committed to the development of the diamond grinding and grooving process for surfaces constructed with Portland cement concrete and asphalt. In 1995, the IGGA joined in affiliation with the American Concrete Pavement Association (ACPA) to represent its newly formed Concrete Pavement Restoration Division. The IGGA/ACPA CPR Division now serves as the technical resource and industry representative in the marketing of optimized pavement surfaces, concrete pavement restoration and pavement preservation around the world. The mission of IGGA is to serve as the leading promotional and technical resource for acceptance and proper use of diamond grinding and grooving as well as Concrete Pavement Preservation (CPP) and restoration. For more information, visit www.igga.net.

Public Works and Hurricane Evacuation

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In recent years the world has watched in amazement as coastal cities in the United States have attempted massive evacuations in the face of impending hurricanes. Over a million fled the Louisiana-Mississippi coastal areas before Katrina made landfall in 2005. That same summer Rita inspired a massive exodus from large portions of the Houston metropolitan area that ended in unprecedented traffic snarls. When Irene approached the metropolitan centers of the eastern seaboard in 2010, evacuation for selected portions of Megalopolis was encouraged and confusion ensued. Despite the limits of the transportation networks and public misunderstandings of who needs to flee, evacuation via public thoroughfares remains a cornerstone of public safety.

The history behind hurricane evacuation is closely tied to the transportation infrastructure, meteorological forecasting, and customary practices that have evolved over the last century. During the first half of the twentieth century, predicting the paths of tropical cyclones was much less precise than it is today. With far less advance notice, the Weather Bureau would hoist storm warnings flags as the threat of a disturbance approached the coast—seldom more than a day in advance. Evacuation was a common response among the people living on the barrier islands of the eastern seaboard and gulf coast and in the communities in Louisiana's coastal marshes. As the 1915 hurricane bore down on the Louisiana coast, a sizable number of people evacuated from communities in the wetlands down river from New Orleans. They could travel by train or personal transportation if they had the means to do so. Not all could afford to travel, and as a consequence the storm surge that inundated the region left a number of fatalities. Low population densities in the coastal regions were the most effective mitigation practice and minimized the burden on the limited transportation facilities available at the time.

Before mid-century, personal responsibility for evacuation via either public thoroughfares or on private transit remained the framework for evacuation. The rise of civil defense after World War II and passage of disaster relief legislation in 1950 led to the formalization of public plans for evacuation from tropical cyclones and other threats—such as a nuclear attack. These plans relied on existing transportation networks. In coastal areas narrow causeways typically connected barrier islands to the mainland and presented potential bottlenecks. Again, low populations in the highly exposed coastal areas minimized the threat of serious consequences that these choke points could cause.

Given the inability to provide accurate long-term forecasts, civil defense planners relied on in-place evacuation by sheltering people near their homes. Local plans designated sturdy, multi-story schools as shelters. In a city like New Orleans, for example, there were 167 shelters, most within walking distance of residents. Proximity and redundancy reduced the advance warning time necessary and eliminated pressure on the pre-interstate highways to accommodate long-distance evacuation.

A series of major hurricanes struck the U.S. coasts in the mid-1950s and highlighted several emerging concerns. Increasing recreational development that brought tourists to the coastal areas during a portion of the hurricane season, with little additional development of transportation infrastructure, exposed increasing numbers of people with little hurricane experience to storms. Also, rapid urbanization in coastal cities like Miami and Houston placed additional demands on transportation networks. To contend with these issues, the U.S. Department of Commerce oversaw a national hurricane research project. It produced a model hurricane plan for coastal communities that called for development of detailed evacuation plans. As part of that effort, states designated particular roadways as hurricane evacuation routes and erected signs to help guide drivers in the event of an evacuation order.

Despite this effort, calamities continued to occur as local

residents resisted evacuation. When Hurricane Audrey hit the southeast Louisiana coast in 1957, many local inhabitants opted to ride out the storm in their low-lying homes. At least 500 perished due to the 10-feet-plus surge that demolished homes and businesses across the chenier plains of Cameron Parish.

During the 1960s development of the interstate highway system offered hope for more efficient movement of large numbers of auto-bound evacuees—at least from the major cities. Barrier islands and coastal wetlands were largely unconnected to these new highways, and the causeways that linked seaside communities to inland freeways remained an inevitable point of congestion. For cities like New Orleans, the interstate highways greatly augmented the city's routes of evacuation. I-10 offered paths of escape both to the east and to the west. In addition, the 1950s-era causeway across Lake Pontchartrain provided still another route directly to the north. Yet, each of these highways passed over open water, which in the event of storm would have to be shut down as waves crashed over the elevated pavement. This situation demanded longer advance notice to launch a protracted evacuation process. So, as transportation systems improved, demands for longer notice from storm forecasters became commonplace.

Structural protections built around New Orleans after Hurricane Betsy in 1965 reconfigured the viability of the neighborhood schools as shelters option. Beginning immediately after Betsy flooded 40 percent of the city, the Corps of Engineers and local partners began building a series of massive levees surrounding portions of the urban area with the potential to capture and hold any surge that overtopped the barriers. This new system could cause flood depths in excess of 20 feet. This threat made in-place sheltering an unwise option. Coupled with the interstate highway system, evacuation planners turned to the auto-oriented long-distance evacuation option.

Hurricane Ivan provided the first dramatic test of the personal automobile-interstate highway evacuation model in coastal Louisiana in 2004. As the storm moved toward the coast from warm Gulf of Mexico, local officials called for an evacuation from Louisiana's largest urban area. Over 600,000 responded and they jammed the highways, along with residents from the Mississippi shore who also fled the storm as it veered to the east. What was normally a 1.5-hour drive to Baton Rouge, became an eight-hour ordeal on the highway that passes through miles of wetland and offers few exits and alternate routes.

Officials prudently adjusted the plans and developed a "contraflow" solution to congestion. As Katrina bore down on the Louisiana coast in 2005, crews redirected all interstate lanes on the three expressways in an outbound direction. This greatly reduced the time to Baton Rouge and points beyond and enabled over 800,000 to safely flee the city.

Yet, weeks later when Hurricane Rita threatened Houston, about 52 percent of the population of the Houston area attempted to evacuate—including up to 40 percent of the population in areas that did not need to flee. This surge of humanity, without the benefit of contraflow, overwhelmed the highways and the services along the roads. Consequently, many were stranded on the shoulders of the road as the storm approached.

Since the powerful storms of 2005, recommendations have been made to deploy trains and buses to alleviate the crowded roads. Certainly, buses might help. But southern cities like Houston, New Orleans and Miami do not have the substantial public transit networks like a New York or Chicago that can move millions of people daily. People quite simply rely on personal transport and highways. The gridlock experienced during Rita did prompt more families to carpool when Ike approached the Texas coast in 2008, but once again there was massive congestion along the interstate highways.

Public officials ordered a limited evacuation of low-lying areas in New York as Hurricane Irene approached in 2010. They also planned to shut down the subway before landfall in order to avoid complications that might accompany flooding of the subterranean sections of the mass transit system. In addition, sections of New Jersey highways employed contraflow. So, even cities with effective mass transit systems face disruptions to normal traffic when tropical systems arrive.

Procedures for evacuating thinly settled barrier islands and coastal wetlands are not easily transferred to major metropolitan areas. Highways that can barely handle rush hour traffic become overwhelmed by mass evacuations. In both the Houston and New York situations, lack of awareness of what areas needed to evacuate complicated the process and contributed to an uncoordinated response. Effective communication and timely mobilization must supplement the limited transportation infrastructure.

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Local Crash Data: The How-To Guide

Why you need the data and how to get it

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Why is crash data important to local practitioners?

According to the Center for Disease Control and Prevention, motor vehicle crashes kill more people ages 5 to 34 than any other cause of death. In 2010, over 30,000 people died in motor vehicle crashes in the United States; 431 of those occurred in Kansas. Reviewing local crash data can give local governments a picture of what is happening on their roads and help to identify safety issues as well as possible solutions. Crash data can also be used to determine eligibility in most safety-assistance programs including programs that offer funding and improvements for local roads such as state Highway Safety Improvement Programs.

Several types of data are crucial to effective roadway safety analysis. Data can also be used to develop and support strategic solutions to safety that will have the greatest impact. The three most common types of roadway safety data are: (1) crash data; (2) roadway characteristic or geometric data; and (3) exposure (traffic counts) data. This article will focus on the first type—how local transportation professionals can obtain, analyze, and utilize crash data. This information is useful to anyone seeking to improve the safety of public roads, including city and county engineers, road supervisors, public works directors, consultants, local law enforcement, and elected officials.

Format and availability

Crash data are collected by law enforcement agencies for all known crashes on public roads, and the data are then used to populate various databases. Crash data are available from several resources: official crash reports, the state's crash database, the federal FARS (Fatality Analysis Reporting System) database, and hospital data. Crash data are typically available in one of three different formats—(1) the official crash report filled out by a law enforcement officer; (2) location or spot data created from selected information in the crash report; and (3) aggregate data. These are described in greater detail below.

Safety data type #1: Aggregate data

Aggregate (or summary) data combines data from many crash reports to see a bigger picture than one crash alone. For instance, aggregate data might describe the number of crashes, fatalities or injuries by state, county, city or a data subtype like roadway, person or vehicle type, as opposed to focusing on an individual crash at a specific location.

Because aggregate data do not focus on individual crashes at specific locations, they are incredibly useful in determining safety problems that can be system-wide. This might include behavioral issues that contribute to crash circumstances such as speeding, impaired driving, inattention, etc. For example, a county or municipality may find a disproportionately high number of crashes involving impaired drivers and decide to increase nighttime enforcement.

However, aggregate data are useful for more than behavioral issues. The frequency and severity of crashes can be broken down by location type, roadway type, and collision type. This type of information is very useful in determining engineering countermeasures.

Aggregate data can assist local practitioners if they are considering system-level engineering improvements such as a systematic edge treatment for roadway shoulders (like the Safety Edge) or the application of rumble strips. For example, if a county or municipality notices a disproportionately high number of "roadway departure" crashes on paved roadways—a type of crash that occurs after a vehicle crosses an edge line or center line, or otherwise leaves the traveled way—government officials might consider implementing a strategy that is specifically designed to prevent roadway departure crashes such as rumble strips.

Aggregate data are the most widely available type of crash data and they can be obtained from a few different sources such as your state's Strategic Highway Safety Plan, and the national FARS database. See the sidebar for more information on these sources.

Safety data type #2: Locational or spot data

Locational or spot data are crash data focused on individual crashes at a specific location. For instance, a practitioner might be concerned with

the crashes that have occurred at a specific intersection or segment of road.

Sources of locational or spot data:

SafeRoadMaps: This is a publicly accessible website that visually communicates public health issues related to rural and urban road transportation safety, including fatal crash data. Enter the location of the crash in SafeRoadMaps to get:

- A GoogleMaps satellite photo of the site;
- An actual street level photo of the crash site;
- An interesting zoom from global to street view;
- A ranking of "hot spot" sites around the nation;
- A five-year-plus history of past fatalities at the site;
- Circumstances of past crashes at the site;
- Was the driver(s) impaired, speeding, belted;
- What traffic laws were in effect at the site.

These data are updated annually as FARS data is released. To see a map of the fatal crashes in your area, go to: http://www.saferoadmaps.org/home/.

5 Percent Report: Each state is required by law to produce a list of high crash locations for improvement for the annual 5 Percent Report. This report is in response to the federal requirement that each state document at least five percent of its locations currently exhibiting the most severe highway safety needs. Kansas has developed methods for identifying stretches of road off the state highway system with high crash rates as well as high crash intersections and roadway departure locations.

Both aggregate and locational crash data are used to identify locations in need of further analysis. Aggregate data assists traffic safety professionals in identifying problem locations, while detailed locational data helps identify safety solutions.

To view your state's 5 Percent Report, go to: http://safety.fhwa.dot.gov/hsip/fivepercent/.

The final way to collect locational or spot crash data is to obtain copies of the third type of safety data—actual crash (or "accident") reports—at the location of interest.

Safety data type #3: Official accident reports

Almost all crash data start with an accident report. In Kansas, this 14-page document is titled the Kansas Motor Vehicle Accident Report. It is recorded by the officer who works the crash, and is perhaps the most important element of traffic safety analysis. It is often said analysis is only as good as the data on which it is based. The information recorded on each accident report populates various crash databases including the FARS and state crash databases.

Information recorded on each accident report includes, but is not limited to, crash location details, roadway information, surface conditions, light and weather conditions, time and date of each crash, driver and occupant information, contributing circumstances, injury details, information regarding vehicle maneuvers, pre-crash movements, collision details, traffic controls, and vehicular information.

The benefit of obtaining an official accident report is the level of detail recorded for each crash. Certain details are not stored in any crash database, such as the officer's narrative and scene observations, as well as scene drawings and illustrations. Crash reports are particularly important when preparing collision diagrams. Collision diagrams allow engineers and other local practitioners to visualize particular crash types at intersections or other high crash locations. A practitioner might want to view an accident report not only to assist in the creation of a collision diagram, but also to examine source data regarding the crash. Reviewing local accident reports is the most effective method of crash analysis when specific in-depth analysis is needed.

How to obtain an accident report

Each accident report is retained by the law enforcement agency of the officer who records the crash (county sheriff's office, city police department or state highway patrol) and a copy is also typically sent to and retained by the state DOT.

An accident report is an open record that can be obtained through the law enforcement agency or through the state with a Freedom of Information (FOI) open records request. Local governments are not charged a fee to obtain an accident report. Reports are not always immediately available, however; some crashes may need further investigation or may be awaiting toxicology results.

Some road agencies have good working relationships with their local law enforcement agencies and have worked out an arrangement whereby they are automatically given a copy of each crash report. Because accident reports can be very helpful in assisting local practitioners with crash analysis, it is extremely important to maintain a good relationship with your local law enforcement agency. Law enforcement personnel not only enforce traffic safety laws; they have the most intimate knowledge of crash histories and traffic safety problems because they were at the scenes of the crashes.

Transportation safety issues are multi-faceted and often involve a partnership between engineering, enforcement, education and emergency response. One department cannot work without the others, so engineers and other local practitioners must work closely with law enforcement to solve traffic safety problems.

In the end, each department has the same goal: to prevent crashes, enhance traffic safety and save lives. According to the Kansas Strategic Highway Safety Plan, when it comes to traffic safety, "dialogue and partnering are mandatory, not elective."

Making the data work for you

The importance of crash data cannot be overstated. Most states, including Kansas, make this data available in a variety of forms, but it's crucial to know where to look and how this data can be used. Crash data help local practitioners answer the critical safety questions: who, what, when, where and why.

In summary, having a good working relationship with your local law enforcement agency, reviewing your state's annual 5% Report locations and Strategic Highway Safety Plan, as well as keeping apprised on the crash trends in your area can give you the tools needed to prevent motor vehicle crashes and promote traffic safety.

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More on these sources of crash data

Kansas's Strategic Highway Safety Plan was created to drive strategic investments that reduce fatal and serious injury crashes. The plan contains fatal and serious injury crash data analyzed by system (state highway or locally owned), location type (rural/urban), roadway type (functional classification), crash type, and behavioral areas. The plan identifies key emphasis areas, as well as objectives and strategies for reducing fatal and serious injuries on all public roads. Local data and analysis as well as its improvement are also an integral piece of the state's Strategic Highway Safety Plan. The Kansas Strategic Highway Safety Plan can be found at: http://www.ksdot.org/burTrafficSaf/reports/kshs.asp.

The emphasis areas for the Kansas SHSP were chosen based on the comparative frequency of fatal and severe injury crashes and are as follows: Roadway Departure, Intersections, Occupant Protection, Impaired Driving, Teen Drivers, Older Drivers, and Large Commercial Vehicles.

To view your state's Strategic Highway Safety Plan, go to: http://safety.fhwa.dot.gov/hsip/shsp/state_links.cfm.

FARS (Fatality Analysis Reporting System) Database: The national FARS database stores and analyzes data for every fatality in the nation. The FARS file contains descriptions of each fatal crash reported, and is updated annually. Each case has more than 100 coded data elements that characterize the crash, the vehicles and the people involved. To view fatality data, go to: http://www-fars.nhtsa.dot.gov/Main/index.aspx.

Mapping local crashes in Kansas

One major roadway safety strategy identified in the Kansas Strategic Highway Safety Plan is the geocoding of all crashes. Geocoding is the process of determining the geographic coordinates (latitude and longitude) of a location for mapping and geospatial analysis.

Because some local roads lack a linear referencing system (such as county mileposts) and many local roads have accumulated multiple road names, it is extremely difficult to map crashes on local roads. Assigning a latitude and longitude to each crash will allow the state and its local governmental partners to map crashes on local roadways. Currently the geocoding of crashes is done by Kansas Department of Transportation and relies on information provided on the Accident Report. Because longitude and latitude are not initially captured in the report, geocoding must be done manually. Naming conventions vary from place to place and it is sometimes difficult for Kansas Department of Transportation staff to pinpoint exactly where the crash occurred.

Helpful Kansas roadway safety websites

- Kansas Strategic Highway Safety Plan: http://www.ksdot.org/burTrafficSaf/reports/kshs.asp
- Kansas Five Percent Report: http://safety.fhwa.dot.gov/hsip/fivepercent/2010/index.cfm?state=ks
- Kansas Accident Statistics: http://www.ksdot.org/burTransPlan/prodinfo/accista.asp
- Fatality Analysis Reporting System: http://www-fars.nhtsa.dot.gov/Main/index.aspx
- Kansas Highway Patrol Online Crash Logs: https://www.accesskansas.org/ssrv-khp-crashlogs/index.do
- Kansas Turnpike Authority Online Accident Logs: http://www.ksturnpike.com/news_and_events/accident_report

Lessons learned from installing LED traffic signals: ten years later

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Does changing from incandescent bulbs in traffic signals to LED lamps actually save money? We did an assessment and to our surprise, the switch saved us even more than we had anticipated. The combination of maintenance and energy cost savings resulted in a payback period of four years, which was a full three years shorter than we had estimated.

In early 2003, the City of Auburn replaced all of the incandescent bulbs in our 48 traffic signals with Light Emitting Diodes (LED). At that time not many cities had switched from incandescent bulbs to LED lamps. As engineers we are cautious about trying new technologies. We like to allow others to discover the shortcomings of the technology so we can minimize failures. The energy cost savings realized by replacing the incandescent bulbs and the longer life of the LED lamps were the main reasons we decided to make the change.

Traffic signals traditionally required 150-watt bulbs to provide the illumination necessary to meet the federal guidelines. At a typical intersection we had 32 incandescent bulbs. At the time the average energy cost of operating an intersection was $966.48 annually. The new LED signal heads required only 14 watts of electricity to operate. We determined the typical LED intersection would cost $217.44 annually to operate. The project required replacement of 362 red balls, 358 green balls, 85 green arrows, and 61 red crosswalk signals. The expected savings in energy cost was determined to be $20,248.85 per year. Considering only the energy cost, it was estimated the project would pay for itself in 7.32 years. This analysis assumed no energy cost increase for seven years.

Another desired feature of the LED signals was the long life of the lamp. The typical life of the LED lamp was projected to be 10 years. We were changing an average of 15 incandescent bulbs per week at an average replacement cost of $20 per bulb. We estimated an expected annual savings of $15,600 on the cost of labor and materials needed to maintain the bulbs.

Combining the energy savings and labor and materials savings, we determined the project would pay for itself in 4.1 years, with a total savings of $358,488.

Usually when we speak of "unattended consequences" it is in a negative manner. However, in this situation the unattended consequences proved to be beneficial. Because of the lower power consumption, we were able to install an uninterrupted power supply (UPS) at all our intersections.

Previously, a typical intersection would draw 3,450 watts of power to run the signals. With the switch to LED lamps we are able to reduce the power drawn to 448 watts. The much lower wattage draw made it feasible to install a UPS that would run the intersection from two to four hours. The two-hours run time is more than enough time for most power outages. We are able to provide for a safer traffic flow during major weather events (when most power outages occur). Use of the UPS was not part of our discussion and analysis when making the decision to switch to LED, but it has been extremely beneficial to the City.

Another advantage of the UPS is cleaner power which has reduced the failure rate for controls and other circuit boards. Prior to use of the UPS we experienced power surges that damaged equipment and put signals in flash mode. Overtime call-outs have been reduced to almost none since we installed the LED and UPS systems. The reduced workload has allowed us to put off hiring additional staff, even as we continue to add new signals. We have been able to step up maintenance and rebuild older signals to minimize signal failures. Here again is another unattended consequence of switching to LED traffic signals.

I have heard from colleagues in northern states that icing of the lamps can be a problem in the winter. This is due to not enough heat being generated to keep the lens free of ice and snow. However, in Alabama this has not been a problem. We have now replaced all of the downtown streetlights with LED lamps and are hopeful of the same results as our transition to LED traffic signals.

Due to the positive outcome of our switching to LED lamps, the City of Auburn now uses LED lights exclusively, and the total savings are expected to be $89,622 annually. For more information on how you can make this switch, contact Jeff Ramsey, Public Works Director, at (334) 501-3000 or jramsey@auburnalabama.org.

FHWA's Roadway Safety Data Community of Practice: Online access to data and discussion

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The Federal Highway Administration (FHWA) Office of Safety has launched a Roadway Safety Data Community of Practice. This Community of Practice is a venue for providing access to a variety of federal safety data as well as a virtual gathering place for transportation safety professionals to discuss data. FHWA's Roadway Safety Data Community of Practice is web based, user friendly, interactive, and has a flexible platform for the exchange of information. One critical component of the Community of Practice has been the inclusion of data and resources that are useful to highway safety professionals at the local, county and regional levels. The site was beta-launched in January 2012, with full launch expected in summer 2012.

This Community of Practice is the first focused on roadway safety data and aims to expand the range of audiences that can be reached by providing a platform for information exchange that is free for users and available anytime. The Community of Practice will provide a single access point for transportation safety professionals from the public and private sectors to engage in three types of exchange:

- Source to audience: FHWA will provide descriptions of new programs, resources, data, and other relevant information to be accessed in a single, familiar, user-friendly platform.
- Audience to source: Members of the Community of Practice can pose questions to FHWA regarding data programs, resources, etc.
- Peer to peer: Members of the Community of Practice can ask questions, seek solutions to problems, and provide insight based on their own experiences and perspective.

Recognizing the specific challenges associated with collecting, analyzing and sharing local/regional data, FHWA is working to expand its focus on data improvement efforts to include local and regional data. This will be evident in both of the initial components of the Community of Practice—the safety data dashboard and the discussion forum.

The safety data dashboards display visual representations (maps, tables, charts and graphs) of safety data. The Community of Practice's collection of data dashboards provide the community with the most up-to-date safety data from sources such as NHTSA's National Center for Statistics and Analysis

and FHWA. Although these data have traditionally been presented at the state and national levels, the Community of Practice will include data breakdowns to the county level when the source data includes that information (such as the Fatality Analysis Reporting System). The dashboards will be customizable, allowing users to identify the data of greatest importance to them to focus their visits, while allowing access to the broader range of data as well. Data presented in the dashboards includes fatality numbers and rates overall and by areas of interest such as intersection fatalities, roadway departure fatalities, urban/rural fatalities, etc., along with information on crash costs and other safety measures such as seat belt use rate.

The discussion forums provide an opportunity for members to exchange information about roadway safety data challenges and solutions. Current plans have the forum structured along four areas identified in the roadway safety data capability assessment as critical to the development of robust and effective roadway data systems: (1) collection and standards, (2) analysis and tools, (3) policies and management, and (4) integration and expandability. We look forward to the participation of local and regional transportation professionals in the discussion forums.

FHWA's Roadway Safety Data Program capabilities assessment midpoint report provided initial findings supporting the need for this Community of Practice and the opportunities for it to address some of the issues specific to local and regional professionals (http://safety.fhwa.dot.gov/rsdp/downloads/RSDP_midpointrpt.pdf).

These topics include the following:

- Navigating organizational structure and relationships across state agencies and with localities that may make it challenging to integrate roadway safety data.
- Capturing data from locally-maintained roadways and integrating that with state roadway databases.
- Identifying how to justify costs associated with collecting detailed elements on non-state roads and deciding when this is a reasonable expenditure.
- Prioritizing which elements of roadway data are most important to collect.
- Using analysis tools at the local level including adaptation of existing tools and/or development of new analysis tools.
- Conveying the importance of high-quality roadway data for effective network screening and countermeasure selection.
- Discussing challenges and opportunities in providing access to roadway data.
- Exploring the relationship between information technology (IT) professionals and highway safety data programs.
- Linking roadway data with other data including traffic, crash, and EMS data.

Our nation's challenging economic climate has required a shift in our approaches to improving highway safety, with an increased focus on leveraging resources and improved collaboration. A cornerstone of this improved collaboration has been an increase in the sharing of roadway safety data, and providing expanded opportunities for transportation professionals to engage in knowledge exchange. Traditionally, we have relied on in-person opportunities to discuss data programs, challenges and solutions through venues such as peer-exchanges, forums and conferences. Given constrained resources, innovative alternatives such as the Roadway Safety Data Community of Practice are much needed. The Volpe National Transportation Systems Center, part of the Research and Innovative Transportation Administration, has been a key partner in the development of this platform.

To find out more, please visit the site at http://rspcb.safety.fhwa.dot.gov/SafetyCommunity of Practice.aspx and sign up in the upper right corner to receive updates. You can also contact Heather Rothenberg at heather.rothenberg2@dot.gov for more information.

Winter maintenance considerations in transportation planning

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Whether constructing new or expanding existing roads, the planning for a major project brings together many disciplines, each having a different frame of reference and focus. Transportation is more than just cars; there is mass transit, light rail, bicycles, and pedestrians moving around in the same corridors. Pavement design, lane configurations, streetscape elements, vegetation, storm drainage, and public art are all part of the planning process. Rarely, however, does winter maintenance become part of the planning effort, but minor design details can have major consequences when winter arrives.

Roundabouts assist in slowing traffic while increasing safety and mobility of the public. These items can also be a hazard when snow has decreased visibility or partially covered them. Plow drivers are maneuvering heavy pieces of equipment during marginal weather when visibility is low. A plow impacting a curb can damage both the equipment and the curb line. Sloped curbs instead of vertical curbs along the central or channelling medians can create the visual barrier needed for traffic but a plow blade will ride up over the curb minimizing the damage and injury potential. The turning radius of plow equipment must be considered when setting the curves and locations of curbs associated with these structures so they may be properly cleared of snow. Roundabouts also create unique problems with snow storage. The entrances and exits, as well as pedestrian facilities, use up much of the available perimeter space that could be used for snow storage. Placing snow in the central island will create icing problems if the pavement slopes away from the center. Melt will flow across the pavement and refreeze at night creating hazardous conditions.

Traffic calming devices such as intersection bulb outs and center refuge islands provide a safer pedestrian environment, but they are also obstructions to plowing operations requiring skilled maneuvering by the plow driver. Bulb outs also create pockets that are difficult to clear and can become collection points for debris and snowmelt if not properly constructed with drainage structures.

Many cities are undergoing a change in the way that lanes are laid out. Parking is being removed and bike lanes are taking their place. What may have previously been used as storage for plowed snow now must be cleared for the bicyclists that are using the streets for commuting. Additional passes by the plow will be necessary and, in some extreme cases, expensive and time-consuming snow hauling will be needed.

Pavement in a shaded area will be 10°F or more cooler than pavement exposed to the sun. Snow that falls

Geometry can make roundabouts difficult to plow.

Bike lanes can eliminate snow storage area.

in this area will melt slower, or not at all, compared to snow in a sunny area. Melt water can enter these cooler areas and refreeze, creating ice accumulation. The placement of buildings, fences and even deciduous trees will have an effect on icing patterns on streets.

Sidewalks are an integral part of an urban transportation network. If the available right-of-way allows a detached sidewalk, or walk that is separated from the curb line, it is less likely to be buried with snow by a plow. Citizens are not happy when they just spent time and energy clearing their walk only to see it all ruined in 30 seconds. Full width plowing is critical to open drainage paths for snow melt to enter storm sewers. Setting sidewalks back as little as five feet from the curb line provides a snow storage zone that allows curb-to-curb street clearing in minor storms and still provides pedestrian mobility.

Storm sewer systems are designed to carry storm runoff sway from streets. While storm sewers themselves have little effect on the development of ice on streets, the placement of an inlet can have a positive impact on the extent of ice formation. An inlet in or near a shady area will soon be wrapped in ice. That same inlet, if placed in a location to allow sun exposure, can allow for collection of some of the snow melt and lessen the formation of ice along the edges of streets.

Vegetation is an important part of the urban environment. Some plants are better suited to occasional exposure to deicing chemicals. The effects are not limited to salts in the soil entering the plant through the root system. A 2008 study out of the University of Colorado showed that overspray from liquid deicers coated the needles of pine trees, closed pores and damaged the tree from the outside. Consult with experts on what are better plants to use along the corridor.

There are other factors in urban roadway construction that can impact snow response. At the APWA National Congress in Anaheim, Calif., in August, a panel discussion will be held with snow experts from the U.S. and Canada. We invite you to come learn from these pros about the little things you can implement with a design and build a project that fits the community needs, is a showcase of attractive design, and is not a burden during winter months.

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Ice can develop on pavement if sunlight is attenuated.

The latest in transportation safety news from Transportation Research Board's Annual Meeting

Tony Giancola, P.E., MASc
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Member, APWA Road Safety Subcommittee

I have been attending and have been on committees, panels and task forces of the Transportation Research Board (TRB) for about 20 years. For those APWA members who are not familiar with the TRB, it is one of six major divisions of the National Research Council—a private, nonprofit institution that is the principal operating agency of the National Academies in providing services to the government, the public, and the scientific and engineering communities. TRB's varied activities annually engage more than 7,000 engineers, scientists, and other transportation researchers and practitioners from the public and private sectors and academia, all of whom contribute their expertise in the public interest by participating on TRB committees, panels and task forces. State transportation departments, federal agencies including the component administrations of the U.S. Department of Transportation, support the program and other organizations and individuals interested in the development of transportation. The mission of the Transportation Research Board is to provide leadership in transportation innovation and progress through research and information exchange, conducted within a setting that is objective, interdisciplinary and multimodal.

For many years several TRB committees have focused on safety on local and rural roads. They include but are not limited to: Rural Road Safety, Policy, Programming and Implementation Joint Subcommittee (ANB10 & AFB30); Transportation Safety Planning Subcommittee (ANB10 (3)); Low Volume Roads Committee (AFB30); Roadside Safety Design (AFB20), Transportation Safety Management (ANB10) and the new TRB Roadway Safety Cultures Subcommittee (AN000(1)). The activities, initiatives and publications of interest to local road practitioners from this past year's annual TRB meeting in Washington, D.C. are summarized as follows:

Rural Road Safety, Policy, Programming & Implementation Joint Subcommittee (ANB10 & AFB30)

This mission of this joint subcommittee is to provide a focal point/forum within TRB for research-based activities and current activities related to improving rural roadway safety through policies, programming, and countermeasure implementation.

This joint subcommittee has proposed for NCHRP funding a **"Synthesis of Best Practices for Safety and Crash Data Management among State and Local Agencies Exploring Safety Investments With and Without Crash Data."** This synthesis would involve an examination of current practices among state and local agencies to determine the availability and accessibility of reliable and current data in each jurisdiction to permit effective and accurate crash analysis across all levels of severity: fatality, injury, and property damage. It will also explore state and local agencies that are programming systemic safety improvements when crash data are not available using risk-based and other methods to improve the safety on rural roads. In addition, other issues of interest would be determined such as best practices for managing databases, presentation and distribution of data, and availability of assistance with analysis and countermeasure application.

Low Volume Roads Committee (ABF30)

This committee is concerned with all aspects of low-volume roads including planning, design, construction, safety, maintenance, operations, environmental and social issues. To view the committee website visit http://sites.google.com/site/trbcommitteeafb30/. One recent topic is safety on gravel (unpaved) roads. George Huntington, Wyoming Local Technical Assistance Program (LTAP) Transportation Training Coordinator, presented a report at the February 2012 American Traffic Safety Services Association Road Infrastructure Safety Conference on this topic. Information on Gravel Road Management can be viewed

on the Wyoming LTAP site at http://wwweng.uwyo.edu/wyt2/index.php.

Transportation Safety Planning Subcommittee (ANB10(3))
This subcommittee works in concert with the Transportation Safety Planning Working Group (TSPWG) of the TRB. Currently the subcommittee is continuing efforts, stemming from NCHRP (National Cooperative Research Project) 08-76, Institutionalizing Safety in the Transportation Planning Process; preparing for the upcoming Leadership Conference and marketing efforts including the launch of the revised TSPWG website and the *Directions in Road Safety* newsletter. To learn more about this effort visit the TSPWG website at http://tsp.trb.org.

Roadway Safety Cultures Subcommittee (AN000(1))
This is a new subcommittee of the Safety and Systems Users Group and it is currently organizing. It will be addressing issues associated with changing the American culture toward transportation safety and in making drivers in the U.S. more conscious of improving their behavior (i.e., less distractions, more focus) as we drive our nation's roads. Currently subcommittee members favor a very broad definition of its scope, to include:

- All roadway users (e.g., drivers, passengers, pedestrians, operators, transportation providers, decision-makers)
- All ages (e.g., early education, new drivers, seniors)
- All roadway modes (e.g., auto, truck, bus, walking, biking)
- All sectors (e.g., public, private, nonprofits)
- Large breadth (e.g., individual, community, corporate, national, global)

Some of the individual topics that were raised:

- How does safety culture influence specific roadway safety issues (e.g., drinking and driving, seatbelt use, fatigue, distraction, and speeding)?
- What does it take to change attitudes and beliefs? How would the cost compare to other safety strategies and countermeasures?
- How can we assess and evaluate the effectiveness of safety culture programs, especially when they may not be comparable?
- We need to look to other sectors for models (e.g., family kit model for emergency preparedness; smoking campaigns)
- Recognize that cultures are different; as such, there is not a single "safety culture" (e.g., rural versus urban cultures; generational cultures; national cultures)
- Need to think about bringing others into this effort: sociologists, health professionals, psychologists

In addition to the TRB activities, other noteworthy publications below have been released this past year that will be useful transportation safety tools for local government public works and transportation agencies. They include:

- American Traffic Safety Services Association/National Association of County Engineers joint publication in February 2012 entitled *Cost Effective Local Road Safety Planning and Implementation*. This publication expands on an earlier publication produced in 2006 and provides a general guide that local officials can utilize to identify and quantify existing safety issues, identify potential solutions to those issues and identify potential state and local partnerships to fund them. Visit http://www.atssa.com/NewsPR/NewslettersPublications.aspx for more information.
- *Roadway Safety Foundation's publication Roadway Safety Guide*. This publication, with a planned release date this summer, is a revision and rewrite of the publication produced ten years ago. It serves as a resource for elected officials, community leaders, civic groups and all stakeholders interested in improving safety on their highways and roads. Visit www.roadwaysafety.org for details.

The above update on some critical areas of interest to local government agencies provides useful information for your use in improving safety on our public roads.

Tony Giancola is an APWA Life Member; Secretary of the Roadway Safety Foundation; former Chair, TRB Low Volume Roads Committee; and Retired Executive Director, National Association of County Engineers. He can be reached at (202) 723-1859 or tonygiancola@rcn.com.

Can they read your signs?

How to develop a streamlined strategy for meeting FHWA traffic sign compliance dates

Leslie McCarthy, Ph.D., P. E., Assistant Professor, and **Seri Park**, Ph.D., P.T.P., Assistant Professor, Villanova University, Villanova, Pennsylvania

The Federal Highway Administration (FHWA) created minimum traffic sign retroreflectivity levels through its *Manual on Uniform Traffic Control Devices* (MUTCD) in response to a congressional mandate in the 1993 Department of Transportation Appropriations Act. FHWA set target deadline dates in the 2009 edition of the MUTCD for public agencies to comply with these standards. Subsequently, proposed revisions to the compliance dates were published in the *Federal Register* on August 30, 2011. Regardless whether the proposed revisions to the compliance dates are accepted, all public agencies must implement and continue use of a sign assessment or management method and all regulatory and warning sign retroreflectivity values must be maintained at or above the established minimum levels. These two actions must be taken within two years from the effective date of the revised 2009 MUTCD.

For a local public agency that does not formally possess a traffic sign inventory database, creating one would help ensure compliance with retroreflectivity standards. A formal sign inventory can help to reduce an agency's risk of liability when violations or crashes occur at locations where signs are the main form of traffic control. According to the Institute of Transportation Engineers' *Traffic Sign Handbook*, results from a highway tort liability study in Pennsylvania showed that sign deficiencies were cited as a leading factor in the sampled tort actions, second only to deformities in pavement surfaces. In addition, sign deficiencies were cited as the cause in 41% of crashes in which a fatality or serious injury occurred. For these reasons, it was essential that a system be developed that local public agencies can use to manage and assess their infrastructure and monitor exposure to liability.

An example of a traffic sign that failed retroreflectivity minimum values. All regulatory signs owned by public agencies must be maintained at or above MUTCD minimums in the near future.

Ideally, the basis of a sign inventory method would include data such as average daily traffic, crash details, crash locations, etc., but much of the information used in sophisticated crash analysis is not within the municipal resources to collect or is simply not available. A more realistic approach is to identify the kind of data that typical local agencies do have in proposing a method for prioritizing sign inventory assessment locations.

For most local public agencies, no overtime is budgeted for visual nighttime sign inspections. In general, assessment of signs is based on police patrols on nightly routes or on community feedback regarding signs exhibiting reduced visibility. In many cases, replacement work orders are used to address signs when budget and schedule permits. In most states, the local public agencies are faced with the challenge of having jurisdiction over the majority of traffic signs, but

little resources to manage them in a sustainable manner.

A few local public agencies in southeastern Pennsylvania volunteered to serve as the beta-testers of a risk-based sign inventory strategy centered upon available resources. The three municipalities differed in characteristics such as land access and usage, centerline mileage, population, and staffing levels. Municipality 1 had a 2008 census population of 30,878 within a 13.77-square-mile area that is primarily suburban with multiple business districts and its own police department. Municipality 2 had a 2007 census population of 28,886 within a 19.8-square-mile area with similar features to Municipality 1 (including its own police department). Located in a rural setting, Municipality 3 had less than half the population over similar land area, no police department, and minimal traffic signals in its jurisdiction, relying more on traffic signs. Average daily traffic counts were not available for the majority of local roads in the jurisdictions studied; however, crash data was obtainable for all townships and the method used in the study was crash-based. Out of 2,012 reportable crashes in the three municipalities, 268 crash reports (19%) cited either a stop sign or yield sign present at the crash location.

A streamlined strategy was developed in which local public agencies can focus on each group of signs sequentially by assigning a tiered approach, capturing signs at the highest priority locations first. The local public agency would then continue collecting the next set of signs, considered to be of lessening risk, until all sign assets are recorded for a particular jurisdiction. Establishing the criteria for the tier

Lower functional class roadways encompass the majority of land access and consequently, the majority of all types of traffic signs.

system was done with feedback from the municipalities involved in the pilot study. It was determined that a location with three or more crashes within the previous three years is considered as a high-risk location. Properly labeling signs in the database under the designated tier allows for a sustainable asset management system. After completion of the sign inventory database, local public agencies can use a query to assess and replace all signs or other assets (e.g., degraded sign posts) that are near locations with the highest risk involved.

All non-signalized intersections with three or more reportable crashes in the previous three years were identified by analyzing either State DOT or municipal crash records. These locations were observed to identify the traffic control device type and intersection type, in order to filter the crash data. For example, crashes that involved a traffic signal, flashing signal, police officer or flagman as the operating traffic control device were screened out of the process of determining Tier I locations. In addition, if a crash was coded to an Intersection Type

Sign retroreflectivity is measured using a retroreflectometer and then numerical values are used to determine whether replacement is needed.

of "midblock" (hence, not at an intersection), then that crash site would also be screened out from the Tier I locations. The remaining data from the database was evaluated to determine all non-signalized locations with three or more crashes in the past three years.

Signs near midblock locations with three or more crashes in the previous three years were classified as Tier II. Signs at signalized intersections with three or more crashes in the previous three years were classified as Tier III locations. Only Tier I, II, and III locations would require any analysis of crash data. The remaining sign tier classifications can be developed based on engineering judgment of locations that require the most safety attention and roadway classifications. After all locations for each sign tier are established, each location can be marked on a map and regulatory and warning sign information collected. An inspection of each sign and recording other aspects such as sign post condition, sign's distance from edge of pavement, etc., that contribute to asset management is also recommended.

For Municipality 1, the time spent implementing the streamlined strategy was continuously measured. A total of 25 hours were spent for the collection and interpretation of crash data. Field measurement of sign retroreflectivity and other sign characteristics took 15 hours. Finally, the time required to input the field data to the sign inventory (an Excel database) was 20 hours. Therefore, approximately two weeks was required to record all 90 Tier I signs for Municipality 1.

With the adjusted FHWA compliance dates approaching, employing a streamlined sign inventory strategy would provide local public agencies with a manageable approach to an otherwise overwhelming process. Although the determination of sign tiers based on crash frequency requires up-front effort, local public agencies will benefit from creating an established record of high risk locations for engineering and litigation support in the future. As with any asset management system, a sign inventory is designed to be a living tool. When new countermeasures are implemented, the previous tier rating of a sign or location must be updated according to the proposed improvements. For example, if a countermeasure changes an intersection governed by stop signs to an intersection controlled by a traffic signal, it could change the signs at this location from Tier I to Tier III or lower (depending on the new frequency of crashes). Current replacement procedures for vandalized or damaged signs should likely remain the same, but with priority placed on updating the sign inventory database after replacing, removing or installing a traffic sign.

Local public agencies that have already begun development of a sign inventory can implement a tiered strategy by analyzing crash data afterwards to determine sign prioritization ratings for each sign. It is recommended that after the development of a sign inventory, local public agencies should continue periodic surveillance of signs to observe and address factors that can affect sign retroreflectivity, including frost and dew, accumulation of dust and dirt, sign direction, graffiti, and sign post condition.

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Signal Strength

Ethernet over Copper may prove to be a preferred option that allows America's smaller cities to modernize traffic signal systems without breaking the bank

Tuan Nguyen
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Many American cities with populations of 15,000 to 50,000 are between the rock of technology need and the hard place of limited budgets.

These cities typically operate their traffic signal systems based on outdated, 1200-baud frequency shift keying (FSK) communication systems and, although technology has marched forward in favor of fiber-optic networks, few city budgets are healthy enough to support the cost of overhauling the entire communication system and installing fiber.

Further complicating the economic picture is the fact that traffic signal equipment manufacturers are beginning to discontinue support for FSK systems, so cities won't be able to keep these systems operating long term without incurring significant expense. Within the next five to 10 years, maintaining legacy traffic signal hardware likely will cost as much, if not more, than a new fiber installation would cost today.

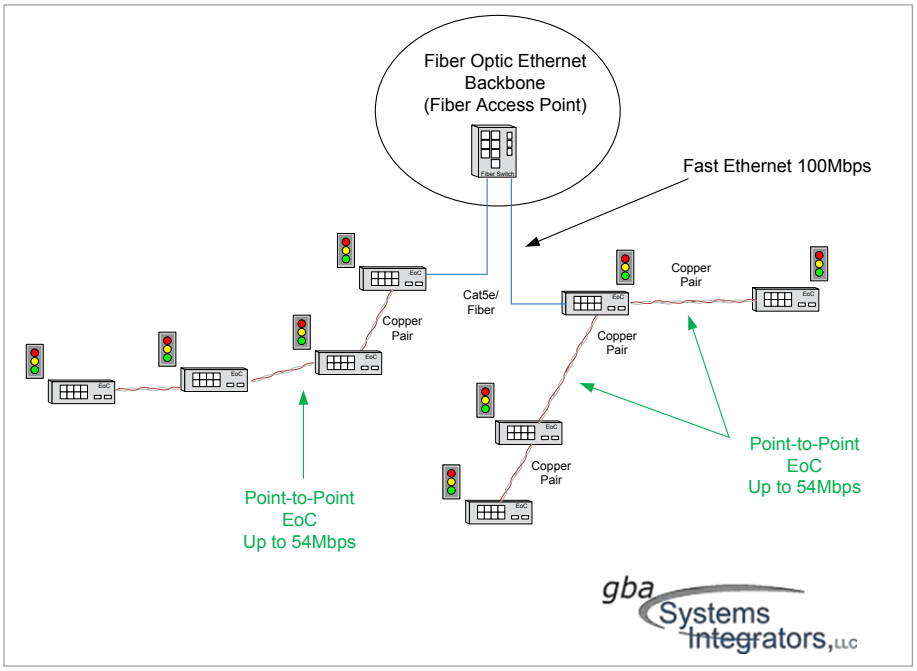
American cities with populations between 15,000 and 50,000 can cost-effectively modernize their traffic signals using Ethernet over Copper and still maintain the ability to install fiber later.

Fortunately, many cities can enhance their system's functionality and extend the life of their existing networks through an affordable technology alternative: **Ethernet over Copper** (EoC).

A cost-effective upgrade

Ethernet over Copper can incorporate existing traffic signal interconnect copper landlines, unused fire protection and police emergency callbox systems and other, non-traffic-related copper systems that government agencies no longer use. While these low-speed systems cannot be connected directly to the Ethernet, newly available network devices—including a capable Layer 2 EoVDSL managed hardened switch and VDSL copper pair hardened Ethernet Extender—allow twisted-pair copper cables to be utilized to supply the bandwidth required for an Ethernet connection of traffic signals over relatively short distances.

Although fiber has emerged as the preferred choice for high-capacity/high-speed communication networks where demands of one gigabyte or more exist, most cities' primary traffic signal needs are for short-haul installations with terminal runs branching from a main stream. If these branches only need to carry low-bandwidth data to and from signal controllers, as usually is the case, EoC is an affordable, functional solution that will deliver enough bandwidth capacity to extend the life of a city's existing traffic signal system by ten years or more. Thus, EoC represents a means for cities to modernize their infrastructure at a reduced cost while maintaining the ability to install fiber at a later date.



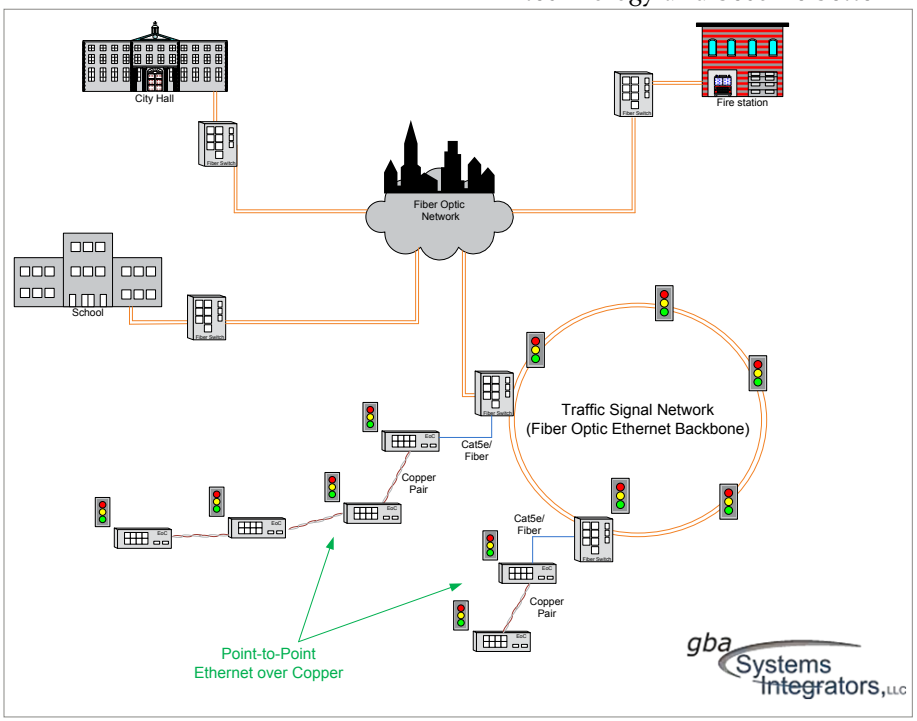
EOC's advantages

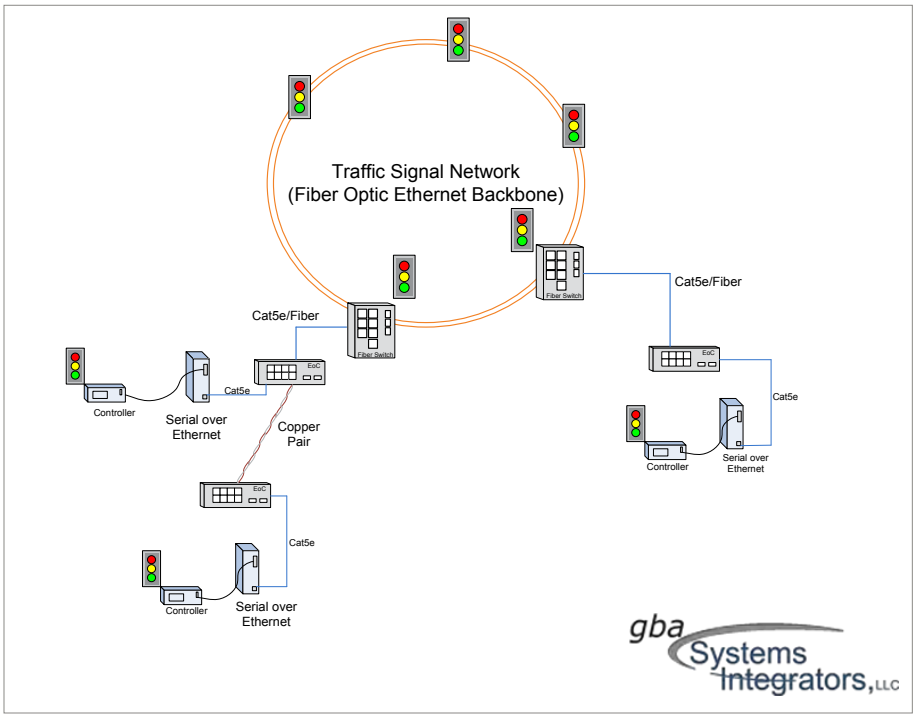
Utilizing existing copper is cost effective because it allows cities to sidestep hefty material, labor, and construction costs—typically the highest cost in a fiber installation project. Developing an EoC system can reduce initial installation costs by up to 100 times as compared to installing fiber. Generally, the larger a city's existing copper infrastructure, the greater its potential savings. Some states also have available ITS, intersection capacity improvement, or air quality improvement grant programs that can help offset the cost.

EoC's reasonable price tag, however, is not the only—or even the most significant—advantage to smaller cities. It also:

- Can be a city's first step toward developing an intelligent transportation system, boosting communication system functionality that permits, for example, the addition of cameras and limited traffic-flow monitoring.
- Provides portability. When a city's budget increases and allows fiber installation in key locations, installed EoC equipment can be relocated within the system to provide expanded service at other locations.
- Permit signalized intersections to be upgraded by installing low-cost, serial-to-Ethernet conversion equipment, and allow existing FSK and other serial devices to continue to be utilized in a modern IP-based EoC network. By upgrading this existing infrastructure, cities can modernize their capabilities, maximizing Ethernet data communication speed to up to 45 Mbps over a single copper pair, and provide reliable network communication to serial devices and others.
- Can streamline communications between system elements. Unlike FSK, for which various components within the system might have differing requirements, EoC is IP-based.

In addition to allowing system components to "talk" to one another more efficiently, EoC can be more easily managed as a city's transportation department or public works staff, maintenance personnel and service providers turn their focus away from fading FSK technology and become better





trained and more proficient with IP-based systems.

- Allows remote management and monitoring of traffic signal systems to be implemented through Ethernet capability and access, greatly reducing maintenance and troubleshooting costs while allowing real-time observation of systems operations.
- Reduces citizens' travel time by more effectively timing, managing and utilizing traffic signal systems capabilities.

Evaluating EoC as an option

To determine whether EoC is an option for the implementation of a more robust communication system, cities first should engage an expert ITS communication and network consultant to evaluate the availability and condition of existing copper, and to help define the dedicated uses for the EoC installation. Each city's communication needs are unique, as is each location where copper is already installed.

The consultant should conduct an in-depth review that analyzes, among other issues, the city's long-term bandwidth needs and priorities, and determines the types of the communication hardware devices required. Such an audit, which typically costs less than $10,000 and requires no more than a week or two to complete, will greatly assist a city in determining whether its existing copper cable infrastructure can be utilized to achieve the desired result.

If the analysis shows that using EoC devices and technology will effectively address the city's needs, the city and the consultant should next develop a structured IP scheme that includes appropriate city departments, identifies end goals and related bandwidth needs, establishes priorities and relevant costs, determines the most cost-effective technologies and equipment types based on what the city wants to achieve, and ascertains how the EoC system will be managed and maintained. The IT/Network consultant also can ensure that the city implements a base structure that will ease the transition to fiber at some future date when this is required.

Cities need to plan now for the future transition of their traffic signal management systems to fiber networks, which one day will likely be an integral piece of a citywide intelligent communication system.

In the meantime, EoC offers a practical, affordable and functional alternative that often can be a city's best first step for moving out from between the rock and the hard place of technology and budget.

Tuan Nguyen is an IT/network engineer and computer engineer with GBA Systems Integrators, LLC, which provides traffic engineering and ITS network design/integration services for complex communication systems across the United States. Nguyen can be reached at (309) 558-0165 or tnguyen@gbasi.com. GBA Companies employs a staff of 160 in Lenexa, Kans., and has offices in Missouri, Nebraska, Colorado and Illinois.

A GBA Systems Integrators employee installs an Ethernet over Copper device that supplies the bandwidth required for an Ethernet connection of traffic signals.

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Salt Lake City's Airport TRAX Extension

The largest continuous section of geofoam fill in the U.S.

Sue Rose
Principal
Rose Public Relations
Denver, Colorado

In 2008, Construction Management General Contractor Stacy Witbeck started early reviewing the preliminary design for the Utah Transit Authority (UTA)'s TRAX airport extension from downtown Salt Lake City valued at $200 million. The light rail extension travels along North Temple to the Salt Lake City International Airport. At the time of this writing, the extension is 60% complete, with a completion scheduled for summer of 2013.

Each of the two sections is estimated to be larger than any known continuous section of geofoam fill used in the U.S. "West Valley Light Rail Project was 2,130,000 cubic feet. This was installed in seven different sections, whereas the airport line is 1,890,000 installed in two different sections. Each of the two airport line sections tops any other continuous section of geofoam in size," explained Ryan Snow, Project Manager. The EPS manufacturer, ACH Foam Technologies, provided Types 29 and 39 Geofoam for the bridge approaches in two sections of equal size for a quantity of over one and a half million cubic feet, or 500 truckloads of geofoam.

Snow explained that it was necessary not only to complete the airport extension under budget and on time, but also that "UTA relied on us to understand the community via public outreach. It was important to make the inconveniences inherent in a project such as the TRAX airport extension—such as road closures and traffic delays—as painless as possible. We set out to find every possible means of efficiency—in cost as well as timeline."

Beginning stages of geofoam installation in late December 2010. (Photo credit: ACH Foam Technologies)

Ranked sixth among U.S. transit contractors by *Engineering News Record* (ENR), the firm rose beyond the UTA's expectations.

We asked Snow what made this transit project unique. "A portion of the extension from 600 West to 400 West on North Temple is a viaduct which crosses over the Union Pacific Railroad tracks and the UTA Frontrunner tracks. For this portion of the project we developed a unique team approach we call the Alliance Contracting Method. The UTA, together with the City of Salt Lake, and Stacy Witbeck, worked as a team to identify cost-saving approaches based on our estimated budget. Cost savings identified were split three ways between all members of the alliance agreement. "The Alliance method worked superbly—with a cost savings over 20%." Snow added that the overall airport extension is currently 5 to 10% under budget.

How, we asked, did the project save this amount of money?

"Well, we instituted several cost-saving measures. Geofoam was installed in the viaduct structure as part of the Alliance model. The team evaluated various fill materials and determined that geofoam would assist us in keeping on schedule and costs under budget for several reasons."

Geofoam's light weight allows for it to be easily moved and installed on the job-site without the need for heavy equipment. (Photo credit: ACH Foam Technologies)

Geofoam weighs in at a whopping 1 to 3 pounds per cubic foot (16 to 48 kg per cubic meter), which is 100 times lighter than soil and 20 to 30 times lighter than other alternative lightweight fill materials. This extreme difference in unit weight, compared to other materials, makes EPS geofoam an attractive fill material to significantly accelerate construction schedules.

Because geofoam weighs only 16 to 32 kilograms per cubic meter (1 to 3 lbs per cubic foot), large earthmoving equipment is not required for construction. After the blocks are delivered to the construction site, they can easily be trimmed to size and placed by hand. In areas where right-of-way is limited, geofoam can be constructed vertically and faced, unlike most other lightweight fill alternatives. It is also unaffected by adverse weather conditions.

"The ease of installation was one aspect of our decision to use geofoam. Settlement was another major concern. When compared to traditional soil fill, we found that the impact of soil settlement on the adjacent Union Pacific Railroad area would be eliminated with the use of geofoam. While surcharging the ground with soil exerts a lateral load on existing structures, geofoam does not," said Snow.

Net Zero Vertical Pressure

When using geofoam, blocks are installed below-grade. Geofoam greatly reduces vertical pressure by a 120/1 ratio. Geofoam embankments were designed to produce zero net load on the foundation soils. This is accomplished by full load compensation or removing a volume equal to the weight added by the new construction.

Lateral Weight Reduction

Not only is the vertical pressure decreased by the use of geofoam, it also exerts no horizontal force on the bridge abutment and supporting walls as with other traditional fill materials.

The diagram below shows lateral pressure of soil compared to geofoam. Note the small gap between the geofoam blocks and the wall of the structure. Soil creates approximately 40 lbs per cubic foot of lateral pressure. This lateral pressure is eliminated with the use of EPS geofoam.

The use of geofoam backfilling against a vertical structure completely eliminates lateral pressure on that structure, whether it is a bridge abutment, retaining wall, or foundation wall. For example, with a foundation wall going 30 feet below grade, the compacted soil will create 3,750 lbs of vertical pressure at the wall base and 1,250 lbs of lateral pressure at the base of the foundation wall. The use of geofoam will greatly reduce lateral and vertical pressure.

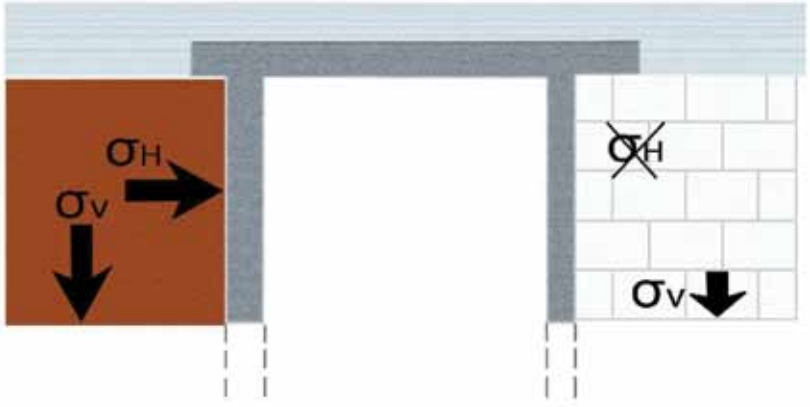

Diagram showing lateral pressure of soil compared to geofoam. (Image credit: ACH Foam Technologies)

To reduce project costs, a thicker three-foot lightweight concrete load distribution slab was used rather than the traditional eight-inch slab. (Photo credit: ACH Foam Technologies)

Another strategic time- and cost-saving strategy employed by Stacy Witbeck for the first time was a new technique for the final surface on the geofoam. "Traditionally," explained Snow, "we would pour a load distribution slab to surface the geofoam. For the first time, we decided to create a thicker section of lightweight concrete—about three feet thick, rather than the traditional eight-inch slab. This is the first time this technique has ever been used, to our knowledge. It was a cost savings approach, and we put the slab design through a rigorous review process to address these questions: (1) Would the thicker, lightweight slab function from an engineering standpoint? and (2) Would the thicker slab impact the integrity of the geofoam? We determined through design calculations that the thicker lightweight surface would provide functionality and cost savings while preserving the integrity of the geofoam."

According to Snow, the project saved two years of inconvenient road closures and traffic delays. "If we had used traditional embankment materials, the project would have lasted an additional two years. Because the geofoam doesn't require settlement, we can have the project completed two years ahead of schedule. That's not just time, but money saved. Commuters benefit tremendously, and the result is a happier community."

"The viaduct portion of the project was closed down for 16 months, which was four months ahead of schedule," added Snow. "We are appreciative of Salt Lake City and the UTA for expediting the process and minimizing traffic delays."

Snow elaborated on a third method for cost savings on the project. "Stacy Witbeck was able to perform test shafts to determine the load bearing capacity of the drill shaft casings on the viaduct. We were able to reduce the diameter of the drill shafts significantly and use smaller casings without sacrificing load-bearing capacities. This process contributed to significant cost savings in the alliance agreement."

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APWA announces the 2012 Public Works Projects of the Year

Each year, APWA presents the Public Works Projects of the Year awards to promote excellence in the management and administration of public works projects, recognizing the alliance between the managing agency, the contractor, the consultant, and their cooperative achievements. This year's award winners will be recognized during APWA's International Public Works Congress & Exposition, which takes place August 26-29 in Anaheim, California.

The 2012 Public Works Projects of the Year Awards Committee consists of Committee Co-Chair Stephanie L. Reid, City Engineer, City of Lincoln City, Ore.; Co-Chair Joel G. Schilling, Water Resources Scientist, Schilling Consultant Services LLC, Mahtomedi, Minn.; Tena S. Campbell, Principal, Bowen Collins & Associates, Draper, Utah; Jeffrey Dale Hancock, P.E., Professional Engineer, SMH Consultants, Manhattan, Kans.; Jill M. Marilley, P.E., Senior Project Manager, HDR, Shoreline, Wash.; David Mason, P.E., Senior Project Manager, CDM Smith, Nashville, Tenn.; Marcus J. McNamara, Project Engineer, Orchard, Hiltz & McCliment, Livonia, Mich.; Gordon A. Munro, Technical Services Leader, Kennedy/Jenks Consultants Inc., Portland, Ore.; Stephen A. Orosz, P.E., Project Manager, MNS Engineers, Inc., Santa Barbara, Calif.; and Murray William Steer, Manager, Sewers Operations, City of Vancouver, British Columbia.

The winners of the 2012 Public Works Projects of the Year Award are:

Disaster or Emergency Construction/Repair

- <$5 million: Emergency Repair of the Pali Trail
- <$5 million: Via Verdi Culvert Collapse Emergency Response Project
- $5 million but less than $25 million: Hurricane Irene Repairs – Route 2
- >$75 million: Vermont's Tropical Storm Irene Recovery

Environment

- <$5 million: College Gardens Park Stormwater Project
- $5 million but less than $25 million: Cave Creek Sanitary Sewer Expansion
- $25 million–$75 million: Charnock Well Field Restoration Project
- >$75 million: Lake Oswego Interceptor Sewer

Historical Restoration/ Preservation

- <$5 million: Historic Wood Paver Restoration
- $5 million but less than $25 million: City Market Building
- >$75 million: Bridge of Lions Rehabilitation

Structures

- <$5 million: SR 14 Cape Horn Pedestrian Undercrossing
- $5 million but less than $25 million: Transit Operations Facility
- $25 million–$75 million: Wilmington Waterfront Park
- >$75 million: Big Tujunga Dam Seismic Rehabilitation and Spillway Modification Project
- >$75 million: New City Hall and Civic Plaza

Transportation

- <$5 million: Anacortes Ferry Dock Rehabilitation and Guemes Island Ferry Dock Repair Projects
- $5 million but less than $25 million: SW Burnham Street Improvements
- $5 million but less than $25 million: East Hamilton Waterfront Link – Multi-use Pedestrian Bridge
- $25 million–$75 million: Northeast 36th Street/SR 520 Overpass and Roundabout Project
- >$75 million: Keystone Parkway Corridor

PROJECT OF THE YEAR

DISASTER OR EMERGENCY CONSTRUCTION/REPAIR
LESS THAN $5 MILLION

Emergency Repair of the Pali Trail

Managing Agency: National Park Service
Primary Contractor: Oregon Woods, Inc.
Primary Consultant: Yogi Kwong Engineers, LLC
Nominated By: National Park Service

Shortly after a severe rainstorm on April 13, 2010 destroyed a trail bridge to Kalaupapa, Yogi Kwong Engineers, LLC (YKE) was retained by the National Park Service (NPS) as geotechnical design engineer to support Oregon Woods, Inc. for an emergency design and construction of a new bridge with improved bridge foundation and tie backs. This bridge provided the only access by land to the Kalaupapa Settlement, a former leper community under state care. The bridge directly affected the livelihood of the community and necessitated a quick repair so business in the area would avoid bankruptcy.

NPS, who maintains the Pali Trail, retained Oregon Woods, Inc. to design and build a new 50- to 65-foot span replacement bridge. However, it became apparent during bridge abutment site selection that the stability of the slopes below the abutments and the Pali slope were a major concern for the NPS and must first be investigated before construction could proceed.

YKE was faced with the unusual challenge of immediately and simultaneously developing an investigation scope, cost, and solution to secure a 50-foot-long prefabricated aluminum trail bridge across the junction of three transient waterfall paths to support people and mule train loads near the top 100 feet of the 1,700-foot-high Kalaupapa Pali cliff face. In June 2010, YKE developed three study and foundation support options for team consideration. In July 2010, NPS selected the lowest cost and an out-of-the-ordinary engineering approach: a combined micropiles and rock anchor support to the bridge abutments based on initial site photograph examination, and utilizing the drilled portion of the work to simultaneously investigate and verify assumed ground conditions.

This unique approach included YKE advising NPS and Oregon Woods to retain Janod, Inc., who had the capability to use steel cables to tether a "spider" drill rig on the cliff face to drill and install the necessary piles and anchors. Also part of this approach was an iterative evaluation of necessary pile and anchor lengths and numbers based on the explored ground conditions and pull-out load tests.

In July 2010 Janod's "spider" drill rig, air compressor, micropiles, and rock anchors were barged to Molokai and mobilized on the top side of the Pali, and later airlifted by helicopter to the Pali Trail site. Based on YKE's reconnaissance of the Pali cliff using field mountaineering and rappelling methods, a 50-foot span bridge was selected onsite with Oregon Woods. The selected bridge site minimized cuts into the Pali rock face, and maintained a trail geometry that would not be problematic and hazardous for the mules carrying tourists up and down the trail.

In October 2010, Pacific Helicopters placed the bridge on the constructed bridge abutment and the bridge was reopened, only six months after the old bridge was destroyed by a severe rainstorm.

Photo by Scott Henrickson, National Park Service

Photo by Richard Hanson, Hawaii Volcanoes Trail Crew Leader

PROJECT OF THE YEAR

DISASTER OR EMERGENCY CONSTRUCTION/REPAIR
LESS THAN $5 MILLION

Via Verdi Culvert Collapse Emergency Response Project

Managing Agency: City of Richmond, California
Primary Contractor: O.C. Jones & Sons, Inc.
Primary Consultant: Nichols Consulting Engineers
Nominated By: APWA Northern California Chapter

On April 15, 2010, the City of Richmond responded to an emergency sinkhole that collapsed unexpectedly at Via Verdi near El Portal Drive. Subsequently, Via Verdi was closed due to the collapse of a portion of Via Verdi into the sinkhole, which is the only street access for a community of 85 single-family homes and several apartment buildings (known as the Sobrante Glen) and serves as a point of access for an apartment complex located at Via Verdi and El Portal Drive. This event was proclaimed by the City as a local state of emergency with implications to street infrastructure and access to nearby communities through Via Verdi, local utilities (sanitary sewer, water supply, gas, and electricity), San Pablo Creek, the upstream San Pablo Reservoir, and the nearby apartment structures.

This project represented a very real and intense failure of public infrastructure within a densely populated and urbanized environment with implications to public health and safety, the environment, and local infrastructure with deep concerns from the public, local community, the City, affected utilities, and many other public agencies. Some of the accomplishments of the emergency response project include the following:

- Design and construction of one-lane bridge utilizing I-beams and steel plates. Completed within 72 hours of collapse, allowing residents to reoccupy their homes.
- Stabilized the site within one-week time frame and established a dewatering and pumping system to draw down creek waters.
- Two weeks to design a more robust temporary bypass road.
- One month to build and construct the temporary bypass road and open to traffic.
- Three weeks to design a temporary shored channel structure which could be built prior to the winter season.
- In many cases construction crews worked seven 12-hour-day weeks (occasionally 24-hour days with up to two shifts of workers).
- Outstanding communication and partnering with local community, local environmental agencies, affected utilities, and many other numerous stakeholders.
- By November 1, 2010, the creek waters flowed back through shored channel on time and before the onset of winter rains and release of the reservoir waters.
- The California Emergency Management Agency (Cal EMA) approved the City's application for the California Disaster Assistance Act (CDAA) Program for the subject project with emergency funding promised for refunding 75% of the eligible emergency costs incurred by the City on this project including replacement of the remaining original culvert, with a 25% local match.

This project was both rewarding and challenging at all stages and both the City and its design team are grateful to have had this opportunity to serve and protect the local community.

PROJECT OF THE YEAR

DISASTER OR EMERGENCY CONSTRUCTION/REPAIR
$5 MILLION BUT LESS THAN $25 MILLION

Hurricane Irene Repairs – Route 2

Managing Agency: MassDOT Highway Division
Primary Contractors: J.H. Maxymillian; Northern Construction; ET&L Corp.; R. Bates & Sons
Primary Consultant: MassDOT Highway Division, District 1
Nominated By: APWA New England Chapter

On August 28, 2011, Hurricane Irene moved up the East Coast. The floodwaters it brought caused extreme damage to Route 2—the area's major artery—in the towns of North Adams, Florida, Savoy, and Charlemont. Hurricane Irene damaged bridges, destabilized embankments, washed out roads, washed away riprap, and covered roads with dirt and storm debris. Damage was so severe in Florida, Savoy, and Charlemont, that Route 2 was closed immediately from mile marker 21.6 in Florida to mile marker 27.4 in Charlemont. Portions of Route 2 in North Adams were reduced to one lane and a temporary signal allowed alternating traffic.

MassDOT engineers mobilized immediately, assessing damage, designing repairs and developing emergency repair extra work orders. J.H. Maxymillian, the first contractor to start, began to clear the roadway while state personnel assessed the damage. Six weeks later, MassDOT had designed all of the repairs and contractors were working to stabilize and repair slopes, retaining walls and gabion walls. By mid-November, MassDOT also had advanced a bridge preservation project, expanding the scope of work to include slope repairs adjacent to the bridge. By December 15, just 110 days after the storm, all portions of Route 2 were reopened to traffic. MassDOT and the contractors had accomplished an incredible amount of work. In addition, MassDOT performed frequent public outreach activities to keep the public informed of road conditions and the construction schedule.

The most outstanding accomplishment of this project was its completion in such a short period of time. MassDOT accelerated the design of the repairs and the procurement to get crews started right away. The four teams worked around the clock as needed to get the work done as quickly as possible. Despite the existence of only a few access points, well over 100,000 cubic yards of fill and 30,000 tons of riprap were delivered and placed in just ten weeks. MassDOT and its contractors also completed the work on schedule despite an unusual October snowstorm that dumped two feet of heavy snow on the area.

MassDOT staff answered the call of duty to ensure quality materials and repairs, to work extended hours and weekends to perform testing, and to quickly turn around material approvals. Every effort was made to ensure that the work was not slowed down and the road was reopened as quickly as possible. MassDOT also worked with the contractors to use the best methods and materials to quickly provide high-quality, durable repairs. The team used prefabricated wall panel forms, which allowed for efficient construction of concrete retaining walls. MassDOT also worked with one contractor to develop project-specific plans for mortared riprap slopes which would provide the greatest constructability and best suit site conditions.

PROJECT OF THE YEAR

DISASTER OR EMERGENCY CONSTRUCTION/REPAIR
MORE THAN $75 MILLION

Vermont's Tropical Storm Irene Recovery

Managing Agency: State of Vermont – Agency of Transportation
Primary Contractor: State of Vermont – Agency of Transportation
Primary Consultant: N/A
Nominated By: APWA New England Chapter

The Vermont Agency of Transportation (VTrans) pulled off the unthinkable after the destructive force of Tropical Storm Irene ravaged the state with floodwaters at the end of August 2012. Within 24 hours this storm event dumped up to eight inches of rain resulting in 700 homes destroyed, nearly 330 road segments closed on both the state and town roadway systems, 36 state highway bridges closed due to damage or destruction along with countless municipal structures, and 11 local communities without access to the road network and outside emergency services.

In short order the relatively small agency assembled an organizational structure that put the state's transportation system back together in a remarkably short amount of time and economically given the magnitude of destruction throughout the state. The agency was able to accomplish monumental reconstruction efforts ranging from the destruction of historic covered bridges to miles of state highway without cutting corners on safety or the environment. In addition to the reconstruction efforts, humanitarian aid was provided to thousands of people in cities and towns cut off from services due to complete destruction or damaged transportation infrastructure.

At the end of the first thirty days following the storm, only six road segments remained closed (for a total of thirteen miles) and six bridges. Incredibly, the "last mile" of Vermont roads rehabilitation on RT 107 took place on December 29, 2011—a mere 123 days after Tropical Storm Irene devastated the landscape.

The Vermont-owned rail system's repairs were just as astounding, with service restored by September 18 through all 107 washed-out areas and to five of the six bridges damaged. The sixth bridge opened on October 11, 2011. VTrans also worked closely with the privately-owned New England Central Railroad whose mid-section—roughly from White River Junction to Essex Junction—was facing downed trees, washed-out-track and knocked-down bridges. Damage was especially severe across six miles of rail line near Rosbury. Rail service through the Roxbury area was restored on September 19.

As memories of Irene's torturous destruction began to wane in the days following the agency's success, VTrans turned to its employees seeking input and solutions. Staff responded with a plan and desire to launch some very important ventures in the forms of an Accelerated Bridge Program (which has led to the reorganization of the Structures Division), creation of a model Rail Infrastructure Asset Program and increased emphasis on their Infrastructure Asset Management Program, which is being accomplished through expanded GIS and other technology. The Asset Management Program modifications began during the Federal Emergency Management Agency and Federal Highway Administration data collection process, and have continued.

PROJECT OF THE YEAR

ENVIRONMENT
LESS THAN $5 MILLION

College Gardens Park Stormwater Project

Managing Agency: City of Rockville, Maryland
Primary Contractor: HMF Paving, Inc.
Primary Consultant: Charles P. Johnson & Associates
Nominated By: City of Rockville, Maryland

College Gardens Park, located in the Washington, D.C. suburb of Rockville, Maryland, was built almost fifty years ago as a neighborhood recreational amenity. The public park kept a farm pond built before World War II and built new play areas, a gazebo, picnic tables and paths. By 2000, the park features were outdated and needed replacement or upgrades. Drainage problems eroded the edge of the basketball court and flooded park paths.

In its 2001 Watts Branch Watershed Study, the Rockville Department of Public Works (DPW) proposed converting this farm pond into a modern stormwater facility. Over 4,000 acres in Rockville drained to the Watts Branch, but only 1,000 acres had modern onsite stormwater management. DPW planned another 1,000 acres of stormwater management to help restore the 18 miles of Watts Branch in the city. College Gardens Park offered the opportunity to capture 8% of this retrofit goal in a single project.

Early in the design, members of a resident task force asked City staff to shrink the proposed pond's footprint in the park by 25% to leave more turf area. Such a modification would cut the water quality volume in half and the water quantity volume by one quarter, as compared to the larger pond that fully met state treatment standards. The community also requested analysis of an underground detention vault in lieu of a surface pond. After evaluating the trade-offs, City staff and community members agreed that the full-sized stormwater management pond offered better water quality, additional downstream erosion protection and more opportunities for aesthetic features—all for a more reasonable cost. The task force began working with the project team to develop the pond as a park amenity. DPW recognized that innovative engineering could achieve the stormwater management goals within a tight footprint that left room for other desired park features.

The prime contractor, HMF Paving, completed construction of the College Gardens Park Stormwater Project in May 2010. It achieves full water quality and quantity treatment in a wet pond with a lush border of native wetland plants.

The original dam, which was starting to leak, has been reconstructed to meet current safety standards. Overlook decks, a pond fountain and a pedestrian steel truss bridge across the pond let residents enjoy and interact with the facility. By incorporating extensive aesthetic and interpretive features, the stormwater management pond, which covers almost an acre, is now the focal point of the six-acre park.

The project also redesigned and renovated the park with a new park shelter, basketball courts, bathrooms and paths, and repaired the nearby stream. Beyond the pond improvements, DPW added storm drain inlets and regraded to resolve overland drainage problems. The maintenance building and new shelter also received a perimeter trench drain to keep the park plaza area drier.

PROJECT OF THE YEAR

ENVIRONMENT

$5 MILLION BUT LESS THAN $25 MILLION

Cave Creek Sanitary Sewer Expansion

Managing Agency: Town of Cave Creek, Arizona
Primary Contractor: Garney Construction
Primary Consultant: Burns & McDonnell
Nominated By: APWA Arizona Chapter

The Cave Creek Sanitary Sewer System Expansion enables Cave Creek to meet its wastewater treatment needs well into the future while reusing 100% of the reclaimed water for beneficial purposes. The 0.66 million gallon-per-day (mgd) water reclamation facility represents a 600% increase in treatment capacity and would accommodate approximately 5,000 additional residential connections. Nine miles of pipeline were installed to convey wastewater to, and reclaimed water away from, the new water reclamation facility. The expanded capacity has allowed the Town to provide services to a new Walmart being constructed in Cave Creek. The addition of a Walmart provides a significant amount of financial stability to a Town the size of Cave Creek.

The new water reclamation facility provides an influent pump station to get the raw wastewater into the reclamation facility, screening with a rotary drum screen and vortex grit removal prior to biological treatment with the sequencing batch reactor process. The SBR system consists of two treatment basins and a post-equalization basin. The final treatment process is cloth disc filtration followed by disinfection with hypochlorite in the chlorine contact basin and dechlorination with sodium metabisulfite. Treated effluent will be pumped back to the old plant site for discharge to golf course irrigation ponds. Solids are pumped from the SBR basins to a sludge holding tank. From the sludge holding tank the solids are pumped to a belt filter press, dewatered and disposed at a local landfill. Chemical odor control has been provided for the treatment facilities. The facility meets all regulatory property set-back criteria. The site can provide for expanded treatment capacity of 2.25 mgd.

An Aquifer Protection Permit was obtained for the treatment process and includes provisions for reuse of the Class A+ effluent for golf course irrigation. A new Arizona Pollution Discharge Elimination System permit was obtained to allow for discharge to two separate locations, giving the Town maximum flexibility.

The design-build team was responsible for transferring operations to the new reclamation facility from the existing plan site without interruption of service. The design-build team was also responsible for decommissioning of the existing facilities and meeting ADEQ closure criteria.

One of the issues encountered was the lack of accurate utility maps to aid in the design of the pipelines installed on this project. To overcome the lack of data, over 70 potholes were excavated in an effort to locate as many of the underground utilities as possible. Even with that effort, the pipeline crews and engineers worked very closely on a daily basis to revise the alignment as required while keeping the original intent of the design intact. At the conclusion of the project, the Town was given a complete and accurate as-built set of drawings that will prove extremely valuable in the future.

PROJECT OF THE YEAR

ENVIRONMENT

$25 MILLION TO $75 MILLION

Charnock Well Field Restoration Project

Managing Agency: City of Santa Monica, California
Primary Contractor: Black & Veatch Construction, Inc.
Primary Consultant: Black & Veatch Corporation
Nominated By: City of Santa Monica, California

In 1996, the City of Santa Monica was forced to shut down one of its main well fields after discovering contamination in the form of methyl tertiary-butyl ether (MtBE), a gasoline additive that is highly soluble in water. Due to the closure, the City was forced to significantly increase its reliance on imported water.

As a result of a settlement with three major oil companies, the City undertook the Charnock Well Field Restoration Project to fully restore local groundwater supplies and help advance its sustainability goal of eliminating the need for imported water from Northern California and the Colorado River.

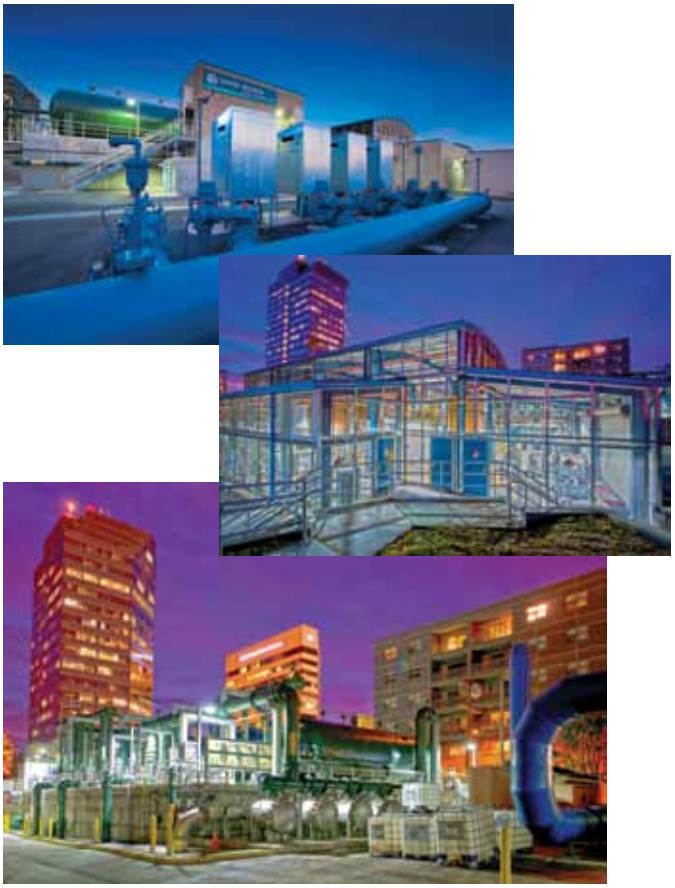
Two sites comprised the project: the Charnock Well Field and the Arcadia Water Treatment Plan (WTP). The well field was the location of five of the main groundwater wells used to supply drinking water. Three of these wells were contaminated and required treatment to remove MtBE, tertiary butyl alcohol, and other volatile organic compounds from the groundwater.

At the Charnock Well Field, improvements included measures to treat contaminated groundwater and remove minerals, plus pumping and feed systems. The existing treatment system at the Arcadia WTP, now known as the Santa Monica WTP, was replaced with an advanced water treatment system that provides a multi-barrier, four-step approach to treatment of the groundwater prior to distribution. The plant receives up to 10 million gallons of water per day from nearby wells, including Charnock.

The heart of the cleanup and filtration system lies in a granular activated carbon (GAC) and then a three-stage reverse osmosis (RO) membrane system, which softens the water by removing minerals (calcium and magnesium). RO uses pressure to force water through membranes with pores so small the minerals can't pass through. The final step, aeration and storage, uses the existing air stripping technology in the five-million-gallon reservoir to remove any remaining volatile groundwater contaminants.

Two months into construction, the project team discovered shallow groundwater table. Prior to this discovery, the water table was originally determined to be deep, but once excavation started water emerged from the excavation at 12 feet. To further complicate this issue, staff could not dewater the area via storm drain due to high levels of selenium in the water (a metal concentrated in the groundwater), thereby making the redesign even more challenging. The design-build team was able to effectively modify the drainage system and stay on schedule by redesigning a subterranean structure to a slab-on-grade structure.

The completed $60 million project was put online in December 2010. As a result, the City of Santa Monica can now provide approximately 70 percent of the water it needs on a typical day, compared to about 20 percent while the facilities were offline.



PROJECT OF THE YEAR

ENVIRONMENT
MORE THAN $75 MILLION

Lake Oswego Interceptor Sewer

Managing Agency: City of Lake Oswego, Oregon
Primary Contractor: Advanced American Construction
Primary Consultant: Brown and Caldwell
Nominated By: APWA Oregon Chapter

Faced with an undersized, corroding, and seismically vulnerable pile-supported interceptor sewer in a popular lake, the City of Lake Oswego and Brown and Caldwell devised an unusual yet highly effective solution: an innovative submerged, buoyant, gravity sewer with a 100-year lifespan.

The centerpiece of the Lake Oswego Interceptor Sewer is a nearly two-mile reach of buoyant HDPE sewer held to proper grade safely beneath the lake surface in the middle of this affluent community, a suburb of the City of Portland. More than 29,000 feet of new pipe, 22 inches to 42 inches in diameter, were installed. The sewer is configured in a serpentine alignment with thermal expansion loops that maintain grade despite wide-ranging water temperatures. The sewer is held to proper grade beneath the lake surface by 428 ground anchors and tethers that are fastened into solid bedrock beneath a thick, soft sediment layer at the bottom of the lake. For maintenance and cleaning, submerged buoyant stainless steel manholes were installed along the pipeline, with access via removable aluminum caissons.

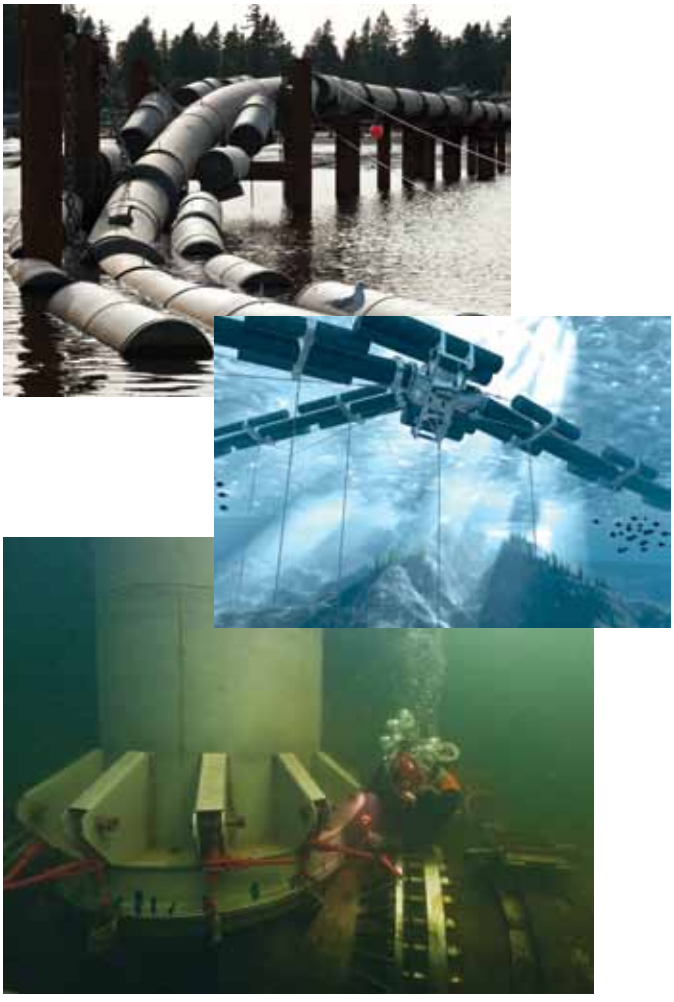
The $100 million project was completed on time and 10 percent under budget, and the gravity system will save $20 million in operations and maintenance costs during its service life. The in-lake gravity sewer eliminated the need to build six pumping stations and reduced the pipe length by 40 percent, compared to a land-based system, providing a direct route with less material consumption, reduced use of heavy construction equipment, and fewer visits from utility maintenance trucks throughout its service life.

Numerous project challenges included: difficult topography and geology (very soft sediment up to 200 feet thick overlying basalt); flat grades on the existing system; lack of access/staging sites; private lake ownership; high visibility and consequence of failure; high HDPE thermal expansion; and future drawdowns.

The project was constructed under two major contracts, termed Lake Full and Lake Down. Lake Full was a marine, barge-based project in which all ground anchors, tethers, pipe, buoyancy, and piles were installed. Lake Down was a more conventional land-based project, albeit on a very soft lakebed, in which excavation, construction, and restoration for some final pipe placement and junction structures was performed. Lake Down included lake level control and substantial temporary flow diversion. Conventional project delivery method of design-bid-build was employed.

The system has performed well since coming online in June 2011. Peak wet-weather flows are now accommodated and maintenance has been trouble-free due to four debris sumps that collect grit and gravel at accessible onshore locations.

Photos by Mark Gamba



PROJECT OF THE YEAR

HISTORICAL RESTORATION/PRESERVATION
LESS THAN $5 MILLION

Historic Wood Paver Restoration

Managing Agency: City of Chicago Department of Transportation
Primary Contractor: MQ Sewer & Water Contractors, Inc.
Primary Consultant: TranSystems
Nominated By: APWA Chicago Metro Chapter

One of only two remaining wood-paved areas in the City of Chicago, the Historic Wood Paver Restoration project rehabilitated a deteriorating alley in the Gold Coast neighborhood of Chicago and returned a national treasure to the community. Originally constructed in 1909 of wooden paver blocks, the alley was in great need of repair. Wagon wheels, horse and automobile traffic, harsh weather conditions, and winter salt treatments had taken their toll causing drainage deficiencies, uneven surfaces, and ADA compliance issues. Because of the neighborhood residents' interest in maintaining the historical integrity of the alley, restoring it became a priority for the Chicago Department of Transportation. The area is listed on the National Register of Historic Places and as a City of Chicago Historic Preservation Division Landmark.

The project involved extensive research into wood block street construction best practices in the late 1800s and early 1900s, only to find that what worked in the past was not suitable for modern-day development. The original pavers were cedar blocks treated with creosote, a known carcinogen. Many solutions were researched and various types of wood tested to gauge their endurance against the elements, but most failed becoming distorted and leaving an unpleasant odor after just a few short months. The black locust wood, an incredibly hard and stable wood that did not absorb moisture easily, was selected and manufactured. The restoration not only included the installation of these new wood pavers, but existing pavers found in good condition were reused. Drainage deficiencies, uneven surfaces, and ADA issues were also corrected.

Until the City located records of original construction from 1909, it was thought that gravel underplayed the paver surface; a concrete base for this type of pavement installation is somewhat unusual. To confirm the concrete's existence and condition, cores were taken and evaluated. As both a cost saving and a green initiative, the existing concrete base was reused with minimal patching in lieu of placing a new base. The construction project manager carefully reviewed the condition of the concrete base after the existing paver removal and marked the areas of necessary patching, generally centered near the east alley end and a utility trench near the center. Concrete paving methods in 1909 were somewhat primitive, and due to frequent joints and an uneven finish, the contractor needed to exert special care so as not to damage the concrete base that would remain.

This unique project, delivered on time and on budget, resulted in a beautiful architectural tribute to the integral role wooden paver blocks played in the development of the street systems in Chicago and around the country. The community has responded to the finished project with appreciation and admiration.

PROJECT OF THE YEAR

HISTORICAL RESTORATION/PRESERVATION
$5 MILLION BUT LESS THAN $25 MILLION

City Market Building

Managing Agency: City of Roanoke, Virginia
Primary Contractor: MB Contractors
Primary Consultant: Cunningham/Quill Architects, PLLC
Nominated By: City of Roanoke, Virginia

The City Market Building is a three-story, multi-use facility located in the heart of the Market Area in downtown Roanoke, Virginia. It has been the centerpiece of the City Market since it was originally constructed as the primary city meat and produce market in 1922. The facility has undergone several smaller-scale renovations and tenant use changes during its history. Prior to this renovation, the building housed food court vendors and several retail shops.

The work consisted of the renovation, repair and modernization of the historic building, to include reconfiguration of the building's interior, replacement of aging utility infrastructure, and improvements to the streetscape surrounding the building. The area renovated was 38,297 gross square feet. The building is listed under the Virginia Landmarks Register and the National Register of Historic Places. To qualify for historic tax credits to assist with the funding of the project, careful consideration was given to maintain the historic character of the facility.

The construction cost of the project was approximately $6.5 million; the total project cost was about $7.3 million. In addition to the construction costs, over $75,000 was incorporated into the project for public artwork. Sidewalk murals were hand-constructed onsite at each of the building's four main entrances.

When fully occupied, the Market Building will house eight food court vendors. There are thirteen retail spaces. The dining areas on the first floor and second floor mezzanine are approximately 8,345 square feet. The third floor consists of a completely renovated 4,475-square-foot assembly hall with a seating capacity of 470. Also included is a stage, entry hall, public restrooms, two bar areas, catering kitchen, office, and small greenroom.

The renovation of the City Market Building was designed and constructed to achieve Leadership in Energy and Environmental Design (LEED) certification as governed by the U.S. Green Building Council. The facility was awarded LEED certification in October 2011.

The Roanoke City Market Building is a cherished building for Roanoke and a regional destination for tourists. This renovation significantly supports the "Roanoke Renaissance" with its central proximity to the downtown historic district, the Hotel Roanoke, Taubman Museum of Art, Center in the Square, local restaurants and shops, as well as increasing numbers of downtown residents. The City Market Building continues to be used daily by Roanoke residents and professionals, school children and tourists for its food court and specialty retail stores. The Assembly Hall, with its spectacular interior volume, is again a welcoming amenity to Roanoke for community gathering space, banquet rental, cultural events and public meetings.

PROJECT OF THE YEAR

HISTORICAL RESTORATION/PRESERVATION
MORE THAN $75 MILLION

Bridge of Lions Rehabilitation

Managing Agency: Florida Department of Transportation
Primary Contractor: Skanska USA Civil
Primary Consultant: Reynolds, Smith and Hills, Inc.
Nominated By: APWA Florida Chapter

The rehabilitation of the Bridge of Lions is one of the most unique and complex preservation projects of its kind. Built in 1927 and listed on the National Register of Historic Places, the bridge serves as a vital link between historic downtown St. Augustine and Anastasia Island carrying traffic over the Matanzas River. The striking architecture of the bridge has long been an important component of the fabric of St. Augustine and is prominent in nearly every skyline image of the city. Over the years, the bridge had deteriorated and required significant safety improvements and upgrades to meet current design standards. Thus, the rehabilitation is a significant step in preserving and enhancing the unique historic and cultural character of St. Augustine, "Our Nation's Oldest City," a driving factor of the area's thriving tourism industry and local economy.

The Florida Department of Transportation led the $88.7 million project, commissioning RS&H as the lead designer and Skanska as the lead contractor. On May 26, 2006, the bridge was closed to traffic after 79 years of dedicated service, and the rigorous process of restoration began. After undergoing more than four years of rehabilitation, which involved completely dismantling, restoring, and reusing the bridge's historic components, the Bridge of Lions reopened to traffic on March 17, 2010, on time for the three-year celebration of the 450th anniversary of the founding of St. Augustine in 2015. While preserving this national historic landmark for future generations, this project also serves as a model for restoring similar historic bridges in our nation's aging infrastructure.

Two of the most iconic elements of the bridge are the steel arched girders of the approach spans, as well as the bascule piers and towers built in the Mediterranean Revival style architecture of the historic buildings in St. Augustine. These elements needed to be preserved, but did not meet modern load-carrying capacity or current design criteria for ship impact and scour. To preserve these elements, the design team developed two key innovations, which offered "hidden" solutions ensuring the structural integrity of the bridge while maintaining the original defining features: (1) a new interior steel framework increased the bridge's load-carrying capacity and shifted most of the load off the original girders; and (2) a new foundation system strengthened the original bascule piers by adding supporting shafts to the outside perimeter and through the center of each pier.

The rehabilitated Bridge of Lions is an investment in St. Augustine's future, as it will now remain a historic landmark, as well as a vital transportation link for years to come. The project is an example of striking the appropriate balance between safety, transportation connectivity, and historic preservation.

PROJECT OF THE YEAR

STRUCTURES
LESS THAN $5 MILLION

SR 14 Cape Horn Pedestrian Undercrossing

Managing Agencies: Washington State Department of Transportation; U.S. Forest Service Columbia River Gorge National Scenic Area; Skamania County, Washington
Primary Contractor: Rotschy, Inc.
Primary Consultant: Wallis Engineering
Nominated By: Washington State Department of Transportation and APWA Washington State Chapter

The SR 14 Cape Horn Pedestrian Undercrossing project provides a safe crossing of State Route 14 (SR 14) in two places on the recently completed U.S. Forest Service Cape Horn Trail. The project is located in the Columbia River Gorge National Scenic Area (CRGNSA), one of the most beautiful areas in the country, that is protected by tight restrictions on development and construction. For 13 years, volunteers worked to cobble together a scenic loop trail at the west end of the Gorge (called the Cape Horn Trail), from old wagon roads and a variety of informal paths. The trail afforded gorgeous views looking east up the Columbia River Gorge, and was very popular with hikers. Although located almost entirely on U.S. Forest Service (USFS) land, that agency did not have the resources to upgrade it to public standards. With the donation of land for a prime overlook area at the Cape Horn Overlook, the project moved up in priority, and the USFS began to make the trail a reality.

One significant safety concern with the trail was the fact that it crossed SR 14, a busy highway linking western and eastern Washington, in two places, creating two risky crossings. The USFS trail project was planned to coincide with a Washington State Department of Transportation (WSDOT) project reconstructing SR 14 in the same area to realign one of its more dangerous curves, and construct other safety improvements. Early on, the Federal Highway Administration (FHWA) through the Western Federal Lands Highway Division (WFLHD) recognized this conflicting safety issue. WFLHD discretionary funds were granted to this project to pay for the engineering design. Concurrently, the FHWA issued a Call for Projects for utilization of Forest Highway Program construction funds. WSDOT and the USFS were successful in obtaining the money for the two pedestrian tunnels underneath SR 14 through this FHWA grant application process.

The project elements include two precast concrete tunnels underneath SR 14. One tunnel is located near the Salmon Falls parking lot, at the beginning of the Cape Horn Trail, and the second is located just west of Cape Horn. Each tunnel is about 12 feet wide by 10 feet high, and has extended wing walls transitioning into a bench-like seating area which acts as a retaining wall. The tunnels are faced with Columbia River basalt, in keeping with the natural materials of the region, and landscaped using native plants on each side of each tunnel. The trail inside each tunnel is paved with concrete.

Because of this project, the safety of trail users is ensured, as the tunnels have eliminated all pedestrian-vehicle conflicts along the Cape Horn Trail. With the construction of the pedestrian tunnels, all users are able to enjoy the beauties of the Columbia River National Gorge while benefiting from an active lifestyle.

PROJECT OF THE YEAR

STRUCTURES
$5 MILLION BUT LESS THAN $25 MILLION

Transit Operations Facility

Managing Agency: City of Raleigh, North Carolina
Primary Contractor: Brasfield & Gorrie, LLC
Primary Consultant: Williard Ferm Architects PA
Nominated By: APWA North Carolina Chapter

The City of Raleigh began operating its bus transit system out of a new, state-of-the-art, $24.5 million facility on May 27, 2011. This new facility is designed and constructed to be energy efficient, environmentally sustainable, and to use the most up-to-date green building technologies.

As background for the project, the City of Raleigh obtained a private bus transit system in the mid-'70s and moved the 50-bus fleet operation into a facility located on four acres of a former landfill. By 2008, Raleigh's transit system had long outgrown the original facility, resulting in operational inefficiency. The City searched for a suitable site with sufficient space to house an expanding system for another four decades.

In December 2008, Raleigh secured a 23-acre site, east of downtown, convenient to developed transportation corridors. The expectation was that this project would follow the usual multi-year process for large capital projects. Two months later, on February 17, 2009, the President signed the American Recovery and Reinvestment Act (ARRA), and Raleigh officials, along with their state and federal counterparts, quickly moved to bring this critical project to the forefront of the many competing needs in the area.

The project met an extremely aggressive schedule to achieve ARRA funding. ARRA legislation was approved on February 17, 2009, with the project only having recently acquired the property. Funding available through ARRA totaled $11.6 million of the $24.5 million project cost. Other sources were scrutinized to assemble the funding package, combining local, state and federal funds to make up the rest.

The site contained 60 feet of elevation change from front to back with areas of extensive rock. This challenge was turned into an asset by constructing a serpentine cast-in-place retaining wall, which reached over 25 feet in some areas. The retaining wall served as a natural divider between the lower public space and the upper secure operational area. An existing side street was raised almost four feet to avoid lowering the site an extra two feet, helping to balance cut and fill.

One deficiency of the old facility was no suitable space to conduct employee training. The new facility features a large training room in the Administration/Operations Building available for use by other organizations and a new training room in the Maintenance Building. The Maintenance Training Room affords space for classroom or workspace setups. There is a roll-up door allowing for large vehicle components such as complete engines or transmissions to be brought in for hands-on education training. The Maintenance Training Room is in high demand and has been used by other area transit systems to conduct their training.

Photos by Jerry Blow Photography

From concept to completion in 25 months through collaboration.

Congratulations City of Raleigh for your APWA Public Works Project of the Year award.

PROJECT OF THE YEAR
PUBLIC WORKS
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PROJECT OF THE YEAR

STRUCTURES
$25 MILLION TO $75 MILLION

Wilmington Waterfront Park

Managing Agency: Port of Los Angeles, California
Primary Contractor: Griffith Company
Primary Consultant: Sasaki and Associates
Nominated By: Port of Los Angeles, California

The Port of Los Angeles (Port) dedicated the 30-acre Wilmington Waterfront Park to serve as a buffer between the community of Wilmington and Port operations, and as a beautifully landscaped recreation space for the community. The park reflects five years of partnership and countless meetings between the community and the Port, and the progression from an adversarial relationship to one of mutual trust and understanding.

From this collaboration the designers, Sasaki Associates, along with Port staff, produced a unifying sculptural aesthetic for the park, with notable elements including never-before-seen views of Wilmington and the harbor from the elevated landforms (which also serve as a sound barrier); wide promenades providing pedestrian and bicycle paths; the iconic, cable-stayed pedestrian bridge over King Avenue that serves as a landmark and symbol of the project; four performance/gathering venues; picnic areas; restrooms; and three water features, including a liquid plaza comprised of forty synchronized, interactive water jets. The park was constructed in the spirit of partnering by Griffith Company, managed by the Port with support from Berg & Associates.

The park is a one-city-block-wide by nine-city-blocks-long, 30-acre landscaped area bounded by Harry Bridges Boulevard, "C" Street, Figueroa Street and Lagoon Avenue in the Wilmington community of the City of Los Angeles. It is located between one of the Port's busiest container terminals and the Wilmington community. The park is intended to shield the community from the Port's operations while providing a large public area for outdoor gathering, recreation and performances.

The improvements included vacating streets, earthwork, and construction of underground facilities, pedestrian and iconic bridges, retaining walls, buildings, water features, a playground, lighting, and landscaping. The park's underground facilities included construction of sewer, potable and recycled water lines, storm drains, irrigation, utilities, and electrical systems. One hundred eight linear feet of 78-inch reinforced concrete storm drain was installed by jack-and-bore method under Harry Bridges Boulevard and an active railroad.

Twenty-two hundred linear feet of 17-feet-high concrete retaining walls on piles were constructed to support 160,000 cubic yards of environmentally-clean imported soil to create the elevated landform. The landform together with the three pedestrian bridges and the 105-foot-high cable-stayed iconic bridge created the El Paseo promenade, which connects the park's east and west ends.

The open space includes over 15 acres of sod area, 1.5 acres of artificial turf, and 11.9 acres of hardscape areas. The hardscape areas utilized resilient playground surfacing, concrete, asphalt concrete, decomposed granite, and unit pavers to construct an adventure playground, walkways, bike paths, streets, sidewalks, performance areas, picnic areas, planters, and two parking lots.

PROJECT OF THE YEAR

STRUCTURES
MORE THAN $75 MILLION

Big Tujunga Dam Seismic Rehabilitation and Spillway Modification Project

Managing Agency: Los Angeles County, Public Works Department
Primary Contractor: Shimmick Construction Company, Inc.
Primary Consultant: MWH Americas Inc.
Nominated By: APWA Southern California Chapter

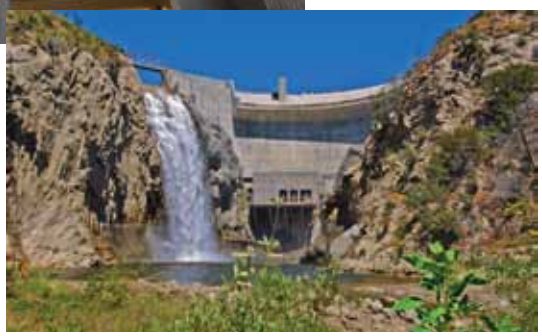
Big Tujunga Dam is a variable radius arch concrete dam with an earthfill wing wall north of the spillway. It was originally designed by the Los Angeles County Flood Control District for flood control and water conservation. The reservoir can impound up to 6,000 acre-feet of water, with a maximum surface area of 83 acres collected from 82 square miles of drainage.

For approximately 30 years, the Big Tujunga Dam's reservoir operating level had been restricted to an elevation that resulted in a storage capacity reduction of 75% by order of the California Department of Water Resources, Division of Safety of Dams (DSOD). In addition, the spillway capacity did not meet DSOD standards for passing the Probable Maximum Flood. The project removed State-imposed operating restrictions by constructing a thickened arch buttress to withstand a major earthquake and a new spillway to safely pass an extreme flood. A comprehensive rock anchor and rock bolting program was executed on the left and right abutments of the dam for stability. In addition, new valves and control systems were added which utilize the restored reservoir capacity to increase stormwater capture for supplemental stream flow to enhance habitat and groundwater recharge operations.

The optimal design to strengthen the dam was to create a thickened buttress to resist Maximum Credible Earthquake seismic forces, in addition to a unique integrated ogee crest spillway with flip bucket to pass the Probable Maximum Flood. To implement this design, approximately 70,000 cubic yards of conventional mass concrete was placed against the downstream face of the dam, from foundation to crest, to convert the structure into a thick arch with uniformly thick arches. This took approximately 18 months of placing concrete. Foundation consolidation grouting was performed beneath the new arch portion of the dam to depths of 25 to 35 feet at about 10-foot spacing to reduce the possibility of differential settlement between the new and the old concrete.

To address the State's concern for monolithic behavior and to reinforce the bond of the new to old concrete, grouted dowels were installed along the interface between the existing and new concrete in a grid pattern spaced at 10 feet. An overtopping ogee crest spillway that follows the curvature of the dam crest was constructed with a flip bucket to essentially throw the entire spillway flow into the plunge pool at the canyon bottom, downstream and away from the dam. The left and right downstream abutments were stabilized with a one-foot layer of fiber-reinforced shotcrete, 15-foot rock bolts and 60-foot rock anchors.

This extremely complex project included numerous design and construction challenges that were often magnified by unforeseen conditions or event which impacted the tight construction schedule, including the largest wildfire in Los Angeles County history which brought construction to a halt for one month.



PROJECT OF THE YEAR

STRUCTURES
MORE THAN $75 MILLION

New City Hall and Civic Plaza

Managing Agency: City of North Las Vegas, Nevada
Primary Contractor: The Whiting-Turner Contracting Company
Primary Consultant: Fentress Architects
Nominated By: City of North Las Vegas, Nevada and APWA Nevada Chapter

The City of North Las Vegas' New City Hall and Civic Plaza project provided for the construction of a 210,400-square-foot, nine-story building located on a twelve-acre parcel at 2250 North Las Vegas Boulevard. This building replaced the City's original City Hall (constructed in 1966). The New City Hall was designed to consolidate municipal services and support the City's growth in coming years. This facility, along with the attached Civic Plaza Park, is expected to be a cornerstone of the City's downtown redevelopment. In addition to site beautification and providing a tranquil pedestrian connector to the City's Justice Facility and Library, the Civic Plaza will play host to various special events aimed at uniting and strengthening the North Las Vegas community.

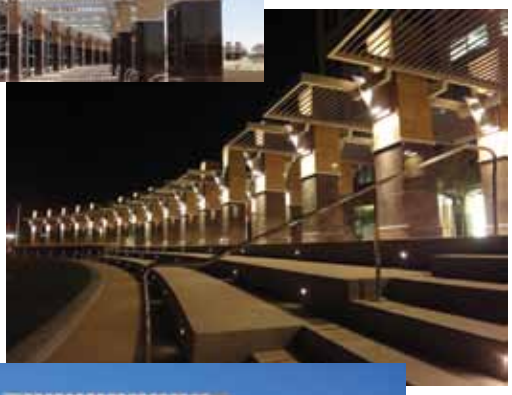
The City elected to administer the New City Hall and Civic Plaza Project with the Construction Manager at Risk (CMAR) construction procurement method. Three key factors made this the best approach for the project. These factors include: the tangible benefit of having the contractor's expertise available during the design; cost savings realized through value-engineering due to the contractor's familiarity with the project; and the ability to accelerate the project construction schedule by eight to twelve months over the traditional design-bid-build delivery method.

The chosen contract delivery method of CMAR allowed for the early integration of cost analysis and construction means and methods within the design effort to streamline the transition from design to construction. For example, it allowed for the upgrade to a high-performance, fully-unitized aluminum curtain wall system with integrated granite façade. This high-quality, timeless, long-term, low-maintenance material skinning the building over a high-performance curtain wall system provides environmental and aesthetic sustainability well into the future, all at a cost less than the originally budgeted precast skin.

Additionally, through the implementation of the CMAR process, the contractor facilitated the addition of onsite power generation as a mini-design-build element during construction as a unique project opportunity to help the City meet one of its key project goals, to reduce the project's carbon footprint. Through the addition of 630 photovoltaic cells (solar panels) to the roof of the building and covered parking, 150kW of power is generated, which will provide more than 10% of the building's power.

The evident results of this effective delivery method are seen in the small impacts to contingency funds allocated to account for gaps in the process that ultimately were not there. The project came in approximately $29 million under the projected budget overall, without sacrificing scope from the project in any way.

Photos: ©Fentress Architects



PROJECT OF THE YEAR

TRANSPORTATION
LESS THAN $5 MILLION

Anacortes Ferry Dock Rehabilitation and Guemes Island Ferry Dock Repair Projects

Managing Agency: Skagit County, Washington
Primary Contractor: RAZZ Construction, Inc.
Primary Consultant: Shearer Design LLC
Nominated By: Skagit County, Washington and APWA Washington State Chapter

The Guemes Island Ferry operates seven days a week, 365 days a year between Anacortes and Guemes Island. Skagit County has operated the ferry since the early 1960s when it was purchased from a private operator. The 22-vehicle and 100-passenger ferry M/V Guemes is a vital transportation link for approximately 200,000 vehicles and 400,000 passengers each year. The ferry crossing is three-quarters of a mile in distance and a round trip takes approximately twenty minutes to complete. The Guemes Island Ferry makes roughly 8,165 round-trip crossings annually.

The project consisted of replacing the terminal approach bridge spans at each facility that were comprised of concrete prestressed girders constructed in 1980. Because of their location on Guemes Channel, all of the girders are in a saltwater splash zone during events with wind and high water. All the girders had significant deterioration due to corrosion in the reinforcement, concrete cracking, and spalling from saltwater exposure.

The impacts to the Guemes Island community had to be kept to a minimum and the project completed in a short eight-week time window. The contractor had much to accomplish during this short closure window. The list of items included: install temporary shoring; remove 448 linear feet of concrete girders at Anacortes; remove 177 linear feet of concrete girders at Guemes Island; jack up the Guemes Island transfer span and remove the corroded cap beam; construct a new cap beam under the Guemes Island transfer span; install new bearings at the Guemes Island terminal; set eleven new prestressed girders at Anacortes; erect 46,000 pounds of new steel girders at Guemes Island; form and place a new concrete deck on the Guemes Island span; build new concrete retaining walls on the Guemes Island abutment; place new waterproofing membrane on the Anacortes approach span; asphalt-pave both the Anacortes and Guemes Island terminal; and reinstall electrical supply, lights, and safety gates.

Both the concrete girders and steel girders were prefabricated and ready to go before the ferry closure time. In addition, the contract required a full shop assembly of the Guemes Island steel approach span. This means that the entire bridge was assembled in the fabricator's shop prior to shipping to the site. Therefore, when the bridge was erected at Guemes Island, it was being assembled for the second time and any bugs or misfitting pieces that could delay the tight schedule were corrected in the shop and not in the field. As a result the steel erection went very smoothly and took less than two days for installation onsite.

All the steel reinforcing used on the project was hot-dip galvanized in non-corrosive zinc. This extra step will prevent the internal steel from rusting in a chloride-elevated environment.

PROJECT OF THE YEAR

TRANSPORTATION
$5 MILLION BUT LESS THAN $25 MILLION

SW Burnham Street Improvements

Managing Agency: City of Tigard, Oregon
Primary Contractor: Kodiak Pacific Construction
Primary Consultant: Otak, Inc.
Nominated By: APWA Oregon Chapter

The City of Tigard adopted a comprehensive plan for its downtown and established an urban renewal district. The downtown plan placed an importance on green and sustainable redevelopment, which was incorporated into the Downtown Streetscape Guidance documents. One of the first streets scheduled for reconstruction was SW Burnham Street. The street provides a critical connection between the downtown core along Main Street and Hall Boulevard, a major arterial (with State Highway designation).

The pre-project SW Burnham Street consisted of varying width (28 to 44 feet) pavement that was in poor condition with intermittent segments of sidewalk, five overhead utilities, a dozen underground conduits, a water main, sanitary sewer mains, and intermittent segments of storm sewer. The 2,050-foot-long roadway was fully reconstructed with this project. The project scope of work includes:

Pavement: The roadway was completely removed and reconstructed from subgrade up with new aggregate base and pavement section. This smooth surface replaced dozens of potholes, lessening damage to automobile and bicycle traffic, including emergency response vehicles used by the fire and police departments located on SW Burnham Street.

Sidewalks: The new street includes sidewalks on both sides. Between Ash Avenue and Main Street the sidewalks are extra wide (18 feet from curb to back of walk) to support downtown events and future redevelopment uses with extra public space.

Accessibility: Access for disabled users, bicyclists, pedestrians, and strollers were all considered to be necessary components of the project design due to an adjacent regional trail system and transit facilities.

Pedestrian Safety: Multiple locations within the project limits made use of different treatments to improve pedestrian (and canine) safety and slow traffic. Curb extensions and pedestrian islands were utilized to decrease pedestrian crossing distance. Colored concrete in the crosswalks accentuate the pedestrian crossings.

Streetlighting: The City partnered with the local power provider (PGE) to provide the first ornamental LED streetlighting system within their customer base. The City purchased and installed the streetlights and PGE agreed to maintain them as a pilot project and will monitor the electrical consumption as well as track maintenance costs.

Storm Sewer System: A completely new storm sewer eliminates frequent standing water on SW Burnham Street and provides water quality treatment of project runoff. This project was the first major road upgrade in the City to provide full stormwater treatment. The design made use of both proprietary mechanical treatment and Low Impact Development facilities.

Utility Underground: All utilities were relocated to an underground system of conduits and vaults. The private utilities were all located within one of two joint utility trenches.

Courtesy of Doug Vorwaller Photography

PROJECT OF THE YEAR

TRANSPORTATION
$5 MILLION BUT LESS THAN $25 MILLION

East Hamilton Waterfront Link – Multi-use Pedestrian Bridge

Managing Agency: City of Hamilton, Ontario
Primary Contractor: Dufferin Construction Company
Primary Consultant: McCormick Rankin Corporation
Nominated By: City of Hamilton, Ontario and APWA Ontario Chapter

The $240 million Red Hill Valley Parkway opened to traffic in the fall of 2007 and connects the Queen Elizabeth Way (QEW) expressway with the City of Hamilton's southeastern development area located on the escarpment. The Parkway project, which constitutes the City's largest-ever infrastructure project, winds through the environmentally sensitive Red Hill Valley and includes a trail system that connects to the Bruce Trail. The final connection of the Red Hill Valley Trail to the well-developed Lake Ontario trail system required a bridge across the Red Hill Creek and the QEW between the Red Hill Valley Parkway and Burlington Street.

This multi-use pedestrian bridge provides a new landmark for the City of Hamilton in a prominent location at the mouth of the Red Hill Creek. The 220m-long bridge passes over a restored, natural wetland and the QEW highway, connecting the valley to the Lake Ontario waterfront. The new crossing enhances the connectivity of Hamilton's recreational trail system, providing pedestrians, cyclists and in-line skaters a safer, universally accessible and much more direct crossing alternative to that previously available. It also becomes a convenient point for users to pause, stop awhile and enjoy the excellent views of the wetland at the foot of the creek and towards the lake. It sends a strong and impressive message to drivers on the QEW that the City of Hamilton promotes an active lifestyle.

The site constraints and the unique appearance and configuration of the structure created a number of design challenges, including minimizing environmental impacts on the creek and wetland; minimizing impact to the old landfill site and protecting the leachate collector system; minimizing impacts to QEW traffic; ensuring feasibility of erection of the superstructure; ensuring that the pedestrian and wind-induced vibrations are within comfortable ranges; and complex geometric controls.

The bridge's contemporary design expresses the architectural and structural technology of its time. An elegant tilted steel arch 85 metres long spans over Red Hill Creek and provides a dramatic focus to the overall bridge structure. The bridge is painted an intense red oxide colour that provides an eye-catching and distinctive visual effect within the built-up setting. Cantilevered, angled concrete curbs provide crisp clean-lined edges to the deck. Metal railings feature a random vertical picket pattern inspired by the appearance of reeds in the wetland below. The tilted configuration of the railing works with the arch to provide an integrated visual effect that is open to the setting. At each end of the arch the handrails open out to form angled lookouts, featuring concealed integrated LED lighting that provides a gentle wash of light over the walking surface. The landscaping design, including concrete approach paths and naturalized planting, successfully integrates the bridge structure into its context.

PROJECT OF THE YEAR

TRANSPORTATION
$25 MILLION TO $75 MILLION

Northeast 36th Street/SR 520 Overpass and Roundabout Project

Managing Agency: City of Redmond, Washington
Primary Contractor: Tri-State Construction, Inc.
Primary Consultant: BergerABAM
Nominated By: City of Redmond, Washington and APWA Washington State Chapter

The Northeast 36th Street/State Route 520 overcrossing and roundabout project in the City of Redmond, Washington (approximately 15 miles northeast of Seattle) was completed and opened to traffic in December 2010. The new bridge, two landscaped lids, offers plenty of pedestrian amenities and provides an overcrossing of SR 520, the highway that leads to the well-known "floating bridge" that connects Redmond (home of Microsoft world headquarters) to north of downtown Seattle (University of Washington campus).

The new 480-foot-long bridge connects two sides of the expanding Overlake neighborhood in the City of Redmond, separated by SR 520, and adjoins a recently expended Microsoft campus. The Overlake neighborhood of Redmond is an urban core designated as a Regional Growth Center by the Puget Sound Regional Council (PSRC). Due to the rapid employment and residential growth in the area, the two arterials connected by the Northeast 36th Street overcrossing are some of Redmond's most congested roadways. The new bridge will help to alleviate bottlenecks experienced on nearby interchanges crossing SR 520 and the impacts of the projected population and employment growth in the Overlake area. Without the new lid, the existing connections over SR 520 would be overwhelmed. The project is expected to reduce vehicle miles travelled (VMT) by approximately 135,000 per year.

The signature piece of the Northeast 36th Street/SR 520 overcrossing and roundabout project is its double-diamond-shaped, approximately 50,000-square-foot, landscaped lid that spans SR 520. The essentially two offset, adjoining landscaped lids—a unique and innovative solution—prevented the project from becoming a much more costly tunnel project. This unique design was chosen due to the ability to use standard WSDOT girders that were laid perpendicular to the SR 520 alignment, creating the lids. Attempting to span along the centerline of the new roadway alignment would have necessitated the use of much longer and deeper girders. These girders would have cost more money and the approach fills and walls would have needed to be higher, adding additional costs to the project.

In keeping with Redmond's designation as the "bicycle capital of the Northwest," the Northeast 36th Street lid is optimized for pedestrian access and bicycle connections. It provides one through-lane in each direction; and bike lanes, sidewalks, and intersection improvements, creating expansive and landscaped pathways. Ramps and multi-use paths at each end of the bridge provide access to adjacent sidewalks and the popular five-mile trail along the west side of SR 520. On- and off-ramps for bicycles are provided in order to allow access to the trail without crossing live vehicular traffic on Northeast 36th Street. It also accommodates a future Sound Transit Link Light Rail alignment and a connecting pathway that offers pedestrian access to a future nearby transit center.

PROJECT OF THE YEAR

TRANSPORTATION
MORE THAN $75 MILLION

Keystone Parkway Corridor

Managing Agency: City of Carmel, Indiana
Primary Contractor: Milestone Contractors, LP
Primary Consultant: American Structurepoint, Inc.
Nominated By: City of Carmel, Indiana and APWA Indiana Chapter

A fast-growing, progressive city containing one of Indiana's largest business districts, the City of Carmel grew substantially over the past decade, by 109 percent. As a result, the explosive growth spurred a slew of traffic challenges with one of Carmel's most heavily traveled roads—Keystone Avenue (formerly known as Indiana State Road 431)—growing increasingly sluggish and dangerous.

Since the late 1960s, Keystone Avenue had been a four-lane, divided roadway with seven at-grade signalized intersections—two of which were rated as "failing" at peak travel periods, according to a state-led analysis. The corridor also acted as a barrier between east and central Carmel, restricting east/west mobility for vehicles, pedestrians and bicyclists.

Seeking a minimally disruptive, long-term solution, the City's officials proposed the redevelopment of Keystone Avenue into a four-lane parkway with grade-separated roundabout interchanges. Turning to American Structurepoint for its conceptual design and engineering expertise, the planning portion of the project evaluated the feasibility of lowering portions of existing Keystone Avenue and creating elevated, grade-separated roundabouts at each of its six major existing intersections. American Structurepoint provided an innovative strategy for the City by developing full-access, tight double-teardrop roundabout interchanges in lieu of traditional interchange configurations, including one complex interchange consisting of two teardrop roundabout intersections connected with a frontage road system. Unlike any other corridor in the U.S., this solution minimized the interchange footprint and eliminated the need for signals, allowing for the free flow of traffic.

In addition to enhancing traffic flow, one of the project's main goals was improving safety and access for pedestrians and bicyclists. The completed interchanges have added substantial capacity, safety and connectivity for all modes of transportation with minimum impact to adjacent property owners.

Although numerous single-lane roundabouts, multi-lane roundabouts, and roundabout interchanges have been constructed in the U.S. over the past several years, the Keystone Parkway project is unique as it features the first double-roundabout interchange in the state of Indiana. No other state or municipality in the country has integrated roundabouts into an interchange design with such a tight configuration. When measured center to center of the teardrop, the ramp termini are less than 290 feet apart, and the maximum right-of-way width along Keystone Parkway was held to less than 300 feet. With such a tight footprint, it was necessary for American Structurepoint to use complex, state-of-the-art traffic modeling and simulation software to perform a comprehensive traffic operations analysis and determine whether such a tight configuration could work effectively for both current and projected traffic volumes. Despite the tight distance between the ramp termini, the completed interchanges have greatly improved traffic flow and are expected to function at top service levels through 2030.

Photo by Above All Photography

Q "Now I've heard it all! I just read that an Air Pollution Control District in California is trying to cut out the All-American display of fireworks on the 4th of July. Our city has done these for years and it doesn't seem right to deprive our citizens of this special time. What's going on?"

A There's nothing more American than motherhood, the 4th of July, and apple pie, right? While many jurisdictions have outlawed the sale and igniting of fireworks for years, most have allowed for community displays so everyone can enjoy the pyrotechnics. However, in some areas where the air pollution is high, the addition of the smoke, bits of paper, and metal created by these massive displays only adds to the heaviness of the air and can cause a host of health problems, particularly with those who have high sensitivities.

I read an article recently about the San Joaquin Valley Air Pollution Control District's pilot project. They are offering grants of $10,000 to three cities in their District who would be willing to put on a laser light show in place of a fireworks display on July 4. Following the holiday, they will assess the impact on air pollution levels and determine whether to continue, halt the program, or expand it in subsequent years. Lots of cities already have laser light shows throughout the year so it may seem anticlimactic to give up your "bombs bursting in air." Since fireworks are considered to be an American tradition during the holidays, Christmas and New Year's, in addition to July 4, some are questioning whether our desire to clean up the air by eliminating a one-day event is reason enough to encroach on our traditions. Dogs and babies will be happy. Vendors will not. What do you think?

Q "Closed landfills are being used for so many things in different communities and it is nice to see golf courses, soccer parks, walking trails, and other recreational amenities instead of just the "mountains" where the landfill used to be. Surely there is something more constructive that could be done on these sites, too. Anything come to mind?"

A Funny you should ask! During a tour of city facilities in Columbia, Mo., during their recent third Reaccreditation Site Visit, we saw the Columbia Bioreactor Landfill and Biogas Energy Plan that turns landfill gas into electricity. What a process! Operational since 2009, the disposal cell provides renewable gas-generated energy to Columbia's power portfolio. Conventional landfills merely store waste; a bioreactor landfill treats waste by adding liquid to the disposal cell to enhance microbial activity, accelerating decomposition and increasing landfill gas production. Previously the greenhouse gas produced as waste decomposed was burned, without energy recovery. With the construction of the Biogas Energy Plant, the landfill gas is captured to produce a valuable commodity needed every day: electricity. Columbia Water & Light was awarded a competitive bid to build the gas-to-energy plant and the cost was $2.85 million. It currently has an output of 2.1 megawatts which will supply approximately l.5 percent of Columbia's energy use per year, or the amount of energy needed to power about 1,500 homes in Columbia. The process has been good for all involved. For more details, contact John Glascock, Public Works, Columbia, Mo., at jdglas@GoColumbiaMO.com.

Q "What in the world can we do with old street-name signs? We don't want to pollute the landfills with them but most aren't appropriate for further city use. Any ideas?"

A Have I got a deal for you! The Seattle Department of Transportation is busy replacing old, faded, hard-to-read street-name signs on many of their streets, both arterial and residential. The new signs

are larger and easier to read. At the end of 2011, SDOT crews had installed new street-name signs at 6,714 intersections across the city. In keeping with their mission of recycling, the Seattle Public Utilities came up with a creative way to reuse many of the old signs. They were built into the entrance wall that greets folks entering the new South Transfer Station in South Park. The project shows a dedication to recycling and a create use of materials. The project was well received and if you have a vacant space you'd like to decorate in your garage, or need a piece of art for the living room or your desk at the office, you can purchase some of the used signs for your own purpose. An updated list of available signs which range in price from $5 to $15 is available at the City of Seattle Fleets and Facilities surplus warehouse. Pretty creative!

R

Ask Ann

Please address all inquiries to:

Ann Daniels
Director of Credentialing
APWA, 2345 Grand Blvd., Suite 700
Kansas City, MO 64108-2625

Fax questions to: (816) 472-1610

E-mail: adaniels@apwa.net

Products in the News

Innovative solutions from RS&H

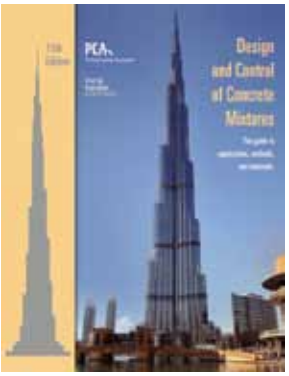
RS&H IMPROVING YOUR WORLD

RS&H, whose tradition began in 1941, offers **comprehensive planning, design, environmental and program management services** for all modes of transportation and public infrastructure projects. We offer a unique mix of architects, engineers, planners, and environmental scientists with nearly 800 associates in 33 offices nationwide. Our teams provide innovative and sustainable solutions encompassing a wide range of practice areas, including roadways, water/wastewater, utilities, community planning and design, public facilities, parks and trails, and transit systems. For more information about RS&H's services, visit www.rsandh.com.

Pavement preservation services from Proseal Inc.

Proseal Inc. has introduced **innovative pavement preservation services** to state, county and city municipalities by using asphalt rejuvenators and restorative scrub seals to prolong the life of asphalt as opposed to other traditional methods such as chip or slurry seals. Proseal Inc. applies a full line of rejuvenators including products used in high- and low-volume traffic areas as well, including city streets, highways, airports, and cart, bike and walking paths. With branches in Kansas, Oklahoma and Nebraska—combined with specialty products like Reclamite, Cyclogen, CRF Restorative Scrub Seal, PACAF Seal, and Coherex to name a few—Proseal Inc. is sure to have the right product for your road with today's budgeting crisis. Call today for a pavement evaluation or more information. Call (877) 650-9805 or visit us at www.proseal.us.

Design and Control of Concrete Mixtures, 2011 Edition



For more than 85 years, PCA's *Design and Control of Concrete Mixtures* has been the authoritative reference on cement and concrete materials. The new, fully revised 15th edition contains the most recent standards, specifications and test methods for ASTM, AASHTO and ACI, and includes the best practice on materials and methods for sustainable concrete construction. For more information or to order, visit www.cement.org/apwa or call (800) 868-6733.

Design-Build Storage Solutions with ClearSpan™ Fabric Structures

ClearSpan Fabric Structures is the industry-leading manufacturer of **tension fabric buildings**, offering American-made structures with in-house engineering, manufacturing, financing and installation. These structures provide energy-efficient, economical solutions for a variety of applications, including waste management, bulk storage, municipal use, wastewater treatment, manufacturing, distribution, athletics, military and more. ClearSpan Hercules Truss Arch Buildings feature abundant natural light and spacious interiors without support posts to interfere with forklifts, dump trucks, skid loaders, conveyers and other heavy machinery. Every Hercules Truss Arch Building is custom engineered to fit the requirements of the specific location, such as snow load or foundation type. With minimal foundation requirements, the structures can be permanent or temporary, and are easy to relocate. For more information, visit www.ClearSpan.com/ADAPWA or call 1.866.643.1010 to speak with a ClearSpan specialist.

Snowplow hitch with electric/hydraulic power command post from Flink Company

Flink Company is proud to release the "NEW" **snowplow hitch with electric/hydraulic power command post.** Hitch allows for hook-up at front of chassis, and demounting of hitch with snowplow for a flush front end. A set of electronic switches allows for plow connect, using a hydraulic leg and arm post for self-supporting of equipment. Driver side switches power up/down the leg and lift arm for repositioning during connection. For more information please visit www.flinkco.com.

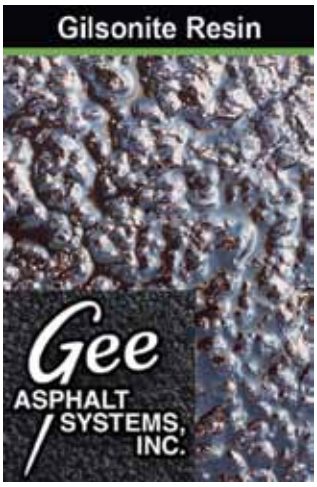
TAGSTER™ – Easy and Safe Graffiti Removal!

TAGSTER™ Graffiti Remover is the safe, biodegradable, non-toxic, non-caustic, and non-flammable way for public works departments to eliminate graffiti and tagging problems. Whether you are trying to remove a declaration of love or gang symbols, TAGSTER unique gelled solution will allow you to wipe it away easily and safely. Removes graffiti from metal, concrete, wood, rock, plastic, restroom privacy panels or virtually any surface! For more information, call **RHOMAR Industries, Inc.**, at (800) 688-6221.

The Cree XSP Series LED Streetlight

The revolutionary **Cree® XSP Series LED streetlight** is unlike any other. Using its **NanoOptic® Precision Delivery Grid™ optic**, it cuts energy consumption in half and is designed to last 100,000 hours. With double the lumens per dollar you get faster payback, better performance and better price. The XSP Series pays for itself, then pays you. For more information, visit http://www.cree.com/lighting/products/outdoor/streetlights/xsp-series-streetlight.asp?WT.mc_id=CR5197

Take care of good pavements while they are still good



All seal coats are not the same! While HMA pavements become hard and brittle, when GSB-88 Sealer Binder—a Gilsonite resin unique in natural hydrocarbon, high in asphaltenes and nitrogen compounds—is applied to the surface it penetrates into the matrix and maintains all oils, resiliency, and flexibility. The use of Gilsonite lowers viscosity by over 30%, increases ductility by 30%, and increases Marshall Stability by almost 40% (strength of binder) after five years. Recent FHWA, FAA, NAVFAC, MDOT, and AzDOT research shows agencies **reduce pavement replacement costs by up to 60%** compared to using the worst first-practices. **Gee Asphalt Systems *ARE* The Asphalt Preservation Specialists!** Serving clients nationwide, for more information contact us at (800) 747-8567 or log on to www.geeasphalt.net/apwa.

Scalewatcher water conditioner from Scalewatcher North America

Scalewatcher North America is the manufacturer of the original, patented and award-winning computerized electronic **water conditioner**. Scalewatcher works by producing a varying electronically-applied force-field, induced by a coil wrapped around the outside of the pipework, which keeps the minerals in suspension and thus prevents limescale forming. Pipes are kept virtually scale-free and as existing scale is dissolved, boilers and

hot water systems become more efficient thereby saving energy. Scalewatcher technology is based on continuous research and over 20 years of experience and expertise as market leaders with countless units sold worldwide. For more information, call (610) 932 6888 or visit www.scalewatcher.com.

Wilden® releases PX800 Advanced™ Series AODD Pumps as drop-in replacement for Original™ Series Pumps

Wilden®, the worldwide leader in air-operated double-diaphragm (AODD) pump technology, has announced the availability of its **PX800 Advanced™ Series Stainless Steel AODD Pump**. The new PX800 design is center-ported and features a full 51mm (2") flow path and threaded 51mm (2") horizontal fluid connections. This construction makes the new PX800 pump ideal for liquid-transfer applications where superior product containment, high flow rates and superior efficiency are required. Additionally, the footprint of the PX800 Advanced pump matches that of Wilden's Original™ Series PX8 (clamped) Stainless Steel AODD pump, which enables "drop-in" replacement of an Original PX8 pump with no need to disturb existing piping. For more information on Wilden AODD pumps, please go to www.wildenpump.com.

SMART VENT automatic foundation flood vents

The **SMART VENT automatic foundation flood vents** protect buildings from the devastation and destruction that a hurricane, flood or other natural disaster can cause. Certified by the International Code Council Evaluation Service (ICC-ES) and accepted by the Federal Emergency Management Agency (FEMA), each standard vent model is certified for 200 square feet of flood coverage. SMART VENT provides a line of engineered openings that are controlled by patented dual floats. SMART VENT automatically opens when floodwater levels rise, without electricity and without human intervention. Temperature-controlled louvers control the airflow in and out of a crawlspace on all dual function models. For more information call (877) 441-8368 or visit www.smartvent.com.

New DAYLube nanoceramic grease is ideal for forklifts and lift trucks

New **DAYLube high performance grease** uses nanoceramic particles which act as sub-microscopic ball bearings to provide continuous lubrication to steel surfaces, and is especially suited for use with fork lifts, lift trucks and other material handling devices. With a much lower coefficient of friction at all temperatures than traditional PTFE greases, chemically inert DAYLube is also environmentally friendly. It maintains its viscosity across full temperature range and is NSF-H1 Food Grade Certified. Extraordinary adhesion extends production up to ten times that of other greases. For more information visit www.daytonprogress.com or call (937) 859-5111.

Drivings-cool, inc.

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drivings-cool, inc

www.drivingscoolinc.org

My name is Jim Van Den Elzen and I am the President of a nonprofit corporation called **Drivings-cool, inc**. We visit middle and high schools all over the United States exposing students to **careers in the transportation industry** using a mobile classroom equipped with a driving simulator. During a scheduled visit we allow students to attend our mobile classroom and drive vehicles within the transportation industry. We break down our visit by offering garbage/recycle trucks, coach/school bus, snowplow/dump trucks—basically

any commercial vehicle weighted and sized all the way to tractor/trailer rigs. We expose the students to this industry and get our future workforce to think about careers, and also explain the importance of being drug and alcohol free as well as having a clean driving record before they drive. For more information please visit www.drivingscoolinc.org.

Go green with Modified Asphalt Solutions, Inc.

Modified Asphalt Solutions, Inc. is the supplier of **ground tire rubber (GTR) modifiers** to asphalt producers in markets across the U.S. Missouri DOT's efforts to increase the use of GTR in asphalt projects in Kansas City and across the state of Missouri resulted in paving projects utilizing nearly 250,000 tires last year alone. This is a time-tested, engineered and proven product, with a three-year project with NCAT at Auburn, AL recently concluding. Projects are currently underway with various state DOTs and municipalities across the country. Contact us to find out how going "green" can actually save money and the environment. For more information please visit www.modifiedasphaltsolutions.com.

RoadVista's upgrades to the Laserlux Mobile Retroreflectometer

RoadVista has announced upgrades to the **Laserlux Mobile Retroreflectometer**, including a new data acquisition system. The Laserlux objectively measures the retroreflectivity of pavement markings using a scanning laser source. Measurements are collected quickly and accurately by incorporating new, high-speed data acquisition electronics and software. The new acquisition system allows for simpler in-vehicle operation through touch-screen tablet compatibility, and a 200kHz sample rate captures 30,000 data points in a single 1.1 m scan for increased accuracy. Enhancements to the Laserlux's USB data acquisition result in even greater reliability. For more information, please visit www.gamma-sci.com/roadvista-retroreflectometers.

Combined Heat and Power – Cogen onsite power generation delivers $0.07/kwh

Vireo Energy provides **turnkey CHP/Cogen systems**. We include 100% finance with our projects, allowing companies to immediately reduce their cost of energy. Our systems range from 100 kW up to 100 MW. Our package includes up to 10-year contracts for gas, O&M, and system production and performance guarantees. Target markets include office buildings, campuses, hotels, hospitals, municipal buildings, MSW sites, landfills, wastewater treatments plants, etc. For more information, please call (310) 314-5126 or visit www.vireoenergy.com.

VIREO ENERGY

A surveyor's dream come true!

Forestry Suppliers' Class II Surveyor's Vest is constructed of 100% polyester mesh that makes it cool and comfortable to wear. You'll love the many roomy pockets including a radio pocket with a mic clip, a field notebook pocket, four pencil slots, a compass pocket with grommet, four flagging pockets with grommets, two large inside pockets and two inside zippered pockets. Velcro® pocket closures keep items secure, and 2" wide reflective strips on the front and back of the vest provide extra visibility. Find our complete selection of safety vests in our current catalog, or visit our website at www.forestry-suppliers.com to learn more and request a free catalog.

Introducing Muncie's Optimum Series Gear Pumps with Opti-Grip Technology

Muncie Power engineers had a mission to improve traditional gear pump technology to achieve higher performance over the industry's current designs. Their efforts resulted in the development of the **OPTIMUM Series hydraulic gear pumps** which offer a unique, bushing style design with enhanced durability and

pressure capabilities while still maintaining a reasonable size and competitive cost. These specialized hydraulic gear pumps incorporate a distinctive load holding feature known as the "Opti-Grip." The "Opti-Grip" design contributes to proper housing alignment and also helps prevent casting separation and pressure bulging which allows the OPTIMUM pumps to operate at high pressures. For more information regarding the OPTIMUM Series, please call 1-800-367-7867 or visit our website at www.munciepower.com/optimum.

DisposaCone traffic control devices

The compact, highly visible **DisposaCone** makes it ideal for private citizens, law enforcement agencies and emergency response teams as a **temporary traffic control device**, as approved under section 6i of the federal *Manual for Uniform Traffic Control Devices* (MUTCD). At 18 inches in height and highly visible in the widely recognized fluorescent safety orange color, DisposaCone is a retroreflective barricade that provides valuable public warning. Its compact design allows for 36 cones to be folded and stacked together for easy storage beneath vehicular seats and trunks. DisposaCones are perfect for motorcycle saddlebags where space is a high commodity. For more information, please visit www.vanguardonline.com.

Dynapac showcases paver at World of Asphalt

Dynapac proudly showcased its paving equipment line at the 2012 World of Asphalt, which drew a record 6,500 people March 13 to 15 in Charlotte, N.C. Of particular interest to attendees were the **Dynapac F1000T tracked paver and F1000W wheeled paver**, which are designed and built specifically for North American operators. The pavers, which are in the 10-foot-wide class with expanding options to 19 feet and beyond, feature an outboard auger drive and conveyor system that eliminates center line segregation. The conveyor system delivers up to 600 tons of asphalt per hour to a Carlson screed for mats up to 12 inches deep or for thin overlays. For more information, please visit www.dynapac.us.

SNOW FOE MTP® medium-duty trip-edge reversible plow

For decades, **Henderson** has been a leader in the engineering and manufacture of heavy-duty snowplows. We're now proud to bring this technology to the **MTP**, a true medium-duty trip-edge reversible plow. Key features setting the MTP apart from other medium-duty snowplows are: multiple moldboard options (orange polymer, carbon steel or stainless steel), trip-edge with adjustable torsion springs, outboard reversing cylinders, level-lift, reinforced pivot points, electric or hydraulic cab control, quick connect/disconnect and ease of maintenance. Henderson delivers heavy-duty characteristics in this very versatile medium-duty snowplow. For more information, please visit www.hendersonproducts.com.

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...to get in the *APWA Reporter*'s Fleet Services issue!

By advertising in the *APWA Reporter*, news of your equipment, product or service will be sent to more than 29,000 APWA members, most of whom are key decision makers in their agencies.

So, don't miss this opportunity to advertise in the September "Fleet Services" issue. Our fleet articles will feature topics such as vehicle procurement, technician training, and performance measurement programs.

The deadline to reserve your space is August 8; the materials are due by August 10.

Call Amanda or Kristen at (800) 800-0341.

UPCOMING APWA EVENTS

International Public Works Congress & Exposition

2012	Aug. 26-29	Anaheim, CA
2013	Aug. 25-28	Chicago, IL
2014	Aug. 17-20	Toronto, ON
2015	Aug. 30-Sept. 2	Phoenix, AZ

For more information, contact Dana Priddy at (800) 848-APWA or send e-mail to dpriddy@apwa.net.

North American Snow Conference

2013	Apr. 7-10	Charlotte, NC

For more information, contact Brenda Shaver at (800) 848-APWA or send e-mail to bshaver@apwa.net.

National Public Works Week: May 19-25, 2013

Always the third full week in May. For more information, contact Jon Dilley at (800) 848-APWA or send e-mail to jdilley@apwa.net.

JULY

13-17 National Association of Counties, 2012 NACo Annual Conference and Exposition, Pittsburgh, PA, www.naco.org

15-18 National Association of Clean Water Agencies, 42nd Annual Meeting, Philadelphia, PA, www.nacwa.org

22-25 Soil and Water Conservation Society, Annual Conference, Fort Worth, TX, www.swcs.org

23-27 Esri User Conference, San Diego, CA, www.esri.com

31-8/3 Association of Diesel Specialists, International Convention & Tradeshow, Lake Buena Vista, FL, www.diesel.org

INDEX OF ADVERTISERS

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Legend: IFC = Inside Front Cover; IBC = Inside Back Cover; BC = Back Cover

Some companies might claim expertise in one or two areas of pavement preservation, but Colas Pavement Preservation has proven expertise in **every** area. The Colas Pavement Preservation group has the most technologically advanced approach to pavement preservation product development, the highest quality manufacturing and the most experienced construction services available.

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