Annual Winter Maintenance Issue

- Levels of Service for Winter Operations
- ROI: A Winter Maintenance Strategy for Success
- Making a Difference with Weather-Savvy Roads
- Operators Take Center Stage
- Don’t Be the Next Weather Disaster Headline
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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.

WINTER MAINTENANCE ISSUE

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The silent servants of the public

David L. Lawry, P.E.
APWA President

You can’t miss a fire truck coming down the street, lights flashing and siren warbling, as it heads toward the fire, on its way to protect the public. There is a whole bunch of noise and distraction associated with the truck, precisely so the public pays attention to the truck, gets out of its way, and allows the first responders to get to the scene and do their job.

Contrast that with the plow truck—it is likely out there at 3:00 a.m. when most people are in bed, and asleep. Should that plow truck happen to wake someone, perhaps because of the noise the plow makes as it scrappes the snow off the road or the backing up alarm, then the woken person is perhaps more likely to complain about the noisy truck than to think warm thoughts about how the plow operator is protecting the public and keeping them safe. No sirens for the plow trucks...

And yet, without those plow trucks, the fire truck is just a big noisy piece of apparatus, stuck in a snow drift. The fire department’s first responders cannot respond effectively (at least if it is snowing) if the plow driver has not been there first to make the road safe for the fire truck to drive along.

As I meet the front-line public works people around the country, two things become very apparent. First, they take pride in doing their jobs quietly, efficiently, and effectively—keeping their communities safe and functioning with as little fuss as possible. They are not “flashing lights and sirens” sort of people. Second, while they are aware that they are not held in the high esteem that other first responders are by the public, they know that they deserve that esteem every bit as much as the fireman or the police officer does, because the job of the public works person is every bit as critical, if not more, to the safety and well-being of their communities as the work of the fireman or the police officer. That lack of esteem does not bother them very much—they are likely to shrug and just get on with the job, because that is the way they are, dedicated public servants who delight in doing their job knowing that in doing it, they serve the public extremely well.

Our front-line folk are the silent servants of the public, and they take pride, as they should, in all the work that they do to keep the public safe and well served in their communities, on a daily basis. And that is why they deserve to be recognized as first responders, and why APWA has worked so hard for them to be recognized by federal mandate as first responders.

During my Opening General Session comments at PWX in Kansas City, the one word I chose to describe public work.
Our front-line folk are the silent servants of the public, and they take pride, as they should, in all the work that they do to keep the public safe and well served in their communities, on a daily basis.

works is selflessness. Selflessness can be defined as, “caring more about the safety and well-being of others than for yourself.” As we enter our winter sea-son, a time when public works is most visible, we should inform everyone of our response and dedication to maintaining our roadways, sidewalks and parking lots throughout the winter. Thousands of dedicated public works professionals will work countless hours this season to ensure the public, freight and emergency services can expect a safe and reliable roadway system. Public works professionals exhibit selflessness each time they are called upon as a first responder, or in this case, each time they are asked to respond to a snow and ice event.

Thanks to APWA and our Winter Maintenance Subcommittee, our first responders in snow removal have educational opportunities to help them in their duties and educate them on the latest technologies and techniques. Our APWA Winter Maintenance Supervisor Certificate Program is one of the most successful educational programs APWA has ever offered. We have had over 3,000 professionals attend and complete the certificate training. The subcommittee continues to roll out new offerings with an Operators Course pilot this fall. They have many other resources available to members as well such as fact sheets, articles, CLL podcasts, videos, etc. They also were the architects of the APWA Excellence in Snow and Ice Control Award which truly helps an agency in its evaluation of its operation. The most important resource is its members who share their experience and knowledge through the planning and delivering of our APWA North American Snow Conference and at PWX.

As you read through this edition of the APWA Reporter, our winter maintenance issue, think of all those first responders that will be out there this winter keeping our roads safe and our communities strong.
Winter Maintenance Subcommittee: Leadership, education and innovations for APWA members

Daniel Schacher
Fairbanks District Superintendent
Alaska DOT and Public Facilities, Fairbanks, Alaska
Chair, APWA Winter Maintenance Subcommittee

Our APWA Winter Maintenance Subcommittee has been working hard this past year. Composed of a group of winter professionals from across the United States and Canada, members come from varied backgrounds including academia, operations, and leadership roles within their various organizations, both public and private. The main role of the Winter Maintenance Subcommittee is to advocate for innovations and efficiencies in the winter maintenance profession in public works. To support that goal, the group helps deliver winter-related education and training to APWA members and those outside of the association and provide strong leadership in industry advancement and outreach. The breadth of knowledge this subcommittee brings to APWA, along with decades of diverse real-world and academic experience, makes it one of the most respected sources of information and expertise in the winter maintenance field.

Recognizing our leaders
Our committee was very proud to learn that one of our own was recognized as one of APWA’s Top Ten Public Works Leaders of 2018. Larry Schneider, Streets Superintendent for the City of Ft. Collins, Colorado, has been awarded this prestigious and well-deserved honor. Larry has been serving at the City of Ft. Collins for over 35 years and has led many positive changes in their snow and ice program. Larry also coordinates with other city departments to enhance service levels to the citizens of Ft. Collins year-round. In addition to his service on the Winter Maintenance Subcommittee, Larry has been instrumental in the continued success of the APWA Western Snow & Ice Conference, held annually in his own Centennial State. One highlight of the Western Snow & Ice Conference is the National Snow Roadeo which brings together equipment operators from across the country to showcase and challenge their knowledge and skills.
Larry, we are extremely honored to call you a colleague, but more so to call you a friend. Congratulations!

Training

The subcommittee continues to be deeply involved in planning and delivering the APWA North American Snow Conference (NASC), one of the highlights of our year. The NASC is recognized as one of the premier snow and ice events in the world, and the standards are very high for the opportunity to deliver the education sessions. One of the highlights of the 2018 NASC held in Indianapolis, Indiana, was the four-part “Liquid Use in Winter Maintenance” series of presentations delivered exclusively by active members of the Winter Maintenance Subcommittee. Courses in Liquids 101, 201, 301 and Advanced Liquids led attendees on a journey from discovery through mastery in incorporating the use of liquids to their winter event tool kit. Each session was very well attended with questions at the end of each session often lasting well beyond the time allotted. All four presentations were reviewed and updated based on the feedback from the attendees at NASC and were presented again at PWX 2018 in Kansas City.

The Winter Maintenance Supervisor Certificate program endures as a very strong educational tool and method of promoting our profession. Over 3,800 individuals have now received certificates through this program. At NASC in Indianapolis this year, another 264 individuals became certified winter maintenance professionals with numerous additional trainings scheduled to be held in various locations throughout North America during the rest of 2018.

Based on requests from APWA membership, a small task force from the Winter Maintenance Subcommittee is diligently working to prepare training targeted for our frontline equipment operators. This training is in the draft stage of development, but plans are to deliver the first training in October. We are excited to share the results.

The “Open Your Winter Toolbox” series in the APWA Reporter continues to appear each month. Subcommittee member Dr. Wilfrid Nixon authors these articles through his own experiences and input from others in the industry. Each article tackles a different subject and involves tools, technology or innovations that agencies can consider implementing to improve their operations. I highly recommend you take the time to read these informative articles, even when winter is not staring us in the face.

2018’s Click, Listen & Learn (CLL) topic is “Research: Where to look for winter answers.” Please tune in October 18 as subcommittee members Kevin Hensley and Matt Morriem, along with Paul Pisano from FHWA, discuss this topic.

Other news

Many changes have taken place in APWA regarding staff assignments and procedures. Deanne Cross is the new staff liaison to the Winter Maintenance Subcommittee and we welcome her to our team. Deanne has been working diligently with us on many projects and has been fantastic to work with—we look forward to an enduring relationship to help sustain subcommittee accomplishments. Our group has also placed two of our members on other committees. Dr. Wilfrid Nixon is now representing winter maintenance interests on the Autonomous/Connected Vehicle Subcommittee. Bret Hodne was nominated by the team to serve on the newly formed Professional Manager Snow and Ice Award Committee.

Our subcommittee also fields media requests and drafts articles for the APWA Reporter and other industry publications. These articles can be seen on a monthly basis in the Reporter in the “Open Your Winter Toolbox” series, mentioned earlier. We also contribute to the annual Transportation and Winter Maintenance editions of the Reporter. Our members are frequently sought-after speakers at winter-related conferences and trainings in North America and abroad, demonstrating the extent to which APWA is viewed as leaders in this profession.

For this group, winter maintenance is not just about the winter season, it is a year-round passion. The world of winter maintenance can be demanding and satisfying all at the same time. One of the major keys to success is the opportunity to network with other professionals. Having the ability to tap into others’ successes, failures and knowledge can prove to be invaluable if one of your major goals is to implement a continuous improvement concept within your organization. Your Winter Maintenance Subcommittee is here to assist in any way possible, so please do not hesitate to reach out to any subcommittee member.

As Chair of this outstanding group, I ask you to visit the APWA Winter Maintenance Subcommittee web page and become more familiar with our members and the excellent opportunities for collaboration in advancing your winter maintenance operations.

Daniel Schacher can be reached at (907) 451-5276 or daniel.schacher@alaska.gov.
In June 2017, the City of Shoreline Public Works Department received Agency Accreditation from the American Public Works Association (APWA). Shoreline was the 126th agency in North America to receive this prestigious designation and is only the eighth accredited agency in the state of Washington. The purpose of the accreditation is to promote and recognize excellence in the operation and management of a public works agency as well as a commitment to continuous improvement in the delivery of public works operations and services.

During 2010, the Public Works Department started researching the accreditation process and level of effort necessary to become an accredited agency. It became clear to City leadership that the accreditation provided many benefits—both in the process of going through accreditation and the recognition it provides. By the end of 2013, we began the self-assessment process to know what we were doing right and how we could do things better.

The process was a journey for the Public Works Department. It began under a previous Public Works Director, Mark Relph, and upon his departure in 2014, priorities shifted and there was a delay in continuing the accreditation process. Our current Public Works Director, Randy Witt, restarted the project involving all employees, from front line to the top, in revising, documenting and/or developing policies and practices. The process was...
a team effort, as every department in the City collaborated. Each applicable practice was assigned to a person or subject matter expert (SME) team and then they had to present the draft final product to the oversight team that reviewed every single practice. This process helped conduct the work in a timely fashion and provided a higher level of quality than might otherwise have been achieved.

In order to meet the stringent accreditation standards, we revised many of our policies and procedures. Since we are a relatively young city (incorporated in 1995), we had to create/modify/update many of them. It was an arduous process and required the constant reshuffling of priorities. However, all the hard work paid off and we proudly became an APWA-accredited agency.

“The awarding of the APWA Accreditation shows we have dedicated ourselves to concepts of improvement and in-depth self-assessment of department policies, procedures and practices. The heroes of this prestigious APWA award are the public works staff whose mission is to provide public works services and programs that contribute to making City of Shoreline a great community,” said Public Works Director, Randy Witt.

Susana Villamarin can be reached at (206) 801-2603 or svillamarin@shorelinewa.gov.

The purpose of the accreditation is to promote and recognize excellence in the operation and management of a public works agency as well as a commitment to continuous improvement in the delivery of public works operations and services.
Most of us have worked for people we admired and respected, and probably worked for some people we wish we had never met. Some of the people I worked for were managers; others were leaders. And some were both. Literally thousands of books have been written about leadership and management, and we still have trouble getting it right. There is a difference between leadership and management. It is my belief that you lead people; you manage systems and processes.

Whenever there is a change at the top of an organization, be it a new city manager or a new department director, a certain amount of anxiety exists, especially if the new person comes from outside the organization. Everyone wants to know all about this new person and what their leadership or management style is like. One way for a new director to address this anxiety is to share his or her leadership philosophy up front. That’s the easy part. Making sure he or she lives up to that philosophy is the hard part. Leadership styles are evolutionary and may change over time, but the core values do not. They are influenced by life experiences, organizational norms, the political environment, and by the citizens of the community.

As I look back on a public service career of nearly fifty years, I describe my style of leadership as “leading and learning by walking around.” Employees could expect to find me any place, at any time, with no hidden agenda. An employee (an engineer in City Hall) once said to me, “Bob, you’re never in your office.” I looked at him and said, “Tom, more than seventy-five percent of our employees don’t work in City Hall.” I learned early on that I would spend more time in the office and in meetings than I would really like to, but I tried to let employees know not to think something was wrong or that they were in trouble if they saw me at their workplace or job site. I believe that the best way to find out what is going on in an organization is to talk to the folks who are making things happen! I asked a lot of questions—not to check up on or “test”—but to learn. Every organization is different and does things in different ways.

My first and foremost responsibility was to ensure that the Public Works Department provided to the residents of the community the finest services possible, consistent with the policies of the city and the direction of the city manager and city council. That required uncompromising adherence to the highest ethical and professional standards.

I expected employees to always TELL IT LIKE IT IS. Honesty and integrity are absolutes—for everyone. There is no room for compromise in these areas. They characterize the only organizational environment in which anything worthwhile can be accomplished. Important decisions are based on information and reports from employees at all levels in the organization, and accuracy is essential. Don’t tell the boss what you think he or she wants to hear. Tell him/her the truth! Your employees must be able to count on you to always tell you the truth as well.

QUALITY IS FREE. You only get one chance to do things right the first time. While it may take a little longer to get it right the first time, you only need to do it once. The work you do on the front end of a project will pay great dividends during the execution phase. Good planning is critical to successful execution. The more you sweat during the planning, the less you bleed during the battle!

The CHAIN OF COMMAND is a two-way street. Loyalty both up and down the chain of command is essential to
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There is a difference between leadership and management. It is my belief that you lead people; you manage systems and processes.

a high-performance organization. You must have total confidence in your employees, as well as those above you, to do what needs to be done, and to communicate openly and honestly.

KEEP THE BOSS INFORMED. Everyone must subscribe to the idea of “no surprises” by keeping the internal lines of communication open and functioning in both directions. When something goes wrong, let the boss know about it immediately. He does not like to hear about problems from his boss or from someone outside the organization. Bad news, unlike good wine, does not get better with old age. Don’t be afraid to be the bearer of bad news (or good news, either!). And don’t shoot the messenger!

WHEN IN CHARGE, TAKE CHARGE! Decentralization results in more efficient execution. It is not the leader’s job to tell employees how to do their jobs. The leader’s job is to ensure that employees have the training, the equipment, and the materials they need to do their job. The city manager makes clear to what is expected of the department, and the leader must do his or her best to ensure that each employee understands what it is that the organization is trying to accomplish.

SPEAK WITH ONE VOICE. While it is unlikely that everyone will all agree on every issue, it is important that differences remain within the organization. Any differences which may come up can be discussed and debated until a decision is reached, at which time everyone must move forward together and in the same direction.

DON’T BE AFRAID TO STICK YOUR NECK OUT. Everyone makes mistakes—even the boss! Hopefully, each mistake is a learning experience, and you will avoid making the same mistake twice. Making mistakes is an essential part of the learning process. Don’t be afraid to do something because of a fear of failure. It is also important to own up to your mistakes.

THE GLASS THAT’S HALF EMPTY IS ALSO HALF FULL. Some organizations are blessed to have more resources than others. There will be occasions when you wish you had more
of something, or a different piece of equipment. It’s human nature to want more. If you truly need something, let the boss know so he/she can try and get it for you. In the meantime, try and do the best you can with what you have.

“PRIVATEs” ARE PEOPLE TOO! Every individual in the organization is important. The folks who sit at the top are the support people. The “real work” is done by the men and women who drive the trucks, operate the construction equipment, turn the wrenches, review the plans and design the projects, and keep the paperwork flowing. Without them, there would not be a need for the director!

BE SAFE! Public works is a dangerous business, but a large part of the business is to make sure the community is safe for everyone. Think before you act, especially when your safety or the safety of others is at risk. Employees are all too important to be incapacitated due to an accident or injury that could have been avoided.

CELEBRATE SUCCESS! When someone does something well, let them know how much their contribution to the organization is appreciated. Take time to recognize good performance when it occurs—not just at annual review time. And don’t be bashful about telling your story about how you serve the community. So much of what you do is unseen and taken for granted. If you don’t “toot your horn,” no one else will.

HAVE FUN! If you do not enjoy what you are doing, you are in the wrong business. Public works is critical to the community and is too often taken for granted. It requires dedication and personal sacrifice. But it also brings much personal satisfaction when you are performing a vital service to the community. You must work hard, but you must also find time to relax and play a little.

Bob Lowry, P.E., PWLF, served as the Public Works Director in Lenexa, KS, Overland Park, KS, Arlington, TX, and Colleyville, TX. He now serves as a presenter in the Public Works Institute of Texas. He can be reached at rdl1966@gmail.com.

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We all know that our world is rich with diversity, and so should be the goal of each public works department in the U.S.

Here is a recent example from the Academy of Motion Picture Arts and Sciences, a professional honorary organization, with the stated goal of advancing the arts and sciences of motion pictures. All of us are aware that because of the increasing public scrutiny and debates over inclusion, representation and discrimination in the entertainment industry, the Academy’s Board of Governors has made changes to increase diversity.

The Academy took its first major step toward its stated goal of doubling the number of women and minorities in its historically overwhelmingly white and male ranks by 2020. It is launching an ambitious, global campaign to identify and recruit qualified new members who represent greater diversity.

Recall Google fired an employee who wrote a memo against diversity efforts. In a 2017 survey of tech employees, 72% reported that diversity and inclusion were important to their company.

The APWA Board of Directors realized this need a long time back and therefore adopted the Diversity Policy in

Are we there yet? No, but APWA members will get there steadily and slowly

Ram Tewari, Ph.D., Pembroke Pines, Florida; member, APWA Diversity & Inclusion Committee
1995. It states that APWA recognizes, appreciates and fosters the synergy which is created when the work environment values the differences in individuals and practices inclusiveness and open communication. Diversity and inclusivity (D & I), an essential value for any organization, still remains elusive. Why?

APWA’s D & I Committee is working to fulfill APWA’s Statement on Diversity: The Board of Directors of APWA embraces inclusiveness within the APWA membership and leadership and will continually work to strengthen the diversity of its leadership by utilizing the vast contributions of the association’s diverse membership. The D & I Committee is working on reviewing and revising the web page; encouraging outreach; updating the Diversity Resource Guide – Tips, Tool & Triumphs, Tool Box; proposing programs at PWX such as Tell Your Story; integrating generational differences; encouraging women in public works; and using social media to promote D & I policies.

Other initiatives include chapter outreach; the Diversity Exemplary Practices Award; diversity awareness to chapters through liaisons; diversity inclusion in other APWA committees, for example the Core Competencies and Responsibilities of a Public Works Leader in the Leadership & Management Committee; working with local public works and human resources departments; and partnership with local universities, community colleges and technical schools for recruiting and retaining a diverse workforce.

So, when we talk about APWA’s D & I, naturally questions do arise. Are we there yet? What has been done so far? What remains to be done? How can APWA continue to do better? What are some success and failure stories? What hiring and retention processes can be followed?

How can APWA measure the success and barriers of the mission of D & I? First, a database of all past D & I Committee members since 1995 will be helpful in asking for their help in data collection and assessment, i.e., an audit of all public works and human resources departments in each branch and chapter to assess their level of D & I success.

APWA National has periodically asked for feedback, comments, and suggestions from its 30,000-plus members. Surveys could also be performed at the chapter and branch levels. The focus of the survey should be the diverse members of APWA and Human Resources Departments. Hopefully, those respondents shall provide useful data for further analyses.

Suggested survey questions on D & I policy of each chapter and branch of APWA to assess success and achievements may be:

• Policy statement
• D & I Committee
• Composition of D & I Committee members and does it parallel the local community?
• Employee Handbook of each public works department
• Does regular meeting agenda of each chapter/branch emphasize the policy and its follow-up?
• Policy statement on website
• Community outreach and job fair programs, benchmarking and monitoring steps of each public works department
• Comments, feedback, and suggestions to improve and accelerate D & I Policy implementation, impediments (barriers), and hiring problems (lack of availability of qualified personnel with knowledge, skills and relevant job experience).

What is next? And where do we go in future? Hopefully, the analyses of the survey data will decide what must be done now (create goals and action plans) and what more should be done in future. One more term that should be added to Diversity and Inclusion is Equity (DEI). Equity refers to the process to ensure that people with marginalized identities have the opportunity to grow, contribute, and develop—regardless of their identity. So, equity addresses the imbalances and supports diversity and inclusion in any organization. DEI is a policy and not a law like EEO and Anti-Discrimination.

APWA’s D & I Committee should expand its scope by adding Equity and should be known as DEI.

Ram Tewari can be reached at trnarayan1@gmail.com.

Resources:

• Articles on diversity and inclusion from the APWA Reporter
• Monthly minutes from meetings of APWA’s Diversity & Inclusion Committee
• Several messages and letters from APWA Presidents
• Google search on diversity and inclusion, Wikipedia
• “What’s the Difference Between Diversity, Inclusion, and Equity? Diversity in Tech,” by Meg Bolger, October 24, 2017

The D & I Committee is working on reviewing and revising the web page; encouraging outreach; updating the Diversity Resource Guide – Tips, Tool & Triumphs, Tool Box; proposing programs at PWX such as Tell Your Story; integrating generational differences; encouraging women in public works; and using social media to promote D & I policies.
TELLER’S COMMITTEE VERIFICATION OF ELECTION RESULTS
2018-2019

As Tellers for the 2018-2019 Board elections, I do hereby declare the results of the election as follows:

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_Teller — Jason Meyers, KC Metro President
_Teller — Kyle Dieckmann, KC Metro Treasurer
_Teller — Shawn Graff, KC Metro Secretary

Date 10-26-18
Public works professionals can positively impact their communities—and the lives of everyone in those communities—by sharing experiences. Taking this example to another level, by using the channels provided by the federal government, public works professionals can educate federal regulators and legislators about the multifaceted role of public works professionals and communicate the challenges faced each day. I would like to now highlight three methods that APWA Government Affairs, in concert with public works, use to share information about the role of public works as we work to expand the reach of APWA at a federal level.

The first method we use to promote the vital role of public works at the federal level is the use of Hill briefs, which aim to update and share information with Members of Congress and their staff. For example, this past July APWA Government Affairs hosted a Capitol Hill brief entitled, “The National Flood Insurance Program (NFIP)—Experiences from The Front Lines.” Attendees were privy to a presentation by APWA members Mr. Nathan Boerboom, Division Engineer from the City of Fargo, ND, and Mr. Dipmani Kumar, Chief of Watershed Planning and Evaluation from Fairfax County, VA. The brief gave Mr. Boerboom and Mr. Kumar an opportunity to share their first-hand NFIP experiences as public works professionals to a critical audience of congressional staff.

The second method is promoting public works by the involvement of APWA members in coalitions and partner organizations. Our members give their time, serving as volunteers, raising awareness of the critical role public works professionals play as first responders in emergency management roles. Too many to name individually, the following examples provide a sample of groups which APWA members participate in: The National Homeland Security Consortium (NHSC), the Public Safety Advisory Commission (PSAC), and the Emergency Management Assistance Compact (EMAC).
Three new ways we are promoting the vital role of public works at the federal level are by using Hill briefs, by involving APWA members in coalitions and partner organizations and by participating in the Federal Emergency Management Agency (FEMA) sponsored “PrepTalks” program.

Through our members’ participation within their respective partner organizations, we are extremely active in promoting the role of public works, not only as first responders, but also as an indispensable component in the protection of our national infrastructure.

Additionally, many APWA members also serve in leadership roles in the coalition and partner organizations. Doing so helps to ensure that public works is included in the policies and governance statements of these coalitions and partner organizations. By taking the initiative to get involved, and then going above and beyond, serving in leadership roles, APWA members are actively spreading the word about the major role of public works in day-to-day infrastructure operations across the nation, and must be included in the conversation with other first responders.

The final method I would like to discuss is APWA’s participation in the Federal Emergency Management Agency (FEMA) sponsored “PrepTalks” program, unveiled this past January. PrepTalks are given by subject-matter experts and thought-leaders to spread new ideas, spark conversation, and promote innovative leadership for the issues confronting emergency managers now, and over the next 20 years. Each of the PrepTalks includes video presentations with question-and-answer (Q&A) sessions, a discussion guide to support local action, plus additional resources.

For these PrepTalks, FEMA has partnered with the International Association of Emergency Managers, the National Emergency Management Association, the NHSC, and the Naval Postgraduate School Center for Homeland Defense and Security. When used together, the videos and guides introduced during the PrepTalks help translate the research and expertise showcased into action steps to improve disaster preparedness.

Of note, APWA participated in FEMA’s September 6, 2018 PrepTalk. APWA member Phil Mann, Director of Public Works for the City of Gainesville, Fla., represented the Association. The recent inclusion of APWA in these PrepTalks is significant, as it speaks to FEMA’s effort to include and recognize public works professionals for their role as first responders.

Each of the three previously mentioned methods serves a valuable purpose in APWA’s outreach program, but it is important to note that this is not an all-inclusive listing of all our outreach efforts. Nevertheless, this snapshot provides a brief look at the level to which APWA and public works professionals are getting the word out about the role of public works, in order to raise our profile on the federal level. As APWA continues to explore new potential relationships and carefully examines our existing partnerships, we want to energize all members to think creatively about how you can play a part in the ongoing effort to expand the reach of APWA and educate the public on the vital role that public works plays on a national scale.

Marty Williams can be reached at (202) 218-6732 or mwilliams@apwa.net.
Thursday, August 9, 2018, was a historic day in Southern Nevada. Fifteen miles of new Interstate (I-11) were officially opened ahead of schedule. This segment of I-11 marks the first new Interstate Highway System to be built since it was deemed complete on October 14, 1992 with the opening of I-70 through Glenwood Canyon, Colorado. I had the privilege and opportunity to spend over ten percent of my life on the project. I want to share my experience and remind everyone why our voice matters.

**Project History**

- December 2000 – Project Proposed by Wendell Cox and Jean Love in *Roads & Bridges* magazine
- June 2007 – Preliminary Design Complete
- July 2012 – MAP-21 Designates “Interstate 11 Corridor”

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**Steven Ireland, P.E.**
Engineer
Las Vegas Paving Corporation, Las Vegas, Nevada
Member, APWA Government Affairs Committee

Why I advocate for public works
• September 2013 – Clark County Commissioners Approve Fuel Revenue Indexing
• November 2013 – Regional Transportation Commission of Southern Nevada (RTC) Releases Design Build Request for Proposal (RFP)
• November 2013 – University of Nevada Las Vegas (UNLV) discovers Naturally Occurring Asbestos (NOA) on the project site
• December 2014 – EIS Re-Evaluation
• December 2014 – RTC Selects Design-Builder: Las Vegas Paving Corporation
• April 2015 – Construction Notice to Proceed
• October 2018 – Final Completion

**Project Statistics**
• 5,200,000 Cubic Yards of Blasting
• 6,000,000 Cubic Yards of Embankment
• 28,000 Lineal Feet of Storm Drain Improvements
• 350,000 Tons Asphalt Pavement
• 550,000 Tons Aggregate Base
• 11 Bridges
• 30,000 Cubic Yards of Structural Concrete

A project that starts well generally ends well, and this was the case with I-11. Complex projects, such as I-11, require a tremendous amount of coordination. From the start, the RTC did an outstanding job of getting everyone together and on the same page. The saying “no man can serve two masters” definitely applies when design review is being performed by multiple agencies. I-11 design review was performed by: Regional Transportation Commission (RTC), Nevada Department of Transportation (NDOT), Federal Highways Administration (FHWA), National Park Service (NPS), Arizona Game and Fish (AZGAF), Boulder City (BC), and Boulder City Airport (BCA) just to name a few. When design review has to pass through that many agencies, sirens and alarms go off in my head. How are all of these agencies going to agree? How are we going to get a design approved? The RTC assembled a management team and created an atmosphere where all the stakeholders involved could openly communicate and talk through the various problems that arose during design and construction. Without the RTC’s planning and foresight, the project would not have been the success that it was.

As noted in the Project History, UNLV discovered NOA on the project site during the RFP. Addendums to the RFP were made which required the design builder to create an NOA Management Plan (NMP) to protect its employees.
and the general public. After being awarded the project Las Vegas Paving, in partnership with SCS Engineers, developed an approved NMP. This plan required 24-hour perimeter monitoring in active work areas, project personnel monitoring, weather monitoring, dust monitoring, and surface soil monitoring. Over the project duration there were over 16,000 air samples, 950 personnel samples, and 250 soil samples collected and analyzed. In the words of the project’s Certified Industrial Hygienist (CIH) Gary Pons, “Never has this amount of data been collected on one project. The data proves that the diligent and continuous execution of the project’s NMP was an overwhelming success in protecting the workforce and the general public. Additionally, the results are clear, NOA does exist across the project site, but the concentration levels are not remotely concerning.” This was the first project in Southern Nevada to deal with NOA and, without the expertise provided by SCS Engineers, the project would not have been a success.

Las Vegas Paving partnered with the CA Group for design services. The CA Group worked diligently to develop 100% design drawings, but that did not stop Las Vegas Paving from starting construction. The final overall design was completed in March 2016. By March 2016, with the help of the CA Group, Las Vegas Paving had moved nearly 3,000,000 cubic yards of material, started construction of three bridges, and placed miles of storm drain culvert. This “jump start” helped the project open ahead of schedule. The CA Group’s design services did not end at 100% drawings; the CA Group worked with Las Vegas Paving to make design changes throughout the project. Some notable design changes include: traffic control reconfiguration for the tie-in to US-93; design of a rock anchor system that was not anticipated; and design of additional embankment areas to reduce cost. There were also times they collaborated with Las Vegas Paving to resolve issues that were discovered during construction. Without the expertise of the CA Group, the project would not have been a success.

Las Vegas Paving self-performed over 80% of the work on the project. Since Las Vegas Paving is a local company, it employs local tradesmen and tradeswomen. It took approximately 250,000 tradesmen and tradeswomen hours, by Las Vegas Paving employees, to complete construction. That total does not include the countless hours spent by designers, subcontractors, and office
personnel. Without the countless hours and sleepless nights of Las Vegas Paving tradesmen and tradeswomen, this project would not have finished ahead of schedule or been the success that it was. After completion of this project, Las Vegas Paving’s slogan still rings true, “We’re Number 1.”

Everyone’s hard work paid off on August 9, 2018. I-11 was officially opened. There was definitely a party, Las Vegas style. All who were involved on the project were invited; it is estimated nearly 500 people attended. U.S. Congressmen, U.S. Congresswomen, U.S. Senators, State Senators, State Congressmen, State Congresswomen, County Commissioners, and Mayors were all eager and willing to attend the grand opening. This is what they live for. I-11 is a direct result of years of hard work with MAP-21 and fuel indexing. Nevada was one of the first states to allow counties to index local fuel taxes to inflation to pay for maintenance and construction of infrastructure.

Now the question: How does this affect me or how can I effect change?

It all starts by advocating for public works—no voice is too small. Talk to your friends and neighbors about what you do each and every day. Share with people how their tax dollars are spent on infrastructure. Share with people the budget issues you face. Sign up for APWA’s Legislative Action Center, where you can easily communicate with Washington, D.C. The best part is APWA does all the work for you. If it were not for public works advocates like you and me, I-11 would not exist and change could not be made. In the words of a good friend, “Why do I advocate for public works? Because if I don’t, who will?”

Steven Ireland is a native of Las Vegas, Nevada. A graduate of APWA’s Emerging Leaders Academy VII, he currently serves as a member of APWA’s Government Affairs Committee. He can be reached at (702) 251-5800 or Steven.Ireland@LasVegasPaving.com.
Understanding and deriving value from environmental data is an ongoing challenge for watershed managers and regulators. In an era where the demand for community engagement in environmental decision-making is on the rise, finding tools to effectively decipher data is increasingly important. In response to these demands, the market of innovative data visualization and sharing tools is growing rapidly.

If you were to attend a typical town hall meeting for a mining project, you would see stacks of maps and complex diagrams depicting the landscape before mine construction, during mine operation, and following mine closure. However, with new tools and approaches, users can explore landscapes in virtual space on their own or fly between pre-defined points of interest with text, images, and links to additional content.

Communications innovation

Water management data comes to life with new tools and approaches
user to pan and zoom as needed, or the room may transform into an underground mine or a reclaimed landscape. Engineering designs can be experienced in an immersive and tangible form.

“About two years ago, BGC was looking at different technologies to help communicate complicated designs, often located in remote areas or underground or underwater, to different stakeholders,” said Matthew Lato, senior geotechnical engineer at BGC and one of the Ada project leads. “We were interested in this tool, because it brought our projects to life.”

Developed as a prototype in 2016 through a partnership with Microsoft, Ada can now be used to bring any elevation-based map data onto the HoloLens platform in a matter of hours. BGC believes this software will eventually become a standard part of their workflow. Internally, BGC is interested in using Ada to equip engineers and geoscientists to see data in 3D and check their designs and model outputs. “This will become part of how we do engineering,” Lato said.

The Ada Platform is currently in use on a project with Indigenous and Northern Affairs Canada on closure planning for Yellowknife’s Giant Mine, one of Canada’s largest contaminated sites. To support this process, BGC developed HoloLens models of the underground mine and the proposed remediation, which could then be displayed in community forums. The models were presented to various stakeholders and received positive feedback and high engagement. “A comment we’ve heard over and over again from stakeholders is, ‘I get it now,’” said Lato.

Connecting stakeholders to remote sites
Another common communications challenge in natural resource consultations is that environmental sites are remote and cannot be easily accessed by stakeholders and the public. Drone survey technology is changing that. Nathan Vadeboncoeur is the president and founder of Smart Shores, a company that uses drones to collect environmental spatial data and turn it into a range of visual and virtual products. Aerial surveys support a range of applications, including ecological monitoring, assessment, and management; flood risk assessment and protective works planning; storm impact assessment; and shoreline change monitoring. “You can connect people emotionally to an area,” said Vadeboncoeur. “With drone data, it’s possible to go beyond building traditional GIS data sets and create engaging models, landscapes, and futures.”

He explained that drone data can provide a wealth of information, but small companies and nonprofits are often limited in being able to make use of the information, due to a lack of analytical capacity. “More data creates more work for people who don’t have enough time,” he said. “So we started creating processes to digitize data that are very time-consuming for GIS professionals, things like counting logs and trees and assessing sediment. The goal is to help people get more value out of their data.”

Smart Shores is currently working on a tool that will enable stakeholders and decision-makers to walk through and learn about a site in a web-based application. “We can create a really nice immersive interface to make it look like you’re playing a video game while you’re looking at flood data,” said Vadeboncoeur. Coupled with remote data acquisition, these products allow users to experience landscapes and explore their curiosity from any location.

Creating platforms for data sharing
Good data on its own is not enough to support decision-making. Data must be stored and shared in a form that is accessible and relevant to users. A range of data platforms has emerged to serve this purpose, including the B.C. and Alberta Water Tools, created by environmental data firm Foundry Spatial. “Our core philosophy is that data should be free, open, and available for closure and reclamation. Mining companies and their hired consultants need to convey massive amounts of data, which can be overwhelming and unintuitive for stakeholders and decision-makers.

Enter Ada, a dedicated software platform for visualizing environmental data. The platform was developed by BGC Engineering, an engineering consulting firm that provides professional services in applied earth sciences. Ada runs on Microsoft’s HoloLens mixed reality headset, allowing stakeholders to visualize environmental data, maps, and images projected on the world around them.

A 3D topographical map may appear on a boardroom table, allowing the
anyone who wants to use it," said Ben Kerr, Foundry Spatial CEO and senior water scientist.

Foundry’s involvement in this space began with the emergence of elevated water demands in northeastern B.C. due to hydraulic fracturing. This created a challenge for water managers and regulators who had to make sense of the limited water data that was available. Foundry launched the NorthEast Water Tool in 2010 to aggregate and share data on surface water supply, demand, and environmental needs for the region, which laid the foundation for similar platforms across B.C., Alberta, and California.

At present, the BC Water Tool offers 75 percent geographic coverage for the province. In Alberta, the tool offers 20 percent coverage and there are plans for its expansion. Funding is provided by the provincial government in B.C. and by industry and NGOs in Alberta, with both tools free and open for anyone to use. Foundry is also collaborating with University of Victoria researcher Tom Gleeson to integrate groundwater into all of its platforms.

“The goal is eventually to have these tools available across North America so water managers and users, as well as people concerned about water sustainability, can understand supply and demand in the context that’s relevant to them,” said Kerr. “We want to help people move toward a more sustainable water future.”

Alan Shapiro is a Vancouver-based science communicator with a focus on water resources and environmental issues.
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2019 EVENTS
A grade crossing is an intersection where a railroad crosses a roadway at the same level. These crossings are typically equipped with warning signs and crossing gates, and approximately 37,000 of them currently exist in Canada.

Level crossings are dangerous; they either directly or indirectly cause the majority of accidents in the railroad industry. Despite constant upgrades to warning devices and installations of new crossing gates and signals, studies have found that 60 percent of level crossing incidents occur at crossings that have already been equipped with active warning systems. This statistic proves that warning systems are not always an adequate solution.

Although not every level crossing is cause for concern, many high-
Traffic crossings are in need of a better solution. The most effective way to eliminate these crossings is to separate the grades. Unfortunately, this is often an infeasible solution due to the high costs associated with conventional grade separation construction. The cheapest and oldest method of grade separation construction uses a railway detour to route train traffic away from the construction site. This detour is known as a “shoofly track” and can add millions of dollars to construction costs, as well as several weeks to the project schedule. This solution is not ideal in space-constricted urban areas as there are often land acquisition issues. As a result, the shoofly track is typically built extremely close to the construction site, requiring costly, engineered shoring systems for safe excavation.

In some cases, there is simply not enough room to construct this temporary track meaning an alternate solution must be used. In these cases, a temporary track support system is typically constructed. This is a temporary bridge that is built at the crossing location for railway traffic to use throughout construction. Once railway traffic is addressed, excavation can commence and the permanent bridge structure is built from the foundation up. Although this solution is adequate when a shoofly track is infeasible, it is quite costly in terms of both time and money, as two bridges are essentially being built. Regardless of the method used, a large number of temporary works are required.

**Alternative practices**

Following a local grade crossing collision in 2013 that resulted in six fatalities, ART Engineering Inc. (AEI) began research on grade separation construction practices with the goal of developing a more cost-efficient alternative. Conventional solutions focus on providing temporary routes or systems for traffic to use throughout construction so that it is safe to excavate and begin bridge construction from the foundation up. These temporary transportation solutions can easily add upwards of $2 million to construction costs. AEI researchers focused their efforts on developing ways to avoid the need for such temporary works, with the aim of eliminating a significant portion of construction costs.

The researchers found that through the incorporation of accelerated bridge construction techniques, combined with modifications to the construction sequence, a permanent bridge structure could be built prior to excavation, rendering the conventional temporary solutions obsolete. This can be achieved through the installation of prefabricated bridge elements during short traffic closures. By prefabricating all bridge elements that are to be placed immediately beneath the railway, placing these prefabricated elements underneath the rail during short traffic closures, and then expanding on these elements outside of the railway clearance envelope during open rail traffic, the entire foundation and bridge substructure can be constructed with minimal interruption to railway operations.

**Grade Separation Systems, or GSS is a procedure that results in various benefits when compared to conventional grade separation techniques.**

Bridge spans can also be prefabricated and placed on top of the newly constructed substructures to complete the final bridge, which is fully underground due to the construction sequence. The last step in the procedure is to excavate to reveal the permanent structure and construct the under-passing roadway.

AEI researchers recognized that developing a universal approach was unrealistic due to the large number of variables to be considered in any given construction project. This meant that in order to develop a solution that was truly applicable to a wide range of projects, modifications and alternatives for all types of scenarios needed to be accounted for. The resulting engineered procedure is known as Grade Separation Systems, or GSS.

This re-imagined construction schedule results in various benefits when
compared to conventional grade separation techniques. The first is the ability to nearly eliminate the need for all temporary works. Rail traffic does not need to be detoured and a temporary bridge is not used to support the tracks throughout construction.

This results in significant time and cost savings. Furthermore, this is accomplished without significant interruption to the railroad. Closures can be planned for times that are most convenient to the railway company, meaning that they do not have to experience significant interruptions throughout construction.

The innovation behind this technology pertains to the construction sequence, rather than the actual construction techniques being used, meaning any competent heavy civil contractor can complete the work without the use of uncommon equipment or specialized work crews. Another major benefit to this technology is its versatility.

The procedure can be used for both bridge replacements and highway or rail grade separation projects. It can accommodate for any number of railway tracks, any number of bridge spans, open roadway traffic, and was designed with inherent flexibility to allow for modifications based on project specific priorities. Furthermore, because construction primarily takes place underground, the technology has the capability of accommodating for year-round construction schedules. Unlike a shoofly track or a temporary support system, GSS is applicable and cost effective in nearly every underpass grade separation project, providing an innovative solution to virtually every issue that is associated with grade separation construction.

Artem Ivantchouk is the president and founder of ART Engineering Inc.

Using GSS any competent heavy civil contractor can complete the work without the use of uncommon equipment or specialized work crews.

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When talking about fresh water in Canada, rivers and lakes come to mind first, but we often overlook one of the most important environments for water in Canada, wetlands. Wetlands represent 14 percent of Canada’s landmass, and provide invaluable filtered and purified water to our streams, rivers, lakes, and aquifers. On top of that, wetland ecosystems are the most productive water purification system in the world, capable of providing more biological productivity per acre than tropical rainforests and coral reefs.

Looking to these invaluable natural resources in terms of wastewater treatment gives Canadians additional methods for introducing components of the circular economy into their communities and facilities.

The circular economy is an alternative to the linear economy of “make, use, dispose.” A circular economy encourages extended product lifespan, reduced energy inputs, and reusable and recyclable end products, representing a “cradle-to-cradle” approach. This process includes biomimetic approach-

Nature at work

The role of engineered wetlands for water treatment in the circular economy

Sean Chilibeck, P.Eng., Project Engineer, Abydoz Environmental Inc., Portugal Cove, St. Philip’s, Newfoundland
es to the design of products and systems that models human industry on nature’s processes.

Through biomimicry and regenerative design, replicating the intricate processes observed in natural wetlands through engineered wetlands have proven to be an effective, low maintenance, and economical method of providing secondary wastewater treatment in Canada for 20 years.

The Town of Bishop’s Falls in Newfoundland and Labrador had a series of outfalls that discharged directly into a freshwater river, which is home to the largest population of North Atlantic Salmon in the world. The Town was looking for solutions that would provide high quality effluent, while minimizing any increases to operational costs for the new facility. Engineered wetlands were chosen as the preferred solution, and by replicating the structures in natural wetlands, engineered wetlands encourage diverse and dense microbial growth within the hydraulically active zones of the wetland. With wetlands about the size of 15 hockey rinks, the Bishop’s Falls facility now releases effluent averaging below 10/10 mg/L TSS and BOD, far below the provincial regulations.

The root mass of the wetland vegetation provides a diverse habitat of variable aerobic and anaerobic areas, with naturally high surface area for the growth of beneficial microorganisms. The wetland plants provide an ever-changing microbial habitat and prevent short circuiting of the wetlands. This ensures that the hydraulic capacity stays constant throughout the beds, adding to the lifespan of the facilities, which exceed 40 years.

The hydraulic flexibility of natural wetlands has also been employed to ensure that adequate treatment is provided during average daily flow as well as stormwater flows. These fluctuations can be particularly extreme in communities with aging collection infrastructure and combined sewers. The rural towns of Appleton and Glenwood in Ontario have high flows during stormwater events and a receiving river with significant tourism and recreational activity, which meant that a flexible, low maintenance solution was required.

To ensure treatment of flows during stormwater events, like their natural counterparts the wetlands use integrated surface storage and are capable of filtration. This allows for the intermittent attenuation and treatment of higher flows with lower contaminant loadings during storm events.

During winter months, the vegetation dies back leaving the dry stocks standing on the beds. By leaving the stalks on the beds they continue to carry oxygen to the water column through capillary action. The stalks also trap snow on the beds, which insulates the wetlands, keeping temperatures higher and improving bacteriological activity during the colder months. During spring, the old plant stalks will fall on the wetlands providing an insulating layer of biomass for the next year. Where viable, the plants can also be harvested and used as biomass for energy, or as thatching and insulation for buildings.

In addition to the expected benefits of natural wetlands, engineered wetlands also eliminate the need for mechanical equipment such as blowers, pumps, and rotating equipment. This reduces the risk of plant failure due to wear, breakdowns, or electrical disruption, and eliminates any electricity needs. This is particularly valuable in remote or rural communities where repairs and replacement parts can be difficult and expensive to acquire, and skilled maintenance staff are required to operate the facilities.

Incorporating the circular economy using biomimicry and regenerative design of engineered wetlands can provide economical and effective wastewater treatment. Through providing high quality effluent and stormwater solutions, the Towns of Appleton and Glenwood and Bishop’s Falls provide significant improvements to their wastewater systems with minimal inputs and costs. Engineered wetlands deliver low maintenance and low-cost solutions to wastewater treatment for municipalities, biosolids, landfills leachate, and industrial sources for a Canadian climate.

Sean Chilibeck is a project engineer focused on design, research, and development of engineered wetlands in Canada at Abydoz Environmental Inc.
The Basics: Holding a press conference

Emily Dowsett, Government Affairs Media Manager, American Public Works Association, Washington, D.C.

Depending on where you work, you may have a staff person(s) dedicated to public relations (PR) and media, but I know that many of our APWA members work for smaller operations where you might wear many different hats on any given day. For those of you who may have to handle PR responsibilities from time to time, but it definitely isn’t your main area of concentration, I thought it would be helpful to share some insights that I’ve learned about holding a press conference should the occasion arise.

Now I know the idea of putting together a press conference could be daunting, especially if the first image that pops up for you is the White House Press Secretary surrounded by dozens of reporters and flashing cameras. But the reality is, unless you’ve got news that appeals to news outlets all over the world, it won’t be anything like that!

First thing’s first: Why are you holding the press conference? Is there an emergency situation that you need to make the community aware of? Are you announcing that you’ve finished a major project? You’re certain that this news simply could not be conveyed as well solely with a press release or would be better conveyed in a press conference? Before any other steps are taken, you must figure out what exactly you want to communicate, so you can then craft your message so that you remain in control (as much as possible) to the manner in which your news ends up getting reported. Remember, this is your opportunity to tell the story, your way.

Now that you’ve answered the “why” as in why you’re holding a press conference, you’ve got to figure out who in your organization is best to serve as the spokesperson in this scenario. It is important that whoever gets up in front of the camera is comfortable with public speaking and is as knowledgeable as possible about the situation so that they can easily answer questions that might be posed by reporters in attendance. If you don’t have a dedicated public relations officer, then likely your spokesperson would be the leader of your organization, say your Public Works Director or CEO.

It’s important to note that it is vital for the spokesperson to have as much background on the situation as possible, and that they are prepared for the tougher questions that may arise. If your spokesperson is well versed on those “key messages” that you want to convey, then it will be easier for them to answer questions in a way that hone in on the key points you want to make.

Next, you’ll want to figure out the details, such as the date, time, and location of the conference. Regarding date/time, this all depends on whether it is an urgent conference, or if you have a few days (or even weeks) to plan. If possible, it’s usually best to try and keep your major announcements Tuesday–Thursday during the hours of 9:00 a.m. to 1:00 p.m. to best work with the news cycles, but of course in an emergency situation “as soon as possible” is likely your best bet.

If you’re announcing a ribbon-cutting or a ground breaking, it is probably best
to hold the conference at that location, so the cameras will be able to get some great shots and be able to visually promote the positive impact your operation is having on the community. On the other hand, indoor press conferences tend to be easier to carry out, as that usually guarantees electricity, air conditioning, and tables and chairs for comfort! If you’re holding the event inside, make sure the area is well-lit, and big enough for all of the cameras/people that may show up.

So, you’ve figured all of those details out, but of course, you can’t have a press conference without the press! Figure out which news outlets you want to invite, and then send them a “media advisory” notifying them that you will be making an announcement, including the details of when and where. Don’t give too much away in the media advisory though—you still want them to have to show up to get the inside scoop or the action shot! I would definitely advise an e-mail first, but if you’re in a time crunch, no harm in picking up the phone. Reach out to a few people from each news outlet you would ideally like in attendance.

Now you’re in the final countdown to your actual press conference. Before you get there, you want to be sure you’ve compiled press kits that you can distribute to members of the media who turn up. These can be sheets of paper in a folder, or a USB drive, and usually these will include the main facts and figures about your organization, as well as a press release which corresponds with what you are announcing at the press conference. If there are some members of the media who didn’t end up being able to make it, don’t hesitate to send them the press kit after the fact.

Hopefully the press conference went well, but either way, positive relations with the media are necessary. Be sure to reach out to members of the press who did turn up, and who covered your event, and thank them for their time. Offer to serve as a point of contact again if they ever need any insight from a public works professional. And finally, keep that list of press handy, so next time something noteworthy is going on, you can keep them in the loop.

Of course, this isn’t an exhaustive list of absolutely everything you could do to prepare for a press conference, but I hope you’ll consider this a basic “how-to” guide. It is important to keep in mind that press conferences should be used sparingly and if a press release will suffice for conveying your news to the media and public, there’s no need to go through the trouble of gathering the troops for a big in-person announcement!

Emily Dowsett can be reached at (202) 218-6736 or edowsett@apwa.net.

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**Introducing the…**

**APWA PUBLIC WORKS FALLEN HEROES PROJECT**

In honor of our Fallen Public Works Employees who gave their lives while keeping their cities and towns alive.

To honor fallen public works heroes, APWA has created this memorial project to remember and honor those who have lost their lives or been seriously injured in the line of duty while serving their communities. APWA is creating an online presence where posted stories and remembrances will celebrate the lives and contributions of these heroes.

Public works is a critical component of our society and everyday lives. These servants of the public good build and maintain the communities and systems, which improve our everyday lives; strive to protect citizens, visitors, and businesses of our communities; are emergency first responders; and serve as the “The Silent Arm of Public Safety.” Through the Public Works Fallen Heroes project, colleagues, family and friends will give them a voice.

For more information visit [www.apwa.net/fallen-heroes](http://www.apwa.net/fallen-heroes)
As I write this column, the temperature outside hovers well above 90% and my air-conditioner is working admirably to transfer heat away from my office. The sobering news is that up to two-thirds of industrial energy demand and almost one-fifth of global energy consumption are associated with industrial heat, according to the Paris-based International Energy Agency. And because fossil-fuel combustion ultimately is used to produce it, industrial heat is estimated to account for most of the direct industrial emissions of carbon dioxide annually.

The heat is used for manufacturing steel and cement, processing pasta sauce, and washing shirts. The demands for industrial heat are diverse—high temperatures for cement kilns, for example, lower temperatures for food processing—and the production technologies are often not interchangeable—a heat pump cannot substitute for a high-temperature gas furnace. Because storage of thermal energy typically requires insulation, often a great deal of it, in most cases the thermal energy for industry is produced at the site where it is used when it is needed; this goes for public buildings as well. Researchers see big benefits to be had from pollution-free ways to capture, store, and use thermal energy.

Phase change materials (PCM) offer one approach to thermal storage. Input heat melts or evaporates the PCM—changing its phase from solid to liquid or gas, for example—and thereby stores energy. When the PCM then cools down below its melting point, it turns back into a solid and the energy stored in the phase change is released again as heat. (Worked in reverse on a hot summer day, the process takes heat energy from warm beverage cans and the ice in the cooler converts back to water.) Simply heating or chilling a reservoir of water or other suitable material is another widely-used way of transferring and storing thermal energy without the extra latent-energy storage capacity a PCM provides. Paraffin, fatty acids (for example, stearic acid, a primary component of many soaps and other skin-care products), sodium sulfate, and sodium chloride (not unknown to northern states’ road crews) are among the PCMs that researchers have been investigating, particularly for storing solar thermal energy.

Some researchers are proposing that excess electricity from wind farms—produced when the wind blows but the lights are off, for example—could be used to drive resistance heaters (think toasters) to heat firebricks that would then release their stored thermal energy for industrial use. The high temperatures associated with resistance heating and firebrick tolerance make the concept interesting for industrial applications and the implementation costs are estimated to beat storage of the electrical energy with conventional batteries.

Other researchers have recently developed chemical modifications of PCMs, essentially add-on molecules that undergo a structural change when exposed to light, acting as a switch to alter the phase-change temperature of the hybrid material. The PCM can then be made to hold its stored energy to temperatures well below the melting point of the original material. Applications for space heating and even cooking appear promising.

Now if someone will find a way to save the summer heat being pumped out of my office to melt the snow from my winter driveway and sidewalks, I would be most grateful!

Andrew C. Lemer, Ph.D., Senior Program Officer, the National Academies of Sciences, Engineering, and Medicine, Washington, D.C.; Member, International Affairs Committee

Dennis Gabor, awarded the 1971 Nobel Prize in Physics for his discoveries underpinning the development of holography, once wrote, “The future cannot be predicted, but futures can be invented.” Imagination to Innovation is a periodic look at new technology and scientific discovery we could be using to invent the future of public works.

Andrew Lemer, Ph.D., is currently a Senior Program Officer with the National Academy of Sciences of the United States of America. In addition to technical papers and occasional articles for the Reporter, he writes on civil infrastructure and human settlement at www.andrewlemer.com.
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OPEN YOUR WINTER TOOLBOX

Snowfighter Appreciation Day

Wilfrid Nixon, Ph.D., P.E., PWLF, Vice President, Science and the Environment, Salt Institute, Naples, Florida, Member, APWA Winter Maintenance Subcommittee

Without a doubt, people are the most important resource in any winter maintenance program. You can have the best plows in the world, the most wonderful technology, all sorts of sensors and materials available to you, but if you neglect your front-line folk, who will be out taking care of things at 3:00 a.m. when the snow is falling thick and heavy, your program will not succeed in providing safe and sustainable snowfighting for the community that you serve.

Much of public works is thankless. When an agency is getting the job done, most of the public will forget about your very existence! It is only when things get interesting that people think about the workers in the public works agency, and often what they think is not too complimentary. So, when it comes to snow, people may be more inclined to think in terms of snow being plowed into their driveway and how hard that will be to shovel, rather than in terms of someone having been up all night doing a difficult job so that they (the public) could get to work safely in the morning.

The front-line public works operator is a little bit like electricity. Most of the time, you just assume the light will come on when you press the switch—so much so that you only notice when the light does not come on. Then it is time to complain!

How might we go about changing this rather negative perception of our key employees? Clearly, they deserve a much better sort of recognition than what will come their way if we are passive about this. So, we have to be active.

A time-honored approach is to hold some sort of day of appreciation for your front-line workers. Ideally, you would get your elected officials to pass a resolution (you know—one of those things with a whole bunch of “whereas” in them). You would let the media know you are going to have a special day, with equipment for people to look at and perhaps
a couple of (short) speeches. And supply some coffee and donuts. It would help a bit more if there were some sort of theme you could build this around—perhaps you could stress how good winter maintenance allows commerce to thrive and have the event at a local mall. Or you could build the event around school safety and have the event at one of the local schools. There are lots of possibilities.

Of course, the challenge here is getting all of this organized and you are probably thinking in terms of how you have a pretty full plate already and this is going to add a bunch of things to that plate, and you are not sure quite how to do those things either. After all, when did you last write one of those “whereases”?

Well, it need not be that hard. The Roadway Safety Foundation has created a website (snowfighterday.com) that includes a draft resolution (all those “whereas” statements), examples of press releases, checklists that you can use when planning the event and a variety of other useful bits of information. In short, it is an online “Snowfighter Appreciation Day in a box” that you can use to put together an event that shows how much you value your front-line operators (although hopefully they know this already!) and more importantly, shares with the public the great work that those front-line folks are doing for them.

Most snowplow operators do not want continuous pats on the back—they are very happy to do their job well and know that by doing it they are helping to keep their community safe and moving. But just because they do not demand recognition, does not mean they do not deserve it. Consider giving them some of the recognition they most surely do deserve, by holding an appreciation day for them!

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Wilfrid Nixon can be reached at (239) 231-3305 or willys@gmail.com.
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For a few years now, I have sat on this committee for APWA... Leadership and Management. Prior to doing so, going back for several years, I have observed those folks who were on the committee before my arrival, many of those folks who were my mentors, counselors, and yes, even good friends, all of which I had looked up to. As such, I made a point to read every word they published and took it all to heart and even more importantly I shared most of it with my staff over the years. I even worked for one of them for more years than either of us care to acknowledge and we will be the best of friends forever. And if that wasn’t special enough, once I even had John Ostrowski sign one of his books for me, where he wrote, “To Jim, make all of your people read my book!” and well, yes, I did as John led me to do! As a result, his leadership influence was exponential as I bought everyone on my team their very own copy. I still have my signed limited edition of the book too! Maybe it will be worth something one day! John will tell you, “It’s priceless!” and he wouldn’t be wrong.

So, in my leadership-inspired efforts, I strived to become part of a “greater” team, as I learned everything I could from these folks who I admired so. I corresponded with all of them, often asking way too many questions, as I do, and exchanging stories, as I do, of the experiences observed, relevant to the articles they published. I looked forward to their sessions at Congress each year (today’s PWX) and attended those sessions religiously as they were the highlight of my trip. I learned so much from them and the exchanges we had, and I still cherish the words of wisdom they shared with me over the many years.
From these relationships and exchanges, I have grown personally and professionally, and I attribute many of my successes (or wild adventures depending upon your perspective) to these folks and hence resulting in my obsession to give back to the profession, the organization, the chapter, the branch (I am the branch secretary in North Texas), and the committees that I served and continue to serve to this day.

All of this leads me to another installment of “Leading from the Frontlines” while sitting in my old chair with my trusty laptop, ranting about the thoughts of the day. Coincidentally, the day I wrote this, we had an L&M meeting which inspired me to type stuff!

So, as I serve the Leadership and Management Committee, I have made several observations during my tenure with regard to the committee and the behaviors of my teammates. But not as a team (which this group has been very effective), but as those individuals that make up that team, each having different strengths, roles, skills, and attributes. As I look around the room and see those sitting at the table, it seems that I am now the old guy (I used to call those old guys dinosaurs, you know as a term of endearment and respect…and now I am one), and I think to myself, “Wow, when did this happen?” But seriously, the one thing I notice is the overwhelming number of folks who came up through the APWA Emerging Leaders Academy (ELA) who are younger than me (I am the dinosaur), eager, smart, innovative, productive and lots of other adjectives. You’ll add a few of your own adjectives once you see them in action.

Then I sometimes wondered...

ELA is not the farm team for L&M, or is it? Do I even belong here with this group, being the dinosaur? Am I even worthy of this assignment? Heck, they don’t need me? Do they?

These here young whipper-snappers are so darn smart. (I don’t talk like that. Someone was barking at me while I was typing that.) Hmmmnnn?!?!? Let’s explore this further...

My involvement with ELA has been my use of it for training and developing folks, some really special folks too. I have volun'told about a dozen folks (or more) to apply for the program. All but one I have pushed into this had made the final cut. Every one of them has come home, bigger, better, faster, inspired, new and improved version of themselves and really good stuff has happened to each of them and the organizations they serve. Every one of them! Promotions, awards, APWA leadership, and more. That in itself is a powerful testament to this program. Most of all they all have a special place in my fondest memories as folks I will always keep an eye on.

So, as it turns out, ELA may just be that foundation that has been very effective in launching those who engage it thoroughly to higher places helping them navigate what is ahead of them! (Slackers need not apply!) It is impactful stuff, not the stuff you learn in school, and the folks who teach it are pretty awesome too. I know most of them and they are nothing short of amazing. Ask any ELA grad.

The point of this rant is not really to plug the ELA, even though it’s something I truly believe in or even to admire the ELA-monopolized L&M family, who are all awesome in their own right (those of you who have been through ELA have probably seen some really cool pictures too… it’s an inside joke…), but my point is it’s to tell you about my observations of those ELA graduates, on the L&M committee and the Knowledge Team too, and the dozen or so of you who have worked for me or with me on a committee or board, and the behaviors they exhibit intuitively, day after day, in every meeting, making impacts and making a difference, and exactly what those behaviors I observed are, always leading from the frontlines and setting the table for success, for themselves and the team that they engage.

I am not going to list those folks who I am thinking about, because you know who you are and yes, this is all about you! But more importantly it is about those things they do, and they continue to do, that I have noticed, that I have witnessed, and that I have watched in awe, and I have to say how much I have learned from their perspective, knowledge, experiences and yes, it’s their leadership, which is what has compelled me to share those things here, each easily learned, taught, practiced and replicated for results, powerful results.

Leadership from the frontlines behaviors observed include but certainly are not limited to:

- **Focus** – They all keep meetings on track, stick to the agenda, focus on the targets and chase the goals of the organization without exception. No effort or opportunity is wasted. As an example on L&M we cover a lot of ground and get it done in an hour each month. It’s awesome!

- **Decisive** - They all make sound decisions, committing, defending their position, being bold yet respectful of dissenting opinions, being direct, being heard, being brief (OK I need to work on that last one) and being present when it matters!

- **Creative** – They are all thinking outside of the boundaries, kicking the box out of the room! QUICKLY exploring alternatives and stretching the limits of everyone’s imagination.

**ELA training is impactful stuff, and the folks who teach it are pretty awesome too.**
• **Teamwork** – They all do whatever it takes to make the team and other teammates successful, always. They helped me through some tough times and I am forever indebted to these folks.

• **Innovation** – “How did they do that?” Look it up in past Reporter articles. Doing different to be better.

• **Perspective** – They all bring a fresh perspective to the topic of leadership, management and problem solving, often pushing the limits of old habits, initiating and embracing change setting the new pace of leadership in our profession.

• **Fearlessness** – Not a one is afraid to do different, new, or present opposing views; embracing conflict for the greater good, always striving for better.

• **Integrity** – They all carry out behaviors that show others that they are leading by example, honestly, ethically and morally sound in everything they do. They all really want to make others better too! These are all really great folks.

• **Trust** – I trust these folks without reservation. Can you even say that about those on your current team? Your boss? Your peers? (Personal checkpoint: ask yourself this now and if there are any doubts, then do something about it! Life is too short to waste your efforts with those whom you are not aligned!)

• **Selflessness** – They execute servant leadership in its truest sense; this stuff we do takes up time from work and sometimes our personal time and these folks all deserve a big thank-you for their efforts! In fact, you should give them all a big hug when you see them and thank them for their service, but do this to everyone except me, you might get smacked if you try to hug me.

• **Ambition** – They are all driven, successful in their own areas, and are excited about growth opportunities, learning is a way of life, and their “status quo” is rapid and meaningful change.

• **Technically Sound** – They are all subject matter experts at something; this is a very talented bunch.

• **Detailed Oriented** – They don’t miss the small stuff, understanding little things can make a big difference.

• **Volunteerism** – In 2008, I went to the St. Bernard Parish in New Orleans with a bunch of ELA folks and we were a drywall hanging machine. But that was just a small snapshot of their willingness to serve others! They are visible in this organization, their agencies and their communities and that is powerful stuff!

I think you can see why I am such a fan! If you do any of these things and get your folks to do any of these things, then good things will follow. It’s a formula for success without a doubt!

By the time you read this, the ELA application deadline will have passed for the upcoming year. I hope you or one of yours are on that candidate list and someday you may be the next L&M or Knowledge Team member! It’s a great honor, responsibility and at the same time humbling experience, that I wish you all could experience! I have witnessed leadership on the frontlines at every engagement.

Your homework assignment has two parts: (1) take my list of observations and then post to my social media and let’s blow up the internet with good ideas, tell me what other behaviors you think should be on this list (in a similar format, state the behavior and define it or give an example) and we may share it in a follow up (in an article or presentation at PWX) and (2) then next year nominate someone for ELA and set the table for future leadership success, save the date now, we gotta keep this going, building for the future, because if we don’t, I won’t be able to retire until ten years after death.

In the end we will all benefit by and appreciate the results! Until next time... **Read, Learn, Do, Share, 4 Community, Team & Results!**

And from all of us on L&M, thank you Sue Hann, for ELA, and for everything you do, we are all better leaders for knowing you.

**Jim Proce**, having served as a city manager, assistant city manager, public works director, consultant, vice president of a water control district and more, serves the North Texas Branch and has served on several APWA committees. He was a 2016 Top Ten Public Works Leader and an ICMA Credentialed Manager. Follow him on:

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**ELA graduates exhibit intuitively, day after day, in every meeting, making impacts and making a difference, always leading from the frontlines and setting the table for success, for themselves and the team that they engage.**
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Going Global: Linking to public works practice worldwide

Andrew C. Lemer, Ph.D., Senior Program Officer, the National Academies of Sciences, Engineering, and Medicine, Washington, D.C.; Member, APWA International Affairs Committee

Listening to the garbage truck’s compactor grinding as my neighbors’ household waste is collected, I doubt that the people on the truck give much thought to the likelihood that hundreds of crews in cities and towns worldwide are doing much the same work each week. The odds are good, in fact, that people in multiple locations on any given day also are sending pigs through sewer lines, repairing roadways, and planning new facilities. They may be separated by distance and even language, but these people have in common similar problems to solve and choices to make in getting their jobs done. If one of them discovers a better way to do the job, the others may be able to adapt the discovery, to learn, and to improve their own practices everywhere.

People who share a profession, craft, or trade can be termed a community of practice (CoP). Coined in the early 1990s by social anthropologists Jean Lave and Etienne Wenger—reportedly when they were studying an apprenticeship program—the term refers to almost any group of people who engage in a process of collective learning in a shared domain of endeavor; for example, a band of artists seeking new forms of expression, a group of engineers working on similar problems, a gathering of first-time managers helping each other cope, a network of mechanics sharing experience about engine overhauls. The learning may be intentional but can also occur simply through the exchange of stories that occurs when the group periodically gets together. Members of the CoP often have their own terminology and develop a shared vision of what their activity means and where it is going in the future. APWA effectively encourages and provides support for CoPs through its chapters, national meetings, and Technical Committees.

The CoP concept and ideas about forming and using CoPs have gained popularity in management circles because it offers practical steps for an organization to enhance productivity by melding people who know what they are doing into teams that do their jobs exceedingly well, and sustain themselves by retaining their knowledge and passing it on to newcomers.

Private-sector organizations like Google and Intel have long relied on having employees work in productive teams, sharing ideas and collaborating, to gain competitive advantage. In this internet age, CoPs and their gathering spaces can be instantly in contact, yet with members of the group remote from one another, geographically dispersed, even separated by oceans and time zones. The U.S. Army has been active in promoting CoPs—among company commanders, for example (described in a video at https://www.youtube.com/watch?v=rAOQAxwqYwU), and technology to support mission-critical activities such as counter-explosive hazards and self-sustaining forward operating bases (see https://www.army.mil/article/124346)—as have other organizations, especially those whose work is project or mission oriented, such as the National Aeronautics and Space Administration (NASA, see https://www.nasa.gov/content/nasa-engineering-network-communities-of-practice/index.html).

International development organizations have applied the CoP concept to enable conversations among experts and novices working on projects around the globe. The World Bank,
Asian, African, and Islamic Development Banks and the United Nations Development Programme (UNDP) all pursue continuing initiatives to develop and nurture multinational CoPs. The latter agency (which uses the British spelling and works to “achieve sustainable, people-centered” economic and social development) explains that they focus their efforts on applying lessons learned from past projects and initiatives, to help local organizations manage and enhance their human resources (through training, for example).

These international examples are among the motivators for APWA’s International Affairs Committee (IAC). The IAC seeks to lower the barriers between APWA’s members and the rest of the world, to give public works practitioners in North America and elsewhere in the world ways to meet, share their knowledge, learn about common problems and ways that the problems have been handled in sometimes very different settings. The IAC hosts international visitors attending APWA’s annual PWX (formerly known as the International Public Works Congress & Exposition, “The Best Show in Public Works”), for example, and adds international perspectives to articles in the APWA Reporter with sidebar reports.

The IAC also plays a significant role in the Jennings Randolph International Fellowship Program administered by APWA. Designed to promote friendship and understanding among public works peers, the program supports APWA members who make public works study tours to a partner country (currently there are nine partners) and participation at that country’s public works conference, the equivalent of PWX. The fellowship recipient, after returning home, is expected to share her or his experience with colleagues in this country, for example through making presentations and contributing articles in national and chapter forums.

We never know how the IAC’s efforts will play out. An article on knowledge management published in the APWA Reporter in June 2017 was reprinted on the web by the Queensland-based Institute of Public Works Engineering Australasia (IPWEA). The IPWEA—an IAC participant—and APWA have signed a Memorandum of Understanding to cooperate on education for public works asset management. (Full disclosure: Building CoPs is one of the tools for knowledge management, and I wrote the original article, but was surprised when an internet search engine pointed out IPWEA’s reprint.)

APWA, IPWEA, UNDP… an alphabet-soup of organizations encouraging CoPs for international public works collaboration and knowledge sharing. As the IAC’s members continue to explore new ways to extend the networks linking APWA’s members and their peers around the world, hear that grinding of the trash compactor as a sign of a vibrant community of public works practice.

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Members of APWA’s International Affairs Committee at the recent PWX in Kansas City. Left to right: Dan Hartman, Ville Atahyppa, Joy Schaard, Doug Drever, Tracy Warner, Jennifer Perry, and Robert Fuller. Not present: Bo Backstrom, Len Bernstein, Julio Fuentes, Andrew Lemer, and Edgar Villasenor.
The public works industry is in the service business. When we as organizations reflect on how our organizations are performing, it comes down to the level of service (LOS) that we are providing to our customers. This applies to a community in Western Massachusetts that has a population of less than 600, major metropolis like New York City, or a state DOT. And, every level of service is different.

It’s my opinion, but I think most people like a nice, warm summer instead of a cool, snowy winter unless you ski or plow snow, or both! Snow is more of a nuisance to the public which drives organizations to be on their “A” game when it comes to winter operations. When you introduce the “nuisance” factor to your typical LOS, your customers are more sensitive to the winter ops.

Over the years, I have had numerous conversations with my colleagues across the country and I have heard everything from plowing residential streets at ¾” of snow accumulation to no plowing unless there is 12” on the side streets and everything in between. These are the two extremes of the LOS spectrum, but they are out there.

It’s always a great exercise to perform a self-assessment of an operation. In this case, a few questions that need to be answered are, who developed your LOS for snow operations? Elected officials? Public Safety? Is it documented somewhere? Is it published for the public to see? Do you have a Snow & Ice Policy? If so, it’s probably in there, but is it cur-
rent? Snow & Ice Policies are live working documents and should change as the technology and operations evolve. The APWA Winter Maintenance Subcommittee can provide you with an example if your organization doesn’t have one. They do work and it helps provide a baseline for performance of the operation.

Do your elected officials understand your LOS? Have they been educated in what your capabilities are? Have you made a point to meet with them and discuss what’s to be expected for the upcoming season? A simple meeting to explain the LOS will provide the critical information that’s needed when the phone calls start coming in. Have you met with Police, Fire & EMS to make sure that everyone understands what acceptable road conditions are?

Is your LOS published in a flyer, on the internet, etc.? Public education prior to the winter season helps the support staff who answer the daily calls about winter-related issues. The staff benefit the most from the public education component.

Are the expectations of your organization achievable when it comes to the snow operations LOS? Before this question is answered, it’s best to perform an internal audit of your resources which includes staff, equipment, contracted services and materials. Make sure that your LOS is attainable with your current staff. Does your staff understand the expected LOS? Make no assumptions about whether or not they know

“Massachusetts Avenue in the downtown area during week 2 of the 88½” month of snow. 57½” of snow had fallen and this was hours after 19” had dropped. It was blistering cold and windy, but the residents were out and about (note the person with ski goggles). Our dedicated crew of six for sidewalk operations helps us maintain our LOS.” – Marc Valenti
it; make it a point to articulate the expectations of the operation.

A good starting point with staff is to bring them in and debrief them relatively soon after a season has ended. And, follow up with the same staff prior to the start of the upcoming winter season to recap, again. This is a great time to discuss the LOS and spark discussion about what is expected of them to maintain the current LOS. This is also a great time to discuss whether the LOS needs to be adjusted. With current personnel issues like employee retirements, promotions, and departures due to other opportunities available in other public works organizations, it’s always good to make sure that everyone understands their responsibilities.

Do you have the equipment to achieve the current LOS? If so, great! If not, think about what it would take to adjust the LOS and tailor it to what can be accomplished. Start planning to replace the equipment to get your operation to the point where you need to be. Correct, where you need to be, not where you want to be. It’s all about progression; plan for success! There’s a lot of new technology out there that will enhance your LOS—everything from composite plow edges, expandable snowplows, tow plows, slurry (“oatmeal”) salt spreaders, ground speed and central hydraulics systems, winter liquids, etc. Communicate with staff and see what kind of equipment challenges are inside the organization and make the changes as best as you can.

If you use them, make sure that the contracted services are briefed before the season starts, especially if they are new to the contract. It’s always good to have a point of contact that understands the contract requirements and performance measures. They should also have a good understanding of the agency’s organizational structure when they need to communicate with the agency staff. Keep the dialogue in the forefront to make your operation successful.

Materials...why should they be included in LOS considerations? Can the current storage facility for the materials that you use sustain the LOS? Is your agency using more materials more than your facility can store? Can your supplier replenish your supply as quickly as it’s applied? Now is the time to reconsider that your expectation may not be attainable. A “bare” pavement policy may deplete your salt supply too quickly. Bare pavement policies are a slippery slope; they are very expensive for the taxpayer, the environment and your storage facility.

In closing, a winter operations Level of Service must be sustainable for the customers, budget, personnel and environment. Each of these holds serious weight in the equation of LOS development and they should always be balanced as best as possible.

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“Residential side street, Flintlock Road, goes down to one lane. Our loader-mounted snow blower made almost a full pass leaving six-foot-plus high curb lines. This was week 3 of the 88½” month of snow. 57½” of snow had fallen. Capital equipment planning helps LOS expectations.” – Marc Valenti
Within snowy regions, snow and ice control is unquestionably one of the most important maintenance services provided for ensuring the safety of the traveling public, the movement of goods and services, and the provision of an uninterrupted quality of life as enjoyed across our great country. Agencies and organizations responsible for providing such services spend millions of dollars annually striving to maintain levels of service established as acceptable to their communities, economies and motorists. Without doubt, the importance of providing an acceptable level of service increases with growth in our country’s need for mobility and transportation and the dependence of our economy and livelihood upon such.

These facts are well understood among those providing winter maintenance services. In the face of diminishing resources and declining budgets, the challenges to achieve and maintain required levels of service can intensify. The need to look beyond traditional methods, treatments and approaches is therefore elevated if one is to achieve success. Identification and implementation of areas offering improved effectiveness and efficiencies becomes a requirement and not an option.

Once identified, embracing and implementing the nontraditional method, treatment or approach offers its own set of challenges. All too frequently, internal limitations negatively impact the ability to move forward, thus creative thinking and strategy become paramount in the decision-making process. Evolution of alternative treatments, technological advancements, improved communication, and equipment upgrades have all suffered through the acceptance and learning...
curve associated with that which is perceived as nontraditional. Strategy for implementation must include consideration for overcoming the existing barriers within not one, but all areas of snow and ice control if optimal improvements in efficiencies and effectiveness are to be achieved.

One excellent strategy—considering the return on investment, ROI, for tangible and nontangible elements—has played an important role in the acceptance and implementation of alternative treatments. Examples include: using sand versus rock salt—while the initial cost of sand per ton is cheaper than rock salt, it has been proven many times over that in the long run sand is a much costlier treatment, both direct and indirectly; realizing the benefits of anti-icing and the prevention of a freeze bond, which are now recognized as costing roughly four times less than the cost of removal; applying a prewetting agent to dry material, thus creating a saving of upwards to 30%... are just a few examples illustrating the benefits of ROI over upfront apparent low cost.

This strategy is gaining momentum, and those in the snow and ice community are seeing the benefits of its application. The migration away from automatically accepting the apparent low, initial upfront cost and/or low bid to the consideration of the long-term investment and associated return is a critical element for achieving truly effective and efficient operations. Leaders, as well as industry providers, within the snow and ice community are embracing this mindset, which gives way to options for overcoming internal constraints and longstanding barriers.

The 2018 APWA North American Snow Conference’s numerous technical sessions and exhibit floor displays offered validation and abundant examples of such opportunities. The newly offered Liquid Series from the APWA Winter Maintenance Subcommittee offered attendees background, guidance and the knowledge base as needed to both implement and grow the use of liquids as a measure for increasing effectiveness and efficiency in any given winter maintenance program. While the implementation of liquid use may require an additional investment of resources and effort on the front end, the benefits and outcomes are proven to be well worth the effort through recognized returns on investment. Many end users speak to the ability to achieve desired levels of service while reducing dry salt use and yet realizing cost savings by the integration of liquids into their tool boxes.

A preview of the conference exhibit floor offered a view of some of the latest advancements the industry currently has to offer in equipment, materials, components, innovations, and services to support winter maintenance. While many of these items may require time and investment for implementation and many weigh in at an above “low bid” price range, the potential benefits for improved efficiency and effectiveness over their respective lifespans will quickly outweigh that required for initial investment.

The migration away from apparent low initial upfront cost and/or low bid to consideration of the long-term investment and associated return is a critical element for achieving truly effective and efficient operations.

An excellent example of the industry’s application of this strategy was illustrated by Winter Equipment Company during both the 2017 APWA North American Snow Conference in Des Moines, Iowa, and the 2018 APWA North American Snow Conference
in Indianapolis, Indiana, with the introduction of their “WearFactor” for assisted use in cutting-edge selection. Based on comparative costs and usage data for various blade types, Winter’s “WearFactor” provides a rating that indicates a snowplow blade’s ability to extend wear life and eliminate blade changes, a concept not only applicable to their product line but to any blade available on the market. Their work in this area is backed with 26 years of experience in research and development as well as numerous customer testimonials. Tracking customer usage and cost data allows for the calculation of comparative life costs on all available products. The intention is to provide end users with necessary criteria for the standardization of specifications based upon performance and life costs, which ultimately yield a much higher ROI than the traditional cutting-edge products.

This concept provides the end user with the information needed to move toward strategic selection and away from the apparent low bid in the cutting-edge selection process. Helping the end user recognize that low-bid blades are the most expensive option is the first step, providing a strategic planning tool such as the “WearFactor” for moving forward is a critical element for optimizing success.

The growing presence of innovative technology as evident on the Snow Conference exhibit floor offers yet another shining example of the need for considering long-term benefits related to managing winter operations. Several product lines related to automated data monitoring, routing optimization and GPS/AVL were available for preview and consideration, all of which require consideration of ROI on the end user’s part. For example, while research indicates high benefit/cost associated with GPS improving areas of the operations ranging from communications and real-time weather reporting to event management and record keeping (Clear Roads, 2016), it is well understood that “low-bid” does not equate to quality, performance and satisfaction in the world of technology, thus elevating the importance benefit/cost represents in the decision-making process for purchasing such systems.

Through the realization that adaption to change is necessary, and embracing technology is critical for achieving optimal solutions, the snow and ice community can create efficiencies and effectiveness to aid in achieving desired goals. Granted it takes time, and is often met with great resistance, but in the end the ROI is well worth the effort.

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Heavy rain, snow, ice, dust, fog and other adverse weather conditions can have significant impacts on roadway safety, mobility, and economic productivity. Over the last decade, weather was responsible for nearly 21 percent of all vehicle crashes, resulting in approximately 5,400 deaths and more than 418,000 injuries annually.¹ Further, adverse weather causes about 15 percent of all non-recurring delays,² costing the freight industry roughly $8.7 billion per year.³

The Weather-Savvy Roads (WSR) initiative aims to tackle the problem of weather impacts on the transportation system head on. Deployed by the Federal Highway Administration (FHWA) under round four of its Every Day Counts (EDC-4) program, WSR consists of two innovative road weather management solutions: Pathfinder and Integrating Mobile Observations (IMO).

Pathfinder is a collaborative effort among state departments of transportation (DOTs), the National Weather Service (NWS), and weather service contractors to share forecasts and road conditions and translate that information into consistent transportation impact messages for the public. Implementing Pathfinder requires a transportation agency to establish a collaborative partnership with its state DOT, NWS, and road weather service contractors. This partnership would develop a common structure to share weather forecasts and road conditions, and to develop the messages that are to be disseminated to road agencies and transportation management centers.

The WSR initiative is designed to provide transportation agencies with an integrated weather management solution that includes products and services necessary to disseminate the weather impact messages. The initiative includes a collaborative framework, four Phase I programs, and one Phase II program. The collaborative framework is designed to establish a sustainable weather management program that can be applied across the nation to optimize the use of existing resources and technology.


menting Pathfinder involves a multi-step process of assessing the types of information to share and when and how to share it before, during, and after high-impact weather events. The goal is to provide the public with consistent and actionable messages on potential impacts on the transportation network.

IMO promotes collecting weather, road, and vehicle data from agency fleets to improve situational awareness of road conditions. It builds on vehicle-based technologies like automatic vehicle location (AVL) and real-time communication, which most states have already implemented in their vehicle fleets. Ancillary sensors collect data on weather and road conditions, such as air pressure, air and surface temperatures, spreader rate and materials, windshield wiper status and rate, and relative humidity. The data provide maintenance managers with a detailed view of local conditions, as well as the location of assets along the highway network. This information can support maintenance and operations decision-making related to road weather forecasts, end-of-shift reporting, material management, traveler information, and performance management.

State and local agencies can adopt one or both of these solutions to manage their roadway networks proactively, ahead of and during adverse weather events. “It’s really important to have the ability to monitor weather events and their potential impact on roads,” says Randy Graham, Deputy Chief Science and Technology Infusion Division at NWS Central Region, “because weather is one of the only things that has an impact on the entire road system at one time.”

The Benefits of Implementing WSR

Both Pathfinder and IMO result in improved highway safety, mobility, and productivity, yet each offers a unique set of benefits. Broadly, Pathfinder benefits can include enhanced decision-making and better-informed travelers, thanks to consistent and targeted messaging regarding traveler information. “One thing that we find with the traveling public is that they look to multiple sources for weather information,” says Jeff Williams, weather program manager, at the Utah DOT. “If we can provide the same message about the storm impacts, no matter what medium they’re using to get this information, we see the traveling public react.” Other benefits of Pathfinder deployments include the potential for reduced vehicle miles traveled (VMT), improved maintenance operations given fewer motorist impediments, and increased overall safety.

A key benefit resulting from an IMO deployment is material savings, which include reductions in salt and sand usage. Real-time information about road conditions and fleet vehicle locations help maintenance staff make better decisions about material applications. Another benefit is agency efficiencies, such as improved reporting, reduced time spent on relaying information, better situational awareness, and fewer responses to emergencies. More comprehensive and accurate real-time information about resource consumption provides agencies with the data needed for decision-making. Over time, FHWA officials expect IMO deployments might also lead to reduced equipment usage and lower legal costs from small tort claims.

Truckee, California: Adopting Pathfinder Principles

Truckee, California, is a resort town located on I-80 near the Nevada border. The town’s population greatly increases on weekends and holidays during the summer and winter seasons, which can create extreme vehicle and truck crowding during winter closures on the interstate. Winter weather can include large amounts of snow and heavy rain, which often cause a high risk of flooding. Town officials agree that that one cohesive message, coordinated with other agencies, is essential to ensuring safe mobility and reducing confusion during severe weather events that could result in dangerous driving conditions.

Using Pathfinder principles, the town has built direct relationships with the NWS to obtain and discuss the impacts of severe weather forecasts, warnings, and watches ahead of major weather events and with Caltrans District 3 for insights related to I-80 operations and traffic impacts. These relationships are essential to Truckee’s road operations decisions and communication with travelers. In addition, the town maintains relationships with law enforcement and emergency responders to coordinate operations and public messaging during severe weather events. Through these relationships, Truckee staff works across these agencies to implement Pathfinder to ensure the public receives consistent, meaningful messages to help travelers make smart decisions. Since implementing Pathfinder, Truckee has noted the following benefits:

- Enhanced weather knowledge. Developing a direct relationship and communication with

“The real value of IMO data, not just for winter maintenance, but for all weather applications, is the ability to obtain high-resolution weather observations in a very timely manner. Any state with any weather problem can use IMO data to fill in those data gaps.”

– Amanda Anderson, NCAR
the NWS office has significantly enhanced Truckee’s knowledge of expected severe weather, allowing them to more effectively prepare their response (staff call-outs and clear streets/drains).

- **Expanded public information and outreach.** Providing critical information to the public about road conditions through Truckee’s web portal has improved operations, increased safety, and improved public trust.

- **Improved efficiency and effectiveness of road operations.** Enhanced weather knowledge and public outreach have made improved road operations possible. Resources are better allocated, known problem areas can be mitigated, fewer motorists on the roads equates to more effective operations, environmental impacts have been reduced, and roads are generally in better condition year-round which enhances safety.

- **Increased public relations.** Providing complete information to the public and stakeholders, including trouble spots and real-time road operations, has significantly increased public relations between the town, the traveling public, and improved coordination with other entities.

**West Des Moines: A City’s Approach to Vehicle-Based Technologies**

West Des Moines, Iowa, is a suburban community of 68,000 residents with 800 lane miles of pavement. Located at an interstate crossroads, the daytime population increases to over 150,000 people. The extensive commuter traffic, combined with winter weather conditions in the area, demands effective road weather management strategies.

The West Des Moines Public Services Department leverages available resources to deploy new technologies and equipment to improve its winter maintenance operations. Efforts have included deploying road weather information systems (RWIS); infrared sensors for determining pavement friction; AVL and mobile sensors on plows and other agency vehicles; and software, including that for route optimization and a maintenance decision support system (MDSS) for material type and application determination. Since implementing these IMO-related technologies, West Des Moines has found the benefits greatly exceed capital, operational, and maintenance costs. The benefits include:

- **Material savings.** The city found that the savings made possible by reducing salt and material use, while providing the same level of service, far exceed the technology costs. The city’s MDSS uses the available real-time road weather conditions and fleet vehicle locations to provide recommendations on material type, application rates, and timing for maintenance staff to make better decisions. Specifically, the West Des Moines Public Services Department has reduced chloride application by 30 percent, saving about $150,000 annually.

- **Agency efficiencies.** Route optimization has increased efficiency, reducing the time needed to clear various areas, fuel consumption, and wear and tear on the plow truck fleet, resulting in about $50,000 savings per year and the ability to do more with less. In addition, with increased data available for review after a winter weather event, agency staff can examine the storm’s progression using available road weather data, such as friction data and RWIS photos, and then compare it to the operational strategy and results.
In this way, the city can modify and enhance its strategy for truck placement, material type, and timing of material application to better meet level-of-service goals for future winter weather events.

Implementing WSR in Your Region

“IMO and Pathfinder are two strategies that enable transportation agencies to better manage the system, ultimately saving lives and keeping traffic moving safely and smoothly,” notes Roemer Alfelor, transportation specialist, FHWA’s Road Weather Management Program. Are you interested in deploying Pathfinder and/or IMO in your region? If so, check out the following resources for more information or contact FHWA’s Road Weather Management Program Team Leader Paul Pisano at Paul.Pisano@dot:

• FHWA’s Weather-Savvy Roads Toolkit houses fact sheets, case studies, videos, guidance documents, and other implementation resources in one central location! https://go.usa.gov/xnSqy
  ◦ To check out IMO Early Adopter Final Reports: https://collaboration.fhwa.dot.gov/dot/fhwa/RWMX/SiteAssets/resources-early-imo.aspx

• For more information on funding mechanisms, check out the FHWA Center for Accelerating Innovation website: https://www.fhwa.dot.gov/innovation/
  ◦ For STIC Incentive Program information: https://www.fhwa.dot.gov/innovation/stic/
  ◦ For AID Demonstration Program information: https://www.fhwa.dot.gov/innovation/grants/

1 NHTSA Fatality Analysis Reporting System (FARS) and NHTSA Crash Report Sampling System (CRSS) databases – https://www.nhtsa.gov/research-data

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The upstate region of South Carolina is plagued with sporadic inclement cold weather events, and these events frequent our region in such a number that we had to develop an inclement cold weather management plan. The City of Greenville, SC’s Public Works Department was challenged with developing an updated process to manage these types of events. Due to the erratic nature of these cold weather events in the region, the Public Works Department could not justify a dedicated snow and ice management technology. How does a small southern city with sporadic snow and ice events accomplish this task?

The Public Works Department decided to use what they already had, a work management program, to implement an inclement cold weather management program.

What does that mean? A work management program or Computerized Maintenance Management System is a program designed to record assets, manage work processes, and record historical records of management activities. Typically, these programs are designed to be versatile, but they are not designed to manage snow and ice removal processes. The department needed to modernize their cold weather management program.

Using your existing work management software to track your inclement weather program

A snow and ice management program in the Southeast? Really?

R. Keith Bishop, Environmental Compliance Coordinator, City of Greenville, South Carolina
management plan, develop location-centric data, and collect critical data associated with cold weather events. A work management program is capable of meeting these goals, but the question is how?

The Department assembled a team consisting of a group of dispatchers and the Work Management Program Administrators. The team was conflicted about two different approaches to the process. One side focused on collecting event data and the other focused on developing a map-driven management process. As with many diverse teams, the group had to diminish some paradigms in order to develop the process. The team assembled together and started working through mock events. Actually sitting down and working through an event, the team decided to put aside their paradigms and unify their ideas.

All personnel, direct and indirect, are critical to the success of developing and implementing any successful management program. The team reached out to operators, dispatchers, program administrators, and management as well as other divisions and departments of the organization to receive input and ideas during the development process. Inclusion of all personnel, during the development of the plan, was critical to the success of the process.

Time was one of the most challenging processes to overcome. The team had to develop a process in which a user could generate a work record very quickly. The team managed to overcome this challenge by optimizing default entries and employing the variable user features that were available within the program. Each user could navigate the program and establish their own process that suited their personal operational styles.

Many work management systems use spatial location data as a key component for managing work tasks. The team realized early on that this feature proved to be a key component in updating the inclement cold weather management plan. The work management program assigns a work task with location coordinates. An asset, such as a street, was assigned a unique identifier called a Facility ID. Instead of using the name of a street, i.e., Washington St., the system calls the street “Street 4506” and “Hudson Street Bridge over Reedy River” becomes “Bridge 56.” The team took advantage of these work management features and used this functionality to build the foundation for the updated inclement cold weather management plan. All work tasks completed during an event were associated with a facility ID and the facility IDs were associated with location coordinates. Therefore, the team had discovered a method in which to obtain the location-centric data. However, was there a way to develop this feature and implement a functional process that was timely and applicable during an event?

The team, gaining insight on how the work management system functioned and gaining insight from personnel, started developing the workflows necessary to implement the program. They updated the digital mapping system and added facility IDs to all critical assets included in the inclement cold weather management plan. Operators were assigned new route books that included facility IDs assigned to assets and maps labeled with the facility IDs. An operator would contact a dispatcher when a task was completed. The dispatcher would create a work task that included the facility ID. The completed work task would display on a large map. The large map was visible in the operations center and the management team could use the data to manage the event. Work tasks were recorded and trackable, and reporting capabilities were available if needed. The process was a success. CELEBRATE! The process is complete!

As with all management plans the plan would have to evolve. A temporary work center called the Emergency Operations Center (EOC) would have to be set up. Temporary computer workstations were installed in the EOC. A training program was developed. To this day, the process continues to evolve. Interestingly, the team never foresaw these modifications. So, how did the process become adaptable and dynamic?

“The achievements of an organization are the results of the combined efforts of each individual.” – Vince Lombardi

The entire team concept was the one crucial function consistently required during the development, implementation, and modifications of the process. In the statement above, “The combined efforts” is the key word. There are many processes, programs, and venues available for developing an inclement weather program. Some will work for one group and others will work for another, but it really depends on the organization and the team that implements the program.

The updated inclement cold weather management process has proven to be a highly dynamic and versatile program. The program has developed into an emergency management process that has the ability to track and manage various types of emergencies. The process has the capability to generate reports with geographic coordinates that will be able to meet the requirement for reporting to the Federal Emergency Management Agency. The process has proven to be a success, not due to the process itself, but due to the team that continues to update and modify the process in order to meet the service level requirements of the organization and its citizens. Employing a work management program to update an inclement cold weather management plan was effective for the City of Greenville. It may be effective for your organization as well. Nevertheless, one thing could hold true. Developing and using the synergy of a team will boost your chances of success.

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would like you to take a moment and think about some of the APWA events that you attend throughout the year. Perhaps it was an APWA chapter or branch meeting, perhaps an APWA educational event or perhaps even an APWA conference. It’s not uncommon to have a mix of consultants, vendors and public works personnel. Of the public works folks, who were the people surrounding you? What were their positions within their agencies? Who were the leaders and presenters at the event? How many of the agency attendees were maintenance laborers or operators?

I can tell you from my personal experience that I see very few operators at our chapter or branch meetings and almost none leading educational events. We do see operators at some of the conferences, especially on the trade floors. They certainly attend training events throughout the year if they pertain to their job duties, but again rarely do I see an operator leading an educational session.

So, the first question is, “Why is that?” Why are operators and laborers not more involved in our association and striv-
ing for leadership roles? The truth is that they make up the bulk of our transportation agencies. I am not certain there is an easy explanation. Many issues may preclude them from attending and participating, beginning with their daily job responsibilities. If they are at an event, who will fill the pothole or fix the sign or plow the road? Perhaps it is the lack of experience—if you have never been in front of a group or participated in a meeting or committee, it may be a bit daunting at first. I believe one of the main reasons is lack of opportunity, and that is something that I believe should change.

Some of the very best leaders in the snow and ice industry came up through the ranks and worked their way into supervisory roles. I have had the pleasure of working with them and they bring great experience and great ideas with them. What I question is, why did we have to wait until they were a supervisor for them to be able to share their ideas, concerns and passion? It has been said that the best ideas come from those who perform the work, and I believe we should use those ideas and challenge them to strive for leadership opportunities.

It may just be a perception on my part, but it seems that in our industry and in our association we strive to look for emerging leaders but often overlook this portion of our workforce. When I look at those in our meetings, on our committees or at our conferences, I see supervisors, superintendents, managers or directors. Rare is it to find an operator.

Thankfully that trend is changing, and we have seen the change in our snow and ice community. More and more we are seeing operators taking center stage. We are seeing them participating in workshops and training events. We see operators actually leading new programs and new projects. We see them in leadership roles, and not surprisingly, doing a fantastic job.

One example I will give you comes from the City of West Des Moines, Iowa. It starts with upper management who has long seen the value of giving staff opportunities and assisting in their personal development. The city has initiated programs that gives every employee the opportunity for personal development and created an environment that promotes educational and leadership outreach. Opportunity is really where everything begins. Not every employee will take advantage of this but those who have, have excelled when given the chance.

Several West Des Moines operators have become fantastic presenters and share their experience and knowledge at conferences and events locally and nationally. It is incred-

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www.apwa.net     /   October 2018     /   APWA Reporter     57
ible to witness for several reasons. First, it is a little unusual. It is a different perspective than what we normally see—operations from an operator’s point of view. Second, it is enlightening. The challenges they face, the communication they need, the experiences that they share are truly needed by the audiences they address. Supervisors get a perspective that is often suppressed for fear of ridicule or retribution. Peer to peer gets an immediate buy-in and they can relate to the presenter when he or she is performing the same operations. Lastly, it is refreshing. It is great to see operators step up and perhaps get outside their comfort zones to deliver their message and take on new leadership roles.

Don’t think for a minute this is easy. When I asked some of them about what their experiences were like, not all were positive, at least not in the beginning. Peer pressure can be an issue. Taking on a leadership role or agreeing to a speaking engagement comes with some perceptions. Are they buttering up to management? Are they doing it just to get out of work? Are they getting to travel and have fun while we cover for them? These can be difficult and even deter some operators from trying. The rewards, however, outweigh the challenges they tell me. The positive feedback and knowing that what they are doing is helping others makes it worthwhile.

The industry has really embraced them as well, giving them more and more opportunities. Over the past five years West Des Moines has had multiple operators present at our Snow Conferences. They are doing teaching across Iowa. Some have been involved in peer-to-peer exchanges and they have even taken leadership of an annual snowplow operator training event. This is led by operators and is a two-day training event with hands-on and classroom training.

Opportunity has led to success. No one has made more of this opportunity than an operator by the name of Matt Dolan. Matt has become a nationally recognized expert. He is one of the most articulated presenters you will ever hear. He is a great leader and takes on leadership roles while still performing his daily maintenance routines. I was proud to nominate him and he was the national recipient of the APWA Donald C. Stone top educator award in 2013.

Today, Matt and perhaps other of his fellow operators are taking on another leadership role, as the Winter Maintenance Subcommittee is working to develop an APWA Winter Maintenance Operator Certificate Course. Matt will be working with the committee on the course and Matt and perhaps some of his colleagues will help deliver the course as well. It is great to see these operators step up to help and take center stage as leaders and presenters in our snow and ice industry.

Mark DeVries can be reached at mark.devries@vaisala.com.
Applications are now being accepted for the 2019 Jennings Randolph International Fellowship Program funded through the Eisenhower World Affairs Institute.

The Jennings Randolph International Fellowship Program supports participation at a public works conference of one of APWA’s international partners and a technology focused public works study tour in that country. Fellowships granted for travel to our partner countries are limited to a maximum of $2,500 (USD) to assist with travel costs and other expenses that may be covered by the award.

For details and application go to: www.apwa.net/JRFellowship or contact Lillie Yvette Salinas at 1-800-848-2792, ext. 5253, or Lsalinas@apwa.net

APPLICATION DEADLINE: NOVEMBER 16, 2018, MIDNIGHT CST.
Culture and public works

Lee Perkins, MBA, CET, Transportation Operations Manager, City of Lethbridge, Alberta; member, APWA Winter Maintenance Subcommittee

In the book Blue Ocean Strategy, W. Chan Kim and Renee Mauborgne cite four hurdles that face a manager trying to institute broad change in an organization. The first hurdle is cognitive—people must have some understanding of why the change in strategy or in culture is needed. The second is limited resources—inevitably, changing an organization will require shifting resources away from some areas and towards others. The third hurdle is motivation—ultimately, workers must want to make the change. And the final hurdle is institutional politics. They quote one manager who complains: “In our organization, you get shot down before you stand up.”

Cultural change is inevitable. As technology, process and personnel transform into the future, the modern snow and ice control manager must, to quote Clint Eastwood in the movie Heartbreak Ridge, “Imposte, adapt and overcome.” It sounds easy in theory but dealing with the human element of the equation is very challenging. In the public sector, it is even more so; politics, entitlement and seniority often play a significant role.

Attaining the newest equipment in weather forecasting and training personnel are the simplest stages in the commencement of cultural change. There will always be the dissenters within the group who won’t “use” the new equipment and will refuse to believe that the road weather information systems and advanced technology will help with plow routes. Of course, we all work with a “Negative Nellie” who won’t accept change, cannot use technology to its full advantage, and believes that the cultural change movement is just the “flavor of the week.”

In public service, to remove these dissenters is difficult; usually they are unofficial leaders with influence in the group. Waiting for retirement is a strategy; however, performance management will most likely be the first course of action suggested by your human resources consultant. In actuality, relieving an individual of thirty-plus years with an organization will be challenging, if not impossible. Frankly, I do not want to work for an organization that dismisses individuals after thirty-plus years because it is ultimately the corporation that has failed them. That’s right. The organization has failed them by promoting the individual without the proper support and tools they need to succeed; the opportunity to fail has been greatly enhanced. Most people accept a new challenge for money without consideration of the responsibilities of the new position. They often believe the promotion is the same as the position they have been backfilling or acting as during annual leave and holidays. Unfortunately, as a manager you require more from these people when they assume the new position. By not coaching, mentoring, training, providing the tools the person needs to be successful and being consistent with performance reviews, you are doing a disservice to the group and to the individual.

People reach the heights of their incompetence through seniority, connections or just being a “good guy.” As the younger workforce endeavors to create opportunities, are fully fluent in technology and can problem-solve as a team, the dissenters are becoming outnumbered and are being left behind. Individuals that seek training opportunities and accept cultural change are becoming more prevalent. Newer employees request training, are inquisitive about educational requirements to move to a leadership role, and are positive influences within their chosen career.

Human nature instinctively rejects change of any sort, even if the change will be beneficial in the long run. To quote John Nash, the father of modern economics, “What is good for the individual may not necessarily be good for the group, but what is good for the group is good for the individual.” As we move to more respectful workplace environments, input from all staff must be considered. This is a key to cultural change. Staff must recognize that the work is “theirs”; their input into equipment, technology and teambuilding is invaluable. Avoid management-only decision making that is imposed upon employees. Do not play favorites or advance people without clear, merit-based criteria. Be careful not to spring the changes on everyone suddenly, without warning. Never threaten or coerce workers into submission. Forget about mass layoffs if you want to maintain any kind of corporate culture.

Modern companies are now welcoming the idea of culture as something that everyone in the organization, not just HR, “owns.” For employees, that ownership comes as a distinct organizational citizenship where their voice matters and can influence operational decisions. Whereas culture was once something dictated and defined by a select few, evolving attitudes and new channels for feedback are positioning employees as prime culture builders—people who rightly get a say in how the organization operates because, frankly, they’re the ones operating it.

Lee Perkins can be reached at (403) 320-3945 or lee.perkins@lethbridge.ca.
As I was heading to the American Meteorological Society’s annual meeting this past January in Austin, Texas, I was sitting on the plane thinking about weather forecasts and how people use them. I don’t remember it now, but I must have been thinking of a recent incident where the weather community had taken to social media to defend a forecast accuracy, but the result was that the public did not react and was still in harm’s way. It made me write the following note on a piece of paper and save it on my desk until today.

The secret to meteorology is not making perfect forecasts but making forecasts the world understands and is able to make correct decisions. Whether it is wearing a coat or putting salt on a road. Who cares if you get it right if they did not make the right decision.

I am not sure why I wrote it down, it is not particularly amazing, but I knew someday for a future article it might come in handy. After reading about some recent incidents involving weather, and seeing people use weather information over the years, it inspired me to do just that. So, to help you and your agency navigate through dealing with weather decisions, I have some suggested steps for you to follow.

As a person who deals with weather year-round on the job, you likely have a pretty good understanding of the weather in your location. You may not even know it, but looking at forecasts, radar, and conditions on your streets has turned you into a good observer of weather. What would make it even better would be if you and your decision makers had a basic understanding of how the weather works. No, I am not asking you to learn how a weather model is created, or for you to turn into a meteorologist. However, understanding things like dew point, how objects transfer heat (specifically roads), how to get observations and what they mean, and yes, how to understand a weather radar are important. Luckily, there are some great ways you can gain this knowledge, such as attend an APWA event with weather educational sessions, hire a trainer to educate your team about weather, or recruit someone from your local National Weather Service or university (assuming it has a weather program) to come and speak to your staff. All are excellent ways to increase the level of understanding of weather, which then allows you and your staff to make better decisions.

The next step in the process is learning about sources for weather information. Before you start downloading the first 20 free weather apps on your smartphone, or turn to internet searches, you really need to begin with a weather forecast. A weather forecast is going to give you the answers you need for 70-80% of your decisions. Of course, you should always turn to services such as the National Weather Service (NWS) and local media. Both provide a good general forecast to help you plan for weather days in advance. For assisting you with events as they get closer or more complicated, you really need to look at subscribing to a paid weather service. Why? Because these services provide a product that is much more

DON’T BE THE NEXT WEATHER DISASTER HEADLINE

Jon Tarleton, Transportation Weather Consultant, and member, APWA Winter Maintenance Subcommittee
customized, which means you are only seeing information that is relevant to your decision making and operations. As I mentioned at the beginning, one of the biggest challenges of forecasts from the NWS is it can be difficult to pull out or be alerted to what you need to know. This is not their fault, as they are making a forecast that is for a broad area and for a broad range of users. A paid service should be making a forecast for you and only what you need to know!

An excellent example of this in action was an incident that occurred this summer that received national attention. No, it was not winter related, but the decision process is the same. The incident happened this past summer involving a tourist amphibious “duck boat” on Table Rock Lake in Southwest Missouri.

At 11:20 a.m. on Thursday, July 19, 2018, the NWS issued a Severe Thunderstorm Watch for the region including the lake involved in the tragedy. At 6:32 p.m., the local NWS office issued a Severe Thunderstorm Warning for the lake and surrounding county, and at approximately 7:01 p.m., winds likely in excess of 60-70 mph caused the duck boat to capsize, injuring several and killing 17 adults and children.

The NWS issued a perfect set of forecasts! But somehow lives were still lost, and people were still injured. So how come this still happened? We are in the face of our communities with such great public service media programs as “When Thunder Roars, Go Indoors,” “Turn Around Don’t Drown,” and listen to meteorologists, so why does it seem that people still go into harm’s way?

One challenge that had an impact on this incident and other weather-related tragedies in the past and will in the future is that weather forecasts and warnings are still not perfect. As a society we know the meteorologist is not always right, and we try to use our own judgement. I am sure even a meteorologist reading this would admit to going for a hike or a picnic on a day with a chance of rain. The NWS communicated the day before this tragedy with some level of threat for severe weather, they issued a watch before lunch on that day, and a warning 30 minutes before the event, so what might have been going through the company or captain’s mind was, “we have heard all of this before, bet it will not happen to us now.” What I am saying is that we have bombarded them with so much information about events that don’t always materialize, that the user does not know when to react. A business must always balance risk vs. reward, and thus, pushes the limits. Are your decisions about winter snow removal different? Lives can certainly be lost, and you are under pressure to maintain budgets and protect the environment. When a snow storm is zeroing in on your community, that volume of information about
the storm streaming by your eyes and brain can be overwhelming.

In the case of weather forecasts and the duck boat tragedy, the solution is any company or agency that is vulnerable to weather risk needs an expert to help decipher weather data and even the weather forecast itself. An organization, such as this one, is thinking about so many things that day. Operation of the vehicles, scheduling of people, customer service, profits, and yes, safety of everyone. So, to ask the company to look at a weather radar, or make sure to read bulletins from the weather service carefully is a challenge, because this information is not specific to the duck boat operations, and even the warnings are for larger regions, which may or may not include them at that moment.

An organization such as this should be using a private weather service to notify them when their assets or business is at risk. When anyone first signs with a service, they should sit down with your team and determine what weather conditions are hazardous or could negatively impact your operations, and how much time you need to begin your winter operations or react to a surprise event. Then, when those conditions are going to occur, a meteorologist contacts and informs them and each forecast contains information specific to your defined impacts.

Some might say, “But if this was a small tourist operation in Southern Missouri they might not be able to afford a private service!” The cost of a service looks a bit different now when they are staring at liabilities that could close the business, and not to mention the enormous guilt and stress the employees and owner of the company are going to be going through over the loss of 17 wonderful people. Or they might say, “Can’t the NWS develop better messaging?” What else could they have done? They made a perfect forecast and alerted the public with enough time. You might be saying the same thing, “We are a small community, how can we afford a private service?” How much does it cost to make the wrong decision, or make decisions to “cover your bases”?

You and your team know a lot about weather, but do you have the time and expertise to know what is important to make that call? In my experience, the tool everyone runs to is the weather radar—it shows you where the event is now, and you loop it to know if/when it is coming to you. Simple, right? Not so fast! The weather radar is one of the most complicated tools a meteorologist has, so if that is the first place you look, maybe you should consider how you look at weather. We will never stop having weather disasters and people dying or being injured from them. Just make sure that your decisions do not become the headline—rely on a weather expert as part of your decision process.

Jon Tarleton can be reached at (314) 704-0052 or Jon.tarleton@outlook.com.
“Nothing ever stays the same, thankfully. Change creates energy and excitement. Be inspired by both the challenges and possibilities that change brings. We need to change faster internally than the marketplace changes externally. The better and faster we are at adapting to change, the stronger and more successful we become as a company.”

This is a core fundamental that our company lives by and I personally challenge myself with all the time. It’s very true, in my personal life and at our work place. So, the question becomes, what can we do as leaders and individuals to “embrace” this constant change? Here are a few things that I have found to be successful on my journey.

Change is necessary
Understanding this is the most important aspect. We need to know that whether we like it or not, change is happening all around us. If we continue to think that the old way of doing things is enough, then we will continue to miss out on the new opportunities that change brings. All good things that come into our lives come from change. Think about it, if it weren’t for change, you never would have taken those training wheels off your bike. You never would have taken that journey by yourself in your first vehicle. If it weren’t for change, we would all still be using beepers as a primary way of communication. The world is evolving with us or without us. Let’s make the decision to hop on that train, and have fun doing it. You will be surprised at how positive the impact will be.

Evaluate your processes, internally and externally
To change, we must evaluate ourselves and our mindsets. The most powerful thing we do as individuals is create habits. Whether we like it or not, we live our lives day in and day out by these habits. Obviously, some are good, and some are bad, but we must challenge ourselves consistently to make sure these habits are producing the correct result for our lives and positions.

As you go through the steps of determining where change is necessary, here are a few things to keep in mind to make sure you are being as honest as possible with your evaluation process.

• What habits have I created in my decision-making process?
• Am I being defensive?
• Am I pre-judging the outcome without understanding the other side?

Embracing change

Tim Cassell, Regional Director of Business Development, Tovar Snow Professionals, Machesney Park, Illinois

Tovar’s Executive team embracing new ideas from an outside consultant
• Where am I not getting the best results?
• How are other people in my position handling this with success?
• Am I using the best technology available within my budget?
• Am I getting the best ROI?
• Do I have the correct people in the best positions?

There are obviously many more ideas, depending on what position you have within your organization, but these were a few to help get your mind going. Take the time to walk through these areas and most importantly, be honest with yourself.

Invite change
As much as we would like to personally conquer the world, we will need help. Change requires many moving pieces and there are many people and resources available to help us start this process. Yes, this will take time. Invite ideas from your people and bring them into the processes. Most of the people we have on our teams have ideas. You will be surprised at how many people are creative with their thought process. This is one process that has helped change our company dramatically. We have found that some of the best ideas we’ve had came from the people who do the specific jobs day in and day out. People love to be involved. It creates energy and excitement for them to know that they can be a part of this change. Put together a meeting with your team and let them lay their ideas out on the table. This is a practice that we do consistently throughout the year. We call them “Lean Groups.” We take the ideas that were gathered, combine them and narrow them down. We then break this idea down and separate them into small groups. These groups will be able to own this idea, research it and come up with some solutions. Make sure the groups are setting time frames and action items for their tasks in the beginning. Once this is complete, bring them back together and let them present it. You can then take it from there as to how you want to move forward.

Put it into action
Now that you have the necessary changes identified, it’s time to move forward. The longer you let it sit stagnant the less impact it will have. You must move quickly on implementing these new changes. Knowing how big the changes are will determine how long and what process must be implemented to move forward. There may be budgets that will have to be modified, boards and committees that need to be involved, but regardless, do not let the process stop. Keep it moving forward. Your team is probably more excited about the ideas than you are, and that excitement is helping to bring things back to life.

I know that change is difficult and can be hindered by our habits, but think how exciting it will be when we look back a year from now and see how much the power of change has impacted our lives. Move past that fear and discomfort and start to embrace change, instead of running from it. You and you alone must independently make that decision. I know you can do it.

Tim Cassell can be reached at (815) 821-1076 or tcassell@tovarsnow.com.
For more information about these programs or to register online, visit www.apwa.net/Events. Program information will be updated as it becomes available.
Questions? Call the Professional Development Department at 1-800-848-APWA.

**2018**

- **October 11**: Talking Top Tech: Unmanned Aircraft Systems (UAS)/Drones
- **October 18**: Research: Where to Look for Winter Answers
- **October 22**: PWX 2019 Call for Presentations Deadline
- **November 12-15**: CSM, CPII and CPFP Certification Exams (computer-based testing)
- **December 6**: Talking Top Tech: GPS/Automatic Vehicle Location (AVL)

**2019**

- **May 19-22**: 2019 North American Snow Conference, Salt Lake City, UT
- **September 8-11**: 2019 PWX, Seattle, WA

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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/
Products in the News

Reduce your slip and fall liability this winter with STAND-UP Freeze Resistant Liquid Deicer

New STAND-UP helps facilities mitigate their slip and fall liabilities by completely clearing away slippery ice and snow pack from their steps, walkways and ramps. STAND-UP is a great alternative to salt around facilities since it keeps working even after the sun goes down. STAND-UP will not track into buildings, and it will not damage expensive stamped concrete and brick pavers like salt can. For more information, watch a short video of STAND-UP in action at www.rhomar.com or call (800) 688-6221.

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New Extech laser distance meters measure up to jobsite challenges
Extech Instruments, a world leader in test and measurement tools, has announced the launch of the DT-M series of pro-grade laser distance meters. The three new Extech meters make it easy to measure distances, compute area and volume, measure angles, and stake out distances between objects. Users can quickly take measurements with one-button, point-and-shoot convenience, saving time and dollars resulting from estimating errors. The laser distance meters are designed for construction workers, contractors, realtors, home appraisers, renovation and remodeling professionals, electrical and HVAC estimators and others who routinely need quick measurements at a job site. For more information, please visit www.extech.com.

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Agile Interoperable Solutions (AIS) provides communications solutions enabling organizations to achieve seamless connectivity, even in the most challenging environments. AIS and its CORE and Mobile CORE products rapidly establish integrated communications among disparate systems. With deep experience in communications technology, extensive operational prowess, and a passion for supporting customers, AIS delivers best-in-class interoperable solutions. AIS’ integrative solutions combine hardware, software, mobile applications, and customer-tailored workflows. The result is interoperable systems connecting radio, cellular, satellite, hardline, and Wi-Fi for seamless, efficient, and secure communications between multiple parties/agencies. AIS also offers specialty solutions that may be standalone or part of an integrated and/or interoperable solutions package. For more information, please visit www.aisinterop.com.

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Niagara Bottling joins The Recycling Partnership
Niagara Bottling, one of the largest beverage manufacturers in the country, joins The Recycling Partnership to expand its waste reduction efforts and make a positive impact on the environment by contributing to the cost and effort necessary to make curbside recycling a reality in communities across the U.S. As a family-owned-and-operated business, Niagara leads the industry in innovation, sustainability, process efficiency and packaging material reduction. Niagara reduced the amount of PET in its Eco-Air Bottle® by over 50% in the past 10 years and is one of the largest consumers of recycled PET (rPET) in North America. Contact: Julia Buchanan at jbuchanan@niagarawater.com.

WorkWave increases visibility for field service and logistics companies through GPS mobile app
WorkWave®, a leading provider of cloud-based software solutions for the field service, last mile delivery and logistics industries, has announced the launch of its mobile app, WorkWave: GPS Track, now available on both Android and iOS. Through the free app, customers using WorkWave’s GPS tracking can instantly access live, 24/7 tracking and visibility
from desktop, phone or tablet to enable more effective management when on-the-go. “With many business owners spending time both in and out of the office, it is important to be able to access their fleet’s live activity, events and functions, even when they step away from their desk,” said Mike Profit, WorkWave’s Chief Product and Service Officer. For more information, please visit www.workwave.com.

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**TALKING TOP TECH: UNMANNED AIRCRAFT SYSTEMS (UAS)/Drones**

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**APWA CLICK, LISTEN & LEARN**

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