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(see page 28)
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Training needs to be a process

Edward A. Gottko, PWLF
APWA President

Although many of us may be hoping that Old Man Winter will hold off for another month or two, the signs are definitely present that he is knocking on the door. Many organizations have learned from years of experience that it is very important to spend significant time preparing snow and ice-fighting equipment prior to rather than during the season. Oftentimes labor-intensive inspections are performed on snowfighting equipment in order to identify any item that could possibly fail during the snow season. For many of you this preseason evaluation is standard practice and you should be commended for using this proactive versus reactive maintenance approach. When you think about this process, it’s absolutely amazing the amount of time, effort and money that goes into ensuring that a fleet is ready for the worst of winters. With the amount of emphasis that is placed on the fleet, one could only assume that the individuals intended to operate the equipment are receiving the same preparation.

Education and development of staff is an essential component to being a champion organization. Focusing on equipment as the primary asset is often a general perception due to the monetary value placed upon it. Many organizations have realized that the true asset lies within the staff that make up the organization. Creating a successful staff training environment can be difficult; it requires an extensive amount of time to ensure that a good training process takes place in which value is being retained. Developing effective training practices and procedures within an organization is something that should be set up with a long-term goal in mind. Just like the saying goes, “Rome wasn’t built in a day” nor can effective training be completed in a single session. Training needs to be a process in which education progresses steadily with emphasis being placed on the ability to accommodate change in organizational practices.

New ways of battling snow and ice are presenting themselves on a regular basis. We have seen rapid advancement in the increased use of new technology in the last ten years. Significant development in the production and use of ice control liquids along with new equipment design concepts are showing how industry progression is taking place at an unbelievable rate. It is extremely important to recognize that with every change we are seeing new demands being placed on staff. In order to ensure that monetary assets (equipment) are effective it is essential that the true asset (staff) receives the adequate training and education needed to succeed.

One of the best opportunities for staff to gain extensive knowledge and training on different methods in battling snow and ice is at the APWA North American Snow Conference.
With the conference taking place in Cincinnati, Ohio in 2014, we are sure to see a good showing of snow professionals. Being no stranger to severe winter weather, Cincinnati annually experiences an average winter snowfall accumulation of 42 inches and an average temperature that hangs right around 30 degrees Fahrenheit during the month of January. Although the average temperature doesn’t seem extremely terrible for the winter months, Cincinnati does experience some extremely cold temperatures that can potentially dip to -25 degrees Fahrenheit.

The Snow Conference not only allows for excellent education opportunities, it also provides access to one of the largest exhibitor showings of winter maintenance equipment and products. One of the best educational opportunities that has taken place at the previous two Snow Conferences will be offered again next year in Cincinnati. With approximately 2,000 snow professionals having already attended the Winter Maintenance Supervisor Certificate Workshop it is exciting to hear that another opportunity will be offered to those that have not yet been able to attend. The workshop provides an all-aspect overview of snow and ice control for those individuals performing winter maintenance operations. Through the workshop some of the leading experts in snow and fleet maintenance will provide participants with a complete overview of processes and procedures that have been proven to be successful.

The North American Snow Conference is the perfect setting and environment for education and training for that new snowfighter on your staff. Through attendance you will not only be able to participate in a wide variety of exciting presentations, you will also get a chance to learn from the experiences of your peers in the snowfighting profession.

“Sustainability done right drives changes that matter.”
– Len Sauers, Ph.D., Vice President, Global Sustainability, The Procter & Gamble Company
beginning this autumn and extending through 2014, the U.S. Department of Transportation (USDOT) will publish proposed rulemakings to implement MAP-21’s performance management provisions. USDOT will roll out in phases, nine interrelated proposed rulemakings addressing planning, highway safety, highway conditions, congestion, system performance, and transit performance.

MAP-21 created a streamlined, performance-based transportation program. Its performance management emphasis focuses on various outcomes such as reducing fatalities, improving the condition of roads and bridges, reducing congestion, increasing system reliability and improving freight movement. The law’s performance management requirements are intended to provide a means to direct transportation investments toward achieving national goals.

Specifically, MAP-21 establishes the following national performance goals for federal highway programs:

• Safety: to achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
• Infrastructure condition: to maintain the highway infrastructure asset system in a state of good repair.
• Congestion reduction: to achieve a significant reduction in congestion on the National Highway System (NHS).
• System reliability: to improve the efficiency of the surface transportation system.
• Freight movement and economic vitality: to improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.
• Environmental sustainability: to enhance the performance of the transportation system while protecting and enhancing the natural environment.
• Reduced project delivery delays: to reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies’ work practices.

The first highway performance measures rulemaking will address Safety Performance Measures, expected to be released with a Highway Safety Improvement Program (HSIP) rulemaking and a Metropolitan and Statewide Planning rulemaking. The Safety Performance Measures will propose and define measures for fatalities and serious injuries, along with target establishment, progress assessment and reporting requirements. It will also discuss the implementation of MAP-21 performance requirements.

The HSIP rulemaking will address integration of performance measures, targets and reporting requirements into the HSIP and Strategic Highway Safety Plan updates. MAP-21’s HSIP is a program that requires a data-driven, strategic approach to improving highway safety on all public roads. It is funded at $2.4 billion annually for MAP-21’s two-year authorization.

Next, USDOT intends to release the Asset Management Plan and the Pavement and Bridge Performance Measures rules in early 2014. The Pavement and Bridge Performance Measures will propose and define pavement and bridge measures for assessing condition, along with minimum condition levels for pavement, target establishment, progress assessment and reporting requirements. The Asset Management Plan will address contents and development process for the Asset...
Management Plan and minimum standards for pavement and bridge management systems.

Next in line is the release of the System Performance Measures rule, in the spring of 2014. It will propose measures for performance of the Interstate system, the non-Interstate NHS and freight movement on the Interstate system. It will also propose measures for the Congestion Mitigation and Air Quality (CMAQ) performance requirements, including congestion and on-road mobile source emissions, and it will summarize all MAP-21 highway performance measure rules.

Proposed rules on transit performance to address transit state of good repair and transit safety standards, transit safety plan content and reporting requirements are also required under MAP-21.

USDOT proposes to establish a single effective date for all highway performance measures, approximately spring 2015.

For more information on transportation performance management, visit: http://www.fhwa.dot.gov/tpm/.

“We should not and cannot change all our differences. Each of us brings from our own background things which we should share. There is good in diversity.”

– Georgie Anne Geyer, American journalist and columnist

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R. Mark DeVries, PWLF
Maintenance Superintendent, McHenry County Division of Transportation
Woodstock, Illinois
Chair, APWA Winter Maintenance Subcommittee

“Blades up!” It’s a common term to snowfighters all across the globe. It signifies the end of a shift, the end of a storm or perhaps even the end of a season. Time to raise the plow and head for the yard. Time to turn it over to the next shift or the next operator. Perhaps time to rejuvenate and be ready for the next event. Or perhaps put it away for good until the next season arrives.

Leadership is all about decision making. I have been in a leadership role for many years and decision making has been an everyday part of my duties. I have learned to embrace change and acknowledge that change is healthy and often very beneficial. This past year, however, I found myself struggling with some major decisions and the changes they will bring. I have decided to call “Blades up” for myself. It is time for me to end my shift and end my season. I do so with no regret, in fact, I do so with a feeling of great pride and accomplishment.

Come May of 2014, I will end my reign as Chair of the APWA Winter Maintenance Subcommittee. I will also be ending my career at the McHenry County Division of Transportation. Two life-changing decisions, because both have brought me great happiness and great opportunities.

Both decisions are made easier, however, because I have great faith that the subcommittee, and my agency, will continue to strive to be the very best and both will have great leaders to guide them. The Winter Maintenance Subcommittee is made up of the best snow and ice professionals in North America. I am turning the subcommittee over to a very bright, ambitious young man, Ben Dow, who is innovative, articulate and inspiring. Ben is the Public Works Director for the City of Fargo, North Dakota, and he has done incredible things there. He is going to lead this committee and set a new vision for the coming years. With the group assembled around him, there is no telling what great things will be accomplished.

The McHenry County Division of Transportation has become well known for what they do. I became the face and the voice of the McHenry County Division of Transportation through APWA. What they have accomplished and the innovations they have brought to our industry is a testament to all the people that work there. I have had the privilege to share in their accomplishments, to allow them to bring new ideas forward and to see them through to realities. I will merely be stepping aside as they move forward and continue their great work. I can’t thank the leadership at McHenry County enough for allowing me the opportunity to be involved in APWA and supporting me throughout the years in my role as Winter Maintenance Chair.

My goal is to continue to assist my subcommittee, my agency and our industry as I move on. I wish to stay part of the Winter Maintenance Subcommittee and assist Ben as I can. I want to continue to teach, present and share my experience with others. I want to be involved in new research and in the development of new technologies. I hope to be a trainer, and consult when needed as well. I have no idea where I will land, or whom I will be working for at this time, but I am keeping all options open for now.

I am so proud of our accomplishments as a Winter Maintenance Subcommittee and I want to thank every member who contributed during my chairmanship. Together we have instilled many new programs, brought great educational opportunities to our members and to our industry, developed sustainable solutions and recognized the great work being done by others.

I would also like to thank our APWA Presidents and Board members that have backed this subcommittee throughout my term. Special thanks to Peter King and his incredible staff at APWA that have helped throughout
the years. So many people are responsible for my success and I can’t list them all, but some special people I must thank are Bret Hodne and John Scharrfbillig, my two best friends and my source of strength and advice. To Larry Frevert and Diane Linderman who guided and inspired me. To Sue Hann who has always been my greatest supporter. To Phyllis Muder and Ashley Scherzer who day to day helped me in my role as Chair. I love you all.

This subcommittee is made up of the very best from across North America and they volunteer to serve you. I am proud to have chaired this subcommittee and the great work that they do. It is a resource that can assist you and I encourage you to get to know your subcommittee members and call on them for assistance or forward on ideas and needs that they can help address.

It has truly been my honor.

R. Mark DeVries can be reached at (815) 334-4975 or RMDevries@co.mchenry.il.us.

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The Donald C. Stone Center: Hitting the mark

George Crombie, MPA, BCEEM, PWLF
Senior Faculty Member, Public Works Administration
Norwich University, College of Graduate Studies
Past President, American Public Works Association

After graduating from college in 1973, I became the youngest public works director in New England in a small community in New Hampshire. I would not have gotten the job if I had not worked for a public works department during college and had a great mentor. I began to notice that the professions around me—police, fire, planners, and town managers—had credentials in their respective fields; I observed that those who had credentials had an advantage. Funding for continuing education to maintain those credentials was available; this was not the case in the public works profession.

I began attending APWA’s Congress in the early 1970s and kept wondering why APWA had not established a credentialing program and defined public works as a profession. I began researching the issue and found that Donald C. Stone, who founded APWA and played a major role in the development of the Marshall Plan along with establishing the first graduate program in public works at the University of Pittsburgh, recognized that public works leaders of the future would require education and professional development beyond a technical or undergraduate degree.

In the late 1970s, I made two commitments to myself: one was that I would go to graduate school, and if I was able to influence a credentialing program at APWA, I would do so, never imagining I would become president of APWA someday. Over the next few years, I completed my master’s degree and discovered what I needed to know to become an effective manager. With my degree, I found new job opportunities in public works and eventually served as the Undersecretary of Environmental Affairs in Massachusetts and Secretary of Environmental Affairs in Vermont. In these positions, I had a major influence over numerous public works projects across both states.

Five years ago, after spending 37 years in the public works and environmental fields, I was asked by Norwich University to develop a master’s degree curriculum in public works and to teach both public works and leadership courses online. My experience led me to believe that education, training and professional development are important for gaining access to better opportunities to serve. I no longer debate that acquiring advanced skills opens doors, nor has this begun to change the perception of professionalism within public works because the trend toward professional leadership within public works is obvious.

When I became president of APWA in 2010, my primary goal was to create a comprehensive education and credentialing program. Through the efforts of a distinguished Education Committee, Education and Certification Task Force and APWA education staff, the APWA Board of Directors approved the APWA Donald C. Stone Center for Leadership Excellence in Public Works. The Center’s mission was to offer credentialing for all levels within the public works profession. The vision was to offer members an opportunity to earn designations based on requirements set by APWA that allowed public works professionals to cite a specific credential after their name.

The Education and Certification Task Force saw the role of the APWA public works institutes was to train the first-line managers, our colleges and universities to train graduate students for public works executive positions, and to invite individuals with decades of experience in public works to become mentors.

Building on Donald C. Stone’s vision, APWA leadership recognized the importance of credentials for advancement in the profession for APWA members. The vision is that someday state laws and personnel departments will identify individuals with these credentials as qualified to manage in the public works profession. By setting a higher bar for public works employees, APWA will support professionals as they develop the skills and emotional intelligence to improve as managers.

Although the Donald C. Stone Center has made significant progress to
enhance education and credentialing, **there is still much more to do:**

We must look “outward” and not “inward” to find what skills managers will require in the future. This means benchmarking outside the public works profession. Public works leaders will be a part of a larger group of professionals, all vying for resources to build infrastructure and communities.

We must embrace new technologies and educational strategies that are more appealing, effective and convenient to younger public works professionals. For instance, most universities are now making online education accessible to thousands of students. It is important that public works professionals grow in experience, not just acquire knowledge. We can now have public works employees from throughout North America sharing courses and gaining a diverse perspective.

We must focus on young and emerging professionals. As president of APWA, I learned from our younger members and emerging leaders that education, international experiences and working in programs such as Habitat for Humanity resonated with them. These young members have so many choices today and they will gravitate to those organizations that provide these options.

We must strive for rigor and relevance. Public works professionals must be prepared for the challenges ahead; they are real and ever-present. Public works professionals must draw upon experiences and knowledge to successfully address these challenges of the future, make informed decisions, interface and sometimes compete with professionals outside of public works for leadership positions and roles.

Finally, for APWA to assume and maintain a leadership position in education, training and professional development, we must anticipate the skills our public works leaders will require in the coming years and invest in the necessary resources that those educational and credentialing programs will require.

Education is the most sustainable gift an association like APWA can provide to its members.

George Crombie can be reached at crombiegeorge@yahoo.com.
Be counted!! Help us celebrate the diversity of APWA!

Judith L. Hines
Assistant Director of Public Works
City of Newport News, Virginia
Member, APWA Diversity Committee

Appointed by the APWA President and comprised of members of the association, the Diversity Committee advances diversity issues throughout the association, placing value on all individuals and the different perspectives of those individuals; and promoting the process for all to feel included as part of the whole. Diversity includes race, gender, creed, age, lifestyle, national origin, disability, personality, educational background, and income level.

Over the last year, the Diversity Committee updated the Diversity Resource Guide* to keep it current and useful to APWA members and chapter leaders. We quickly realized that the demographic information on file about our own membership was incomplete. We want to be able to show that we are a diverse organization but cannot do this without your help. You can help us by updating your Member Profile.

If you have access to a computer, please take a couple minutes to log on to www.apwa.net and Sign In with your username and password. (If you are not at a computer, it is okay to keep reading, but please take a few minutes later to visit the website.)

If you do not already have a user name and password, select Sign In and then click on the Create an Account button. The system will prompt you for information.

Once you are signed in, select the Discover APWA tab. A list of options will appear. Click on Members Only in the right-hand column.

Now select Member Tools.

A list of Member Tools will be displayed on the right side of the screen. Select Update Member Profile Information. Complete (or update) the short 16-question survey. The survey provides information on the membership composition of our organization. For example:

- Do you work for a public agency or a private corporation?
- What is your level of authority?
- What are your areas of responsibility and interest? What type of agency do you work for?
- How big is your agency budget?

These questions begin to tell others about our organization, but please don’t skip optional Questions 13 through 16. This is the demographic data needed to tell the story of diversity in our organization. The data
is collated to determine the current demographic profile of the APWA membership and will only be used in aggregate form. Your privacy will be respected.

Be sure to click on the Submit button when you have completed the survey.

That’s it! You are done. You have helped the Diversity Committee by providing a more complete picture of our organization. Thank you for updating your Member Profile!

But wait, there are some other areas in Member Tools that may need updating. Take a minute to check these too.

- Is your Contact Information current? If you change jobs will APWA still be able to contact you? This is possible if your home address is listed as alternate contact information.

- Are you receiving information from APWA in the format that works best for you? Update your Communication Preferences to indicate your preference for printed or electronic communication.

- Have you completed the Chapter Interest Survey? This information could be the avenue you have been looking for to get involved with your local chapter.

- Have you been taking advantage of the collaboration and knowledge sharing opportunities in the infoNOW online communities? Open this link and select or update your preferences to take full advantage of this resource. You have colleagues across the country and around the world who are willing to offer their expertise and experiences that will help with your current challenges. It is an excellent networking opportunity—use it!

Take time to explore the website and take advantage of the many resources available at the click of a button.

Judi Hines can be reached at (757) 269-2710 or jhines@mngov.com.

* The Diversity Resource Guide is available on the APWA website under Discover Public Works in the Diversity Toolbox.
Ethics: How many kinds are there?

Don Bruey  
President, NorthStar Group  
Ogden, Utah  
Member, APWA Small Cities/Rural Communities Committee

As I travel the country teaching leadership and management skills, I am often asked if I teach a course on business ethics. My reply is always, “There is no such thing as business ethics.” As you can imagine this always produces that same incredulous response, “WHAT?” So I repeat myself explaining that there is no such thing as business ethics, there is only ethics. People try to use one set of ethics for their professional life, another set for their spiritual life, and still another set for their family life. That kind of multiplicity will only get you into trouble. Aside from the personal confusion, educators, philosophers, theologians, and lawyers have taken what is really a very simple matter and made it very confusing. Living an ethical life may not always be easy, but it need not be complicated. Ethics is ethics!

It can’t be that confusing, can it? After all, what’s right is right and what’s wrong is wrong. But that is not what our life’s heroes are showing us. Our sports heroes are using performance-enhancing drugs and lying about it under oath. Our business leaders are making billions of dollars by cheating investors. Our corporations are hiding money offshore so they don’t have to pay taxes on their profits. Our politicians are taking bribes and profiting from selling their votes. In the meantime we are teaching our children that honest competition damages our self-esteem, and that the nucleus family doesn’t matter as long as we each have our own flat screen in our rooms. How is that confusing?

Our collective disgust is now turning to discussion. People want to know: Why is ethics in such a terrible state? Although there are many possibilities as to why our culture is in such a terrible state, I believe there are three basic reasons why people make unethical choices:

1. **We do what is most convenient.** If we define an ethical dilemma as an undesirable or unpleasant choice to a moral principle or practice, do we do the easy thing or the right thing?

2. **We do what we think we must to win.** If most people are like me, we hate losing. Our culture drives us to achievement and success. Many of us think we have to choose between being ethical or winning. I believe that few people set out to be unethical but nobody wants to lose. Is that really our only choice? I don’t think so.

3. **We rationalize our choices with relativism.** Many people choose to deal with such no-win situations by deciding what is right in that moment. It’s called situational ethics, a theory made popular in the 1960s by Dr. Joseph Fletcher. The result has been the ethical chaos that we live with today. As illogical and immoral as this theory is, it is pervasive in our society today.

So where are you on the ethics scale? Let’s look at a study done by William Boetcker. Consider the five following statements. Pause and reflect which one applies to you. Then put a check mark next to the statement that best describes you:

1. I am always ethical.  
2. I am mostly ethical.  
3. I am somewhat ethical.  
4. I am seldom ethical.  
5. I am never ethical.

Now that you have given that some thought, here is what Boetcker’s study found as to how people look at ethics:

1. The majority of people place themselves in the top two categories. Most of us try to be ethical.

2. Most people who put themselves in the second category do so because of personal convenience. Practicing discipline is inconvenient. Losing is inconvenient. Paying a high price for success is inconvenient.

3. Most people think that being “mostly ethical” is okay, unless they are on the losing side of someone else’s lapse of ethics.
4. One rule can move people from “mostly ethical” to “always ethical.” It is based on the Golden Rule that we all learned in Kindergarten: “To play nice in the sandbox, always treat people the way you would like to be treated.”

Dis you scoff? Is this just too simplistic? John C. Maxwell said, “There are only two important points when it comes to ethics. The first is a standard to follow. The second is the will to follow it.” Asking the question, “How would I like to be treated in this situation?” is an integrity guideline for any situation.

So, why should we adopt the Golden Rule? Here are four simple but powerful reasons:

1. The Golden Rule is known and accepted by most people. How do you justify demanding better treatment from others than you are willing to give? The Golden Rule can be used to create common ground with any reasonable person.

2. The Golden Rule is easy to understand. People often have a hard time coming to grips with this issue because it seems so complex and intangible. There are no complicated rules or loopholes here. Most people can come to a reasonable understanding of what to do.

3. The Golden Rule is a win-win philosophy. When you live by the Golden Rule, everybody wins. If I treat you as well as I would like to be treated, you win. If you treat me likewise, I win. Where is the loser in that?

4. The Golden Rule is a compass when you need direction. The Golden Rule does more than just give people wins. It also has an internal value for anyone who practices it. Ted Koppel said, “There’s harmony and inner peace to be found in following a moral compass that points in the same direction regardless of fashion or trend.”

Who can’t use a little inner peace in their life?

Don Bruey can be reached at DbrueyA4@gmail.com.

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- Pump Transfer Stations

Catch the PowerPlatform in action!
During our daily machinations we often don’t take the opportunity to think about the ordeals that our public works forefathers had to endure. This is especially true during the winter season when we become immersed in our climate-influenced misery, spending time around the water cooler cursing the frigid weather conditions outside our heated offices and addressing staff complaints about irritants such as the fact that vehicles do not have heated seats or a cup holder for a coffee mug. It is during these moments of occupational lethargy that it becomes important to remember the past and we need look no further than a recent twentieth century public works project that involved military and civilian personnel, Americans and Canadians, who achieved collaborative public works success during a tumultuous period in our history.

Before World War II, there had been little political or economic incentive within the Canadian government to build a roadway linking the northwest part of the country. This was due primarily to the fact that the region was so sparsely populated and contained few economic development incentives.

In early 1942 the status quo in the region changed. After the attack on Pearl Harbor and the subsequent threat of Japanese naval ships and submarines off the Pacific coast of the United States and Canada, as well as the close proximity of the Aleutian Islands to Japan, the strategic importance of linking Alaska to the rest of the United States via a land route became paramount for the United States and Canadian governments. Since even rudimentary pioneer trails did not exist and since transporting military equipment via dog sled was not an option, the two countries were suddenly given the impetus to embark on an audacious, large-scale public works project.

The signing of the Ogdensburg Agreement ensured that the defense of North America was a shared responsibility for the U.S. and Canada but the cost of building the first phase of the Alaska Highway fell almost exclusively on the United States government. In return for the heavy cost, the Canadian government gave the United States military almost complete autonomy of the project and on March 8, 1942, United States army engineers arrived in Dawson Creek, British Columbia. The initial highway route that was chosen was based on the location of military airfields and radio ranging stations linking Edmonton, Alberta and Whitehorse, Yukon Territory that composed the Northwest staging route. The U.S. military leader of the project, Colonel William Morris Hoge, acknowledged after the war that his engineering staff had actually taken aerial photos of the airfields and without the benefit of land surveying, had planned the route of the Alaska Highway based almost exclusively on the need to link the airfields.

The highway workers, who were initially all military personnel, had to overcome severe natural elements such as the extreme cold of a subarctic environment, as well as the incessant presence of mosquitoes. The logistics of mobilizing and supplying the various regiments working along the highway was a constant problem, as was the task of clearing heavily forested terrain that had not been surveyed. The necessity to build bridges to cross frequent water obstacles was another impediment for the workers. A noteworthy problem was the fact that the workers used equipment that was designed for temperate climates and further burdened by the existence of permanent ground frost along the prospective route.

The workers also lived in the subarctic conditions in tent cities and worked with bulldozers and tractors that had no closed cabs and therefore afforded little protection from the cold.

Yet even with all the obstacles in their path, on October 28, 1942, a rough roadway linked Dawson Creek to Fairbanks, Alaska. The road was named the Alaska Highway and was 1,500 miles long (roughly the distance from Washington, D.C. to Denver, CO). Built by 11,000 military men, the crude road was a mishmash of timber bridges, raised gravel and dirt roads that was now able to transport equipment and supplies through the
northwest. The road was functional but it was not yet a fully-certified all-season road.

The second phase in improving the roadway occurred immediately after dedication in the fall of 1942 as 81 contractors and 40,000 civilian workers began improving on the preexisting road surface. The road that was constructed under the supervision of the Public Roads Administration was a much more sturdy and enduring structure. By October 13, 1943, civilian contractors successfully completed improvements to the highway that made it possible to use the Alaska Highway 365 days a year.

The Alaska Highway was built to specs of 26-foot beds and 20-22 feet of surfacing (gravel or crushed stone). Eighty-six permanent bridges were erected, including the 2,130-foot-long suspension bridge at Peace River near Taylor, British Columbia.

The Alaska Canadian highway only became open to the general public in 1948. Today the same highway is still travelled and although it is now paved its entire length, its enduring legacy is that this massive endeavor was designed and constructed under harsh working conditions, often based on ad hoc design as ground obstacles emerged and constructed in an incredibly short duration (even when compared to today’s construction standards).

A public works legacy to remember the next time you are standing around the water cooler.

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Bibliography

Alaska Highway – Film Documentary (35 minutes long). Produced by the US Army Service Forces Signal Corps in collaboration with the Northwest Service Command, 1944.


1 There had been a great deal of effort by the British Columbian government (led by Premier Thomas Dufferin Pattulo) to gain funds for the project throughout the early 20th century.
2 40th, 2-7, 9-22.
3 Working the North, 24.
4 Arctic, 55.
5 Arctic, 56-58.
6 Arctic 56.
7 40th, 40-41.
8 40th, 43.
9 Working, 60.
10 Working, 37, 96-97.
11 Working, 37, 96-97.
12 Film
Management by *Working* Around: A new twist on an old term

Jay T. Spurgin, P.E.
Public Works Director
City of Thousand Oaks, California

Management by walking around, or MBWA, has long been a tool for managers to engage employees in an unstructured environment by simply walking around and starting impromptu, face-to-face conversations. These spontaneous conversations create stronger bonds between managers and staff, provide opportunities for idea sharing, and make for more informed managers. At the City of Thousand Oaks, we’ve taken this concept a step further and tweaked the coined acronym to more accurately describe our version of MBWA—management by *working* around.

My version of MBWA started nearly two years ago when I asked John Smallis, our Public Works Superintendent, if I could work with staff in the field to gain a better perspective and appreciation for the work they do on a daily basis. John was more than glad to put the Director to work. I committed to spending half days working with crews from all the divisions of our Municipal Service Center. Over the course of a few months, I repaired sidewalk lifts with our Streets Division, removed a huge pine tree with the Landscape Division, performed safety inspections on City buses with our Fleet Division, cleaned out sewer lines with our Wastewater Division, answered customer calls with our Administrative Division, rebuilt pump control valves and replaced water meters with our Water Division, and made operator rounds with staff at our Hill Canyon Wastewater Treatment Plant.

There were a number of benefits to this experience. First, I got the opportunity to develop relationships with line staff that I rarely would interact with. In a department of 200 people, it’s difficult to even remember everyone’s names let alone develop relationships with them. When I visit our Public Works facilities, I frequently see the staff I spent a day learning from and I feel more connected to the staff at these sites because I got to know them. Conversely, they now know me. I’m
no longer the big nebulous suit on the hill—I’m Jay, the new guy, who couldn’t stop asking questions on his first day doing whatever (I also showed I knew which end of the wrench to use). When I walk around the service yard now, I get asked, “Hey, Jay, when are you coming out to trim more trees with us?”

After only half a day on the job, I would return to my office exhausted. I wish I could simply chalk up my tiredness to age, but many of the men and women who I worked with are in my age range (early 50s). Needless to say, I quickly developed an appreciation for how hard our field staff work on a daily basis.

Finally, the experience made me a better Public Works Director. Aside from an appreciation of their work, I also developed a knowledge of it. I now know what is involved in monthly CHP bus inspections and how to service a Gorman Rupp 2-stage sewage lift pump. While I’m certainly no expert after half a day on the job, I’m much more informed than I was at the beginning of the day. At the Director level, it’s easy to get wrapped up responding to press inquiries, attending policy conferences, or meeting with Councilmembers and executive staff. Still, I would encourage directors and other managerial staff to carve some time out to spend in the field.

MBWA has started to gain popularity. Soon after I shared my positive experience, our City Manager spent a day with the Landscape crew trimming street trees. Not long after that, one of our Councilmembers also tried his hand at landscape work, who was then followed by our Human Resources Director. The MBWA bug is contagious and you will likely find that the positive experiences of both the directors and field staff will spur others to give MBWA a try.

MBWA can be a rewarding experience for any manager, but even greater than that is the impact it has on your field staff. Spending the day with them and genuinely wanting to know more about their craft communicates how important their role and work is to you and the department.

Jay T. Spurgin can be reached at (805) 449-2444 or jspurgin@toaks.org.
The City of Surprise is a small community northwest of Phoenix, Arizona. We have two dog parks for our community, and we have around 117,000 residents. Of course, this is a transient population in that we have a lot of winter visitors in the months of October to May, and then a smaller amount of residents in the heat of the summer, May to October. The two dog parks see a lot of use, both by visitors and residents.

My supervisor, Lee Lambert, is the Interim Capital Improvement Projects Manager for the City. Lee worked with me on a project that made a huge difference for our community. The project was to address pollution prevention in our two dog parks for our community. These dog parks are next to each other at our community lake.

The problem was that the signage upon entering the dog parks was confusing. There were over eight signs on each dog park (small dog, big dog) and conflicting messages. There were no educational messages as to why dog waste needed to be picked up. There were plenty of signs that said dog waste removal was a city code and not picking it up could be a $2,500 fine, but nothing explaining why the dog waste needed to be picked up. Those visiting the dog park did not pick up after their own dogs and relied solely on efforts of city staff to keep the waste cleaned up.

Working with me, Lee was able to completely change the perception of the dog parks. Confused patrons were no longer left to wonder if they are to clean up after their pet, or if the city workers would do that. And waste was cleaned up and controlled in-between the times City staff was able to provide support.

The new signage conveys a simple message and makes the dog owner aware of the reason pet waste needs to be picked up—pet waste is a contaminant that degrades our community, is a threat to our water quality, and it’s a city code/law. Colorful and educational messages were created from other City outreach posters, and made into a banner for our display boards.

Our two dog parks have become much cleaner, our water quality less degraded (we are on groundwater only), and our citizens have learned about their own pets and pet waste.

Lee should be recognized for taking on a task that was out of his jurisdictional duties, at a facility that is often neglected by residents, and bringing about positive empowerment: awareness to the users (people) and making it more eco-friendly for the dog visitors.

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

### 2013

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= Click, Listen, & Learn program (Free to Members)  
= Live Conference (Paid Registration)  
= Certification Exam

APWA members may access past Click, Listen, & Learn programs from the Members’ Library at no cost. Programs can be streamed to your computer via the link found in the library.

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/](http://www.apwa.net/callforpresentations/)
Coatings of many colors?

Andrew C. Lemer, Ph.D.
Senior Program Officer
The National Academies of the United States, Washington, D.C.
Member, APWA Engineering & Technology 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 that we could be using to invent the future of public works.

In one of the more famous passages in American literature, Tom Sawyer convinces his friends to take over his assigned job of whitewashing a fence. Whitewash—an inexpensive paint made from slaked lime—has been a popular treatment on modest houses, dairy barns, and tree trunks, as well as fences in many parts of the world, for the clean look, protection from sun damage, and mild antibacterial effect it provides. The use of paint generally has its origins in antiquity, of course, and in modern times has evolved into a wide range of protective surface coatings.

Recent discoveries offer prospects of even wider applications of coatings, many with public works applications. One likely candidate is titanium dioxide—TiO₂ in its simplest chemical form—an abundant naturally occurring material commonly used as the pigment in white paint and the sunblock protecting people’s noses at the beach.

Scientists have found that TiO₂, when ground very fine, takes on amazing new properties. Old-fashioned paint used particles of 6 to 7 microns diameter. (The business end of a mosquito, its proboscis, is about 60 microns across.) Researchers found that finer particles made the mix more opaque. Sunscreens now use particles in the 0.2 to 0.5 micron range.

But then the scientists found they could make nanoparticles, bits 2 to 5 nanometers (nm) in diameter. (It takes one-thousand nanometers to make a micron; a typical rhinovirus, the cause of the common cold, is about 30 nm in diameter.) With particles at this scale, they found, TiO₂ can trigger a photocatalytic reaction with chemical pollution and biological agents; that is, sunlight (or more generally, ultraviolet light) causes the pollution and viruses or bacteria to react with oxygen in the air and decompose into less harmful materials.

The effect is already being used in a few commercial applications such as ceramic tiles, enameled metal for countertops, and even pavement blocks. The tiles and counters are being used in healthcare facilities, the pavers in trial installations in Japan and the United Kingdom. If the large-scale exterior applications prove effective and prices come down, one can imagine that someday streets, sidewalks, and buildings, clad in nanoparticle coatings, might

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2013 APWA Congress Blood Drive Chapter-to-Chapter Challenge

APWA members, friends and family joined together to make the 2013 APWA Congress Blood Drive a tremendous success! APWA and partner, the American Red Cross, collected a total of 70 units of blood—35 units per day for the two-day event. Twenty-four chapters participated.

Kris Dimmick, New York Chapter (Day 1) and Tony Torres, Chicago Metro Chapter (Day 2) were the winners of the APWA Blood Drive Drawing, each taking home an iPod donated by a sponsor.

In this inaugural year of the Blood Drive Chapter-to-Chapter Challenge, the Chicago Metro Chapter has the distinction of donating the most blood units—a whopping 23! Among the Chicago Metro Chapter, the donation results by branch were Suburban (8), Lake (6), Fox Valley (5) and Southwest (4). The New England Chapter came in next with seven total donations and the Michigan Chapter rounded out the top tier with six donations. Congratulations to all participants!!
contribute to cleaning up urban air and keeping pathogens in check. The TiO$_2$ photocatalyst effect might also be used for water treatment. Recent developments include transparent plastic coatings that are self-cleaning and self-sterilizing, suitable for food packaging and possibly other applications. Scientists are working on ways to make these nanoparticle coatings effective even in the dark.

All is not positive in these developments. Concerns have been raised about the possible health effects of nano-scale TiO$_2$ particles in food and skin-care products. The U.S. EPA has been exploring what is known about the effects of nanoscale TiO$_2$ used as an agent for removing arsenic from drinking water and as an active ingredient in topical sunscreen. The Nanotechnology Industries Association recently reported on a study that found TiO$_2$ nanoparticles in two brands of donuts. There are many more questions than answers.

Nevertheless, research and discovery continue. In what seems like a feat of alchemy, researchers have now discovered that white TiO$_2$ nanoparticles can be turned black. The technique involves introducing disorder into the normally very ordered crystal structure of the TiO$_2$; the material becomes a sponge for infrared, ultraviolet, and visible light—hence the black appearance—becoming an efficient means for using sunlight to split water molecules for the production of hydrogen. While the exact nature of the disordering and how it comes about remain a mystery, this capability to drive decomposition of water is generating excitement because of the potential for using cheap hydrogen as a non-polluting fuel. Perhaps in the future TiO$_2$, white and black, will be used with sunlight on buildings and other public works facilities to purify air and wastewater and produce hydrogen to generate electricity.

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.
Managing Information

Jill Marilley, P.E., PWLF
Senior Project Manager
HDR, Inc., Shoreline, Washington
Member, APWA Board of Directors

This article exploring the Core Competencies of a Public Works Director addresses the principle that an excellent public works leader “Manages Information.” Just the word “information” may overwhelm even the most seasoned director in this modern, fast-paced society and cause eyes to glaze over and emit a small whimpering sound. In the past, collecting and developing information allowed time for research, potentially sending away for information and attending conferences to collect data and have conversations with vendors or staff for potential future reference. Today, we operate in 24-hour news cycle with the constant bombardment of data, news and advertisements that must be dissected, assimilated and applied in a timeframe that may render it useless with lightning speed. In comparison to just 25 years ago, we are now constantly surrounded by the “noise” of information rather than the tool it can be for a public works organization.

For the purposes of this article, “information” refers to the data, details and topics that relate to the success of your particular organization. It may be information needed for budget analysis or excellent product procurement choices.

The simplest tool for success in managing information well is accepting that you cannot know it all at any given time. A successful leader understands you cannot possibly know everything about every aspect of the organization. A “total and instantaneous recall” of the details of your organization should not be expected of yourself nor should it
be required of you (unless a mental meltdown after every Council meeting is normal in your jurisdiction). To attempt to maintain all knowledge at fingertip recall is setting you or your team up for failure or at least setting you up for potentially providing outdated or irrelevant information.

So how can you be successful in managing information? In interviewing many current and former public works leaders, it is obvious that the tools that make “managing information” successful vary with the individual and their strengths and weaknesses as well as the culture of the organization, but some common themes arose from all interviewed.

Follow your primary priorities and interests
The priorities of the organization as set by you as a leader or other key participants (Council, City Manager, citizens, etc.) will also dictate the key issues you need to follow. Perhaps it is information for purchasing a new street sweeper or what the latest cost savings measures are for overlays. In any case, pick no more than 3-4 that you personally are tracking and delegate the rest.

As for your personal interests, don’t let the organization dictate your personal growth opportunities. Information by its nature is only interesting if the receiver has a specific interest in it. In many cases, as public works leaders we cannot always be learning about every new piece of equipment or management process to be implemented. But if we take time to gather information or reach out and seek areas of enjoyment or personal focus, we get energy from the knowledge, whether we use it or not. Make it a priority to schedule time for your own learning, exploring and gathering of information. You’ll keep your perspective fresh, enable you to review and create fresh visions for your organization and increase your service to the community you serve.

Delegate
It is never your job to know everything as a public works leader (something some of us find it hard to acknowledge). Just as you delegate the work of managing an organization, you must also delegate the gathering and managing of required information. Then, as a leader, you will know who will have the information that you require

APWA’s Awards Program recognizes individuals, groups and chapters for their outstanding contributions to the profession of public works. Some of the awards presented include Professional Manager of the Year Awards, Young Leader, Public Works Project of the Year, and Top Ten Public Works Leader of the Year, to name just a few.

Each award is listed on the APWA website. Criteria and nomination forms for the 2014 Awards Program are now available online.

Nominations are due March 3, 2014!
Excellence in Snow and Ice Control Award due February 3, 2014.
(Electronic nominations only.)

Visit www.apwa.net and nominate your award winners today!
or who can gather it for the current need. Trust the experts you have added to your team and task them with summarizing the information for effective decision making and leadership.

**Identify your best sources of information before you need it**

Paying attention to where to get information, for some, is more important a skill than actually managing the information sought. With so many sources of information, knowing that you are getting accurate and timely data is critical to being responsive to council members or citizen inquiries. Establishing clear responsibility assignments for your staff or teammates is critical. Then there is only one “clearing house” for the information, data and any analysis that may have been required.

Additionally, the sources of information external to your organization can easily derail a decision-making process if they do not provide timely and up-to-date information. Just because you can find a website that lists all shovels for sale on the Internet, it doesn’t mean they have the most up-to-date pricing. Watch your sources for how frequently they update their Internet-posted information and check the dates of the latest posting. Like most products, information has an expiration date where the smart manager would question its value.

**Recognize other sources for your information**

Successful information management requires the keen public works official to check the freshness of perspective on information being developed and brought into the organization at regular intervals.

It is very easy today to rely on one perceived “expert” or on one location for information in the act of avoiding information overload. While one page on the Internet may be a great resource, it is still only from the viewpoint of that author or owner of the website. Similarly, in your own organization it is easy to develop explicit trust of someone who is providing research, analysis or summaries for your work. However, it is far too easy to get into one style of communicating or interpreting the information. To keep it fresh and effective, bring in subject matter experts or task another person to review the result or develop a new result.
As an example, many areas in the United States and Canada have municipal research firms that are available for leaders to access timely information. In the Seattle, Wash., area the Municipal Research and Services Center (MRSC) was established to be a service center for information and resource for questions that smaller agencies may not have the staff or ability to perform in-depth analysis. Seeking these resources out before you need them can provide excellent resources as an issue heats up.

Reach for it when you are ready
With the relative availability of information, there is not always a need to take in everything that is coming your way. When you recognize a certain need for information, reach out for it, utilize your resources and then move on. This helps address the items that come up that might not have been on the top priority list for the organization but can sometimes be the most political.

Collect information in a central location
Leaders interviewed for this article did have a common consensus that it was important to keep all information in one central area or with one person. One organization in Western Canada had established SharePoint sites in their online, internal web system with various topics related to the different departments of the organization. All employees and managers had access to the sites and could post comments, pieces of information or ideas for the division. In this way there was a central depository for ideas. This group took it one step further and established one management team meeting a month where everyone brought ideas, articles or anecdotal experiences they had found or seen over the previous month to support the information of the organization. Each manager that had charge of the information placed it on the SharePoint site until it could be utilized or “parked” until needed. One time per year, staff reviewed the internal information sites and purged items no longer relevant to the organization’s priorities or needs.

To prevent institutional knowledge from being lost to retirement or other staff changes, one public works department established an administrative professional to collect the processes and procedures, as well as historical information about the different divisions in the organization. This person was tasked to interview each of the division heads and/or their designees each year to create a historical timeline of activities that may otherwise be lost.

A longtime public works professional noted that if you are employing your best skills in the other eight core competencies, information management is successful by-product. When a successful public works leader Plans for the Future, (has excellent skills in...) Communication, Manages Staff, Leads an Organization, Builds Relationships and Partnerships, Manages Money and Resources, Manages Infrastructure and Manages Municipal Service they develop an organization of excellent information. Consider that in the art and skill of being an excellent public works leader, you are always managing the information that comes with every action you take.

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International Affairs Committee sets 2013-14 goals

Ted Rhinehart
Director/Public Sector Strategy
Infor Corp, Stone Mountain, Georgia
Chair, APWA International Affairs Committee

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our APWA International Affairs Committee is looking forward to an interesting year in which we continue to expand our international partnerships, and to increase our dialogue and learning opportunities with the international public works community. At the 2013 Congress in Chicago we set the following goals for the 2013-14 year:

- To reestablish Chapter Liaisons: members in each APWA chapter who are willing to monitor international partnership issues, case studies, and exchanges and provide updates back to your chapter. This goal furthers the APWA strategic goal of member education by allowing more of our members to learn about what is going on overseas, hear about some best practices in our profession, and share some of your state, province or region’s success stories with the international community.

- To continue international exchanges and study tours, as our members volunteer and participate in exchanges either through APWA or other service organizations that you are a member of, and then especially to share what you learn with the rest of our membership, again to further our educational mission through the identification, understanding and information-sharing related to best practices globally in our profession. Included in this goal is our continued promotion of our members’ participation in the Jennings Randolph Fellows program, hoping that you will consider applying for one of the study tours.

- To strengthen our existing partnerships with IFME, IPWEA and IPWEA-NZ, Czech-Slovak Republics, and ICLEI-Mexico, both with increased attendance by our members at their conferences.
and events, as well as to welcome more of their members to our Congress in 2014 in Toronto.

• To add new partnerships. We started dialogue with Finland municipal representatives at the 2013 Congress, and they will be discussing with other Scandinavian country representatives their interest in executing a partnership agreement with APWA for Finland and/or other Scandinavian countries. In addition, they are taking the lead in forming an IFME working group focused on winter maintenance best practices, and will dialogue with our APWA Winter Maintenance Subcommittee to facilitate all of our members’ learning opportunities about those best practices. We are also reaching out to pursue new partners in Brazil, an African country, and a Central or South American country this year. If you have some ideas and especially some good contacts in the public works community in those countries, please let us know and we will follow up.

• To update, enhance and expand our APWA website content.

Another of APWA’s strategic goals is increased use of information technology for our members’ education, and our committee’s goal is to ensure that we find good content centered on updates to previous Global Solutions studies, Jennings Randolph Fellowship study tours, their ongoing dialogues with international partners, and additional examples of best practices that we can all learn from.

• To work closely with each of APWA’s Technical Committees and Standing Committees to exchange information from and with our international public works partners related to issues of our mutual concern, such as solid waste recycling and waste-to-energy advances; watershed protection and best practices; sustainability and alternative energy sources; fleet management; winter maintenance; transit expansion; emergency preparedness; asset management; and any other topics that public works professionals are advancing globally.

• To complete translations of APWA materials to other languages where there is a demand, such as materials related to traffic and work zone safety, asset management, sustainability, and right-of-way policies and procedures.

Our committee members for 2013-14 are Helena Allison, Davis, California; Chris Champion, Sydney, Australia; Doug Drever, Saskatoon, Canada; Vydas Juskelis, Village Park, Illinois; Len Bernstein, Philadelphia, Pennsylvania; Ron Norris, Olathe, Kansas; Ram Tewari, Pembroke Pines, Florida; Noel Thompson, Louisville, Kentucky; Ross Vincent, Thames, New Zealand; Mary Anderson, Port Orange, Florida; and Tyler Palmer, Moscow, Idaho.

We hope all of our members will consider involvement at some level in these exchanges, learning opportunities, studies and sharing of best practices with our international partners. If you have some ideas please share them with me or one of the other committee members. If you are willing to volunteer as a Chapter Liaison, work group member, to help research a case study or other ways to facilitate learning, dialogue and information sharing, please contact me any time at ted.rhinehart@infor.com or at (678) 319-8473.
Public Interference: Are there “magic words” that will encourage driver cooperation?

Sara Croke, President, Weather or Not, Inc., Shawnee, Kansas, and member, APWA Kansas City Metro Chapter Emergency Management Committee and Snow Plow Expo and Training Committee; and Steve Irwin, Meteorologist, Weather or Not, Inc., Shawnee, Kansas

Hard-hitting storms
Public Works “Clears the Way.” That objective gets quite challenging when the motoring public hits the road regardless of weather severity. In recent winters, major storms brought hazardous conditions that made it temporarily impossible for even the most well-equipped and professionally experienced snowfighting teams to keep up with Mother Nature.

From the 2-3”/hour snowfall rates for three continuous hours in Kansas City to the 16 hours with near zero visibility in Fargo to the massive Nor’Easter that slammed coastal New York and New England with several feet of snow and 60 mph gusts, road crews needed the driving public’s cooperation to keep even primary routes open for other first responders such as police, fire and medical.

Do they hear what we hear? Unfortunately, in all of these cases, the public did not heed the warnings. And there were plenty of warnings! These storms were well
advertised by local media outlets, the National Weather Service and private meteorological consulting firms. While wording from each source varied, the extenuating circumstances for the impending storms were impossible to miss.

In the Kansas City area case, “thunder snow” was talked about several days in advance. Every private consultant, media outlet and National Weather Service office used the strongest language possible. The key message was that the storm would hit in the middle of rush hour making it impossible to drive around. When only a few flakes were hitting the ground at 5:30 a.m., folks headed out the door as if it would be no big deal to get to work. By the middle of rush hour, the entire region was getting pounded with 2-3” of snow per hour for three straight hours. Snow crews were immobilized by the stalled-out, sliding and abandoned vehicles.

A second morning rush
Those who actually made it to work in one piece looked out their office window and realized the storm was treacherous. So what did they do? They got back in their vehicles at about 10 a.m., the height of the thunder snow, and headed home creating a second rush hour. This second wave of “public interference” truly compounded the problem as many of those workers got stranded in transit.

Vehicle abandonment was so bad, that for the first time in MoDOT’s history they immediately contracted with towing companies. At MoDOT’s expense, cars were towed to the Stadium Maintenance facility. When they ran out of room there, MoDOT made an agreement with the Truman Sports Complex, home to the Royals and Chiefs. MoDOT plowed a section of that parking lot and had the towing companies park the abandoned vehicles there. This extreme measure was needed in order for MoDOT to get their plows down the Interstates!

In Fargo, N.D., the local NWS began discussing the upcoming blizzard days in advance of what became known as the New Year’s Eve Blizzard of 2010. Director of Operations, Ben Dow, issued a news release explaining to residents that despite his Public Works Department’s best efforts, there were unmanageable challenges. “Due to the severity of the wind conditions and snowfall it has become difficult to maintain east/
west roadways within the city,” Dow alerted. This honest, specific alert was part of the “NO TRAVEL” advisory. Despite his proactive efforts, Ben’s crews encountered many distressed motorists.

Practical solutions suggested
Natural disasters, winter and beyond, have an unfortunate commonality: people put themselves in harm’s way disregarding specific, accurate warnings even when they have safer alternatives. Andy Bailey, Warning Coordination Meteorologist for the National Weather Service Office at Pleasant Hill, Mo., has devised a practical approach. They include phrasing such as: “Expect the commute to take at least three to four times longer than normal.” Bailey says, “When you start speaking about people’s time, you really get their attention and that may help their decision-making process.”

Chuck Williams, Director of Municipal Services for the City of Lenexa, Kans., has good advice for businesses: “If employees must go to work then keep them there and give road crews the opportunity to get the roads cleared before the evening rush hour.” Williams notes that monitoring social media can be a critical part of every business’s strategy as most municipalities are constantly updating their road conditions. In Lenexa’s case, they even offer advice for commuters.

Nancy Powell, Traffic Management Center Supervisor for the Kansas City Scout system, asks a good question: “Do we need more community outreach to businesses that have telecommuting-capable employees before the winter starts?”

Undoubtedly, consistent, accurate forecasts improve the confidence that public works officials have when it’s time to make strategic snowfighting decisions. Most public works departments have a forecasting plan. They review the potential storm with much more consideration than a quick glance at a cool app. However, does this same assumption apply to the traveling public? Is it possible that they are getting too much noise and not synthesizing the hundreds of thousands of brightly colored graphs, apps and radars? Additionally, they may be thinking in terms of “inconveniences” such as school closings rather than how they will survive -20 to -35 degree wind chills should they be stranded (i.e., the Fargo blizzard).

Keeping the conversation going
While it’s impossible for everyone to avoid driving when snow crews move into action, there are people who really can stay home. Had businesses told their employees who could have telecommuted that day that they should work from home, how

The second hardest job on Feb. 21, 2013 in the Kansas City Metro was reuniting vehicles and their owners. (Courtesy: Overland Park, Kans., Public Works Dept.)
many fewer accidents and abandoned cars would there have been? Had employers better understood the dynamics of the storm, would they have kept their employees at work until the roads had been cleared rather than send everybody home and make matters even worse?

There’s a 100% chance these situations will reoccur somewhere. As we’ve seen here, practical lessons can be shared to minimize the dangerous impacts of future, well-advertised winter storms. Every community’s review sheds light on new ideas other APWA members can use. So let’s keep the conversation going. E-mail me at sara@weatherornot.com or Tweet to @WeatherorNotInc and we’ll keep spreading the word.

Sara Croke, Founder and President, Weather or Not, Inc., is active in emergency management and preparedness communications. She can be reached at sara@weatherornot.com. Weather or Not is a private meteorological consulting firm that has been providing 24/7 support to public works, airports, utilities and schools since 1986.

Steve Irwin, Meteorologist, Weather or Not, Inc., is active in storm preparedness forecasting. He can be reached at steve@weatherornot.com. Steve and Sara have taught Weather Forecasting Techniques for Emergency Management at the Heart of America Snow Plow and Equipment Training Expo.
Urban snow professionals facing new challenges

Ben Dow
Director of Public Works
City of Fargo, North Dakota
Member, APWA Winter Maintenance Subcommittee

As this year’s winter season quickly approaches, many professionals are preparing for that first snow event by conducting their annual preseason windshield inspections. For many of us, a common goal of this inspection is to analyze and identify possible snow and ice concerns on both new and existing roadways. Through this inspection, many are seeing extensive development in new concepts and designs that are focused around pedestrian transportation amenities.

With a rapid increase in active and healthy living across the country, a driving need for new design concepts that provide for year-round use of pedestrian-friendly environments has recently been launched. Due to major improvements in running and cold-weather athletic wear, exercise enthusiasts once seasonally limited are now able to use pedestrian transportation amenities during even the coldest of winters. With this dynamic transformation, many snow professionals are seeing the need for significant changes in their established snow removal process and procedures. Items such as urban trails, bike lanes and other alternative pedestrian transportation amenities are requiring more immediate snow removal attention both during and after a snow event.

One of the most accepted and easily added pedestrian amenities is the on-road bike lane. The on-road bike lane offers a great benefit for a cyclist who desires the freedom to travel in a safe environment while avoiding sidewalk-bound pedestrian foot traffic. The on-road bike lane has been constructed in a wide variety of design methods across the country. Many locations have simply chosen to add striping to accommodate the addition of a bike lane while others have made the decision to differentiate the pavement color in order to provide a safe vehicle-to-bicycle transition. In many winter weather regions the snow professional is largely concerned with the thought of individuals taking to the streets by way of bicycle when conditions are not always favorable for vehicles. With on-road bike lanes typically found directly adjacent to the curb the snow professional is also struggling to find a cost-effective maintenance method that provides positive results in removing snow, ice, and other winter debris from these areas.

Extended use of pedestrian facilities during the winter weather months is not only taking place on-road but also off-road. Urban trail systems have become widely popular community features that are not only used for transportation purposes but also recreation. These trails provide both foot- and bicycle-bound pedestrians the freedom to travel avidly throughout our communities. Oftentimes placed in relatively large open spaces with sprawling curves, the urban trail can at times become a troublesome feature for the snow

Active and healthy living is producing the need for additional pedestrian-friendly environments.
Removing snow, ice, and other winter debris is a challenge for the snow professional. With trail design primarily focused on providing a recreational environment with a natural buffer from vehicular traffic, placement is often in areas that are susceptible to heavy blowing snow and icy conditions. Many permanent snowfighting solutions that have been proven and used in correlation with road surfaces can easily be applied to aid with difficult trail conditions. For example, the living snow fence consisting of shrubbery, native grasses and low decorative trees can be one of the most cost-effective long-term solutions against blowing snow impacts. Living snow fences can also incorporate features that aid with negative drainage issues that may help in preventing icy conditions.

As alternative pedestrian transportation amenities become more established and in demand many of us will be faced with finding innovative, maintenance-friendly designs that will allow us to provide year-round pedestrian use. The successful key to designing useable pedestrian amenities is to think long term. It is critical that all information is digested with the key players. During the initial concept planning, take the time to ensure that you have involved all members of your team ranging from planning, to those individuals that will be dealing with snow clearing and debris removal once the project is complete.

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Decorative amenities and living snow fences can aid with blowing snow impacts.
Rice, reindeer, vodka and snow?

R. Mark DeVries, PWLF
Maintenance Superintendent, McHenry County Division of Transportation
Woodstock, Illinois
Chair, APWA Winter Maintenance Subcommittee

If music is the universal language, then weather must be the fabric that binds the world together, because it impacts us all. That fabric, or blanket, will soon cover our world in the form of winter. Winter, and its associated issues, has led other countries to seek expertise in winter maintenance operations and environmental best practices. We have had the honor to answer those calls and share our experiences all across the globe.

If the title wasn’t clue enough, this past year included visits to China, Sweden, Russia and just recently, Chile and the United Kingdom.

Combine with that, previous visits to Argentina, Norway, most of Eastern Europe, the UK and Scotland in just the past few years. It has been an exciting time and a great sharing of knowledge.

So it begs the question, what did we share and what did we learn? Most of our visits are done in conjunction with conferences or meetings. In some cases it may be multiple meetings in different parts of the country or traveling from one country to another. Site visits, working with staff and even hands-on training have all been part of our participation. In all cases funding has been provided by the hosting country or conference. The seminars we have put on generally favor latest technologies and North American practices. In many cases liquid use in winter operations and the emerging use of alternatives has been a hot topic. Sustainability in winter operations has become a focus.

Attendees at the World Snow Forum in Russia

The author at a site visit in the UK
around the world and we have shared our challenges and our progress in this area. We have shared our experience in training and retaining staff, the great programs we have in place, like the North American Snow Conference and the supervisor certificate program. We have also shared our emerging snow removal equipment and the changes in that industry, like the tow plow, expandable plows, new plow blades, slurry generators, and new innovative brine and blending systems. They are fascinated by the progress we are making.

By the same token, we learn so much with each trip we make. Like any conference, seminar, workshop or meeting, networking seems to be one of the greatest takeaways. It is who we have met, the relationships we maintain and the ongoing communication we continue, that truly advances any visit. For many years we know that Europe was very progressive in snow and ice removal methods and that trend continues today. We look to them for the latest technologies, especially in the areas of data gathering and data management. They are also experts in contracting and performance-based contracts.

They have utilized these systems for years. They were leaders in proactive measures and in equipment as well. It is fair to say that today we are more progressive and fairly equal in many areas of snow removal and in some areas we are able to return the favors given to us over the years.

China, Russia and South America are finding their way through all the new technologies and putting new methods in place. I am happy to say that our influence has been well received and they are implementing many of the practices we shared with them. There are so many challenges to implementing new programs especially in areas that are somewhat isolated, but all three of these countries are hungry for information and are making huge strides.

The greatest asset any agency has, regardless where it lies, is its people. I am happy to say that in our experience, we find the same passion we have for public safety, environmental concerns, innovative technologies and sharing information, in every visit we made. The people we met, the hospitality we were shown, the information they shared and the lifetime friendships we have established are invaluable.

I believe the future is very bright and I would expect the international sharing of information to continue. There will be sessions and international presentations at the Snow Conference in Cincinnati next May. Come and meet some of our international attendees and learn about their challenges and how it could improve your own operation.

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The Incident Command System and winter operations

Dave Bergner, M.A., PWLF
Mesa, Arizona
Member, APWA Emergency Management Committee
Member, APWA Winter Maintenance Subcommittee

Winter weather operations is one of the most important functions of local public works departments and state DOTs. Even a slight amount of snow and ice on our transportation systems has substantial and detrimental impact. Keeping the roads and streets safe for vehicle traffic is a vital service that we must provide in a timely and efficient manner. Newer technology provides us with more accurate weather forecasts, real-time field condition reports, better tracking of route progress through GPS and AVL, expanded menu of material options, advanced spreader controls for precise applications, and improved operator training. Altogether, we have made great strides forward in providing more efficient, effective and environmentally-compatible service.

The next area to focus on is the organizational structure of the operation. Most agencies have followed the same model for years and that has worked well. But, just as we’ve had to adapt to changes in methods, materials and equipment, so we need to do likewise with the conduct of the total operation. The new model is based on the procedures and practices that are the basis of the Incident Command Structure. ICS is a fundamental part of the National Incident Management System, the foundation for the nation and governments at all levels to plan, prepare, respond to and recover from disasters and other emergencies of any type and scale. But what has this got to do with winter operations?

As we know, winter storms vary considerably as to frequency, amount and intensity; even “minor” storms can cause significant traffic delays,

Civil Engineer
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increased accidents, power outages, closure of schools, cancellation of planned events, etc. The costs of damages, injuries, disrupted commerce and other outcomes is estimated in billions of dollars annually just in the U.S. Thus winter storms are emergency events that affect whole communities and even larger regions. Viewed in that context, public works agencies need to incorporate ICS concepts and formats into their winter weather operations.

A brief refresher on ICS

Many public works managers, supervisors and other personnel have had IS100-Introduction to the Incident Command System, IS200-ICS for Single Resources and Initial Action Incidents, and IS700-Introduction to the National Incident Management System (NIMS). These are the basic courses recommended by FEMA for all emergency responders. Ideally supervisors, managers and directors will have also completed the ICS300-Intermediate Incident Command System and ICS400-Advanced Incident Command Systems classroom courses. (FEMA online Independent Study courses are available at: https://training.fema.gov/IS/crslist.aspx; the ICS 300 and 400 classes are offered through each state’s emergency management agency.)

Under ICS, one person is designated as the Incident Commander and, depending upon the characteristics and expected duration of a situation, is supported by Section Chiefs for Operations, Planning, Logistics and Administration, and by a Safety Officer, Public Information Officer and Liaison. Note that any of these positions, other than Incident Commander, is staffed only when there is actual need as determined by the IC. The duties of each are as follows:

- **Incident Commander**: Sets the incident objectives, strategies and priorities and has overall responsibility for the incident.
- **Operations**: Conducts tactical activities to reach the incident objectives.
- **Planning**: Supports the incident action planning process by tracking resources, collecting/analyzing information, and maintaining documentation.
- **Logistics**: Arranges for resources and needed services to support achievement of the incident objectives.
- **Finance & Administration**: Monitors costs related to the incident. Provides accounting, procurement, time recording, and cost analyses.
- **Safety Officer**: Monitors safety conditions and develops measures for ensuring the safety of all incident personnel.
- **Public Information Officer**: Serves as the conduit for information to internal and external stakeholders, including the media, stakeholders, and the public.
- **Liaison**: Serves as the primary contact for other agencies assisting at an incident.

ICS works for winter operations

But how does this apply to a snowstorm for a public works agency? First, it is very important that the public works department is recognized, internally and externally, as having primary responsibility—and authority—for winter weather operations. Therefore, with that mandate, public works assumes Incident Command and designates the Incident Commander, usually the Maintenance Superintendent or Manager. Regardless of the person’s classification, it is more important to be very knowledgeable, decisive, communicative, able to effectively deal with multiple demands, and work well under stress. Police and Fire, who routinely operate under ICS, should readily acknowledge that PW is in charge. Though many jurisdictions have a designated Emergency Manager, this does not lessen the authority of the PW Incident Commander. The EM is there to support, not direct.

Secondly, it should be kept in mind that ICS is flexible and expandable depending upon the situation. For a light snowstorm, the PW Incident Commander may handle most, if not all, the other positions. The IC will typically handle the Operations functions and be the PIO and Safety Officer. This is most common in smaller agencies. Larger agencies may do likewise but have more personnel to staff selected key positions in the ICS structure. Also, as snow and ice storms often last 24 hours or longer, from initial preparations to final cleanup, the IC should designate a Deputy IC who will serve in the IC’s absence.

There are 14 ICS features; most, if not all, are similar to elements in winter operations plans:

- Common Terminology
- Establishment and Transfer of Command
- Chain of Command and Unity of Command
- Unified Command
- Management by Objectives
Many public works agencies have developed extensive plans and procedures for winter weather operation that, surprisingly, are already comparable in some aspects to the Incident Command System. One person is the “snow boss” or Incident Commander (“Establishment of Command”) who may have a deputy to hand off control to when relief needed (“Transfer of Command”). The IC directs activities through subordinate supervisors (“Chain of Command”) who oversee teams (“Span of Control,” “Unity of Command”) of individual trucks and operators working in designated areas or routes. The approach is “Management by Objectives” and follows an “Incident Action Plan” tailored to the specific conditions and situation. There is “Comprehensive Resource Management” of the personnel, equipment and materials. “Accountability” is ensured through documentation of resources used, tasks accomplished, costs incurred. “Facilities” and “Communications” systems are clearly identified and integrated. “Dispatch and Deployment” follow well-defined protocols. The size and composition of the operation can vary according to needs (“Modular Organization”). For example, when just frost is expected a small crew may only pre-treat bridges and overpasses. One pass and done. In contrast, a full-blown blizzard may require the entire staff working on shifts plus bringing in contractors and auxiliary help from other departments. Should the situation create myriad problems beyond the normal capability and duty of the public works agency then “Unified Command” may be established with other departments and agencies. Keeping the public and officials informed of the status and expectations is part of “Information and Intelligence Management” as is continual updates of weather forecasts and current conditions used to make tactical decisions.

Incorporating ICS features does not require a radical shift away from an agency’s current winter operations program. Instead, it should be considered an evolution to a structure and system for other emergencies and planned events. In many ways, winter weather operations—in all phases of planning, preparation and execution—parallel the same format FEMA recommends for Debris Management, another function that is primarily a public works responsibility. For example, clearing debris from roads and streets following a widespread windstorm or flood is quite similar to plowing snow; in fact, the same routes, trucks and personnel are often used. (Interestingly, several cities in Florida are buying snowplows for clearing debris after hurricanes.)

**Moving forward**

Because every public works department is unique as to size, structure, scope of services and systems, it follows then that each will have a winter operations plan specific to its organizational style and situation. ICS does not replace these with a “one-size-fits-all” template. Instead, it is a framework that can be adapted and modified to the individual agency and a particular situation using a model accepted and utilized by all disciplines. Winter weather operations thus presents a great opportunity for every public works department to implement ICS fundamentals into routine and emergency operations. This makes us ready to work seamlessly with other departments, agencies, jurisdictions and levels of government when disasters strike. The Oklahoma City Federal Office building bombing; 9/11; Cedar City, Iowa flood; Hurricane Katrina; Joplin, Missouri and Moore, Oklahoma tornadoes; East Coast massive snows of 2009; Superstorm Sandy; Boston Marathon bombing; Colorado and California wildfires and many other smaller events that occur each year dramatically illustrate the role of public works and the need for us to be prepared for all contingencies as well as winter weather.

Dave Bergner is a member of APWA’s Winter Maintenance Subcommittee and the Emergency Management Committee. He has presented on winter operations and emergency management at APWA events and is an instructor for the Snow Supervisor course. Dave retired as Public Works Superintendent from Overland Park, Kans., and is former Emergency Services Planner for Maricopa County, Ariz. He also is a member of the Transportation Research Board’s Winter Maintenance, Maintenance and Operations Management, and Maintenance and Operations Personnel Committees. He can be reached at dlbergner@gmail.com.
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Salting roads in the summer?

Justin Droste, P.E.
Roadway Maintenance Engineer
Operations Field Services Division
Michigan Department of Transportation, Lansing, Michigan

No, this is not a new practice for preventing ice formation on pavements. However, this is exactly what members of the Operations Field Services (OFS) roadway unit did in collaboration with the Southwest Region in June of 2012. Efforts were done on an unused portion of US-31 in Benton Harbor, as part of the Salt Bounce and Scatter Study. The study examined different parameters, such as truck speed, salt delivery systems, and salt type, to see how different variations stacked up, when comparing the amounts of salt retained on the roadway near the point of application (typically the crown or center of the road).

Salt usage is the largest cost in a winter maintenance budget (approximately $30 million annually for MDOT statewide). Salt helps keep roads safe (in the winter) by interacting with snow/ice to form a brine solution, which keeps ice from bonding to the pavement. If starting at the crown, salt brine will continue to work across the entire pavement via gravity. Knowing this, it makes sense that as salt bounces further away from the drop point, it can only treat a smaller area of the pavement. Applying extra salt is not the solution. Over-salting is not only hazardous to the environment it is also wasteful—it might as well be nickels and dimes bouncing off the back of that truck!

Okay...back to the study. Tests were conducted by having trucks apply salt across a 100-foot-long by 48-foot-wide painted grid on the pavement. Workers then collected the salt from the different portions of the grid with shop-vacs. By weighing the contents for each grid segment, OFS could quantify the salt pattern from each test for comparison.

Results show that speed plays the biggest role in salt bounce and scatter, with slower speeds (25 mph) retaining significantly more salt than faster speeds (35 and 45 mph). Results also show that pre-wetting salt prior to application reduces the distance that salt will scatter (this confirms...
discoveries made by our predecessors at MDOT back in the 1970s). Of the two delivery systems tested, the Rear Cross Conveyor slightly edged out the Y-Chute. Going forward, OFS plans to expand the study to include additional delivery systems and delivery setups. The Salt Bounce and Scatter Study report can be found on the OFS Maintenance webpage: http://inside.michigan.gov/sites/mdot/highways/ops/maintenance/winternet/SitePages/Home.aspx.

In all, twelve scenarios were tested over the course of two long, hot summer days (100 degree temps were recorded). While there wasn’t any ice to melt those days, the findings from the Salt Bounce and Scatter Study will help improve salting practices and provide more savings for many winters to come.

Justin Droste can be reached at (517) 636-0518 or DrosteJ@michigan.gov.
Montreal preparing to dispose of 12,000,000 cubic meters of snow!

Michel Frenette, Ing
City Engineer
City of Montreal, Québec
Member, CPWA Board of Directors

Winter 2013-2014 is coming. The City of Montreal is preparing to face a new winter season in order to maintain the rhythm of the socio-economical activities on 4,100 km (2,550 miles) of streets and 6,500 km (4,040 miles) of sidewalks. A budget of $155 million will be spent. But what is a “winter” in the largest city of the province of Québec, with a population of 1,650,000?

Winter climate
In Montreal, the first snowflakes fall in early November and the last ones leave us around mid-April. The snowy part of the winter is between December 1 and March 15. During this period, the average temperature is -7 Celsius (19 F). The average precipitation of snow is 225 cm (90 inches) per winter, including 7 events of more than 10 cm (4 in) and 8 occurrences of freezing rain.

Snow operations
During a precipitation of snow, the sequence of the operations is as follows:

1. as the first snowflakes hit the ground: salt/abrasive spreading on the pavement;
2. when the accumulation reaches 2.5 cm (1 in): snowplowing on pavement and sidewalks;
And if the amount of snow is significant…
3. snow removal, by means of snow blowers and haul trucks;
4. snow elimination at one of the snow disposal facilities.

In order to have the maximum equipment and teams, the City contracts out a part of the task. Private and public sectors working together, the City can rely on:

• Salt spreading operations: 170 street spreaders and 190 sidewalk spreaders;
• Snowplowing operations (about 15 times per winter): 1,000 vehicles (including sidewalks and pavement);
• Snow removal operations (about 5 times per winter): 2,200 vehicles, including about 800 dump trucks; 3,000 workers.
Among these activities, one of them (the subject of this article), must be planned and managed adequately during the snow removal operations. This important activity is the reception and the disposal of the hauled snow at one of the 28 snow disposal sites.

**Snow disposal at the sites**

The snow removal operations take a total of 25 days per winter in Montreal. During this time a fleet of nearly 800 dump trucks haul the snow to a predetermined snow disposal site. A total of 12,000,000 cubic meters (15,700,000 cubic yards) is eliminated during an average winter, which represents about 300,000 round trips of dump trucks. The City no longer uses snow melters and stopped river dumping in the St. Lawrence River in 1999.

**There are three different processes to get rid of the snow at the sites:**

1. snow piling on a surface (traditional snow dumps);
2. snow dumping into a quarry from the top of the cliff;
3. snow dumping into the sewer chutes.

Montreal uses all three of these processes as described below:

**Snow piling on a surface (12 sites)**

This mode is common for cities that haul the snow and must dump it somewhere. The capacity of the sites in Montreal varies from 55,000 to 2,250,000 cubic meters (72,000 to 3,275,000 cubic yards). To pile up the snow optimally, that is to put the most volume of snow per area; the preferred equipment is powerful snow blowers. This type of equipment has a 700 HP engine (or more) and can blow the snow at a height of 20 meters (66 feet) and more. On smaller sites, bulldozers are used.

About 50% of the 12,000,000 cubic meters ends up at one of these 12 sites. In case of snowy winters, it’s more difficult to operate these sites at the end of the winter, so trucks may be sent to other sites, farther away but still able to receive the snow.

From April to July, this piled snow melts and runoff water is collected by ditches surrounding the sites. It is driven to the sewer network, for further treatment at the wastewater treatment plant. Some sites have a sedimentation basin because the runoff water is driven to the rain sewer which is not connected to the wastewater treatment plant. This equipment enables some treatment to the runoff water, as it removes heavy metal and refuses that can be found in the snow.

**Snow dumping into a quarry from the top of a cliff (1 site)**

In early 1980s, the City acquired a private quarry whose operations were ceased and turned it into a snow dump. One can look at it as a traditional snow disposal site, but the snow piles up being dumped from the top of the quarry (14 platforms), instead of being piled up by heavy equipment, making it cheaper to operate. Considering that 20% of the snow ends up at this site, it’s an economical way to dispose of it.

The snow melts at spring/summer time and sedimentation ponds form at the bottom of the quarry, which enables some treatment of the water. Then, it is pumped out from the bottom of the quarry to the sewer network (at higher elevation), and driven to the wastewater treatment plant.

**Snow dumping into sewer chutes (15 sites)**

The Montreal sewer network is composed of many collectors and two huge interceptors that carry high discharges of water. At some locations, the discharge of wastewater is sufficient to evacuate any snow dumped into a pit over the collector or interceptor: discharge of 1 to 4 cubic meters per second for a collector, and of 10 to 15 cubic meters per second for an interceptor. Sewer chutes have been built at these locations and it enables the City to get rid of the snow using a minimum of space (compared to snow dumps). The dumped snow melts on its way to the wastewater treatment plant. About 30% of the 12,000,000 cubic meters is dumped into one of these structures.

This disposal mode is cheap and enables an “almost live” treatment of melted snow. Nevertheless, it requires a very careful monitoring of the behaviour of the sewer network, since the evacuation of snow depends on the discharge and the temperature of the water in the sewer. There are some times during the day (or the week) when the discharge is very low, and that reduces the capacity of elimination at the sewer chute. The flagman on the site must make sure that the snow dumped by the last truck is evacuated before dumping...
another truck. If delays between dumpings increase, trucks are rerouted to other sites.

**Conclusion**

During a snow removal operation, the snow disposal activity may look like a secondary or a “behind-the-scenes” operation, but it is really a bottleneck for the operations.

Not only has Montreal developed a strategy for snow disposal that responds correctly to the rhythm of the snow removal operations and is respectful to the environment, but the City monitors the operations 24 hours per day during the snow removal operations, to be able to make an appropriate and quick response in case of problems. A very important presence.

Have a nice winter.

MONTRÉAL SE PRÉPARE À ÉLIMINER 12 000 000 MÈTRES CUBES DE NEIGE!

L’hiver 2013-2014 est à nos portes. La Ville de Montréal se prépare à affronter un nouvel hiver de façon à maintenir ses 4 100 km (2550 milles) de rues et 6 500 km (4040 milles) de trottoirs libres de neige, pour le maintien du rythme des activités socio-économiques. Un budget de 155 millions de dollars est nécessaire. Mais qu’est-ce qu’un hiver dans la plus grande Ville de la province du Québec, dont la population est de 1 650 000 habitants?

Le climat hivernal

À Montréal, les premiers flocons de neige font leur apparition début novembre et les derniers, vers le 15 avril. Le plus fort de l’hiver se déroule entre le 1er décembre et le 15 mars. La température moyenne durant cette période est de -7 °C (19 °F). L’hiver moyen apporte 225 cm par hiver (90 pouces) dont 7 précipitations de plus de 10 cm (4 pouces) et 8 occasions de verglas.

Les opérations de déneigement

De base, lorsque se présente une précipitation de neige, la séquence des opérations est la suivante:

1. dès les premiers flocons: épandage sur la chaussée;
2. dès l’atteinte de 2,5 cm (1 po.) de précipitation : déblaiement des trottoirs et chaussées; w et si la quantité de précipitation le justifie, …
3. l’enlèvement de la neige par souffleuses et camions;
4. l’élimination de la neige dans les sites prévus.

Pour accomplir adéquatement cette tache, la Ville de Montréal recourt à des entreprises privées pour en effectuer une partie. Ainsi, on compte au total les ressources suivantes :

<table>
<thead>
<tr>
<th>OPÉRATIONS D’ÉPANDAGE</th>
<th>OPÉRATIONS DE DÉBLAIEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>-170 épandeuses pour les chaussées;</td>
<td>(environ 15 fois par hiver) :</td>
</tr>
<tr>
<td>-190 épandeuses pour les trottoirs;</td>
<td>-1 000 véhicules, incluant les appareils chaussées et trottoirs;</td>
</tr>
</tbody>
</table>

NEIGE ET D’ÉLIMINATION (environ 5 fois par hiver):

-2 200 véhicules, incluant environ 800 camions de transport;

- environ 3 000 travailleurs.

Parmi ces activités, une d’elle (l’objet de cet article) doit être planifiée et orchestrée tout au long de l’hiver; il s’agit de la réception et l’élimination de cette neige à l’un ou l’autre des 28 sites d’élimination de la Ville.

Élimination de la neige transportée aux sites

Durant les quelque 25 jours d’enlèvement de neige par hiver à Montréal, une flotte d’environ 800 camions transporte la neige ramassée dans les rues vers le site assigné. Au total 12 000 000 mètres cubes (15 700 000 verges cubes) sont éliminés durant un hiver moyen, ce qui représente environ 300 000 voyages de camions. Par ailleurs, la Ville n’utilise aucune fonceuse à neige et ne déverse plus la neige au cours d’eau depuis 1999.

Cette neige est éliminée selon l’une des trois méthodes suivantes:

1. Empilement sur un lieu de surface,
2. déversement au fond d’une carrière,
3. déversement direct dans les chutes à l’égout.

Ce mode d’élimination est le plus courant chez les municipalités qui transportent la neige et doivent...
La capacité des sites montréalais varie entre 55 000 et 2 500 000 mètres cubes (72 000 à 3 275 000 verges cubes). Pour empiler la neige de façon optimale (en mettre le plus possible par mètre carré de surface), la machinerie privilégiée est la souffleuse haute puissance. Ces machines sont équipées de moteurs de 700 HP et plus, et peuvent monter la neige à plus de 20 mètres de hauteur. Dans certains sites, de surface moins grande, l’utilisation des béliers mécaniques pour l’empilement est maintenue.

Environ 50% des 12 000 000 mètres cubes (15 700 000 verges cubes) de neige enlevés des rues est envoyé à l’un ou l’autre de ces sites. Lors d’hivers neigeux, ces derniers deviennent plus difficiles à opérer. Le rythme doit alors être ralenti et les camions redirigés vers d’autres lieux.

La neige, ainsi entreposée, fond au cours des mois d’avril à juillet et l’eau de fonte collectée par les fossés au pourtour du site est envoyé à l’un ou l’autre de ces sites. Lors d’hivers neigeux, ces derniers deviennent plus difficiles à opérer. Le rythme doit alors être ralenti et les camions redirigés vers d’autres lieux.

2. Déversement au fond d’une carrière (1 site)
Au début des années 1980, la Ville de Montréal a acquis une carrière privée dont les opérations avaient cessé et l’a aménagée pour y recevoir de la neige. Ce site revêt les mêmes caractéristiques que les lieux de surface traditionnels, sauf que la neige est déversée depuis le haut d’une falaise à partir de l’un des 14 quais de déversement, sans être empilée par de la machinerie lourde. Considérant que 20% de la neige de Montréal s’y retrouve, soit 2 400 000 mètres cubes par hiver (3 140 000 verges cubes), ce site permet une grande économie de coût.

Au printemps, l’eau de fonte forme des étangs de sédimentation au fond de la carrière, ce qui en assure un traitement préliminaire. L’eau est ensuite pompée et dirigée vers le réseau d’égout (plus élevé que le fond de la carrière), pour se retrouver à la station de traitement des eaux.

3. Déversement au réseau d’égout via les chutes à l’égout (15 sites)
Le réseau d’égout de Montréal est constitué de plusieurs collecteurs et de deux grands intercepteurs qui véhiculent des débits d’eau considérables. Dans certains endroits, le débit est suffisant pour pouvoir y déverser de la neige: débit de 1 à 4 mètres cubes par seconde pour les collecteurs, et de 10 à 15 mètres cubes par seconde pour les intercepteurs. D’ailleurs, plusieurs chutes ont été aménagées au-dessus de ces structures pour accueillir les camions qui transportent la neige. La neige ainsi déversée fond durant son parcours vers l’usine d’épuration des eaux usées. Environ 30% de la neige ramassée à Montréal se retrouve dans l’une ou l’autre des chutes à neige.

Ce mode d’élimination est très peu coûteux en plus de permettre un traitement quasi-instantané des eaux de fonte. Par contre, il exige un suivi minutieux du comportement du réseau d’égout, puisque l’évacuation de la neige déversée dépend du débit d’eau usée et de sa température. Or il y a des moments où le débit d’eau usée est très faible (par exemple vers 4:00 am), ce qui réduit la capacité d’élimination de la neige. Les surveillants aux chutes doivent s’assurer que le dernier voyage déversé ait été évacué au fond de l’égout avant de déverser le prochain contenu. Si des retards sont signalés, les camions sont alors détournés vers des sites de surface.

Conclusion
L’activité d’élimination de neige selon différents méthodes et sur divers sites peut être perçue comme une activité d’arrière-plan, cependant elle peut aussi constituer un goulot d’étranglement sur le plan opérationnel.

Non seulement la Ville de Montréal s’est dotée d’une stratégie d’élimination de la neige offrant une capacité d’accueil suffisante pour répondre aux opérations d’enlèvement de neige et respectueuse de l’environnement, mais elle en assure le suivi 24 heures sur 24 en période de chargement de neige, et ce, afin d’intervenir promptement en toute circonstance. Une présence d’envergure.

Bon hiver.
CNG vehicles in the snowplowing fleet

Jeffrey A. Tews, CPFP
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City of Milwaukee, Wisconsin
Member, APWA Fleet Services Committee

Many governmental fleet units are making the transition to compressed natural gas vehicles to supplement the fleet while diversifying their fuel footprint, but some are using CNG vehicles as front-line snow removal equipment as well, with very good results. The City of Milwaukee added 21 CNG-powered refuse packers with plow hitches since 2010, and is about to double its complement.

This is actually Milwaukee’s third attempt at utilizing CNG vehicles since 1980, when a trial with two CNG pickups and a very slow-filling CNG compression system proved that there was a long way to go before CNG vehicles would be practical. The two pickups were converted gasoline engines, and the CNG storage tanks used up most of the pickup bed storage space. The range was limited to about 30 miles, and the early compressor seldom provided a full fill. Each truck’s power was limited, and both the trucks and fueling system broke down frequently.

Another attempt at utilizing CNG was launched in 1992 with seven light-duty vehicles including pickups, vans and cars, including one police cruiser. There were no viable large truck CNG options available at the time. Fuel was purchased from the local gas utility, as they invested in better fueling equipment. Both performance and range were slightly improved, but users were often unable to get a full charge of CNG, due to the compressing equipment trying to catch up after a previous customer had filled. Not much had changed regarding the loss of payload or trunk space, as bulky storage tanks still occupied one-half to two-thirds of that space. All of these 1992 CNG units were dual fueled, and drivers could change over to gasoline with the flip of a switch, in case CNG was not available.

However, the mediocre performance of Milwaukee’s first two CNG experiences were wiped out in 2010 when the City’s first two CNG refuse packers were purchased, equipped with the Cummins-Westport ISL-G natural gas engine, rated at 320 HP. These cab-forward, dual-drive dedicated fuel CNG trucks utilize the same short wheelbase as the City’s standard diesel-powered refuse trucks, with three CNG tanks mounted below the body on the outboard frame rails. The three tanks provide for 42 diesel gallon equivalent (DGE) units of fuel, which proved to be less capacity than needed, as the drivers occasionally needed to fuel the trucks twice per day.

The power and torque of these CNG engines rivals that of their diesel-powered counterparts. The drivers like them because they operate quieter than the diesels. Milwaukee’s citizens appreciate them for both the reduced noise levels and substantially lower emissions. When utilized for plowing snow, these first two trucks were just as responsive and powerful as the Milwaukee CNG refuse truck during a plowing operation.
diesels, but the range needed to be improved.

The next nineteen trucks purchased had longer wheelbases, allowing for larger capacity fuel tank cascades to be installed between the cab and the body, and an overall fuel volume of 75-80 DGE’s. Fifteen of these trucks have the City standard 25-yard high-compaction rear-loading body with dual residential cart lifters. Even with a slightly longer wheelbase, these trucks turn on a 31.5’ turning radius which is detrimental for servicing all areas of the city, including several “T” and “H” alleys.

However, six of these nineteen refuse trucks were purchased with 27-yard fully-automated side-loading bodies. Because of the need to maintain a low cart-dumping height, to avoid striking any low-hanging overhead wires, Milwaukee used a chassis with a drop-frame design. Couple the longer wheelbase for this body design with the need to make extra room for the CNG storage tank cascade, and these six trucks would prove to be too long to navigate the tight alleys. To help negotiate the alley restrictions, Milwaukee would specify a dual-axle suspension with a single forward-mounted drive axle and a rear-mounted steering tag axle. This in effect shortened the turning radius of the truck by 26”.

Unfortunately, with a snowplow mounted the overall length of the truck (along with the extra added weight on the front axle for the CNG tank cascade) put more weight than desired on the front axle, reducing the truck weight in the rear, thus negating adequate traction with even a small amount of snow on the ground. These six automated trucks did not perform well when used for plowing, and will likely not be used in the future.

Fueling
Milwaukee was fortunate to secure a grant that fully funded the construction of two high-capacity CNG refueling stations, each built in strategic locations at main repair and parking facilities. Each station is capable of rapid continual fueling of up to eleven trucks within any 30-minute period. Given the minor fluctuations of start/stop times for different routes, these stations with their dual 250 HP electric motor driven compressors can easily handle a fleet of over 60 refuse trucks without breaking a sweat. To bolster fueling capacity, the City also utilizes time-fill operations during the evening hours.

One of Milwaukee’s dual 250 HP electric motor-powered CNG compressors
at one station. However, the old fleet manager adage, “If you can’t measure it, you can’t manage it,” applies to the City’s time-fill system.

Rather than using a traditional time-fill setup, where all trucks hook into the supply and simultaneously slow fill during non-peak electrical demand periods, fleet management wanted to account for exactly how much fuel goes into each truck. One method would have been to install a $500 meter at each time-fill hose, which still would have created some reporting headaches. Instead, the City and its CNG station designer developed a sequential time-fill system in conjunction with the fuel management system. The truck driver authorizes their truck at the end of the day at the time-fill controller, and connects a specific fill hose to the truck. When the time-fill system activates during evening hours, the first hose fills its truck and the system records the individual transaction, then sequences to the next truck, and so on, until as many as sixteen trucks have been filled.

**Maintenance**

There are specific regulations found in your local fire codes that will likely affect how maintenance facilities need to be set up for CNG repair. For instance, any electrical devices such as garage door openers, lights, exhaust fans, and heating plants need to be installed within a predetermined distance from the ceiling, and/or be NFPA 52 rated as explosion-proof. Contact your Fire Marshall if in doubt. Some types of maintenance may be allowed in an existing facility, provided the truck’s fueling system is not the subject of the repair at hand.

To be sure, CNG requires a different mindset on truck maintenance, though. You will be changing out spark plugs, checking coil packs, and performing more frequent overhead valve set service with the CNG engine, along with periodic inspections of key fuel system components. You now need to use special low-ash natural gas engine oil, CES 200074. If diesel engine oil is used in a CNG engine, burned valves, piston scuffing, and reduction in spark plug and catalyst life will occur. However, unlike most of today’s larger diesels, CNG engines have no diesel exhaust fluid (DEF) to add, and the catalyst muffler is passive, requiring no maintenance and no regeneration events.

Although diesel fuel in a diesel engine is slightly more efficient per equal BTU content, the reduced fuel costs when using CNG can be phenomenal. Each CNG refuse truck used by Milwaukee is projected to save the City about $6,500 in fuel costs per year over the diesel refuse trucks. With a marginal cost of about $36,000, the payback period of a fully-funded CNG refuse truck would be 5.5 years.

Often, grants can be found to promote natural gas vehicle purchases by assisting in the cost of vehicles and/or infrastructure. One of the best sources to help locate such grants is your closest Clean Cities Coalition (a quick search on “clean cities coalitions” will hook you up fast). If you can secure a grant to fund 80% of a $36,000 CNG upgrade, the fuel savings payback can be as little as 1.1 years.

**Technician training**

There is a learning curve for technicians that will maintain CNG engines. Typical training sources include your regional engine distributor, maintenance programs such as INSITE and QuickServe, and your local technical and trade schools. You can add engine and fuel system training requirements to be provided by your truck dealer, as part of your purchase specifications. ASE holds an Alternative Fuels CNG test (F1) to certify technicians to diagnose, service and repair CNG vehicles.

Now is a good time to look into CNG. Prices have been relatively stable, and do not seem to be tied to fluctuations in the petroleum fuel markets. Natural gas is abundant and viable. The technology has caught up with the expectations, and more companies are offering CNG vehicles. Milwaukee is purchasing another twenty CNG refuse trucks that will supplement the plowing fleet, along with support vehicles such as cars and cargo vans. With each purchase, fuel costs for the fleet are coming down, as Milwaukee leans less on gasoline and diesel to fuel the future vehicle fleet.

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Small-town success

Matt Wittum
Public Works Supervisor
Village of Spring Grove, Illinois

How many times in recent years have we heard “we have to do more with less”? With budgets straining, how can you still provide excellent winter maintenance to your residents? The answer, simply put, is: add liquids to your program. Think you have to be a large municipality to do it? Think again! The Village of Spring Grove is a small community of less than 6,000 in Northern Illinois along the Wisconsin border. For $600 and some creative department thinking we were able to construct our first salt brine production system that made 500 gallons at a time. The system included a livestock water tank, pump, valves and the 500-gallon storage tank. Having our own liquid on demand was a huge advantage and our first system only took a few days to put together and test its operation.

Additional trucks in the fleet were set up for pre-wetting as storm reports were showing those trucks were using 20-30% less salt than trucks that were not using liquid. This combined with the positive results of anti-icing found a need for a larger capacity of liquid. In addition, the limitations of straight salt brine were also realized. As the years progressed the department was able to purchase an anti-ice applicator capable of applying hundreds of gallons per tank and place liquid dispensing systems on all front-line plow trucks. After some help from our local county DOT and seeing their success, the Village also decided to blend our own product in-house. Fast forward five years and we still produce our own brine in-house but at 1,100 gallons at a time. In addition we have 3,000 gallons of GeoMelt 55 (sugar beet by-product) that we blend together at an 80/20 (brine/GeoMelt55) ratio and a 6,000-gallon storage tank for the blended product. We chose to do this because for the cost of salt brine purchased from a vendor we could produce our own brine, buy a product to blend with it and have a more versatile liquid in our winter maintenance operations.

Average winters have us using over 10,000 gallons of liquid on 78 miles of roads and using less salt than we did 10 years ago with approximately 60 miles of roads.

So you’ve decided this may be for your community. How and where do you start? First you need to have

Our homemade brine production system
an application system on your truck. There are many options to make current trucks in your fleet capable of dispensing liquid and there are numerous manufacturers that make systems that are fairly easy to install.

Second you need the liquid, which there are several options on how you can get started either producing or purchasing it. How can you justify spending a couple thousand dollars to do this? Studies have shown that pre-wetting can reduce salt use up to 20-30%, sometimes more. Calculate this with what the truck uses on a typical 2” snowfall, for the season and you can see the savings. There are other things that liquid can potentially save you too: overtime, fuel, and vehicle and equipment wear and tear.

The money you project to save can be your investment in your system. That is exactly how our Public Works Department was able to start and grow its system; as more savings was realized, equipment was upgraded and additional equipment was purchased. As the economy turned bad this was the only option for us.

If you have the ability and the space, you can produce your own salt brine or blend. If not, vendors can sell you any type of concentrate or blended product you are looking for. Be specific when you talk to them and tell them what results you are looking for. Municipalities that service higher-speed roads may want something different than a municipality that services residential streets only. If either of those options doesn’t seem to work, do you have a neighboring community you can work with to use their liquids? A simple intergovernmental agreement could be the best option for you. Maybe by bartering it could provide you with the use of their liquids which could get you started in the winter.

If you decide that you can do this with your staff and want to get started, the company that up-fit your truck probably sells liquid dispensing systems. If you want to produce, blend or store your own liquid(s), local agriculture or hardware stores (Farm & Fleet, Conserv FS, etc.) are a great place to start. The Village of Spring Grove uses Dultmeier Sales which has anything from brine production and application systems to the parts necessary to build your own system.

As I have worked with other communities on starting their own liquid programs a common misconception is that it takes many thousands of dollars to initially start. It doesn’t! Do some research and talk to communities that have done it and you will not only get some great ideas, you will most likely discover it costs a lot less than you think. One thing that you will get from talking to people who are doing it is what challenges they faced. Was the largest hurdle spending money and their elected officials or the education of their elected officials and residents on how liquids work and how they benefit? Maybe they had an issue with production and storage space and they were only able to have a storage tank and had to purchase their product. You can learn more from talking to the people doing it in a few hours than you would ever have thought. In working with other communities I try and help them in any way I can when I’m contacted. I’ll offer statistics on pre-wetting and anti-icing, refer them to other government agencies that use liquids, help them get started either buying systems or parts to build their own or offer to attend their board or council meetings to speak directly with their elected officials on our experiences.

So now you have decided to start in liquids. You have at least one of your trucks capable of dispensing and you have liquid for it by whatever method you have chosen to obtain it. What’s next? A pavement temperature sensor. Depending on the liquid you are using, there will be limitations to
when you can use it both anti-icing and pre-wetting. Handheld units start at under $100 and will give you an idea of what the pavement temperature is. Just like salt, liquids will have their limitations when the pavement temperature reaches a certain point. After that, research your liquid product and find out the recommended gallons per ton to apply it and set/calibrate your system accordingly. Driver training is also very important. There are classes and seminars annually that this topic is discussed. In McHenry County there is a certification class that addresses all aspects of salt and liquid application. I have had the privilege of instructing this class and there are many, many years of experience there which is a great resource that is available. After that, a specific policy for your municipality outlining what you will do and when is strongly recommended. In your policy you can outline criteria when you will anti-ice if you have chosen for that to be part of your program and when you will use liquids. Depending if you are anti-icing and what type of liquid you have, preparations for a winter event can be made days before an event. The Village of Spring Grove has specific criteria and guidelines for liquid applications.

Finally let’s not forget the reason we do this: our residents. It is essential to educate them on what you are doing and why. Websites, newsletters, and local newspapers are all good sources to get them the information they need. The Village of Spring Grove has an informational flyer that is mailed upon request to residents seeking more information. Any way(s) to get your residents the information of what you are doing, why you are doing it and when you do it is a piece of the success you will have with your liquid program.

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The 2014 Snow Conference will bring together more than 1,500 snowfighters from cities and townships, county and rural street divisions, and state and provincial departments of transportation. It’s four days of education and networking, featuring an exhibit floor with the newest equipment and products available, quality education programs and technical tours, and opportunities to exchange ideas with manufacturers, distributors, consultants and other public works professionals.

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Salt distribution patterns of various spreader types using different speeds and pre-wet rates

Prepared by Tina Greenfield, Iowa DOT RWIS Coordinator, and the Iowa Department of Transportation Deicing Committee

Introduction
The Iowa Department of Transportation (DOT) uses a variety of different salt spreader systems in its winter operations; some which are commercially available, and some which are modified or entirely fabricated by local maintenance crews. The Department also expects that granular salt must be pre-wet and applied at a reasonable speed in order to reduce bounce and scatter, but which spreader, pre-wet rate, and speed works best to accomplish this goal was based largely on opinion and local experience. The DOT undertook a project to measure the distribution pattern of six different spreaders at two different speeds and five different pre-wet rates so that operators and supervisors could more confidently select the most appropriate configuration for their situation.

Test Variables
There were six different spreader types included in this study:

- Monroe Brand Zero Velocity (ZV)
- Monroe Brand Plate Spinner (Standard Spreader)
- Wide Chute
- Triangle
- Box
- Tuxedo

The Monroe spreaders are available commercially. The wide chute is manufactured by the DOT and is in wide use across the state. The Triangle, Box, and Tuxedo are all shop-built and typically used only in local garage areas.

Two speeds were modulated in this experiment: 25 mph and 35 mph. Five pre-wet rates were modulated: Dry, 5 gallons per lane-mile (gal/LM), 20 gal/LM, 30 gal/LM, and 50 gal/LM. The majority of the pre-wet systems at the DOT apply at the 5-20 gal/LM range, although the higher rates have been used operationally at some garages.

Procedure
Prior to the test, each truck’s granular spreader system was calibrated at a nearby shop by a team of mechanics. The liquid application system was checked, and in some cases, modified so that it could reliably pre-wet at all of the rates required for the test. The trucks were loaded with salt and brine from the same location.

An impermeable, smooth rubber mat was bolted to the roadway on which a grid was painted. The grid was comprised of a row of 10, three-foot by three-foot squares stretching across the test road. The squares were labeled A through J for reference.

The spreaders would apply salt at 200 lbs/LM at a given speed and pre-wet rate over the mat, driving so that the driver’s wheel was centered over the middle of the grid. The spreader system was engaged several hundred feet before the grid so that the flow was stable prior to reaching the grid. After the salt came to rest, a team of assistants would collect all of the salt and brine in each grid using squeegees and plastic storage bags. The test was repeated once for every spreader, pre-wet rate, and speed combination, for a total of 60 runs. The samples from each grid and run were marked appropriately and sent to the DOT’s...
Materials Testing Lab to be dehydrated and weighed. The total dry weight of salt after dehydration was entered into a spreadsheet for analysis.

**Results and Conclusions**
The raw salt weights found in each grid in each run were divided by the total weight collected in that run to normalize the impact of any total weight fluctuations between runs. As such, all results are stated as the average percent of the total weight collected in each grid. The percents across the grid (from A to J) will always add to 100%. From this, a percent of variation between grids was calculated by dividing the standard deviation by the average. Larger percent of variation indicates the weight was more clumped into certain grids, whereas a smaller percent of variation indicates a more uniform distribution between grids.

For each spreader system, when pre-wet was zero (dry salt only), more salt was found in the outer grids of the test strip than when any amount of pre-wet was used. Also, when pre-wet was zero, the Zero Velocity type spreader notably outperformed all other spreader types at all speeds.

Once even the smallest amount of pre-wet was used, loss to the outside grids by the non-ZV spreaders reduced dramatically. The ZV pattern also improved with the addition of pre-wet but to a lesser degree.

At higher rates of pre-wet (20 gallons/LM and higher) the type of spreader used seemed to matter less to the distribution pattern than with the dry or 5 gal/LM cases. The 25 mph speed runs for nearly all spreader types exhibited a tighter distribution pattern and less loss to outer grids than runs at 35 mph (see Table 1). In dry runs, the influence of speed was more notable than when pre-wet was used. Amongst pre-wet runs, speed was more of an influence at lower rates than at higher rates (see Table 2).

The performance of pre-wet runs compared to dry runs seems to support the DOT’s policy to pre-wet salt prior to application. While the performance of the 50 gal/LM rates is in most cases more ideal for DOT mainline application, there is some tradeoff that must be considered since the equipment required to achieve such rates is significantly different in cost and complexity from the 5 gal/LM case.

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Table 1: Percent of weight collected and percent of variation between grids for various speed and spreader type combinations. Average of all pre-wet rates.

<table>
<thead>
<tr>
<th>Speed and Spreader Type</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>% variation between grids</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 mph runs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Box</td>
<td>0%</td>
<td>0%</td>
<td>2%</td>
<td>8%</td>
<td>35%</td>
<td>42%</td>
<td>9%</td>
<td>2%</td>
<td>1%</td>
<td>1%</td>
<td>147%</td>
</tr>
<tr>
<td>Standard Spreader</td>
<td>0%</td>
<td>1%</td>
<td>3%</td>
<td>8%</td>
<td>30%</td>
<td>27%</td>
<td>18%</td>
<td>9%</td>
<td>3%</td>
<td>2%</td>
<td>109%</td>
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<td>Triangle</td>
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<td>0%</td>
<td>2%</td>
<td>8%</td>
<td>28%</td>
<td>46%</td>
<td>11%</td>
<td>3%</td>
<td>1%</td>
<td>0%</td>
<td>147%</td>
</tr>
<tr>
<td>Tuxedo</td>
<td>0%</td>
<td>1%</td>
<td>4%</td>
<td>10%</td>
<td>28%</td>
<td>35%</td>
<td>13%</td>
<td>7%</td>
<td>2%</td>
<td>1%</td>
<td>120%</td>
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<td>Wide Chute</td>
<td>0%</td>
<td>1%</td>
<td>2%</td>
<td>7%</td>
<td>28%</td>
<td>38%</td>
<td>13%</td>
<td>8%</td>
<td>1%</td>
<td>1%</td>
<td>127%</td>
</tr>
<tr>
<td>ZV</td>
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<td>0%</td>
<td>2%</td>
<td>27%</td>
<td>65%</td>
<td>5%</td>
<td>1%</td>
<td>0%</td>
<td>0%</td>
<td>191%</td>
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<tr>
<td>35 mph runs</td>
<td></td>
<td></td>
<td></td>
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<tr>
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<td>5%</td>
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<td>31%</td>
<td>30%</td>
<td>8%</td>
<td>5%</td>
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<td>3%</td>
<td>112%</td>
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<tr>
<td>Standard Spreader</td>
<td>1%</td>
<td>2%</td>
<td>2%</td>
<td>7%</td>
<td>30%</td>
<td>32%</td>
<td>12%</td>
<td>11%</td>
<td>3%</td>
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<td>Triangle</td>
<td>1%</td>
<td>2%</td>
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<td>10%</td>
<td>27%</td>
<td>33%</td>
<td>12%</td>
<td>7%</td>
<td>4%</td>
<td>1%</td>
<td>110%</td>
</tr>
<tr>
<td>Tuxedo</td>
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<td>4%</td>
<td>12%</td>
<td>36%</td>
<td>29%</td>
<td>9%</td>
<td>5%</td>
<td>2%</td>
<td>2%</td>
<td>121%</td>
</tr>
<tr>
<td>Wide Chute</td>
<td>0%</td>
<td>0%</td>
<td>2%</td>
<td>7%</td>
<td>29%</td>
<td>28%</td>
<td>13%</td>
<td>8%</td>
<td>5%</td>
<td>3%</td>
<td>103%</td>
</tr>
<tr>
<td>ZV</td>
<td>0%</td>
<td>1%</td>
<td>2%</td>
<td>8%</td>
<td>38%</td>
<td>42%</td>
<td>7%</td>
<td>2%</td>
<td>1%</td>
<td>0%</td>
<td>152%</td>
</tr>
</tbody>
</table>

Table 2: Percent of weight collected and percent of variation between grids for various speed and pre-wet rate combinations. Average of all spreader types.

<table>
<thead>
<tr>
<th>Speed and Pre-wet Rate</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>% variation between grids</th>
</tr>
</thead>
<tbody>
<tr>
<td>All 25 mph runs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All 25 mph, 5 gal/LM</td>
<td>0%</td>
<td>1%</td>
<td>2%</td>
<td>7%</td>
<td>29%</td>
<td>42%</td>
<td>12%</td>
<td>5%</td>
<td>1%</td>
<td>1%</td>
<td>138%</td>
</tr>
<tr>
<td>All 25 mph, 20 gal/LM</td>
<td>0%</td>
<td>1%</td>
<td>3%</td>
<td>8%</td>
<td>32%</td>
<td>46%</td>
<td>8%</td>
<td>4%</td>
<td>1%</td>
<td>0%</td>
<td>150%</td>
</tr>
<tr>
<td>All 25 mph, 30 gal/LM</td>
<td>0%</td>
<td>1%</td>
<td>3%</td>
<td>6%</td>
<td>33%</td>
<td>42%</td>
<td>8%</td>
<td>4%</td>
<td>1%</td>
<td>1%</td>
<td>143%</td>
</tr>
<tr>
<td>All 25 mph, 50 gal/LM</td>
<td>0%</td>
<td>1%</td>
<td>5%</td>
<td>8%</td>
<td>31%</td>
<td>49%</td>
<td>9%</td>
<td>3%</td>
<td>1%</td>
<td>1%</td>
<td>157%</td>
</tr>
<tr>
<td>All 25 mph, Dry only</td>
<td>0%</td>
<td>1%</td>
<td>3%</td>
<td>9%</td>
<td>18%</td>
<td>35%</td>
<td>20%</td>
<td>8%</td>
<td>3%</td>
<td>2%</td>
<td>110%</td>
</tr>
<tr>
<td>All 35 mph runs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All 35 mph, 5 gal/LM</td>
<td>0%</td>
<td>1%</td>
<td>3%</td>
<td>9%</td>
<td>32%</td>
<td>32%</td>
<td>10%</td>
<td>6%</td>
<td>3%</td>
<td>2%</td>
<td>118%</td>
</tr>
<tr>
<td>All 35 mph, 20 gal/LM</td>
<td>1%</td>
<td>1%</td>
<td>3%</td>
<td>8%</td>
<td>31%</td>
<td>33%</td>
<td>11%</td>
<td>8%</td>
<td>3%</td>
<td>2%</td>
<td>120%</td>
</tr>
<tr>
<td>All 35 mph, 30 gal/LM</td>
<td>0%</td>
<td>1%</td>
<td>4%</td>
<td>10%</td>
<td>39%</td>
<td>29%</td>
<td>8%</td>
<td>4%</td>
<td>3%</td>
<td>2%</td>
<td>127%</td>
</tr>
<tr>
<td>All 35 mph, 50 gal/LM</td>
<td>0%</td>
<td>1%</td>
<td>3%</td>
<td>11%</td>
<td>38%</td>
<td>31%</td>
<td>8%</td>
<td>4%</td>
<td>2%</td>
<td>1%</td>
<td>132%</td>
</tr>
<tr>
<td>All 35 mph, Dry only</td>
<td>1%</td>
<td>2%</td>
<td>5%</td>
<td>10%</td>
<td>20%</td>
<td>23%</td>
<td>17%</td>
<td>10%</td>
<td>7%</td>
<td>4%</td>
<td>78%</td>
</tr>
</tbody>
</table>
“We seem to be falling into a rut when it comes to hiring new employees. We advertise the skills required for the position; meet and interview; check résumés; and then make an offer. Somehow in less than a year, we are looking for someone to fill the same position. We spend more time interviewing than getting our work done. There must be something we are missing. Any ideas?”

This is a familiar question. For years we have felt it was essential to interview for the perfect candidate with the right technical skills to hit the ground running in our organization. The scenario you mention is quite common. We often learn, too late, that having great technical skills cannot make up for shortcomings in personality, work ethic, or the ability to assimilate to our culture. Recent interviewing strategies suggest that most of the positions we fill in public works, while requiring some level of skill and training, might better be filled with candidates who meet the other three traits mentioned earlier. You can train skills but not usually the other aspects. One thought is to change your focus during the interview process. Ask questions that will share insight into their motivation, abilities, and personality. For instance, when determining what motivates the candidate, you might ask, “What do you like to do at your job? What environments, stress levels, and team dynamics make you excel at work?” Some may be excited about the job you are offering but not necessarily working in public works or government. Not necessarily a good fit. You might ask, “What are the things you’re exceptionally good at at your job?” Assessing abilities, or a person’s mental or physical capacity to do a job, may not include an accurate picture of his/her greatest skills which may actually be more valuable in the position. In assessing personality, a good question might be, “What makes you happy in your workplace?” If your environment is team driven and encourages a creative, social, and innovative environment and your candidate talks about only his own personal achievements, it is likely the fit will not be a good one. Now it’s time for you to think outside the normal interview questions and try actually interviewing the candidate as a person rather than a technical being. Good luck!

“My husband brings home the Reporter each month and even though I’m not a member, I enjoy reading each issue. Recently I thought of a question regarding recycling that I’d like to ask. I have always understood that before recycling glass bottles, it’s best to rinse them out before taking them to the recycling center. However, sometimes it can take a fair amount of water to rinse out bottles that had contained items such as jelly or mayonnaise. My question is, is it counter-productive to use a lot of water to clean a glass bottle that’s headed for the recycling center? It seems that in trying to be proactive in one area of public works (recycling glass bottles), we are possibly being negligent in another area (wasting water). It seems as though the ‘law of diminishing returns’ applies here. What do you think?” – Terry Clark, wife of Kevin Clark, Editor, APWA Reporter

Good question, Terry. There are two issues to consider. The first is that anything you recycle should be rinsed to prevent odor and, even more importantly, to prevent residuals in the glass bottle or jar from contaminating other materials that may be comingled in the container. This could cause all the materials to be landfilled and defeat the whole process. If your recycler allows you to separate your items, it might not be as necessary to rinse the jars or bottles. If not, I’d continue to do so. With regard to your concern about wasting water, any water that goes down the drain will be “recycled” either through human effort in wastewater plants, or by the natural environmental process. Many cities do not accept glass items in their household recycling collection.
and if you are among the lucky ones who have that option, I’d continue to rinse! Thanks for the question.

Q

“A couple of our administrative staff members have requested ‘standing’ desks or exercise balls to replace their normal desks or desk chairs. Is this really something we should consider as a valid request?”

A

Most employers today have a policy on ergonomics which is a program designed to study how a workplace and the equipment used there can best be designed for comfort, efficiency, safety, and productivity. Many times we only consider ergonomics when being asked to make a “reasonable” accommodation for an employee with a disability. But today’s workers are finding that being encouraged to perform their duties in an atmosphere that is conducive to better health allows them to be more productive. For instance, industry studies have proved that workers who sit at a desk for eight hours a day see a slowing of their metabolism and lowers the good cholesterol in a person’s blood and often leads to increased risks for heart disease and Type 2 Diabetes. The advantages of working from a standing desk or a slightly deflated plastic exercise ball include improved posture and core strength. When standing or balancing, you are forced to engage the back and core muscles while shifting your weight from one leg to the other. While it takes a few weeks to become acclimated, those who have been using the process for some time find their health improved and their activity levels increased. The costs are really minimal compared to many of the highly priced “ergonomically” correct office chairs. Of course, these options are not feasible for everyone. If your ergonomics policy does not currently include these two options, I would suggest you discuss adding it. It could be the best “healthy” purchase you make.

Ann Daniels
Director of Credentialing
APWA, 2345 Grand Blvd., Suite 700
Kansas City, MO 64108-2625
Fax questions to: (816) 472-1610
E-mail: adaniels@apwa.net

Ask Ann
Please address all inquiries to:

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Products in the News

Tippmann Post Driving Equipment introduces side mount adapter for driving u-channel posts

The Tippmann Side Mount Adapter fastens quickly to all u-channel posts ranging in size from 2 lb. per foot all the way up to a 4 lb. per foot post. Whether you are driving an 8 ft. post or a 14 ft. post, this adapter will allow you to drive from a height you are comfortable with and your feet on the ground. This adapter is equipped with 11 sturdy attachment pins, which fit all major manufacturer u-channel hole patterns. The side mount adapter is then held in place by a long retaining pin and clevis. Learn more about this adapter as well as view online video demonstrations by visiting propanehammer.com. Or call toll free for a free brochure: (866) 286-8046.

SNO-FLO snow and ice anti-stick coating

SNO-FLO is a new anti-stick coating that makes the job easier for contractors hired to remove snow from downtown areas or parking lots. SNO-FLO prevents high-moisture-content snow from sticking to your truck beds and loader buckets so it slides right out when you get to the dumpsite. No more costly delays caused by manually removing the snow from your truck bed! Apply SNO-FLO in seconds with our 25-gallon or 60-gallon powered sprayers. No mixing. Call 1-800-688-6221 or visit rhomar.com.

Vaisala Truck Weather Sensors

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ClearSpan Fabric Structures provides energy-efficient, economical structures for a variety of waste management needs. State-of-the-art, USA-made ClearSpan Hercules Truss Arch Buildings feature abundant natural light and spacious interiors without interior support posts to hamper operations. Every Hercules Truss Arch Building is custom engineered to fit the requirements of the specific location, such as snow load or foundation type. With minimal foundation requirements, the structures can be permanent or temporary, and are easy to relocate. For more information, visit www.ClearSpan.com/ADAPWA or call 1-866-643-1010 to speak with a ClearSpan specialist.
Henderson Wing System

Henderson’s HWS is a modular wing system that replaces traditional patrol, mid-mount and rear-mount wing systems. Its modular design offers four possible configurations and is built using many common components. The front mast is a fabricated I-beam with rock solid features: ½” flange, ¼” web and ½” slide. And finally, the HWS wraps up with an array of options for the moldboard (shape and length), cutting edge, steel construction and more. For more information, please visit www.hendersonproducts.com.

Parallel Lift Plow from Henke Manufacturing

The latest snowfighting product from Henke Manufacturing is their Parallel Lift Plow. Designed to remain parallel to the ground in transport or in angling positions, this unique plow can be completely removed from the truck hydraulically, leaving only a flat plate. The truck hitch and power reversing and lifting mechanisms remain with the plow. The Parallel Lift Plow has an inverted “J” shape 43” high moldboard with 10 vertical ribs. The moldboard is available in steel or polymer in 10’, 11’ and 12’ lengths.

PowerPlatform™:
The next-generation municipal vehicle

GVM’s PowerPlatform is a multi-purpose machine offering a four-wheel drive mechanical drive train with a 275 hp Cummins engine paired with a 6-speed powershift transmission. The PowerPlatform offers high, 40 mph speed transport, excellent 360° visibility, a tight 20.2-foot turning radius, three steering modes, a 22,000-pound cargo capacity and a 102-inch road legal tire width. This multi-purpose vehicle also offers four-season versatility with multiple three-point hitch attachment options, including snowplows, blowers, brushes, sprayers, spreaders, dumpers, tillers and mowers. For more information, please visit www.snowequipmentsales.com.

West Coast Contractors working on new dock

West Coast Contractors (www.westcoastcontractors.com) is beginning work to build a new dock at Lower Granite Dam on the lower Snake River, working as the major subcontractor for a joint venture between general contractors Garco Construction and Total Site Services. WCC will build a new dock to handle the increased numbers of barges added in recent years. In order to minimize the risk of disturbing fish populations, WCC must complete all water-based construction between December 15 and February 28. They will be moving equipment to the site and begin the upland portion of work in November, utilizing their 100 and 160 ton cranes. For more information, please contact Ron Kutch at (541) 267-2689 or rkutch@westcoastcontractors.com.

CNIguard: wireless monitoring for critical national infrastructure

CNIguard manufactures the only encrypted wireless intrusion detection platform designed to detect incidents before they occur—not just alarm after it has happened. Qualified by the U.S. Department of Homeland Security (DHS) SAFETY Act as an Anti-Terrorism Technology, CNIguard greatly enhances the safety and security of critical infrastructure delivering smart solutions for water, energy, chemical, oil and gas, border and defense, communications and every other crucial sector requiring significant safeguard. With thousands of units already installed and a false alarm rate of no more than one per year avoiding unnecessary callouts, the CNIguard platform interfaces with SCADA and many other systems. For more information, please visit www.cniguard.com.
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Bergkamp’s new Spray Injection Patchers

Three new Spray Injection Patchers join Bergkamp Inc.’s renowned all-in-one FPS Flameless Pothole Patchers, adding new swift and effective pothole repair solutions to the product line. The new models lead the market in innovation with truck-mounted units that are safely operated from in front of the truck; custom-mounted units using an existing conventional or cab-over fleet chassis; dual-chamber, aggregate hopper on truck-mounted units deliver two different gradations; and trailer-mounted unit for use with aggregate haulers. Each Spray Injection Patcher can be used with the optional Bergkamp InPave™ Pothole Patcher Management System. For more information, call (785) 825-1375 or visit www.bergkampinc.com.

Engineered lightweight fill helps trim project costs

InsulFoam® GF Geofoam simplifies design and construction of projects requiring lightweight fill. The expanded polystyrene (EPS) fill is 100 times lighter than soil, durable and not subject to freeze-thaw damage. This geosynthetic product is engineered to the specifications of ASTM D6817 and has been successfully used in highways, bridges, water treatment plants, levees and other infrastructure development and replacement projects. Uses include soft soil remediation, slope stabilization, structural void fill and engineered applications. InsulFoam GF Geofoam does not typically require the surcharging, preloading or staging common with other fills. For more information, please visit www.insulfoam.com.

Schwarze Industries unveils state-of-the-art Schwarze® Training Academy

Schwarze Industries has unveiled its new Schwarze Training Academy in Huntsville, Ala., in response to increased demand for more hands-on training and as part of their ongoing initiative to further strengthen customer satisfaction. The new facility will provide advanced, maintenance and hands-on training for all Schwarze products. The 7,000-square-foot Schwarze Training Academy will be instrumental in further improving the service experience for customers and Schwarze dealers globally. It is located across from the company’s manufacturing plant and is expected to be one of the most advanced sweeper training facilities in the industry. For more information, please visit www.schwarze.com.

Ritron introduces PT-150M license-free portable 2-way radio for government users

Ritron, Inc. introduces the PT-150M, a professional-grade license-free portable 2-way radio. Operating in the VHF MURS frequency band, the PT-150M allows business-only users to operate license free at 2 watts, anywhere within the U.S. This saves customers the hassle and expense of licensing typically associated with “FCC Part 90 business band” radio frequencies, and provides out-of-the-box functionality and simplicity for retail locations, manufacturing environments, schools,
hospitals, healthcare facilities, and more. The PT-150M features 8-channel capacity which allows maximum use of all five MURS frequencies plus reuse of three frequencies for additional work groups, etc. A 2-watt transmitter is adequate for up to two-mile range, line-of-sight, no obstructions or 250,000 sq. ft. indoors range. For more information, call (800) 872-1872 or visit www.ritron.com.

Oil filtration system from Puradyn Filter Technologies

An oil bypass filtration system produced by Florida-based Puradyn Filter Technologies effectively reduces by 90 percent the amount of waste oil generated by the engines that utilize the system. Working like a dialysis machine for engine oil, the system is used on engines in construction and on transit vehicles. It is currently in use in both Miami Dade (2,600 vehicles) and Hillsborough Counties in Florida. In addition to being environmentally friendly, the filter also allows engine oil to remain clean for a long period of time, helping to save money that would otherwise be used to purchase more oil. For more information, please contact Kathryn Morris at 1-866-PURADYN (787-2396) or kmorris@puradyn.com.

Nordic Auto Plow easy on equipment and operators

The Nordic Auto Plow attaches to any ATV, UTV or zero-turn mower to turn existing public works equipment into a versatile, cost-effective tool that helps with a range of challenging tasks, including: clearing snow from grass, gravel and pavers without damaging the ground; smoothing out baseball diamonds; and pushing landscaping materials like dirt and mulch. Weighing less than 50 lbs., the plow is easy on equipment and operators. The blade is made from rugged ABS plastic for durability and repeated use. A universal mounting system ensures that the plow will attach quickly to any equipment brand without damaging the vehicle. For more information, please call 1-888-662-PLOW (7569) or visit www.nordicautoplow.com.
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November 2013

4-8 APWA CSM/CPPI/CPFP Certification exams (computer-based testing), (800) 848-APWA, www.apwa.net


20-21 Canadian Waste & Recycling Expo, Montreal, Québec, www.cwre.ca

December 2013


6-10 American Sports Builders Technical Meeting, San Antonio, TX, sportsbuilders.org

12 APWA Click, Listen & Learn, “How to Get Buy-In for Asset Programs,” (800) 848-APWA, www.apwa.net

January 2014

8-11 National Pavement Expo, Fort Lauderdale, FL, nationalpavementexpo.com

12-16 Transportation Research Board Annual Meeting, Washington, DC, www.trb.org,

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Legend: IFC = Inside Front Cover; IBC = Inside Back Cover; BC = Back Cover
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