A new method for streamlining tree selection for streets and public properties

(see page 44)
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Facilities and grounds management is a holistic approach

Larry Stevens, P.E., PWLF
APWA President

When one thinks of infrastructure, not much attention is given to the public buildings that our organizations are responsible for maintaining. Even in ASCE’s “Report Card for America’s Infrastructure,” they speak of public parks and recreation as well as schools; however, there is no mention of the public buildings. Take for instance the substantial amount of work that is being completed on the U.S. Capitol Dome in Washington, D.C., and the cost of this renovation/repair project (approximately $60 million). This is one structure.

Every public organization in North America, regardless of size, has the responsibility of maintaining the facilities that house the services they are responsible for providing. Not only should attention be paid to the facility but also to the grounds on which it is located. Such things as the parking lot, the sidewalks and walkways into the facility, and the trees and landscaping are things that we see every day but more often than not pay little attention to. All of these are assets that have to be appropriately managed.

Communities and governing boards get excited about building new facilities and infrastructure; however, that excitement is not there when you need to spend money to replace a roof that is leaking, replace a 250-ton chiller that has reached the end of its useful life, or prune a mature tree. These are the components of a facility that most people don’t even think about. The public has the expectation of conducting the business they need to attend to within a well-maintained facility and their perception is based solely on appearance. However, those of us involved with facilities management know there is much more to maintaining a facility beyond that in which the public observes while in one of our public buildings.

This is why asset management is so vital in our organizations and should play a critical role in keeping our facilities operating at the highest level. Every public organization needs to have a handle on their facilities and every component of the grounds that it takes for them to function. In other words, facilities and grounds management is a holistic approach and not simply picking and choosing the things to address that the citizens see day in and day out. As public works leaders, it is our responsibility to not only educate the decision makers in our communities but the public as well. We must take the time to explain the need to spend the necessary funds on keeping our facilities functioning while identifying improvements that are going to be sustainable moving forward.
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EPA and USACE set to release final version of WOTUS rule

Tracy Okoroike
Government Affairs Associate
American Public Works Association
Washington, D.C.

This spring, the Environmental Protection Agency (EPA) and the United States Army Corps of Engineers (USACE) are scheduled to release the final version of the “Waters of the US” (WOTUS) rule. To read more about the WOTUS rule, visit http://www.apwa.net/be_involved/Federal-Advocacy/Federal-Regulation/US-Federal-Regulations.

Nearly a year ago, the EPA and USACE released a proposed rulemaking to define WOTUS and determine which waters are subject to the jurisdiction of the Clean Water Act (CWA). When the two agencies released the proposed rule in April 2014, a broad coalition of local government agencies, agricultural producers, business advocates, and congressional members loudly made known their opposition to the rule. In November 2014, APWA submitted its official comments in response to the proposed rule, citing concerns that the rule would expand jurisdiction to ditches and municipal separate stormwater systems (MS4s), increasing the cost of maintenance and permit requirements for public works departments.

After releasing the proposed rule, the EPA and USACE opened up a comment period, which after several extensions, lasted seven months. In that seven-month period, the agencies received over one million comments. Throughout the entire rulemaking process, the EPA and USACE have resolutely supported the proposed rule as it was initially written.

EPA and USACE officials have testified multiple times in recent months and faced great skepticism, and sometimes outright hostility, from congressional members. Agency and Corps officials stood their ground against claims that the rule would greatly expand the jurisdiction of the CWA and unfairly burden state and local governments with the unfunded mandate of complying with additional regulations.

In spite of the agencies’ claims, the House of Representatives passed legislation blocking the EPA from implementing the proposed rule. The Senate never voted on the bill.

In January 2015, the EPA released the final version of a scientific report supporting the WOTUS rule. The proposed rule extends jurisdiction of the CWA to streams and wetlands in floodplains, which have been historically excluded from jurisdiction. The EPA claims streams and wetlands can affect the water quality of larger bodies of water. The 400-page scientific report synthesizes 1,200 peer-reviewed scientific studies and draws a strong connection between streams and wetlands and larger bodies of downstream water, such as rivers.

These findings consequentially support the agency’s attempt to expand CWA jurisdiction beyond larger bodies of water or navigable waters.

Because public works professionals in communities of all sizes play an important role in providing clean and safe water, APWA will continue to monitor this matter and make certain APWA membership is informed. Of paramount importance is to support federal and state policies critical to managing and delivering clean water without placing unnecessary regulatory burdens on state and local entities.

Tracy Okoroike can be reached at (202) 218-6702 or tokoroike@apwa.net.

“Example is not the main thing in influencing others. It is the only thing.”

– Dr. Albert Schweitzer (1875-1965), physician, philosopher and humanitarian
Public buildings are the heart of many communities. These historic structures with their pristine landscapes are a source of pride across North America. This is thanks to the dedicated individuals that maintain these facilities and tend to the grounds. The APWA Facilities and Grounds Technical Committee consists of expertise from both sides of the profession.

Chair Jennifer Gulick, MA, heads this year’s committee. Jenny is a Senior Consulting Urban Forester for Davey Resource Group in Walton, KY. The rest of the committee represents the broad spectrum on public works individuals that are concerned with facilities and grounds issues.

- Brian Carthan, PWLF, Park Services Manager, City of Oakland, CA
- Mark A. Whitfield, PLS, Director of Public Works, Borough of State College, PA
- Jeffery Patrick Brown, P.E., Engineering & Infrastructure Director, Cumberland County Engineering & Infrastructure Department, Fayetteville, NC
- Joseph A. Sisler, P.E., Chief of Engineering/Facility Maintenance, County of York, Yorktown, VA
- Gary L. Rank, Facilities Manager, City of West Des Moines, IA

With our previous Board liaison, Brian Usher, busy preparing for his term as the next APWA President, the committee welcomed their new board liaison Ms. Mary Joyce Ivers, CPFP, PWLF. Mary Joyce is the Fleet and Facilities Manager, City of Ventura Public Works, Ventura, CA and brings over 20 years of facilities experience to the committee.

Facility managers constantly face increased demand for services, shrinking budgets, rising operating costs, and aging infrastructure. The committee has highlighted these issues in this issue of the Reporter with articles on the challenges of retrofitting historic buildings in “Historic building maintenance,” accessibility issues in “Things to keep in mind for ADA compliance,” going green in “Building a sustainable maintenance facility,” managing facilities in “Automated asset management systems” and keeping workers safe in “Big changes in electrical safety.”

Sustainability and environmental protection is a key focus on the grounds side of the equation. This edition features articles on the effect of road salt on street trees in “Protecting public tree health with a ‘low sodium diet’” and some best practices for a sustainable landscape in “Bay-Friendly Landscaping & Gardening Coalition.”

We hope you all caught the committee’s Click, Listen and Learn session, “What to do with Historic Buildings? Tips on Management, Maintenance and Retro-Commissioning” on March 26. With so many communities looking to repurpose properties, the topic is extremely timely.

The committee also recommends and advances APWA policies and positions concerning public buildings and grounds issues in the form of position statements. There are three levels of statements that APWA generates: advocacy, guidance and regulatory. An advocacy position statement clearly states APWA support for or opposition to a legislative issue; this statement is specific in nature, and directed to local, state, and national legislators and governmental agency administrators. A guidance position statement recommends that public works professionals follow certain practices, methods and activities. The regulatory position states APWA support for action to be taken by an administrative or regulatory body. Every spring, these positions are reviewed for accuracy and relevance to public works. The guidance statements that the committee currently has available on the APWA website are:

1. Mobility and Access For People with Disabilities (Americans with Disabilities Act of 1990)
2. Energy Conservation and Sustainability for Public Facilities
3. Quality Management of Public Facilities and Assets
4. Hazardous Materials and Asbestos Management in Public Facilities
5. Indoor Air Quality
6. Quality Management of the Urban Forest
7. Vulnerability and Security of Public Buildings

Updates are currently in the work for all of these. If your agency is looking for guidance on a facilities and grounds issue that is not addressed or if you would like to get more involved, please feel free to contact the staff liaison, committee chair or any committee member.

Phyllis Muder can be reached at (816) 595-5211 or pmuder@apwa.net.
APWA invites you to join us in the heart of the Snowbelt for the record-breaking 2015 North American Snow Conference in Grand Rapids, MI, April 12-15! We’ve just expanded what was already our largest exhibit floor to accommodate all of the top-notch vendors wanting to share their innovative winter maintenance products with you. Pair that with excellent education sessions led by some of the most knowledgeable experts in the industry, and you have a can’t-miss event! Come experience the most concentrated collection of snow and ice solutions available under one (expanding) roof!
City of Columbus, Ohio

The City of Columbus, Ohio, has a snow and ice control plan in place to set forth guidance in providing efficient and timely snow and ice control to the residents and visitors of Columbus. The goals of the plan are to reduce life-threatening and injury-producing conditions, reduce interruption to commerce, and reduce damage to property. The plan is also committed to limiting the environmental impacts associated with removing snow and ice. When there is snow, sleet, ice, or other winter weather events, the City of Columbus’ top priority is public safety. The City of Columbus reviews and revises the snow and ice control plan annually to further improve the levels of service provided to the citizens and visitors of the city.

Recognizing the need for efficient and effective snow and ice control along with the demands from the public, the City of Columbus has an available 86 dedicated snowplows. Through interdepartmental cooperation, the City can ramp up to 145 plow trucks, depending upon the severity of a storm. The City has 114 core employees for snow and ice control that can be supplemented by other City departments, bringing the total number of snow and ice control staff to over 400 employees. The City maintains a stockpile of 27,000 tons of salt for snow and ice control operations. Depending on the nature of a winter season, the City of Columbus uses between 23,000 to 30,000 tons of salt. The six-year average salt use has been 23,320 tons.

City of Lenexa, Kansas

Snow removal is a high priority with the citizens of Lenexa, Kansas. There are high expectations to get it done right and perform to a high standard. The Municipal Services Department takes this challenge seriously and attempts to meet or exceed expectations. According to a 2013 DirectionFinder survey, snow removal on major city streets and residential streets ranked #2 and #3 for top City maintenance priorities over the following two years. According to the survey results, the highest levels of satisfaction with maintenance services was snow removal on major streets at 82% of the respondents either very satisfied or satisfied.

In order to enhance onsite salt storage, City crews self-performed the construction of two additional hoop-style, fabric-lined salt storage
structures in the past two years that has added 1,500 tons of salt capacity. One structure was built at the west satellite location and the other unit was built to enhance storage at the main service center location. In previous years, the west satellite location was only able to hold 100 tons of salt; this new structure greatly reduces the City’s need to replenish salt during large or multiple winter events.

City of Waconia, Minnesota
Employees of the City of Waconia, Minnesota, actively maintain and improve the City’s environment and infrastructure. In the winter season, workers oversee approximately 48 center-lane miles of roadways, all municipal parking lots, and 27 miles of trails and sidewalks. The State of Minnesota has set forth high expectations for reducing chloride applications in the effort of protecting the wetlands, streams, and lakes for recreational use. In 2010 the City of Waconia made significant changes in winter maintenance practices to meet the State’s expectations. The City of Waconia was the first community in Carver County to utilize liquids in winter maintenance operations. Brine production and anti-icing were implemented into the community’s winter maintenance practices.

The City of Waconia continues to equip and research the latest technologies in winter maintenance. In 2014 Public Services created a “Green Fleet Team.” The emphasis of this group is to discuss equipment needs, improve route optimization, and reduce greenhouse gas emissions. The group discusses all equipment uses, and recommends equipment purchases to improve and maintain service delivery for all divisions of Public Services. The City continues to improve efforts towards chloride reduction and data acquisition by upgrading one-ton unit application equipment and controls scheduled for 2015, and the proposed 2016 automation of brine and blending production.

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Tempe has a variety of unique experiences to offer you while attending Congress in August. I should know. Tempe is my home. I am an ASU graduate and have served the residents of Tempe for 25 years. I have watched this community grow from a college community to a thriving hub of corporate business. As Past President of the APWA Arizona Chapter and past Chair of the National Diversity Committee, I encourage you to visit our exceptional city.

Tempe, a vibrant urban oasis in the heart of the Phoenix area, has its own personality. This refreshingly offbeat college town is home to Arizona State University (ASU), one of the largest universities in the country. It’s just minutes from Phoenix Sky Harbor International Airport (PHX) and accessible via METRO light rail. It is about a 10-minute METRO light rail ride from the Phoenix Convention Center and host hotels for Congress.

Tempe’s spirited lifestyle is welcoming and creates a contagious energy. You can feel it on the Arizona State University Tempe Campus where students sporting maroon and gold learn BIG ideas. You can feel this vibe at fun-filled festivals, at theatre productions, comedy shows and art exhibitions at the ASU Art Museum. And, you will never forget when your children see the desert for the first time or feed a giraffe at the Phoenix Zoo. It’s a place where you can earn your personal best at the P.F. Chang’s Arizona Marathon & Half Marathon or Ironman Arizona. You can go kayaking or paddle boarding on Tempe Town Lake, or just relax poolside underneath a colorful umbrella.

Here is a list of things to do in Tempe while you visit our diverse and beautiful city:

• See the best shows straight from Broadway at the Frank Lloyd Wright-designed ASU Gammage Theater.

• Cruise on an electric boat, kayak, or stand-up paddleboard at Tempe Town Lake.

• Shop at Arizona Mills, Tempe Marketplace and IKEA.
• Take a tour of the Desert Botanical Garden, a living museum with more than 50,000 varieties of desert plants from around the world. www.dbg.org

• Stroll the shady, brick-lined sidewalks in Downtown Tempe. This popular gathering place is home to more than 100 restaurants, taverns and shops, in addition to public art and historic sites. www.downtowntempe.com

• Escape to another world at SEA LIFE Arizona Aquarium at Arizona Mills, with more than 30 display tanks and 5,000 water-loving creatures. www.visitsealife.com/Arizona

• Savor farm to table cuisine and see the city lights from Top of the Rock, a signature dining experience at Phoenix Marriott Tempe at The Buttes. www.marriott.com/phxtem

Interested in golfing in Tempe?
• Play a round at ASU Karsten Golf Course, a par 70, classic Pete Dye links-style course. Afterwards, have a casual lunch at the Trophy Room. You are sure to see a sports personality in the clubhouse. www.asukarsten.com

• Play a round at one of the city’s courses. Ken McDonald or Rolling Hills. www.tempe.gov/golftempe

Interested in adult activities?
• Four Peaks Brewing Co. is legendary in Tempe for both great food and beers like Kilt Lifter and 8th Street Ale. www.fourpeaks.com

• Meet a few locals at The Handlebar Tempe on Mill Avenue. This popular spot features a unique mix of beers on tap, beer cocktails, German-inspired brats and pretzels, and a patio that mimics a City Park. www.handlebaraz.com

• Order a perfect pint of Guinness, listen to a live band and soak up the Emerald Isle charm at Rula Bula Irish Pub. www.rulabula.com

• Laugh along with one of the well-known comedians who grace the stage at the Tempe Improv each weekend. www.tempeimprov.com

• See live music and have rockin’ good food at Copper Blues. www.copperblueslive.com

• Have a great meal, play games on the expansive outdoor patio and find your favorite specialty cocktail at the newest addition to Downtown Tempe’s culinary and nightlife scene, Culinary Dropout at the Yard Tempe. www.culinarydropout.com
Interested in some family activities?

• Go to the Phoenix Zoo, voted one of the top five zoos for kids. www.phoenixzoo.org

• Take a hike at Papago Park, where you can discover saguaro cactus, lagoons and see the sunset from Hole in the Rock. www.papagosalado.org

• See a Childsplay performance, created just for young audiences, at the Tempe Center for the Arts. www.childsplayaz.org

• Go play at Main Event Tempe. Here, you’ll find bowling lanes, laser tag, arcade games, gravity ropes course and great food. www.mainevent.com

• Explore the underwater world at SEA LIFE Arizona Aquarium, perfectly designed for kids. www.visitsealife.com/Arizona

Here are some fun facts about Arizona State University, Tempe, Arizona:

• ASU ranks second on a list of schools that are making the most promising and innovative changes in the area of academics, facility and student life, according to U.S. News and World Report. The ranking put ASU in the top 15 percent of all four-year colleges in America.

• For its commitment to sustainability operations and practice, ASU has achieved a gold rating in the Sustainability Tracking, Assessment and Rating System, a self-assessment program launched by the Association for the Advancement of Sustainability in Higher Education.

• Visit Air Apparent, a Skyspace designed by James Turrell on the ASU Tempe Campus at Rural and Terrace Roads. skyspace.asu.edu

• The Gallery of Scientific Exploration features interactive exhibits from the voyage of HMS Darwin to NASA’s Mars Science Laboratory. A self-guided tour of Arizona’s largest public arboretum at ASU’s Tempe campus is available online at https://cfo.asu.edu/edm-arboretum-plantcollection. The arboretum has a large date palm collection as well as collections of palms, conifers, cacti, succulents, and desert accent plants.

Getting to and around Tempe by METRO light rail

METRO light rail connects Tempe and the ASU Tempe Campus to Downtown Phoenix, the airport and the city of Mesa. METRO runs seven days a week, Monday through Sunday, and on Friday and Saturday, hours are extended. Trains arrive at the stop every 12-20 minutes, depending on the time of day.

METRO light rail cars can accommodate wheelchairs and bicycles. Bicycle symbols on the train windows indicate the doors nearest the bicycle rack.

Tempe believes that public transportation is crucial to a community. We are the only city in Arizona offering light rail from border to border and the only one with a light rail bridge. The bridge is illuminated by LCD lights and changes colors every time a train crosses. The rainbow reflects onto the surface of Town Lake, casting shimmering color onto the water.

Tickets are $2 one-way, or $4 for an all-day pass. Passes for light rail can also be used for buses. www.valleymetro.org/metrolightrail, (602) 253-5000

Whatever your plans may be when you visit our gorgeous state, we hope you consider exploring our exciting and diverse community in Tempe.

Jennifer Adams can be reached at (480) 350-8835 or jennifer_adams@tempe.gov.
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TUESDAY

DIANA NYAD
Long-distance swimmer, sports journalist and broadcaster
Find a Way

WEDNESDAY

DAN MCNICHOL, PHD
Author, Journalist, Speaker
Low & Slow Across America: A Road Trip through the Nation’s Public Works… in a 1949 Hudson
Preparation: The key to success

Terry Kader, CPFP
Fleet Services Superintendent
City of Denton, Texas

In life, being well prepared has its advantages. Taking APWA’s Certified Public Fleet Professional (CPFP) exam is no different.

I began supervising the maintenance of public works vehicles and equipment in 2002, and like many of today’s seasoned fleet professionals, my career in fleet maintenance began long before that. I worked as a technician for more than 15 years before advancing into supervision and, eventually, management. As a technician, I learned of professional certification programs that could enhance the status of my career path, such as the National Institute for Automotive Service Excellence (ASE); in just a few short years, I became an ASE Master, certified in Automotive and Heavy Duty Truck. While these certifications are not required in my present position, they are still maintained as a matter of pride and as an example of their importance and value in the fleet maintenance industry. Technicians continue to be highly encouraged and supported throughout their efforts to obtain ASE certifications.

While working as a fleet supervisor for a small municipality, I learned of the CPFP credential offered by APWA. After comparing other prevalent accreditations, I chose to pursue the CPFP certification, as it seemed the most relevant to the public works industry and to my work. Professional certification would be a big step toward being ready for a future fleet management position if (or when) an opportunity presented itself.

Any fleet professional that has attempted CPFP certification will attest to the difficulty of the exam. Preparing to take the test is not an easy task. Although relevant prior experience may contribute to passing the test, a thorough study of suggested
I began with research of the recommended reading list and gathered materials suggested by APWA, especially in those areas of less familiarity, as this would be the best investment of my time. The core competency areas are Operations, General Management and Business, Asset Management, Financial Management, Human Resource Management, Risk Management, Environmental Management, and Information Management & Technology. Each core area requires knowledge based on a wide range of subject matter, which is not as simple as memorizing pages from a particular book. While studying, however, it can be surprising to find what you already know from experience, as well as learning some basic information that you may not have encountered in your career to-date.

I attained my certification in 2007, and there have been many associated personal and professional benefits. My promotion to Fleet Superintendent for the City of Denton in 2012 was certainly due, in part, to having the CPFP certification. When seeking advancement opportunities, you find yourself competing against equally-qualified candidates. CPFP is not just four letters added behind your name on a business card; it immediately recognizes your professionalism, knowledge, integrity, and ethics. The credential adds personal credibility and promotes a level of respect among other fleet managers—and that, in and of itself, leads to invaluable networking opportunities. Credibility with your customer base is another benefit, especially when you begin establishing relationships with various operating departments. When hiring a manager into a position of great fiscal responsibility, I believe a city, and its residents, benefit by selecting a candidate who has a thorough understanding of the core principles of fleet management.

Initially, I believed that fleet maintenance was all about vehicles, equipment, machines, parts, and tools. I have come to realize that fleet maintenance is really all about people. Directors, managers, supervisors, technicians, administrative staff, customers, vendors—these are the people who drive fleet maintenance. Learning to develop and maintain good working relationships with all of them is important for today’s fleet manager. Taking care of people, whether customers or staff, is one of the most important functions a fleet manager will do on a day-to-day basis.

Becoming certified was a very rewarding experience for me. In the beginning, I did not give much thought to how my career in fleet maintenance would progress and to what extent. Over time, I simply prepared to the best of my ability and made the most of the opportunities that came my way. I highly recommend this credential to anyone in the fleet maintenance business, whether you are currently in management, working toward a management position, or simply want to enhance your credibility in your current position. The CPFP credential demonstrates possession of industry knowledge, best practices, and a commitment to the profession. A CPFP-accredited fleet manager is well-prepared for the many challenges and opportunities that he or she may face in today’s fleet maintenance environment.

Terry Kader can be reached at (940) 349-8729 or Terry.kader@cityofdenton.com.
When I looked over the list of APWA Donald C. Stone (DCS) Center graduates, I was curious about the one person on the list who was not currently working for a public agency. So, I decided to interview Gerald Williams, who earned the DCS Public Works Manager designation in 2014. At first I wondered why an engineer who ran his own consulting firm would enroll in the program. In looking through his DCS application, I discovered that after 32 years working in the private sector, Gerald is planning to find a position in the public sector.

To meet a key requirement of the DCS manager’s track, he enrolled in Iowa State University’s Public Employee Leadership Institute, an online, 100-hour program. I became even more curious about Gerald when I noticed that besides the Institute, in the last four years, he also has managed to earn, online, a master’s degree in public administration from the University of Nebraska-Omaha, and he is completing his last class this semester at the University of Idaho to earn a master’s degree in engineering management. Now I was even more curious. With two master’s degrees almost under his belt at such an accelerated pace, when I interviewed him, I asked why he pursued the DCS designation as well.

“Formal book learning is important,” he said, “but real world application where ‘the rubber meets the road’ is also invaluable, and that is why I was so interested in the DCS program.”

He said that when he applied to the DCS program, he was encouraged to enter at the Public Works Executive (PWE) level, but he felt compelled to begin with the manager track. “The majority of public works agencies in this country are still small enough that one person must capably wear both the public works manager and executive hats. It was important for me to understand both levels.” The DCS program gives him the additional, relevant public works experience the university programs don’t provide.

When I told Gerald about my interest in his paradigm shift, he said this new direction is partly a reflection of the times—an economy that has hit consulting engineering firms squarely in the pocketbook. This is particularly true in small communities like Rexburg, Idaho, where Gerald currently lives and does business, which is approximately 80 miles northeast of Pocatello. He said the switch is also about where he is in life. Gerald wants to be able to devote all of his time at work to using what he knows doing things that benefit society, and he believes that he will be better able to do that in the public sector.

“It is not about position and status for me now,” said Gerald. “As a consultant, even in the good times, you can spend about a third of your time marketing and networking, looking for work—lining up that next job. But in public works, the work is just there. There’s seldom any non-productive downtime to deal with.”

Having once worked in the public sector for about a year and a half, Gerald has a little “official” public works experience. However, that was many years ago, and not as an administrator or a manager. But he does have a rich variety of experience in areas that are related to public works, including drainage and hydraulics, floodplain management, water and sewer, transportation engineering, and other forms of municipal engineering. His numerous successful projects attest to Gerald’s knowledge, skills, and abilities in dealing with public works projects and personnel.

Since mentorship is a significant part of the DCS process, Gerald chose Bill Sterling as his mentor from the list of DCS Public Works Leadership Fellows (PWLFs). Bill, who retired a few years ago as director of public works in Greeley, Colorado, has—among many other things—written management-oriented books for...
APWA, served in key capacities on several APWA committees, and has been instrumental in the APWA Accreditation program.

“What a terrific opportunity,” Gerald said. “I could not have picked a better person to be my mentor.” He noted that some programs with mentoring components at other associations pick the mentors for the participants, “but I was able to pick Bill Sterling for myself. That’s a real advantage of the DCS program.”

As with other DCS graduates I have interviewed, Gerald can’t say enough about how much he appreciates the time his mentor has taken with him. Bill’s counsel was invaluable to Gerald as they searched through his varied and numerous completed work projects to find one that was public works oriented enough to submit for the project component of the PWM.

Ultimately, they selected the Portneuf River Levee Recertification Project, which Gerald’s firm undertook in September 2008 to July 2009. The river flows through the City of Pocatello in southeastern Idaho, and a significant older portion of the town (commercial and residential area) is protected by levees on both sides of a 7.2-mile reach of the river.

Although the levees were critical to the area, several factors threatened to force their deaccreditation. At the time, levee recertification was new, and the Portneuf project was one of the first to be considered. The project presented some interesting (a euphemism for frustrating!) challenges in coordination of multiple agencies (local and federal). Levee rehabilitation was necessary before certification could be made, which was innovatively provided under the direction of Superintendent Randy Ghezzi using multiple City departments—without any change in budget the first year! While used to working with contractors on public works projects, this offered Gerald a new and greater view of the challenges and opportunities available in public works.

Gerald particularly appreciates the interest Bill showed in him. He felt that Bill was interested in Gerald reaching his own various goals, not just in “going down a checklist” with him. However, because of his simultaneous educational endeavors and not being actively involved in an agency at the time, Gerald observed that he “was probably not the kind of mentee Bill was looking for.” This makes Gerald even more appreciative of Bill’s willingness to mentor him.

Gerald has identified a particular area of interest in public works for himself, which he believes is “not adequately covered in typical engineering, project management, business, or public administration programs and training.” Noting that even small communities like Rexburg have hundreds of millions of dollars tied up in infrastructure assets, he said, “Cities deserve to have people who are trained in infrastructure asset management.”

Gerald has been accepted into the DCS PWE program and will begin it officially after he finishes his last master’s class in May. About his experience with DCS, Gerald said, “I think if someone thinks that they don’t need the DCS program, they need to think again! Whatever level you are at, there is something there for all of us. That’s the beauty of the DCS program.”

Connie Hartline can be reached at (816) 595 5258 or chartline@apwa.net.
"Pat" is retiring after a long career with us. Let’s gather in the Maintenance Center break room for some coffee, cake, and punch this Friday afternoon just before quitting time. Maybe the Mayor will stop by with a Certificate of Appreciation. Maybe the crew has fashioned some sort of memento from the stuff in the scrap box. Let’s all hope that Pat’s first retirement check arrives on time next month!

Besides the certificate and the memento and the left-over cake, what else is leaving with Pat this week? Perhaps 25 or 30 years of Memories. Knowledge. Insights. Everyday Practical Answers. The confidence that everything is running well just from the hum or the feel or the sound or the smell in the place.

Can you afford to let Pat retire? Have you asked Pat to review the operations manual lately? Or just jot down a few “secrets” to keep things on an even keel? Have a few less-experienced employees been given the opportunity to spend any quality time shadowing Pat to learn the routines? Does anybody else know which locker holds that gizmo Pat uses to adjust the thing-a-ma-jig?

The three components of any well-run organization are people, equipment, and materials. Most of us do a reasonable job in keeping the fleet and mechanical systems up-to-date. Many of us are daring enough to try some new materials when they come along. We usually hold training sessions to keep our employees current on the issues and options of the day. But how many of us are getting the most out of our most experienced employees before they retire or move on?

Former news anchorman Tom Brokaw lauded the perseverance and accomplishments of “The Greatest Generation” of the Depression and World War II era. Have we done the same for the “Baby Boomers” who followed? Statistically, the “Boomers” were born between 1946 and 1964, which puts them in their early 50s to late 60s, the common age range for retirements. They operated and expanded the public works infrastructure over the past 30 to 40 years as the population of the United States grew from under 200,000,000 to over 300,000,000. They knew not just how to build or rebuild the water, sewer, transportation, and recreation facilities, but how to operate them efficiently as well.

So, let’s not let Pat out the door before we glean as much of her/his vocational memory and institutional knowledge as we can. Let’s utilize the retiring generation as the valuable resource it is before turning the public works systems over to the next generation, which will face different challenges and situations, but might still need to know where the gizmo that keeps the thing-a-ma-jig running smoothly is stored.

And, let’s not forget to say “Thanks, Pat for all you’ve done.” And, invite Pat to stop by once in a while just to see how well the next generation is doing in its own season of responsibility. After all, we’ll all likely be following Pat’s footsteps out the door in a year, or two, or ten, or twenty, or thirty.

Bob Moorhead is a Past President of the APWA Washington State Chapter, and a member of the Public Works Historical Society Board of Trustees. He may well be joining Pat within a year or two, and can currently be reached at BobM@crab.wa.gov or (360) 350-6083.

The Public Works Historical Society is an affiliate of APWA, with membership open to public works practitioners, authors, academia, and anyone interested in public works history. Membership in APWA is not required. Annual dues are $35, and can be added to APWA members’ regular annual dues statements. Please visit the PWHS website at www.apwa.net/PWHS/ for more details on the Society’s mission and activities.
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Public works professionals (including us engineers) have a knack for being progressive and innovative. When faced with technological advances, we adapt to change. When faced with funding constraints, we find creative solutions. We must be responsive and resourceful to survive in our competitive field. But there’s one field that presents a road block to many of us, myself included. That is social media. Let’s face it: engineers are not historically known for our social acuity. I find this stereotype of myself as a kind of self-fulfilling prophecy.

Social media sites are great avenues for people to express their opinion, brag on their children, and share personal triumphs or challenges. But they are not great avenues for me. Or so I thought, until it was suggested I use social media as a means to reach more people in a professional capacity, to diversify my department’s public awareness portfolio so to speak. Historically, we’ve gone the traditional route to share information: press releases about road closures, public meetings about proposed projects, construction updates on our website, etc.

Call me, e-mail me, even fax me and I’ll respond to your questions and comments, but tweet me? IM me? What? I hope I am not alone in my “old school” thinking when it comes to public correspondence. I hope there are some of you willing to join me in forging a new path on the information superhighway of web 2.0. It’ll be less scary for all if we band together when putting ourselves, our coworkers, and our department on Facebook and Twitter for all to see, criticize, and crush.

No one likes public humiliation. Professionals like us who just “do our job” don’t even like public accolades, so how can we possibly consider sharing the bad news of a road is closed, the bridge is out, or snow is coming directly with the public @ PeoriaCoHwyDept? (That’s a handle for those who don’t know, and it’s probably too long for those who do know.) We’re just asking for trouble.

But then I dug a little deeper. People tend towards distrust when they do not fully understand. Maybe they believe we’re repairing Main Street because the mayor lives on Main. Or Mercedes Drive is the first road plowed because it leads to the country club. But if

“"It is not about being best in the world, it is about being best for the world."”

– Dewitt Jones, National Geographic photographer
we can explain to them that county government does not have a mayor—therefore, his residence didn’t factor into our road maintenance schedule—or if we can remind them that no one is driving to the golf course when it’s snowing, then they have a better understanding and a foundation of trust begins to form.

And social media is the most direct route to a better understanding. If your department is having issues with reduced revenues due to declining Motor Fuel Tax (MFT), tell people. But be sure to explain what MFT is because they may not know. If you have issues with a subcontractor and your construction project is delayed, tell people. They may not know you use subcontractors. If your employee wins the Civil Engineer of the Year Award, tell people. They may not know what a civil engineer does.

All these things we take for granted—funding challenges, construction delays, award nominations—the general public does not have general knowledge of because they do not live and breathe it like you and I. But if we set aside our fears of repercussion and take the time to tell people how and why we do the things we do, then they understand. My preliminary investigation into this personally uncharted territory of social media as a professional means to communicate with our motoring public has led me to discover that people simply appreciate knowing.

And who can fault them for that? Certainly not us public works professionals, who know how roads are made and how we could make them better. I believe we can make the less traveled road of social media the best avenue for reaching our citizens with the information they need so we can develop the trust we both desire.

To that end, I will be content in taking baby steps toward a more robust pallet of communication methods, keeping in mind that I might have to learn new “languages,” of sorts, to be effective with others who I deal with.

Amy McLaren can be reached at (309) 697-6400 or amclaren@peoriacounty.org.

Special Reminder: Please make sure you update your personal membership profile, including answering the optional questions 13-16 (see page 10, November 2013 Reporter). Please refer to APWA’s 2013 Diversity Resource Guide 2nd Edition and the Diversity Toolbox for more ideas in celebrating the diversity in your chapter.
Recognize Your Leaders

Nominator’s Name: Josh Wheeler, Benton County Public Works Director

Candidate’s Name: Jim Burke

Candidate’s Title: Fleet Manager

Candidate’s Agency/Organization: Benton County Public Works

Candidate’s City/State: Benton County Public Works

How long has the candidate been involved in the public works industry? 28 years

How long has the candidate worked in their current position? Started as a mechanic in 1986. That fall, Jim was promoted to Lead Worker. In August of 1988, Jim was promoted to his current position of Fleet Manager.

How was the candidate’s leadership ideas/actions brought to the forefront?
In 1990, Jim Blair, the Public Works Director at that time, became aware of economic struggles at a small school district, the Alsea School District. They were having problems with getting their buses repaired in a timely and cost-effective manner. Mr. Blair asked Jim Burke if we could take on that account, and thus began the future of Benton County Fleet as a regional maintenance facility for the Willamette Valley. As was common, the various governmental entities met on a quarterly basis and learned of this new account at Benton County. Oregon Department of Transportation (ODOT) asked if the County would be willing to do their work for the local district. Jim Burke realized at that time that the County could be a regional maintenance facility for the central Valley. At the time, agencies in Benton County were looked at, but over the years, the program has expanded to agencies in Polk and Linn County. In 1992, Corvallis Fire came on board which accelerated the program as other Fire Departments saw the advantage of allowing Benton County to maintain their fleet. Jim’s background as a volunteer firefighter became the highlight of Benton County Fleet as he understood the needs of fire departments.

When ODOT came on board, they asked if they could fuel at the County site. This started what has now become Benton County Public Works as a regional fueling site for all of Benton County and a few other programs outside of the County such as Linn-Benton College.

Today, Benton County Fleet Department serves 48 customers in the three-county region which includes Oregon State University, Corvallis Fire, Albany Fire, and Lebanon Fire, just to name a few.

The partnerships formed by the Benton County Fleet Department jumpstarted a regional effort by all of Benton County. Today, the Road Crew provides Chip Seal services to other agencies as well as Striping Services (all the way to Seaside, OR). Shared mowing has occurred with Lane County as well as internally with our Parks and Natural Resources Department. The Health Department now has facilities in Linn County, the furthest being all the way to Sweet Home, OR.
Who did the candidate work with to help bring this idea/action forward?
See above description. Started with Public Works Director Jim Blair and Alsea School District.

Tim Smith, foreman at the time, and Dave MacKenzie, Senior Mechanic at the time, really supported Jim in this effort. After Tim left in 1996, Dave MacKenzie, now Foreman, ended up being a staunch supporter of Jim’s commitment to the customers and bringing the mechanic staff along with him, with all staff believing in the concept and making Benton County a regional facility—the place to get done what was needed done with the best service possible.

The Board of Commissioners has been instrumental in supporting this endeavor throughout the years.

Did the candidate experience any challenges when trying to implement this?
In 1992, as the program was quickly expanding, the mechanics were concerned about their compensation. They felt they were being asked to do more without compensation. There were four mechanics at the time, and Jim asked the Public Works Director if they could hire an additional mechanic due to the increasing workload. To be able to justify additional pay, Jim instituted the requirement of ASE (Automotive Service Excellence) Certification which allowed the mechanics to receive additional wages.

In 1994-1995, space started to become an issue. The work bays were full. Work had to be done outside. There was just not enough room for all the repairs the County was now responsible for. Sometimes they had to tow a vehicle that was waiting on parts out of the garage just to make room for another repair. To solve this issue, the Board of Commissioners recognized the Fleet Department as a team and asked what they could do for the employees. The employees asked for a new lathe and more space. At the time, the building housed the Road Department and the Fleet Department. The Commissioners had a new building built that would house Road Department staff and allow the Fleet Department to take over the old area they used. A few years later, an addition was made to the garage which was built specifically to work on large fire engines, two at a time.

A big challenge in operating a government regional facility is that we cannot profit from the services. The shop rate must remain low to compete with private business, but with rising wages and overhead costs, the need to raise rates presents a challenge for the future.

One challenge we have today, as our staff ages and technology changes annually, is implementing a succession plan where highly educated and experienced people will transfer from college, technical school, or private industry to keep Benton County Fleet as a regional leader in the industry. Our partnerships with Linn-Benton College and Oregon State University will allow us to make this a reality.

Are there steps/processes that, when looking back, the candidate could have done differently to make this idea/action even more successful (lessons learned)?
Ideas have been proposed over the years such as being a full regional shop for places like Corvallis Public Works and Albany Public Works. Those ideas never fully came to fruition, but if we had to do it over again, we would strengthen those relationships early on rather than later which would allow those communities to not be as vested in their own departments and instead save money by using Benton County as a regional facility.

The County also looked at partnering with Oregon State University; however, the logistics for partnering with a state agency were too complex.

Contributed by Josh Wheeler, Benton County Director of Public Works, Office: 541-766-6010, Fax: 541-766-6891, Cell: 541-740-7704, Joshua.wheeler@co.benton.or.us
The City of Santa Cruz Public Works Department has launched a blog that profiles 37 of its employees titled “The Many Faces of Public Works.” Individuals who help to keep the city in working order are depicted through photography and narrative. Santa Cruz residents who visit the blog may enter a weekly contest to win prizes donated by local Green Certified Businesses. Visit http://themanyfacesofpublicworks.blogspot.com.

“The Many Faces of Public Works” includes narrative from Resource Recovery Worker Daniel Ambrose who enjoys operating the street sweeper. “The best part of this work is my shift from 4:30 a.m. until 12:30 p.m.,” he said. “I get to experience ‘green and free’ Santa Cruz as it wakes up five days a week.”

In her profile, Tina Larsen, Parking Facilities Maintenance Assistant, states, “Off of the job, I am a seamstress and limit my work to performance costumes. My hobbies include wilderness camping and four-wheeling. I am also an avid target shooter. I am very concerned about our local homeless youth and have served as a licensed foster parent.”

Street Maintenance Crew Leader Jess Davila’s post says, “I was drawn to public works 34 years ago because I wanted to work for the town I grew up in and enjoyed outdoor construction work. There’s always a full plate maintaining the streets and sidewalks and storm drains for the citizens of Santa Cruz. The challenge is completing jobs with minimal traffic delays and maximum safety for pedestrians and cyclists.”

The employee profiles also include Fred Stevens, Lead Mechanical Technician at the Wastewater Treatment Facility; Agnes Topp, Environmental Projects Analyst; and Laura Shaw, Wharf Parking Attendant. Photography is by Kevin Johnson, a photojournalist, documentary videographer and multimedia journalist.

Prizes for the weekly contest have been donated by six Certified Green Businesses: Kaiser Permanente Arena, home of the Santa Cruz Warriors; Santa Cruz Dream Inn; Olitas Cantina & Grille; Venture Quest Kayaking; The Crow’s Nest; and L’Atelier Salon and Day Spa. The first winner received two NBA D-League Showcase passes providing seats to 16 tournament games at the 11th annual event in Santa Cruz.

For more information, please visit the Public Works Department’s website, www.cityofsantacruz.com/publicworks, or Facebook page, www.facebook.com/cityofsantacruzpublicworks.

Janice Bisgaard can be reached at (831) 420-5166 or JBisgaard@cityofsantacruz.com.
Community Begins Here
May 17-23, 2015

Join Us in Celebration!
National Public Works Week

We're Celebrating Public Works!

There would be no community without the quality of life public works provides. There would be no community to police and protect, no public to lead or represent. Public works allows the world as we know it to be - community begins here.

Join us in celebrating the tens of thousands of women and men in North America who provide and maintain the infrastructure and services collectively known as public works.

Visit our website at apwa.net/npww for great ideas on how to celebrate National Public Works Week in your community this year. Share your experiences on social media using the hashtag #npww.

If you have any questions about NPWW, contact Jon Dilley at jdilley@apwa.net or call 816-595-5251.
Community Begins Here

This year's national public works week poster is now available!
This year's theme “Community Begins Here” speaks to the essential nature of Public Works services in support of everyday quality of life. There would be no community to police and protect, no public to lead or represent. Public works allows the world as we know it to be.

About this year's artist:
Christiane Beauregard is an award winning illustrator and designer. Her creative motivation has been to expand her capacity to bring virtual images to life. From delicate emotion to complex technological data, she is always striving to express her passions through her digital art.

P.W. Paws Sampler
• P.W. Paws Plush
• P.W. Paws Pencil
• P.W. Paws Balloon
• P.W. Paws Comic Book
• P.W. Paws Coloring Book
• P.W. Paws Pencil Pouch
• P.W. Paws Stickers (one sheet)
PB.A347 – Member $12 /Non $17

P.W. Paws Pencil Pouch
Size: 9 1/4" x 6"  
PB.A832 – Member $1.25 /Non $2.25

P.W. Paws Pencils
PB.A324 (Package of 12)
Member – $3 /Non $5
PB.A402 (Package of 100)
Member – $20 /Non $25
PB.A403 (Package of 250)
Member – $45 /Non $50
Not sold separately.

APWA Earth Squeeze
PB.A1206  
Member – $1.25 /Non $2.25
(Logo not actual size)

P.W. Paws Construction Hat
PB.A903  
Member $2.25 /Non $3.25

P.W. Paws Construction T-shirt
PB.A900 (Child size 6-8)
PB.A901 (Youth size 10-12)
PB.A902 (Youth size 14-16)
Member – $12 /Non $17

P.W. Paws Stickers
PB.STIC1 (30 per sheet)
Member – $1.25 /Non $2.25

P.W. Paws Rain of Terror
A storm is brewing—and evil is rising. Something dark and twisted is growing beneath the streets. With the coming storm, this unseen menace threatens to flood the city. Everything will be washed away. Luckily one — tiger stands in its way—P.W. Paws! Join P.W. Paws as he faces an enemy without fear or mercy—a creature so powerful that a hero can’t vanquish it alone. Fortunately for us all, P.W. Paws never works alone.

P.W. Paws Plush
PB.A313 – Member $10 /Non $15

P.W. Paws Balloons
PB.A314 (One dozen)  
Member – $18 /Non $23
With Plastic Lid: PB.A807 – Member $20/Non $30
PB.A806 – Member $15 /Non $20

P.W. Paws Bubble Head
PB.A400 – Member $12 /Non $17

P.W. Paws Children’s T-shirt
PW.TEE2 (Child size 2-4)
PW.TEE6 (Child size 6-8)
PW.TEE10 (Youth size 10-12)
PW.TEE14 (Youth size 14-16)
Member – $12 /Non $17

P.W. Paws Coloring Book
PB.PAWS51  
Member – $1.25 /Non $2.25

Playtime with P.W. Paws: A Coloring and Activity Book
PB.A1101 – Member $1.25 /Non $2.25

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PB.A1325 – Member $10/Non $15

APWA Hat
PB.AHAT – Member $15/Non $17

APWA Navy Cap
PB.A623 – Member $10/Non $15

APWA Visor
PB.A624 – Member $8/Non $13

The Heart of Every City T-shirt (Heather)
PB.A910 (Adult Small)
PB.A911 (Adult Medium)
PB.A912 (Adult Large)
PB.A913 (Adult X-Large)
PB.A914 (Adult XX-Large)
PB.A915 (Adult XXX-Large)

The Heart of Every City T-shirt (White)
PB.A856 (Adult Small)
PB.A857 (Adult Medium)
PB.A858 (Adult Large)
PB.A859 (Adult X-Large)
PB.A860 (Adult XX-Large)
PB.A861 (Adult XXX-Large)

Always There T-shirt
PB.A600 (Adult Small)
PB.A601 (Adult Medium)
PB.A602 (Adult Large)
PB.A603 (Adult X-Large)
PB.A604 (Adult XX-Large)
PB.A605 (Adult XXX-Large)

APWA T-shirt
PB.A811 (Adult Small)
PB.A417 (Adult Medium)
PB.A304 (Adult Large)
PB.A305 (Adult X-Large)
PB.A306 (Adult XX-Large)
PB.A307 (Adult XXX-Large)

Property of APWA Public Works T-Shirt
PB.A1307 (Adult Small)
PB.A1308 (Adult Medium)
PB.A1309 (Adult Large)
PB.A1310 (Adult X-Large)
PB.A1311 (Adult XX-Large)
PB.A1312 (Adult XXX-Large)

**T-SHIRT PRICING BY SIZE**

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<th>Non-Member Price</th>
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APWA Glacier Bottle
PB.A825 – Member $9/Non $14

APWA Multi-Function Pocket Knife
PB.A317 – Member $10/Non $15

APWA Car Sticker
Clear cling sticker with white APWA logo. (Shown here on a navy background for purpose of display)
PB.A851 – Member $5.50/Non $1
PB.A852 (Package of 12)
Member $5/Non $10

“I ♡ Public Works” Bumper Sticker
PB.A320 – Member $1.50/Non $2.50

APWA Blinking Traffic Cone
APWA blinking orange traffic cone with white stripe and silver base.
PB.A114 – Member $3.50/Non $5.50

APWA Flashlight Keychain
PB.A301 – Member $3/Non $5

APWA Padfolio
PB.A1300 – Member $12/Non $17

Acrylic Tumbler (16oz)
PB.A1112 – Member $9/Non $14

APWA Friction Travel Mug
PB.A1100 – Member $11/Non $16

Big Barrel Mug (16oz)
PB.A1110 – Member $8/Non $13

APWA Paper Coffee Cup
(Package of 50)
PB.A806 – Member $15/Non $20
With Plastic Lid: PB.A807 – Member $20/Non $30

APWA EcoCore Golf Balls
PB.A314 (One dozen) – Member $18/Non $23
Not sold separately.

APWA Golf Towel
PB.A316 – Member $5/Non $8

APWA Sports Bag
PB.A303 – Member $25/Non $35

APWA Briefpack
Size: 13” x 15” x 6”
PB.A622 – Member $15/Non $20

APWA Lunch Sack
Size: 9” x 6.5” x 6”
PB.A419 – Member $7/Non $12

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2015

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April 23
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May 4-8
CSM, CPII and CPFP Certification Exams (computer-based testing)

May 28
Public Works Leaders Talk About Traffic Incident Management

June 18
Best Practices for GPS Fleet Management Solutions

July 13-17
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August 30 –September 2
2015 Congress, Phoenix Convention Center, Phoenix, AZ

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CSM, CPII and CPFP Certification Exams (computer-based testing)

November 16-20
CSM, CPII and CPFP Certification Exams (computer-based testing)

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= Certification Exam
= Web-based training

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/
With snow on the ground and an Alberta Clipper’s sub-freezing temperatures outside my window, my mind wanders to a memory of a colorful chart on the wall of my high school chemistry classroom—the periodic table of elements—and the outlier boxes that introduced me to the “rare earth elements,” oddly named because they are for the most part fairly common in our planet’s rocks and soil. By most accounts there are seventeen of these elements and what is rare is finding enough of them in one place to support economical mining and refining operations. China, by far the low-cost producer, accounts for about 95 percent of the global supply. The supply matters because these rare earth elements have turned out to be really important in many electronics applications and in the very strong magnets used everywhere from tiny electric motors to stereo speakers to medical devices. According to one report, an Apple iPhone has in it eight rare earth elements, in its screen, speakers, and circuitry.

One particular rare earth element, samarium (number 62 on that chemistry wall chart), is used primarily in production of strong magnets that can withstand significantly higher temperatures than other kinds without losing their magnetic properties. But what has generated particular buzz lately is the odd properties of the chemical compound samarium hexaboride, six parts boron (think heat-resistant glass in cooking pots and laundry bleach) and one part samarium. The material is one of several electrical insulators that physicists began to study several decades ago because, contrary to what would normally be expected, they retain some conductivity when cooled to near absolute zero; researchers call them Kondo insulators.

At such low temperatures, the insulating ability of most insulating materials effectively becomes infinite—no electricity flows through. Trying to learn why Kondo insulators are different led some scientists to theorize that “topological insulators” might exist, materials that let electricity flow over their surface but not through. Now scientists at a number of universities have shown experimental results that samarium hexaboride may be a true topological insulator.

The “fly in the ointment” for samarium hexaboride’s contribution is the low temperatures needed to have it perform. Having found what they believe is one real topological insulator, however, scientists anticipate they may find others and then develop ways to put them to work. The excitement about the discovery comes from the thought that having topological insulators could open a new path to quantum computers and other futuristic electronics. Quantum computers, applying advanced physics principles to perform computation and data processing tasks with single atoms or electrons, could dramatically increase our computing power and greatly improve computer security. Their development is still in its infancy, of course, but the research could one day help control the threat that someone will hack into our increasingly sophisticated water supply or transportation control systems. For now, though, just stay cool.

Andrew Lemer, Ph.D., is currently a Senior Program Officer with the National Academy of Sciences of the United States, Washington, D.C. Member, APWA Engineering & Technology Committee.
Public works is unique in that many who end up here, did not start out with public works in mind much less a leadership role in the field. Whether you started your public works career in construction or environmental services, a common thread is the ongoing need to develop leaders with the specific skill set unique to our profession.

I am proud to have completed one of the first Public Works Institute’s four-part programs in the Arizona Chapter. Many of my leaders were called upon to deliver modules of the Institute’s curriculum. The specific relevance of this national program was not only a benefit; it was a boon to my own career. In addition to the invaluable lectures from respected local authorities, the program provided a unique opportunity to spend extended group time with my peers from around the state. These contacts became one of the most precious takeaways from the program and I have remained in contact exchanging data, collaborating on policies and procedures, and sometimes just benchmarking our service with that of others in the area.

As a leader, I have steered several emerging leaders to the Institute for training, utilizing the program as a resource to help me with the growth and development of my organization and succession planning. I recently made an internal promotion of a supervisor in the department. As you might guess, his résumé included the Public Works Institute. I appreciate the experience and insight he gained from the Institute and his participation in the American Public Works Association so when I was called upon to deliver a module to a program group, I could scarcely refuse. My module was on a topic near and dear to my heart: communication.

The leader’s role is to inspire and motivate a team toward the mission and vision of the organization through communication. That’s much more complicated than good grammar and eloquence in presentation. While those things are important, a good communicator must find a common ground on which to deliver her message to the selected audience. Even when there is a captive audience, those you pay to listen, communication is a
complicated beast that takes on life of its own. It can support or destroy your organization through its use.

“We have two ears and one mouth so that we can listen twice as much as we speak.”
– Epictetus

The best communicators are at least equal parts listener and speaker.

In a world of communications gone high-tech—text messages, e-mails, twitter and snapchat—it’s tempting to sit at a desk and deliver directives along with colorful illustrations about your organization’s goals and objectives. Depending upon the people in your organization, this may work some or even most of the time. Knowing when and under what circumstances is key because it is a fact that the most effective leaders have always been and will always be good communicators.

“To effectively communicate, we must realize that we are all different in the way we perceive the world and use this understanding as a guide to our communication with others.” – Anthony Robbins

As a leader, you must not only convey your message through communication, you must be effective in its delivery. This requires some knowledge of your audience and, ideally, a relationship with them. You begin to build this relationship and build upon it by communicating. You must build awareness of the individuals, their interest and role in your message, and then you can be most effective.

There are five essential “Be” rules of effective communication:

1. Be honest. Build trust in you and your organization by being a reliable source of information. Tell the truth, even when it is unpleasant because you can move past an incident of digression, but you cannot move past a general lack of trust. Integrity is key to your team’s security. Security is a requirement for people to take risks and, as we know, risks are required to find innovation. People will feel secure in taking the risks to be innovative where trust exists. When they do not trust you, they will secure themselves in the safest role and that is not where we find motivation and innovation.

To be persuasive we must be believable; to be believable we must be credible; to be credible, we must be truthful. – Edward R. Murrow

2. Be personal. John Maxwell said, “People don’t care how much you know until they know how much you care.” Even as their leader, you are engaged in a relationship with your team. Human beings are emotional and when you communicate to them that you care about them as a person, you touch them on a level that inspires loyalty and motivation. The personal aspect of this relationship may be uncomfortable for some leaders so it will take practice to find what you can do that is both sincere and comfortable. Whether it’s eye contact, a pat on the back, or just a handshake, haptic (nonverbal) communication is personal and cannot be accomplished in an e-mail or twitter blast.

3. Be available. When one of your team members asks, “Do you have a minute?” the answer is ALWAYS yes. If not this minute, soon. The best message you can send is, “Of course I have a minute for you.” In the best case, you do not wait for them to seek you. You will find them and ask what you can do for them. Time spent with your team is time spent developing the relationship that supports your mission as a leader.

4. Be quiet. Never underestimate the value of listening attentively. Not only will you gain understanding of the question or problem at hand, you will likely gain valuable insight to the person that will help you to reach him/her when you need to communicate your message. Knowing their values is insight into their motivational keys.

5. Be aware. Take note of the things you do and be ever mindful that your words, your body language, your appearance and even your silence can speak volumes for you. Are you conveying the message you want in all your communications? Self-awareness is vital to avoidance of sending unwanted messages.

Communication is the single most important aspect of leading a team. You can be the most skilled technician in your field but if you lack the communication skills to lead, direct and motivate your support team, you will be an ineffective leader.

“You can have brilliant ideas, but if you can’t get them across, your ideas won’t get you anywhere.” – Lee Iacocca

It is critical to be a perpetual student in the art of communication. As a leader, it is critical to engage in the continuous study of yourself, your words, the things you do and do not say in communicating to your team. It is vital that you stay informed, relevant and appropriate as a communicator and it is this insight, this skill, that will set you apart from the rest and earn you the distinction as a great leader.

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Fuel site modernization and automation

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Member, APWA Fleet Services Committee

In addition to overseeing vehicles and equipment, the City of Toronto’s Fleet Division is responsible for overseeing the City’s fueling infrastructure. This includes a number of City-owned sites that distribute thousands of litres of fuel per day for use in City vehicles and equipment.

The City is currently undergoing a multi-year fuel site improvement and consolidation initiative. This initiative reduces a number of smaller fuel sites that are nearing the end of their life by replacing them with larger capacity super-sites. Super-sites are strategically located and contain multiple pumps and fuel types, enabling them to serve a wider range of vehicles and equipment. The estimated completion date for all upgrades and replacements is 2017, with the City typically upgrading two or three sites per year.

Site upgrades include installing new above-ground tanks and state-of-the-art fuel management systems. Not only do these upgrades ensure compliance with current environmental standards and regulations, but they also provide an increase in management effectiveness through consolidation and modernization. Older fuel sites required daily manual fuel volume measurements and inspections, followed by volumetric charting and calculations which were recorded, inputted and emailed for central record keeping. In contrast, super-sites are equipped with real-time centralized automated controls that are able to identify tank volumes, including the amount of fuel dispensed or obtained. In addition, the controls provide live readings and thresholds for each tank which are used for ordering fuel, similar to a fuel gauge and low fuel light in a passenger vehicle. Sites are now equipped with an emergency standby generator to ensure the location remains operational in the event of a power outage.

These upgrades have considerably reduced the amount of staff time and effort that was previously required for the numerous daily manual tasks necessary to maintain a fuel site. As a result of the automated systems and centralized oversight, data accuracy and response time for fuel management operations have significantly improved.

In 2013, Fleet Services introduced a pilot project to further automate the fueling process at each of these sites. Wireless Radio Frequency Identification (RFID) technology was used to capture vehicle usage and fuel consumption data. Initially, fifty on-road vehicles ranging from small passenger cars to large garbage trucks were equipped with a wireless microprocessor known as a Vehicle Interface Box (VIB). The VIB connects to a secure transponder ring near the vehicle’s fuel port. A corresponding inlet ring was installed on the fuel pump nozzle at the pilot sites for proximity control. Pumps are
activated when the transponder ring on the vehicle’s fuel port is within approximately six inches of the inlet ring on the fuel pump. The pilot was later expanded to include more sites along with a wider range of vehicles and off-road equipment.

The fueling process for VIB equipped vehicles is fast and simple. The operator drives to the fuel island, picks up the nozzle, fuels the vehicle and returns the nozzle to the pump when finished. No other steps are required. Behind the scene, the system is fully integrated through a fuel module application on the Fleet Management Information System. This enables real-time authentication and secure fuel management. Statistics including asset identification, fuel type, dispensing limit, time/date and location are collected seamlessly during the fueling process. Vehicle- or equipment-operating data such as the odometer and/or engine hour readings are also captured. As an added option, additional diagnostic data directly from the engine computer is available on many newer vehicles.

The simplicity in the fueling process reduces the time operators spend at the fuel pump. Previously, in order to fuel a vehicle the operator had to insert the vehicle’s fuel card into a pump activation module located in an operator shack at each site. They then were required to correctly key in the odometer reading before fuel was dispensed. If the reading was incorrectly keyed or the vehicle’s fuel capacity did not match the system specified range, fueling was stopped or the operator was locked out. A phone call was required to have the reading corrected or the system overridden in order for fuel to be dispensed. In addition, vehicle capacity threshold control was only provided in ranges as opposed to exact quantities, so some variance existed. Having up-to-date reliable data will result in improvements on vehicle preventive maintenance scheduling and vehicle life-cycle management.

The VIB pilot project has been successful. It has proven to be a cost-effective method to capture asset data while ensuring secure and accurate fuel management when compared with other solutions, such as those that require ongoing monthly charges and/or human effort to input odometer readings and review and correct entry and reporting errors.

Due to the success of the pilot and the seamless data transfer that further reduces staff time and involvement, Fleet Services will now be using the new module on all fuel pumps/islands as upgrades continue. The illustrated 125,000 litre fuel site, which is nearing completion, dispenses gasoline and clear diesel for on-road vehicles as well as dyed-diesel for off-road equipment.

As a result of the improvement in data accuracy, fleet and fuel management integrity and security, Fleet Services will be adding the VIB modules to all new vehicles as part of the ongoing vehicle and equipment replacement process. Additional efforts will be put forth in 2015 and 2016 to add VIBs to existing vehicles and equipment.

The new fuel management system in itself is an improvement, even without the VIB component. Previous systems were unable to provide the same concise data and fleet management capability.

The resultant combination of the modernized fuel sites, automated processes and real-time data has produced positive results and financial savings in both fleet and fuel management for the City of Toronto.

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The 2013-14 winter was unquestionably severe. Across the country, the “Polar Vortex” broke records for both total snowfall and low temperatures in many communities. The impacts of the harsh winter on road conditions and budgets have been well documented. In fact, the high demand for salt to keep roads and sidewalks clear caused prices to skyrocket in many local markets (Coyne 2015). As a result of the unanticipated frequency and duration of snow removal and ice treatment, many cities exceeded their winter maintenance budgets which made news headlines across the country (Murray 2015).

While much attention has been dedicated to the budgetary overruns and unexpected costs associated with the “Polar Vortex,” the damage of the severe weather and snow management practices on trees and other plants have been less publicized. While some tree and shrub damage has been attributed to cold temperatures alone, communities are now realizing the negative impacts of using large quantities of salt and other snow removal practices on plants.

Following the 2013-14 winter, both Clayton, Mo., and Columbus, Ohio, experienced significant tree losses. In Clayton especially, a large portion of these losses have been attributed to uses of large quantities of salt (sodium chloride or NaCl) to melt snow and ice within the business corridor.

Considering that many communities across the country are looking at their trees as public assets, practices such as using different deicing chemicals, locating piles of snow appropriately, and employing post-winter damage mitigation strategies may help cities protect their investment in trees.

“In Columbus, we had a really bad winter. It was not typical. We had a lot of London plane dying, because they don’t take extreme cold that well,” said Joe Sulak, at the time the City Forester for Columbus, Ohio and now with Grand Rapids, Michigan. “I saw a lot of salt damage on elms—mostly on newly planted trees. I’d say approximately two percent of newly planted trees were affected citywide by salt. But in some corridors it was much as sixty-five percent.”

Salt can cause significant damage to plants, especially in high concentrations. In many winters, cities use salt sparingly. In more severe winters—like last year—high usage of salt led to considerable and irreversible plant injury.

Clayton, Mo., is an example of a city learning the costs of high concentrations of salt on tree health. Clayton has a vibrant business district. To help enhance and protect the character of their community, Clayton established a streetscape program that requires the inclusion of trees as well as other features throughout the business district.

“Typically, we put our street trees on 22-foot spacing. We’ll put two trees followed by a streetlight. We have a very tight tree canopy in our business district,” said Gary Scheipeter, Superintendent of Public Works.

Clayton also requires business owners to clear their adjacent sidewalks of all snow and ice. In the business district, where the streetscape consists mostly of pavement, a mixture of snow and salt was repeatedly piled on the small four-foot-square areas where trees are planted. As the long winter dragged on, heavy concentrations of salt accumulated in the soil and only growing space the trees had.

Protecting public tree health with a “low sodium diet”

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Salt can cause significant damage to trees and other plants. In this attractive business district, severe salt injury killed these trees. (Credit: Rex Bastian)
“After the [2013-14] winter, what we saw was extremely typical for salt damage, once trees pushed buds out in spring a lot just instantly turned brown and shriveled up,” said Justin Whipple, Clayton’s City Forester. “In total, we lost 117 trees, 25 more were severely affected.”

Scheipeter added that the losses “represent about 45% loss of trees in our downtown core. We lost one whole block of gorgeous ‘Frontier’ elms, about six inches in diameter.”

Following winter, Clayton replaced 117 of the trees. Normally, the City plants 125 trees each year. To complete the extra work, the City was forced to contract tree planting for the first time in recent history. Not including removal costs, the replacement of these trees totaled $35,000 or an increase of 15% over Clayton’s standard forestry budget.

Citizen safety is a top priority for every community and it is not realistic, nor recommended to stop deicing altogether. Largely, the tree damage in both Clayton and Columbus was limited to those areas where salt is heavily applied—primarily business districts. While the winter of 2013-14 was extreme, it brings to light the need for public works managers to understand the interactions between trees and salt/deicing chemicals, and how a few simple best practices might limit damage even in normal or average winter seasons.

Where realistic, the simplest way to limit salt damage is to avoid using it as much as possible. Prudent snow removal, or pre-wetting prior to application, can reduce the amount of salt needed. While more expensive, alternative deicing chemicals such as calcium magnesium acetate or potassium chloride are not as harmful to plants (Beckerman and Lerner 2009). However, this investment is often justified when the expense of removing and replacing trees and other vegetation is included in cost-benefit analyses.

In Clayton, mounding of salt-laden snow on trees near the sidewalk led to the loss of the business district trees. In addition to salt, snow from urban sites often includes contaminants produced by vehicles, which can severely damage plants. Simply locating piles of snow on pavement, away from sensitive vegetation, or relocating snow and ice entirely may reduce damage to trees and other plants.
"We touched base with a number of contract companies [that do snow removal] expressing concerns about stacking snow around the base of the trees” said Scheipeter. “We’re discussing ways that when we plow, [the contractors] could push excess snow into the streets so that it could be removed.”

Regardless of how managers choose to mitigate the problems of salt damage, it remains a fact that cities across the country are increasingly investing in trees. Numerous studies have quantified the benefits and values provided by community trees. Initiatives such as Million Trees New York, the Mile High Million (Denver), and Million Trees Los Angeles demonstrate the growing priority that communities have placed on their urban forests.

With such increasing attention and resources dedicated to the urban forest, it makes sense to understand the effects of winter management practices on trees. Though trees are dormant in winter, they are still fragile, and often face many other significant challenges in the urban environment. For communities that have decided that a vibrant urban forest is a desirable objective, small changes to winter management practices may be one way to protect city’s return on this growing investment.

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Too much salt can kill!
When rock salt (chemically sodium chloride or NaCl) contacts ice or water it separates into sodium and chloride ions. These ions are taken up by plants much the same way as essential nutrients. Chloride tends to concentrate near shoot tips and causes bud death or leaf scorch (Beckerman and Lerner 2009). These effects are not often noticed until the early spring, when trees begin shoot elongation and growth.

Sodium ions are treated by plants similarly to essential nutrients such as potassium and magnesium. As a plant accumulates sodium in its tissue, it lowers the capacity to gather other nutrients. Lacking these essential nutrients, plants can have difficulty producing sufficient chlorophyll, limiting their ability to produce carbohydrates (Beckerman and Lerner 2009). This condition is known as chlorosis and is exhibited in leaf discoloration, disfigurement, or necrosis (tissue death).

High concentrations of salt can have significant effects on the osmosis mechanism used by a plant to capture water through its root system (Beckerman and Lerner 2009). Rather than moving into the tree, water potential can be reversed. Trees can actually lose water to the surrounding soil—causing desiccation and even death of plant tissue.

https://www.extension.purdue.edu/extmedia/id/id-412-w.pdf
Building a sustainable maintenance facility

Edward C. Holmes
Public Services Manager
State College Borough, Pennsylvania

“This facility will serve the needs of the Borough of State College for the next 50 years.”
No one knew just how accurate that statement would be when it was made prior to Borough Council approving construction of a new public works maintenance facility in 1961.

In the ensuing years, the Borough grew and the services provided by the Public Works Department grew right along with it. By the turn of the millennium, the truck garages were full and the department was parking about $2 million in rolling stock in driveways and beside buildings every night.

Residential developments built upstream from the facility and a sediment-filled neighborhood sinkhole resulted in too frequent flooding events during or before which staff scrambled to move equipment to high ground.

A concrete plant closed on an adjacent property, opening the door to a solution. The Borough acquired the property, which also happened to be in a neighboring township. The purchase set the stage for the construction of a new maintenance facility on the highest ground of the combined parcels. A qualifications-based selection process yielded a local design team to prepare the land development plan. Design charrettes with public works crews and neighborhood meetings were staged to seek input on the project from the people using the facility and those living with it in their backyards. The land development plan team envisioned the campus, scaled the buildings, and conceptualized the stormwater management plan. The team was very intentional about minimizing the impact of the facility on surrounding properties.

As environmentally conscious construction came to the forefront, Borough Council adopted a policy to build all new municipal buildings to qualify for LEED Silver certification at a minimum. Council appointed a citizens advisory committee to act as liaison to staff and the design team. Most members were Borough residents, predominantly from the neighborhoods closest to the facility. These citizens brought expertise to the advisory committee in such areas as construction, energy engineering.
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and acoustics. Council also recognized the impact the new facility would have on the local elementary school, which is in the Borough and a half-block from the facility, and residential neighborhoods in Ferguson Township, which borders the site. With one appointment, Council gave voice to both concerns by appointing the elementary school principal who lived a stone’s throw from the project site.

The design professional for the construction project was selected following a second qualifications-based evaluation process. Buchart Horn’s architects and engineers set about the business of designing the new facility to meet the environmental and operational needs of the department. This new facility would be built around an existing building with administrative offices, the mechanics garage and crew locker rooms. A significant phasing challenge awaited the Borough and the contractor, all owing to the fact that street and sewer maintenance, sanitation and tree crews had to operate from the old facility while the new one was being built around it.

The design professional and advisory committee began evaluating major design themes. Winter weather response means loaders and trucks with backup alarms at all hours of the day and night. The salt storage and cold truck storage buildings would be built along the property line to allow their mass to block most of the noise from onsite activities. General one-way traffic flow within the facility minimizes backing up, further limiting the noise of backup alarms.

All buildings would have LED lights and occupancy sensors to minimize electricity consumption. Site lighting includes both photocells and occupancy sensors. Minimal light levels will be maintained when there is no activity, but will increase instantly to maximum lighting when motion is detected.

Equipment storage buildings would have large roof surfaces, ideal for rainwater harvesting. Two 20,000-square-foot storage buildings would be built, one heated and one not, with their roof lines sloping toward each other. A 20,000-gallon rainwater collection tank would be buried between the buildings. The Borough will use this water to fill a sewer jetter truck, street sweepers, and large pressure washer tanks. The water is also piped to a holding area where trees, shrubs and flowers are staged in the spring planting season.
A new truck wash facility would include a canopy between the truck wash and the existing fuel island. The new canopy was designed with space for a CNG fueling island should the Borough’s fleet of CNG-powered vehicles expand to the point that onsite compression makes sense. The drive-through truck wash design includes undercarriage wash and customized wash cycles for each vehicle type. Wash-water reclamation equipment will minimize the use of freshwater in the washing of vehicles and equipment.

The stormwater management plan features a detention sump to contain runoff from most rainfall events, with a detention pond the size of a soccer field for the largest storm runoff events. The field may be used by the elementary school and by the regional parks and recreation department.

Employee parking will double as public parking for parks and recreation activities which will generally occur during non-work hours. In addition, parking is made available in the staff lot for employees of the elementary school when their onsite parking is at full capacity.

The design professional worked with the advisory committee and staff to scope the LEED points within reach of the project. The only new occupied structure in the project was too small to qualify for LEED certification, but the “LEED Campus” concept had been born. While LEED Silver was the initial goal, the committee and architect determined that LEED Gold was within reach. In the final analysis, with the expectation that tens of thousands of dollars would be added to the cost of the project to meet the LEED requirements, Council accepted the recommendation of the advisory committee to not pursue LEED certification.

Bids were opened in the fall of 2013 followed by groundbreaking in January 2014. The staging was every bit as challenging as expected. The excellent working relationship between the Borough and general contractor Poole Anderson kept things moving forward in a positive vein. As the construction project concluded in February 2015, public works crews used available time to “move in” to the new buildings. Already one wonders how crews managed in the leaky, flood prone, way-too-crammed buildings that just barely outlived that prophetic statement made to Council in 1961.

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The dust has settled, the engineers have put away their slide rules, and the architect has filed the paint swatch colors for the newly remodeled/repurposed historic building. Now the real fun and work begins—maintenance of what was created by others in some cases over two hundred years ago and repurposed in your last budget cycle.

Let’s take a look at how this may affect you, your staff, and those who inhabit the building as the end user. Small items that were not found when the punch list was completed become your problem, along with a few big ones that were hidden. You then get to play hide and seek to find the root cause of the issues. An example of this would be low water pressure to the second floor restrooms. It seems to have plenty of volume and pressure to fill the ultra-low water flush toilet, and seems that the new low-flow faucet has plenty of water, but when the garden hose was hooked up to complete a maintenance task on the second floor it runs a steady stream for all of a minute. From there, the water all but disappears, and there is no pressure. As you initiate your search in all of the dark, confused, compromised, and confined spaces you find no issue with the newly-installed water lines. As you work the problem from end to source you determine that the water line into the building has an issue. This is where the Facility Manager begins to ask some important questions. Was this system evaluated? Was the Water Department involved in flow testing this before the new concrete floor was placed? All too often these critical items are overlooked. They do, however, become a very major issue as you move forth to replace or repair. This may sound very familiar to some and a “duh” moment to others, but it does happen.

As we begin to work out all of the kinks and twists that this old girl has up her sleeve, you find other issues, the ones that come back to haunt and create sleepless nights for a Facility Manager. The paint is beginning to boil in very specific areas of the building. We all know what that means. Moisture has found a way to compromise the very existence of this historic building. But how could this happen? The building with which I have had recent experience has been around for over a hundred years. It seems to come down to modern intervention. The brick design of this structure, as with a lot of buildings of its era, shares common wall construction with its neighbors. At this point one may think compromised walls. No, once again the building has been around for a long time and upon evaluation to repurpose it, all that was detected was some tuck point areas that needed repair and all would be fine. This is where tools such as thermal cameras, moisture detecting tools, and small probe tools are found to be indispensable. What happened in the short span of time from repurpose to now? Plaster was added to the walls of the building. This caused any trapped moisture within the wall system a very limited area for it to escape. In the case of this building it was found that moisture was wicking up from below grade and through the walls themselves. No issues were found with adjoining walls, just front and rear of the building and a center support footing midway through the structure. I won’t go into the obvious discussion about proper backfill, caulking, or vapor barrier, but I will state these were all factors in the root problem.

We all know that with the building being occupied and no other place to relocate the affected staff, you now have a dilemma on your hands. How do we correct this issue without shutting down the building? Will this issue become more problematic if not addressed correctly? What changes need to be made that won’t
affect the building’s historic value? Will any of this jeopardize meeting all the requirements to remain listed as a historic landmark? These are all questions that will have to be sorted through, with decisions needing to be made based upon the findings with relevance to historic preservation. I can say that in this case, the problem will never be truly corrected. Unfortunately, recurring maintenance will have to be the solution to many of the issues. There are many factors that will impact the complete repair, monetary expense and relocation space for affected staff. Another area that compounded these problems was with the HVAC system. It was determined that the diffusers were improperly sized to allow for adequate air flow and dehumidification of the building. With the system already in place, altering it was a next-to-impossible task with relation to maintaining the aesthetics of the building’s interior—another “slap in the face.”

As we redesign and repurpose these types of structures, maintenance needs to be part of the equation. This viewpoint is from one of those who is typically left “holding the bag” and having to repair these types of buildings to maintain their integrity for now and well into the future. Items that may not be in some folks’ “cross hairs” are very much in the “bull’s-eye” of those of us that have to maintain them. It is imperative for success that key maintenance staff should be included in every aspect of this process including purchasing, planning and punch list completion. These folks are the ones that look at the building from a maintenance perspective and ask the questions that far too often are overlooked in the planning process. Some of the questions that seem to be a common theme are “was the water line tested?”, “has the sewer into the building been evaluated?” and “has it had a camera run down the line and a report given as to deficiencies found by a Certified Inspector?” These are very important items to a Facility Manager, as they become the problems inherited once the project is completed. From a logical point of view, if a project isn’t designed with overall maintenance in mind, small items that make a huge difference will eventually come into play. In closing, the issue really boils down to similar problems in many other processes—a lack of communication. Getting the right people involved and engaged in the process will typically lead to enhanced levels of success.

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very city plants trees; but how do you choose the types of trees that your crews plant? Would your answer be any of these?

1. We have a “Top 10” species list we choose from every year.
2. I select whatever trees are on sale at the nursery.
3. We plant the same kinds of trees because it’s easier to maintain them.
4. We plant the mayor’s favorite trees.

If your answer is any of the above, then you are taking a big risk with your future forest and are likely wasting public funds.

History has shown us the perils of planting too many trees of the same species. In the 1920s Dutch elm disease all but wiped out the popular American elm that graced city streets and parks. Currently the emerald ash borer (EAB) is killing the even more popular ash species that is a favorite go-to tree for streets, parks, cemeteries, commercial areas, and residential properties. Planting too many trees of the same species (a monoculture) is a disaster waiting to happen. But another wrong practice is not selecting trees that are best suited for the planting site. Some trees won’t grow in compacted soils; some need large rowing areas above and below ground; some need high levels of nutrients. If you plant the wrong tree in the wrong place, you are again setting your community forest up for failure and wasting tax dollars.

So, how do you make the right tree species selection when you have so many to choose from and yet so many possible site constraints?

The New York City Parks Department developed a simple and effective system to help them select the right tree for the right place. This system works well for this city that plants over 25,000 trees annually. But, it can also work for your city whether you plant 2,500 or 250 trees a year.

Background
The MillionTreesNYC initiative was catalyzed by research that shows on average, New York City street trees currently return $5.60 to the community for every $1 spent on management.¹ In the course of fulfilling the mission of MillionTreesNYC, NYC Parks Department foresters are tasked with designing planting spaces and selecting tree species for each site, then overseeing construction and community engagement.

Two factors that affect plant selection in NYC: first, to guarantee biodiversity, we use over 250 different tree species, cultivars, and selections grown under contract by tree nurseries in the region; second, the planting sites that we survey have varying environmental constraints.

Selection can be a simple task on a tree-by-tree basis, but this is not efficient when it comes to making thousands of selections per season. We needed a decision-making protocol to ensure consistency and accuracy throughout the urban forestry program, while considering the reality of our foresters’ time constraints. We also wanted to optimize the net benefits of our tree plantings by systematically maximizing each planting site’s potential.

Developing a classification system for street tree planting sites
Our first task was to develop a classification system to distinguish the different street tree planting conditions we come across. Each site is its own habitat or biotope (a subsection of a biome) for a tree. We aimed to define the various environmental conditions that would set one street tree biotope apart from another.

This was a difficult task given the diverse landscapes of New York City. We had to choose the most significant criteria influencing a forester’s selection decision. If we split hairs, we could have hundreds of different biotopes, but such a specific classification system wouldn’t be very helpful to anyone in the field. But by framing the biotopes a little more
broadly, they would be more easily identified in the field.

How did we determine the most significant and common criteria impacting tree selection? Many conditions are already held constant across the city for various reasons—for example, because of contract specifications. For instance, soil composition within the tree bed is uniform because each excavation is backfilled with a specified topsoil. There are also some conditions that vary, however uncommonly. For instance, the majority of planting sites will be a full-sun condition because streets are typically wide relative to building height, but some sites will be outliers with a partial-sun condition.

Additional major factors to consider: We recognize that there is a dramatic range of how “urban” a planting site can be across the city—parts of Manhattan resemble a concrete jungle, while parts of the outer boroughs consist of single-family homes with lush lawns and quiet streets. Another big factor is whether or not a planting site has overhead power lines; if such wires are present, only a small ornamental tree species would be chosen. (Most neighborhoods throughout the outer boroughs have electric power lines over one side of the street.)

A third major factor is the total soil volume available to the tree. Typically trees are headed for cut-outs that have been shaped and sized to accommodate both the tree and pedestrian traffic on the sidewalk. These cut-outs vary in size due to the fluctuating shape and size of the public right-of-way throughout the city, or to underground utilities, or to other safety and spacing guidelines that are used throughout the city. In some neighborhoods of the outer boroughs, trees are planted in extended lawn strips instead of in concrete cut-outs. This allows for extra rooting volume as well as other site condition benefits.

**Definition of criteria**

The following is an overview of how we defined these three major criteria used to classify our biotopes:
Site Condition. A forester judges a site’s degree of drought condition, soil compaction, and soil pollution, then provides a site condition rating.

<table>
<thead>
<tr>
<th>Drought Condition</th>
<th>Landscape</th>
<th>Urban (Residential)</th>
<th>Urban (Commercial)</th>
</tr>
</thead>
<tbody>
<tr>
<td>caused by surrounding reflective surfaces, lack of nearby lawns or mature trees, lack of irrigation</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Soil Compaction</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>caused by truck and bus traffic, pedestrian traffic, passengers unloading from vehicles</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Soil Pollution</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>caused by pedestrian waste, pet waste, vehicular pollution, road salt</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
</tbody>
</table>

– A Landscape rating would be representative of a quiet street with a lawn strip for tree planting.

– An Urban (Residential) rating would be representative of a moderate-usage urban street with a sidewalk cut-out for tree planting.

– An Urban (Commercial) rating would be representative of a heavy-usage urban street with a sidewalk cut-out for tree planting.

**Vertical Clearance:**

<table>
<thead>
<tr>
<th>Wires</th>
<th>Wireless</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pole to Pole electric wires less than 30’ overhead</td>
<td>No wires at all, communication wires only, or wires connecting building to main lines across the street</td>
</tr>
</tbody>
</table>

– The vertical clearance criterion determines whether an “underwire” (dwarf or ornamental) tree is needed.

**Tree Bed Width (distance perpendicular to curb):**

< 42” vs. 42” to 54” vs. > 54”

– This last criterion is an indicator of total soil volume. Because most tree beds are rectangular to accommodate pedestrian flow, tree bed width (distance perpendicular to curb) is the limiting factor for how big a tree trunk can get without causing sidewalk heaving.

**Developing tools**

In order to make this system field-ready, it was necessary to develop a master spreadsheet that identified the distinguishable features and tolerances of all the 250+ tree species on our planting list. (You can download this spreadsheet here: http://www.nycgovparks.org/trees/street-tree-planting/steps. Under Step 5: Species Selection and Tree Planting, see the hyperlink for “data sheet”). Each row represents a different tree species and each column represents various categories of a tree’s biological qualities (drought tolerance, flood tolerance, shade tolerance, form, leaf color, etc.).

These data were drawn from USDA Fact Sheets and other relevant sources written in an urban forestry context. Each column is filterable, so a forester can find a tree species fitting various specific criteria in a matter of seconds. You will notice that our department added some columns customized to our own needs; you may want to tailor this spreadsheet to your own program’s needs.

Results

In total, there are 18 different possible combinations of these three criteria (site condition, vertical clearance, and tree bed width); thus, these are our 18 different street tree biotopes for New York City. (See flow chart and example photos on pages 48-49.)
Combining the science-based research collected in this spreadsheet with additional first-hand field knowledge, it was possible to assign these tree species to their most appropriate biotopes (see columns in far right). We used an “x” to signify the first choice, and an “m” for the “maybes” or secondary choices. The process of choosing which tree species corresponded to each biotope was quite challenging and underwent many revisions. The trees needed to be distributed based on their biological tolerances to match the given site conditions. The lists also had to be generous enough so that foresters had realistic options given nursery availability. Plus, some biotopes are more commonly found in the field than others, so tree species choices had to reflect that distribution. Lastly, we wanted to assign trees to biotopes where they would be put to best use relative to all their other biotope options (considering factors of tree growth potential, longevity, and site potential).

Application
Using this methodology, we are able to approach a planting site and classify it as a certain biotope fairly efficiently. When the forester comes across one of the less-common environmental constraints (e.g., being in a coastal flood zone), the spreadsheet can be filtered by this criterion, which further refines the tree species list for that biotope. Since it is common for surveying to take place months before a forester knows nursery availability, this classification system can come in handy. During the site visit, the forester can assess the three criteria for determining the biotope, make note of that biotope number, and document any additional environmental constraints. Then, species can easily be retrofitted to the site listing at a later date.

Guidelines for field use:
- Step 1: Approach your potential tree planting site.
- Step 2: Measure distances from surrounding buildings, trees, and other infrastructure to find the most suitable location for the new tree.
- Step 3: Assess the site condition by taking a 360° view of the streetscape and how it is used.
- Step 4: Score the site on drought condition, soil compaction, and soil pollution and determine its site condition rating as either Urban-Commercial, Urban-Residential, or Landscape.
- Step 5: Determine whether or not the site has overhead pole-to-pole electric wires.
- Step 6: Determine and measure the most appropriate tree bed width and length.
- Step 7: Use information regarding site condition, overhead clearance, and tree bed width to classify the site as a specific biotope (1–18).
- Step 8: Make note of any additional environmental factors that could influence tree species selection.
- Step 9: Using data collected during the field visit, filter the master spreadsheet and match tree species to corresponding biotopes and site conditions.

Using this process, foresters will be collecting information on the distribution of biotopes across the city. These data can be analyzed and used to inform tree procurement decisions for future years.
Conclusion
By developing a methodical system based on scientific research, New York City hopes to maximize the efficiency and effectiveness of our street tree planting program, as well as demonstrate accountability and transparency to the public we serve. While many citizens are primarily focused on the aesthetic results of our tree planting operations, we hope this set of documented protocols will portray street trees as growing, living, green infrastructure that provide quantifiable environmental benefits to our city.

We believe our system can provide useful insights that can be adapted and customized to the needs of other cities undertaking street tree planting, and we are pleased to share this with the public works community.

Acknowledgements:
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• Leylâ Moore, flow chart design

Citations:

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Right:
Example photo: Biotope 11, Urban-Residential, Wireless, Tree Bed 42-54”

Bottom:
Example photo: Biotope 18, Landscape, Wireless, Tree Bed >54”
Big changes in electrical safety

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There has been a major shift in the enforcement of electrical safety. This is in part due to the latest regulations concerning Arc Flash Risk Assessments. Arc Flash in a sense has become the driving force for bringing the existing known hazards of shock and electrocution to the forefront, as well as emphasizing the importance of qualified persons and proper equipment maintenance. Explosions, burn injuries, and physical trauma caused by electrical equipment failure and accidental contact are easily visualized at a primordial level. This has made OSHA compliance officers and safety professionals take a second look at what factors contribute to electrical injuries and what can be done to prevent future injuries from occurring. It is becoming more and more evident that working as an electrician or electrical maintenance person requires training and an understanding that even the slightest modification or error can have catastrophic results. Arc Flash Risk Assessments are just one piece of the overall picture in becoming OSHA compliant and preventing future injuries or deaths.

It may be best to identify some of the root causes of electrical accidents and injuries, and then address them individually.

1. Inadequately trained personnel
2. Electrical hazards have not been evaluated properly
3. Lack of Personal Protective Equipment (PPE)
4. Poorly maintained electrical equipment

The best defense is a good offense. Employees who have been properly trained have the skills to avoid and prevent the accident before they occur. If an event does occur, they have the proper PPE to maintain a survivable level. The question “Who is a Qualified Person?” seems to be a common debate. There is frustration that OSHA does not clearly define what a qualified person is except for the fact that a person must be deemed qualified to work on or near energized parts. OSHA and the NFPA 70E also have strict guidelines on when you can and can’t work near energized parts. Every qualified person should know these regulations or standards as well as several others. OSHA’s definition of a qualified person (1910.399 8/07) includes the phrase “has demonstrated skills.” This has a big impact on the type of training required for electrical workers. In order to meet this requirement a person actually has to demonstrate the ability to perform the task in a safe and timely manner. The level of training should match the level of the hazard. This type of training is seen in the community and is accepted because there is a proper perception on the hazards and consequences of these hazards.

Take firemen, for example; if they make a mistake “on the job” the worst-case scenario would be death to themselves or others nearby. The public in general would not feel safe if they knew the only training firemen received was watching a short video on how to drive a fire truck and put out fires. So one could ask what the worst-case scenario is if an electrician makes a mistake on the job. It could also be death to themselves or others.
nearby. If the training an electrician receives does not include individual hands-on demonstrations and auditing procedures, training would be incomplete. If the worker cannot perform the task with proper PPE in a safe manner, a reasonable person can assume the training has failed. When it comes to training OSHA tells employers what to do and the NFPA 70E tells them how to do it. Justification to work, Hazard Risk Assessments, PPE, Shock Boundaries, CPR/AED, Release of Victims, and LOTO are but a few of the items a person needs to clearly know and demonstrate their ability to perform before an employer can deem them qualified.

How can an employer protect their employees from a hazard if they don’t know what the hazard is?

This is why Arc Flash Risk Assessments are so very important in an overall electrical safety program. Is the panel a stick of dynamite or is it a firecracker? Choosing the proper PPE for personnel is incredibly important but almost impossible without conducting an Arc Flash Risk Assessment. Even in what would be considered a small Arc Flash, the choice of clothing can literally mean life or death. Arc Flash Risk Assessments are the only way to reduce a hazard to a manageable level. This is a vital step in OSHA’s requirements to Assess-Eliminate-Reduce hazards in a facility.

So how does properly maintained electrical equipment fall into the picture?

If equipment is improperly maintained or at the end of its life cycle, there can be devastating consequences. Equipment near the end of its life cycle, as with any mechanical part, can fail at any given time. At best it would mean disruption in power or loss of production. Worst case would mean death, serious injuries, and building damage. Outdated and improperly maintained or tested equipment will not operate as expected. If the Arc Flash Risk Assessment is based on particular clearing times of breakers and the breaker does not clear per manufacturer’s specs, the hazards can increase exponentially. This renders PPE virtually ineffective. It takes highly trained personnel to evaluate and test electrical equipment. Electricity is not only the most powerful and dangerous item in your facility but also arguably the one item you cannot do without. Electricity deserves the upmost respect as a driving force for industry and as a hazard.

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Automated asset management systems

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If your public works department is managing work orders via a homegrown database or worse, by some type of “pen and paper” system, you could save significant time and money while obtaining better outcomes by utilizing an automated asset management system. Automated asset management systems have many advantages such as higher efficiency, improved communications, better record keeping, and easy-to-use reporting capabilities. Here are some of the reasons that your department may wish to consider using such a system.

Public works managers must be good stewards of the buildings and infrastructure they are responsible for. “If you can’t measure it, you can’t manage it” is an old maxim that has application to the resources that public works managers maintain. Staff’s perception of how often they are working on or how much they are spending to maintain a building’s roof or a certain piece of equipment is often distorted. It is frequently surprising to pull up a report of actual dollars spent and hours expended working on something such as a heat pump and learn that it isn’t nearly as bad, or possibly as good, as the maintenance supervisor thought. Without the ability to easily retrieve and view such vital reports, important decisions about equipment and infrastructure repair and replacement can be misguided. Automated asset management systems provide such reports with just a few clicks of the mouse. These systems help to ensure that budget dollars and valuable staff time are spent on actual priorities rather than just responding to “squeaky wheels.”

Public works departments that still use some form of pen and paper system for initiating and carrying out their work orders invariably have an indispensable staff person that is essential to the system’s operation. This individual has all of the history, knows each of the technicians and their capabilities, has a relationship with all the building managers and knows just whom to give each job as it is reported. Having such a knowledgeable and valuable employee performing a task that the asset management system can perform automatically is a waste of crucial resources. In these trying times of budget constraints there are certain to be other critical needs to which such a valuable employee could be better utilized. With most systems, nearly anyone having knowledge of problems or a needed repair can in a minute or two initiate a work order. The system can then automatically route the work order to the supervisor or technician that normally handles the work of the needed craft or the type of problem detailed in the work order request. There is no sticky note to lose, and the system rapidly resolves multiple reports of the same problem; and once the work is complete, the technician can quickly and easily input...
important information such as the cost of materials, hours of labor, and a description of what was found and how it was corrected.

Communications between the service providers and end users can be greatly improved through the use of these systems. Often, an office manager will only learn the outcome of the work order requests they initiate, either when the problem is corrected or they pick up the phone and track down who is working on their issue. Many automated asset management systems have multilayered work order feedback built in. Such systems can automatically generate an e-mail message that lets requesters know that their work order request was received, when it was assigned, who is working on it and when it has been resolved. Such communication helps to improve relations between maintenance departments and the other public works employees that depend on their services without adding any additional effort on the part of the maintenance workers.

Another advantage of these systems is that they provide easy access and permanent storage of vital information about your assets. With most systems, the public works department can decide how much detail they wish to input and maintain in the system. It can be high-level information such as when installed, value, make, model, etc. or more detailed information such as filter types and sizes, operating voltage, replacement value, etc. Having one location where everyone can access this data can be a huge time saver. It is also essential during accidents and disasters. As APWA President Larry Stevens recently wrote, “Every year the extraordinary events that happen seem to evolve significantly, from the types of disasters to the shifting pattern of geographical locations.” When facilities are damaged or destroyed, public works departments are strained beyond their limits trying to simultaneously clean up, provide temporary facilities, repair or replace the damage all while continuing with regular operations. Agencies like FEMA will step in to help, but they pretty quickly want to know what facilities you are dealing with, what assets are in them, what their condition was, and what the replacement value was. That information can be very hard to pull together quickly if you don’t already have it. Outside of disasters, having up-to-date information on assets is crucial to justify spending requests, maintaining proper inventories and aiding with long-term planning.

There are dozens upon dozens of automated asset management systems available. The different software systems have highly varied capabilities and costs. The advantages and disadvantages depend upon items such as: what types of assets you will be tracking and maintaining; what level of automation you want; and how much time and effort you want to put into developing and operating the system. Some systems reside on your computer network and others are cloud based. As with so many things, you can utilize APWA resources to aid you in determining which system is best for your organization. Speak with neighboring jurisdictions, your colleagues in APWA, or use infoNOW to learn what system they are using and which ones may work best for your organization.

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Establishing site expectations and developing maintenance programs for athletic fields

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Introduction
The challenges facing grounds managers today are arguably the most complex seen in decades. Challenges such as the rising costs of supplies, increasing expectations, environmental concerns, and limited resources are issues that a grounds manager must confront on a frequent basis and still maintain safe playable conditions. This article attempts to provide some key elements in your tool kit as a grounds manager. Tools and strategies such as interpersonal skills, effective communication, and collecting metrics are essential for a grounds manager to obtain great results in any municipal organization.

Building collaborative relationships
Perhaps the most important and most difficult skill set to master is the ability to build collaborative relationships. Jeffery Shuman and Janice Trombly of The Rhythm of Business, Inc., state that “Collaboration is a purposeful, strategic way of working that leverages the resources of each party for the benefit of all by coordinating activities and communicating information within an environment of trust and transparency” (Shuman 2009). Collaborative relationships extend beyond the department of the grounds manager and include stakeholders such as youth groups, town or city committees, and athletic directors.

The foundation of a collaborative relationship begins with identifying your own and other individuals’ goals, both personal and within an organization. This identification is critical to understand not what an individual does within an organization or department, but to better understand why they do what they do. For example, a youth group leader may speak with you regarding a game schedule, but the core of their participation is rooted in a child’s joy while playing a sport. Understanding this core element of an individual’s purpose will help build a collaborative relationship by aligning goals and building trust.

Both you as a grounds manager and the youth group leader have a shared interest in providing a safe and fun athletic field that a child can enjoy. This shared interest begins to build a win-win situation and relationship that can be very valuable when you may be challenged as manager, or need support to make capital improvements to a site. Learning how to leverage resources through a collaborative relationship is an essential skill for a grounds manager. To begin building collaborative relationships consider the following:

• Identify shared interests (not always the most important)
• Identify ways to build trust

Consider how all parties benefit from the relationship
• Remember this relationship requires leadership
• Find ways to obtain group buy-in

Set site expectations and level of service
Regardless of your community’s size or economic stability, resources are limited. Limited resources can negatively affect a grounds manager’s ability to adequately meet the needs of the community and meet level of service expectations. Attempting to meet the same level of service at all locations throughout your community can be frustrating and for most of us impossible due to staffing, funding, and most importantly time. One effective strategy is to set different levels of service for your properties and set site expectations. To accomplish this consider the following:

• Key user groups
• Site amenities
• Versatility of site
• Irrigation
• Level of use
• Overall site conditions

After gathering this data a level of service model can be built. In the areas of the greatest use and most desirable site amenities set a high level of service. In areas that are used less or offer more passive recreation, set a lower level of
service (see Exhibit 1 on page 56). Most importantly document the level of service goals and outline the frequency and quality related to:

- Mowing height and frequency
- Irrigation, if any
- Fertilizer and pest control, if any
- Cultural practices such as aeration and seeding
- Infield grooming frequencies

This may seem to be a simple strategy; however, when documented this information offers a desirable level of transparency for your department and helps you to build a maintenance program and schedule for each site. This information can be used to address issues regarding product applications and concerns, maintenance frequencies, and to build trust with your key stakeholders. This trust and transparency will enable you to build collaborative relationships and help others understand the maintenance of the turf and why strategies such as goal mouth wear, proper infield grooming, and frost damage prevention are so important to you.

**Know your costs and collect data for performance increase justifications**

Now that your site expectations and level of service are set, a monetary value can be set for the work that you perform (see Exhibit 2 on page 57). Setting monetary values and collecting other metrics such as the number of events on your field, or hours required to repair damage, will greatly help you and others understand the financial impact of maintenance and events.
As management educator and author Peter Drucker once said, “What gets measured gets improved.” Costs that are more transparent will not only help with fiscal budgeting, but will also be valuable data to help support your requests for extra funding, or obtain funding for new or improved sites. This information can also be shared with your key stakeholders to help demonstrate the value of your service and demonstrate the value of return for investing in the community. Because most of what municipal organizations provide are social, public or political goods, metrics and monetary values are an essential tool to realize our value in a tangible manner. Based on your set expectations and level of service, a monetary value per acre can be determined by considering the following:

- Product costs
- Contractor costs
- Maintenance frequencies

For maintenance performed by in-house staff a commercial rate can be substituted to measure other costs that can be difficult to capture such as labor, fuel, and equipment depreciation.

Finally, produce results and maintain trust

Of course, the most important factor to maintain your relationships and keep the trust earned is to follow through. Now that site expectations and level of service are set, ensure that you stick to your commitments. When issues arise that endanger your commitments, communicate those issues with your stakeholders. Set expectations that are obtainable and when appropriate under-promise and over-deliver. Although these tools may seem simple on the surface, they are essential to build relationships, align goals, and to demonstrate your value as a grounds manager professional.

Works Cited


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Exhibit 1. Site Expectation Example

**Class One**

Class one represents the most intense use, care, and site expectations. These sites are mowed two or three times per week at a height of two and one-quarter inches and are irrigated with well water. Irrigation is monitored on a frequent basis and irrigation programs are adjusted on a weekly basis based on anticipated rainfall and environmental conditions. Cultural practices include core aeration and vertical drainage at a frequency not to be less than twice per year. Goal mouths and other high wear areas are monitored frequently with soil amendments and turfgrass seed applied as needed.

**Class Two**

Class two represents a moderate use model and site expectations. Site two locations may or may not be irrigated. These areas are mowed once, sometimes twice per week at a height of two and one-quarter inches. Cultural practices such as core aeration and vertical drainage have a goal of once or twice per year. Fertilization and turfgrass seed applications in a given year depend on funds available.

**Class Three**

Class three represents the lowest use model and site expectations. These areas are not irrigated and are mowed once per week at a height of two and one-quarter inches. Cultural practices such as core aeration and vertical drainage are performed when possible based on time and funds. Fertilizer and seed are rarely applied to these sites.
Exhibit 2. Maintenance Program Example
Class One Maintenance Program

<table>
<thead>
<tr>
<th>Fertilization</th>
<th>lb/M</th>
<th>lb/A</th>
<th>$$/lb</th>
<th>$$/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fertilizer 16-1-5 @1lbN</td>
<td>6.25</td>
<td>275</td>
<td>1.02</td>
<td>280.17</td>
</tr>
<tr>
<td>Amendment @20lb/M</td>
<td>20</td>
<td>880</td>
<td>0.54</td>
<td>475.20</td>
</tr>
<tr>
<td>Fertilizer 17-0-20 @1lbN</td>
<td>5.88</td>
<td>258.72</td>
<td>1.18</td>
<td>304.77</td>
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<tr>
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<td>6.25</td>
<td>275</td>
<td>1.02</td>
<td>280.17</td>
</tr>
<tr>
<td>Amendment @20lb/M</td>
<td>20</td>
<td>880</td>
<td>0.54</td>
<td>475.20</td>
</tr>
<tr>
<td><strong>Total Cost per Acre Fertilization</strong></td>
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<td>$</td>
<td><strong>1,815.51</strong></td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Seeding</th>
<th>lb/M</th>
<th>lb/A</th>
<th>$$/lb</th>
<th>$$/A</th>
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<tbody>
<tr>
<td>Seed 50/50 Mix</td>
<td>2</td>
<td>88</td>
<td>2.79</td>
<td>245.52</td>
</tr>
<tr>
<td>Seed 50/50 Mix</td>
<td>2</td>
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<td>2.79</td>
<td>245.52</td>
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<tr>
<td><strong>Total Cost per Acre Seed</strong></td>
<td>$</td>
<td>$</td>
<td><strong>491.04</strong></td>
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<table>
<thead>
<tr>
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<th>#/Week</th>
<th>Weeks Per Year</th>
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<td>30</td>
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<td><strong>Total Cost per Acre Mowing</strong></td>
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<td>$</td>
<td><strong>1,732.80</strong></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Cultural Practices-Labor</th>
<th>$$/A</th>
<th>Times/Year</th>
<th>$$/A/Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deep Tine Aerification*</td>
<td>$700.00</td>
<td>2</td>
<td>$1,400.00</td>
</tr>
<tr>
<td>Core Aerification*</td>
<td>$325.00</td>
<td>2</td>
<td>$650.00</td>
</tr>
<tr>
<td>Topdressing</td>
<td>$375.00</td>
<td>1</td>
<td>$375.00</td>
</tr>
<tr>
<td>Seeding</td>
<td>$150.00</td>
<td>2</td>
<td>$300.00</td>
</tr>
</tbody>
</table>

Continued on page 58
### Total Cost per Acre Cultural Practices-Labor

<table>
<thead>
<tr>
<th>Cultural Practices-Tines</th>
<th>$$/Tine</th>
<th># of Tines</th>
<th>Acres/Set</th>
<th>$$/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deep Tine-Solid Tines</td>
<td>$7.35</td>
<td>12</td>
<td>8</td>
<td>$11.03</td>
</tr>
<tr>
<td>Core Aerification Tines</td>
<td>$7.35</td>
<td>32</td>
<td>8</td>
<td>$29.40</td>
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</table>

**Total Cost per Acre Cultural Practices-Tines**

$40.43

<table>
<thead>
<tr>
<th>Cultural Practices-Materials</th>
<th>Tons/A</th>
<th>$$/Ton</th>
<th>Times/Year</th>
<th>$$/A/Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top Dressing Sand 2mm</td>
<td>20</td>
<td>$25.25</td>
<td>1</td>
<td>$505.00</td>
</tr>
</tbody>
</table>

**Total Cost per Acre Cultural Practices-Materials**

$505.00

### Plant Protectant Applications-Materials

<table>
<thead>
<tr>
<th>Plant Protectant Applications-Materials</th>
<th>oz/M</th>
<th>oz/A</th>
<th>$$/oz</th>
<th>$$/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monocot herbicide</td>
<td>1.5</td>
<td>66</td>
<td>$1.55</td>
<td>$102.30</td>
</tr>
<tr>
<td>Surfactant</td>
<td>0.16</td>
<td>7.04</td>
<td>$0.56</td>
<td>$3.94</td>
</tr>
<tr>
<td>Broadleaf Herbicide</td>
<td>1.5</td>
<td>66</td>
<td>$0.84</td>
<td>$55.44</td>
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<tr>
<td>Insecticide</td>
<td>0.147</td>
<td>6.468</td>
<td>$19.19</td>
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</tbody>
</table>

**Total Cost Per Acre Plant Protectant-Materials**

$285.80

<table>
<thead>
<tr>
<th>Plant Protectant Applications-Labor</th>
<th>$$/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spray Rate Per Acre</td>
<td>$125.00</td>
</tr>
</tbody>
</table>

**Total Cost Per Acre Plant Protectant-Labor**

$125.00

*Performed In House*

**Total Cost Per Acre Class One**

$7,229.54
Things to keep in mind regarding ADA guidelines

Jeffery Brown, P.E.
Engineering & Infrastructure Director
Cumberland County, North Carolina
Member, APWA Facilities and Grounds Committee

Picture this: Your department has been appropriated some funding to make some improvements to one of the many buildings that you are responsible for maintaining. Departmental staff works diligently with the building occupant in developing a detailed plan for the proposed improvements. You have reached the pinnacle. The plan is complete and the last step before construction begins is to get the necessary permits. While reviewing the plans, the building code official begins to ask questions about door widths and counter heights. You immediately begin to panic. This is the first time that you think *ADA: Another Disapproved Action*. Have you ever found yourself in the middle of this scenario? If so, you are not alone.

The American with Disabilities Act (ADA) of 1990 was put in place to prohibit discrimination against persons with a disability as well as to
ensure that they are provided an equal opportunity for employment and public accommodations. The 1991 ADA Standards for Accessible Design could be used for new construction and alterations up until March 14, 2012. However, as of March 15, 2012, all new construction and alterations shall meet the 2010 ADA Standards for Accessible Design as published by the Department of Justice. The 2010 ADA Standards addresses new construction and alterations to state and local government facilities as well as program accessibility and barrier removal.

We have to begin to analyze our facilities with ADA guidelines as forethought and not an afterthought as many of us find ourselves doing at times. It is not a goal of any organization to overlook the needs of anyone as most agencies pride themselves on providing equal opportunities to all citizens. In the scenario described above, the basis of the renovation was to improve security for the employees working within the facility as well as improve customer service to the citizens conducting business within the facility. One of the sole reasons behind the renovation was for customer service enhancement, but no thought was given to the fact that the soap dispenser was installed at a height of 42” and ADA guidelines require soap and towel dispensers not to exceed 40” from the floor. ADA also requires that all obstacles protrude no more than 4” from the wall and the newly installed suggestion box protrudes 5.5” from the wall.

As you can see, it is critical for maintenance personnel to have a good understanding of the ADA guidelines to avoid the creation of compliance issues as they relate to the ADA guidelines. This is why training and education are so vital for any organization. Both of these compliance issues could have been easily avoided if the maintenance staff had been educated on the requirements of ADA. Two basic examples were provided within this article. Take the time to evaluate your organization’s maintenance practices to make certain that you are not creating compliance issues.

Understanding of ADA requirements is not only essential for the design of facilities, it is equally important when it comes to maintaining an organization’s facilities and grounds. It is easy to see why design professionals would need to have a firm understanding of ADA requirements when designing a new facility or renovating an existing facility. However, it may not be as obvious why your facilities maintenance staff needs to understand ADA guidelines as well. If you are responsible for facilities management for your organization, then I am sure that you have received work order requests to reinstall a paper towel dispenser or a hand soap dispenser within a restroom that has become unattached from the wall. This work order is then given to maintenance staff to be completed. Staff arrives at the facility and determines that the drywall anchors used to attach the dispenser to the restroom wall have been stripped out of the wall. The decision is made to simply raise the height of the dispenser and the dispenser is reattached to the wall. The work order is complete and closed out and they move onto the next work order in a different facility. One of the largest departments within your organization has requested a suggestion box be placed within the hallway to receive feedback from the customers in which they are providing services to. The skilled craftsmen with the Carpentry Section have constructed a small box and given to the maintenance staff to install. The maintenance staff arrives at the facility and consults with the department head as to where they would like to see the suggestion box installed. The suggestion box is installed and the work order is closed out. At the end of the day you commend your staff for addressing the work orders in such a timely manner. However, what you don’t realize is that the staff just created two ADA violations that did not previously exist. The soap dispenser was installed at a height of 42” and ADA guidelines require soap and towel dispensers not to exceed 40” from the floor. ADA also requires that all obstacles protrude no more than 4” from the wall and the newly installed suggestion box protrudes 5.5” from the wall.

Please reference the link below to find detailed information concerning the current requirements regarding ADA accessibility and design. Information and Technical Assistance on the American with Disabilities Act (www.ada.gov).

Jeffery Brown can be reached at (910) 678-7633 or jbrown@co.cumberland.nc.us.
Bay-Friendly Landscaping & Gardening Coalition

Robert Kennedy
Park Supervisor II
Parks & Tree Services Division
City of Oakland, California

Park Services: Bay-Friendly Practice

The City of Oakland has partnered with the Bay-Friendly Coalition to train and develop its Parks & Tree Services staff to improve City standards and to create sustainable landscapes within its parks network. In October 2014, 90% of Parks and Tree Services staff received their Maintenance Qualification (MTQ). Oakland’s Bay-Friendly Qualified Staff applies this sustainable and holistic approach to improve its maintenance practices and manage the City’s park assets. They work with nature to conserve water and soil, reduce waste, and prevent pollution—creating a landscape that is safe, healthy and provides an aesthetic that the community values and supports.

Background

The Bay-Friendly Landscaping & Gardening Coalition is a nonprofit organization that the City of Oakland works in partnership with to make informed decisions about sustainable landscaping in their communities, reduce waste and pollution, conserve natural resources, and create vibrant landscape amenities. Bay-Friendly landscaping is the systematic approach that Oakland Public Works (OPW) uses when it comes to design, construction, and the maintenance of landscapes. This allows for a balanced maintenance practice that supports the San Francisco Bay Area’s fragile watershed and ecosystem. There are seven Bay-Friendly Landscape principles that integrate over 50 environmentally-sound landscape practices that the Parks and Tree Services Division implements. The seven principles are: (1) Landscape Locally; (2) Landscape for Less to the Landfill; (3) Nurture the Soil; (4) Conserve Water; (5) Conserve Energy; (6) Protect Water & Air Quality; and (7) Create & Protect Wildlife Habitat. Some practices are repeated under multiple principles because they protect the environment in more than one way. Using mulch, for example, reduces waste, nurtures the soil, conserves water, and creates wildlife habitat.

Bay-Friendly Guidelines

The Bay-Friendly guidelines are organized around seven principles for protecting the environment. By viewing our landscapes through the lens of these seven principles, our agency can see how the choices we make for specific landscape projects can have a ripple effect on the surrounding community and the natural environment. Plant selection, for example, has a direct impact on how much waste ends up in landfills. Selecting the appropriate plant palette for a given area can determine how...
much water is consumed for irrigation due to plant needs, and how much food and habitat is available for pollinators and wildlife. In applying these principles OPW can establish a beneficial planting pallet, improve our maintenance standards with sustainable practices, and conserve our resources.

**The Seven Principles**

1. **Landscape Locally.** This principle encourages our staff to learn about the native plant communities and helps our gardening staff recognize what these local plant communities are and how to evaluate the condition that allows these plants to thrive. By choosing plants that match the microclimate and soil conditions, we can reduce their susceptibility to disease, other pests, while decreasing their need for fertilizers and pesticides. These thriving local plant communities can act as a model for our planting standards and enable our staff to develop procedures for selecting the appropriate plant palette for their environment.

2. **Landscape Less to the Landfill.** In order to reduce our waste stream, we have to not create it in the first place. This goes back to landscaping locally and proper plant selection. The reuse of plant trimmings such as mulch, grass clippings, and compost have helped to improve our park soils which in turn reduces the tons of debris going to the landfill. The use of compost has a direct benefit to our park patrons as the soil stores approximately one-third of all urban water applied to landscapes. Sustainable water practices for landscaping are more than efficient irrigation and xeriscaping. It’s a combination of practices that augments the water-holding capacity of the soil to create drought resistant soils. By utilizing non-potable water sources like reclaimed water, gray water, or rain catchment water, we can conserve the potable water we rely on to live and promote a sustainable maintenance practice.

3. **Nurture the Soil.** The cornerstone to Bay-Friendly landscaping is creating and protecting soil conditions that help to promote the diversity of beneficial soil organisms. The soil beneath our feet is a complex and dynamic combination of minerals, air, water, and organic matter that play a vital part in the health of our environment. Healthy soils contain plant and animal debris in various stages of decomposition along with billions of living organisms such as beneficial bacteria and fungi. This matters because the soil and the organisms that live within it create soil structure that stores and cycles nutrients which protect plants from pests and filter out urban pollutants. Oakland’s network of creeks and streams tie into the Bay Area’s watershed, so keeping these waterways clean and clear of pollutants is the main focus.

4. **Conserve Water.** The climate in California consists of long, dry summers and in recent years drought conditions due to the lack of significant rainfall. Water is a precious and often scarce resource where one-third of all urban water is applied to landscapes. Sustainable water practices for landscaping are more than efficient irrigation and xeriscaping. It’s a combination of practices that augments the water-holding capacity of the soil to create drought resistant soils. By utilizing non-potable water sources like reclaimed water, gray water, or rain catchment water, we can conserve the potable water we rely on to live and promote a sustainable maintenance practice.

5. **Conserve Energy.** As the City of Oakland embraces sustainability, the conservation of energy is one of our top priorities as the use of power equipment contributes to major use of energy. Conventional landscapes consume large amounts of fossil fuels. Statistics show that nationally forty million lawnmowers consume 200+ million gallons of gasoline per year, representing a huge investment of energy for this one maintenance task alone. By adjusting our maintenance practices and creating native habitats we reduce the need for power equipment, thus allowing Mother Nature to sustain itself.

6. **Protect Water and Air Quality.** The Bay-Friendly practices protect our waterways from pollution by reducing the amount of contaminants entering the waterways and by increasing the soil’s ability to remove pollutants from urban runoff before it enters the watershed. Only 15% of rainwater leaves the system through surface water runoff and more than one-third moves into the soil where the living organisms break down and naturally filter out pollutants. For example, an acre of parking lot will produce four gallons of oil, gasoline and diesel fuel runoff each year.

At the same time, gas-powered equipment accounts for 5% of the nation’s air pollution. The plant debris that is removed from the site is hauled off in CO2 emitting trucks. Once there, the disposed plant materials begin to decompose and release greenhouse gases. By embracing the deployment of composting in our parks we can sequester large amounts of these gases before they reach the atmosphere, promoting a healthier way of maintaining our park network.

7. **Create and Protect Wildlife Habitat.** The San Francisco Bay Area, rich in its plant and animal diversity, makes for a unique and beautiful watershed. With more than 1,500 local plant species that support hundreds of native pollinators, beneficial insects and other organisms, we can reduce the need for herbicides. By installing native habitats, we attract birds and butterflies that bring song and beauty to our urban park spaces throughout the city. The developed landscape that we maintain provides food, shelter, water and nesting sites for birds, butterflies, beneficial insects and other creatures. Maintaining our park networks with Bay-Friendly techniques...
creates natural corridors that preserve valuable wildlife resources and restores damaged ecosystem, which promotes the benefits of having a healthy and diverse wildlife population.

The City of Oakland has inspired many people to be environmental stewards and to take part in the “Pollinator Posse” which activates the collaboration between Oakland Park Maintenance, the West Oakland Green Initiative, the Insect Sciences Museum of California and Children’s Fairyland. This group works closely together to keep Oakland beautiful and safe for pollinator populations by creating healthy and sustainable landscapes. OPW’s vision is to be the industry leader by creating the Lake Merritt Butterfly House garden and applying maintenance practices that can be used as a model for greener living throughout the San Francisco Bay Area.

Oakland Parks and Tree Services is working to increase wildlife diversity and reestablish sustainable and balanced ecosystems throughout our city by creating Bay-Friendly, Pollinator-Friendly landscapes. It is OPW’s mission and challenge to the community and local businesses to go Bay-Friendly and Pollinator-Friendly in their landscapes and gardens. OPW is working to create a system and practice within Oakland’s park network that can be used as a national model for activating local communities to take ownership of their neighborhood parks. By creating a stewardship and volunteer based model, OPW is reversing pollinator decline through gardening opportunities and other educational outreach that brings life, habitat and nature back into the urban built environment.

Robert Kennedy graduated from the College of Environmental Design at the University of California, Berkeley where he was able to merge landscape architecture with city planning. UC Berkeley’s Environmental Design program and philosophies have provided him with the foundation to not only obtain his CA Landscape Contractor’s license, but enabled him to become CAD certified and a Bay-Friendly designer. As Park Supervisor II for the City of Oakland, it is Kennedy’s vision to continue applying the Bay-Friendly concepts in a way that integrates the natural environment to improve the residents’ lives and increase their standard of living. He can be reached at (510) 615-5987 or RKennedy@oaklandnet.com.

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**FROM THE PEOPLE WHO INVENTED REGENERATIVE AIR SWEEPING!**
Fighting an uphill battle: facility maintenance software eases the public works load

Brian Bell  
Vice President of Strategy  
Dude Solutions and FacilityDude  
Cary, North Carolina

Consistently fighting against budget constraints and cuts coupled with renewed questions on the efficacy and efficiency of the department as a whole, public works professionals are facing mounting pressures to maintain vast infrastructures in the areas they serve. As state governments and municipalities continue to grow, so do the facility maintenance requirements, particularly with older buildings and crumbling infrastructure systems as well as linear.

Technology in support of select local and state government operations and particularly facility maintenance is outdated or relies on e-mail and fax to handle communication across departments to track and update progress to supervisors managing work requests. Often, “phoning it in” is still an accepted method to convey status updates or location status while out in the field.

With the use of web-based facility management technology applications,
facility maintenance professionals can benefit from an affordable and efficient vehicle to streamline operations requests, improve awareness, readiness and response times during an event, reduce liability exposure and drive down insurance claims, and empower supervisors with information and answers when needed. Let’s take a deeper look:

**Administrative efficiency affords project transparency**

Whether it’s a scheduled repair to a courthouse out-of-work bathroom or a pop-up water main break, it can be a complex and daunting task for facility maintenance professionals to manage administrative work orders and reporting, particularly when much of it is still accomplished in a paper-based fashion or through Excel spreadsheets.

Web-based facility maintenance solutions can help improve communication and give continuous insight into progress on current work orders, personnel assigned to managing and completing the project, and time and budget allocated. Supervisors can easily reallocate personnel utilizing web-based software to handle emergency situations or call in a nearby field worker when additional support is needed. Armed with the right information, facility maintenance professionals can do more with the assets and resources available and, at the same time, justify resource needs and requests to administration. And, according to recent research, technology can extend the life of building and equipment assets by nearly 35 percent.

**Inter- and cross-departmental communications vehicle**

While cloud technology enables improved facilities data accessibility and storage capacity, adoption rates are still relatively low across most governmental departments. The benefits of the cloud, however, are undeniable—particularly when looking at increased communication across a department or multiple departments. Take, for instance, if several employees are sick or can’t make it on time during a snow emergency when they are tasked to be first on the scene in order to keep roads and government building entrances clear. Public works is on the front lines and is responsible for managing the cleanup regardless of a reduced workforce.

During routine or emergency issues, facility maintenance web-based software affords the ability to effortlessly assess scheduling needs and reassign personnel located in one part of the municipality to help out in the understaffed region. Instantly creating automatic reports, supervisors can easily send status updates to other departments apprising them of the progress on an hourly, daily or other pre-determined timing basis. In addition, incident calls coming in from local residents can be easily tracked and managed through the software.

**Minimizing liability exposure**

Civil lawsuits against municipalities are on the rise. Building maintenance issues ranging from routine repairs to old and outdated facilities mean hundreds of thousands to millions of dollars that eat into government budgets and resources. Recently, one municipality was able to successfully fight a lawsuit using their facility maintenance software reporting records where a local resident claimed they slipped and injured themselves in a courthouse bathroom due to an out-of-order overflowing toilet. Through a quick review of records in the implemented facility maintenance solution, it was determined that the toilet was successfully replaced several weeks prior to the incident thus stopping the lawsuit before thousands of dollars in legal fees and settlement claims could be assessed.

During a major natural disaster where FEMA steps in, such as Hurricane Sandy, response, cleanup and recovery efforts by a municipality or state government need to be well-documented in order to receive reimbursement funds from the federal agency. Using paper-based or even Excel spreadsheets can mean hundreds of hours of time and money wasted, whereas a facility maintenance management solution yields incredible efficiency and reporting capabilities as the work happens so that facilities maintenance professionals can focus on the cleanup rather than the administrative tasks.

Whether managing public works buildings, maintaining grounds, or mitigating a minor or major disaster in concert with other departments, critical resources are vital to ensuring that the overall assets are well-maintained, kept safe, and the public works department works smoothly and efficiently. As in-house resources become stretched and strained, the advantage of a web-based facility maintenance solution can easily manage daily work requests, schedule routine maintenance and inspections, and create a more cooperative work environment to better connect employees and other governmental agencies and most importantly the citizens they serve.

*Brian Bell can be reached at (866) 455-3833 or brian@facilitydude.com.*
Annual Buyer’s Guide (alphabetical listing)

The Annual Buyer’s Guide is provided as a service by the American Public Works Association to its members to assist in identifying the corporate members that represent the consulting, service and manufacturing firms serving the public works industry today. It is by no means an attempt to list all of the firms serving the industry, only those that are APWA members as of February 18, 2015. The Annual Buyer’s Guide is not intended to provide endorsement of any particular products or services listed herein. The alphabetical listing appears first, followed by the categorical listing on page 80.

APWA makes every effort to achieve accuracy, but cannot be held responsible for inadvertent omissions or incorrect entries. If any errors are detected, please notify the Finance/Membership Department at (800) 848-APWA.
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Construction Management & Services, Debris Management
AshBrett Environmental
CrowderGulf
Herzog Contracting Corp
Morbark Inc

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AshBrett Environmental
CrowderGulf
Herzog Contracting Corp
Jones & Carter Inc
Morbark Inc
PubWorks
TETRA TECH
Willdan Engineering

Construction Management & Services, Emergency Management
CrowderGulf
Diebberry
Morbark Inc
Thompson Pump & Manufacturing Company
Oldcastle Precast Inc

Emergency Management & Security, Barricades
Oldcastle Precast Inc
Professional Pavement Products Inc
Reef Industries Inc
Site-Safe LLC

Emergency Management & Security, Closed Circuit Televisions (CCTV)
United Resource LLC

Emergency Management & Security, Damage Prevention
GeoDesign Inc
Southwest Gas Corporation

Emergency Management & Security, Emergency Signage
Reef Industries Inc

Emergency Management & Security, Flood Protection
HDR Inc
Horner & Shifrin Inc
LDA Engineering
LNV Inc
Short Elliott Hendrickson Inc
Thompson Pump & Manufacturing Company
TRU LINE Sheet Piling System
WEST Consultants Inc

Emergency Management & Security, Lights/Hazard Lights
Harrison Hydraulic Solutions
Sternberg Lighting

Emergency Management & Security, Traffic Control Equipment
AirX Utility Surveyors
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4Leaf Inc
Achen-Gardner Construction LLC
Alfred Benesch & Co
American Engineering Testing Inc
Ames Construction Inc
ARS Engineers Inc
Baxter & Woodman Consulting Engineers
BHC RHODES Civil Engineers & Surveyors
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Blair Church & Flynn Consulting Engineers
Bollinger Lach & Associates Inc
Bolton & Menk Inc
BCA
Carollo Engineers
Carroll Engineering Inc
CDG Engineers & Associates Inc
CESNW Inc
Chastain & Associates LLC
Ciorba Group Inc
Civil Engineering & Information Technology Inc
Cobb Fendley & Associates Inc
Collier Engineering Company Inc
Collins Engineers Inc
Creighton Manning Engineering LLP
CRS Consulting Engineers
CTS Group
DBA Construction Inc
D’Esco To Engineering
Dokken Engineering
Drake Haglan & Associates Inc
EBA-A Tetra Tech Company
EFK Moen LLC
Encore Group
Engineering Resources
Environmental Partners Group Inc
EPS Group Inc
Erlandsen & Associates Inc
ESI Consultants Ltd
Exeltech Consulting Inc
Fay Sofford & Thordrile Inc
First Group Engineering
Fisher & Arnold Inc
Fred Weber Inc
Freesie and Nichols
Fugro Consultants Inc
G&A Architects and Engineers
GHD
Gkworks
Gonzales Companies LLC
GovHR USA
GPD Group
Greeley and Hansen
Gremmer & Associates Inc
Gresham Smith and Partners
Hannum Wagle & Clinic Engineering
Hansen Thorp Pellinen Olson Inc
Harris & Associates
Hart Crowser Inc
HNTB Corporation
HR Green Inc
Huitt-Zollars Inc
HWIochner
HWL & Associates
HWA GeoSciences Inc
Interwest Consulting Group
Jacobs
Jones & Carter Inc
Klotz Associates

Lighting & Hazard Lights
Klotz Associates

Klotz Associates

Construction Management & Security
LDA Engineering
LiRo Engineers Inc
LNV Inc
Lorchmueller Group
Locklear & Associates Inc
Lynch & Associates-Engineering Consultants LLC
MacKay & Sposito Inc
Manhattan Construction (Florida Inc)
Markham Contracting Co Inc
Mattern & Craig Inc
Mead and Hunt
Milone & MacBroom Inc
Mismen
MMM Group Limited
Morrison-Maierle Inc
NW Engineers LLC
Oelrich Construction Inc
Onward Engineering
Pakpour Consulting Group Inc
Paramext
Parsons Brinckerhoff
Patrick Engineering Inc
Primera Engineers Ltd
Principal Engineering Inc
Project Engineering Consultants Ltd
Promptas
Quincy Engineering Company
RFE Engineering Inc
Rick Engineering Company
Riley Construction Company Inc
RJ Behar & Company Inc
ROWE Professional Services Company
RTVision Inc
S & C Engineers Inc
Salaber Associates Inc
Sayre Associates Inc
Schlagel & Associates PA
SEPI Engineering & Construction Inc
SharpeSoft Inc
Skilling's Connolly Inc
Slater Hanlan Group Inc
Sletten Construction of Nevada
Stanley Consultants Inc
Stantec
Stonebrooke Engineering
Strand Associates Inc
Summit Associates
Sunrise Engineering Inc
Swinerton Management & Consulting
Terra Associates Inc
Terra Engineering
TETRA TECH
Tighe & Bond
TKDA
Trotter and Associates Inc
TV Lin International
Urban Engineers Inc
US Infrastructure of Carolina Inc
V3 Companies
Vaughn & Melton Consulting
Engineers Transportation
VTN Consulting
Wade Trim
Wallace Group
Water Resource Engineering Associates
WBK Engineering
Weston & Sampson

Engineering & Technology, Data Collection Systems
Andregg Geomatics
ARS Engineers Inc
BHC RHODES Civil Engineers & Surveyors
CFA Software Inc
Civic Engineering & Information Technology Inc
EBA-A Tetra Tech Company
FORCE America Inc
Freeze and Nichols
Fugro Roadware Inc
Guida Surveying Inc
HBK Engineering LLC
IMS Infrastructure Management Services
International Road Dynamics
LDA Engineering
Locklear & Associates Inc
Lynch & Associates-Engineering Consultants LLC
MotionLink
PubWorks
Terra Engineering
Trotter and Associates Inc
VTN Consulting
Weston & Sampson

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4Leaf Inc
Alfred Benesch & Co
American Engineering Testing Inc
ARCADIS
Aspect Consulting LLC
Ayes Associates
Aztec Engineering
BL Companies Inc
Bolton & Menk Inc
Burgess and Niple
Carroll Engineering Inc
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EBA-A Tetra Tech Company
Engineering Service Inc
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Fay Sofford & Thordrile Inc
Fisher & Arnold Inc
Foth
Gateway Industrial Products Inc
GEA
GeoDesign Inc
GeoEngineers
GHD
Greeley and Hansen
Gresham Smith and Partners
Hannum Wagle & Clinic Engineering
Hansen Thorp Pellinen Olson Inc
Hart Crowser Inc
HR Green Inc
HVI Associates Inc
HWIochner
Klotz Associates
Landau Associates Inc
LDA Engineering
LiRo Engineers Inc
Lochmueler Group
Locklear & Associates Inc
Milone & MacBroom Inc
Moore Twinning Associates Inc
Morrison-Maierle Inc
MSA Consulting Inc
MSA Professional Svcs
NVS
Osborn Consulting Inc
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PBS Engineering + Environmental
Project Engineering Consultants Ltd
RBF Consulting
RV Anderson Associates Limited
SEPI Engineering & Construction Inc
Short Elliott Hendrickson Inc
Skilling's Connolly Inc
Stanley Consultants Inc
Stantec
Sunrise Engineering Inc
Taber Consultants
Thompson Pump & Manufacturing Company
Tighe & Bond
TranSystems Corporation
Trotter and Associates Inc
Urban Engineers Inc
V3 Companies
Wade Trim
Wallace Group
Water Resource Engineering Associates
WBK Engineering
Western Environmental Testing Laboratory
WKG Inc
WHPacific Inc
Willdan Engineering
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Wood Rodgers Inc
Wright-Pierce

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Azteca Systems/Cityworks
CFA Software Inc
Civic Engineering & Information Technology Inc
CollectiveData Inc
EJ Group Inc
FORCE America Inc
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Lucity Inc
MotionLink
OPW Fuel Management Systems
PubWorks
Terra Engineering
TranSystems Corporation
Verizon Networkfleet
Webtech Wireless

Engineering & Technology, Fleet
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AgileAssets Inc
CarteGraph
CollectiveData Inc
CompassCom Software
EJ Group Inc
ESG Operations
FUELMASTER/Syn-Tech Systems
International Road Dynamics
MotionLink
OPW Fuel Management Systems
PubWorks
Shenandoah Fleet Maintenance and Management LLC
Terra Engineering
TranSystems Corporation
Verizon Networkfleet
Webtech Wireless
Weston & Sampson

Engineer & Technology, Geotechnical Engineering
Alfred Benesch & Co
Alpha Geotechnical & Materials
American Engineering Testing Inc
Aspect Consulting LLC
Cal Engineering & Geology Inc
CESARE Inc
CMT Engineering Laboratories
Collins Engineers Inc
Diaz Yurman & Associates
Earth Systems Inc
EBA-A Tetra Tech Company
Environmental Partners Group Inc
Exp Services Inc
Foundation Engineering Inc
Fugro Consultants Inc
GeoDesign Inc
GeoEngineers
Gresham Smith and Partners
Hart Crowser Inc
Holdrege & Kull Consulting
Engineers and Geologists
HVJ Associates Inc
HW Lochner
HW GeoSciences Inc
Kaskasia Engineering Group LLC
Landau Associates Inc
LandMark Consultants Inc
Leighton Consulting Inc
Locklear & Associates Inc
Moore Twinning Associates Inc
PBS Engineering + Environmental
Project Engineering Consultants Ltd
Reed Engineering Group Ltd
Stonebrooke Engineering
TETRA TECH
Tighe & Bond
TranSystems Corporation
Willdan Engineering
Wood Rodgers Inc

Engineer & Technology, GIS
AgileAssets Inc
Andregg Geomatics
ARS Engineers Inc
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BP
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Environmental Partners Group Inc
EPS Group Inc
Erlandsen & Associates Inc
ESRI
Fugro Roadware Inc
GBA Architects and Engineers
GEC
GeoEngineers
Gewalt Hamilton Associates Inc
GovHR USA
GPD Group
Great Valley Consultants
Greeley and Hansen
Gremmer & Associates Inc
Guida Surveying Inc
HBK Engineering LLC
HDR Inc
Henry Meisennheim & Gende Inc
HR Green Inc
Intervest Consulting Group
Jones & Carter Inc
Kleinfielder
Klotz Associates
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Larkin Lamp Rynearnor
LDA Engineering
Lomchuelle Group
LSA Associates Inc
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Mason Bruce & Girard
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MGP Inc
Milone & MacBroom Inc
MMM Group Limited
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MSA Consulting Inc
Oates Associates Inc
Olsson Associates
OMNII Associates Inc
PACE Inc
Paragon Partners Ltd
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Project Engineering Consultants Ltd
Psomas
PubWorks
RBF Consulting
Rick Engineering Company
Safe Site Utility Services LLC
Short Elliott Hendrickson Inc
Southeastern Surveying & Mapping Corporation
Strand Associates Inc
Sunrise Engineering Inc
Terra Engineering
The Altum Group
Tierra Right of Way Services
Tighe & Bond
Trotter and Associates Inc
Universal Field Services
Urban Engineers Inc
US Infrastructure of Carolina Inc
Vaughn & Melton Consulting
Engineers Transportation
VTN Consulting
Wallace Group
WBK Engineering
Webtech Wireless
WEST Consultants Inc
Westland Group Inc
Weston & Sampson
White Shield Inc
Willdan Engineering
Wood Rodgers Inc
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Engineering & Technology, Internet Technologies
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Azteca Systems/Cityworks
CarteGraph
Civic Engineering & Information Technology Inc
Encore Group
ESRI
KPPF Inc
RTVision Inc
Telco Supply Company
Terra Engineering
TranSystems Corporation
VTN Consulting

Engineering & Technology, Locators
AirX Utility Surveyors
BURY
Etna Supply
MotionLink
Safe Site Utility Services LLC
Southeastern Surveying & Mapping Corporation
Terra Engineering
Webtech Wireless

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AirX Utility Surveyors
Andregg Geomatics
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Ayres Associates
B & E Engineers
Baxter & Woodman Consulting Engineers
BL Companies Inc
Bolton & Menk Inc
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Collier Engineering Company Inc
Crafton Tull
Creighton Manning Engineering LLP
CRS Consulting Engineers
Dewberry
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Guida Surveying Inc
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Krieger & Stewart Inc
LDA Engineering
Lomchuelle Group
Lowe Engineers LLC
MacKay & Sposito Inc
Mesa Associates Inc
Milone & MacBroom Inc
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ROWE Professional Services Company
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Sunrise Engineering Inc
Terra Engineering
TETRA TECH
The Altum Group
Tierra Right of Way Services
Trotter and Associates Inc
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Verizon Networkfleet
VTN Consulting
Wade Trim
Water Resource Engineering Associates
Webtech Wireless
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Becher-Hoppe Associates Inc
BL Companies Inc
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Bolton & Menk Inc
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Dokken Engineering
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GeoEngineers
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GovHR USA
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J2 Engineering & Environmental Design
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JSO Professional Services Inc
J-U-B Engineers Inc
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KSA Engineers Inc
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LCC Inc
LDA Engineering
LiRo Engineers Inc
LNV Inc
Lochmueller Group

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Neel-Schaffer
NW Engineers LLC
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Onward Engineering
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Quiny Engineering Inc
Reed Engineering Group Ltd
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RFE Engineering Inc
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Sunrise Engineering Inc
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Trotter and Associates Inc
Wade Trim
Walter P Moore
WHPacific Inc
Wilson & Company
Wood Rodgers Inc

Engineering & Technology, Subsurface Utility Engineering
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ARS Engineers Inc
Aztec Engineering
Berg & Associates Inc
BHC RHODES Civil Engineers & Surveyors
BL Companies Inc
Carollo Engineers
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Great Valley Consultants
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Hyatt Survey Services Inc
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Jacobs
Jones & Carter Inc
JSD Professional Services Inc
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KCI Associates of NC
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LRN Inc
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Mattern & Craig Inc
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MNS Engineers Inc
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Mulkey Engineers & Consultants
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Northern Pump & Well Co
Oates Associates Inc
Olsson Associates
OMNNI Associates Inc
Parametrix
Pennoini Associates Inc
Phelps Engineering
Project Engineering Consultants Ltd
PSS
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Sayre Associates Inc
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Skilling Connolly Inc
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Wade Trim
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WHPacific Inc
Wilson & Company
Wood Rodgers Inc
WSP Canada Inc

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Neel-Schaffer
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Olsson Associates
OMNI Associates Inc
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Osborn Consulting Inc
Othon Inc Consulting Engineers
PACE Inc
Parametrax
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Pennoi Associates Inc
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Principal Engineering Inc
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Rick Engineering Company
RJ Behar & Company Inc
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RV Anderson Associates Limited
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Stanley Consultants Inc
Strand Associates Inc
Sunrise Engineering Inc
Terra Associates Inc
Terra Engineering
TETRA TECH
Thompson Pump & Manufacturing Company
Tighe & Bond
TKDA
TransSystems Corporation
Trotter and Associates Inc
V3 Companies
Vaughn & Melton Consulting
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WG Zimmerman Engineering Inc
Wade Trim
Wallace Group
Water Resource Engineering Associates
WBK Engineering
Westland Group Inc
Weston & Sampson
WGX Inc
WHPacific Inc
Wilson & Company
Wool Rodgers Inc
WSP Canada Inc

Engineering & Technology, Well Construction
Northern Pump & Well Co
Utility Service Company
WSP Canada Inc

Environmental Equipment & Services, Brownfield Redevelopment
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GHD
GKD
GovHR USA
GPD Group
Jones & Carter Inc
Kleinfield
Klotz Associates
Leighton Consulting Inc
LNV Inc
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Morrison-Maierle Inc
Olsson Associates
OMNI Associates Inc
PBS Engineering + Environmental
The Chazen Companies
Tighe & Bond

Environmental Equipment & Services, Cathodic Protection
Universal Field Services

Environmental Equipment & Services, Corrosion Engineering
HDR Inc
RHOMAR Industries Inc

Environmental Equipment & Services, Culverts
Alberta Highway Services Ltd
Alfred Benesch & Co
DBA Construction Inc
Environmental Partners Group Inc
Etna Supply
GeEngineers
Landau Associates Inc
O'Brien & Gere
OMNI Associates Inc
PCL Construction Inc
Public Works Equipment and Supply Inc
RNOW Inc
TYMCO

Environmental Equipment & Services, Recycling Equipment
Amick Equipment Company Inc
Bell Equipment Company
KM International
MacQueen Equipment Inc
Morbark Inc
RNOW Inc
Stringfellow Inc

Equipment Maintenance, Air Compressors
Airworks Compressors Corp
Diesel Equipment Company
QPR
Siewert Equipment
West Side Tractor Sales

Equipment Maintenance, Environmental Equipment
Aggregate Industries SWR Inc
Atlantic Detroit Diesel-Allison LLC
Everglades Farm Equipment
GapVax Inc
MacQueen Equipment Inc
Murray & Trettel Inc
Siewert Equipment
Stringfellow Inc
Thompson Pump & Manufacturing Company

Equipment Maintenance, Fleet Construction Equipment
Atlantic Detroit Diesel-Allison LLC
Casper's Truck Equipment
CompassCom Software
Diesel Equipment Company
Everglades Farm Equipment
GovDeals
GS Equipment Co Inc
Harrison Hydraulic Solutions
HOLT CAT
Johnston North America
Power Equipment Leasing Company
Truck Country
Verizon Network Fleet
Volvo Construction Equipment
West Side Tractor Sales

Equipment Maintenance, Vehicles
Atlantic Detroit Diesel-Allison LLC
Donovan Equipment Co Inc
Everglades Farm Equipment
GovDeals
Harrison Hydraulic Solutions
Power Equipment Leasing Company
Rough Clean Tech
Shenandoah Fleet Maintenance and Management LLC
Standard Equipment Company
Truck Country

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Aggregate Industries SWR Inc
American Engineering Testing Inc
Ayres Associates
BL Companies Inc
Bowman Bowman Novick
Camosy Construction
Carollo Engineers
Collins Engineers Inc
Construction Accessories
Crafton Tull
CTS Group
Dewberry
ESI Consultants Ltd
Exeltech Consulting Inc
FGM Architects
Gateway Industrial Products Inc
GHD
Gkkworks
Henry Meisenheimer & Gende Inc
HNTB Corporation
Legat Architects
LNV Inc
Maintenance Design Group
Moore Twining Associates Inc
New-Com Inc
Oates Associates Inc
O'Brien & Gere
Olsson Associates
PCL Construction Inc
Primera Engineers Ltd
PTMW Inc
R2H Engineering Inc
Reid Middleton
Riley Construction Company Inc
Strand Associates Inc
Swinerton Management & Consulting
TKDA
Walter P Moore
WHPacific Inc
Wright Construction Group Inc
<table>
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<tr>
<th>Water/Sewers, Manhole Risers</th>
<th>Visu-Sewer Inc</th>
<th>CRT Specialty Products</th>
<th>Ess Brothers &amp; Sons Inc</th>
<th>Etna Supply</th>
<th>Neenah Foundry Company</th>
<th>Oldcastle Precast Inc</th>
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<td><strong>Water/Sewers, Manhole Service Equipment</strong></td>
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<td>CRT Specialty Products</td>
<td>Ess Brothers &amp; Sons Inc</td>
<td>Liqui-Force Services (USA) Inc</td>
<td>McClellan Sales Inc</td>
<td>USABlueBook</td>
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<td><strong>Water/Sewers, Sustainability Equipment</strong></td>
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<td>ClearSpan Fabric Structures</td>
<td>Ess Brothers &amp; Sons Inc</td>
<td>NMC</td>
<td>PCL Construction Inc</td>
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<td>ESG Operations</td>
<td>Ess Brothers &amp; Sons Inc</td>
<td>HDR Inc</td>
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<td>Engineering Service Inc</td>
<td>Erler &amp; Kalinowski Inc</td>
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<td>Larkin Lamp Rynearson</td>
<td>PCL Construction Inc</td>
<td>United Resource LLC</td>
<td>Veolia Water Milwaukee LLC</td>
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<td><strong>Winter Maintenance, Blades &amp; Scrapers</strong></td>
<td>FallLine Corporation</td>
<td>Little Falls Machine Inc</td>
<td>Monroe Truck Equipment Inc</td>
<td>Parker Farm Service</td>
<td>Trackless Vehicles Ltd</td>
<td>Waltman Construction</td>
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<td>LOT Maintenance Inc</td>
<td>MacQueen Equipment Inc</td>
<td>Parker Farm Service</td>
<td>Trackless Vehicles Ltd</td>
<td>Wauaus Water Equipment Company Inc</td>
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<td><strong>Winter Maintenance, Chemical Storage Tanks</strong></td>
<td>GVM Snow Equipment</td>
<td>Swenson Products Inc</td>
<td>Wilkinson Corporation</td>
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<td><strong>Winter Maintenance, Chemicals</strong></td>
<td>Compass Minerals America Inc</td>
<td>Great Lakes Chloride Inc</td>
<td>GVM Snow Equipment</td>
<td>Industrial Systems Ltd</td>
<td>Occidental Chemical Corporation</td>
<td>Ossian Inc</td>
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<td>Cargill Deicing Technology</td>
<td>Certified Power Inc</td>
<td>Great Lakes Chloride Inc</td>
<td>GVM Snow Equipment</td>
<td>Highway Equipment Company</td>
<td>Industrial Systems Ltd</td>
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<td>GVM Snow Equipment</td>
<td>Salt Institute</td>
<td>Wauaus Water Equipment Company Inc</td>
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<td>GVM Snow Equipment</td>
<td>Winter Equipment Company</td>
<td>Little Falls Machine Inc</td>
<td>Monroe Truck Equipment Inc</td>
<td>Reed Systems Ltd</td>
<td>Trackless Vehicles Ltd</td>
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<td>Murray &amp; Trettel Inc</td>
<td>HP Fairfield LLC</td>
<td>Little Falls Machine Inc</td>
<td>Monroe Truck Equipment Inc</td>
<td>Reed Systems Ltd</td>
<td>Toro Company</td>
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<td><strong>Winter Maintenance, Salt Storage</strong></td>
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<td>Dome Corporation of North America</td>
<td>Gateway Industrial Products Inc</td>
<td>GVM Snow Equipment</td>
<td>Salt Institute</td>
<td></td>
</tr>
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"I think I saw something in this column a while back about getting high-speed Internet to rural communities but I think it was for a specific issue. We are out in the middle of nowhere and really need to get this service to our residents. Is there any way to make the big companies install it for us?"

I hear this question from folks all over the U.S. They tell me they are losing out on educational opportunities because they can’t hire a teacher to teach an advanced placement course so your students miss out. If broadband was available, the district could link up with adjoining districts so students could take part remotely in the course. Doctors are confronted with unusual medical cases and may not have to send patients “hundreds of miles” to tertiary-care hospitals if the doctors were equipped with broadband. They can consult with an expert online and the patient could even be examined online. In some areas, conventional broadband providers find it hard to make a business case for extending access to sparsely populated areas. And in other areas, there’s little or no competition, and even if people there have access to broadband, it’s priced so high they can’t afford it. The U.S. Agriculture Chief, Tom Vilsack, recently shared information about his department’s Community Connect program which makes grants for broadband and will soon reopen its loan program, which provides financing for broadband in unserved or underserved areas. Community Connect is targeted specifically for small rural communities. The grants can range from $200,000 to $1 million, depending on the scope of the project. The department is still in the process of writing rules and regulations for how the new money should be distributed to unserved and underserved areas. If your community is interested in expanding broadband access, you should seek technical assistance from BroadbandUSA, a program of the U.S.
Department of Commerce. Contact the USDA’s Rural Development office and ask for information on Community Connect. The link is: www.rd.usda.gov/programs-services/community-connect-grants.

Q “Enough is enough already! We have gotten 60 inches of snow this year and the winter isn’t even over yet. We are running out of places to put it. We’ve filled all our vacant lots. A suggestion has been made that we push or dump it in the nearby river. What’s going to happen to us if we do this?”

A It has indeed been a record year for snow in the Northeast and I can only imagine the frustration at not having any place to move it. Dumping it in rivers or the ocean might seem like a good alternative when everything else is full. Normally, dumping plowed snow into waterways is considered a bad idea. Snow that’s been on roads and highways is filthy. It’s mixed with chemical-laced road salt, motor oil, dog poop, trash and who knows what else. Not only that but some of the snow could potentially freeze in chunks and threaten boat traffic or create hazard pushing against bridge pilings. So far, the Environmental Protection Agency is not regulating the dumping of snow into rivers or oceans. I hope they don’t get into that business! Some states have their own laws that forbid coastal towns from doing so unless the snow threatens public safety and they get an emergency waiver. This requirement is not surprising since many of our rivers and harbors have been polluted and overrun by sewage for many decades, and states have been forced to spend billions of dollars cleaning them up. My sources tell me more cities are utilizing “snow farms” further inland so that the soil can filter out contaminants as it melts and runs toward the sea or river. During storms, cities like Boston and New York will also ship some of their snow to melters, which send the water to treatment plants to remove contaminants. We all realize that emergency situations can cause us to override these concerns. When cities accumulate an insane amount of snow, it can become dangerous. The snow piled up alongside roadways can get so high that drivers can’t see. Pedestrians stop using sidewalks and start stumbling down streets. My best advice would be to contact your state department of natural resources/environmental quality to see what they will allow. By now, you have probably already resolved the issue but it’s never too late to plan for the next “snowmageddon” because it always manages to come!

Q “We are seeing many technologies added to the vehicles we purchase for our fleet every year. While we only dreamed of having backup cameras previously, it is now cheaper to buy a vehicle with that package than it is to install it after the purchase. What impact will these various new technologies have on how we purchase and operate our fleets?”

A I understand there are “voice alert systems” that can be added to buses that provide an audible warning signal that will broadcast a heads-up message to anyone who might be in the bus’s path. Similar “talking bus” systems, using externally mounted speakers, have been tested in Portland, Ore., Baltimore and Washington, DC. In Cleveland, transit officials say that the use of the alerts—which in that city consist of a female voice warning that the bus is turning—have contributed to a reduction of bus-pedestrian fatalities to zero since they were installed on 400 vehicles in 2009. The cost for the Cleveland program, the most comprehensive in the nation so far, was $600,000 paid from federal stimulus funds. The program is not without opponents. Reaction to the advent of talking buses was met with skepticism by advocates in Washington, believing “talking buses bully pedestrians into accepting responsibility for an incident that might occur” and call the move “safety theater.” Rob Pitingolo at Greater Greater Washington (a group organized to promote informed and civically engaged communities to support a growing and inclusive region and speak up for livable communities and quality education) says, “After all, if someone is unfortunately struck, shouldn’t they have seen it coming? It is logic designed to distract attention away from the incident itself, and prematurely assign responsibility.” Noise pollution is also another concern in a crowded city. Opponents here believe that “degrading the public realm with unnecessary noise doesn’t make anything safer.” With all the varying levels of noise that already surround a busy intersection in, say, New York, one more noise might be more irritating than effective. People may likely be able to subconsciously block out the noise the same way they block out the other auditory offenses in the city—jackhammers, elevated trains, honking, revving engines and the like. And, after all, half of the pedestrians in any city are walking around wearing headphones as it is! We’ll watch for results.

Ask Ann...

Please address all inquiries to:

Ann Daniels
Director of Accreditation
APWA, 2345 Grand Blvd., Suite 700
Kansas City, MO 64108-2625

Fax questions to: (816) 472-1610
E-mail: adaniels@apwa.net
APWA is proud to announce that the Certified Public Fleet Professional (CPFP) eligibility requirements have been updated for 2015 and now allow individuals with private fleet experience a chance to earn their certification!
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.

ClearSpan™ is the industry leader for sand and salt storage

ClearSpan™ Fabric Structures, the preferred choice for sand and salt storage, provides design-build and energy-efficient solutions for material, equipment and other storage needs. Just recently, the Township of Wayne Department of Public Works in Wayne, N.J., installed a 65’ wide by 100’ long ClearSpan Hercules Truss Arch building for their salt supply. The ClearSpan buildings feature abundant natural light and spacious interiors without support posts. With minimal foundation requirements, the structures can be permanent or temporary, and are easy to relocate. Made in the USA, they can be built to any length and up to 300’ wide. According to George Holzapfel, Wayne’s public works director, “[The building] is well received. Material stored is safe from the elements and access for trucks and equipment is excellent.” For more information, call 1-866-643-1010 or visit www.clearspan.com/ADAPWA.

TAGSTER™ – Easy and Safe Graffiti Removal!

TAGSTER™ Graffiti Remover is the safe, biodegradable, non-toxic, non-caustic, and non-flammable way for public works departments to eliminate graffiti and tagging problems. Whether you are trying to remove a declaration of love or gang symbols, TAGSTER unique gelled solution will allow you to wipe it away easily and safely. Removes graffiti from metal, concrete, wood, rock, plastic, restroom privacy panels or virtually any surface! For more information, call RHOMAR Industries, Inc., at (800) 688-6221.

Sustainable waste-to-energy facility approved for construction in Tennessee

PHG Energy (PHGE) and the City of Lebanon, Tennessee, have signed a contract that will provide an environmentally sustainable method of waste disposal and produce green power in the process. The waste-to-energy technology, which will go online early next year, is a downdraft gasification plant that will cleanly convert up to 64 tons per day of blended waste wood, scrap tires and sewer sludge into a fuel gas that will generate up to 300Kw of electricity. The generation of this
power will provide for the plant’s internal power needs as well as contribute electricity to the wastewater treatment plant where it will be located. The plant is projected to keep more than 8,000 tons of material out of landfills each year—the equivalent of a line of trucks over four miles long. For more information regarding PHG Energy, please visit www.phgenergy.com or contact Nancy Cooper at (615) 471-9093.

Bergkamp’s new MA30 applies Mastic Surface Treatment to preserve asphalt pavement

Bergkamp Inc., based in Salina, Kansas, offers the MA30 Frictional Mastic Surface Treatment Applicator that allows contractors and government agencies to apply Frictional Mastic Surface Treatment over highways, roads, parking lots and airport runways to protect the surface and extend the life of the pavement. It applies a material mix that is made to precise specification, which results in fewer operator calculations and on-the-job adjustments, minimizing operator training time. The full-length ribbon mixer works to maintain the proper material consistency, regardless of the truck engine speed during transport to the job site. The Frictional Mastic Surface Treatment is then applied over the existing pavement through a patent-pending, variable-width, low-pressure spray bar that has side-shift capabilities. For more information, contact Bergkamp at (785) 825-1375 or visit www.bergkampinc.com.

Solar pumps for closed and remote landfills help keep municipal, local sites in compliance

Blackhawk Technology’s Apollo Solar Piston Pump™ is a popular choice for groundwater remediation at aging, closed landfills and at remote sites not served by electric or pneumatic power. Rugged, reliable and cost-effective, Apollo solar pumps are employed across the country at inactive sites experiencing potential ecological and regulatory issues, and to dewater gas wells for agencies wishing to increase methane flows. The above-ground driver is simple to install, and downhole components are the industry standard. Dependable Apollo solar pumps operate in latitudes as northerly as Toronto. See case studies at www.blackhawkco.com. Contact Mark Bertane, mbertane@blackhawkco.com, 800-469-4887.

Ending the lift station waste

Steel Toe Group now has the system that Europe uses to end the need to remove wastewater pumps when clogged with wipes, etc. The DIP System® provides the innovation and sustainability called for by every agency involved. It ends the odors, corrosion, raw sewage retention, trash removal, need for bar screens and rakes or baskets, and wet well cleaning that plagues neighborhoods and wastewater management. Your renovated wet well now becomes a clean, dry lift station that you manage remotely with pumps that clean themselves. Stop wasting time, labor, and personnel. Call (800) 475-0101 or get a FREE EBook by requesting here: http://bit.ly/1JLYElR.

Laserfiche: Simple, elegant enterprise content management

Laserfiche Connector provides an easy, “no coding required” way to integrate Laserfiche enterprise content management (ECM) software with line of business applications such as GIS. Public works organizations use Laserfiche to store and manage a wide variety of digital documents such as permit job files, maps and drawings, right-of-way agreement files and standard operating procedures, among others. By integrating Laserfiche with
GIS, field maintenance crews gain instant access to the scanned permits and record drawings they need on the job from laptops, tablets or smartphones. For more information, call (562) 988-1688 or visit www.laserfiche.com.

Simulation-based driver training solutions from Virtual Driver Interactive, Inc.

Virtual Driver Interactive, Inc. is the leading provider of simulation-based driver training solutions for commercial and education applications. Virtual HD® is the industry’s first voice-controlled, interactive, simulation-based driver safety program designed for corporate fleets to improve hazard recognition skills and reduce crash risk. Industry-leading utility organizations including PSE&G, National Grid, Enmax, Minnesota Power, and Ameren are improving driver safety with Virtual HD. For more information, visit our website at www.driverinteractive.com or contact us at 877-746-8332 or vdiwebinquiry@driverinteractive.com.

Wiser Riser™ – A ‘hole’ new technology in manhole cover risers

The award-winning makers of PLATE LOCKS, a reusable road plate securing system sold around the world, have created Wiser Riser™, yet another unique product to answer a need within the roadwork community. Wiser Riser is the only manhole cover on the market made of strong, durable polypropylene that includes Plate Locks Roadway Safety Products’ exclusive wedge shaped spacers that bring the manhole cover level to street grade, even on an uneven road surface. Other brands are made of vulcanized rubber, which crumble, warp and degrade, and no other brand offers our patent-pending wedge spacers. For more information on this innovative new product, visit our website at www.wiserriser.com, call/text (541) 821-3622, or e-mail Chris Lane at chris@platelocks.com.

Emergency Utility Marking Kit

Act quickly to secure downed areas when a storm hits. Featuring critical safety and warning supplies, the Emergency Utility Marking Kit will help you warn others of a potential electrical utility hazard. Kit includes tags, labels and markers conveniently stored in a durable camouflage duffle bag. Ideal as part of an Emergency Response and Pre-storm Preparedness program. Kit includes: Traffic Cone Sleeve (1), Utility Pole Wraps (2), Hard Hat Emergency Labels (10), Utility Cable ID Tags (25), Lock-Out Tags (5), “Danger” Marking Flags (50), Red “Danger” Tape (2 x 300-ft rolls), and one durable Camo Duffel Bag. The Emergency Utility Marking Kit is available for immediate purchase on shop.fricknet.com or contact William Frick & Company at marketing@fricknet.com.

Heavy-duty granulators

SMS Series granulators from Herbold have been redesigned to cope with the most demanding heavy-duty size reduction applications in a single step. These machines are manufactured with rotor widths ranging from 23½” to 78¾” and with drive capacities between 60 and 420 HP. The knife design is segmental, thus ensuring a quick and easy exchange of the cutting tools. Typical applications for these heavy duty granulators include heavy, thick-walled semi-finished products in PE, PP, POM and PA, pipes with high wall thicknesses and large purgings. They are also well suited for difficult-to-grind materials such as aramid fibers (commonly used for manufacturing bullet-proof vests), carbon fibers and composite materials. For more information, call (401) 597-5500 or visit www.herboldusa.com.
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