

Spotlight

A publication of Spotts, Stevens and McCoy



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SPOTTS | STEVENS | MCCOY

Our work touches everyday life.

From the water you drink to the air you breathe to the buildings and communities where you live, work and play.

Spotts, Stevens and McCoy is a family-owned regional engineering, environmental, and surveying firm serving local and global clients. We engineer solutions for a better world. Our work touches everyday life; from the water you drink, to the air you breathe, to the buildings and communities where you live, work and play.

EXPERTISE

- Building Engineering
- Site and Civil Engineering
- Survey, Data Capture and Modeling
- Water and Wastewater Engineering
- Construction Phase Services

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Changing Seasons

Pumpkin spice is here! Even if you're not a pumpkin fan, it's unavoidable that the Fall season has arrived. The leaves are beginning to crunch when you walk on the sidewalk, and the breeze is beginning to blow a bit cooler than it did before.

For some the beginning of a new season means redecorating the mantle, preparing plans for holidays and special events, and maybe reorganizing the closet to prepare for temperature changes. For others it means the start of a new sports season or new recreational activities.

But for businesses, organizations, facilities, municipalities, and everywhere in between- the change of seasons means preparations, challenges, and opportunities. From falling leaves, changes in temperature, and shorter days, to preparing facilities for the Winter - whatever the item on your list, now is a great time to get started.

And a New Year is Just Around the Corner

Just as winter may feel a world away, for many municipalities, the end of the MS4 permit term may also feel like it's a long way off. However, we encourage municipal leaders to begin the process sooner, rather than later. As budgets are being developed, consider your stormwater management plans. Identify the priority projects in relation to your fiscal year.

SSM is always here to help! Whether you need guidance on your MS4 requirements, or you want to jumpstart some of your priority projects- give us a call!

CASE STUDY

Swarthmore College Scott Amphitheatre

Working for Project Architect Atkin-Olshin, and CVM, the structural engineers responsible for designing a proposed removable canopy and supporting structures for the existing 50-year-old open-air Amphitheatre, SSM utilized high definition laser scanning equipment and software to quickly and accurately capture the existing structure and landscape conditions.

These services were employed to enable the project team to design the renovations in a 3-D environment. The Revit model and accompanying point cloud allows the team and owner to design and then view the effects their design will have on the multi-terraced levels, stone retaining walls and mature trees. In addition, SSM utilized an existing topographical survey plan that was imported into Revit and used as supplemental background information. SSM delivered an accurate 3D model of the Amphitheatre developed in Revit. SSM provided point cloud data and a Leica Tru-View of each scanner position .



A Look at Surveying in the Fall

For many, the Fall season brings great joy. The crunch of leaves, the extra breeze, and yes, the smell of pumpkin flavoring and warm apple cider.

For surveyors, whose days are spent almost fully outdoors, the start to Fall is a welcome change in climate. Most of our surveying team considers Fall the best time to survey. The weather is more temperate than Summer or Winter, and it is not quite as wet as Springtime. But there's one other key to the season that makes surveying in the Fall better, stronger, and more efficient: falling leaves.

As the leaves fall off the trees, you should make a point to get your data collected! Performing surveying and data collection at this time of the year is actually less difficult. Because measured spaces need to be visible, as leaves fall- more data is able to be captured in a simpler, and often faster, fashion. Aerial imagery from a vertical position becomes clearer. And the same can be said for horizontal measurements. Without large shrubs and leaves on the trees, our surveyors are able to survey faster and more accurately. This is especially true in wooded areas because more measurements can be taken from less setups. That means more data, less time.

A common term for this idea is leaf-off imagery. This is as opposed to leaf-on imagery. As expected, leaf-on refers to foliage on trees or thriving shrubs. Leaf-off means no foliage or a decreased amount of shrubs.

Leaf-off imagery is particularly essential when mapping with contours and ground elevations from aerial imagery. When capturing leaf-on imagery, large portions of an area cannot be mapped accurately due to tree coverage. On the other hand, with leaf-off imagery, the photogrammetry processing is able to determine elevations more accurately through the gaps in tree branches that are not visible when the leaves are on.

As we embrace the season, we also embrace the opportunities that Autumn presents for serving our clients in an even better, an even more efficient, and an even more precise manner.



Preparing Your Facility for Winter

Winter, snowstorms, blizzards, warm hot chocolate, shoveling, sledding, snow days. They all feel like a world away. But believe it or not, Fall is the best time to prepare for the Winter. Don't let your facility, or your people be caught off guard or unprepared for the first snowstorm or freezing weather. Making preparations in advance, and evaluating your facility's vulnerability will ensure that Winter is a breeze. (Pun intended).

Take some time to identify how winter usually hits your area, or the location of your building. Is your area typically hit hard in the winter? What types of things cause the most damage, stress, or concern through the winter months? Have you ever noticed or identified specific areas of winter-concern? These could include pronounced icicle formation, excess roof snow accumulation, doors not closing with temperature changes, areas of shade that ice for longer. Does your manufacturing process generate heat within the building? How have your existing systems functioned for you in the past few years?

Roof collapse is one of the most catastrophic losses during winter. In the recent past, this has had more impact on pre-engineered steel buildings, but it can also have an impact on stepped roofs where snow drifts can accumulate. In pre-engineered steel buildings, owners should monitor the displacement of the roof should a heavy snow storm affect the area, and have an action plan in place for snow removal. For buildings with flat or stepped roofs, ensure that roof drains are not blocked and are functioning properly. Finally, for older buildings, be on alert for combined snow and rain loads, as earlier buildings' codes did not fully acknowledge this condition as a possible roof loading.

Possibly a less anticipated form of damage during winter occurs during extended periods of sub-freezing temperatures. This most often will affect manufacturing or process facilities that have operations shut down during the holidays, but this can also affect any area of a building with piping in close proximity to exterior walls. Of utmost importance during these cold snaps is to ensure that someone familiar with building operations is aware of the coming temperature swings.

Preparations should be in place for addressing damage to equipment or piping, especially fire protection systems. Finally, always maintain a consistent and reliable source of heat within the building during operation shut downs.

It is also important to observe the effects of sub-freezing temperatures on the building to build the base of knowledge for future remediation. If you notice significant or concentrated icicle formations, this is usually a sign of a poorly insulated roof, or possibly ineffective roof drains. This is a condition that warrants review so that more significant damage within the building envelope can be prevented. If you notice doors not closing properly or interior walls that crack during a cold snap only to close once temperatures rebound, this is likely a lack of perimeter frost protection. This is a condition that should be corrected so that voids in the soil below do not cause more significant damage to the building.

Good planning and a keen eye means you can be well prepared for even the worst of winter.

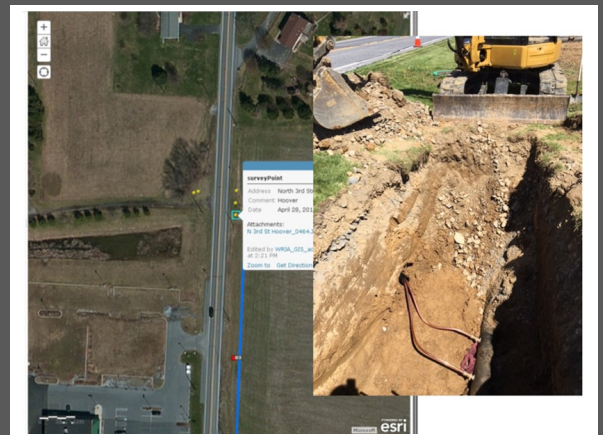
CASE STUDY

Accessing Assets Year-Round

In 2013, a water main broke in the middle of winter. The water authority rushed into action. First step was to shut off the water at the valve to stop the water from shooting out the broken main. They got their map and headed out to the location. As it turned out, the location of the main was in the middle of a park. So, while normally a to-scale map offers landmarks and points of reference to quickly pin point the exact location—in this instance, that wasn't quite the case. To make matters worse, everywhere the eye could see was covered with a foot of white snow. The only option was to guess and check. Despite their map, despite their data, it took that water authority 8 hours to locate and turn off the water valve.

Following that event, the authority decided they can never allow that situation to happen again. So, they set out to gather every critical water system asset—such as shut-off valves—and store it in one GIS map. The online GIS data is available through mobile applications, making it always accessible in the field. Having the ability to easily confirm the precise location, allows for quicker decision making and better problem solving.

Since 2013, SSM and other partners have worked with the water authority to collect every single water asset point in the authority's geographic reach and input it into an interactive, up-to-date GIS mapping system. Now, when the water valve needs to be shut off at any location, in any weather conditions, with the assistance of smart devices, they'll be able to pinpoint the exact precise location of the valve. Less time, less damage, more effective.





Staff News

In August, SSM welcomed Seth A. Nace, PE, LC, LEED AP to the team as a Senior Electrical Engineer in the Facilities Engineering Department.

Mr. Nace has more than 23 years of electrical engineering and project management experience. Among these include design of high, medium, and low voltage power distribution systems and substations, motor control, lighting/controls, auxiliary systems including photovoltaic, emergency/standby power generation systems, uninterruptible power systems (UPS), fire alarm, security and access control, signaling and suppression systems, and telecommunication systems for various facilities. In addition, he has performed specialized studies and investigations of existing conditions and systems resulting in building assessment, evaluations, and recommendations reports, as well as cost opinions for code compliance, economic cost evaluations, and scheduling.

Nace's project work has included the analysis, design, and specification during project development from conceptual and preliminary through final design and all construction phase services.

He holds a BS in Architectural Engineering from The Pennsylvania State University and is a Registered PE in Pennsylvania, Arizona, California, District of Columbia, Delaware, Florida, Hawaii, Illinois, Iowa, Maryland, Minnesota, Nebraska, New Mexico, Nevada, New Jersey, Rhode Island, Oregon, Texas, Utah, Vermont, and Virginia. Additional credentials include National Council on Qualifications for the Lighting Professions (NCQLP) Certification, National Council of Examiners for Engineering and Surveying (NCEES) Certification, and Leadership in Energy and Environmental Design Accredited Professional.

A Moment Many Years in the Making

This month, a combined project with [Western Berks Water Authority \(WBWA\)](#) and the [US Army Corps of Engineers \(USACE\)](#) hit a major milestone: the completion of a 4,000 foot raw water line connecting the WBWA treatment plant to the Blue Marsh Dam. The final piece, a 48" tee/48" x 24" reducer fitting/24" valve assembly, was installed as members of the WBWA Board and staff, USACE staff, and the SSM team were present to celebrate.

In the mid-to-late 1970s, the pipeline was intended to be built during construction of Blue Marsh Dam after Hurricane Agnes. Due to budget cuts, the connecting pipe was never built, until WBWA discussed the possibility of withdrawing water directly from the dam to increase raw water quality to the water treatment plant. Withdrawing water from a consistent depth level within the lake reduces the impacts from surface algae and other contaminants.

SSM was selected for this project 7 years ago to provide engineering, design and construction management services. The design is based totally on gravity flow from the dam to the treatment plant, and must withstand the pressure of water forced from a large 48" pipe into a 24" pipe. The project also included extensive permitting and mitigation input from the USACE to restore the recreational area back to its original state.

