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PIPELINE

MICHIGAN ASSOCIATION OF COUNTY DRAIN COMMISSIONERS
MANAGING MICHIGAN'S WATER RESOURCES SINCE 1899

STERLING RELIEF DRAIN

2022 Innovation & Excellence Project

MASTODON FOUND ON INTERCOUNTY DRAIN PROJECT

2023 MACDC AWARDS PROGRAM

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PRESIDENT'S MESSAGE

BRIAN WENDLING
Saginaw County Public Works Commissioner

Greetings Fellow MACDC Members,

A couple of weeks ago on a Sunday evening I found myself relatively caught up on things around the house, so I thought maybe it was a good time to just relax, pretty rare for me. My son was home as well and looking forward to watching Tom Brady take on Patrick Mahomes in the Sunday Night Football game—what a great opportunity to spend a little time with him and catch up.

As the game progressed, we found ourselves talking about a lot of different things, and of course being the best armchair coaches and quarterbacks that anyone has ever seen! What I found to be interesting as the night went on was that the conversation would abruptly end as soon as there was a commercial break. Why, you ask? Because it's election year and every commercial break seems to have multiple candidate commercials!

As the night went on, I found that our conversations turned more towards politics and candidates than our professional critiquing of two future hall of fame quarterbacks. As crazy and obnoxious as some of those commercials appeared to be, it was enlightening to me to see my 23-year-old son take an interest in what is going on and making some effort to educate himself about both issues and candidates. Even more exciting for me was that he was actually asking dad for thoughts and advice!!

Clearly this is a big year with plenty of important issues and races on the ballot. Redistricting alone has created some significant races and will drastically change the dynamics for many of us moving forward. As an example, Saginaw County previously had three Representatives and one Senator representing portions or all of the county. After the upcoming election we will have four Representatives and three Senators, all representing portions of the county. Between redistricting, term limits, and an incumbent losing a primary election, I will have only one returning legislator who I actually know. I suspect that there are many of you out there in similar situations.

As much as I was intrigued by my son's interest and questions, I quickly realized throughout the conversation that I didn't know too much about most of the candidates myself. Now the good news is that I really only need to educate myself on a couple of them before November. The real work will come later as I make the effort to actually meet all of these new folks, introduce myself, and talk about the importance of our positions as Drain Commissioners and our proposed legislative priorities.

My point here is that our "political" work is never done, the lifting is just going to be a little heavier this next year. I know you've all heard it before, and I don't mean to preach, but I can't stress enough how important it is for all of us to know our legislators. I understand that these conversations can be a little difficult at times due to party affiliations, but I see no reason that any of our MACDC issues should have anything but bi-partisan support. I've been looking for years and have yet to find a drain name with a (R) or a (D) behind it, or a drainage district that has all of one party or the other living in it.

Obviously there's lots more to unpack on this topic, but thought I'd try to get everyone thinking about it. I hope everyone is well and enjoying this wonderful fall weather we've been having.

~Brian

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ONCE IN A LIFETIME FIND

Mastodon bones unearthed during intercounty drain improvement project

By: Erin Heitzenrater, Spicer Group

It isn't every day that something from 10,000 years ago is found in an intercounty drain.

Volunteers from the Grand Rapids Public Museum, crews from Busscher Development, engineers from Spicer Group, and drain commission employees from Kent and Newaygo County hand dig through dirt to discover the fossilized skeleton of a mastodon.

Construction crews, however, unearthed just that in the early morning hours on Thursday, August 11, while working on the Geers Intercounty Drain improvement project for the Michigan Department of Agriculture and Rural Development next to East 22 Mile Road in Newaygo County. While digging to replace a culvert beneath the roadway, the crew from Busscher Development unearthed the bones of a juvenile mastodon just a few feet below the ground surface.

While the work to replace the culvert stopped, excavation work on the mastodon skeleton continued as project representatives from the Kent County Drain Commissioner and Newaygo County Drain Commissioner's offices called in experts from the Grand Rapids Public Museum and the University of Michigan. Spicer Group, the engineers on the county drain project, along with Busscher Development, local residents, and volunteers from the Grand Rapids Public Museum all assisted with the skeleton excavation.

Mastodons are an ancient extinct animal and relative to today's elephants. Over the past century, more than 250 mastodon fossils have been discovered in Michigan. Read more about how this county drain improvement and maintenance project included a once-in-a-lifetime find in an upcoming issue of Pipeline.

View from above of the mastodon find in Newaygo County.

Large mastodon bones laid out after being unearthed during an intercounty drain improvement project in Newaygo County.

2023 MACDC
INNOVATION & EXCELLENCE AWARDS

PROJECT SUBMITTALS NOW OPEN!

Pre-application Entry Form must be received by *5:00 PM, November 1, 2022*
Complete applications are due by *5:00 PM, December 1, 2022*

Application is available at https://macdc.us/awards

Awards Program | Rules and Procedures

Purpose and Goals

This Awards Program aims to:

- Recognize creative and innovative accomplishments of all scopes, sizes, and budgets, of Members and Associate Members of the Michigan Association of County Drain Commissioners (MACDC).
- Promote public awareness of the activities and contributions of MACDC, its Members and Associate Members.

Eligibility

Any MACDC Member or Associate Member may enter this Awards Program. Drain Commissioner(s) and/or Associate Member(s) may submit projects jointly or separately. Associate Members submitting separately must obtain the signature of the Drain Commissioner of record on their Entry Form.

Award Categories

MACDC's panel of judges will review submittals. Two projects will receive an *Innovation and Excellence* award. MACDC will provide one award for each winning project; recipients may purchase additional copies of the award. MACDC may also award Honorable Mention certificates to a maximum of two projects.

General Criteria

1. All entries must be submitted in accordance with the rules outlined in this document.
2. The project must have been conducted under the direct authority of the Drain Commissioner or through a Board of which the Drain Commissioner is a member.
3. A Member or Associate Member may enter as many qualified projects as they wish.
4. Projects that have received awards from other organizations may be entered.
5. Projects must have been completed and in use between April 1, 2022 and December 31, 2022.
6. Entries must comply with Submission Guidelines section of this document. Failure to comply may disqualify an entry. Please read the Guidelines thoroughly.
7. MACDC Awards Committee reserves the right to determine entry eligibility.
8. MACDC Awards Committee determines the Award Category based on submitted information.

Judges and Judging Criteria

The MACDC Awards Committee will evaluate entries based on the work completed by the entering organization(s). Finalists and winners are selected based on overall project excellence. Judges will evaluate and compare projects based on the following.

Judging Criteria *(in no particular order)*:

1. Public involvement and education
2. Environmental and water quality benefits
3. Use of new materials
   (including improving/finding new uses of existing materials)
4. Use of new technologies
   (product/method/tool to solve problem)
5. Innovation
6. Complexity
7. Cost effectiveness

Note: Projects need not contain all seven of the above criteria. However, the more criteria that a project effectively encompasses, the greater consideration it will be given.

Electronic submissions are preferred*

Email Entry Form and Final Application packet to: *admin@macdc.us*

Questions?
Contact MACDC at **517-484-9761**
or admin@macdc.us

EGLE ESTABLISHES NEW SURFACE WATER VALUES FOR TWO PFAS CHEMICALS

By: Scott Dean, EGLE Strategic Communications Advisor

The Michigan Department of Environment, Great Lakes, and Energy (EGLE) has established a new Water Quality Value (WQV) for perfluorobutane sulfonic acid (PFBS) and has revised the existing WQV for perfluorooctanoic acid (PFOA). PFOA and PFBS are members of the larger group of per- and polyfluoroalkyl substances (PFAS). WQVs are designed to protect the designated uses of Michigan's surface waters, including protections for aquatic life and public health.

The agency's Water Resources Division (WRD) determined that sufficient data was available to generate human health and aquatic life values for PFBS. Following the risk assessment method provided in Rule 323.1057 ("Rule 57"), a PFBS concentration of 670,000 parts per trillion (ppt; or nanograms per liter) was set for surface water to be broadly protective of human health and 8,300 ppt for surface water specifically protected as a drinking water source. While aquatic life values were established, the human health values are lower and thereby provide a more conservative endpoint with the overall goal of protecting water quality.

For PFOA, an update to the existing WQV from 2011 was undertaken after a review of current science indicated that a revision was needed to ensure the public and environment are protected from adverse effects. The revised human health values for PFOA are 170 ppt for surface water (from 12,000 ppt previously) and 66 ppt for surface water protected as a drinking water source (from 420 ppt, previously).

EGLE's WQVs for PFOS are not being updated at this time. EGLE continues to collaborate with other state departments and review new literature to determine if changes to its PFOS WQVs are warranted.

The Rule 57 Water Quality Values for Select PFAS (listed in nanograms per liter which is equivalent to parts per trillion) are as follows:

PFAS	HNV* (drinking)	HNV* (nondrinking)	FCV*	AMV*	FAV*
PFOS	11	12	140,000	780,000	1,600,000
PFOA[1]	66	170	880,000	7,700,000	15,000,000
PFBS[2]	8,300	670,000	24,000,0000	120,000,000	240,000,000

[1] Revised Values; [2] New Values

*Human Noncancer Value (HNV), Final Chronic Value (FCV), Aquatic Maximum Value (AMV), Final Acute Value (FAV)

Importantly, the human health WQVs are not the same as Maximum Contaminant Levels (MCLs) which apply to drinking water systems. Water Quality Values define the maximum concentration of a chemical that can be in Michigan's surface waters (lakes, rivers, streams, etc.) without adversely impacting aquatic life, recreational activities, fish consumption, and other beneficial uses. They are also used to help determine limits for discharging pollutants from water treatment plants, industrial and commercial facilities, and other regulated entities.

By law, the Water Quality Values become the generic Groundwater-Surface Water Interface (GSI) criteria under Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. The generic GSI criteria are used as the basis to determine if response activities are necessary to prevent contaminated groundwater from venting to surface water at unacceptable levels.

These new and updated WQVs only apply to surface waters in Michigan – our inland lakes, rivers, streams, wetlands, and Great Lakes. Groundwater and drinking water standards are available on the MPART website.

Geoff Rhodes collecting PFAS sample from a stream in Michigan.

FREQUENTLY ASKED QUESTIONS:

Q: How will these new Water Quality Values (WQVs) be used?

A: These new and updated WQVs will be used for regulated facilities discharging or venting to surface waters. Additionally, all WQVs are useful in understanding surface water monitoring results and helping to identify waters potentially impacted by toxic chemicals and leads to prioritization to address those concerns.

Q: How will this affect entities like wastewater plants and industry that discharge to Michigan waterways?

A: Once finalized, the WQVs for PFBS and PFOA will be incorporated into the review process for regulated discharges and venting groundwater to surface waters. Requirements for effluent limits based on state and federal regulations, monitoring, pollutant minimization programs, and/or corrective action programs can be incorporated into regulatory control documents such as permits and administrative orders. It

is important to note however that EGLE anticipates that PFOS will continue to be the main regulatory driver at most facilities.

Q: What about the other PFAS constituents for which there are no values or standards?

A: Michigan has led the nation in researching and establishing standards for PFAS and the state continues to research how to better protect public health and the environment from their hazards. As new data and research develops, EGLE and the state's MPART will continue to provide protection for the public and the state's natural resources.

Q: How does EGLE develop these Water Quality Values?

A: Michigan uses a narrative process for developing WQVs under Michigan Rule 323.1057 ("Rule 57"), which follows established federal guidance. Rule 57 allows the state to use a standardized, transparent process to develop and update WQVs when new toxicological data are available and to provide a timely response to contaminants of emerging concern. Additional information on this process can be found on EGLE's Rule 57 Water Quality Values webpage.

Q: What is the federal government doing about PFAS?

A: EGLE continues to monitor ongoing efforts from the U.S. EPA regarding PFAS and as new information becomes available will consider future updates to WQVs as deemed appropriate to protect public health and the environment. Presently, the U.S. EPA is in process of developing updated drinking water health advisories for PFOA and PFOS.

Sterling Relief Drain

By: Candice Miller, Macomb County Public Works Commissioner | Jeff Bednar, Macomb County P

INTRODUCTION

Sterling Heights is the fourth largest city in Michigan and is home to the Sterling Relief Drain, which serves over 27,000 residents throughout its 1,870-acre urban drainage district. The Macomb County Public Works Commissioner's Office (MCPWO), led by Candice Miller, brought together a team of highly qualified professional subject matter experts to design and construct two miles of green infrastructure enhancements on the Sterling Relief Drain to improve water quality entering the Red Run Intercounty Drain. The MCPWO had the idea of designing these drain improvements in a way that benefits their community by providing a beautiful green space.

The district is 30% impervious surface and provides drainage for three auto assembly plants and several major defense contractors. The Sterling Relief Drain was originally designed in 1970 as an open grass trapezoidal channel with a 4-foot diameter concrete pipe that served as an underdrain. The underdrain carried all flow except in extreme storm events when the large trapezoidal channel would begin to fill with stormwater. Lateral storm sewers collected urban drainage, which were directly connected to the underdrain. The underdrain served as a direct, untreated conduit to the Red Run Intercounty Drain, the Clinton River, and ultimately Lake St. Clair. The Sterling Relief Drain was initially designed as an inter-county drain, picking up

Daylighting and Green Infrastructure Retrofit

2022 Innovation & Excellence Winning Project

Public Works | Jamie Burton, Hubbell, Roth & Clark, Inc.

flow from the City of Troy. Upon completion, flow from the City of Troy and upstream was diverted to another drain, leaving the Sterling Relief Drain with a significant capacity surplus.

The U.S. Environmental Protection Agency's (EPA) Great Lakes Restoration Initiative grant, and the National Fish & Wildlife Foundation's Sustain Our Great Lakes (SOGL) grant program provided funding to the Macomb County Public Works Office for the Sterling Relief Drain Daylighting and Green Infrastructure Retrofit project. MCPWO's goal for this project was to redesign and retrofit approximately two miles of open channel drain from Van Dyke Avenue to its outlet into the Red Run Intercounty Drain. The corridor was redesigned to improve the water quality entering the Red Run Intercounty Drain from the Sterling Relief Drain by managing runoff from smaller rain events, including the and most polluted portion of larger storm events, the first flush. The Drain was originally designed with 28 lateral drains that directly connected to the 48-inch underdrain providing stormwater drainage from the nearby roads and subdivisions. Through the EPA and SOGL grant projects, two lateral drains were diverted from the underdrain and daylighted so that stormwater would directly discharge to the open channel. To redirect the remaining flow to the surface, ten removable restrictor plates were installed in the underdrain to force flows to the surface for treatment.

Check dam installed within the Sterling Relief Drain

The trapezoidal open channel was modified to create low depth (<18") treatment cells by constructing berms and raising structures. Berms created the stormwater treatment cells and provided maintenance access across the drain. Storm sewer structures were raised to allow for stormwater storage and treatment, forcing the water to be filtered through native plantings incorporated into the design. In addition, 300 feet of the 48-inch drain was removed near the end of the system to fully daylight the runoff before it enters the Red Run Intercounty Drain. Two check dams were placed in this area for further improvement of water quality during final treatment and sediment sump of the water entering the Red Run Intercounty Drain.

Aerial after construction

While the design behind this project sought to improve the quality of stormwater entering the Red Run Intercounty Drain, it also looked to improve the quality of life for the people in this area. Around 40 acres of habitat was created in this project, with almost 1,400 shrubs, 160,650 native perennial plugs, and over 500 trees, many native species. It provides space and resources that allow a declining monarch butterfly population to live and grow. In an area that is predominately urban, it brings a change of scenery to the residents with native flowers and a grass path through newly planted trees.

Aerial before construction

This project is the beginning of establishing a five-mile-long linear park in the community. Furthermore, the project aimed to create native and resilient habitat.

Construction began in June 2019 and was completed in September of 2020. Project monitoring and plant maintenance are still ongoing. Despite bouts of adverse weather and disruptions due to COVID-19, no time extensions were needed to complete the project on time.

The well-being and cooperation of neighboring residents who were impacted by the construction and the project results were a top priority of the project team. To keep residents updated,

multiple flyers were mailed out before work began to alert them of the upcoming project to improve relations.

Originally, the Sterling Relief Drain was designed to be utilitarian by only serving its intended purpose. The redesign and implementation of this project changed and improved the quality of life for the community. Once requiring regular mowing, the bioretention areas are not only functional and low maintenance, but aesthetically pleasing. In addition, the project provided a linear park in an area that was previously unusable to adjacent residents.

Restoring and increasing urban tree canopies is a pivotal way to combat climate change at the local level. The Sterling Relief Drain Daylighting and Green Infrastructure Retrofit project added over 500 trees to the area. Green Macomb, a county initiative promoting tree planting, and ReLeaf Michigan, a non-profit tree planting organization, planted dozens of trees along the drain. The involvement of these organizations helped to increase community awareness about the benefits of urban tree canopy. Macomb County held a tree planting event for Sterling Relief on November 1, 2019. The planting event was very successful with dozens of volunteers from the community showing up to take part. It was posted on the Sterling Heights YouTube channel at, https://www.youtube.com/watch?v=cwP-HcW8IPw&t=7s.

A mix of native grasses and flowers that are known to attract butterflies were selected to create a “butterfly alley” along the drainage corridor. The creation of the butterfly alley proved to be a source of both beauty and education. A local elementary school raised monarch butterflies and then released them

Monarch Butterfly found in butterfly alley after native plantings were introduced

around the Sterling Relief Drain, where plenty of milkweed and other native flowers allowed them to flourish. The drain has also been used as an outdoor classroom to provide students with a scenic learning environment.

ENVIRONMENTAL AND WATER QUALITY BENEFITS

The water quality benefits are significant. As stated, prior to the project, there were very limited water quality measures in place to treat the stormwater runoff from an urbanized area. Now, approximately 157 million gallons of urban stormwater runoff per year (46% of the total yearly runoff from the district) are treated while preventing the following from entering the Red Run Intercounty Drain and the Clinton River:

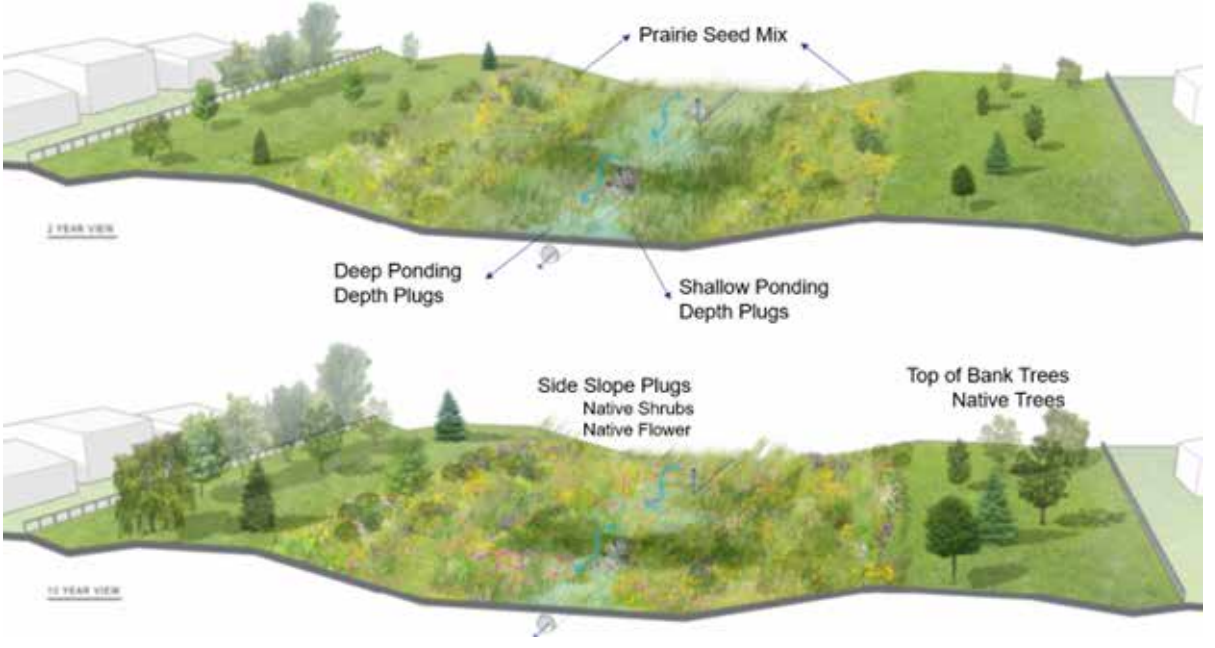
- 3,500 lbs/yr of Nitrogen
- 600 lbs/yr of Phosphorus
- 200 tons of sediment captured (68% of the yearly sediment load)

This project retrofitted the Sterling Relief Drain with additional green infrastructure and created a diversity of natural habitat zones across the 250 ft wide drain corridor. These habitat zones restored the natural processes and aided in the removal and breakdown of contaminants and pollution from urban runoff while creating an uninterrupted natural corridor.

InSite Design Studio selected diverse species to maintain healthy ecosystems, provide varied habitat, minimize potential impacts of pests, and increase the resiliency of the urban forest system. Site appropriateness, availability, and quality of trees ultimately determined the final species used.

Sherman Nursery planted 1,396 shrubs, over 500 trees, and 160,650 native pollinator perennial plugs. The landscape now acts like a natural sponge that absorbs materials from stormwater runoff that could negatively impact the local waterways. The project also increased the volume of water that the drain can handle and provided much-needed native habitat for important species like the monarch butterfly in an urbanized area.

Another major success of the project was creating an ecologically diverse corridor that promotes pollinators, reduces erosion, and helps filter pollutants and creates a resilient landscape capable of adapting to changing temperatures and extreme weather conditions. Ecological restoration created approximately 40 acres of habitat with around 15 acres of open channel bottom and 25 acres of riparian tree canopy and low-profile prairie. Ecological restoration included riparian reforestation along the top of the channel banks, peripheral bioretention swales to capture local drainage, a variety of native prairie pollinator plantings and scrub/shrub along the channel slopes, and wet-mesic prairie in the retention/infiltration zone across the channel bottom. As a result, the project will benefit



Concept plan of the new habitat growth along the drain

Concept profile of Sterling Relief Drain after construction

aquatic primary producers upstream and thus nearshore species such as northern pike, lake sturgeon, waterfowl, and shorebirds downstream. Riparian habitat restoration included native herbaceous grasses and flowers, shrubs, and trees. Future impacts will be more significant as plants establish, grow, and mature – including greater canopy benefits and increased infiltration rates from the formation of deep-rooted systems.

Drain corridor after construction

USE OF NEW TECHNOLOGIES

Sterling Relief Drain Daylighting and Green Infrastructure Retrofit project employed an innovative solution to intercept, and daylight stormwater lateral collector drains before entering the Red Run via the main underdrain conduit below the Sterling Relief Drain. This pioneering design leverages the capacity surplus and adds water quality measures to a significant amount of stormwater that historically did not have any water quality measures. As required by funding grants, the Clinton River Watershed Council (CRWC) provided project support and monitoring. The monitoring was vital in quantifying the benefits of the improvements to the Sterling Relief Drain. The pre- and post-construction monitoring activities included:

- Habitat sampling at the Sterling Relief Drain confluence with the Red Run Drain.
- Temperature pendent deployment at the Red Run confluence throughout the duration of the project.
- Temperature, pH, conductivity, and total suspended solids testing.
- Flow meter measurements at the Red Run confluence.
- Michigan frog and toad survey at two locations.

The Project was the first-ever drain project for Macomb County Public Works Commissioner's Office to use a design-build approach. This approach proved to be the most effective as the project exceeded expectations. It allowed for new ideas and changes to be brought to the design process as real-time field conditions were assessed.

INNOVATION

Stormwater management systems with excess capacity are extremely rare in the urban setting, especially considering the impacts of climate change. Taking advantage of available capacity and a large but easily modified footprint, this project highlights the reimagining of what conventional infrastructure can be to solve current water quality problems. This project optimized the existing grey infrastructure to interact with new green elements for the benefit of water quality without sacrificing the facility's original design intent or purpose.

The Sterling Relief Drain Daylighting and Green Infrastructure Retrofit project employed an innovative solution to intercept and daylight stormwater from lateral collector drains by thinking out of the box to retrofit an existing storm system that was functioning adequately to implementing modifications for the betterment of the environment and the society.

The MCPWO is currently studying the addition of real-time monitoring and adjustable restrictor plates so more water can be daylighted to the treatment cells when capacity is available.

Updated and cleaned out culverts at Shoenherr Road

COMPLEXITY

Extensive planning with all of those involved or affected by the project was a crucial achievement. Heavily driven by MCPWO, the solid working relationships between all organizations provided invaluable support to the Engineer and Contractor from the initial phases of the project through its completion. The Sterling Relief Drain Daylighting and Green Infrastructure Retrofit Daylighting project forged a strong partnership between federal, county, and local governments, private consultants, and non-profit agencies.

A challenge that was overcome, during this project, was maintaining the integrity of new construction during rain events. While construction was taking place, the drain was still in use during high flows and backwater conditions from the Red Run Intercounty Drain. The drain had to be able to sustain the same preconstruction base flow and drainage capabilities throughout the project, as bypass pumping or diversions were not feasible. This was partially accomplished by prompt planting and seeding. Areas designed to be seeded or planted were done as soon as they were

constructed to stabilize the drain capacity during rain events. These natural habitats that were created, aided in the removal and breakdown of contaminants and pollution from urban runoff.

COST EFFECTIVENESS

As stated, the Sterling Relief Drain Daylighting and Green Infrastructure Retrofit Project was MCPWO's first design-build project. MCPWO had a vision for their dream project, which spearheaded even more quality-of-life enhancements for surrounding neighbors. This project, funded through grants, had a fixed budget and the design-build process maximized the amount of time and money spent on improvements, which allowed the contractor to have more design flexibility. As a result, design-build route helped to accomplish more outcomes than initially intended for the project. The early collaboration allowed for reduced engineering costs and left more money available for construction and landscaping. Monthly design meetings and a stringent schedule were also employed to ensure that the project remained on track for its contracted completion date and within budget.

CONCLUSION

This project took an existing, dull, unimpressive grass area and turned it into a flourishing habitat with beautiful features. What once resembled a utility right of way has now turned into an extensive green infrastructure system that not only enhances the water quality for a sizeable drainage district, but it also provides park access to a resilient and natural recreation area. This project helped to break up the suburban environment with the addition of natural habitat and a walkable park. The drain was designed, and trees were planted specifically for a walkable grass pathway with the understanding that a more permanent pathway, which is currently being developed at the east end of the project, will replace it. This 5-mile-long green way is now an asset to the community. The project exceeded expectations, and the outcome has been noted by residents and the community alike. In an area that is predominately urban, it brings a change of scenery to the residents with native flowers and a grass path through newly planted trees.

In addition, the drainage system was designed with sustainability in mind. The restrictors along the drain can adapt as the conditions of the watershed change over the years. The size of the restrictor can be increased, decreased, or the restrictor can be removed altogether. This was designed purposely with the knowledge that the watershed is subject to change as the infrastructure in the area changes and the impacts of climate change produce more frequent rain events.

Native flower plantings along drain

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NEW RESEARCH STUDY:

To Save Time and Money on Infrastructure Projects, Ignore Cost (For Now)

By: Ron Brenke, PE
Executive Director, American Council of Engineering Companies of Michigan (ACEC/M)

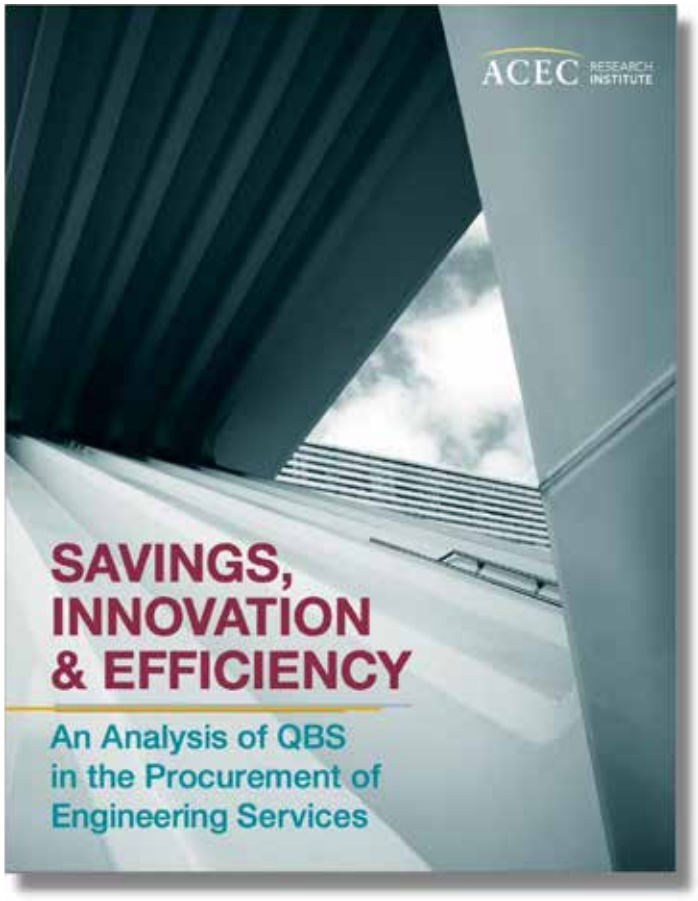
Two professors recently released an in-depth study comparing procurement methods used to select design professionals such as licensed engineers, architects, and surveyors. What they found runs counter to some conventional wisdom in the public sector.

Savings, Innovation & Efficiency: An Analysis of QBS in the Procurement of Engineering Services, distills the results of research conducted by Paul S. Chinowsky, University of Colorado Boulder and Gordon Kingsley, Georgia Institute of Technology, examining the benefits of Qualifications-Based Selection (QBS) in the procurement of engineering and design services. The study was commissioned by the ACEC Research Institute.

QBS is a structured competitive procurement process, designed to match the most qualified professional services firm to a project, based on the alignment between a project's characteristics and a firm's experience, staffing, expertise, and past performance.

What sets QBS apart from other procurement methods is that in QBS, the owner selects the most qualified provider based on responses to a Request for Qualifications, and then together, the owner and professional develop a detailed scope of services and fees for the project.

QBS does not preclude the consideration of price in the overall process. Instead, price discussions take place at the appropriate stage of the selection process, when the scope of services has been well defined, with a preferred candidate who has a clear understanding of the project.



[Image: 1. 2022 QBS Study.jpg. Caption: Researchers from the University of Colorado Boulder and Georgia Tech compared procurement methods used to select design professionals such as engineers, architects, and surveyors.]

Organizations like the American Council of Engineering Companies (ACEC) and the American Public Works Association (APWA) have advocated for QBS as the preferred procurement method for selecting architects, engineers and other design professionals. But a few lingering myths have served as barriers to comprehensive adoption of QBS.

The 2022 study provides data, gathered across a host of project types, sizes, and geographic regions, that debunks the most common objections to using QBS.

MYTH 1. Selecting design professionals based on qualifications and past performance results in a higher fees and costs.

A concern that some officials and members of the public raise about using a qualifications-based selection process rather than a traditional request for proposal and bid submitted in advance of selection is a fear of "paying too much." There's an assumption that the most qualified provider will charge a higher fee, resulting in more costly projects.

> Research proves that the best use of taxpayer money is to select engineering firms for this work competitively, based on their qualifications and experience, instead of price alone.
>
> *Paul Chinowsk, Study co-author*

In reality, selecting more qualified consultants does not equate to higher design fees.

The Chinowsky/Kingsley report cited the results of three different studies published between 2017 and 2020, comprising a collective 334 projects, and found no correlation between greater consultant qualifications and higher design fees (Shalwani 2017, Lines and Shalwani 2019 and Adamtey 2020).

In fact, the Adamtey study, published in the International Journal of Construction and Research, found that QBS performed better in terms of cost when compared to best value procurement in 160 Design-Build projects built between 2008-2019.

One likely contributor to the improved cost performance of QBS projects is the quality of designs produced by highly qualified firms. It's no secret that poor design documents lead to increased construction costs. In fact, 79% of all contract modification costs – e.g., change orders – are due to design errors and omissions discovered during construction. The price of these errors can make up almost 10% of the project's total cost.

Selecting the most qualified professional service provider can potentially save as much as 25 percent of the total project costs through a combination of shorter development and construction schedules, scope control and improved engineering.

MYTH 2: Using the QBS procurement method takes longer than other procurement types.

Investing the time in using QBS, with its structured process of issuing a Request for Qualifications, ranking of firms based on those qualifications and then co-developing the detailed project scope with the top ranked firm, can feel like an investment that busy municipal professionals don't have time to make.

However, better design documents produced by more qualified engineers and architects typically results in shorter project schedules. QBS was found to have the fastest construction speed, compared to low bid, best value and single source procurement, due to increased quality of design documents. When looking at construction milestones, QBS-based projects had a 50 percent increase in the number of projects that met all schedules.

MYTH 3: It's better to include price in the evaluation process.

Advocates for including price in the procurement process assert that greater consultant qualifications are inherently associated with higher design and construction costs. However, as we've seen from the three studies included in the Chinowsky/Kingsley report, there's no correlation between greater consultant qualifications and higher design fees.

Use of cost as a factor can appear to be the correct approach to a busy official who is primarily focused on the contracted design cost, rather than the overall project costs and schedule impacts over the course of the project. But this research proves that the best use of taxpayer money is to select design firms competitively, based on their qualifications, and to discuss costs in collaboration with the most qualified firm.

"The clarity and simplicity of the process when QBS is used enhances project outcomes and owner satisfaction, while other methods such as low bid procurement can lead to unintended consequences including cost overruns and longer timelines," said Paul Chinowsky, University of Colorado Boulder.

We have an opportunity for greater savings to our taxpayers through increased use of QBS at the local level, particularly among counties, municipalities, schools. According to the QBS study, counties, municipalities, school districts and other agencies are found to be using QBS 41-60% of projects. Increasing the use of QBS among these stakeholders would increase cost savings and improve project outcomes for all.

About the Author:
Ron Brenke, PE is the Executive Director for the American Council of Engineering Companies of Michigan (ACEC/M). ACEC/M is the association representing the business interests of Michigan engineering, surveying, architectural and related scientific firms who provide professional knowledge to the built environment and strive to protect the health and safety of the public. For more information, visit the ACEC/M website at www.acecmi.org or contact ACEC/M at 517.332.2066.

ASSOCIATE MEMBER NEWS

SPALDING DEDECKER WELCOMES CRAIG GENGLER, PE AS WEST MICHIGAN LAND DEVELOPMENT LEAD

Gengler

Spalding DeDecker (SD), has hired Craig Gengler, PE as West Michigan Land Development Lead.

Mr. Gengler has dedicated a majority of his career to land development projects, and has the expertise to take a project from concept to successful completion. He brings over 10 years of experience that includes performing site evaluations, assisting with topographic survey field work, performing soil borings and analysis, leading engineering design work, conducting pre-bid and pre-construction meetings, and managing client and stakeholder communications on a variety of projects. Craig has worked closely with large teams of architects, engineers, planners, and contractors and has specialized training in wall design. Mr. Gengler's background encompasses commercial, institutional, residential, and industrial projects ranging from small mixed-use buildings to multi-phase sprawling industrial sites. Additionally, he is well versed in the design and management of K-12 education projects across Michigan. Craig's land development expertise will complement the municipal, traffic, and construction engineering services our Grand Rapids office currently offers. In his role, Craig will focus on cultivating client relationships and providing infrastructure solutions to west and mid-Michigan clients.

"His land development experience and knowledge will enable us to expand capabilities of our Grand Rapids office," said Steve Benedettini, president of Spalding DeDecker. "We are delighted to have Craig as part of our team."

MACDC EVENT CALENDAR

FEBRUARY 15-17, 2023
MACDC Annual Winter Conference
Grand Traverse Resort, Acme

JULY 25-28, 2023
MACDC Annual Summer Conference
Crystal Mountain Resort, Thompsonville

FEBRUARY 14-16, 2024
MACDC Annual Winter Conference
Radisson Plaza Hotel, Kalamazoo

To place your event on this calendar, contact us at admin@macdc.us or 517.484.9761.

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