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ASCE Illinois Section

News

Vol. 62, No.1
Spring 2021

3D FEM Modeling with Time Effects for 100+ Year Old Bridge

Written by Irsilia Colletti, P.E.

In our industry, we embrace and hunt for innovation. In a constantly changing world with dynamic needs, engineers endeavor to not only meet said needs, but extrapolate so that the solution will outlive even the engineer. This is seen not only in the present, but also revealed when tasked with evaluating existing structures.

The Third Avenue Bridge in Minneapolis, Minnesota completed construction in 1918. Recently, the Minnesota Department of Transportation required a Load Rating Evaluation of this Historic Bridge.



The unique features of the multi-span 1,888-foot bridge include an S-Curve Alignment and its striking arches over the Mississippi River. Its Structural System is most notable. Although it is described as a Concrete Arch, it is more specifically an example of Melan Truss arch construction where the concrete arch
(continued on page 8)

President's Notes

Brian L. Pawula, P.E., PMP



Happy New Year! May 2021 bring new happiness, goals, achievements, and inspirations to everyone.

For me, 2021 has already brought new baby boy twins and a host of adjustments at home, at work, and everywhere in between. I would like to thank the Executive Board (listed in the box to the right) and Past President Megan McDonald for keeping the ball rolling on many, many topics while I have been tending to my family.

For the Illinois Section, 2021 has a promising outlook with a host of engagement opportunities for members of all ages including America's Report Card, Legends Program, partnership with ACEC on new student outreach videos, realignment of the student conferences, Scholarship Program, and the Illinois Report Card.

ASCE National released their 2021 Report Card for **America's** Infrastructure at a virtual half-day solutions summit on March 3. Those volunteering on the 2022 Report Card for **Illinois** Infrastructure undoubtedly found this helpful.

The Legends Program, which connects Life Members and retired civil engineers to students, already held two virtual events this year and is scheduled through the spring semester. Yet to come: March 10, March 31, and April 21. Check out their [YouTube Channel](#).

The Section has partnered with ACEC for years on legislative initiatives. 2021 will mark our first partnership on student outreach. ACEC is seeking to inspire high school students with videos about local projects. The videos will put a unique spin on outreach efforts that the Section has been doing for years, so we welcomed this partnership. Be on the lookout for the videos soon.

IIT, NU, and UIC students, did you know that ASCE National is realigning the student conferences nationwide? Well, they are! The goal is to better align the student conference boundaries with ASCE Region boundaries. You will be part of the new western conference (Illinois, Wisconsin, Minnesota, North Dakota, and Lakehead University in Ontario).

Students, while I have your attention, the Scholarship Program will award \$17,500 in 2021! The Section just completed a series of 4 virtual informational sessions for students to kick off the program. [Applications](#) are due on March 15. Don't miss out!

As mentioned above the Illinois Report Card is coming! We anticipate a formal kick off in early April, and it will be released in spring 2022. But, we still need volunteers! If you want to learn more, [email me](#).

On behalf of the Illinois Section, thank you for reading and stay warm! Spring is almost here.

ASCE Illinois Section News

ILLINOIS SECTION NEWSLETTER

E-Mailed to all ASCE-IS dues-paying members
American Society of Civil Engineers Illinois Section - Region 3

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Doing More with Less: Arguments for Low-Tech Innovation

Written by James P. Hambleton

One would be hard pressed to find a person who is not concerned about the world our children are inheriting. We worry, rightly so, about what more we could be doing to improve conditions for ourselves, our fellow humans, Earth's other inhabitants, and the Earth itself. As a professor of civil engineering, I worry about attracting the talent we need for the next generation of civil engineers. While we want to project a willingness to develop and embrace the very latest technology (pushing this envelope is an essential part of my job), we may be misleading people into thinking that new technology is the answer to our concerns. What if the solutions we seek are very nearly the opposite? This article describes two experiments completed during the pandemic, while working from home with my family, that lead me to think this may be the case. Indeed, the pathway to a sustainable future may be through innovations that are decidedly low-tech but nevertheless rely on a highly skilled workforce and select high-tech components.

In our first experiment, we built a house—a really small one—primarily from repurposed materials (Fig. 1). The story starts from when we first moved into our first-floor condominium, which had a large, aging deck on the patio. After months of debating what to do with this deck, including several

moments where it was perilously close to ending up in a dumpster, we decided to disassemble it (Fig. 2) with the thought of repurposing the lumber or giving it to someone who could. We spent many hours prying, drilling, and pounding to separate the deteriorated boards with mucky undersides that had not seen the light of day in many years, and we spent more hours still removing the jagged, corroded



Figure 1. "Tiny house" built primarily from repurposed materials.

Photo credit: Rachel Hambleton.

screws that once held the deck together. The work was slow and painstaking, yet also deeply meditative. The mind could not dwell on whatever thoughts of work or drama from daily news might otherwise creep in. We stacked the lumber and started to ruminate on

what could be done with it. Then, in March 2020, the pandemic sent us home for months on end. Suddenly, our condominium was just too small for two adults and two young children, and it was abundantly clear what we needed to do. We needed space. So we used the lumber to build space—a detached room that could serve alternately as a home office, home school, and playhouse.

Our "tiny house" experiment was transformational in so many ways. Foremost, it produced a profound shift in how we think about building materials. Our entire objective in design and construction became focused on using what we already have.

Our "tiny house" experiment was transformational in so many ways. Foremost, it produced a profound shift in how we think about building materials. Our entire objective in design and construction became focused on using what we already have. Buying something from the lumberyard or hardware store was seen as giving up, or at least a great concession, and indeed we made (continued on page 10)

Wastewater Surveillance for COVID-19

Written by Jerome McGovern

For the last year all of our lives have been turned upside down by the COVID-19 pandemic. It has changed the way we work, shop and socialize. With the development of vaccines and their distribution, an end to the pandemic is hopefully in sight.

In an attempt to gauge the spread of the pandemic, health officials are using wastewater surveillance to determine the presence of COVID-19 in the general population by sampling wastewater and analyzing it for the presence of the virus. Previously, wastewater surveillance has been used to determine the presence of opioids, polio and (norovirus) influenza in the general population. Shortly after

the outbreak of the pandemic, health officials requested owners of wastewater treatment plants to begin sampling influent at treatment plants to determine the presence and concentration of the genetic material ribonucleic acid (RNA) from SARS-CoV-2, the virus that causes COVID-19. While COVID-19 is a respiratory illness, a person who is infected will have the virus in their feces before they may have any symptoms. Monitoring the amount of RNA present in wastewater can help determine if the virus is present and if it is increasing or decreasing in the general population served by a specific treatment plant. This can give health officials important feedback regarding the success or failure of

protective measures to mitigate the spread of COVID-19.

Locally, the Metropolitan Water Reclamation District of Greater Chicago (MWRD) is participating in several studies by collecting

In an attempt to gauge the spread of the pandemic, health officials are using wastewater surveillance to determine the presence of COVID-19 in the general population.

samples and forwarding them to researchers. The sponsors for the studies are the National Science Foundation, the United States Department of Health and Human Services and the Walder Foundation. Samples are being taken from raw sewage and primary solids. A link to their fact sheet is provided at the end of this article.

Some states are providing websites that provide real-time infection data for various municipalities within the state comparing that to the amount of virus detected in the wastewater. An advantage of this approach is that the amount of virus appears to correlate with the rate of infection in the general population. See the graphic below for sample output for Madison, Wisconsin from the Wisconsin Department (continued on page [12](#))



O'Brien Water Reclamation Plant, Skokie, Illinois (MWRD photo)

Student Scholarship Update

Written by Tom Janicke, P.E., S.E.

The Illinois Section and its Institutes are excited to continue the student scholarship program in 2021. Dating back since as early as the 1980s, ISASCE has awarded hundreds of scholarships to civil engineering students and future industry leaders. In 2020, two new scholarships from the recently formed Con-

In 2021, ISASCE will once again break the scholarship record with 13 awards available and a total of \$17,500!

struction Institute as well as a new ASCE Student Leadership & Involvement Scholarship, sponsored by the Section, were added for a record-breaking year for scholarships offered, both in number and dollar amount. In 2021, ISASCE will once again break the scholarship record with 13 awards available and a total of \$17,500! In addition to the 3 new awards from 2020, awards remain available from the Environmental and Water Resources Institute, Geo-Institute, Transportation and Development Institute (Bob Camillone Memorial), Urban Planning and

Students get the opportunity to ask questions to practicing civil engineers working in a variety of technical disciplines and companies.

Development, and Structural Engineering Institute, who in 2021 added a third award to break the 2020 record.

Last year we received 25 student applications, and we are hoping to exceed that number this year. Student ASCE members currently enrolled in a civil engineering curriculum at Northwestern University, Illinois Institute of Technology, or the University of Illinois at Chicago are eligible to apply. Previous winners are not eligible. Both graduate and undergraduate students may apply to as many scholarships as desired. For more information on the application and eligibility requirements, please visit the ISASCE website for the latest application PDF:

<https://www.isasce.org/scholarships/>.



For several years, the ISASCE Outreach Committee has kicked off the scholarship program by hosting in-person school visits to Northwestern, UIC and IIT ASCE student chapters. Each visit includes a brief presentation about

ISASCE, the scholarships offered that year, and the application. However, the main draw of the event is the professional panel discussion, moderated by local representatives from ISASCE and the Institutes. Students get the opportunity to ask questions to practicing civil engineers working in a variety of technical disciplines and companies. Afterwards, students can also have their resumes critiqued one-on-one by one of the panelists, oftentimes some of the same individuals who represent their companies at career fairs.

To view the scholarship presentation and professional panel discussion recording (and many other videos), visit the ISASCE YouTube Channel

<https://www.youtube.com/channel/UCnsb8DrjGo5Rddet4DpoEHg>.

Due to current concerns regarding in-person meetings, the 2021 school visits were held in a virtual format (Microsoft Teams). Given the new setup, the Outreach Committee decided to try something new this year. Instead of three events (one per each school), four virtual events were scheduled for 2021, each open to all students. Each night featured a focused panel, organized based on the technical institutes.

(continued on page 13).

IS-ASCE Annual Membership Committee Update

Written by Tom Borges, P.E.

Last year, the Membership Committee identified two initiatives that would be the primary focus of the newly expanded group as we eagerly entered the promising new decade of the 2020s. The two initiatives, which both aimed at retaining and increasing membership, were as follows:

1. Student Member Transition Initiative
2. Local Membership Champion Initiative

Immediately prior to the release of the Illinois Section Spring 2020 Newsletter where these two initiatives were first announced, the world was turned upside down as the global coronavirus pandemic known as COVID-19 spread to unforeseen levels and much of our industry was forced to adapt in various ways. As we endured the growing pains of remote working environments in our new home offices, many of us had to face the unfortunate reality of trying to remain focused on work while also dealing with unexpected challenges in our personal lives. For many, this included helping their children adapt to remote learning. Needless to say, ASCE has had to adapt in many ways as well; most prominently, in-person meetings and events have not been possible for nearly a year now. While we hope that changes very soon, both the Section and the Institutes have done their best to seamlessly

transition to virtual meetings which have been able to provide our members with opportunities to continue to interact with each other and help advance their careers. While these virtual events have certainly been a relative success, the two membership initiatives are arguably more important than ever not only to ensure we maintain our valuable membership as we continue to face these unprecedented challenges, but also to provide much-needed support to those students and younger engineers who may feel isolated and lost in this new environment.

The Section and the Institutes have done their best to seamlessly transition to virtual meetings which has been able to provide our members with opportunities to continue to interact with each other and help advance their careers.

Efforts on both of the membership initiatives slowed down throughout 2020, however we have renewed focus in 2021 and have added more support to the Membership Committee with John Lazara (Stanley Consultants), who joins current Membership Chair

Tom Borges (Bloom Companies), former Membership Chair Matt Huffman (Christopher B. Burke Engineering), and Tatiana Papakos (Michael Baker).

There are currently 607 student members from 99 different universities registered within the Illinois Section, which makes up approximately 23% of the total membership. Of these student members, 45% attend the three Chicago-area universities with civil engineering programs (UIC, IIT and Northwestern); the remaining 55% of active student members attend other universities but permanently reside within the boundaries of the Illinois Section. The Student Membership Initiative aims to improve the transition for student members as they begin their professional careers by reaching out directly to soon-to-be graduates and letting them know of the countless benefits to continuing their membership and informing them of the many ways that they can stay involved. As a young professional, membership dues can seem intimidating if they are not reimbursed by their company or agency; it will be important to make them aware of the graduated scale of membership dues that helps lessen the financial burden for the first 5 years post-graduation, along with what helps make these dues a good investment for their career.

The Local Membership Champion (continued on page [13](#))

Burt Lewis Builds Foundation for the Future

Written by Steven M. Rienks, P.E., PMP

Burt Lewis has seen the world—and he has helped to build parts of it, too.



A proud graduate of both the Illinois Institute of Technology and the University of Illinois, Burt enjoyed a long career in civil engineering. His expertise took him overseas via service in the 606 Army Engineer Camouflage Battalion in World War II and through his work on projects in Kuwait. I was fortunate to have worked with Burt back in 1984-1986 in Kuwait, where we developed a 20-yr master transportation plan for Kuwait and worked on preliminary engineering plans for 20 kilometers of expressway.

Burt spent the majority of his career in California, where he was an expert on building earthquake-proof structures. Already active with the American Society of Civil Engineers (ASCE) on a local level,

he received special attention after the 1971 San Fernando Earthquake, which inspired the ASCE to create the Council of Lifeline Earthquake Engineering. He joined the committee and went on to spend eight years on the Executive Committee of the council.

Burt continues to invest in his profession by naming the ASCE Foundation a beneficiary of his life insurance policies. These generous planned gifts will allow the ASCE Foundation to thrive long after his lifetime.

"It's important to give back to the

Burt continues to invest in his profession by naming the ASCE Foundation a beneficiary of his life insurance policies. These generous planned gifts will allow the ASCE Foundation to thrive long after his lifetime.

profession what the profession has given to me," he says. "I had an interesting career and life, which was the result of my civil engineering background—and ASCE supports others like me."

"Burt Lewis' lifetime of ASCE membership and generous dedication to the ASCE Foundation are

Burt Lewis' lifetime of ASCE membership and generous dedication to the ASCE Foundation are shining examples of his passion for the civil engineering profession.

shining examples of his passion for the civil engineering profession," says H. G. "Gerry" Schwartz, Jr., the ASCE Foundation Board President. "The legacy gifts that Burt is generously leaving to the ASCE Foundation provide us all with a model to emulate."

Author Bio: Steven M. Rienks, P.E., PMP is the Director of Engineering/Senior Project Manager at American Surveying & Engineering with 40+ years of experience in preparing preliminary engineering studies, final construction documents, and construction supervision for transportation, highway, and site improvement projects.

3D FEM Modeling with Time Effects for 100+ Year Old Bridge

(continued from page 1)

reinforcement consists of steel trusses. It is almost more accurate to describe it as concrete encased

The Third Avenue Bridge in Minneapolis, Minnesota completed construction in 1918. Recently, the Minnesota Department of Transportation required a Load Rating Evolution of this Historic Bridge.

steel truss. In the instance of the Third Avenue Bridge, it is a series of multiple curved arched trusses comprised of steel angles.

The overall global load rating of such a configuration posed a unique challenge of its own; in addition, it was imperative to capture the arches for time dependent loading and local effects. These effects include: investigating splitting stresses in the concrete due to stressing of embedded steel elements that ensure integrity of available bond, stability of the rigid steel rolled shaped reinforcement embedded in concrete due to their interaction with surrounding concrete, pre-loading of the steel elements due to time-dependent effects such as creep and shrinkage that has occurred during the last 100 years and bond demand for full composite action. Here, the splitting stresses, stability of the rolled shape and the time-dependent effects are elaborated on.

To investigate these effects, a 3D model was created to model the interaction between the steel truss

and the concrete that encases the Melan Truss. It is always an honor to work on a historic bridge; one of the many challenges, however, is sorting through original bridge plans as well as the numerous repairs and rehabilitations through the years. The Third Avenue

It is always an honor to work on a historic bridge; one of the many challenges, however, is sorting through original bridge plans as well as the numerous repairs and rehabilitations through the years. The Third Avenue Bridge is no exception. Significant time was spent interpreting the original plans to ascertain the most accurate configuration before embarking on the arduous effort of building a detailed model.

Bridge is no exception. Significant time was spent interpreting the original plans to ascertain the most accurate configuration before embarking on the arduous effort of building a detailed model. Before approving a final procedure, several exhibit models were created to verify local effects such as splitting stresses in concrete and buckling strength of the steel by creating segments representative of a section of the model. Although the actual structure is comprised of several series of encased trusses, for

efficiency, only a portion of the truss rib was modeled to alleviate analytical demand on the program and enable shorter analysis time. Symmetrical boundary conditions were applied to take advantage of the symmetry of the model.

INVESTIGATION OF SPLITTING STRESSES IN CONCRETE

A double angle segment was curved and shared the same radius as the top chord of the arch and was set at a conservative length. It was comprised of concrete reinforced with a double angle and assigned Fixed-Fixed boundaries to investigate the possibility of concrete splitting due to the steel experiencing compressive forces resulting in potential tendency to buckle out and break the concrete cover. This was achieved by simulating a significant axial force applied to the segment.

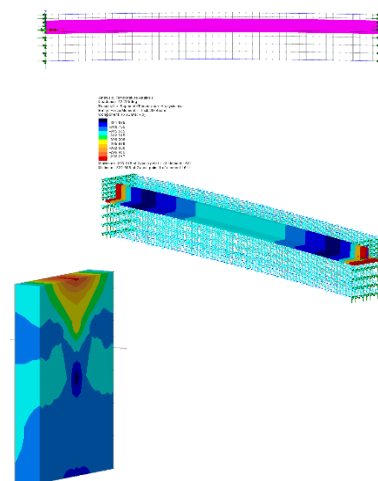


Figure 2: Double Angle encased in concrete Splitting Stresses

(continued on page 9)

3D FEM Modeling with Time Effects for 100+ Year Old Bridge

(continued from page 8)

STABILITY OF RIGID STEEL REINFORCEMENT

In addition to the concrete encased section used to investigate splitting stresses, a separate segment was created by removing the concrete surrounding the steel angles and evaluating the steel angles without any lateral support from surrounding concrete. Similarly, this model was curved, shared the same radius of a segment of melan truss and was set at a certain length. The model was developed to verify concrete cover needed to be removed for repair needs from a portion of the arch, the steel will not buckle; i.e., the steel does not need to rely on the concrete for continuous bracing. A nonlinear buckling analysis was used to determine the axial force demand required to buckle the member and this result

finding confirmed that portions of concrete may be removed during repair without concern of the steel buckling outwards.

Pre-Loading of Steel Elements Due to Time-Dependent Effects – FULL MODEL

A truss model was built using plan geometry and sections represented by beam elements and solids. To optimize analysis, only a pair of half-trusses were included as indicated in Figure 4 that spanned from the arch springline to the arch crown. Mesh refinement was determined by maintaining an appropriate aspect ratio while at the same time optimizing refinement as not to hinder analysis speed. The same model was used to perform both a linear analysis, and a non-

model did not utilize nonlinear capabilities.

The linear model was copied and then altered to be prepared for nonlinear analysis i.e. adding the stepped loading. The two components of the model changed were the concrete material property and the addition of age enabled loading. The age increments were added as previously discussed according to the historic notes until Day 10,000-the theoretical end of concrete aging, equivalent to 30 years.

The final linear analyzed model steel truss member axial demands were then tabulated to be compared to the nonlinear creep and shrinkage model results.

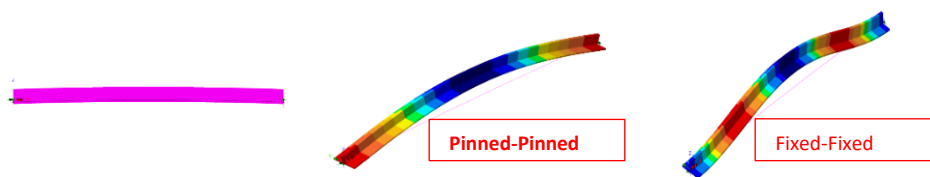


Figure 3: Double Angle Stability

was compared to a hand calculation of the Euler Buckling Load of the same member with straight geometry as a base. The analysis and hand calculations incorporated a Fixed-Fixed condition and a Pinned-Pinned condition to cover the spectrum of fixities possible. The weak axis controlled despite the longer bracing length for the strong axis. It was found that the member yielding in compression would control over buckling. This

linear analysis that included time-dependent effects due to a staging of the loads based on average historical data. In the linear model, the same loads were added as in the non-linear; however, these loads were added all at once in one step as the sequence would not impact the results. Dead loads were added to the model in an order that simulated actual construction staging according to historical notes. The material properties of this linear

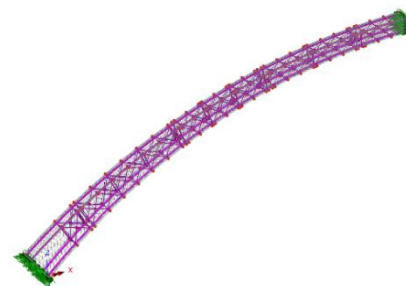


Figure 4: Steel Truss Configuration visible without Concrete Volumes

CONCLUSION

After the multiple approaches were completed, it was deemed that the concrete cover will not split due to bursting demand from stiff reinforcement trying to buckle, the (continued on page 11)

Doing More with Less: Arguments for Low-Tech Innovation

(continued from page 3)

just such a concession in purchasing the polycarbonate roof panels that let in glorious amounts of light. We sourced windows and galvanized steel for siding from the rebuilders warehouses of Evanston



Figure 2. Middle of construction.
Photo credit: Rachel Hambleton.

and Chicago, which are now among our very favorite shops to frequent. Large polystyrene containers from takeout became, for a short time, an absolute treasure that could be used to plug holes and insulate our new space. The process was as important as the outcome, and this unlocked all kinds of opportunities that we might not have seen otherwise.

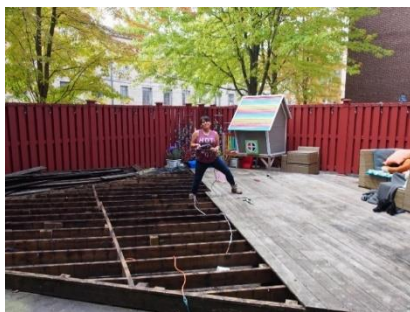


Figure 3. Deck disassembly and salvaging of lumber.
Photo credit: Jim Hambleton.

Our shared project at home was also transformational in the way that it alleviated stress at home and got us through the worst of the pandemic thus far. We had a creative, useful project that engaged the entire family. For the kids, it was a space for play, limited only by the imagination. For my wife and I, it was a way to use the lumber we salvaged in a deeply satisfying way, a way to make separated space for productivity, a way to take our minds off of the tumult, a way to exercise, and an opportunity to work towards a fulfilling project together. We each contributed mind and muscle in some capacity, and we invested time and



Figure 4. Remote learning in the newly built space.
Photo credit: Rachel Hambleton.

energy in something that fundamentally made our lives better.

The second major experiment we ran during the pandemic, one that was motivated in part by our success with the tiny house, was to attempt to fix a major problem with our furnace rather than give in to the temptation to replace it entirely. The problem was that our old, electric furnace would get stuck permanently in heating mode. To stop it from heating, we had to flip the breakers, and the furnace effectively became a

manually operated heater on an on/off switch. This was not good. But we knew it might be coming given that the furnace is old (to our knowledge it is the original one installed when the building went up in 1969). Knowing a few things about electricity and electrical gadgetry, but very little about furnaces, I set about one day to disassemble the furnace and peek inside. My first reaction was amazement at its internal cleanliness and how simple an electric furnace really is. Given the problem, we knew the issue was most likely with a faulty relay, and it did not take long to identify the part. Within minutes, the faulty part was extricated from the furnace and sitting on the kitchen table, and we set about seeing if we could find a new one. With delight and anticipation, we found a supplier of aftermarket parts who then, several days later, informed us the part had been discontinued. With a bit more time and perseverance, we tracked down an OEM replacement being sold on eBay by someone from Wyoming. A few days later, the part arrived, and our furnace has been humming along beautifully ever since.

The second experiment had lessons as fundamental as the first. We managed to save our furnace from the landfill (and save considerable money) by forging into that space that no vendors seem to occupy, since they would rather sell you a new furnace than try to fix the old one. Venturing into that space requires skill and the desire to self-educate, and most importantly it requires patience and (continued on page 11)

Doing More with Less: Arguments for Low-Tech Innovation

(continued from page 10)

tolerance for potential missteps.

The second experiment had lessons as fundamental as the first. We managed to save our furnace from the landfill (and save considerable money) by forging into that space that no vendors seem to occupy, since they would rather sell you a new furnace than try to fix the old one.

After all, we took a financial risk buying the new part, a small expense compared to replacing the entire furnace. Our small bet paid off big time. But what if the new part did not fix the problem? What if we could not find the part? Would we have taken our experiment to the next level and tried to

make our own part, or find someone who could? It is clear that there is a huge market for this type of work, but there is almost no one there to meet the demand. The same technology that gave us eBay unlocks unlimited potential for sharing and repurposing the many resources that humans have already amassed, but for now, if you want to unlock this potential, you just have to do the work yourself.

While these anecdotes pertain to one household, they hint at something that could be implemented on a much larger scale and have implications for the entire engineering profession. What if our primary goal in engineering and design shifted to optimizing the resources that we already have? What if there were funding initiatives to support development of the practical approaches resembling those described above? We cannot have the next generation of engineers believe that they can solve

everything with a phone app. Technology unlocks great potential, but it only gets us so far. We clearly need more hands-on expe-

What if our primary goal in engineering and design shifted to optimizing the resources that we already have?

riences for engineers to promote such initiatives and build the necessary skillsets. Civil engineers, who take great pride in building, seem uniquely poised to take on this challenge.

Author Bio: Jim Hambleton is Louis Berger Junior Professor of Civil and Environmental Engineering at Northwestern University and Chair of the ASCE Geo-Institute Chicago Chapter.

3D FEM Modeling with Time Effects for 100+ Year Old Bridge

(continued from page 9)

double angles will not buckle even with the removal of its surrounding concrete, the theoretical bond between concrete and steel angles is adequate to ensure composite action between concrete and steel and finally while creep and shrinkage in the last 100 years may have increased stress in the elements

within the Melan Trusses, the system was far within its capabilities to resist the typical daily vehicular demands placed on it. Josef Melan's innovative system has successfully outlived him and continues to provide additional beauty to the city of Minneapolis.

Author Bio: Irsilia Colletti, P.E. is a Project Bridge Engineer at HNTB in Chicago and currently serves as Chair for the IS-ASCE Structural Engineering Institute.

Wastewater Surveillance for COVID-19

(continued from page 4)

ment of Health Services website.

Where wastewater surveillance has proven very useful is at congregant

political boundaries and sampling from sewers tributary to a designated area must be done to focus on a particular community. Cur-

have a mitigating effect on the concentration of the virus in the wastewater.

Much of the current research is focused on developing standards for sampling, storing and analyzing wastewater to have consistent and repeatable results. Right now everyone is going in different directions with different protocols. Wastewater surveillance will not eliminate the need for in-person COVID-19 testing, but it can provide an early warning signal about the presence of the virus in specific areas and whether that presence is increasing or diminishing. Public health officials can use this information to determine if measures to prevent the spread of COVID-19 are working or not.

Link to MWRD Fact Sheet: https://mwrld.org/sites/default/files/documents/Sewerage%20Surveillance_FS_210119.pdf

On January 29 as part of MWRD's Monitoring and Research Seminar program, Dr. Alexandria Boehm of Stanford University gave a presentation regarding research on COVID 19 in wastewater. A link to the presentation is included below.

https://mwrld.org/sites/default/files/documents/M%26R_Seminar_1.29.21.pdf

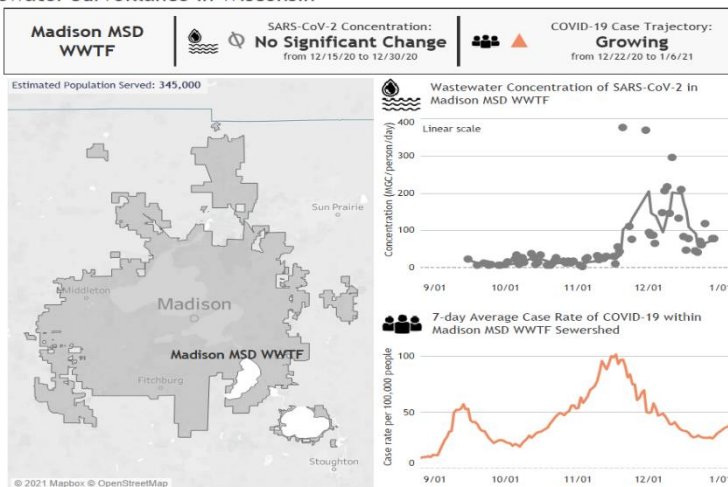
Author Bio: Jerome McGovern is a Senior Municipal Engineer for Baxter & Woodman

COVID-19 Wastewater Surveillance in Wisconsin

Date Updated: 01/06/2021

Click on the list or map to select a sewershed. Click again to deselect.

Appleton WWTF
Burlington WPC
Columbus WWTF
De Pere WWTF
Fox River WPC
Green Bay MSD
Janesville WW Utility
Kenosha WWTF
La Crosse WWTF
Madison MSD WWTF
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Whitewater WWTF
Wisconsin Rapids W...



settings such as a nursing home, college dormitory or a correctional facility. At these locations samples taken from sanitary sewers that serve the site can give information about the presence of the virus in the congregant population several days before those who have been infected will start to display symptoms. The virus can be detected even if the infected person is asymptomatic.

There are multiple challenges in using wastewater surveillance for detecting COVID-19. One is managing expectations. Public Health officials would like to see the information about the presence and concentration of the virus broken down by zip codes or community areas. Unfortunately, sewer systems are not constructed to serve specific community areas or

rently it is not known how much virus is shed in the feces during and after a person is infected, making it difficult to correlate the concentration of the virus found in

Wastewater surveillance will not eliminate the need for in-person COVID-19 testing, but it can provide an early warning signal about the presence of the virus in specific areas and whether that presence is increasing or diminishing.

wastewater with the rate of infection in the general population. The quantity of storm water in areas served by combined sewers and the presence of industrial waste may

Student Scholarship Update

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Session #1 included Environmental/Water Resources & Geotechnical, Session #2 included Structural & Construction, Session #3 included Transportation & Urban Planning, and the final Session #4 included a technical mix with representatives from the ISASCE board and Younger Member Group. Per request by one of the

student groups, Session #2 was recorded and made available online. To view the scholarship presentation and professional panel discussion recording (and many other videos), visit the ISASCE YouTube Channel: <https://www.youtube.com/channel/UCnsb8DrjGo5Rddet4DpoEHg>.

Author Bio: Tom Janicke, P.E., S.E. is a Senior Structural Manager at BLA, Inc. He currently serves as IS-ASCE Director to 2021 and Student Scholarship Chair for the Outreach Committee.

IS-ASCE Annual Membership Committee Update

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Initiative aims to strengthen our membership network within the Illinois Section to allow for more efficient communication with our members by identifying one ASCE member at each company or agency. This member would act as the main point of contact within their respective workplace and will help communicate various efforts of the Illinois Section while also ensuring their colleagues are up-to-date on membership benefits and volunteer opportunities. The initial list of Local Membership Champions is currently being de-

veloped by the Membership Committee; ideal candidates are those that are current members and are already involved in some capacity at the Section or National level. Local Membership Champions will receive emails and materials directly from ASCE National and it is anticipated that the Illinois Section Membership Committee will hold optional quarterly conference calls to discuss the continued efforts of the initiative and best practices of communicating with their colleagues about ASCE. If you would like to learn more or volunteer as your company or agency's Local Membership Champion, please contact Tom Borges at tborges@bloomcos.com.

period lasts through March 31st, at which point your membership will be dropped and you will no longer receive benefits such as the ASCE magazine.

If you have not already renewed your membership, please note that the ASCE membership renewal grace period lasts through March 31st

The state of membership within the Illinois Section of ASCE begins 2021 with 2,675 active members. The makeup of our Section consists of 1,270 Members (48%), 449 Associate Members (17%), 607 Student Members (23%), 61 Fellows (2%), 3 Distinguished Members, and 71 Affiliate Members (3%). The Illinois Section also has 499 Life Members (19%) who have made a lifetime commitment to ASCE and the profession by maintaining membership over the length of their career.

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veloped by the Membership Committee; ideal candidates are those that are current members and are

Please remember to keep your ASCE account up-to-date with your latest employment and contact information via your online ASCE account ([Login](#)). It is also very important to remember to pay the Illinois Section dues (\$30) when renewing your 2021 membership, which constitutes a majority of our Section income. If you have not already renewed your membership, please note that the ASCE membership renewal grace

To inform Illinois Section members of the discussions at monthly Board meetings, the Section Secretary contributes this article to the newsletter covering December 2020, January 2021 and February 2021. Due to COVID-19 all Illinois Section Board meetings are being held via MS Teams. Any questions or comments on the Board activities are welcome by contacting Matt Huffman at mhuffman@cbbel.com.

■ **Treasurer's Report**

▲ A treasurer's report was presented and approved at the December 2020, January 2021, and February 2021 meetings. The FY 21 budget was unanimously approved at the January 2021 IS Board meeting.

■ **Highlights from Illinois Section Activities and Institute/Group Reports.**

▲ **2020 Annual Awards** – The 2020 ASCE IL Section 104th Annual Awards has been re-envisioned as a virtual event this year due to the ongoing COVID-19 pandemic and is a produced video recording. Please see the Illinois Section's website for this year's award winner videos as well as remarks by Society President Jean-Louis Briaud and Section President Brian Pawula: <https://www.isasce.org/2020-virtual-awards-ceremony-videos/>.

▲ **ASCE Society Convention** – The 2021 ASCE Convention will be in Chicago from October 6th through October 9th. A Local Convention Planning Committee has been established to assist ASCE Headquarters

Convention Committee with ideas for technical and cultural tours. A decision will be made in April whether the 2021 Convention will be held in-person or virtually. Please refer the following webpage for information regarding the upcoming ASCE Convention: <https://convention.asce.org/>

▲ **2022 Illinois ASCE Infrastructure Report Card Update** – The IL Section has established its 2022 Illinois Report Card Committee and will be chaired by Past Illinois Section President, Patrick Lach. The Report Card Committee is in the process of organizing the sub-committees in Spring 2021. The 2022 Illinois Infrastructure Report Card is targeted to be released in April 2022.

▲ **2021 ASCE IL Section Spring Dinner** – The 2021 ASCE IL Section Spring Dinner will be held virtually in April 2021. Virtual meetings will be set-up by discipline that all three area universities can attend. The scholarships will be awarded out at the Spring Dinner, which total \$17,500. The IS is coordinating with ASCE HQ about participation by the current president or president elect.

▲ **ACEC of Illinois Student Outreach Effort** – ACEC of Illinois is leading a student outreach effort, in partnership with IDOT District 1, to inspire and encourage high school students to become civil engineers. ASCE IS is supporting this initiative and is expected to be launched in Spring 2021.

▲ **IL Section Bylaws** – A sub-committee will be formed to perform and update to the Illinois Section

Bylaws. The updated bylaws will be advertised to the membership for review/comment prior to being brought the IS Board for approval.

▲ **Legislative Affairs** – The Government Affairs Committee is planning the Spring 2021 legislative outreach effort (aka 'Lobby Day') with ACEC-IL and TFIC. The 2021 ASCE Virtual Fly-In will be held on March 3rd and 4th and will be attended by eight IS members.

▲ **2021 Washington Award** – Western Society of Engineers announced their 2021 award winner and is Nobel Prize Winner – John B. Goodenough.

▲ **Illinois Section Holiday Gathering** – The Illinois Section and the Younger Member Group hosted a virtual holiday trivia gathering on December 16th, 2020. Approximately 30 members attended the event.

▲ **Future City Competition** – The Illinois Section and all Institutes/Groups will be supporting the 2021 Future City Competition being held virtually on February 27th. The Future City Competition theme this year is Living on the Moon for 6th, 7th and 8th graders.

▲ **OCEA Awards and opal Awards** – An outstanding Civil Engineer Achievement (OCEA) award was given to Northwestern University for the recently constructed coastal wall along Lake Michigan. Northwestern University professor, Dr. Raymond Krizek, received an Outstanding Projects and Leaders (OPAL) award in education.
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Secretary Report

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▲ **Student Conferences Realignment** – ASCE HQ is seeking input on re-aligning the student conferences to align with Region boundaries. This is planned to take effect in 2022. There are 37 universities across six states (North Dakota, Minnesota, Wisconsin, Illinois, Michigan and Ohio).

▲ **2021 ASCE National Infrastructure Report Card** – ASCE HQ will release the 2021 national infrastructure report card on March 3rd, 2021.

Highlights from the Illinois Section Institutets & Groups

▲ **Construction Institute (CI)** – The CI participated in a national virtual presentation in December titled *Rope Access and Underwater Bridge Inspection*. For more information or if interested in joining this institute, please contact CI Chair Justin Weisberg at jweisberg@rsplaw.com.

▲ **Environmental & Water Resources Institute (EWRI)** – The EWRI started a virtual workshop in January titled *Smart City, Smart Water, Smart Investments?* with a second session held on February 24th. Please contact EWRI Chair Steve Randolph with any questions or for information about EWRI activities at srandolph@hornershifrin.com.

▲ **Geo-Institute (GI)** – The GI hosted virtual presentation in December titled *Underpinning Prairie: Micropiles Support Prairie Du Sac Dam*. A virtual meeting titled *Bio-Inspection for Load Transfer and Soil Penetration Processes* was held on February 10th. Please contact GI Chair James P. Hambleton with any questions or for information about GI activities at jphambleton@northwestern.edu.

▲ **Structural Engineering Institute (SEI)** – The SEI hosted virtual presentations in December titled *Movable Bridge Repair and Rehab*. A virtual meeting was held on January 26th titled *RJ Watson Bearings*. Please contact SEI Chair Irsilia Colletti with any questions or for information about SEI activities at icolletti@hntb.com.

▲ **Transportation & Development Institute (T&DI)** – The T&DI hosted virtual presentation on January 14th with ISTHA – Paul Kovacs. A virtual happy hour and networking event was held on February 25th. Monthly T&DI board meetings are held on the second Wednesday of the month. Please contact T&DI Chair Colleen Miller with any questions or for more information at comiller@gfnet.com.

▲ **Urban Planning & Development Group (UP&D)** – All UP&D events have been suspended due to the

ongoing COVID-19 pandemic.. Please contact UP&D Pamela Whitfield with any questions or for more information at pwhitfield@gsg-consultants.com.

▲ **ASCE Younger Member Group (YMG)** – The YMG hosted a virtual presentation in December titled *Restoration of the Historic Bee Branch Creek*. The PM Skills Series (Session 1) was held on February 8th and a Happy Hour Lunar New Year was held on February 17th. For more information about YMG activities or if interested in joining this group, please contact YMG Chair Ben Ostermann at Benjamin.Ostermann@jacobs.com.

The Illinois Section Board Meetings are held the first Monday of the month, except for holidays. The next board meeting is scheduled for March 1, 2021 and will be held via video conference only due to the ongoing COVID-19 pandemic. If you are interested in attending these meetings, please contact President Brian Pawula at brianp@thomas-engineering.com.

By Matt Huffman, P.E.

ASCE Illinois Section Secretary 2020-2022

mhuffman@cbbel.com

IS-ASCE Annual Membership Committee Update

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Please contact Tom Borges, the Illinois Section Membership Committee Chair, with any

membership-related questions at tborges@bloomcos.com.

Author Bio: Tom Borges, P.E. is the Illinois Highways and Roads Design Manager at Bloom Companies, LLC

Illinois Section

Activities

ASCE Legends – Zoom Presentation by Karen Kabbes

Date: Wednesday, March 10

Time: 7:30pm

[Presentation Flyer](#)

ASCE IL Section 2021 Student Resume Book – Resumes Due

Date: Monday, March 15

[Student Resume Invitation](#)

ASCE IL Section 2021 Student Scholarship Applications Due

Date: Monday, March 15

[Student Scholarship Application](#)

ASCE IL Section EWRI Technical Workshop Series – Session #3, “Smart City, Smart Water, Smart Infrastructure?” (Save the Date)

Date: Tuesday, March 30

Time: 12:00-1:30pm

Details and registration information will be sent out soon.

ASCE IL Section T&DI March Virtual Luncheon (Save the Date)

Speaker: Bill Mooney, Chief Infrastructure Officer of the Chicago Transit Authority

Time: 11:00am

Registration details to come.