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ASCE Illinois Section

News

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Chicago's 2006 Green Alley Pilot Program – How are the alleys performing?

By Jerome McGovern, P.E.

In the fall of 2006 the City of Chicago's Department of Transportation (CDOT) began construction of several experimental alleys. The alleys were to be more environmentally friendly by using a variety of permeable pavements and recycled construction materials. Commonly referred to as "Green" alleys, the pilot alleys have been in service for more than 10 years and the purpose of this article is to follow-up and make some observations of how they are performing. My interest in this subject is not altruistic, my wife and I live in the Beverly community and our home is adjacent to one of the pilot green alleys.

Chicago is unique in that when land was subdivided for development on a grid pattern, a dedicated right-of-way, 16 feet in width, was provided between public streets. This was a requirement of the municipal code and not optional. This strip of land provided access to the rear (continued on page 10)



President's Notes

Dhooli Raj, P.E.



I would like to thank the Illinois section board, our Region 3 Director George Ghareeb, Governor Darren Olson and the 2800+ ASCE members in the Chicagoland area who have helped me fulfill the goals of my presidency. At the start of my term, I stated my commitment to provide events where we can give back to our industry, our educational institutions and our community. With your participation, we have completed the three initiatives outlined at the start of my tenure:

- Mentorship Program
- 2018 Illinois Report Card
- 2018 Great Lakes Student Conference

The mentorship program, under the leadership of Kris Salvatera and Emery Waterhouse, paired university students with a working professional through a mentor/protegé relationship. Successful completion of the program required the mentorship pairs to attend and log four events from the 2017 Annual Awards Dinner to the 2018 Spring Dinner. At the core of this initiative is the ability to provide ASCE student members with a helping hand and familiar face at ASCE technical and social events. **As these Gen Z's enter the workforce, the mentorship program will help in fulfilling their need to make a meaningful contribution to society through our numerous K-12 STEM related volunteer activities.** We are grateful to the companies that encouraged their employees to volunteer for this effort which led to numerous successful internships this summer!

We had a successful launch of the 2018 ASCE Report Card for Illinois' Infrastructure at Maggiano's in Chicago in February. Participating in the event were ASCE Members, public agency leaders, elected officials, members of the press and students. The Report Card was compiled over the past year by more than 30 volunteer civil engineers in Illinois. The 2018 ASCE Report Card for Illinois' Infrastructure gives the state a combined grade of C-. The details of the existing conditions can be found in the [2018 Report Card](#).

The Great Lakes Student Conference was held in April at UIC with approximately 600 student participants from schools around the Midwest. The UIC team did a fantastic job organizing and managing the 3-day event and was able to secure over \$70,000 in sponsorship from companies who support ASCE to make the event a success and subsidize costs for the student attendees.

Volunteering for ASCE has given me a chance to give back as a professional and to honor the universities and companies that have trained me to be an engineer. I am a mentor and a student every day and **ASCE gives me the opportunity to contribute towards cultivating the continued growth of the Illinois Section.**

I look forward to handing the torch of leadership to Mr. John Green at the 2018 Annual Awards Dinner on October 11, 2018 and wish him the best with his term. It has been an honor to serve you in this capacity of the Illinois Section.

ASCE Illinois Section News

ILLINOIS SECTION NEWSLETTER

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Bridge Construction Update: I-74 over the Mississippi River

By Thomas Janicke, P.E., S.E. & Robert Tipton, P.E., S.E.

Construction is well underway at the new I-74 Mississippi River Bridge located in the Quad Cities and spanning between Illinois and Iowa. The scope of the bridge recon-

struction will carry a 14' wide multi-use pedestrian and bicycle path across the river, which will include connections to existing paths in both Illinois and Iowa and feature a 20' wide x 100' long

improvements to the surrounding area in Moline, IL. Overall, the full limits of the I-74 Central Corridor reconstruction extend from 0.9 miles south of Avenue of the Cities (23rd Avenue) in Moline, IL to 1.0 mile north of 53rd Street in Davenport, IA and include a large portion of extensive pavement reconstruction and other work on the existing alignment which will require closure of existing I-74 westbound in Spring 2019.

Alfred Benesch & Company serves as the prime corridor-wide design consultant, responsible for coordination with the design team which includes Modjeski & Masters, Inc, WHKS & Company,



struction centers around new dual 3,396' long river bridges which include dual steel "basket-handle" true arch main spans of 795' with welded steel plate girder approach

New dual 3,396' long river bridges with dual steel "basket-handle" true arch main spans of 795' and steel plate girder approach spans, all built off alignment and adjacent to the existing bridge

spans on both sides, all built off alignment and adjacent to the existing I-74 bridge. In addition to interstate traffic, the eastbound

overlook area underscored by a 10' diameter glass oculus embedded in the deck.

On the Iowa side, the reconstruction of mainline I-74 continues onto new dual 2,280' long welded steel plate girder viaduct bridges being built alongside four new welded steel plate girder ramp bridges and additional local road improvements in and around downtown Bettendorf, IA. On the Illinois side, I-74 reconstruction continues from the river bridge abutment through a short pavement fill section to a pair of new dual 1,938' long welded steel plate girder viaduct bridges and two new welded steel plate girder ramp bridges with additional im-

14' wide multi-use path across the river, with connections to existing paths in both Illinois and Iowa, will feature a 20' x 100' overlook area and 10' diameter glass oculus embedded in the bridge floor

Hanson Professional Services, Shive Hattery, Inc, Iteris, Inc, FluidClarity, HLB Lighting Design, Terracon Consultants, Inc. and American Surveying & Engineering, P.C. For corridor construction management, the General Engineering Consultant (GEC) team consists of Wood (continued on page 13)

Dynamic Testing of Driven Piles in Chicago

By Tim Corcoran and Michael Wysockey, Ph.D., P.E.

In Chicago a static pile load test is required to determine the allowable load on driven piles if the design load exceeds 30 tons for wood piles, 60 tons for steel or concrete in soil, and 100 tons for piles on rock. A static load test is conducted by building a reaction frame around the pile

Although dynamic testing is not currently accepted in Chicago, the International Building Code (IBC) recognizes static and dynamic testing interchangeably.

and applying a load on the pile to twice the design load or failure by ASTM D1143. Static load testing is accurate, but costly and time consuming. A static load test often takes multiple days to set up, perform, and take down. A safer and more efficient option is dynamic testing, whereby the strain and acceleration in the pile is measured during driving. As the hammer drives a pile, each blow is a mini pile load test where a given amount of energy acts on the pile, and the pile/soil system reacts with displacement. ASTM D4945 is the standard for this type of load testing. Although dynamic testing is not currently accepted in Chicago, the International Building Code (IBC) recognizes

static and dynamic testing interchangeably.

Dynamic testing of deep foundations has a long history, starting in the 1950's with Raymond International and then gaining widespread usage through the FHWA and GRL in the 1970's. Its use and acceptance in Chicago has been erratic. The Soldier Field reconstruction in 2001 served as a high-profile test program to demonstrate the effectiveness of dynamic testing vs. static testing, and to clear up much of the confusion that had previously hampered its implementation. This large-scale project had the time and financial incentive to afford an extensive load test program. Dynamic testing matched the static results well to geotechnical standards, i.e. about 20%. The most thorough test program tests an

individual pile both statically and dynamically to calibrate the dynamic model on a site-specific basis, then use dynamic testing for areas of the jobsite with different soil types, pile types or to confirm spatial variability. A dynamic test only takes a matter of minutes, so many different piles can be tested in a single day resulting in the best of both worlds, high quality and high quantity.

An opportunity arose in March of 2018 to compare the results of static versus dynamic testing at the Marina Crossings at 2075 West 43rd Street in Chicago. A 633,000-sf. infill development was to be supported by more than 1300 driven pipe piles filled with concrete. The piles were driven and tested statically by Thatcher Foundations, and dynamic tested (continued on page 14)



Figure 1 Driving pipe piles at 2075 W. 43rd St.

ENVISION® v3 Release

By John Lazzara, P.E. and Paul Hurley, EIT

On April 17, 2018 the Institute for Sustainable Infrastructure (ISI) announced the release of the latest update to their sustainable infrastructure framework, Envision® v3. After five years of applying Envision on billions of dollars' worth of infrastructure assets, the industry has progressed significantly. ISI has captured lessons learned, specifically how Envision is applied to real-world projects, and incorporated these key lessons into Envision® v3.



For example, the understanding of resilience has grown tremendously, especially in the wake of hurricanes Katrina and Harvey. Therefore, ISI identified the need to expand the framework to incorporate a more advanced understanding of resilience. ISI also identified the need to place greater emphasis on evaluating the economics of infrastructure projects and to include construction-related sustainability aspects.

Learn about the latest updates to the Envision rating system

ISI is moving from primarily focusing on the rating system aspect to promoting self-assessments – with the purpose of the third-party verification program remaining the same – to help users calibrate their self-assessments. The new Envision® v3 manual includes a table with the level of achievement for each credit outlined in an incremental or “waterfall” fashion. Through the support of a Technical Committee, the various sustainability credits were all improved, rewritten, moved, combined, developed, or retired. Figure 1 shows an example of the changes that were made to the Quality of Life category.

Find out what it takes to maintain ENV SP certification

As part of the release of Envision® v3, ISI will be implementing a credit maintenance program to promote knowledge of the latest sustainable practices and

strengthen the value of the Envision Sustainability Professional (ENV SP) credential. ENV SPs will be required to complete an educational requirement, totaling 7 hours per year (2 prescribed by ISI and 5 by user's choice) and pay a renewal fee. These fees pay for online courses through ISI, each course counting towards an hour of the educational requirement. The new credential maintenance program requirements differ slightly if the ENV SP certification was received before or after October 1, 2017.

Discover where to get details on Envision® v3

For those who are interested in learning more about Envision® v3 or becoming an ENV SP, visit the [Institute for Sustainable Infrastructure](http://www.instituteforsustainableinfrastructure.com) website. ISI's website includes a description of the (continued on page 12)



Figure 1. Examples of Envision® v3 Credit Changes for “Quality”

2018 ASCE Region 3 Assembly, Chicago, IL



The Illinois Section was honored to host ASCE colleagues from around the Midwest for the ASCE Region 3 Assembly. ASCE National President Elect, Robin Kemper; Region 3 Director, George Ghareeb; and Region 3 Governor Darren Olson also met with the Illinois Tollway and Chicago DOT to discuss ASCE involvement with public agencies. In addition, there was a tour of the ASCE Award winning Chicago Riverwalk project by CDOT Engineering leadership, followed by a boat cruise on Lake Michigan. Region 3 is a diverse group of 14 sections and 16 branches across the Midwest, including the ASCE Illinois section.



ASCE AMERICAN SOCIETY
OF CIVIL ENGINEERS

2018 ASCE Region 3 Assembly, Chicago, IL



Wema, Goodness in Bukembe, Kenya

By Alan Phelps

Wema, it means goodness in Swahili. It also means a place of comfort, community, and family for over 500 school children in Bukembe, Kenya, about half of them orphaned. Run by Teresa Wati and Stephen Juma, the Wema Children's Centre is a top



Figure 1 Wema girls taking a break from class

performing school for children K-12. In 2014, Teresa and Stephen, with all of their US-based supporters lead by Alex Breinin, crowdfunded \$50,000 to build a water borehole which would supply the school and surrounding area. Unfortunately, only after a few months, the borehole became contaminated with silts and pathogens. The contamination became glaring when 50 children along with one volunteer fell ill to typhoid after drinking the contaminated water.

While on a volunteer trip in Honduras, I met an individual who introduced me to this volunteer who contracted typhoid. She and I connected a few weeks later and she explained to me the situation at Wema. It seemed like she and

the Wema, Inc. team (US-based support nonprofit) had their decision made on how to correct the water quality issue. They asked me to simply make a recommendation of what water filter to buy from a local supplier and contractor, and that would solve their problems. It was then that I had a Skype call with her and explained to her the complications of the situation, and we decided to take this project through to Engineers Without Borders' Engineering Service Corps in the Spring of 2016. The EWB Service Corps specializes in assisting communities with short term projects.

By the time March 2017 arrived, 4 members from the Chicagoland Professional Chapter jumped on a plane with me bound for Kenya.

24 hours later, after passing through Qatar, Nairobi, and Kisumu, we arrived in Bukembe

Village and found the Wema Children's Centre. Teresa and Stephen greeted us with big smiles and a warm welcome. It was home for the next 10 days.

Addressing Water Quality Issues in Bukembe, Kenya

Our plan was to get our bearings for the first few days, then meet with Davis & Shirliff to discuss construction, and then watch the completion of the construction and conduct all our testing. By the end of the 9th day, our design had been substantially changed and the commissioning of the water treatment system was stopped by a storm which disrupted the power, leaving the Wema school without a functioning borehole pump. Our team left the community with the promise we would help them work with the contractor (continued on page 15)



Figure 2 EWB Chicagoland team and Wema directors

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2018 Annual Awards Dinner

THURSDAY, OCTOBER 11

*The Crystal Gardens at Navy Pier
700 East Grand Avenue
Chicago, Illinois 60611*

Cocktail Reception

6:00 pm to 7:00 pm

Dinner & Awards

7:00 pm to 9:30 pm

The Illinois Section of ASCE cordially invites you and your guests to join us for our 2018 Annual Awards Dinner. Please help support this premier civil engineering event with your sponsorship and attendance.

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Chicago's 2006 Green Alley Pilot Program – How are the alleys performing?

(continued from page 1)

of homes and businesses for deliveries and trash collection. Eventually overhead utilities such as phone and electricity were installed on poles placed in the pub-

Green Alleys are Green Infrastructure That Works.

lic right-of-way between properties. With the development of the automobile, garages were constructed at the rear of the property and could be accessed from this strip of land commonly referred to as the alley. Unlike the public streets provided by the developer with improvements such as water, sewer, pavement and sidewalks, the alleys were unimproved and were simply graded and surfaced with aggregates. Unfortunately such a pavement does not perform well in a freeze-thaw environment and over the years many alleys deteriorated into severely rutted and potholed means of access. Since the alley was considered unimproved, the city would not pay to install a permanent pavement unless the adjacent property owners petitioned the city for a local improvement and agreed to a special assessment to pay for the work. There was also the problem of drainage for a permanent pavement since the combined sewer system did not connect to the alleys. Chicago's preferred solution was to construct a Portland cement concrete pavement with a storm sewer that connected to the existing combined sewer. Because of concerns about stormwater runoff flooding adja-

cent properties, the alley pavement was constructed with an inverted crown. To provide an inverted crown, the pavement is depressed at the centerline so that water will run to the middle and then longitudinally into the catch basins. Improving your alley was

alleys that would possibly reduce the heat island effect of urbanized areas and use lighting fixtures that would minimize excess light pollution. CDOT began the planning and design of several pilot alleys: Their design and location are shown in the table below.

Location	Type	Condition 2018	Notes
1700 Block W. 106 th Street	Permeable Asphalt	Poor	Extensive Tree Canopy
10300 Block S. Avenue G	Permeable Concrete	Good	Some Patching
5300 Block N. Glenwood Ave	Permeable Concrete And Regular Concrete	Good	No Problems
2100 Block N. Rockwell Ave	Permeable Pavers	Fair	Some Settlement of Pavers
2400 Block of N. Hartling Ave	High Albedo Concrete And Permeable Concrete	Good	Some Clogging of Permeable Concrete

an expensive proposition for adjacent property owners. In the 1990's, in response to complaints by property owners about the poor condition of alleys, Chicago began paving alleys with hot mix asphalt. Use of asphalt provided a better pavement but could flood backyards and garages since there was not a drainage system for stormwater runoff.

Beginning in the early 2000s, CDOT began testing permeable pavements for alleys as a possible solution to provide a better pavement without the need for a storm drainage system. In 2001 the first "Green" alley was constructed. In 2004 open bottom catch basins were used in the two alleys. In 2005 three "Green" alleys were constructed as part of Department of Housing developments. This evolved into providing "Green"

CDOT did a great deal of research and experimentation to find pavement designs and construction techniques that could be implemented and provide stability for permeable pavement.

Unfamiliar construction techniques increased the initial costs as the contractors experimented with how to construct the permeable pavements. Providing an inverted crown is not simple for pervious pavements. The permea-

Pervious pavements are a viable option.

ble concrete alley was placed in panels half the width of the alley to provide an inverted crown. The permeable asphalt pavement did not have an inverted crown due to (continued on page 11)

Chicago's 2006 Green Alley Pilot Program – How are the alleys performing?

(continued from page 10)

the placement of asphalt. A four inch wide trench or slot was ground out after the installation of the pavement. Unfortunately, this trench has become a place where organic material collects and vegetation begins to grow. The hybrid alley of concrete wheel paths with permeable concrete in the center was relatively easy to construct as was the permeable paver alley.

My biggest concern was how the permeable pavement would function during the winter months as the cycle of freezing and thawing occurs. Research conducted by CDOT on a permeable paver parking lot found that in freezing weather the internal temperature of the subgrade remained above freezing. To date I have not observed any problems with freeze-thaw deterioration after 10 winters with the 106th Street alley. The other alleys I observed did not show any freeze-thaw deterioration in the spring of 2018. An underdrain is provided if there is a combined sewer available to connect with. Of the 300 Green alleys constructed by Chicago, about half have an underdrain system.

If an underdrain is provided, excess water that is not infiltrated into the soil is drained to a combined sewer. If an underdrain is not provided, where does the excess water go? There are some advocates of green infrastructure that claim the water eventually seeps through the subsurface soil material and recharges underground aquifers. I am not a hydrogeologist, but I doubt that

this happens. During a rain event water passes through the permeable pavement into the open graded stone base. The stone base has a



Permeable Asphalt Pavement 2018



Permeable Concrete Pavement 2018

finite capacity and some water is absorbed by the ground below and adjacent to the permeable pave-

ment's stone base. Given the limited permeability of the Chicago's native clay soil, excess water would not penetrate quickly into the subsurface. I would not be surprised that a large amount of the water held in the interstices of the stone base is evaporated into the atmosphere between rain events. Just as liquid water goes into the stone base, water vapor can migrate out to the atmosphere. Otherwise, as the stone base is filled with water due to the slow infiltration into the subsurface, it should not be able to take additional runoff and water would pond on the surface of the permeable pavement. This is an area that requires further research to determine the path and rate of infiltration of water from permeable pavements into a clay soil.

Green infrastructure is viable but it has different maintenance requirements than traditional infrastructure. Unlike traditional pavements, permeable pavements need to be cleaned on a regular basis. The best method of cleaning is with a vacuum truck. If a vacuum truck is not available, a street sweeper will remove some of the material that can clog the pores of the permeable pavement. Otherwise organic matter will accumulate on the surface and you will have truly "Green Infrastructure"! The presence of mature trees will greatly affect the amount of organic material that will fall on the permeable pavement. As can be seen in the photo, the permeable asphalt pavement (continued on page 12)

Chicago's 2006 Green Alley Pilot Program – How are the alleys performing?

(continued from page 11)

has not done well due to the extensive canopy of trees. Alleys without trees have held up better. Failure to provide proper maintenance



Hybrid Alley – Regular concrete wheel paths sloped to permeable concrete with overflow catch basin

nance will lead to premature failure of the pavement and sour people on green infrastructure.

After construction of the pilot Green alleys a study was done to

see if they reduced the heat island in the urban area. A link to the study can be found at the end of this article.

Maintenance, Maintenance, Maintenance.

Today CDOT's Green Alley design usually consists of having standard Portland concrete cement wheel paths sloped to drain to a pervious concrete center strip. Underneath the pervious concrete is open graded limestone aggregate to a depth of 60 inches on top of a geotextile fabric. A storm sewer is provided as part of a new green alley as an emergency overflow should the pavement be clogged or the stone base become saturated. CDOT will not install a full width permeable concrete pavement. Use of permeable asphalt may be considered if the volume amount of asphalt required is great enough for the material supplier to batch economi-

cally and if an extensive tree canopy will not exist over the permeable surface.

Thanks to Luann Hamilton and Ibrahim Hadzic of Chicago Department of Transportation for their review and comment on this article.

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<https://www.cityofchicago.org/content/dam/city/depts/cdot/GreenAlleyHandbook2010.pdf>

Heat Island Study:

<https://core.ac.uk/download/pdf/81134405.pdf>

Jerome McGovern is a retired Principal Civil Engineer for the MWRD.

Envision® v3 Release

(continued from page 5)

changes to Envision® v3 a copy of the new Envision® v3 Manual (requires ENV SP login), and a detailed FAQ pamphlet entitled "Envision® v3: What You Need to Know & Frequently Asked Questions". If you would like to

become more involved in sustainability activities, contact ASCE – IL Section's Sustainability Committee.

John Lazzara, P.E. is the Transportation Business Group Manager for HDR Engineering in Chicago, Illinois.

Paul Hurley, EIT, works for Greeley and Hansen on water and wastewater projects with a focus on sustainability.

Bridge Construction Update: I-74 over the Mississippi River

(continued from page 3)

PLC, HR Green, Hutchinson Engineering, Images Inc., Knight E/A, and RM Chin & Associates. The Construction Engineering & Inspection team consists of HNTB, Bruner, Cooper & Zuck Incorporated, McClure Engineering Associates, and several subconsultants.

Most of the current bridge construction is split into 4 separate contracts (2 let by the Iowa DOT and 2 by the Illinois DOT). The \$322 million river bridge contract was the largest single letting in Iowa DOT history and was awarded to Lunda Construction Company of Black River Falls, WI. The \$30 million Iowa westbound viaduct and ramp bridge contract was awarded to Helm Group - Civil Constructors Incorporated of Freeport, IL. On the

\$322 million river bridge contract was the largest single letting in IOWA history

Illinois side, an \$82 million contract for the main I-74 viaduct and ramp bridges was awarded to Kraemer North America LLC of Plain, WI, and a second \$84 million contract consisting of I-74 pavement widening with additional ramp and interchange bridge reconstruction work was awarded to Walsh Construction of Chicago, IL.

As of August 2018, all 233 drilled shafts that comprise the foundations of the arch and approach bridge spans for the Mississippi River bridge have been construct-



ed, and girders have been erected for the first two westbound spans. At the arch spans, the massive concrete foundations for the westbound side are complete and the arch rib concrete sections that will support the steel superstructure are in progress. As crews continue work at the 6 arch bridge foundations and 24 approach bridge foundations located in the river, efforts are being focused on the structural elements located on the westbound half of the bridge since the corridor-wide staging calls for

the westbound side to be opened to traffic first. The Iowa viaduct is furthest along with most steel girders erected and several bridge decks poured on the westbound viaduct units and US 67 ramps. Each week, more and more of the aesthetic “reflection” style curved pier columns can be seen going up on the eastbound and westbound sides across the river and in both states.



The completion of the central section of I-74 westbound is scheduled for 2019 with the eastbound wrapping up in 2020. The existing I-74 Iowa-Illinois Memorial Bridge, which includes dual suspension bridges at the main spans and deck truss spans at the approaches – built in 1935 and 1959 – is slated to be demolished in 2021. For more information on the I-74 river bridge project and continual updates on construction progress, please visit <http://www.i74riverbridge.com>.

Tom Janicke, PE, SE and Robert Tipton, PE, SE of Alfred Benesch & Company have been involved with the I-74 project for over 8 years. Tom also currently serves as Vice Chair for the Structural Engineering Institute Illinois Chapter.

Dynamic Testing of Driven Piles in Chicago

(continued from page 4)

by GRL Engineers. Soils on site consisted of miscellaneous fill to a depth of up to 35', on top of a stiff to very stiff clay in which undrained shear strength increases with depth. The piles were driven by diesel hammers to an average depth of 40' to 45'.

ing to note that the load levels on this project did not require load testing per the Chicago Department of Buildings, the allowable could be determined using the dynamic formula in the building code. However, the more accurate measurements of load testing

ing that driven piles are often designed with a factor of safety of 2.0 to cover the design load, this accuracy of the dynamic testing capacity to the static testing capacity is encouraging. The majority of past experience in the Chicago area shows the dynamic results lower than the static results, i.e. dynamic testing is usually conservative.

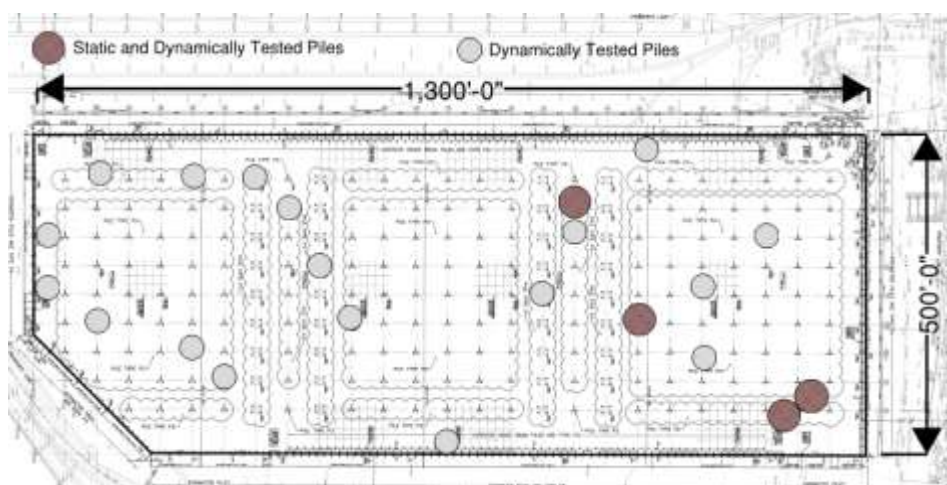
Per the IBC, dynamic testing by ASTM 4945 is an acceptable load test procedure. Dynamic testing

Dynamic testing of driven piles provides a safe and more expedient measurement of pile capacity allowing for significantly more testing.

of driven piles provides a safe and more expedient measurement of pile capacity allowing for significantly more testing. This is done without the sacrifice of accuracy, as in the project above, the dynamic testing was shown to measure the ultimate pile capacity within 20%.

Michael Wysocky, Ph.D., P.E. is the president of Thatcher Foundations, Inc. He received his Bachelor's degree in Civil Engineering from The Citadel, his Master's from MIT, and Doctorate in Geotechnical Engineering from the University of Illinois

Tim Corcoran is an engineer at Thatcher Foundations, Inc. He received a B.S. in Civil and Environmental Engineering at University of Illinois at Champaign-Urbana and a M.S. in Civil Engineering at Northwestern University.



2075 W. 43rd St. Test Pile Layout

Pile Number	Pile Diameter (in)	Pile Penetration Depth (ft)	Deflection at Design Load (in)	Design Load (kips)	Static Ultimate Capacity (kips)	Dynamic CAP-WAP Capacity (kips)	Dynamic/Static (%)
810	7	45	0.079	45	112	133	119%
863	7	42.6	0.115	60	184	155	84%
686	10.75	39	0.124	85	180	190	106%
684	10.75	48	0.065	85	285	265	93%

Static vs. Dynamic Testing Results

At the beginning of the project, dynamic testing was performed in various areas of the job site to confirm pile design assumptions and blow count. A total of 28 dynamic tests were performed on 22 piles. Four of these piles were then tested statically (Figure 2). With such a large site, the quantity of testing helps give confidence that spacial variability of the soils is being considered. It's interest-

allowed savings in material and time that more than offset the cost of the testing. The results of these tests can be seen above.

The static testing of the piles confirmed the accuracy of the dynamic testing within 20%. Consider-

The static testing of the piles confirmed the accuracy of the dynamic testing within 20%.

Wema, Goodness in Bukembe, Kenya

(continued from page 8)

tor to return and fulfill their promise to test and commission the water treatment system. In June 2018, Teresa reported that the technicians returned and the system was commissioned and everything was working well. Then in August 2018, I held a phone call with them to talk about the system and if our mission was successful. Teresa and Stephen mentioned to me that there has been noticeable improvement in public health and while they used to have many villagers come up to them complaining about waterborne illness, they had not received any complaints after the water treatment system



Figure 3 Completed water treatment system

became operational.

Our next phase of the project will address long term improvements to their water and energy infra-

structure. Upcoming projects include taking the borehole pump off the government energy supply and onto a solar power grid, and make improvements to water storage capacity for the next phase of implementation.

Alan Phelps is a project engineer with Baxter & Woodman, Inc. who volunteers with the Engineers Without Borders – Chicagoland Professional Chapter. His experience includes working on water and sanitation projects in Honduras, Guatemala, Nepal, Costa Rica, and Kenya.

The Newly Formed Construction Institute Illinois Chapter

The newly formed Construction Institute Illinois Chapter is seeking members and speakers from all areas of the con-

Our intent is to be the leader in promoting quality in construction and advance the construction industry through collaboration, promotion and raising public awareness.

struction industry. Our intent is to be the leader in promoting quality in construction and advance the construction industry through collaboration, promotion and raising

public awareness. We are looking for owners, contractors, construction managers, owners' representatives, designers, material suppliers, technology companies, etc.

We will provide a collaborative space for all parties involved in the construction industry to share information, technology and knowledge to advance and improve construction projects. The Institute will begin monthly events beginning this Fall and end out the 2018-2019 year with a project tour in the summer. This summer, we were able to tour the Jane Byrne Interchange with T&DI and YMG and had over 45

engineers attend the presentation and social hour. We are looking for projects that would be educational to the construction industry. If you would like to present a project, become a member or just need general information, please email Zachary Pucel at zjpucel@transystems.com.



Summer 2018

In an effort to inform Illinois Section members of the discussions at the monthly Board meetings, the Section Secretary contributes this article to the newsletter. Any questions or comments on the Board activities are welcome by contacting Megan McDonald, at megan.mcdonald@clarkdietz.com

■ Treasurer's Report

▲ A treasurer's report was presented at the June, and August meetings. All reports were approved.

■ Highlights from Illinois Section Activities and Group Reports.

▲ **ASCE Student Chapters** – In June, IIT went on as the wildcard representative in the ASCE National Concrete Canoe Competition in California. IIT also attended the National Steel Bridge Competition at the end of May at UIC.

▲ **Construction Committee** – A proposal for the Construction Committee to become an Institute was reviewed during the August meeting and is included in the fall newsletter. The Section Board voted to implement the Construc-

tion Institute starting in October. If you are interested in joining this committee please contact Zachary Pucel, zjpucel@transystems.com.

▲ **Geo-Institute** – The next meeting is scheduled for September, details to come.

▲ **Environmental & Water Resources Institute** – Green Infrastructure Seminar is planned for November 7, 2018 at UIC. Registration details to come.

▲ **Transportation & Development Institute** – The next luncheon event is planned for early fall, details to come.

▲ **Structural Engineering Institute** – There will be a September dinner meeting, details to come.

▲ **Urban Planning & Development Group** – The UP&D group is recruiting for new members. If you're interested in joining, please contact Bill Cussen for details, wcussen@gsg-consultants.com. A late summer seminar is being planned, details to come.

▲ **Region 3 Assembly** – The Region 3 Assembly was held in Chicago this year on August 17-18. A

River Walk tour and boat tour highlighted the Chicago River. ASCE National President-Elect Kemper presented for the Assembly.

▲ **Annual Awards Dinner** – The Annual Awards Dinner will be held at The Crystal Gardens at Navy Pier on October 11. The Award committee and Annual dinner committee is coordinating and planning for this upcoming event.

The Illinois Section Board Meetings are held every first Monday of every month with the exception of holidays. The next board meeting is scheduled for September 10, 2018 at 5:30pm at the Collins Engineers office located at 123 N. Upper Wacker Drive, Suite 900, Chicago, IL. Please note the meeting location. Future meetings will be held on October 1, and November 5. If you are interested in attending those meetings, please contact Dhooli Raj for the location.

By Megan McDonald
ASCE Secretary 2017-2018
megan.mcdonald@clarkdietz.com

Illinois Section

Activities

ASCE IL Section ASCE YMG Fall PE Review Course

Date: Wednesdays, August 29 – October 13
Time: 6:00pm – 8:30pm
Place: WSP
30 N. LaSalle, Suite 4200
Chicago, IL
Cost: \$375 for Course Classes and Mock Exam or
\$125 for Mock Exam Only
RSVP: Hussam Alkhatib
(PE.Review.YMG@gmail.com)
[Course Flyer](#)

ASCE IL Section Geo-Institute September Meeting – Rigid Inclusion Applications for the Chicago Area

Date: Tuesday, September 11
Time: 5:15pm – 8:00pm
Place: Pazzo's at 311
311 S. Wacker Drive
Chicago, IL 60606
Cost: \$45-General
\$35-Government/Education
\$25 Student
PDH: 1.0 PDH
<https://www.123signup.com/register?id=hrmcc>
Contact: asceilgeotech@gmail.com

ASCE IL Section T&DI Board Meeting

Date: Wednesday, September 12
Time: 5:30pm
Place: Bowman, Barrett & Assoc.
130 E. Randolph St.,
Suite 2650
Chicago, IL 60601
RSVP: mkirby@hntb.com

ASCE IL Section YMG Trivia Night

Date: Monday, September 24
Time: 6:00 - 8:00pm
Place: Sidebar Grille
21 N. LaSalle
Chicago, IL
RSVP: Kyle Sant
kyle.sant@kimley-horn.com

ASCE IL Section SEI September Dinner Meeting – Development of a New Generation, High-Strength Post-Tensioned Anchorage Bar (NEW DATE)

Date: Wednesday, September 27
Time: Cocktails at 5:30pm; Dinner at 6:00; Presentation following dinner
Place: Pazzo's at 311
311 S. Wacker Drive
Chicago, IL 60606
Cost: \$50-with reservation
\$35-Government/Education
\$25 for fulltime students – with reservation
Make checks payable to ASCE Structural Group
PDH: 1.0 PDH
RSVP: [Register Here](#) by September 21, 2018
Contact: Emery Waterhouse
asce.il.struct@gmail.com
[Dinner Flyer](#)

For all Section, Group and Committee events, check out the Section website at:

www.isasce.org/calendar/

ASCE IL Section YMG Annual Planning Meeting & Open Director Positions

Date: Thursday, October 4
Time: 5:30 – 7:30pm
Place: Jacobs
525 W. Monore,
Suite 1600
Chicago, IL
RSVP: Tina Revzin
trevzin@transystems.com
[Open Officer & Director Position Descriptions](#)

ASCE IL Section Geo-Institute October Meeting – 2018 ASCE Geo-Legends Panel

Date: Tuesday, October 9
Time: 5:15pm – 8:00pm
Place: Pazzo's at 311
311 S. Wacker Drive
Chicago, IL 60606
Cost: \$45-General
\$35-Government/Education
\$25 Student
PDH: 1.0 PDH
<https://www.123signup.com/register?id=hrnbv>
Contact: asceilgeotech@gmail.com
[Event Flyer](#)

ASCE IL Section Annual Awards Dinner

Date: Thursday, October 11
Time: 6:00 - 7:00pm Cocktail Reception
7:00 – 9:30pm Dinner & Awards
Place: The Crystal Gardens on Navy Pier
700 E. Grand Ave.
Chicago, IL 60611
RSVP: <https://www.123signup.com/event?id=hrbnz>
[Sponsorship Flyer](#)

ASCE IL Section EWRI Green Infrastructure Seminar – SAVE

THE DATE

Date: Wednesday, November 7
Place: Cardinal Room (Room 329)
University of Illinois-
Chicago (UIC)
Student Center East
750 South Halsted Street
Chicago, IL
PDHs: 6.0
Cost: \$250
Sponsorships available

SEI Call for Abstracts

The signature event for SEI-Illinois is coming up fast. Lecture series is currently scheduled for the spring of 2019 and we are looking for presentations to fill out our program.

If you or your company have experience on a unique project that you think other engineers would get excited about, please drop us a line at our email below and let us know about it. Please submit a brief description of the project and if there are any pictures or supporting material that would help us select your project, we would love to see it.

Please send your email with the subject line “2019 - Lecture Series Abstract” to asce.il.struct@gmail.com.

We look forward to hearing about all the great projects that everyone is working on.

Society for Industrial Archeology Call for Papers

The Society for Industrial Archeology will be having their annual conference in Chicago on June 6-9, 2019. It will be an opportunity to present Chicago's built environment. Please view the [call for papers](#).

<http://www.sia-web.org/sia-48th-annual-conference-chicago-il/>