



Illinois Section
Founded 1916

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ASCE Illinois Section

News

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Wacker Drive Reconstruction Project: A Major Structural Engineering Achievement

By Hossam Abdou, Andrew Keaschall, and Thomas Janicke

The success of the Wacker Drive Viaduct & Congress Parkway Interchange Reconstruction relied on innovative structural design to reconstruct a two-level heavily trafficked roadway and pedestrian thoroughfare along the Chicago River constrained by elevated CTA rail lines, CTA subway rail tunnels, bascule bridge approaches, abandoned freight & trolley tunnels, dozens of high rise buildings, and countless buried utilities of every type and age. Standing as a marvel to the coordination of so many complex systems through the heart of one of the busiest urban centers of the country, Wacker Drive has been recognized locally and nationally as a historic structural engineering achievement for the City of Chicago.



(continued on page 7)

President's Notes

John Lazzara, P.E.



Welcome to a new year for the Society! I am privileged to begin my term as president of the Illinois Section of the American Society of Civil Engineers. I would like to thank our Past-President, Thera Baldauf, for her wisdom and guidance this past year. She inspired the Illinois Section throughout the year as we celebrated our Centennial Anniversary. Her leadership and dedication to ASCE continued to strengthen our organization while providing many benefits to our members.

The Centennial Anniversary Committee did an exceptional job organizing a series of events that highlighted 100 years of professional service and commitment to the public. The Centennial Anniversary webpage (<http://www.isasce.org/centennial-anniversary/>) includes a timeline depicting the Section's amazing heritage. Various special celebration events were held this year including an engineering themed scavenger hunt, Winterfest bowling, a Schaumburg Boomers family baseball outing, and a civil engineering themed boat cruise in August. The special activities culminated in the Annual Dinner which was organized as a 100 Year Anniversary Gala! Over 500 people enjoyed the fun-filled evening at the Intercontinental Hotel with dinner and dancing. I would like to congratulate all of the award winners and thank the numerous Illinois Section

volunteers that made this event so successful.

The Illinois Section Technical Groups Holiday Party is a great way to end 2016 and enjoy some holiday cheer with fellow members on Wednesday, December 14 at the Jefferson Tap. The Younger Member Group is hosting this event along with all of the technical groups/institutes. This social event is a great way to introduce someone new in your office to ASCE, so invite a co-worker to join you this year. Come and enjoy a great time networking with your fellow engineers and don't forget your unwrapped toy for **Toys for Tots!**

This past year the Illinois Section worked hard with our partner organizations to educate the state legislators on the merits of the Safe Roads Amendment, also known as the Lockbox Amendment. The issue was on the November general election ballot and it was passed by an overwhelming majority of the voters. The amendment will constitutionally protect funds collected for transportation purposes to only be used for transportation purposes and this includes multi-modal options. Properly funding infrastructure in Illinois is a critical issue. The Section published an Infrastructure Report Card in 2014 and it has been widely used to describe the state of our infrastructure and the need for additional funding to (continued on page 21)

ASCE Illinois Section News

ILLINOIS SECTION NEWSLETTER

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100th Annual Awards Dinner Meeting Highlights

By Megan McDonald, P.E., M.ASCE and Dhooli Raj, P.E., M.ASCE

The ASCE Illinois Section closed its Centennial celebration at the 100th Annual Awards Dinner Gala at the Intercontinental Hotel on Michigan Avenue on Thursday, October 13, 2016. This was a

This was a very significant year for the Illinois Section and a rare opportunity to recognize and celebrate the feats of our local civil engineering history.

very significant year for the Illinois Section and a rare opportunity to recognize and celebrate the feats of our local civil engineering history. We envisioned an elegant, black tie

optional event as the Illinois Section turned 100 years old and opened the evening to spouses and significant others to celebrate with us during the festivities that included awards presentations, dancing and networking. Over 500 members, guests, educators, government representatives and students registered for this historic event.

We kept the individual ticket pricing affordable to encourage attendance and relied heavily on the generous sponsorship of leaders in the engineering and construction industry. The sponsors made a commitment to support our engineering community by making financial donations for the ASCE Annual

Awards Gala at the Platinum, Gold, Silver or Bronze levels. We would also like to recognize the Centennial sponsors who supported the section throughout the year at Centennial events.

The evening started with cocktails where ten nominees for project of the year were highlighted on the slide show before the dinner. We continued with dinner, the Awards ceremony and then dancing to create the Gala ambiance. Our guest emcee was Steve Cochran, a radio personality with WGN Radio in Chicago. Mr. Cochran was an entertaining host who helped expedite the awards program and kept the audience engaged.

2016 Annual Awards Dinner Gala Sponsors

Platinum (\$1,250): Alfred Benesch, DB Sterlin Consultants, Hayward Baker, HBK Engineering, HDR Engineering, HNTB, McHugh Construction Co., Milhouse, Patrick Engineering, Primera, Stantec/MWH, STV, Walsh Construction, WBK Engineering

Gold (\$1,000): Greeley and Hansen, Michael Baker International, Mott MacDonald, RME, Skyline Steel, Thornton Tomasetti

(continued on page 10)



Completion of a Potable Water Distribution System in Armenta, Honduras

By Ross Brazzale

The relationship between the community of Armenta, Honduras and the Chicagoland Professional Chapter of Engineers Without Borders (EWB-CPC) is exemplary of the strength, dedication, and

**Tremendous partnership
between Armenta,
Honduras and the
Chicagoland Professional
Chapter of Engineers
Without Borders**

cooperation necessary from community members and EWB volunteers working to meet a community's basic needs. The program, started in 2008, was initially established with the purpose of building a cast-in-place concrete pedestrian bridge that would connect two sides of town through both the dry and rainy season. Over the years the relationship strengthened and EWB-CPC quickly recognized that even though the community's challenges were immense (impoverished with limited resources and an unemployment rate near 60%), their commitment to improving life in the community was evident from the beginning of this partnership.



"Together Forever" Bridge Constructed in Armenta, 2009

**Successful completion of a
cast-in-place concrete
pedestrian bridge
developed the partnership**

Guided by the community driven project model of Engineers Without Borders USA, professionals from EWB-CPC developed plans and construction methods for the bridge and oversaw the construction, but successful completion of the project was only possible due to the community's hard work, ingenuity, and dedication.

Following successful completion of the bridge in 2009, EWB-CPC returned to Armenta in 2011 to assess the performance of the

bridge and was surprised to learn about Armenta's dire need for improved water infrastructure. Their existing water system was not only undersized for the growing community of approximately 2,000 people but also in a constant state of disrepair. This resulted in community members and the medical clinic receiving very limited access to clean potable water as the Water Council leadership struggled to keep up with backlogged repairs. The site assessment for the water system indicated that not only was the source for the existing gravity fed system ample and clean, but the community already had critical assets such as an elected Governing Board, elected Water Council, and a monthly fee (continued on page 11)

108 Years of Bad Baseball and Major Transportation Achievements

By Thomas Borges and Anne Marie Jensen

The Cubs are World Champions. With that final out in Game 7 of the 2016 World Series, it officially marked the end of decades of overtaxed “Did you know?” statements used to emphasize just how long it has been since winning the last title. Did you know that since 1908, five states were admitted into the Union, one of which formed their own baseball team and won its own World Series in that time? Did you know that since the Cubs’ last championship, Wrigley Field was constructed and subsequently became the oldest ball park in the National League? Did you know that at the time of their last World Series victory on October 14, 1908, the Ottoman Empire was still in existence and both radio and television had not yet been invented?

Just three years prior to the Cubs' last championship win, Chicago only had 1,900 miles of improved or "hard" roads compared to today's 4,000 miles of roads

As a tribute to both the Cubs’ World Series win as well as the conclusion of the ASCE Illinois



Section Centennial celebration, the significant advancements made throughout the transportation industry since 1908 should not be overlooked. Could you possibly envision Chicago without a systematic plan for a paved roadway network? Just three years prior to the Cubs’ last championship win, Chicago only had 1,900 miles of improved or “hard” roads compared to today’s 4,000 miles of roads. In 1909, city planner Daniel H. Burnham developed a 60-mile radius urban plan for the City of Chicago which would interconnect three states and Lake Michigan. This plan, commonly known as the 1909 Plan of Chicago, recognized the complexities of the modern industrial city and developed solutions to improve the City’s infrastructure, relieve traffic congestion, incorporate open

space and enhance the physical environment by dedicating the lakefront as public space, among others¹. The Chicago Plan Commission was created in 1910 to implement this plan and to provide systematic planning for public roads leading to the present-day infrastructure.

In 1909, city planner Daniel H. Burnham developed a 60-mile radius urban plan for the City of Chicago which would interconnect three states and Lake Michigan

The significant increase in vehicles and roadway use naturally created a demand for safe roads, efficient routes, traffic congestion relief and transcontinental travel, eventually giving birth to our expressway system. Most of the transportation funds were allocated to planning and constructing an expressway system until the creation of the Illinois State Toll Highway Commission (now known as (continued on page 12)

¹

<https://www.britannica.com/biography/Daniel-H-Burnham>

ASCE Illinois Section Urban Planning and Development Group Holds Permitting Seminar

By Steven Shanholtzer

The Urban Planning and Development Group (UPDG) of the American Society of Civil Engineers (ASCE) - Illinois Section conducted a permitting seminar at the Schaumburg Golf Club on November 10th, 2016. The event was well attended by engineering consultants, government agencies, and key developers within Northeastern Illinois. With over 150 professionals under one roof, it was a successful day for the civil engineering community as a whole.

development permitting process in Northeastern Illinois. Each

Representatives from over forty different organizations came together to discuss issues and challenges with regard to the land development permitting process in Northeastern Illinois

presenter outlined their specific permitting requirements and

was interactive and a sufficient amount of time was set aside for professionals to share ideas.

The presenters demonstrated leadership on behalf of their agency, the commitment of time and effort to prepare, and dedication to the civil engineering profession. It is important to have such strong leadership and dedication to betterment of our industry. On behalf of the Urban

The presenters demonstrated leadership on behalf of their agency, the commitment of time and effort to prepare, and dedication to the civil engineering profession

Planning and Development Group, we would like to personally thank each of the following individuals for their contributions:

- Greg Bedalov - Executive Director of Illinois Tollway
 - Dan Feltes - Local Sewer Systems Permit Engineer, MWRDGC
 - Lucy Chang - Project Engineer, DuPage County Stormwater Management
- (continued on page 13)



Representatives from over forty different organizations came together to discuss issues and challenges with regard to the land

common pitfalls that may lead to project delays. Several presenters provided the "Top Ten" reasons for permit delays. The seminar

Wacker Drive Reconstruction Project: A Major Structural Engineering Achievement

(continued from page 1)

A critical downtown artery, Wacker Drive is home to several buildings that define Chicago's iconic skyline and border the central business district. The

Standing as a marvel to the coordination of so many complex systems through the heart of one of the busiest urban centers of the country, Wacker Drive has been recognized locally and nationally as a historic structural engineering achievement for the City of Chicago

Willis Tower, the Civic Opera House and the Chicago Mercantile Exchange are among those that claim a prestigious Wacker Drive address. An estimated 60,000 vehicles use the Drive daily, along with 225,000 pedestrians and vehicles on the associated cross streets. The viaduct was reconstructed in an effort to modernize the upper and lower levels, providing a safer, more efficient roadway for motorists and pedestrians.

The deck is supported by individual columns located to accommodate the main travel lanes, service lanes, median and numerous building entrances on Lower Wacker Drive. The 3'-0" diameter columns are spaced at roughly 32' centers in the longitudinal direction with variable transverse spacing to accommodate a complex array of

constraints. The columns at the expansion joints utilize hammerhead caps in order to support bearings for the up-station and down-station deck segments.

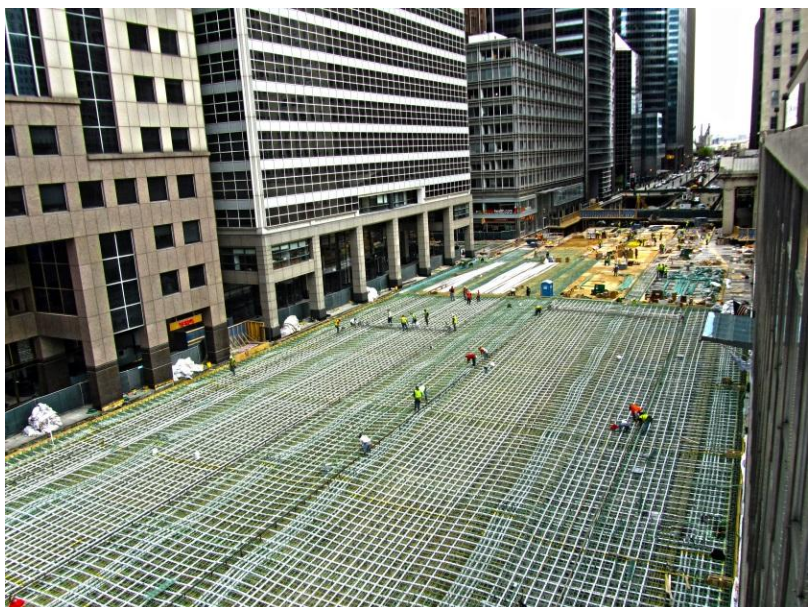
The grade beams are typically 5'-0" wide by 4'-0" deep with larger 5'-0" by 5'-0" sections at the expansion joints to accommodate increased torsion loading from the hammerhead columns. Adjusting the column locations required the reconstruction of the existing grade beams which were supported on belled shafts extending approximately 60' below the surface to a hardpan clay layer.

The revised column arrangement meant that some existing shafts would see substantial load increases. In certain locations, pressure meter testing was conducted to justify nearly doubling the allowable bearing pressure. This allowed for the

vast majority of the existing belled shafts to be reused which limited the amount of new shafts that had to be constructed.

Another challenging component of the reconstruction was to upgrade the alignment of both the upper and lower levels. Re-aligning the Lower Wacker Drive service and travel lanes proved to be the most significant geometric challenge due to its impact on the structural column arrangement. The Upper Wacker Drive Viaduct geometric improvements sought to reduce the number of access points between Upper and Lower Wacker to better facilitate traffic flow. Another key constraint was that the sidewalks on the viaduct had to be level with adjacent building plazas. The tight vertical geometry constraints introduced additional challenges for the drainage design of the viaducts as well.

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Wacker Drive Reconstruction Project: A Major Structural Engineering Achievement

(continued from page 7)

The viaduct deck is a cast-in-place concrete slab post-tensioned in both directions. High strength (6,000 psi), high performance concrete with reduced chloride permeability was specified to ensure the structure would withstand the harsh Chicago winters. Typically, a two foot deep, four foot wide longitudinal rib runs along each of the six column lines with a 13" deep deck between the ribs. This design introduced a challenge in avoiding conflicts between the post-tensioning tendons and conventional epoxy-coated reinforcement throughout the deck. This issue was solved by banding the profiled tendons in the ribs in the longitudinal direction with straight tendons in the slab between adjacent ribs. Banding of the profiled tendons provided uniform distribution in the transverse direction. In this manner, the deck acts as a one-way slab in the transverse direction, supported by post-tensioned concrete beams formed by the ribs with their banded tendons. At the end of each deck segment is a two foot deep transverse rib to accommodate the anchorage block-outs and the expansion joint.

The structural slab was designed to zero tension under all service loads for both the top and bottom surfaces. This design objective was accomplished through the use of three separate post-tensioning "systems." The primary system consists of the banded tendons in

the longitudinal ribs. Each rib has between five and eight 3" diameter profiled ducts, which contain nine 0.6" diameter low relaxation grade 270 post-tensioning strands. These tendons were stressed at each end to a force of 370 kips. The secondary system is in the transverse direction and extends along the entire length of the viaduct with profiled 4-strand flat ducts. The ducts are spaced at 1'-6" or 2'-0" centers, depending on geometric variables. These tendons are single end stressed to 164 kips with a mono-strand jack. The third element of the system consists of non-draped distributed tendons in the longitudinal direction. These are 5-strand tendons, single end stressed, to a force of 205 kips, and spaced roughly 2'-0" on center between the ribs. All ducts were grouted after the stressing operations were complete.

Designing the system to a zero tension criteria involved quite a few design challenges. The geometry and loading was always varying, meaning several different profiles and spacing adjustments had to be made within each system. A 19th century trolley tunnel beneath Washington Street eliminated the possibility of columns for that bay and created an abnormally long span of over 50 feet between the column bents. This was accounted for by using additional tendons in the ribs and modifying the drape to adjust the magnitude of the balance forces.

The Upper Wacker Drive median was also required to support planters requiring a design loading of over 400 psf. Due to the geometric layout of the deck and the congestion created by the post-tensioning ducts, it was not practical to provide spare ducts as a fall back in case field stressing data did not achieve the required results. This was addressed by designing the PT tendons to be stressed to 70% of the ultimate strength. Once in-place friction test data was available the stressing value could be increased to 75% if deemed necessary. The additional capacity would also be available if a particular strand was lost. Both of these contingency plans were implemented on occasion during construction.

The very dense urban setting was a fundamental constraint that had

The very dense urban setting was a fundamental constraint that had to be constantly considered during both design and construction

to be constantly considered during both design and construction. The viaduct footprint on the east and west is bordered by buildings with the gap between the viaduct and adjacent property set at only 7/8". During the design phase, it was a significant challenge to develop details to allow for transverse (continued on page 9)

Wacker Drive Reconstruction Project: A Major Structural Engineering Achievement

(continued from page 8)

stressors at the edge of the viaduct with very tight clearance to adjacent building façades.

The Contractor also had to deal with very difficult scheduling. Work activities were limited or restricted during performances at the Chicago Civic Opera, which occupies an entire city block in the middle of the project. The Madison Street intersection could not be closed until all other side streets were re-opened. This constraint was implemented because the closing of Madison Street diverted 50,000 pedestrians a day that mostly come into the city through Chicago's Union Station and walk across Wacker Drive into the central business district. The Contractor was also responsible for maintaining access

The overall Wacker Drive Reconstruction project is a remarkable example of how a massive urban reconstruction undertaking proved to be a great success and achievement for civil engineering

24 hours a day to all loading docks and parking garages in the Lower Wacker service drive. Maintaining continuous access for pedestrians to all buildings and businesses proved to be a challenge as well.

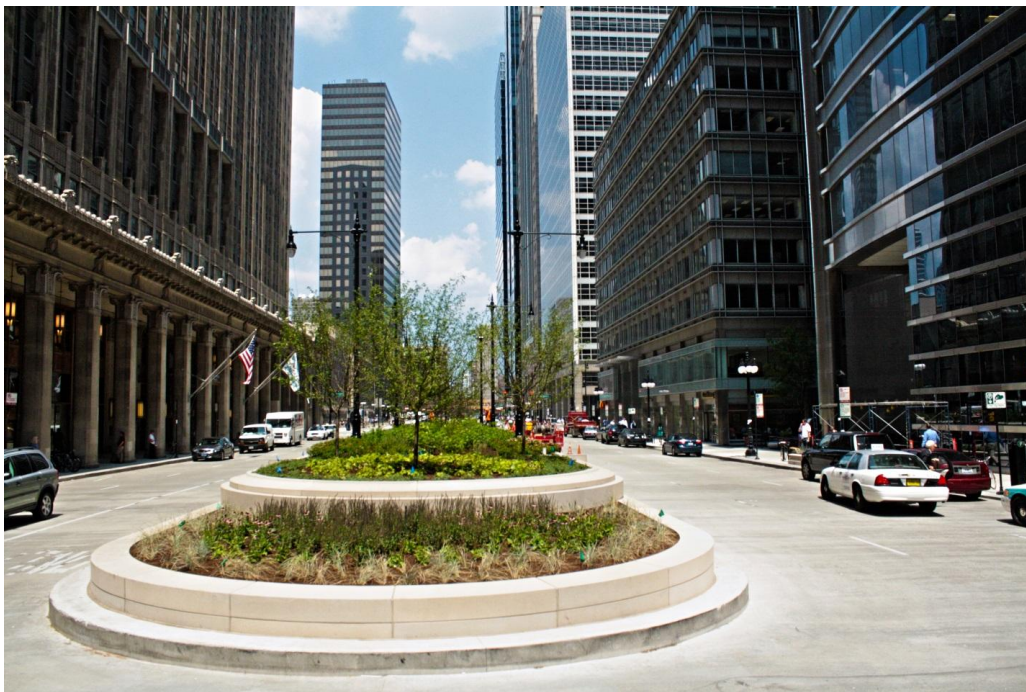
The overall Wacker Drive Reconstruction project is a remarkable example of how a

massive urban reconstruction undertaking proved to be a great success and achievement for civil engineering.

Hossam Abdou, P.E., S.E., Ph.D., is a Senior Vice President and Chief Structural Engineer with Alfred Benesch & Company.

Andrew Keaschall, P.E., S.E. is a Vice President and Structural Group Manager with Alfred Benesch & Company. He is currently a Director for the ASCE Illinois Section.

Thomas Janicke, P.E., S.E., is a Project Engineer with Alfred Benesch & Company. He currently serves as Secretary of the Structural Engineering Institute (SEI), a technical group of the ASCE Illinois Section.



100th Annual Awards Dinner Meeting Highlights

(continued from page 3)

Silver (\$750): ACEC-IL, Black & Veatch, Clark Dietz, Crawford, Murphy and Tilly, ECS Midwest, HBM Engineering, Jacobs, OMEGA, SEI, Strata Earth Services, V3

Bronze (\$500): ACI-IL, Aqua Vitae Eng., Bowman, Barrett & Associates, Ciorba Group, Collins Engineers, EWRI, Forefront Structural Eng., GI, Michels Foundations, Ozinga Bros., Parsons, Power Construction, Robinson Engineering, Spaceco, Reinforced Earth Company, TranSystems, Trotter & Associates

Centennial Sponsors

(\$3,000/year): Bentley, Christopher B. Burke Engineering, Robinson Engineering, STV



2016-17 ASCE Illinois Section board members being sworn in

Members, or Affiliates, who have reached the age of 65 years, have

The The Illinois Section recognized all the volunteers who gave of their time and effort throughout the year by serving on various committees, technical groups, and the Board. The ASCE Illinois Section Board is composed of President, Past President, President-Elect, Secretary, Treasurer, 6 directors who served a staggered 2-year term, and chairs of each technical group. Governor Darren Olson swore in the 2016-17 Board and President John Lazzara spoke about the responsibility of civil engineers in our community.

The main event was the presentation of award recipients, outstanding civil engineering achievements, sustainable civil engineering project, and Engineers Without Borders (EWB) project grants for 2016. There were many outstanding (continued on page 11)



ASCE Life Members honored during event

The ASCE Illinois Section honored 22 Life Members during the Annual Awards Dinner Gala. Life Membership status is bestowed on an ASCE member in recognition of his or her long-term support of the Society. Fellows,

paid dues in any membership grade except student for at least 35 years and have had ten years continuous membership immediately preceding the attainment of Life Member.

100th Annual Awards Dinner Meeting Highlights

(continued from page 10)

There were many outstanding nominations, and the Awards Committee wishes to thank all those that participated in the process

nominations, and the Awards Committee wishes to thank all those that participated in the process. The Awards Selection Committee includes a member from each Technical Group or Institute, and a minimum of two representatives from the Illinois Section Board of Directors. All

the winners presented tonight were chosen by a vote of the Selection Committee. After the Committee selected the award recipients, a vote of the Illinois Section Board was required to ratify the Committee's selections. (continued on page 15)

Completion of a Potable Water Distribution System in Armenta, Honduras

(continued from page 4)



Meeting with community members during the site assessment

Currently finishing a water system for over 2,000 people, one of the largest EWB projects ever undertaken

schedule to pay for future maintenance. With the feasibility of an improved water system and the strong ongoing partnership

with the community, volunteers began design work in the U.S. and implementation began in 2013.

Since then, EWB-CPC has mobilized over 100 different volunteers traveling on 17 separate different implementation trips to ensure that the community will have a reliable source of clean water 24/7 to pass on to their next generation. The water

distribution system includes a modified collection dam, a new sedimentation tank, nine pipe bridges, over 1.6 kilometers of distribution pipeline, two large water tanks, and over 1.6 miles of transmission pipeline that is scheduled for completion in 2017. In addition to the thousands of individual hours donated by EWB volunteers, the Armenta community leaders have organized their own community labor resources to match our engineering efforts. Together, we have worked side-by-side with one another in pipe trenches, on the side of a mountain, and in the heart of the community cutting, bending and tying rebar, pouring concrete, and sweating profusely in the often 100+ degree heat. When we think we have expended all we could possibly expend, it's the offering of a refreshing drink from a nearby neighbor or the site of a group of kids laughing and making a game of seeing how fast they can carry buckets of concrete (continued on page 14)

108 Years of Bad Baseball and Major Transportation Achievements

(continued from page 5)

the Illinois State Toll Highway Authority) in 1953. The Federal Aid Highway Act of 1956 also provided an opportunity for cities and counties to continue to improve their roadway systems by requiring the federal government to incur ninety percent of expressway costs². By 1956, thanks to the passage of this act and the creation of the Illinois State Toll Highway Authority, construction had begun on the original Northwest Tollway (I-90 from Rosemont to South Beloit), Tri-State Tollway (I-294 as a bypass route from south and west of Chicago to I-94, north to Wisconsin) and East-West Tollway (I-88 from Hillside to Aurora)³. The tollways have since been extended to accommodate the heightened demands of the Chicago-area commuter routes and long distance travel.

Prior to Illinois' expressway system becoming privatized, the city's public transit system as we know it today was once privately owned. The street railways were owned by five different companies being managed by Chicago Surface Lines and the rapid transit was owned by Chicago Rapid Transit Company. As stated in *The CTA is Created: A New Era Begins (1947)*, the Chicago Transit Authority (CTA)

was created in 1945 due to poor public relations that resulted from the construction and expansion of the "L" and street railways systems, failure to convert low traffic streetcar routes to more economical bus operations and to eliminate duplicate routes between former rival companies, inability to set fares to rates adequate for generating funds needed for modernization and reinvestment, as well as the reluctance to modify routes, close low-traffic "L" stations or change services due to changing land use patterns. Shortly after the CTA was created to resolve these transit issues, it took over all rapid transit and streetcar service on October 1, 1947 in order to restructure and modernize the city's transit system⁴.

While the newly-formed CTA was successful in revamping routes, modernizing equipment and mending its public relations, the agency struggled with managing costs. In 1970, following the construction of the Dan Ryan and Kennedy rapid transit lines, fare revenue failed to cover operating costs for the first time ever, partly due to a widespread population shift from the city to the suburbs. To aid in the financial distress and to help ensure the future well-being of the transit system, Governor Ogilvie received \$200 million in capital grants from the state legislature for mass transits and appointed a task force to

provide recommendations on a six county regional transit authority. The Regional Transportation Authority (RTA) was created by the March 19, 1974 referendum with the intention of supporting each transit system in the Chicago area, including budgetary oversight and some planning over CTA⁵.

Just as mankind has come a long way since the Chicago Cubs last World Series victory in 1908, so has the transportation industry in Chicago and its surrounding suburbs

Just as mankind has come a long way since the Chicago Cubs last World Series victory in 1908, so has the transportation industry in Chicago and its surrounding suburbs. And as the tired "Did you know?" trivia finally comes to an end with the conclusion of the 2016 baseball season, one must wonder what we as transportation engineers will accomplish before their next championship. Regardless of what team you root for and however long that next championship may take, it is exciting to envision where we will go next with this industry. Go Cubs!

(continued on page 13)

² <http://www.encyclopedia.chicagohistory.org/pages/1209.html>

³ <http://www.encyclopedia.chicagohistory.org/pages/1258.html>

⁴ <http://www.chicago-l.org/history/CTA1.html>

⁵ <http://www.chicago-l.org/history/RTA.html>

108 Years of Bad Baseball and Major Transportation Achievements

(continued from page 12)

Thomas Borges, P.E. is an engineer in transportation and is chair of the IS-ASCE Transportation and Development Institute.

Anne Marie Jensen, P.E., M.B.A. is an engineer in transportation and is past-chair of the IS-ASCE

Transportation & Development Institute.

ASCE Illinois Section Urban Planning and Development Group Holds Permitting Seminar

(continued from page 6)

- Jonathon Karabowicz - Permit Engineer, Illinois Department of Transportation
- Thomas Gallenbach - Permit Section Manager, Illinois Department of Transportation
- Abigail Robinson – Permit Engineer, Illinois Department of Transportation
- Hasan A-Gholeh – Permit Engineer, Illinois Department of Transportation
- Kurt Nika - Chief of Traffic Operations & Permitting, Kane County Division of Transportation
- Cathy Demeroukas – Lead Permit Reviewer, Illinois Environmental Protection Agency (Stormwater)
- Michael Machalek - Senior Enforcement Officer, US Army Corps of Engineers
- Ron Abrant - Senior Project Manager, US Army Corps of Engineers
- Eric Wesel - Permit Engineer, Will County Division of Transportation
- Andrew Billings - Lead Stormwater Reviewer, City of Chicago

The Urban Planning and Development Group sponsors several education programs throughout the year. The settings are intended to be interactive, and they support collaboration among the civil engineering industry. The UPDG is under new leadership, and it is continuing to grow and expand its presence in the ASCE - Illinois Section. The unique composition of the UPDG encompasses a broad spectrum of disciplines within the civil

engineering umbrella.

This year's permitting seminar was a tremendous success thanks to the contributions and support of the entire UPDG Committee. UPDG utilizes the proceeds to provide scholarships, provide educational events, and communicate the civil engineering profession throughout our communities. One of the greatest objectives is to introduce (continued on page 14)



ASCE Illinois Section Urban Planning and Development Group Holds Permitting Seminar

(continued from page 13)

The UPDG is under new leadership, and it is continuing to grow and expand its presence in the ASCE - Illinois Section

students to the practice of civil engineering. Thank you again to all who helped make this event possible. It was truly a great success, and the perfect way to re-

energize the UPDG and look forward to 2017.

For further detailed information on any aspect of the recent seminar, please feel free to contact Steve Shanholtzer or Jay Oslon with the Urban Planning and Development Group. They can be reached by email at sshanholtzer@manhard.com or jolson@gsg-consultants.com.

Steven Shanholtzer, P.E., is a Project Manager for Manhard Consulting

with over 12 years of experience in land development. He has an extensive background in the stormwater management aspects of land development and the nuances for development within each of the collar counties. Steven is a graduate of Bradley University in Peoria, Illinois, and he currently serves as an officer for the American Society of Civil Engineers Urban Planning and Development Group. He is a registered Professional Engineer in the State of Illinois.

Completion of a Potable Water Distribution System in Armenta, Honduras

(continued from page 11)



up a ramp that causes us to pause in wonderment, slip on our gloves and get back to work. While we may be proud of all our contributions on this project, as it is one of EWB-USA's largest projects ever undertaken, we are continually humbled by this community's consistent outpouring of gratitude and generosity of heart. This truly has been a project where we have received more than we have been given.

Ross Brazzale, PE is structural engineer at Lochner and has been involved in EWB since beginning his Bachelor of Science in Civil Engineering at the Illinois Institute of Technology in 2006.

100th Annual Awards Dinner Meeting Highlights

(continued from page 11)

CITIZEN ENGINEER OF THE YEAR

Wilbur C. Milhouse, III, P.E.



Wilbur C. Milhouse III is a recognized and accomplished entrepreneur. He is the Founder and President/CEO of Milhouse Engineering & Construction, Inc. (parent company), established in 2001. Wilbur has been instrumental in the growth of Milhouse. The Milhouse parent company has two subsidiaries: Milhouse Construction, Inc. and Milhouse Snow, LLC. Additionally, Milhouse's philanthropic arm, Milhouse Charities, has been actively promoting its work to support education in the STEM fields and to bring young people into the engineering and power professions.

Wilbur leads his companies' goals to provide excellent service through quality work performed with integrity. His beliefs are based on the confidence of hiring great people, challenging them to excel, and maintaining a laser focus on the needs of the clients. Wilbur brings nearly 24 years of diversified experience in civil and structural engineering.

Wilbur is an alumnus of the University of Illinois Urbana-Champaign, where he obtained his Bachelor of Science degree in Civil Engineering and a Master of Science degree in Structural Engineering. He is a Licensed Professional Engineer in the following locations: Illinois, Indiana, Missouri, Ohio, Pennsylvania, Texas, Virginia, Washington D.C., and Wisconsin.

YOUNG GOVERNMENT CIVIL ENGINEER OF THE YEAR

Arturo Hernandez, P.E.



Arturo Hernandez is an Associate Civil Engineer for the Metropolitan Water Reclamation District of Greater Chicago (MWRD). In this position Mr. Hernandez is a Watershed Management Ordinance Permit Reviewer responsible for the design of sanitary and stormwater systems to support MWRD's core mission of protecting the health and safety of the public.

Arturo's nine year public sector career has included work with

Cook County and MWRD's Engineering and Maintenance & Operation (M&O) Departments. Arturo has experience in roadway construction, biosolids management, sewer maintenance, geographic information systems, and stormwater detention modeling.

In each role Arturo performs, he enters with the vision of improving work processes to benefit the taxpaying public. In the MWRD M&O department, Arturo implemented a risk and information based methodology to sewer inspections. This method reduced both expense and allowed for quicker identification of problem areas. In his current position, Arturo developed a methodology and oversaw the conversion of the MWRD Local Sewer System permit database into a GIS format. As a result of his efforts, MWRD staff can perform faster and more accurate permit reviews.

Arturo obtained his Bachelor of Science (2008) and Master of Science (2012) in Civil Engineering from the University of Illinois at Chicago (UIC) and has been licensed as an Illinois Professional Engineer since 2013. Arturo currently resides in Chicago with his wife, Alia, and their stubborn little dog, Gatsby. Arturo is a member of the ASCE YMG Outreach group and the Veterans of Foreign War. He is currently pursuing a Master of Business Administration from UIC.

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GOVERNMENT CIVIL ENGINEER OF THE YEAR

Paul A. Loete, P.E.



Mr. Loete graduated with honors from the University of Illinois at Urbana Champaign with a degree in Civil Engineering before beginning his career in the private sector. His private sector experience includes a diverse background in environmental, civil, and transportation engineering. Mr. Loete is a licensed professional engineer in Illinois with over twenty years of experience in private practice and state government. Throughout his career, he has both managed and developed transportation projects in Illinois and Iowa. His experience includes planning, design and construction engineering associated with various transportation and storm water management projects, as well as management, strategic planning, and office leadership.

In September 2012 Mr. Loete began his career with the Illinois Department of Transportation. Mr. Loete's time was allocated to organizational management, administration, and quality review

at the district 2 and 3 offices in Dixon and Ottawa, respectively. Region Two includes a staff of over 670 employees and average annual program of approximately \$300 Million.

In February 2016, Paul was appointed Director of Highways Project Implementation with the Department of Transportation. Mr. Loete's current position is accountable for the implementation of programs to accomplish the annual highway work program in conjunction with the coordination of the state's highway activities with local and regional agencies. This encompasses the safe, efficient and sustainable delivery of the state's highway construction program as well as maintenance and operations of the state highway system through effective engineering activities of the districts and central bureaus with 4,616 full – time employees and over \$1 billion in annual construction programs.

YOUNG CIVIL ENGINEER OF THE YEAR

Monica Crinion, P.E.



Monica Crinion, P.E., joined WBK Engineering in 2014 and works with the structural department on projects performing project management and structural design. She has 8 years of experience in transportation engineering including Phase I, II and III services on State, Municipal, County and Illinois Tollway projects. "We are proud that ASCE recognized what we already know - that Monica is a credit to the profession of engineer and an example of the spirit of giving back to her community that we all strive for", says John Wills, President of WBK.

One of many organizations Monica has actively supported through volunteering is ASCE. Monica joined the ASCE - Younger Member Group (YMG) back in 2010 where she started as a member of the student outreach committee. After realizing YMG was the perfect group to connect youth, recent graduates and young professionals with development opportunities in our industry, she became integrally involved in the YMG board. She has served as Director of Engineering Outreach (2013-2015), planning co-chair for a regional ASCE conference (2016), and currently serves on the Board of Directors for the Younger Member Group (2015-2017).

Monica earned a B.S. in Civil Engineering from the University of Illinois, Urbana-Champaign in 2007 followed (continued on page 17)

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by a M.S. in Civil Engineering from the University of Illinois, Chicago in 2013. She is a native of Downers Grove, IL and now calls the West Loop neighborhood in Chicago her home.

CIVIL ENGINEER OF THE YEAR

Gary Goodheart, P.E.



Gary Goodheart's career includes over 42 years of professional experience executing and managing a diverse portfolio of civil engineering projects, geotechnical investigations, environmental and water resources projects, in more than 35 states across the USA and in a dozen countries.

As a young engineer, Gary worked on multiple segments of the Metropolitan Atlanta Rapid Transit Authority rapid rail system, as well as design, permitting/ licensing, and construction of numerous nuclear and fossil fuel power plants. In the early 1980s, Gary worked on industrial projects in Europe and

the Middle East, and spent a total of about 18 months in Saudi Arabia. Gary is currently a Vice President of Patrick Engineering and oversees the firm's Water Resources Team. He provides senior leadership for many significant Patrick Engineering projects, including: a new rail yard, dumping pit, and conveyor system for a Pennsylvania power plant; a 3.5-mile long rail loop at a central Illinois power plant; and ADA and other improvements to 19 AMTRAK rail stations in the Pacific Northwest.

Gary has been actively involved in ASCE since college, and has been active in the Illinois Section since 1996. He is past Chair of the Geotechnical Group, a past Director of the Illinois Section, and has served on several local and national ASCE committees.

Gary and his wife Karen have five adult children and six grandchildren between them. Gary and Karen are active members of St. Luke Presbyterian Church in Downers Grove, and they enjoy travelling and spending time with friends and family.

PRIVATE SECTOR EMPLOYER RECOGNITION AWARD

Primera Engineers, Ltd.



Founded in 1987, Primera Engineers has been a longstanding leader in the engineering industry, with projects ranging from schools and roadways to healthcare facilities and utility infrastructure. With over 200 employees, Primera is a full-service, woman-owned engineering design and consulting firm that specializes in: buildings, transportation, utilities and business consulting. Primera employs experts in a variety of disciplines including: mechanical, electrical, plumbing (M/E/P), structural, civil, telecommunications and power engineering, as well as protection & controls, commissioning, (continued on page 18)

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energy services, architecture, sustainability, life safety, lighting, transportation, power delivery, and project and construction management. Primera is known to provide dynamic design, innovative technology, and superior service.

OUTSTANDING CIVIL ENGINEERING ACHIEVEMENT - UNDER \$10 MILLION

Busse Reservoir South Dam Modification Project



The Busse Reservoir, controlled by the South (main) dam, was one of the first flood mitigation projects built in the early 1970's, and plans to further modify its original construction have been considered since the early 1980's. However, the flooding in 2008 that occurred on Salt Creek energized the Village of Elk Grove Village to jump-start the long stalled discussions required among the host of public agencies with some stake in Busse Reservoir. They sought a new approach that would break the stalemate between achieving more

flood mitigation and preserving valuable ecological communities adjacent to the reservoir.

The Project consisted of replacing a concrete weir with a pair of hinge gates that are controlled by sensing Water surface elevations downstream of the dam, where Salt creek flows through the public spaces making up the heart of the Community of the Village of Elk Grove Village. The operation of the two crest gates allows bypass of the early part of a storm event by lowering the

gate to keep the reservoir elevation constant but allowing more flow out of the reservoir. As flows increase downstream to a pre-damage threshold, the gate then begins to raise, keeping flow out constant but utilizing the reservoir storage. As an upper limit in the reservoir storage elevation is

approached, based on the presence of unique ecological resources fringing the reservoir, the gates then lower balancing upstream ecological impacts with downstream flooding.

OUTSTANDING CIVIL ENGINEERING ACHIEVEMENT \$10-\$25 MILLION

Navy Pier Centennial Wheel



In honor of Navy Pier's 100th anniversary, a major redevelopment was performed on the Midwest's most popular tourist destination which included the replacement of the iconic 20-year old Navy Pier Ferris Wheel. Attracting over 9 million visitors a year, the Pier is a vital part of Chicago's economy, with the new Centennial Wheel serving as a major draw for new visitors. A staple fixture in Chicago's skyline, the new wheel has a sophisticated look, offering a more modern and pleasing experience to riders with enclosed gondolas featuring padded seats, TV screens, speakers, air conditioning and heating.

Navy Pier's Centennial Wheel clocked in at 196 feet and 525 (continued on page 19)

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tons – twice the weight of the former Ferris wheel. The Wheel's six main support columns and the axle total a combined weight of 333,000 pounds, themselves. And the center axle, the heaviest crane load installed on the wheel, weighed in at 48,000 pounds on its own. Each of the Wheel's six legs was 120 feet long and weighed 36,000-60,000 pounds, and the 21 spokes on the Wheel each measured 95 feet long. Eight micropiles were installed below the Pier Park to a depth of approximately 150 feet each. The project also used 500 cubic yards of concrete and 50 tons of steel, not including the Wheel itself.

For James McHugh Construction Co., based in Chicago, Navy Pier has become one of its most complex projects to date. The project came to be described by the team as an “orchestrated ballet,” with planning stages beginning more than a year in advance of the September 2015 demolition. More than 500 McHugh employees and subcontractors and more than 30 Chicagoland subcontractors were engaged by McHugh, completing the project in excess of 25,000 total hours. The total cost of the Wheel and its construction came in at \$25 million.

OUTSTANDING CIVIL ENGINEERING ACHIEVEMENT - Over \$25 MILLION

Thornton Composite Reservoir



The Tunnel and Reservoir Plan (TARP) was adopted in 1972 as the Metropolitan Water Reclamation District of Greater Chicago's (MWRD) cost-effective plan for complying with federal and state water quality standards with respect to the region's combined sewer area consisting of the city of Chicago and 51 suburban municipalities. TARP's main goals are to protect Lake Michigan's drinking water supply from raw sewage, improve the water quality of area waterways, and provide an outlet for area floodwaters to reduce street and basement sewage backup. The Thornton Composite Reservoir, part of Phase II of TARP, is a major step towards achieving these goals.

Completed in 2015, the reservoir has a storage capacity of 7.9 BG and is the largest combined sewer

overflow (CSO) facility in the world. The reservoir measures approximately 2,480 feet long, 1,580 feet wide and 300 feet deep. In addition to 4.8 BG CSO storage from the Calumet deep tunnel system, the reservoir was

also designed to provide 3.1 BG storage for overbank floodwaters from Thorn Creek. The reservoir, with a surface area of approximately 83 acres, serves a 90-square-mile area in Cook County. The reservoir provides benefits to 556,000 people in 14

communities, including the South Side of Chicago and 13 suburban communities.

The reservoir is located in the expanded north lobe of the Thornton Quarry, one of the largest active aggregate quarries in the world. The MWRD reached an agreement in 1998 to allow HMS to finish mining operations in the north lobe, at which point the MWRD would take ownership of the north lobe and complete the necessary construction improvements to convert the expanded quarry into an operational CSO reservoir.

TARP has been an innovative plan to reduce pollution and flooding in the Chicago metropolitan area since its inception over 40 years ago. With significant reductions of CSOs, area waterways such as the
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Chicago River, Des Plaines River and Cal-Sag Channel are once again abundant with multiple species of aquatic life and are being reclaimed for recreational purposes. TARP relieves each municipality of the burden of designing, building and operating its own system to capture and treat combined sewer overflow to comply with state and federal regulations.

SUSTAINABILITY IN CIVIL ENGINEERING ACHIEVEMENT AWARD

Elm Woods Stream Stabilization



The Elm Woods Stream Stabilization was an initial phase of a large, publicly funded project for the Southern Des Plaines River Preserves to enhance a series of hydraulically connected sites, both individually and collectively, as a riparian corridor woodland system. Major initiatives focused on stabilizing woodland structure; restoring age/size class distribution of native trees; restoring historic drainage patterns; replacing invasive species with native forbs, grasses, shrubs and trees; enhancing breeding areas for birds, amphibians, small

mammals and reptiles; and re-introducing native wildlife by establishing long-term monitoring and management schedules.

Elm Woods is an Illinois Nature Preserve with a ravine-like oak forest and high quality historic flatwoods at the uppermost reach of the watershed. Surrounding development and excessive oak canopy have decimated the understory vegetation, thereby allowing head cut to progress upstream and jeopardizing the groundwater hydrology of

the flatwoods.

In a collaborative endeavor, Black Creek Hydrology and Aqua Vitae Engineering worked together with the Lake County Forest Preserve's environmental scientists and contractors to research, design, and provide construction direction to "field-fit" in-stream structures while minimizing impacts to the Nature Preserve.

THANK YOU

Thank you to all who came to celebrate the ASCE IL Section 100 year anniversary and the

incredible civil engineering projects and engineers that were nominated this year. Thank you for all the support for the Section through sponsorships and attendance at the events through the year and all the years before this.



*Past Presidents and Chicago Area Leaders
within our Section*

The IL Section appreciates seeing the Life Members who have committed themselves to the success of ASCE through their membership and support, as well as the Student Members who will keep our Section moving into the future. It was a great way to celebrate the Centennial Anniversary by seeing past winners and familiar faces among those there to celebrate the new achievements within our engineering community.

And finally, thank you to all of our volunteers who dedicate their time and expertise to the Board
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100th Annual Awards Dinner Meeting Highlights

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and our individual institutes that make up the IL Section. Their dedication and volunteerism are the backbone of our organization and how we can provide so much value for our members.

Megan McDonald, P.E., M.ASCE is a transportation engineer with TranSystems. She is Co-Chair of the

Annual Awards Dinner Committee, Secretary of the ASCE IL Section, and Newsletter Editor/Communications Chair for the ASCE Illinois Section.

Dhooli Raj, P.E., M.ASCE is a project manager with Collins Engineers, Inc. She is Co-Chair of the Annual Awards



Dinner Committee and President elect of the ASCE Illinois Section.

President's Notes

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address our community needs. We will be busy starting to work on the next update for the Illinois Infrastructure Report Card very soon. This is a large effort and we will need all the help we can get so I am asking you to consider volunteering a little of your time and expertise to this cause.

The first canon in ASCE's Code of Ethics states: "Engineers shall hold paramount the safety, health and welfare of the public and shall strive to comply with the

principles of sustainable development in the performance of their professional duties." What better way to show the public what engineers do and get students excited than with an IMAX movie! ASCE's **DREAM BIG** movie will be shown early next year at the Museum of Science and Industry and the Illinois Section is planning a special event for 2017 centered on the release of the movie. We will be using this movie and the excitement it creates to further

public education about the importance of the civil engineering practice and the critical role it plays in society.

For all of our members, I have a special request. The coming year will be an exciting time for the Illinois Section and I ask you to think about inviting other engineers you work with or know to one of our events. For many people, getting involved simply starts with being asked.



VILLAGE OF ELK GROVE VILLAGE

Community Development is seeking a Staff Engineer to review engineering plans & recommending approval/disapproval to the Village by ensuring sound engineering practices & compliance with all State & Village codes, ordinances & requirements for proposed new construction.

REQUIREMENTS: Bachelor's degree in Civil Engineering; 2 years of professional Civil Engineering experience, either in design or review of construction plans & specifications, or in construction field inspection. Possession of a valid IL Driver's License & a safe driving record. Considerable knowledge in Microsoft applications, as well as MicroStation. Knowledge of GIS and Accela a plus. Ability to work independently with minimal direction & outside in varying weather conditions.

HOURS OF WORK: 40 hrs/wk COMPENSATION: \$72,758 annually CLOSING DATE: December 12, 2016

To Apply, visit www.elkgrove.org, go to *Open Jobs* on top of the home page, & select the *Staff Engineer* position to complete an employment application by 5:00 PM on Monday, December 12, 2016.

Thank you to the generous sponsors of the ASCE Illinois Section Civil Engineering Board Tour, which was held on Friday, August 12, 2016. The event was a great success thanks to your support!

<u>Centennial Sponsors</u>		
 		 
<u>Gold Sponsors</u>		<u>Silver Sponsors</u>
 	 	
<u>Bronze Sponsors</u>		
		Jennifer Gora, ASCE Illinois Section President-Elect

December 2016

In an effort to keep Illinois Section members informed 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 mamcdonald@transystems.com.

■ Treasurer's Report

▲ A treasurer's report was presented at the September, October, and November meetings. All reports were approved.

■ Highlights from Illinois Section Activities and Group Reports.

▲ **Dream Big** – ASCE will be releasing the I-MAX film on civil engineering during Engineers Week February 19-25, 2017. Look for a special IL Section event focused around the movie.

▲ **ASCE IL Section Annual Dinner Gala** – The Annual Dinner Gala was a success at the InterContinental Hotel on Michigan Avenue, with over 500 attendees to conclude our Centennial celebration.

▲ **2016 ASCE Holiday Party** – This year's ASCE Holiday Party will be at Jefferson Tap on December 14 from 6:00 pm to 9:00 pm. The cost will be \$20 plus an unwrapped toy to be donated to Toys For Tots.

▲ **Report Card Committee** – The IL Section will begin work on the updated release for the 2018 Infrastructure Report Card. If interested in helping, please contact Pat Lach or Darren Olson.

▲ **Special Events Committee** – The IL Section has a new Special Events Committee to use the positive feedback from our Centennial Events held over the last year to encourage our members to get together for social events.

▲ **Geo-Institute** – The Geo-Institute will be hosting a 2017 lecture series on May 5 with the topic of "Innovative Geo-Technology".

▲ **Future City Competition** – Future City Competition will be at the University of Illinois-Chicago on January 7. If you have any questions, please contact Don Wittmer (dewittmer@hntb.com).

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 December 5, 2016 at 5:30pm at the TranSystems office located at 222 S. Riverside Plaza, Suite 610, Chicago, IL. Please note the meeting location. Future meetings will be held on January 9, February 6, and March 6..

By Megan McDonald
mamcdonald@transystems.com

Illinois Section

Activities

ASCE IL Section & Technical Groups Holiday Party

Date: Wednesday, December 14
Time: 6:00 pm - 9:00 pm
Place: Jefferson Tap
325 N. Jefferson Street
Chicago, IL
Cost: \$20 Individual
\$125 Sponsorship
RSVP: <https://www.123signup.com/register?id=nsmkz> by Friday, December 9th.
[Holiday Party Flyer](#)

ASCE IL Section T&DI Luncheon Event - John Yonan: Cook County DOT Superintendent (Save the Date)

Date: Thursday, January 26
Time: 11:30am - 1:15pm
Place: Petterino's
150 N. Dearborn Street
Chicago, IL 60601

ASCE IL Section SEI - Biennial Lecture Series (Save the Dates)

Dates: March 1, Session 1
March 15, Session 2
March 29, Session 3
April 12, Session 4
Time: 5:30pm - 8:00pm
Place: Union League Club
65 W. Jackson
Chicago, IL

For all Section, Group and Committee events, check out the Section website at:
www.isasce.org/web/section/calendar.html