

ASCE

American Society
of Civil Engineers



News

ASCE Illinois Section

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Illinois Tollway Plans to Use Intelligent Transportation Systems to Improve Customer Service

By Jack Hartman, Executive Director, Illinois Tollway

Since joining the Illinois Tollway in February 2003, I've begun rebuilding this agency based on best practices and cutting-edge ideas. Our goal is to become a model tollway for the 21st century. We're looking to the future and making plans to expand the Illinois Tollway's focus beyond our 274 miles of interstate roads to meet the comprehensive transportation needs of our customers.

A 21st century tollway will do more than offer a means of transportation from point A to point B. Our focus will be on helping customers plan their trips before they get on the road, ensuring that they can pay tolls as conveniently as possible, and — once on the road — provide them with information and services to aid their trip.

Reform Plan Improves Customer Communications

Part of the reform agenda at the Illinois Tollway is to provide important travel information to our customers so they can make informed decisions about their travel while they are on the road. We have improved these customer communications by making the fullest use of our Dynamic Message Signs (DMS) to relay travel times, accident information and safety messages. In the past, the DMS were only used sporadically and now we are taking advantage of this powerful communications tool. Our customers want to see more of this communication, and we are responding. Our upcoming construction season will see an additional 13 DMS added to the eight that are already in place, with another 12 DMS planned for 2005, bringing our system total to 33 by 2005.

And we are actively pursuing federal transportation dollars to implement intelligent transportation systems (ITS) by adding seven additional DMS, 17 additional CCTV video surveillance cameras and 100 additional remote traffic monitoring sensors (RTMS), with a goal of providing real time information, including travel times, weather, construction

and accident information to enable our customers to make informed travel plans. These improvements in customer communications will also enable more effective police, fire, medical and transportation operations, as well as reduced accident response and clearing times.



Intelligent Transportation Systems (ITS), including electronic toll collection and traffic and incident management systems, will enable us to make transportation more efficient, safer, and more coordinated.

One thing that remains constant is our mission: "The Illinois State Toll Highway Authority is dedicated to providing and promoting a safe and efficient system of toll supported highways while ensuring the highest possible level of service to our customers."

Boosting I-PASS Usage

I-PASS electronic toll collection is one of my top priorities. In the short time I have been at the Tollway, I-PASS usage has increased from 38 percent of our revenue to 48 percent, and 52 percent of rush hour traffic, up from 43 percent in December 2002. I-PASS has already proven to reduce congestion, trip time and emissions. We're confident that increasing participation to 75 percent will further improve travel on the Illinois Tollway.

To realize this level, we need to continue providing customers with strong reasons to join the I-PASS family. To that end, Governor Rod Blagojevich announced last fall the launch of our I-PASS Expansion Project, which increased the number of dedicated I-PASS lanes from 50 to 85, with an additional two lanes to be complete by early summer this year. "This project demonstrates the new way of doing business in Illinois government," said Gov. Blagojevich. "I-PASS improves customer service

(continued on page 6)

President's Notes

Don Wittmer



Thank you, thank you, and thank you! Who says that we engineers can't influence legislation? As of the time that I write these notes, Senate Bills 2435 and 2289 have not been called for a vote on the Senate floor due to the opposition that was raised by the engineering community. To those of you that took the time to call their Senators, I offer you my sincere appreciation. For those that didn't, I have to ask why not? If we did not take a stand on these bills, they would have passed

already and our PE Act would be changed at the behest of non-engineers. I encouraged our downstate Central Illinois members to help and they did. Many of the other engineering societies took very active roles in fighting this legislation, especially CECI and ISPE, and their effort was appreciated. There still is a possibility that amendments may be filed to sneak these bills in before the legislative session ends in May. If this takes place, we will contact you asking for your help once again.

I am also happy to say that the House of Representatives recently passed their version of the Transportation Reauthorization bill for \$275 billion. The House and Senate now need to meet in committee to resolve the differences in their bills since the Senate version was for \$318 billion. The White House is still threatening to veto any amount above the President's proposed amount of \$256 billion.

Neither of the bills will increase the federal deficit, which is being stated in many different news sources throughout the country including the Chicago Tribune. All funding proposed for the highways, bridges and transit is paid out of the Highway Trust Fund, which cannot be transferred to the general fund. If the President does veto the bill, I would encourage you to contact your Senators and Representative and ask them to override the veto. Transportation funding needs to be passed now so the work can continue on improving our nation's infrastructure.

ASCE has made it easy for you to become more politically active on engineering issues. You can become a Key Contact member by simply going to www.asce.org/govrel/ and clicking on the Key Contact program to register online. When you become a member, you will receive the following benefits. The email "This

(continued on page 8)

ASCE Illinois Section News

ILLINOIS SECTION NEWSLETTER

Mailed to all ASCE-IS dues-paying members
American Society of Civil Engineers
Illinois Section - Zone III - District 8

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**Submission deadline for the
July/August Newsletter is
June 10, 2004**



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New Approaches to Evaluate the Performance of Supported Excavations

Richard J. Finno

Open cuts have long been used to create underground space, but from an information technology standpoint, design and construction of excavation support systems is primitive. Furthermore, third party perceptions and congestion in cities impose new constraints on the planning and execution of such projects. A major technical concern when performing underground works in urban environments is the impact of construction-related ground movements on adjacent buildings and utilities. The ground movements cause any structures supported by the affected ground to deform and possibly sustain damage. It is critically important to control the magnitude and distribution of the ground movements that result from creating the underground space and to allay third party concern over these matters.

The National Science Foundation (NSF) recently has funded a 5 year research grant

to Northwestern University (NU) and the University of Illinois at Urbana-Champaign to improve the state-of-the-art and practice of planning, design and evaluation of construction of underground space, and the consequent impact on affected communities.

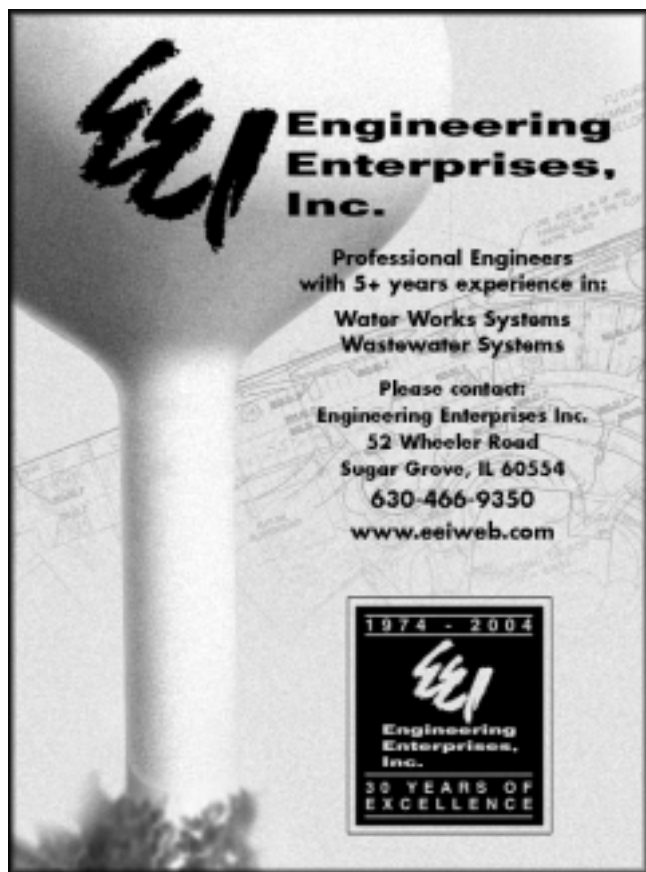
New sensor technologies, wireless communication, virtual reality display and intelligent computational models offer substantial promise for greatly enhancing excavation design and construction control process. The NSF project aims to develop new technologies that improve data collection and use, including: (1) field instrumentation and sensors with wireless communication capabilities, (2) data storage and display, including the display of construction progress and ground and building movements in a virtual reality environment, and (3) intelligent, self-updating numerical models to simulate the excavation and support process, to compute anticipated ground and structure

movements, and to evaluate attendant structural responses. These new technologies will be checked during development, and ultimately verified, in the field in real time during excavation projects. To date, one such field project has been completed and a second is underway.

Lurie Research Center project

Detailed performance data have been collected at the 40 ft deep excavation for the Lurie Research Center on the Chicago campus of NU. The excavation was supported by a sheet-pile wall and three levels of tiedback ground anchors. Data from eight conventional inclinometers and an array of 200 optical survey points allowed recording of three-dimensional ground response to construction activities. Block samples of the compressible clays were obtained during excavation. At this first project, two methods to remotely track excavation

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Environmental Engineering & Water Resources Group*Monthly Group Meeting*

Date: May 11, 2004
Time: at 5:30 p.m.
Location: CDM Office
 125 S.Wacker Drive
 (northeast corner of South
 Wacker and Adams)
 Suite 600 – Conference Room
 Chicago, IL 60606

Upcoming activities include Chicago River Clean-up (May 8), NPDES Phase II Dinner Seminar (May 18), and RBCA Training (June 14, 15). (For information regarding the EE&WR Group please contact Group Chair Tim Scully Granzeier. ARCADIS, 35 E Wacker Dr., Ste 1000, Chicago, TGranzeier@arcadisu.com, 312-263-6703 ext 4109.

Geotechnical Group*Monthly Group Meeting*

Topic: Timber Pile Foundation Design and Performance
Speaker: Mr. Dean Matthews
 Timber Piling Council
Date: Tuesday, May 11, 2004
Time: 5:30 PM
Cost: \$35 general,
 \$25 education/government,
 \$15 student (with reservations)
Location: La Borsa, 375 North Morgan
 Chicago, IL
RSVP: rjfranz@haywardbaker.com;
 Ray Franz (847) 484 - 8109

For information regarding the Geotechnical Group please contact Group Chair Ray Franz, Hayward Baker Inc., 1477 Barclay Blvd., Buffalo Grove, IL 60089, (847) 484-8109

Minority Affairs Committee*Monthly Meeting*

Date: May 4, 2004
Time: 5:30 PM
Location: ARCADIS
 35 East Wacker Drive, Suite 1000
 Chicago, IL 60601

For information regarding the MAC Group please contact Group Chair Tim Scully Granzeier. ARCADIS, 35 E Wacker Dr., Ste 1000, Chicago, TGranzeier@arcadis-us.com, 312-263-6703 ext 4109

Structural Group**2004 LIFETIME ACHIEVEMENT AWARD – MR. THOMAS COLLINS OF COLLINS ENGINEERS INC.**

The ASCE Illinois Section Structural Group is proud to announce that Mr. Thomas Collins is the recipient of its 2004 Lifetime Achievement Award. This award is presented to an individual who has achieved Fellow membership status in ASCE and who has been committed throughout his or her career to the achievement of the structural engineering profession.

Please join his family, friends, and colleagues in honoring Mr. Collins with this prestigious Lifetime Achievement Award.

Date: Wednesday, May 19, 2004
Time: 5:30 p.m. – Social
 6:00 p.m. – Dinner
 7:00 p.m. – Program
Place: Como Restaurant
 695 North Milwaukee Ave.
 Chicago, Illinois
Cost: \$40 / \$25 (Student)
RSVP: Sudhir Singamsethi at
 (312) 938-0300, ext. 4262
 or via email at
 sudhir.singamsethi@cte-eng.com
 by Friday, May 14, 2004

Transportation Group*Monthly Luncheon*

Speaker: Prof. David Boyce, PE
 Professor Emeritus of
 Civil and Materials Engineering
 University of Illinois at Chicago,
 Where Do Those Design
 Volumes Come From Anyway?
 This talk will explore questions
 related to the meaning and
 stability of forecasted
 traffic volumes.
Date: Wednesday May 19
Time: 11:30 to 1:30
Location: Chicago Athletic Association
 12 S. Michigan Ave.
RSVP: Robert Gorski at
 robert_gorski@urscorp.com

Executive Committee Meeting*Monthly Group Meeting*

Date: Thursday, May 20
Time: 5:30 p.m.
Location: Benesch
 205 N. Michigan Ave, Suite 2400
 Chicago

Urban Planning & Development Group*Monthly Group Meeting*

Date: May 13, 2004
Time: 5:30-7:00
Place: Chandler's Chop House
 401 N. Roselle Road,
 Schaumburg

For Information about the group or its activities, contact its Chairman, Mike Ungeran, StormTech at 815/730-0503 or ungeran@aol.com or Group Secretary, Bernie Bono, Bono Consulting at 847/791-0579 or bonoengineering@sbcglobal.net

Younger Member Group

Topic: Drainage Design for
 Transportation Projects
Presenter: Edward Yousif, PE and
 Kent Olsen, PE with CTE
Date: Thursday, May 20, 2004
Time: 5:30PM
Location: Alfred Benesch & Co.
 205 N. Michigan Ave., 23rd floor
Cost: \$12 (\$6 for students)
RSVP: Mark Bendok at
 mbendok@benesch.com or
 (312) 819-9776 x446 by May 19

This seminar will be a brief overview of the drainage design process for Phase I and Phase II work. It will include information about gathering the necessary data, writing a drainage report, determining permit requirements, listing the drainage design criteria, describing drainage software applications, coordinating with different government agencies, performing storm sewer, culvert and inlet spacing design, and preparing existing and proposed drainage utility sheets.

Please contact Leo Morand at lmorand@gha-engineers.com or (847) 478-9700 to be added to the YMG e-mail distribution list.

Environmental Engineering & Water Resources Group

Monthly Group Meeting

Date: June 15
Time: 5:30 p.m.
Location: CDM Office
125 S. Wacker Drive
(northeast corner of
South Wacker and Adams)
Suite 600 – Conference Room
Chicago, IL 60606

Note new meeting location: For information regarding the EE&WR Group please contact Group Chair Tim Scully Granzeier. ARCADIS, 35 E Wacker Dr., Ste 1000, Chicago, TGranzeier@arcadis-us.com, 312-263-6703 ext 4109.

Geotechnical Group

No June Monthly Group Meeting

For information regarding the Geotechnical Group please contact Group Chair Ray Franz, Hayward Baker Inc., 1477 Barclay Blvd., Buffalo Grove, IL 60089, (847) 484-8109, rjfranz@haywardbaker.com

Minority Affairs Committee

Monthly Meeting

Date: June 8th
Time: 5:30 PM
Location: ARCADIS
35 East Wacker Drive, Suite 1000
Chicago, IL 60601

For information regarding the MAC Group please contact Group Chair Tim Scully Granzeier. ARCADIS, 35 E Wacker Dr., Ste 1000, Chicago, TGranzeier@arcadis-us.com, 312-263-6703 ext 4109

Transportation Group

Executive Committee Meeting

Date: Wednesday, June 9
Time: 5:30 p.m.
Location: URS
122 S. Michigan Ave., Suite 1920
Chicago

Joint Luncheon Program with Institute of Traffic Engineers

Speaker: Illinois Senator Dale Risinger
Date: Thursday, June 10
Time: 11:30 to 1:30
Location: Oak Brook - Maggiano's
240 Oak Brook Center
Oak Brook, IL

For information regarding the Transportation Group please contact Group Chair Robert Gorski, URS Corporation, 122 S. Michigan Ave., Suite 1900, Chicago, IL 60603, (312) 939-1000, robert_gorski@urscorp.com

Urban Planning & Development Group

Monthly Group Meeting

Date: June 10, 2004
Time: 5:30-7:00
Place: Chandler's Chop House
401 N. Roselle Road,
Schaumburg

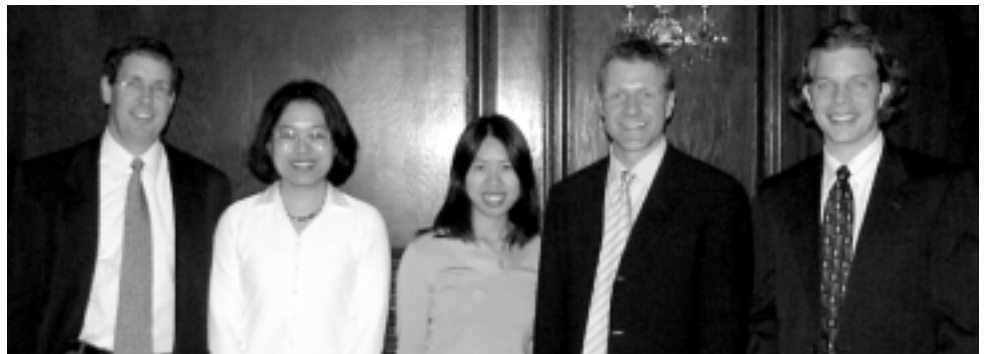
For Information about the group or its activities, contact its Chairman, Mike Ungeran, StormTech at 815/730-0503 or ungeran@aol.com or Group Secretary, Bernie Bono, Bono Consulting at 847/791-0579 or bonoengineering@sbcglobal.net

Younger Member Group

Make plans to join us for the 11th Annual IS-ASCE Younger Member Group golf outing on Saturday, June 5th at Gleneagles Country Club. Space is limited.

Cost: \$45 (includes golf & prizes)
Carts are available for \$14/person (optional)
(Carts will be purchased the day of the event)
Format: Four-player scramble (arrange a group or we can pair you up)
Tee Times: Beginning late morning (actual times TBA)
Prizes: Will be awarded for: Best Team Score; Most Honest Team; Longest Drive (2); Closest to Pin (2); Several Raffle Prizes
RSVP: By Wednesday May 19
Additional Info.: Call Lisa Harbert at (312) 819-9776 x308 or email Lharbert@benesch.com

MAIL REGISTRATION & PAYMENT
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BY 5/19 TO:
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ALFRED BENESCH & COMPANY
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CHICAGO, IL 60601



2004 Transportation Group Scholarship Winners, presented on April 7th.
(Left to right) Peter Johnston - Past Chair; Joan Zhang - Secretary; Lien Bui - UIC, Undergraduate Winner; Robert Gorski - Chair; Greg Coldren - NU, Graduate Winner.

Illinois Tollway Plans to Use Intelligent Transportation Systems *(continued from page 1)*

by making trips on the Illinois Tollway shorter and more predictable. I-PASS also reduces congestion, which saves time not only for the I-PASS user, but also for all Illinois Tollway drivers.”

Drive Entire Tollway Without Stopping for Tolls

Having dedicated I-PASS lanes at each mainline toll plaza and on entrance and exit ramps with three or more collection lanes has allowed customers to drive virtually our entire system without stopping to pay a toll. And by making it easier than ever to get an I-PASS, we have seen the I-PASS family grow throughout the last year. A new, innovative plan to sell I-PASS at Jewel-Osco stores proved to be a phenomenal success, adding over 100,000 new I-PASS customers in just four months. Additionally, last summer we began offering I-PASS sales online, and to date have totaled \$1 million in sales. Customers are now able to manage their accounts online, allowing them to check their balances, update personal account information and view transaction records. In just three months, we have had over 43,000 new online accounts created with over 172,000 logins.

Future of I-PASS: Open Road Tolling

But our existing barrier-type toll collection system will eventually hold back additional growth of I-PASS. With that in mind, we have begun the planning to take toll collection to the next level — open road tolling. We are working with state and federal transportation leaders to secure federal funding for a demonstration project that could be replicated nationwide.

Our plans call for converting our current barrier-style toll collection system to an all-electronic toll collection method on an uninterrupted mainline, with accommodations for cash-paying customers to divert to a ramp within the toll road to make payments.

Open-road tolling offers numerous benefits. Delays and traffic back-ups at the toll plaza could be dramatically reduced. Air quality could be improved by reducing or eliminating deceleration, toll lane waiting, and acceleration back onto the roads. And fewer idle engines in conventional toll plazas mean greater fuel savings for all our customers.

I-PASS Benefits Beyond Tollway

From a regional perspective, we're also working to expand the program beyond the boundaries of the Illinois Tollway System. The interoperability of electronic toll collection allows us to better integrate with other toll roads. We're working with the Chicago Skyway so drivers could use one transponder in Illinois.

In addition, I-PASS will allow us to promote convenience and inter-modalism. We're working with the City of Chicago so drivers could use I-PASS to pay for parking at O'Hare and Midway airports as well as city attractions.

Intelligent Transportation Systems also allow us to increase “real-time” communication with drivers, help them plan their trips and share the information they need to make decisions while on the road.

Better Incident Management Through TIMS

Our Traffic and Incident Management System (TIMS) shares travel times and accident information with drivers via the Internet at www.gcmtravel.com. (By the way, if you're not already familiar with the Gary-Chicago-Milwaukee Corridor web site, you should be. Go directly to your browser and add it to your list of web favorites. It allows visitors to view real-time updates of travel times in the 130-mile long, 16-county multi-state corridor and takes only seconds to access.)

TIMS also enables the Illinois Tollway to better detect and confirm an incident on the roadway in order to deploy the appropriate maintenance and emergency vehicles and clear the roadway more quickly. In addition, TIMS information collected on the Illinois Tollway is fed into one of four national ITS Priority Corridors.

TIMS centralizes collection of roadway information from I-PASS electronic toll collection, system-wide weather sensors, computer-aided dispatch (CAD) for Tollway maintenance and Illinois State Police, as well as motorist phone calls via *999. Through TIMS, we are setting the standard as the first known traffic information system allowing two-way interface between the police and maintenance crews. Using 120 cameras located throughout the Illinois Tollway system, TIMS technicians are able to view the reported incidents, determine the appropriate roadway response, and communicate directly with maintenance crews, State Police and local fire and emergency services.

TIMS is the driving force behind messaging on our DMS so we can share not only the latest travel times, but severe weather alerts and incident information so motorists will be aware of what lies ahead. Providing information through DMS improves safety and reduces secondary accidents by encouraging slower speeds for conditions and attentive driving.

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Next Steps

My goal as we work to become a 21st century tollway is to continue to find better ways to communicate with customers while they are on the road. Sharing travel information on the Internet and on roadway signage is just the beginning. We are researching various new technologies that would allow drivers to get real-time travel information while they are in their cars.

My commitment to reform and rebuild the Illinois Tollway begins with improving the agency's responsiveness to the needs of our customers. ITS solutions – electronic toll collection and traffic and incident management – will make travel on the Tollway easier and more convenient and is a positive step toward putting the Illinois Tollway customer first.



Transportation Group March Luncheon with speakers (left to right) Ed Yousip-CTE, Kent Olsen-CTE, Bob Gorski-Chair, Joan Zhoug-Secretary

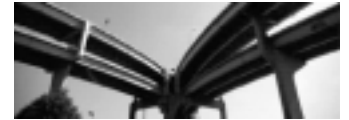


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Statistical Analysis of Engineering Data (CAE 523 001)
Communications and Electrical Systems in Buildings (CAE 528 051)
Wind and Earthquake Engineering (CAE 582 051)

Design Building Envelope Rehab (CAE 506)
- June 7-July 31
- 2 credit hours
- Thursdays, 1:00 – 5:00 p.m.
- Meets only once a week for 8 weeks

M, W 3:00-5:40 p.m.
Th 6:25-9:05 p.m.
Th 6:25-9:05 p.m.
M, W 6:25-9:05 p.m.
M, W 6:25-9:05 p.m.
M, W 6:25-9:05 p.m.
M, W 3:00-5:40 p.m.
Th 6:25-9:05 p.m.
M, W 5:30-9:05 p.m.

Courses meet June 7-July 31 and are 3 credit hours, except Wind and Earthquake Engineering, which is 4.

Please contact:

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President's Notes

(continued from page 2)

Week in Washington" will be sent to you weekly while Congress is in session and contains news briefs on the latest happenings in Washington and in the state capitals. Key Alerts will also be sent to you on important legislation that impacts civil engineers. You will also have access to the On-Line Advocacy website and will be the first to hear about opportunities for Back Home Visits with elected officials. If you are not a member, I encourage you to become one today.

I hope you read our past District Director Nick Textor's lead article in the December, 2003 newsletter on the proposed Governance Restructuring Proposal that was passed by the National Board last November and now must be voted on by the membership. A committee has been working on this issue for the past three years and their criteria for changes included being more flexible and responsive, providing more diverse perspectives, improving communication, enhancing the opportunities for members to serve and participate in government functions, and to build more leadership. Since the last change in the Board structure in the 1970's, ASCE has doubled its

membership to around 133,000 members. About 10% of the members are outside the United States and only 50% pay voluntary dues to one of the 86 geographic Sections. Institutes were started several years ago, and 60% of our members belong to one of the Institutes.

The current Board of Direction has 28 members including the President, President-Elect, Past President, 4 Vice Presidents (one from each Zone), 20 Directors (from our 15 domestic geographic districts) and 1 International Director. The proposed Constitutional change would have a 17 member Board of Direction comprised of a President, President-Elect, Past President, 9 Domestic Directors (from 9 geographic regions), 1 International Director, 2 Institute Directors (from Institute members), and 2 At-Large Directors. Under this structure, each geographic region would have a Board of Governors with the chair being the Society Director from that Region. In addition to the chair, five to nine Governors, depending on regional needs, would be elected from the

Region membership. The restructuring will be cost neutral. Money saved by the reduced size of the Board will be distributed to each Region's Board of Governors.

The proposed option endorsed by the committee keeps the Sections within the Districts together within the new Regions. If you would like to see the existing layout of the Districts and Zones go to <http://www.asce.org/graphics/governance/nowandoption1maps1.gif>. The proposed option can be found at <http://www.asce.org/graphics/governance/nowandoption1maps2.gif>. You can visit <http://www.asce.org/governance/> to find out more information. The constitutional amendment proposition will appear on the election ballot for President-Elect (see the June issue of ASCE News). I have seen a couple presentations, and I myself am in favor of this reorganization. I urge you to take the time to vote for this amendment, as it must pass by a Two Thirds majority.

If you miss the pre-printed ballot, you can download a ballot from the ASCE website. If you have any questions on the Governance Proposal, you can contact our resident expert, Nick Textor, at nick.textor@cte-eng.com.

I close with two final comments. I encourage all members to sign up and play in our tenth annual golf outing being held on Thursday, May 29 at Gleneagles Country Club in Lemont. Please make an effort to have your company become a \$250 sponsor for the golf outing or to give donations for door prizes. All proceeds from the outing go to our Minority Affairs committee who provide scholarships for area high school students to attend summer engineering camps. I hope you will be able to attend!

Also, I was informed by Michael Goodkind that John B.W. Corey, one of our Section's most senior members, passed away on March 9th. Mr. Corey was a Colonel with the Chicago District of the Corps of Engineers and was a Commissioner with the Chicago Water Department. He was also the recipient of the "Civil Engineer of the Year" award from the Illinois Section in 1980. I would like to offer my condolences to his family.

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Environmental Risk Assessment Seminar

The Environmental Engineering and Water Resources Group and ASTM are sponsoring a Risk Based Corrective Action (RBCA) Seminar

The RBCA process provides the methods and procedures for calculating risk and exposure associated with impacted soil and groundwater. ASTM's RBCA equations are the basis for the environmental risk assessment rules for several states, including Illinois' Tiered Approach to Corrective Action Objectives (TACO). The course is designed to provide environmental engineers, scientists, and other professionals with an understanding of the general risk procedures as well as the specifics of the toxicology and exposure mechanisms (i.e. fate and transport) implicit in determining environmental risk.

This course will be presented by an ASTM-certified instructor and will include both RBCA and TACO risk assessment topics.

June 14-15, 2004
35 East Wacker Drive
21st Floor
Chicago, IL 60601
Registration: 8:30 a.m.
Professional Development Hours certificates will be provided.

Cost: \$280 – ASCE members
\$300 – non-members

Please contact Tim Scully Granzeier at 312-263-6703 ext. 4109 for more information.

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Registration Form

Send Registration
and Payment to:

Tim Scully Granzeier
ARCADIS
35 East Wacker Dr. Ste.1000
Chicago, IL 60601

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Name: _____

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A P R I L 2 0 0 4

In an effort to inform Illinois Section members of the discussions at the monthly Board meetings, the Section Secretary contributes this monthly article to the newsletter. Any questions or comments on the Board activities are welcome and can be sent to the Section office at the address shown on Page 2.

■ Treasurer's Report

The March 2004 monthly report, General Ledger Trial Balance, Income Statement and Aged Receivables Report were discussed and approved. The aged receivables (Ad income) over 90 days are from several customers.

■ Group Reports

▲ Each Section Group reported on their past month's activities and future group meetings as noted in the Section Activities portion of the newsletter. Highlights of the Group's activities are as follows:

▲ Geotechnical Group's March dinner meeting was on "Walter F. George Dam Cut-off". In April, the group will have a dinner meeting on "Helical Anchors" and the speaker is Mr. Patrick Donlea of United Structural Systems. In May, the group is planning a dinner meeting and the topic will be "Timber Pile Foundation Design and Performance" and the speaker will be Mr. Dean Matthews of Timber Piling Council.

▲ Structural Group's March dinner meeting was on "Foundation Design of the New Mississippi River Bridge in St. Louis". In April the group will be participating in the ASCE President-Elect/Student Awards Dinner. In May, the group is planning a dinner meeting for their "Lifetime Achievement Award".

▲ Environmental Engineering & Water Resources Group's March group meeting was held at the CDM office. In April, the group will be participating in the ASCE President-Elect/Student Awards Dinner and will present the student scholarship award to the winner. In May, the group will be meeting at the CDM office. The group will have the following seminars and courses: Risk Based Corrective Action in June, TR-20 Evening Seminar in June/July and NPDES Phase II Seminar in summer. In May, the group is planning on "The Chicago River Clean-up activity".

▲ Urban Planning & Development Group's March meeting was at Chandler's Restaurant in Schaumburg. In April, the group will be participating in the ASCE President-Elect/Student Awards Dinner and will present the student scholarship awards to the winners. The Spring Permitting Workshop will be held on April 28th at Chandler's. The group is planning to host another workshop on MWRD permitting in fall.

▲ Transportation Group's March meeting was at HDR Engineering. A luncheon program on "Roadway Drainage Seminar" was presented by CTE Engineers. In April, the group will be participating in the ASCE President-Elect/Student Awards Dinner and will present the student scholarship awards to the winners. The April monthly meeting will be held at GAS. The speaker for the May luncheon program is Professor David Boyce and the topic will be "Where do those road design volumes come from anyway".

▲ Younger Member Group's March meeting was on "Chicago Avenue Pumping Station Roof Deck Replacement". In April, the group will meet at Alfred Benesch & Co. The topic is "Design & Construction of Thornton Transitional Reservoir" and the speaker is Mr. Nick Textor of CTE Engineers. In May, the group is planning a meeting and the topic will be "Drainage Design for Transportation Projects" and the speakers will be Mr. Edward Yousif and Mr. Kent Olsen of CTE Engineers.

■ Committee Reports

▲ The Communications Committee reported that the upcoming newsletter is combined for May/June. In March, President Wittmer, Chair Gorski and other members discussed future positions related to the Communications Committee and the newsletter specifically. Director Harbert is planning to present old newsletters on the website. Also, the nomination forms for the Section Awards can be downloaded from the website.

▲ Minority Affairs / Golf Outing Committee talked about the Tenth Annual Golf Outing; scheduled for Thursday May 27, 2004 at Gleneagles Country Club in Lemont. All members are requested to make the event successful by supporting the Outing.

▲ Annual Awards Dinner Committee is planning for the 88th Annual Awards Dinner to be held on Thursday October 14th at the Chicago Hilton.

■ Old Business

▲ President-Elect Burke talked about the final preparations of President Elect/Student Awards Dinner to be held on April 7th at Maggiano's, Chicago. The Illinois Section welcomes Mr. William Henry, ASCE National President-Elect and the Student Award Recipients.

▲ The section has received another State Public Affairs Grant (SPAG) of \$1500 in support for state legislature lobbying efforts. Immediate Past President Zimmermann will complete the final report and submit to National by September.

▲ President-Elect Burke talked about the "4th Annual Leadership Training in Government Relations" conference he attended which was sponsored by ASCE and NSPE on March 9 & 10, 2004 in Washington, D.C.

▲ The Section Awards Committee Chair Neal is beginning to organize this committee. President Wittmer talked about the selection of the awards and that one representative from each technical group will serve on the committee. Also the committee needs a Vice-Chair that would be able to serve as the Chair for next year.

▲ President Wittmer talked about the Transportation Reauthorization Bill-the Transportation Equity Act: A Legacy for Users (TEA-LU) that passed the US Senate and recently passed the US House of Representatives. President Wittmer also provided an update about proposed changes to the Illinois Professional Engineering Practice Act, S.B. 2289 and S.B. 2435 and his letter to the State Senate sponsor.

▲ President-Elect Burke talked about the Natural Areas Conference and requested the board make a \$250 contribution. The board approved the request.

■ New Business

▲ President Wittmer discussed the ASCE Geographic Services Conference Call held on March 23 and will be participating in a District 8 Conference Call on April 15.

▲ President Wittmer attended the Engineers Hall of Fame meeting on March 16 with other engineering society representatives.

▲ A Nominating Committee will be formed for the selection of next year's Secretary and three incoming Directors. Immediate Past President Zimmermann will chair the committee.

▲ The board is sorry to hear that Mr. John B. W. Corey passed away on March 9th. He was a Colonel with the Chicago District of the Corps of Engineers and was a Commissioner with the Chicago Water Department.

—By *Abdul M. Khan, Secretary*

ASCE 150th Anniversary Book



To order a copy of "150 Years of Engineering Excellence", written by members of the Illinois Section, send \$29.95 plus \$5.00 for shipping and handling to:

Barbara Pries
ASCE Illinois Section
203 North Wabash Ave, Suite 2010
Chicago, IL 60601-2418

New Approaches, *(continued from page 3)*

progress were employed, a web-camera and laser scanning technology. A web camera was mounted on an adjacent building and was used to remotely monitor construction activities while accurately recording construction progress. A laser-scanning device was used in a demonstration to scan the excavation remotely. The scanned images are “stitched” together to develop an accurately scaled image of the excavation. These images allow one define the excavated surface at any time, an important factor when one is trying to interpret performance data.

Ford Design Center project

Several remote sensor networks are being applied at the on-going excavation for the Ford Design Center on the Evanston campus of NU. The excavation is supported by a sheet-pile wall braced by two levels of cross-lot and diagonal bracing. Inclinometers are placed around the excavation and conventional optical survey points established on the ground surface and the adjacent Technological Institute (Tech) to measure the ground and building responses to excavation. These conventional techniques are being supplemented by wireless and autonomous deformation and strut load monitoring systems. As in the case of the Lurie excavation, construction progress is being tracked by a web-camera (<http://videoserv3.mccormick.northwestern.edu:8080/>) and laser scanning technology.

Sensing elements in the wireless system employed at the Ford Center include a wireless slope inclinometer, strain gauges with wireless connectivity, and a robotic total station. Prototypes for the robotic inclinometer and strain gages contain commercially-available self-contained sensing “nodes.” The nodes include built-in sensing elements - triaxial micro electro-mechanical accelerometers to measure inclination in the robotic inclinometer and foil-type strain gauges to record strut responses. Each node includes a microprocessor for analog-to-digital data processing, flash memory for data logging, a DC power source, and a radio frequency chip to transmit the data and to receive instructions. A laptop computer and base station communicate with the array of sensors to provide sensing instructions and to capture transmitted data. Conventional slope inclinometers and vibrating wire strain gages employed on a number of the support elements provide baseline data against which results from the prototype systems can be compared.

A total station is employed atop Tech so that the vertical and lateral movements of survey points can be continuously monitored. The instrument includes monitoring firmware and robotic capabilities that allow for repeated automated measurements of as many as 100 predetermined survey points. The accuracy of the instrument during automated measurement is 3 mm at distances up to 300 meters. Software and a wireless relay system has been developed to obtain a reading of an optical survey point, to transmit and store the data in a remote host computer program and to develop a graphical representation of the data so that an interpretation of the results can be quickly made. After the coordinates of each optical survey point has been found with the total station, the total station can be programmed internally to remember the location of each point.

A remote host program initiates the reading cycle, instructs the total station to find each point and obtains its coordinates, and sends the coordinates back to the host program. These data are processed by evaluating relative movements between a survey point and several reference points established outside the zone of influence of the excavation to determine the lateral and vertical movements of the survey point.

Other developments

Numerical techniques to provide automated updates of predicted performance based on field observations have been used on both projects. Inverse analyses techniques were applied during the Lurie and Ford excavations to update predictions of the expected movements of the adjacent ground. This approach combines a finite element simulation of excavation using a commercially-available code, PLAXIS, with the inverse analysis package, UCODE written by the US Geological Survey. Several constitutive models were used, and satisfactory agreement between computed and observed lateral movements were obtained at the Lurie project with the hardening soil model. Improvements in the constitutive models are needed to accurately compute the distributions of settlements behind the support wall. Using block samples from the Lurie site, a detailed laboratory investigation is underway to study incrementally nonlinear response of the compressible glacial Chicago clays, a key aspect of behavior needed to be incorporated into the models to accurately compute settlement distributions. An auto-progressive neural network approach has been developed and is currently being applied to the results of the Lurie excavation. In this method, the constitutive response of the soil is deduced from the observed performance data.

Simplified structural models have been developed that allow one to evaluate the impact the expected ground movements have on the responses of affected buildings and utilities.

A geographical information system is under development to store all remotely-gathered data and to present it in graphical form. This data conversion and plot creation will allow for the displacement data to be used in several applications and analyses and to be accessible to multiple users over the internet.

With additional work, these developments will be refined, verified in the field under typical construction conditions, and incorporated into an integrated system for design and real-time evaluation of excavation support systems. Application of such a system by engineers and contractors will improve the state-of-the-practice of underground support.

Acknowledgments

Turner Construction Co. is the general contractor for both the Lurie and Ford projects. Case Foundation Co. and Thatcher Engineering Corp. are the excavation support contractors for the Lurie and Ford project, respectively. The support of these firms has been essential in the field phases of this work.

ASCE Illinois Section
News

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Calendar of Events

2004

May 3 ASCE Illinois Section Board Meeting

May 4 Minority Affairs Committee Meeting

May 8 Urban Planning and Development Group Meeting

May 8 Chicago River Cleanup (EE&WR)

May 11 Environmental Engineering and Water
Resources Group Meeting

May 12 Transportation Group Executive Committee Meeting

May 11 Geotechnical Group Meeting

May 18 NPDES Dinner Presentation (EE&WR)

May 19 Transportation Group Luncheon

May 20 Younger Member Group Meeting

June 5 Younger Member Group Golf Outing

June 7 ASCE Illinois Section Board Meeting

June 8 Minority Affairs Committee Meeting

June 8 Urban Planning and Development Group Meeting

June 15 Environmental Engineering and
Water Resources Group Meeting

June 9 Transportation Group Executive Committee Meeting

June 14, 15 RBCA Risk Assessment Course (EE&WR)

June 16 Transportation Group Luncheon

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ACTIVITIES AND EVENTS