ASCE

American Society of Civil Engineers

ASCE Illinois Section

News

Vol. 43, No. 4
April 2002

OUTSTANDING ENGINEERING PROJECT SERIES

Reversal of the Chicago River

The approach of the 20th century proved to be one of the great turning points in Chicago's history. After the Great Chicago Fire of 1871, the rate of construction surged along with the population of the city and so did the need for clean water. Sewage from industries, stockyards, homes, and farms dumped directly into the Chicago River that flowed into Lake Michigan and contaminated the city's drinking water supply. Epidemics of water borne diseases such as typhoid fever, cholera, and dysentery plagued the city. Between 1860 and 1900, deaths from typhoid fever alone averaged 65 per 100,000 people annually.

One initial answer to the increase in water borne diseases was to deepen the Illinois and Michigan (I&M) Canal, which was accomplished between the years 1865 to 1871. Deepening of the I&M Canal created a partial reversal of the Chicago River and directed the polluted Chicago River water to flow away from Lake Michigan. Pumps were also installed to help direct the flow of the North and South branches of the Chicago River toward the I&M Canal. The pumps were found to have little effect in preventing sewage from entering the lake. Winds, rainfall, and varying lake levels all contributed to the failure of these plans and the continuation of the epidemics.

A massive storm in 1885 caused sewage-laden storm water to flow directly into the water intake cribs of Lake Michigan and contaminate the metropolitan water supply system. This contamination of the city's drinking water forced everyone to realize that a more thorough solution was needed to clean up Lake Michigan and the river. In 1886, Rudolph Hering, chief engineer of the Chicago Drainage and Water Supply Commission, developed a plan in which the Great Lakes drainage system would be connected with the Mississippi River drainage system by means of a cut in the ridge between the two watersheds. The ridge was located approximately 12 miles west of Lake Michigan and rose to a height of eight feet. By cutting a canal through the ridge, the Chicago River could flow in the opposite direction and away from Lake Michigan.

In response to the disease outbreaks, on November 5, 1889, the Sanitary District of Chicago, which later evolved into the now famous Metropolitan Water Reclamation District of Greater Chicago, was organized under the Sanitary District Enabling Act. Its initial purpose was to facilitate the construction of the canals between Lake Michigan and the Mississippi River with a goal to provide a pure and uncontaminated water supply for the use of the inhabitants of Chicago and its environs. The District planned to construct channels and canals that would take the waste flow away from Lake Michigan to the Des Plaines River where it would be diluted and eventually flow to the Illinois and Mississippi Rivers. The plan was named the Dilution Project.

The first step in the implementation of the Dilution Project was to construct a main drainage canal. The construction of the first canal, named the Main Channel, or the Sanitary and Ship Canal, was started September 3, 1892 and completed January 2, 1900. Lyman F. Cooley was the first chief engineer of the Sanitary District and was placed in charge of construction of the canal. The channel extended from the West Fork of the South Branch of the Chicago

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President's Notes *Cleighton D. Smith*

Last month, at a conference of floodplain and stormwater management professionals in Springfield, IL, I had the good fortune to hear a presentation by a man named Tom Berns. Some of you may know Tom. He has recently done something remarkable in becoming the first civil engineer to be elected to statewide office in Illinois in over fifty years.

Tom is a Partner in the firm Berns, Clancy & Associates, headquartered in Urbana, IL. He is currently a State Representative from the 104th District (basically the Urbana area). Parts of his talk were truly enlightening. He talked about being known as "THE ENGINEER" in the General Assembly, and what that has meant. Being a freshman and asked to Chair any House Committee is unheard of. But since he was THE ENGINEER, he was asked to Chair the Geographic Information System Committee! He also encouraged – in fact challenged – all of us to get involved in politics in some way or another. He told us how, although most of his colleagues in Springfield are educated, knowledgeable people, most are not well-versed in technical issues (as you would expect). Most of these people would welcome the opportunity to become better informed. Wouldn't it be a good idea if all elected officials had a civil engineer he could call with questions from time-to-time? Tom went on to say that most of his colleagues are in their districts on Monday and Friday to meet with their constituents. Why not do two things: (1) look up who your local, elected officials are (as I would venture to guess many of us do not know), and (2) make an appointment to visit with one of them this month. Find out what issues are hot, and how you can be a resource down the road.

For more advice, please call or send an email to Kay Whitlock of Christopher B. Burke Engineering, Ltd., Rosemont, IL. She represented the Illinois Section at a recent training exercise in Washington DC, put on by ASCE headquarters staff. She received specific guidelines on how to make the most of our engineering expertise in the political arena. Kay can be reached at (847) 823-0500; her email address is kwhitlock@cbbel.com. She would love to hear from you.

Before we leave the discussion of politics, it is worth mentioning that we have at least one more civil engineer throwing his hat into the political arena. Dale Risinger is running for the Illinois Senate seat in Peoria. Dale is with Clark Engineers in Peoria. Before that he was the IDOT District Engineer for District 4 based in Peoria. The point here is not to endorse a candidate or political party. The point is that we as civil engineers need to get more involved in political decision-making. Our colleagues who are taking that step need our support.

Tom Berns got a big round of applause when he said "nothing against lawyers, but why would we want them making all the decisions!" Amen, Tom! Thanks for reminding us that we have a fine profession, too. And thanks for taking that step and, hopefully, leading the way for more of us.

A final note. Many of you may know that Dr. Gene Corley of Construction Technologies Laboratory, Skokie, IL, is leading the ASCE/FEMA investigative team at the World Trade Center. Gene testified before Congress on March 6 on some of his preliminary findings. His full testimony can be downloaded from ASCE's website at: http://www.asce.org/publicpolicy/congtest.cfm.

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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Web Site: www.asce.org
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Michael Cook x6121

Submittal deadline for the May/June Newsletter is April 10, 2002

Terrorism and Public Water Utilities

Sponsored by the ASCE Illinois Section Urban Planning & Development Group

Tuesday, June 4, 2002 Chandler's Chop House
401 N. Roselle Road, Schaumburg, Illinois 60194
(847) 490-7074
(The restaurant entrance is 1 mile north of Schaumburg Road or 1/2 mile south of Higgins Road.)

SCHEDULE:

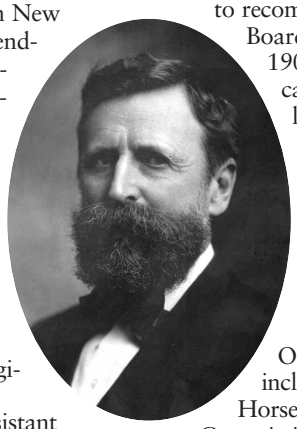
5:30 PM - 6:00 PM	Cocktails *(Cash Bar)*
6:00 PM - 7:00 PM	Dinner
7:00 PM - 8:30 PM	Program: **Terrorism and Public Water Utilities**

SPEAKER:
Robert Whitworth, Acting Director Environmental Resources Training Center of Southern Illinois at Edwardsville. Mr. Whitworth has presented 12 workshops and Panel Discussions on "Terrorism and Public Water Utilities"

PROGRAM DESCRIPTION:
Mr. Whitworth will speak on measures used by water/wastewater treatment personnel to protect the public water utilities. Mr. Whitworth will discuss "Why water systems are bad terrorist targets, Operations Strategies, Physical Strategies and Vulnerability Assessment."

The cost for the dinner and program is $50.00. For more information, call **Lee Fell at** (847) 823-0500.

Isham Randolph



Isham Randolph was born on March 25, 1848, in New Market, Virginia. He was home schooled and attended private schools. He did not receive formal training in civil engineering but gained his extensive knowledge of civil engineering practices through hands-on experience. However, on June 15, 1910, he received an honorary degree of Doctorate in Engineering from the University of Illinois.

He began his career working as an axeman, rodman, levelman, and transitman on surveys for various railroads. In March 1872, he returned to the Baltimore & Ohio Railroad and worked as a transitman on the extension to Chicago. In 1873, he became resident engineer and built 27 miles of track, the roundhouse, and shops at South Chicago, Illinois. He worked as an Assistant Engineer for the Scioto Valley Railroad, then built terminals and freight houses for the Chicago & Western Indiana Belt Railroad serving as the Chief Engineer.

From 1885-1893, he operated a civil engineering business from the office he opened in Chicago. During this time, he served as chief engineer for location and construction of the Chicago, Madison, & Northern Railroad and the Freeport & Dolgeville line. He worked as a consulting engineer for the design of the Chicago Union StockYards as well as for the Baltimore & Ohio Railroad.

In June 1893, Isham was appointed Chief Engineer of the Sanitary District of Chicago (SDC) and brought stability to their engineering department serving in this capacity until 1907. The problem facing the SDC was that the growing city of Chicago was plagued with frequent epidemics of waterborne diseases. Despite the widespread installation and use of sewers beginning in 1855, the problem did not abate. The sewers provided adequate local drainage, but then only moved the public health hazard to the river and into Lake Michigan. By the 1880s, it became clear that the only viable solution was to discharge the sewage into the Des Plaines River—and on to the Illinois River—via a channel from Chicago to Joliet. SDC was created and charged with building the channel and reversing the flow of the Chicago River.

As the chief engineer, Isham is credited with guiding the SDC in constructing the 28-mile Chicago Drainage Canal (now known as the Chicago Sanitary and Ship Canal) including 12 miles of river improvements, the Lockport Controlling Works, and the construction of 31 highway and railroad bridges. In 1900, the Paris Exposition awarded him the gold medal in recognition of this work. From 1907-1912, he continued to serve the SDC as a consulting engineer.

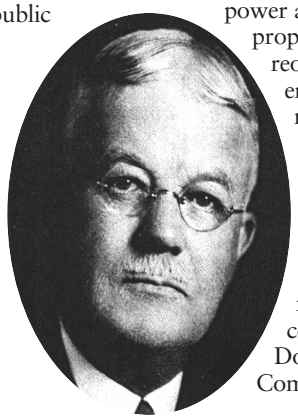
In 1905, President Roosevelt named Isham Randolph as one of the thirteen members on the International Board of Advisory Engineers to recommend a type of canal for the Isthmus of Panama. The Board visited the Isthmus and reported to the President in 1906. The majority of the Board recommended a sea-level canal. Isham was part of the minority who recommended a lock-type canal with a lake at 85 feet above sea level formed by a dam across the Chagres River at Gatun. They estimated the cost, exclusive of sanitation and civil government, at $139,705,200 and the project duration to be nine years. Chief Engineer Stevens and all but one member of the Panama Canal Commission concurred with the minority report. President Roosevelt made the decision to recommend the lock-type canal.

Other notable engineering feats performed by Isham include: design and construction of the Obelisk Dam above Horseshoe Falls for Queen Victoria Niagara Falls Park Commission and consulting engineer for Toronto in connection with the track elevation and construction of a new water supply system and water works. He was awarded the Elliot Cresson Medal from the Franklin Institute of Philadelphia in February 1913.

By Jason Dove
Younger Member Group

Henry Morton Brinckerhoff

Henry Brinckerhoff was born in 1868 in Beacon, New York. Graduating from New Jerseys' Stevens Institute of Technology in 1890, with a degree in Mechanical Engineering, the young engineer began a distinguished career in the transportation/public transit engineering field.



Mr. Brinckerhoff first became employed with the Thompson-Huston Company in Boston, Massachusetts. One of the first projects to which he was assigned involved the conversion of the horse car lines of Boston into an electric overhead-trolley system. During his employment with Thompson-Huston, he progressed through the positions of lineman of overhead trolley work, car shop mechanic, and sub-foreman of shop inspection. General Electric (GE) then employed Mr. Brinckerhoff in 1891 and 1892, where he was involved with the installation of electrical equipment. In 1892, he became assistant engineer for the power plant operation of the Utica Belt Line Street Railway Company in New York.

With the varied experience that he had acquired, he was next summoned to become assistant engineer for the Intramural Railway Company. This company operated a 3.5-mile railway, developed by GE, that served as a demonstration rapid transit system at the 1893 World's Columbian Exhibition in Chicago. It was during this time that Charles A. Macloskie and Henry co-invented, installed, and patented the electric third-rail system, which was used on the Intramural Railway. The new technology enabled electricity to travel from an elevated steel rail to conductor shoes mounted at intervals along the underside of a train car. Current then flowed from the shoes through copper conductors to the motor of the train. This system soon supplanted steam driven trains on elevated and subway lines in urban areas. The patent for this system was assigned to GE, and in return the two inventors each received twenty-five dollars.

In 1894, Brinckerhoff went to work for the Metropolitan West Side Elevated Railroad Co. of Chicago. There he successively held positions of electrical engineer, master mechanic, superintendent of motive power and way, and assistant general manager. In 1899, the property holdings of the company were reapportioned and the reorganized company made Brinckerhoff the general manager of the entire line. This line was comprised of twenty-five miles of four-track and double-track lines and another twenty-five miles of elevated railroad. In 1906, the seasoned engineer resigned from Metropolitan to study electric railway systems in Germany, Belgium, Italy, England, and France. Upon his return that same year, Henry joined the New York firm of William Barclay Parsons Engineers. Upon attaining the position of partner of the firm in 1919, Brinckerhoff's name was included in the company name of Parsons, Klapp, Brinckerhoff, & Douglas. The esteemed engineer's name has remained in the Company name to this day.

In addition to consulting on numerous rail and subway systems throughout the country, Brinckerhoff also developed a method for predicting the earnings of Toll roads. This approach to revenue forecasting was formulated during his involvement with the creation of the Pennsylvania Turnpike. The method helped to project revenue and became the basis for the associated bond issues. A number of toll roads throughout the country calculate revenue streams utilizing his method.

Henry Brinckerhoff died in 1949, after a remarkable career that brought insight and skill to the transportation industry.

By Peter Johnston
Transportation Group

2002 Awards Program Call For Nominations

The American Society of Civil Engineers (ASCE), founded in 1852, is the oldest and one of the most prestigious national engineering societies in the United States. ASCE is dedicated to the advancement of the science and the profession of engineering to enhance the welfare of mankind. The Illinois Section, in keeping with the objectives of the ASCE, is soliciting nominations for its 2002 Awards Program to be held in October. The Awards Program is held yearly to recognize local engineers and engineering firms who have been committed to the advancement of civil engineering and have contributed to the general improvement in the quality of life. Illinois Section Award recipients will represent the Section by becoming candidates for the 2003 ASCE National Awards Program.

Nominations are being sought for the following awards:

Outstanding Civil Engineering Achievement

Civil Engineer of the Year

Young Civil Engineer of the Year

Government Civil Engineer of the Year

Young Government Civil Engineer of the Year

Citizen Engineer Award

Public Involvement Award

Employer Recognition Program for Exemplary Support of Government Civil Engineers in ASCE Activities

Employer Recognition Program for Exemplary Support of Private Civil Engineers in ASCE Activities

Excellence in Journalism Award

Persons wishing to submit a nomination should contact either Director Rob Covey at 847-923-4736 or Communications Chair Lisa Harbert at 312-819-9776 ext. 308 for an application form. Forms can also be obtained directly from the Illinois Section ASCE web homepage www.isasce.org.

Nomination forms must be submitted in order to be considered for any of the awards. The nomination forms provide general guidelines for completing an application.

Nominations for all awards are due by July 26, 2002 and should be sent to Mr. Rob Covey, Village of Schaumburg, 101 Schaumburg Court, Schaumburg, IL 60193-1899.

Section Activities

Younger Member Group

April Dinner Meeting
Topic: To Be Determined
Speaker: To Be Determined
Place: Alfred Benesch & Company
205 N. Michigan Ave., 23rd floor
Chicago, Illinois 60601
Date: April 25, 2002
Time: 5:30 pm
Cost: $12.00/$6.00 Students

Please call Lisa Harbert at (312) 819-9776 ext. 308 or Lharbert@benesch.com for reservations or more information.

If you would like to receive monthly e-mails from the Younger Member Group, please e-mail Mark Bendok at mbendok@benesch.com.

Urban Planning & Development Group

Our next group meeting will be on April 18th 2002. Group meetings are generally held every third Thursday of the month.

Our spring seminar is set:
Terrorism and Public Water Utilities
By: Robert Whitworth, Acting Director Environmental Resources Training Center of Southern Illinois at Edwardsville (Presenting)

Date: June 4th
Time: 5:30 to 8:30 PM
Place: Chandler's Chop House - Schaumburg

We are also looking for liaisons to various academic institutions when we get our scholarship program going this spring.

Our next scheduled meeting is:

Date: Thursday, April 18th 2002
Time: 7:30 AM
Place: Denny's Restaurant
Oakbrook Terrace, Illinois

Please contact Chair Lee Fell at 847-823-0500 for more information.

Structural Group

Investigation of the Structural Performance of the Pentagon During the 9/11 Terrorist Attack
By Prof. Mete Sozen, Kettelhut, Distinguished Professor of Civil Engineering Purdue University.

Professor Sozen was selected by ASCE to serve on the Data Collection Team investigating the damage sustained by the Pentagon when a commercial airliner impacted it during the terrorist attacks on September 11, 2001. Prof. Sozen will discuss his observations during the site investigation, outline the analytical work performed and review the findings of the committee.

Date: Wednesday, April 17, 2002
Time: 5:30 p.m. Social
6:00 p.m. Dinner
7:00 p.m. Program
Place: Maggiano's Restaurant
516 North Clark Street
Chicago, Illinois
Cost: $35.00 / $20.00 (Students)
RSVP: Barb Pries at (312) 263-1606 by Friday, April 11, 2002

Environmental Engineering & Water Resources Group

At the March meeting, the EEWR group finalized plans for the Advanced HEC-RAS class. The Advanced HEC-RAS class is scheduled for May 1-3 at the IDOT facilities and will cover advanced steady state hydraulic modeling, GIS applications in HEC-RAS, and unsteady flow modeling in HEC-RAS. The course will also feature two instructors.

Our next meeting will be April 10, 2002. We always look forward to new attendees or any suggestions for courses or seminars that may be helpful for water resources or environmental engineers in the Illinois Section.

April Meeting Date: April 10, 2002 Wednesday
Place: Christopher B. Burke Engineering, Ltd.
9575 W. Higgins Road
Rosemont, IL
Time: 5:30 p.m.

May Meeting Date: May 8, 2002 Wednesday
Place: Christopher B. Burke Engineering, Ltd.
9575 W. Higgins Road
Rosemont, IL
Time: 5:30 p.m.

For more information, contact Darren Olson at (847) 823-0500.

Transportation Group

April Luncheon Meeting:
ISTHA
By: Tom Cuculich, Exec Director
Date: April 17, 2002
Time: 11:30 am -1:30 pm
Location: Union League Club
65 W. Jackson Blvd.
Chicago, Illinois 60604
Cost: $30.00

Please contact Robert Gorski, Program Chair at 312 697 7255 or at robert_gorski@asce.members.org by April 12th.

Also, you are invited to join the Transportation Group Executive Committee. Our meetings are held on the second Wednesday of every month beginning at 5:30. They are located at the office of Knight Architects, Engineers; Planners located at 549 W. Randolph St. on the 2nd Floor conference room in Chicago. The office is conveniently located near the train stations and there is free on street parking available.

Geotechnical Group

Use of Field Performance Data to Update Predictions of Movements of Supported Excavations
By: Prof. Rich Finno, Northwestern University
Date: Tuesday, April 9, 2002
Cocktails @ 5:30 pm,
Dinner @ 6:30 pm
Presentation @ 8:00 pm
Place: Athena Restaurant
212 South Halsted, Chicago, Illinois (312-655-0000)
Cost: $30 with reservations
$20 Education/Government Employees (with reservations)
$15 for students (with reservations)
$35 at the door OR if you call after RSVP date
(Make checks payable to "ASCE Geotechnical Group")
RSVP: Via e-mail or phone by FRIDAY, April 5, 2002 to Dhooli Raj (DRaj@Casefoundation.com or 630-924-3146).

If you are interested in getting on our mailing list, please e-mail your information to Dhooli Raj (draj@casefoundation.com).

Illinois Section News & Secretary Report

M A R C H 2 0 0 2

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 is welcome and can be sent to the Section office at the address shown on Page 2.

■ *Treasurers Report*

▲ The February Income Statement, General Ledger Trial Balance, and Aged Receivables were discussed and approved. We have already exceeded the budgeted amounts for Section Dues and Society Allotment Income five months into the year.

■ *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:

▲ The Geotechnical Group held their monthly dinner meeting on Feb. 12 with the topic "Soil Nail Failures". The March meeting is scheduled for Mar. 12 and the topic will be "Geotechnical Earthquake Engineering for the New Mississippi River Bridge at Cape Girardeau". The April meeting is scheduled for Apr. 19 and the topic will be "Use of Field Performance Data to Update Predictions of Movements of Supported Excavations".

▲ The Structural Group held their monthly dinner meeting on Feb. 20 with the topic "1999 Revisions to ACI Seismic Provisions". The March meeting is scheduled for Mar. 20 and the topic will be "Wacker Drive Reconstruction".

▲ The Environmental Engineering and Water Resources Group held their monthly meeting on Feb. 12. The Group finalized plans for the Advanced HEC RAS class scheduled for May 1-3. The group's next meeting is scheduled for Mar. 12 at CBBEL's office in Rosemont at 5:30 p.m. The Group elected to give $5,000 to the Section to use toward the 2006 National Conference out of profits from co-sponsoring the SWS National Conference.

▲ The Urban Planning & Development Group held their monthly meeting on Feb. 21. The Group finalized the dinner meeting with Bob Whitworth from SIU – Edwardsville discussing Terrorism and Public Works Utilities on June 4. Their next meeting will be Mar. 21 at 7:30 a.m. at Denny's Restaurant in Oakbrook Terrace.

▲ The Transportation Group held their last planning meeting on Feb. 6 and held their monthly luncheon meeting on Feb. 13 with the topic "Hillside Bottleneck Reconstruction Project". The March meeting is scheduled for Mar. 20 at the Union League Club on the Gary/Chicago Airport. The April luncheon meeting is scheduled for Apr. 17 and the speaker will be Tom Cuculich, Executive Director of ISTHA. The next two planning meetings are scheduled for Mar. 13 and Apr. 10 at 5:30 p.m. at Knight's office. The Group awarded two scholarships for $2000 each this year.

▲ The Younger Member Group held their monthly dinner meeting on Feb. 21 and the topic was on the "Millennium Park Bandshell". The next meeting is scheduled for March and the topic will be "Field Safety for Engineers". The Group volunteered at the Mathcounts competition. Thirteen people registered for the P.E. Review Course.

■ *Committee Reports*

▲ Communications Committee Chair Harbert reported that the deadline for the April newsletter is March 11. The EE&WR Group is writing on the Reversal of the Chicago River and the YMG has the article on Isham Randolph and the Trans. Group has the article on Henry Brinckerhoff. The Chair has received complaints from advertisers on our advertising rate hike. Some changes in the price structure were made. The Chair is still looking for help with editing the newsletter, time commitment is about one hour per month. Director Sikich investigated converting the newsletter into another format so that it could be emailed. The website has been updated with Board member information taken from the stationary. Discussion also occurred about creating a movers or members page.

■ *Old Business*

▲ Megan Bowgren, IIT Student Chapter President, discussed their groups participating in the Bridge Building Competition this year. They intend to enter two bridges, an I-Beam and a Truss. Twenty students will be attending and a breakdown of expenses was shown. They have already received sponsorships for the steel and welding and are also soliciting engineering companies. They requested $1500 of support from the Board. The motion was made and approved by the Board.

▲ The Annual Dinner Meeting committee will be meeting soon to determine the location. The committee should target the third Wednesday of October and inquire about having a two year deal with the hotel.

▲ The Zone III Management Conference showed the Directors that attended that National has a lot of resources available. The Directors were asked to write a short report on their thoughts on the Conference.

▲ Articles on the projects and engineers for the 150th Anniversary celebration are due by the end of March. A reminder will be emailed to the Group Chairs. The length of the articles for the proposed book is 1000-1200 words for the engineer and 2000-2500 for the project. Plans for the recognition dinner need to get completed soon.

▲ We need to get more people to attend the Spring President Elect Dinner on March 14 at Maggiano's Restaurant in Chicago (62 registered as of last week). He will discuss the 1st Professional Degree and Governance issues before National. Past Presidents can attend at no cost.

▲ Chair Harbert emailed to the Board today an electronic version of the stationary that was created by Trans. Group member Gorski.

■ ***New Business***

▲ The Membership committee met on Feb. 13 and spent time brainstorming on activities to boost membership. Mailings will be sent out to those members that haven't paid their dues this year.

▲ The Minority Affairs committee has sent applications out to the schools. A chair needs to be found for the committee. The golf outing needs additional help and will probably occur again in August. The location may change this year.

▲ U.I.C. student chapter is looking for funding for their activities. They need to submit their proposal prior to the Board meeting and then present their request at the next Board meeting.

—By Don Wittmer, Secretary

Visit www.isasce.org

Advanced HEC-RAS Hydraulic Modeling Course for Experienced Users

Sponsored by:

The Environmental Engineering & Water Resources Technical Group (EE&WR) of the Illinois Section ASCE

Two Instructors from David Ford Consulting Engineers (Sacramento, CA) will present the following HEC-RAS topics in a 3-day "hands on" course:

- Advanced Steady Flow Modeling including: Bridges, Culverts, Split Flow, In-Line and Lateral Weirs
- GeoRas and GIS based RAS model demo
- Unsteady Flow Modeling

Date: May 1-3, 2002

Location: IDOT Schaumburg Facility

Cost: $830 for non-ASCE Members
$30 Discount for ASCE Members

Reservations are required by Monday, April 8, 2002
Please reserve your place by sending this form and a check to:

EE&WR c/o Christopher B. Burke Engineering, Ltd.
Attn: Darren Olson
9575 W. Higgins Road, Suite 600, Rosemont, IL 60018
Phone: 847-823-0500 Fax: 847-518-2214

Name:_____

Company:_____

Address:_____

Phone:_____ FAX:_____

Email :_____

ASCE Member (Y/N) :_____

Reversal of the Chicago River

(continued from page 1)

River at Robey Street to the Des Plaines River at Lockport. The channel, as constructed, was 28 miles long, 24.4 feet deep, and took thirteen days to fill with water to its design level when completed. Locks were constructed at the mouth of the Chicago River, and seven 30-foot wide sluice gates and a movable arm 160 feet long were built at Lockport to control the flow of water through the Main Channel. The proposed design flow of the channel was 10,000 cfs of water directed from Lake Michigan. The canal was the largest public works excavation project ever constructed at the time. Not even the amount of earth moved for the Panama Canal exceeded the quantity of excavated material for this project.

An extension of the Main Channel was designed and constructed from late 1903 to 1907 and connected the Main Channel at Lockport to the Des Plaines River in Joliet. This four-mile extension connected the I&M Canal to the Sanitary and Ship Canal. The highest lift lock ever constructed at the time was built at the halfway point between the extension. The vertical lift was 36 feet.

The Des Plaines River was straightened upstream of Lockport and the channel was improved from Lockport to Joliet. These improvements allowed the river to accommodate a combined flow of 25,000 cfs from the Des Plaines River and Chicago River watersheds.

Two auxiliary canals, the North Shore Channel and the Calumet-Sag Channel, were built to aid in the reversal of the Chicago River and to remove the sewage from the North and South Branches of the river. The North Shore Channel was constructed from 1907 to 1910 and was first used on November 29, 1910. This channel starts at Lake Michigan in Wilmette and connects with the North Branch of the Chicago River at Lawrence Avenue in Chicago. A 140-foot-long, 11-foot deep, and 30-foot wide lock and four screw pumps were constructed at the Wilmette site to aid in the flow of fresh water through the canal. Along with the pumping house, an 82-foot wide, eight-foot high dam was constructed at the location where the channel met the North Branch of the Chicago River. The channel is eight miles long, 13.5 feet deep, and has a capacity of 1,000 cfs. The channel's main purpose was to collect the sewage from the northern suburbs of Chicago and move the waste to the North Branch of the Chicago River where it would eventually make its way to the Mississippi River. The North Shore Channel was also used to drain the Skokie Marsh by way of another channel constructed to join the East Fork of the North Branch of the Chicago River.

The Calumet-Sag Channel was constructed from 1911 to 1923 and extends from the Little Calumet River at Blue Island to the Main Channel in Sag, Illinois. This canal is 16.25 miles long, 20 feet deep, and has a capacity of 2,000 cfs. The channel was not originally intended to reverse the flow of the Calumet River completely. Instead, it was constructed to drain the land south of 87th Street into the river. The canal was also a main route for barge travel after its construction. A lock was constructed near Blue Island but later removed and a larger lock constructed in 1960. When the O'Brien Lock and Dam was finished, it created the complete reversal of the Calumet and Little Calumet Rivers.

In all, the Dilution Project cost over $100,000,000. The entire waterway system consists of 71 miles of canals, channels, and rivers. Water borne diseases were all but eliminated with the construction of the system. In 1955, ASCE National selected the Metropolitan Sanitary District of Greater Chicago as one of the seven engineering wonders of the United States. In 2001, during the 150th anniversary of ASCE, the Reversal of the Chicago River was selected

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Reversal of the Chicago River

(continued from page 9)

as one of the 10 civil engineering achievements that had the greatest positive impact on life in the 20th century.

Today, the main purpose of the canals is no longer for sewage dilution as originally designed. Instead, the canals are used as a collection system for combined sewer overflows in times of heavy rainfall. Diversion structures were constructed to connect the combined sewers with the Chicago River. Significant rainfall events cause overflows of the combined sewer system. The Tunnel and Reservoir Project (TARP) was planned and is being constructed to capture this overflow from the combined sewers.

The past one hundred and fifty years have seen great changes in the usage and the cleanliness of the Chicago River. The river has transitioned from being a sleepy, swampy river to being an open sewer that discharged into Lake Michigan. It has finally become a place of recreation for the people of Chicago. The reversal of the Chicago River has influenced many aspects of Chicago including the development of new communities, industry, and recreation. Lake Michigan is no longer a hotbed for water borne diseases but is instead an attraction to residents and tourists alike. The Chicago River is now free of odors and raw sewage, and wildlife and vegetation are once again making their way back to the banks of the river.

By Joanna S. Colletti
EE&WR Group

Calendar of Events

2002

Apr. 1	Illinois Section Board Meeting
Apr. 9	EE&WR Business Meeting
Apr. 9	Movements of Supported Excavations (Geotechnical Group)
Apr. 10	Transportation Group Board Meeting
Apr. 17	ISTHA (Transportation Group)
Apr. 17	The Pentagon (Structural Group)
Apr. 18	UP&D Group Meeting
Apr. 25	Younger Member Dinner Meeting
May 1-3	Advanced HEC-RAS Seminar (EE&WR Group)
May 6	Illinois Section Board Meeting
May 8	EE&WR Business Meeting
May 8	Transportation Group Board Meeting
May 15	UP&D Group Meeting
June 1	YMG Golf Outing
June 4	Terrorism and Public Water Utilities (UP&D Group)

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