Calendar of Events:

April:
22-24 - Mid Continent Regional Conference. (Steel Bridge, Concrete Canoe, and other activities)
29 - Transportation Meeting, 5:30 pm at Jerico’s, Omaha

May:
20 - Annual Meeting and Banquet and Order of the Engineer Ceremony

Annual Banquet and Meeting
Thursday May, 20th at the Tiburon Golf Club

All members, spouses and guests are cordially invited to attend this year’s annual meeting of the Nebraska Section of ASCE. Meet your friends and acquaintances for good conversation, food, drink, and fun. The buffet dinner will include roast beef, grilled chicken and a selection of vegetables. During a short business meeting, the awards for outstanding service by one of our members and the outstanding graduating seniors from the UNL and UNO campuses will be presented. New life members will be inducted. New section officers will be elected.

“The Amazing Arthur” will provide comedic entertainment. Arthur performs wherever crowds require top-notch entertainment, skill, and good humor. "The Amazing Arthur" is a comedy hypnotist with many other entertaining talents.

Schedule of Events:

Cocktail Hour 6:00 PM
Dinner 7:00 PM
Program 7:45 PM
Comedy Show 8:15 PM

The Transportation Group Presents:

Design and Testing of Roadside Safety Barriers
Thursday, April 29th

Featuring: Robert Bielenberg, MSME, EIT, Research Associate Engineer, Midwest Roadside Safety Facility

Robert has done research for the Midwest Roadside Safety Facility at the University of Nebraska since August 1999. He has co-authored numerous publications and made presentations on temporary barriers, guardrail systems, and energy-absorbing barrier for high-speed racetrack applications. Robert has completed research reports and received research grants from the Midwest States Regional Pooled Fund Program for the last six years. Mr. Bielenberg is currently working on completing his Doctor of Philosophy Degree at the University of Nebraska-Lincoln. He has a Bachelor of Science and Master of Science degrees in Mechanical Engineering from the University of Nebraska-Lincoln.

Location: Jerico’s, 11732 W. Dodge Rd., Omaha

Times: Social Hour 5:30 PM
      Dinner 6:00 PM
      Presentations 7:30 PM

Menu: Petite Sirloin ........... $20.00
      Butterfly Porkchop ....... $20.00
      Chicken Breast .......... $20.00

Spouses and guests welcome
RSVP by Monday, April 26th

To Steve Kathol In Omaha 402.493.4800
skathol@schemer.com

Or Brad Levich In Lincoln 402.466.3911
balevich@terracom.com
March has been a busy month. The Water Resources Development Act (WRDA) legislation is moving along at a rapid clip. The Environment and Public Works Committee received project requests from the Senators on March 15th. We received more than 500 requests totaling more than $18 billion. The House passed legislation in 2003 (H.R. 2557) that included more than 500 projects at an estimated cost of $4.7 billion. Of the $18 billion, more than half of the requests were for ecosystem restoration and environmental infrastructure. While ecosystem restoration is now a Corps mission area that has grown over the past several years, the role of the Corps in environmental infrastructure projects (mainly water supply and wastewater treatment) is still somewhat undefined.

I spent a large portion of the month getting up to speed on the House passed bill, meeting with stakeholders to various specific projects and more generic nationwide programs, and helping summarize the requests that we have received. In addition, we prepared for the only scheduled hearing related to the WRDA legislation.

The month ended with a Transportation and Infrastructure Subcommittee hearing on “U.S. Army Corps of Engineers: Meeting the Nation’s Water Resource Needs in the 21st Century.” It was during this hearing that I got my first real glimpse at the importance of having engineers on the staffs of elected officials.

First, let me say that hearings are not held solely to get information to Congress. Quite the contrary, Congress has access to any information that we might need. We can get briefings and information with just a moment’s notice. However, getting the public at large to understand the issues and needs is accomplished through the hearing process. The mechanism that is used to accomplish this is through the voices of the stakeholders on both sides of the issue. At the hearing, we heard from the Lt. Gen. Flowers of the Corps as well as the Assistant Secretary of the Army John Paul Woodley, public and private stakeholders needing Corps projects and entities both praising and criticizing previous Corps projects and processes. Dom Izzo represented ASCE at the hearing. Lt. Gen Flowers referenced ASCE’s Infrastructure Report Card more than once in his answers to questions posed by the Senators.

Now back to the important role that the staff plays. The Senators rely on information prepared by the staff. The Senators have up to six or seven committee assignments in addition to the general duties that each one has. These assignments change regularly based on things like the party in majority and seniority within the party. It would be nearly impossible for each Senator to be an expert in each area that they are responsible for. This is where staff steps in. Prior to the hearing, a staff memo is prepared by the Committee staff for use in preparing the Senators for the hearing. The Committee staff is responsible for developing the witness list and helping inform the witnesses about potential questions or concerns the Senators might have. The personal office staff briefs the Senators and, with help from the Committee as requested, prepares questions for the senators. Since the Senators have schedules that would crash most calendar programs, most Senators are not able to attend an entire hearing. Personal staff is responsible for getting the Senators up to speed when they join the hearing and, at least in this hearing, providing follow-up questions to the Senators for clarification by the witnesses.

Through this hearing process, I saw firsthand the value of having an engineer in the process. As witness lists were developed and questions were formed, I was allowed to be quite involved in the process. With my experience as a local sponsor on Corps projects, I brought a perspective to the table that is different than most people in the process.

It is also through this process that the importance of both personal office and committee staff was highlighted. I would encourage each of you that are interested in becoming involved in the process to use our Washington, DC ASCE staff and to find the staff members in your elected official’s offices that are responsible for civil engineering issues. They are all quite approachable. Develop a relationship with those staff members and actively provide support and information as needed. If they know your name and your willingness to help, you might be in a position to provide information and support at a key time. You don’t have to be ASCE’s Congressional Fellow to help out in the legislative process, but I would encourage any of you that are interested to consider this incredible opportunity.
DREDGING FOR DEVELOPMENT

The West Shores Development
- Loras A. Klostermann, P.E., HWS Consulting Group, Inc.

There are many interesting engineering projects completed within Nebraska each year. High rise buildings and innovative designs are highly visible examples of area engineering accomplishments. However, some of the most interesting projects for me have been those that incorporate well-used construction tools in a new way to provide an economical solution to construction.

Dredges have been used for many years within the major river floodplains in this area to retrieve sand and gravel deposits from below the groundwater level. As the resulting sandpit lakes took shape, they became havens for wildlife and recreation. Housing has sprung up around many of these lakes. However, since development was an afterthought after sand and gravel extraction was completed, some constructability problems have been found. Current flood-related regulations require a minimum elevation of the lowest finished floor of any structure to be 1' above the regulatory flood elevation and basement levels are usually not possible. Although many housing areas around existing sandpit lakes were formed by additional dredging of sand and gravel along the shoreline in order to provide foundation support materials, areas of predominately overburden clay deposits exist around portions of some of these lakes. During the latter part of the 1980’s a need for a planned lake community within the combined floodplains of the Platte and Elkhorn Rivers was realized.

Planning for the West Shores development started over ten years before construction began. The square mile of land southwest of the intersection of Highway 275 and Dodge Street in western Douglas County was a flat farm field. Portions of the property exhibited poor drainage, resulting in poor conditions for crop production due to excess moisture. A center-pivot irrigation system once existed over a portion of the property to provide sufficient moisture for crop production during drought years. Periodic flooding occurred across the site, but nothing about the site had the appearance of a lake. Although the area road ditches around the perimeter of the site carried runoff water from the area, the site is not adjacent to the Platte or the Elkhorn River channels. The Elkhorn River is located 1.25 miles to the east of the site while the Platte River is located 2 miles west of the site.

In addition to the usual studies of environmental impact of the site including wetland delineation and floodway determinations, an extensive study of the area surface and groundwater hydrology was required. Groundwater levels below the site were studied over a ten-year period. Based on the groundwater studies and the direction of groundwater flow, normal groundwater levels below the site were determined. It was found that the floodway on the west side of the Elkhorn River extends more than 1.25 miles west of the channel within the eastern part of the proposed development. Wetlands were delineated, many along excavated drainage ditches across the site and required mitigation.

Engineering aspects of the resulting housing lots were specified and borings to determine subsoil conditions were advanced at three periods during plan development. Subsoil conditions varied greatly as significant areas of thick sand deposits existed below portions of the site with no sand in other portions. On the east side of the site, the clay deposits were soft to very soft and contained naturally organic materials buried when the river channels meandered through this area. At the west side of the site, substantial deposits of very stiff clay were encountered. Some of the clay deposits had low to moderate plasticity, but most of the near surface clays had high plasticity. After several iterations, a lot and lake layout began to take shape based on the available subsoil data and geometry requirements of a boating lake. To the extent possible, the lake was to be formed from the areas of predominately sand subgrade. Peninsulas that extend into the lake were proposed, based on locations of predominately clay subgrade below the site.
Each lot had to be capable of supporting a large residence. Lots that allowed construction of walkout basement levels were deemed necessary, requiring a substantial amount of fill for streets and front yards. Use of existing clay deposits was restricted by the high plasticity. A grading plan that took advantage of the sand deposits below the site began to take shape. The grading plan provided for the placement of compacted sand fill below each building lot. Based on the regulatory flood levels, a minimum basement floor level was determined. Below the building lots the grading provided a minimum thickness of compacted sand fill below the basement levels for foundation support. The thickness of sand below the individual building lots generally ranged from 5' to 10', depending upon subsoil strength as it varied across the site and the difference in elevation from the natural soil grade to the finished soils surface grades. The cross section utilized a fill section within the building areas that extends to a sand beach. Area sandpit lakes were studied to determine appropriate inclination of the sand beach at the shoreline and below the shoreline to allow stable beach locations without the need for intrusive walls or massive riprap structures.

In fill areas, the design utilized the strength of the sand fill for foundation support. Clays remaining below the sand fill were insulated from significant changes in moisture content by the layer of fill above them, resulting in small shrinkage and swell volume changes. The shrubs and trees that existed over portions of the site were removed before filling, but the topsoil clays remain below the fill. In cut areas that would eventually become the lake, the clay overburden was excavated by backhoes. Trucks quickly became bogged down in the moist alluvium. A fleet of Challenger tractors, each pulling a single scraper pan, were used to carry the topsoil and overburden to the designated park and green-space areas around the perimeter of the project area. However, the wet site materials could not be effectively loaded onto the scrapers by pulling them across the cut areas. The scrapers needed to be top-loaded with backhoes. In addition to providing a soil base for perimeter landscape areas, the overburden clays also acted as a perimeter dam to contain the dredge materials during placement.

Excavating the sand deposits below the site with backhoes was not effective. Two dredges were used for a period of about two years to excavate the sand for fill in the housing lots. Although a fleet of equipment was required to removed the overburden ahead of the dredges, each dredge requires only a small amount of equipment to place the sand fill. After a shallow pond was excavated onto which the dredge pontoons could barely float, the dredging operations begun. Water and sand were pulled from the lake, through the dredge’s cutting head by powerful pumps. The material was discharged through a piping system that allowed for placement of the dredge materials on the building lots and to the locations as required. A single backhoe was required near the end of the discharge pipe to move the end of the pipe and aim the discharge. In addition to the backhoe, a bulldozer was stationed with each dredge to properly direct the channels of return water flowing back to the lake from the dredge deposition areas.

Compaction of dredge material is not instantaneous. The compaction occurs gradually as excess water seeps from the material, with the compaction starting near the top of the sand deposit immediately after placement and extending to the base of the deposit as the excess water is allowed to drain. During dredging, track-mounted backhoes and bulldozers can travel on the new sand deposits immediately as the sand is being placed. An area of transition was always found at the leading edge of the sand deposit, where the dredge fill was less than 1' thick due to poor subsurface water drainage properties, resulting in unstable edges during dredge sand placement. However, a track-mounted bulldozer or backhoe had no trouble traversing these edge areas. Within a couple of days after dredge sand placement, the upper surface was
The clay overburden was spread over the site away from the sand beaches in a 12” lift to provide a growing medium and surface erosion protection.

Based on the groundwater levels measured during site investigation over a ten-year period, a planned lake level of 1111.5’ was determined. Water within the lake is the result of normal groundwater flow within the area alluvium. The plan level allowed control of the lake level through a discharge pipe and flow control structure. Flow through the pipe can be effectively controlled through adding or removing gate boards within the small control box. As an added benefit, the discharge water was channeled through the mitigated wetland area formed within the floodway area along the east side of the project area. Wetland plants were seeded and hand planted within the mitigated wetland area. Discharge water eventually makes its way into the existing roadway side ditch along the west side of Highway 275 at Pacific Street. No change in the grade or configuration of the Highway 275 roadway ditches was done for this project.

The previous groundwater data found that the groundwater level varies greatly in this area from periods of excess rainfall and flooding to periods of drought. Use of the gravity flow discharge system has effectively controlled the lake level to within 1.5’ of the plan level. During area floods, the lake level has been measured to generally rise no more than 1’ above plan level. This past spring, the lake level was found to have risen about 1.5’ above plan elevation, but this was the result of a piece of construction debris being jammed into the outlet pipe, constructing the outlet flow. During the past two years the area has been plagued by drought. However, the level of West Shore Lake has remained no lower than 1.5’ below the plan elevation, allowing utilization of the lake for its intended recreational purposes.

In addition to using dredging as a mechanism for grading construction, the project also involved the creation of an island within the lake. Planning of the island included the placement of trees and placing riprap with trucks before the lake around the island was excavated. The island is mainly inhabited by flocks of geese. The marina is surrounded by a vinyl sheet pile wall supported by a wood waler and tiebacks designed for marine conditions. The sheet pile wall has performed well in spite of heavy ice buildup during winter periods.
The sixteenth annual “truss bustin’” event during Engineers’ Week was a huge success for local Omaha area high school students. The Balsa Wood Truss Competition was held during Engineers’ Week in February at the Westroads Mall. Altogether 75 trusses were entered in the competition from Millard West, Millard North, Gross, and North High Schools.

The load-to-weight ratios were expected to be lower than in the past competitions because there are now seven rather than one potential loading conditions that must be considered. The potential of multiple loading conditions requires the student to add more web members that increases the weight of the trusses. The load combination tested was decided just prior to testing: Two concentrated loads located six inches in from each support across a 24-inch span loaded all trusses to failure.

The load-to-weight ratio of the winning truss was 2.938. The winning truss from North High weighed 23.2 grams (0.8 ounces) and carried a total load of 150 pounds.

The top three places in the Sixteenth Annual Balsa Wood Truss Competition for 2004 went to:

1st Eric Leahy, North High: $150 prize
2nd Matt Fast & Dan Wees, Gross High: $75 prize
3rd Jeff Siemens, North High: $50 prize

Scott Gilliland, Structural Technical Chairman, NE Section ASCE, and Bruce Harris, “E” Week and High School Chairman, participated in presenting prize and a framed certificate for their accomplishment.

A special thanks to all the Nebraska Section members that helped to contact the metro area high schools and assisted during truss testing, the Student Chapter and Dr. Chris Tuan Faculty Advisor from UNO that helped with weighing trusses, testing and documentation during the contest. Thanks to the Civil Engineering Round Table for the prime location at the Westroads Mall and those High Schools that participated. We are looking forward to more participation from the other metro high schools in the years ahead.

With the 2004 ASCE Mid-Continent Conference just around the corner, the students at UNL are working harder than ever. Not only are we preparing a steel bridge and concrete canoe for the competition, we’re also making the final arrangements to host the annual conference.

The conference is well on its way to success. The never-ending list of things to do is shrinking and we are beginning to see our work pay off. Equipment is arriving, the bowling ball pile is burgeoning, food orders will be placed soon, the steel bridge is complete, the concrete canoe will be poured the week after spring break and all the awards are finished.

As the conference creeps closer and closer, we’ll continue to work hard until all that’s left to do is welcome the teams on April 22nd.

This year’s conference should be full of great competitions, UNL’s steel bridge team has devised a unique connection on a very light bridge that they hope will give Carbondale a run for its money. The canoe race also promises to be exciting. If the quality of the actual product compares at all to the professionalism shown in the academic papers, we’ll have some very nice boats on campus. And of course we can’t forget the fun competitions. Who’s to say what surprises schools will have up their sleeves in the K’nex and concrete bowling competitions? And as for the mystery competition, well, it still is just that, a mystery!

So, what’s left?

You are! Are you ready to come support us? We invite and encourage you to take an hour or two (or all day) from work to come cheer us on. We’d love to have you at all the events and all of them are open to the public. Your support means a lot to us and we hope you don’t miss this opportunity.

You’re also welcome to attend the annual awards banquet. The speaker is Joe Burns from Thornton-Tomasetti Engineers in Chicago. He will be discussing the renovation of Soldier Field. Tickets are available for $20 and can be purchased using the order form on the NE-ASCE website. Orders must be received no later than April 15th.
The Order of The Engineer

The Order of the Engineer is an association of engineers dedicated to the teaching, administration, or practice of their profession. Initiation into the Order includes adherence to a Creed and acceptance of a stainless steel ring to be worn on the working hand. There are no further meetings to attend, or dues or subscriptions to pay. The Obligation is voluntary and for life. It does not replace or compete with NSPE, ASCE, IEEE, or any other educational, scientific, or engineering organization, but lends dignity and significance to those who are members.

In the midst of a career, it is possible to lose sight of goals so that dreams grow dim in the press of earning a living and establishing a vocation. The ring is a constant reminder of the wearer’s calling, a bond of strength in adversity and assurance that one is not alone in his endeavor, but is joined by a vast number of contemporaries with a common purpose and resolution. It is a badge of recognition which also will be known to the public. It is worn with pride and viewed with honor. The ring reminds you that you are an engineer. It is only for those who have met the high standards of engineering training, administration, or practice, and who voluntarily accept the Obligation. The ring is not a trinket to be bought nor an award to be conferred carelessly. It is, rather, the union of the engineer with the engineering profession.

The Order was started in 1970 by members of the Ohio Society of Professional Engineers who became part of the international engineering organization started in Canada. The Charter for the Nebraska link, as it is called, was granted in 1976.

The Order of the Engineer strives for the following objectives:

- Develop a spirit of pride and responsibility in the engineering profession;
- Strengthen the interface between training for and the practice of engineering; and
- Present the public with a visible symbol identifying the engineer.

Recently, ASCE leadership has embraced the Order, and is promoting it throughout the Society. Sections and Branches are encouraged to participate in ring ceremonies.

Membership is open to all holders of a bachelor’s degree in any engineering discipline. The onetime initiation fee for The Order of the Engineer is $20.00. All of the proceeds (minus administration and ring costs) will go to support the Mathcounts program in Nebraska which encourages 7th and 8th grade students to continue their math studies and perhaps select a career in Engineering.

If you are interested in joining the Order, contact Rick Kaufmann in Omaha at webmaster@neasce.org or 330-2202. Additional information will be forwarded to those interested.

Also, check the website at www.order-of-the-engineer.org.

The Nebraska Section’s first initiation ceremony was held at 2003’s Annual Meeting and Banquet last May where twelve engineers accepted the Obligation. If enough interest is shown, we hope to have another ceremony at this year’s Annual Meeting.

For information on attending the Opal Awards visit:
www.asce.org/opal
Environmental Meeting

Thanks to Gretchen Livingston and the Environmental group for doing an excellent job hosting "Missouri River Restoration Activities." This was an excellent presentation done by John Remus II, P.E.

Pictured Above: Gretchen Livingston, Environmental Char, and John Remus, Speaker

The names listed below can be considered official documentation of attendance at the March meeting worth 1 PDH credit.

Steven Bottum
Helen Bottum
Pat Engelbert
Paul Kierking
Scott Gilliland
Al Harrison
Jamie Hamm
Brian Havens
John Hill
Ray Hogrefe
Steve Kathol
Rick Kaufmann
Loras Klostermann
Heidi Kramer
Gretchen Livingston
Lindsay Madson
Marie Maly
Tom Marnik
Peggy Meyers
Kevin Meyers
Ryan Paradis
Ed Prost
John Portney
John Rimmis
Mark Stark
Tom Strauss
Joe Waxse

Younger Member Awards

- Mary Moly, EI, Younger Member Co-Chair

Throughout the year, the Committee on Younger Members (CYM) releases nomination forms for a variety of recognition opportunities. To be eligible for a CYM Award, you must be 35 or younger. In most cases, winners are selected from each Zone and then a National winner is chosen from the four Zonal recipients. Awards information is available either on the Nebraska Section Younger Member website (under Upcoming Events & Award Information) or on the National website (under Inside ASCE – Younger Members). Right now, there are two nomination forms available on our website:

Employer Recognition – This award is to recognize those employers who encourage ASCE membership, allow time off for professional development, support and encourage professional and technical growth, encourage young engineers to prepare articles for publication, and/or assist in the payment of dues. Help us recognize employer support for ASCE in Nebraska. (Multiple employers in each Zone will be recognized.)

Young Government Civil Engineer of the Year – This award goes to a Civil Engineer employed by any local, state, or federal government entity. Often, creative and highly skilled Engineers working for the government are overlooked, so this is a chance to be recognized for your hard work and dedication. An EI is required, and a PE is preferred.

More information, including deadlines and nomination forms, are available at www.neasce.org - click “Younger Members” – then select “Upcoming Events & Award Information.” Let Marie and Lindsay know if you plan on nominating yourself or another for one of these awards (ymg@neasce.org). Please consider making a nomination – it’s an opportunity to recognize the great companies and people we have in Nebraska!

Go to www.asce.org for information to register for the National Conference in Baltimore.