

## Events

Land Development  
and Younger Member  
Groups Event

1.19.09

Transportation Group Event

1.20.09

Structural Group Event

1.28.09

Waterways Group Event

1.29.09

Environmental & Water  
Resources Group Event

2.4.09

Geo-Institute Group Event

2.24.09

BSCES Professional  
Engineer Refresher Course

3.5.09 – 4.16.09

Full Details Inside

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# BSCES NEWS

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## Environmental & Water Resources



### Developing a Stormwater Utility

by Michael Cunningham, PE, S E A Consultants Inc.

Communities across the nation are faced with significant stormwater and drainage challenges. Meeting the requirements of the National Pollutant Discharge Elimination System (NPDES) Phase II Program and proactively managing municipal drainage systems are nearly impossible under traditional funding mechanisms.

Conditional assessment investigations reveal that large portions of municipal drainage systems have reached the end of their useful life and require replacement. Moreover, drainage systems in urbanized areas are often undersized to handle the large amount of runoff generated by the densely developed tributary areas. Although most of the systems were designed and constructed to handle run-off from a projected future development density, those development projections proved to be underestimated. Today, developed areas generate flow volumes that exceed design capacity. As a consequence, frequent flooding and backups occur. The results of drainage master planning analyses show that significant upgrades are necessary to improve existing conditions.

In 2004, the Commonwealth of Massachusetts enacted enabling legislation that allowed municipalities to create a stormwater user fee to fund the cost of planning, constructing, operating, and maintaining their stormwater

management facilities. The legislation allows the municipalities' governing bodies to establish a by-law or ordinance and charge an equitable fee. The legislation also allows the municipality to develop and charge a uniform fee for residential properties and a separate uniform fee for commercial properties, or to establish an annual charge based upon a uniform unit method as long as the charge is assessed in a fair and equitable manner. Typically, the unit of measure used is impervious area, since it generally equates to the contribution of stormwater runoff.

The term "stormwater utility" is often used to describe a fee-based enterprise fund managed by a division of the municipal government, such as the Department of Public Works, to implement a stormwater management program. Examples of communities with established stormwater utilities in Massachusetts are the Town of Reading, the City of Newton, and the City of Chicopee. In Reading, fees are assessed based on impervious area as discussed above and in Newton, the fee is a flat rate based on user class (i.e. residential and commercial/industrial). A stormwater utility can be used to fund stormwater management, operations and maintenance, improvement projects, stormwater planning, project review, regulatory compliance, inspections, or other stormwater management services. As with water and wastewater utility user fees, the revenues from a stormwater user fee are reliable and dedicated to funding the stormwater utility. Such a funding mechanism would provide communities in Massachusetts with the consistent funding needed to commit to and implement regulatory compliance, stormwater planning, and capital improvement programs.

The first step in implementing a stormwater utility is to promote the need for the stormwater



### President's Report

by Anatoly M. Darov, PE, Esq.  
Burns & Levinson LLP

The downturn in the nation's economy experienced during the last quarter of 2008 and credit market turmoil evident throughout most of the 2008 has profoundly impacted the engineering and construction industry. In the private sector, capital investment programs have been postponed or scrapped altogether as companies work feverishly to cut costs and downsize operations, while even public sector awarding authorities have had to delay public projects due to sharply escalated project finance costs and slowing government revenues. Against this backdrop, President-elect Barack Obama—with broad support of Washington lawmakers—has proposed a huge federal stimulus package aimed at restarting the nation's economy and getting people back to work. ASCE has been active to make sure that politicians understand and appreciate the importance of infrastructure spending as part of any federal stimulus package to combat unemployment and foster continued economic growth.

ASCE has advanced certain principles for federal stimulus investment in infrastructure. Among them, ASCE is advocating for an infrastructure investment that supplements, rather than replaces, existing long-term funding programs. If viewed otherwise, any anticipated infrastructure stimulus would not result in any long-term improvement to our nation's failing infrastructure and, instead, be a wasted opportunity to make significant headway in getting our infrastructure systems'

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### SPONSORING FIRMS



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## President's Report

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to an acceptable level capable of supporting a robust 21st century economy. Other principles advocated by ASCE focus on prioritization and selection of infrastructure projects to ensure that projects create and sustain jobs, provide long-term benefits to the public, and include accountability and transparency measures to evaluate whether desired outcomes are achieved. ASCE has also urged policymakers that all projects be designed and built in an environmentally sustainable and cost-effective manner and that any federal funding take into account long-term maintenance needs of existing and new infrastructure systems.

In Massachusetts, anticipation of more federal infrastructure dollars has prompted Governor Deval Patrick to take action to ready the Commonwealth for efficient deployment of possible federal stimulus funding. Governor Patrick has created seven task force groups asked to prepare a work plan to identify and address gaps or barriers that may impede the flow and deployment of federal funds to Massachusetts and into infrastructure projects both in the immediate term (so-called "shovel ready projects") as well as other longer-range projects not yet at the final design stage. I am representing BSCES on the Executive Office of Transportation's Task Force led by EOT's COO and Undersecretary Jeff Mullan.

Governor Patrick has established certain "guiding principles" with regard to implementation of federal stimulus projects. Those principles call for projects that: (1) provide a long-term benefit in addition to providing short-term economic stimulus; (2) have a limited impact on agency operating budgets; (3) are consistent with the administration's infrastructure recommendations; (4) are diversified across industries and geographic locations; and (5) to the extent possible, maximize benefits to Massachusetts companies and people. The EOT Task Force will be meeting until January 20th to complete its work.

While the Federal Economic Recovery Package—as it is presently called—is in an early stage of conceptualization, it is expected that it will come together quickly in response to President-elect Obama's call to have a stimulus package ready on or shortly after inauguration day. In 2005, ASCE issued its last Report Card for America's Infrastructure that graded the nation's overall infrastructure a "D" and called for infrastructure spending of \$1.6 trillion dollars over a five year period to bring conditions up to an acceptable level. It appears that the current economic climate may present a historic opportunity to make meaningful progress toward raising that grade.

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## Stormwater Utility

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utility by presenting the requirements and costs of meeting the conditions of the NPDES Phase II Program and managing the municipal drainage system. Thorough public education and outreach is essential to gaining support.

The next step is to set up an enterprise fund for a stormwater utility per MGL Chapter 44 Section 53F-1/2. Once the enterprise fund is in place, the community must adopt a regulation detailing the user fee method and cost. An abatement method is critical for any type of utility. It provides a financial incentive to minimize the amount of runoff from private property which will help reduce the amount of pollutants entering receiving waters.

Communities that lack extensive drainage systems or those that have areas with no drainage infrastructure may have concerns about the ability to gain support for a stormwater utility.

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Photos pictured clockwise from upper left corner:  
 Simmons Hall, MIT, Cambridge, MA; Exeter Street Theatre, Boston, MA; Macallen Building, Boston, MA; Beinecke Library, Yale University, New Haven, CT.

## BSCES Joins with ASCE to Help Out in Pittsburgh

by Reed M. Brockman, PE, AECOM USA Inc., BSCES Public Awareness & Outreach Committee Chair

Volunteers from BSCES were on-hand to show Pittsburgh what civil engineering is all about, in an event led by locals John Cavanaro, Reed Brockman, Michael Joyce, and Ammie and Chan Rogers, along with Michelle Everett from Orlando, Keith Chong from Pittsburgh and Julian Garcia from Los Angeles. Throughout Saturday, November 8th at the 2008 ASCE Annual Civil Engineering Conference, which was held in Pittsburgh, PA, ASCE partnered with Pittsburgh Cares—an organization dedicated to inspiring volunteerism by organizing flexible and rewarding service projects that impact critical needs in Greater Pittsburgh—to renovate and repair Pittsburgh’s Bradley Center, a residential educational facility for at-risk youth. In addition, ASCE volunteers ran hands-on educational activities aimed at both teaching the students about their built environment and that great work that civil engineers accomplish. This is the sixth year in a row that Society volunteers have participated in a project of this type to round out their experience at the annual conference.

Forty-plus volunteers from ASCE, Pittsburgh Cares, and other organizations participated in the project. Their goal was to improve the functionality and appearance of the center and have a fun, educational afternoon with the

young residents. Volunteers built planting beds for an edible garden, repainted picnic tables, built shelves, repainted rooms, painted a beautiful mural, refurbished a gazebo, created a sensory garden that involved hand-painting various bird houses, and much more. While crews of volunteers were making these improvements, another team brought in group after group of students to the cafeteria and ran hands-on sustainability and engineering activities involving water quality testing, building arch and truss bridges, and designing skyscrapers. The activity materials were actually shipped to Pittsburgh from Boston (courtesy of AECOM). Thanks to the MWRA for lending out the Water Quality Testing Kits and Tufts for their Model Bridge.

For over 100 years Bradley has been providing hope to children and families in need of comprehensive and caring services.

The Bradley Center has since evolved into an accredited, regional behavioral healthcare and child welfare system that provides hope to young girls and boys. Bradley is committed to advocacy for children and dedicated to the restoration of productive relationships among children, their families and the community whenever possible.

Karen Zimmerman, the Community Relations coordinator for the Bradley Center, said “I am just thrilled that your dedication and commitment to children came the whole way to Pittsburgh! And our facility was just abuzz with all the excitement, the learning, and the happiness that you and your group brought to our residents. It certainly will be a memory for these children, and one that I hope instills them to strive to be curious, to search for answers and always to have fun while doing so.”

ASCE began organizing volunteer community service events in 2002 as part of the celebrations marking its 150th anniversary. The service projects, however, have continued and have become an addendum to ASCE’s annual conference. Members are already hard at work organizing next year’s project to be held at the ASCE Annual Conference in Kansas City in November 2009.

This year’s event was organized by ASCE’s Committee on Volunteer Community Service, the Pittsburgh Section, the Younger Member Forum of that section, and Pittsburgh Cares. Those interested in being part of the volunteer endeavor next year should contact me at [reed.brockman@aecom.com](mailto:reed.brockman@aecom.com).

Special thanks to HDR Engineering for being the corporate sponsor of this event.

## Stormwater Utility

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The rationale presented to the community must emphasize that it is not solely intended to maintain and operate municipal storm drain systems. A large part of the need is derived from the associated costs of meeting NPDES Phase II Program requirements and other mandates pertaining to overall stormwater management.

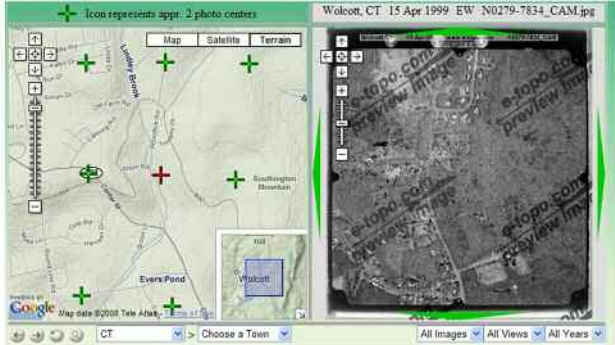
The water quality enhancements derived from improved stormwater management are a benefit to the entire community. In addition, existing storm drain systems require maintenance and improvements to maintain access to critical roadways used by all residents and businesses and to ensure public safety, another collective benefit.

Interested communities should develop a stormwater taskforce to evaluate implementation of a stormwater utility. The goal of the taskforce is to identify the type of utility that best suits the community’s needs and prepare a schedule and program to promote the utility prior to implementation.

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## BSCES MEMBER PROFILE: Cranston (Chan) Rogers, PE, Dist. M ASCE, COL-CE (Ret.)

by Bonnie Ashworth, Quincy, MA

It's no exaggeration to state that if you drive in Massachusetts, you benefit from the design work of Chan Rogers. He has 53 years of experience in the design of major transportation facilities, including 15 or more significant bridge, tunnel, rail transit, and interstate highway projects. These were some of the most highly visible and unique projects in the country which utilized design elements not previously employed. Each has resulted in an outstanding example of engineered work, including the largest Big Dig design section. (The 9A Section never leaked nor was the ceiling integrity compromised).

Chan has a BSCE from The Citadel and an SMCE from MIT and is a registered PE in eight states. He began his career as a structural engineer on the Charlestown Section of the Central Artery viaduct in 1950. He managed the design of the original Central Artery to its juncture with the SE Expressway; it was the first project to utilize shear studs and pipe piles as foundation and pier columns on the Interstate System. Chan managed the design of the Dewey Square Tunnel section of the Boston Central Artery, the first highway designed to interstate standards placed underground in the US (1955) and it included ramps between portals.

He managed design of a section of the MA Turnpike, I-290 in Worcester, I-93 Boston to Medford, and I-190 Worcester to West Boylston which utilized the first in U.S. of a closed drainage system. Chan proposed and planned the first in US long distance overland movement (170 miles) of a nuclear reactor to the plant site. He proposed and managed the design of the first in the U.S. use of jacked highway tunnel boxes under railroad tracks, and he proposed the first in the U.S. use of Japanese Soil Mix for foundation support, the latter as part of Section 9A of the CAT/THT (Big Dig). The jacked tunnels received the 2002 BCI International Award, the 2003 ASCE Pankow Award, and the 2004 NOVA Award.

Chan managed the design of two heavy rail transit projects: the tunnel design of the Red

Line extension from Harvard to Alewife and the U-2 Section of WAMTA, Washington, DC. He also managed the design of two similar trestle bridges of about 900 feet, one over the Westport River in Westport, MA, that included a bascule span and the other over the Connecticut River in Lee, MA. He also designed the Cambridge Street Underpass for Harvard, the Tremont/Columbus St. arterial upgrade for the Boston BRA, and the Route 25 connection to the Bourne Bridge for MA DPW. The title of an article in the *Boston Globe* (9/18/06) sums up the importance and tremendous impact of Chan's engineering career, "He shaped Boston for half a century."

He has also served the engineering profession. He spent 20 very active years in the Massachusetts Section of ASCE, was president in 1962, and feels honored to be a Distinguished Member of ASCE. He was one of the key leaders who engineered the merger of ASCE and BSCE in 1973 and also made significant contributions to ASCE at the national level as director, vice president, and chair of five national committees: PAC, COSOPO, COSP, Manual 45, and an Ad Hoc Committee of B/D to advise on Headquarters (Re) Location (1973). He has written several articles in support of his projects, the bridge crisis (1979), and ASCE's interests, which have received regional attention, and he continues today to mentor students on the vital responsibilities of the civil engineer. Although retired, he spent 55 days in New Orleans after Hurricane Katrina to help with the cleanup and look into the engineering failures.

Another important aspect of Chan's life was his military service. He was a combat infantryman in WW II where he advanced from private to



Chan (seated on couch; far right) in a recent family photograph

first sergeant. He remained in the army reserve (USAR) after the war and received a direct commission as a 2nd Lieutenant for meritorious service during combat. He continued as an active reservist and advanced to command engineer units at battalion and group level. Colonel Rogers proposed and successfully managed the use of US Army Engineer Reserve units to rehabilitate the Army's training railroad at Fort Eustis, and this effort was awarded SAME's Wheeler Medal in 1979.

Chan and his wife, Francine, have been married for forty years. He retired in 2002 and feels fortunate to have his health. He enjoys playing bridge, is active writing and lecturing, involved with veterans' groups, and is consulted about transportation matters, such as what to do about the poor condition of the Storrow Drive tunnel (which he didn't design). In reflection, Chan said, "I've had exceptional good fortune to have survived the war, have a great family, and then be responsible for an unbelievable array of sophisticated projects."

Chan Rogers's engineering career spanned the decades from creation of the Central Artery to the Big Dig, and the engineering community is proud of his many accomplishments and contributions to the profession.

**A Bit of Perspective**

*by Ken Benet, Resource Options Inc.*

In the fall of 2007 a New York Times article revealed the results of a national survey on stress levels in the US. One third of those polled said that they felt extremely stressed on a regular basis and one half said that their personal situation had worsened over the course of the past five years. Those polled cited the primary causes of stress were finance and job related. This was prior to the collapse of the housing, credit and the job markets that took place in the last few months.

True, the economic situation a year later has worsened. But, most engineering and environmental related projects that can either be canceled or put on hold have already happened. Most firms that have felt the impact have already made the necessary layoffs and other adjustments. While firms have become more conservative, from eliminating capital expenditures, to making all but the most necessary of new hires, they do recognize the importance of keeping people working, knowing how difficult and expensive it is to ramp back up again.

Job stress can be caused by a myriad of factors of which, being overworked and concerns about impending layoffs seem to be the most common for many in engineering these days. While I personally feel that we are close to if not at the bottom of the business cycle as it pertains to engineering, I cannot say when things will start improving to such an extent that we can get back to business as usual. Until then, the following are a few ideas of what to do to keep your sanity and maybe even take advantage of the current situation:

1. **Make a visible impact within your department and firm.** Fewer projects mean more time to spend on burnishing each one. More proposals mean more opportunities to participate in bringing business into the firm and contributing to the bottom line. Be cognizant of the fact that your colleagues feel the pressure; see this as an opportunity to take a supportive and nurturing role within the group.

2. **Read more.** Reading is cheap, or even free if you dust off books that you have not read for years; visit the library. Many newspapers and magazines such as The New York Times, Washington Post, Boston Globe, Business Week, Slate.com and MotherJones.com are online.
3. **Go for a walk.** They are free, head clearing and stress reducing.
4. **Improve yourself, professionally.** Take a continuing education course on a topic related to your discipline, business management, or other topic of interest to you. Participating in professional organizations, such as BSCES, and networking with other members of the engineering community is a good way to maintain perspective and better understand the dynamics of the industry business cycles.

*Ken Benet is an Engineering Search Consultant with Resource Options Inc., in Needham, MA.*

**The BSCES Environmental and Water Resources Group**

*by Rhonda N. Forrester, Woodard & Curran, Inc., BSCES Environment & Water Resources Group Chair*

The mission of the Environmental & Water Resources (EWR) Group is to advance scientific knowledge and promote sound engineering thought and practice in the solution of projects related to:

- Wastewater
- Drinking Water
- Storm Water
- Hydrology
- Solid and Hazardous Waste
- Pollution Prevention
- Water Resources.

Knowledge in these areas is promoted by group discussion and dinner meetings. We meet bi-monthly in a causal setting to receive updates on the BSCES operations and discuss relevant environmental and water resources projects and other topics of interest.

To date we have scheduled two dinner meetings. On Tuesday, December 9, 2008 Sara Cohen from the Department of Conservation and Recreation will be giving a presentation on Low Impact Development and Water Conservation Projects in the Ipswich River Basin. The goal of Low Impact

Development (LID) projects is to maintain a site's predevelopment hydrology by using design techniques that infiltrate, filter, store, evaporate, and detain runoff close to its source. Techniques, known as Best Management Practices (BMPs) are used to control sediment, stormwater runoff, and soil stabilization, and ultimately reduce nonpoint source pollution. LID projects can be incorporated in most urban environment and can be applied to both new developments and redevelopment/revitalization projects.

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## Codes, Standards, and Rules

by Christopher M. Koehler, PE, CDM

I was recently asked to review the design of a landfill gas (methane) extraction system and flaring station for a landfill located in the City of New York. After obtaining the design plans and specifications, reviewing the New York City Fire Code seemed a logical next step. Armed with my high speed internet connection and the most popular web search engine I typed in "City of New York Fire Code" and hit "Search."

The first website listed was www.nyc.gov, and a few clicks later I arrived at the Fire Department of New York (FDNY) website. Off to the left was a link entitled "Fire Code" that directed me to the "New Fire Code for New York City" webpage. I said to myself, "New Fire Code? Just how new is new?" Turns out the Code was revised in July 2008. The design plans for the landfill gas extraction system was signed and stamped in April 2007. My heart sank thinking of hours of costly revisions.

Two more clicks and I was viewing the Table of Contents; forty-seven (47) chapters and two (2) appendices for a total of 637-pages. After recovering from a quick panic, I narrowed my search to a few likely chapters; Hazardous Materials (Ch. 27), Compressed Gases (Ch. 30), Corrosive Materials (Ch. 31), and by far the most likely, Flammable Gases (Ch. 35).

I was shocked to find, right there at the bottom of the first page of Chapter 35 Flammable Gases, Subsection 3501.4.3 Methane Recovery which read:

**"3501.4.3 Methane Recovery.** Methane recovery facilities shall be operated under the personal supervision of a person holding a certificate of fitness to recover methane gas from landfills."

That was it, the entire subsection on Methane Recovery. There was nothing further, no more guidance, no references to other more enlightening subsections—nothing more. To

top it off, a *certificate of fitness* to recover methane gas from landfills? What is that?

Nine pages later, another solitary subsection.

**"3508.1 Recovery Operations.** The commissioner shall promulgate rules relating to the recovery of methane gas from landfills and other approved locations, to ensure the safe recovery thereof."

Rules? New York City has its own rules for methane recovery? These rules are developed by the Commissioner? Now I have to review, Codes, Standards, and Rules. I returned to the FDNY website determined to find these Rules.

A few clicks later and I am reviewing the available FDNY Rules. I view the Final Rules, the Promulgated Rules, and even the Notice of Opportunity to Comment on the Rules. No luck finding anything about methane recovery. I search the final and promulgated rules for the word "methane." One hit. I am pleased to announce that natural gas is primarily comprised of methane. After an hour of searching, I am at the end of my rope.

I notice a link that beckons "to submit a Fire Code question, click on this" similar to how the

Statue of Liberty beckons, "Give me your tired, your poor, your huddled masses yearning to breathe free..." I am hesitant to become part of the machine, to unveil myself as a rookie that cannot navigate a simple website, who cannot read Code, who is an utter failure at deciphering the obvious. Yet, I've got nowhere else to go.

I submit my question that reads, "Section 3508.1 of the Fire Code references a rule promulgated by the Commissioner relating to the recovery of methane gas from landfills. Have these rules been promulgated? If so, where may I obtain a copy?" Although I have the upmost respect for the FDNY and the great work they do, I really don't expect a reply. I hit send and hunker down to wait.

To my great surprise, within an hour, the FDNY replies with a link to Title 3 §23.-02 Recovery of Methane from Landfill. My faith restored in the machine, the system, government agencies, and my respect for the FDNY confirmed, I begin my review.

In the seven (7) page Rule, there are three (3) references to other NYC Codes, two (2) references to ASME Code, four (4) ANSI references, two (2) API Standard references, and one (1) NFPA Standard reference... but no more Rules.

## Environmental and Water Resources Group

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On Tuesday, February 4, 2009 Nicholas Anastas from the Massachusetts Department of Environmental Protection will be giving a presentation on Pharmaceuticals and Personal Care Products in Water Supplies. This issue has been gaining momentum in recent years and has served to remind us that the water is a limited resource. Wastewater treatment methods and technologies do not remove all of the medications and personal care products used by humans. Recent studies have shown

that some of these contaminants have been found in drinking water supplies. Nicholas will present his research and help separate the fact from fiction on this issue.

We will potentially be scheduling another dinner meeting or field trip this year. If you are interested in joining our group or have any ideas for future meeting topics, please contact me at 978/557-8150 or via email at [rforrester@woodardcurran.com](mailto:rforrester@woodardcurran.com).



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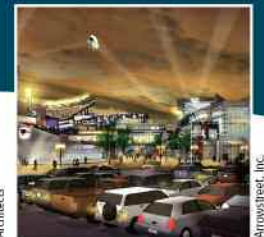
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## Massachusetts Proposes New Stormwater Regulations

by Betsy Frederick, S E A Consultants Inc.

The Massachusetts Department of Environmental Protection (MassDEP) has recently proposed new regulations that would confer upon the MassDEP the authority to regulate general surface water discharge permits, a program currently regulated through the Environmental Protection Agency's National Pollutant Discharge Elimination System (EPA NPDES) program. As authorized by the Clean Water Act, the NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States.

The new regulations would be codified in 314 CMR 21.00. The regulations address previously existing jurisdictions under the EPA program, such as stormwater discharges from activities that could contribute pollutants to surface or ground waters of the Commonwealth, and discharges from municipal separate storm sewers. Significantly, the regulations also create a new classification of regulated entity, and detail required performance standards for stormwater controls on "Regulated Impervious Areas" (RIA). These areas are basically defined

as one or more aggregated lots that contain five or more acres of impervious area.

These regulations differ from existing stormwater regulations, known as the Massachusetts Stormwater Management Standards, which typically apply to development regulated under the Massachusetts Wetlands Protection Act or the Massachusetts Clean Waters Act. The existing regulations are typically triggered when there is work performed on a development or redevelopment project. The new regulations would apply to existing RIAs regardless of whether any new work is being performed. Alternatives to meeting performance standards through on-site mitigation efforts are provided in the regulations for properties that can not meet the new discharge requirements. There are potentially expanded administrative requirements associated with both the RIA program itself, and the off-site mitigation program, for communities that choose to develop "Qualifying Local Programs." Otherwise, all of the permitting will be conducted through the MassDEP exclusively.

The MassDEP will also now issue individual permits, or approval for coverage under a general permit, for "any activities that may reasonably be expected to result in a discharge that is contaminated by contact with process wastes, raw materials, toxic pollutants, hazardous substances, or oil and grease." The language as currently proposed in the regulations provides for broader authority and jurisdiction over stormwater discharges than currently exists under the EPA NPDES program. Finally, the small MS4 NPDES Phase II program will also be delegated to the state. While program components are the same as those described in the original EPA general permit, DEP has stated that they may require more stringent numerical or quantitative measures of improvement relative to the BMPs implemented. This suggests that water quality monitoring and laboratory analysis may soon be part of the program requirements, even under a general permit.

In tandem with existing regulations, the proposed Stormwater Management Regulations will become part of the Commonwealth's comprehensive program of water quality protection. The Wetlands Protection Act Regulations are codified under 310 CMR 10 (Wetlands Protection) and the Water Quality Certification Regulations (for the Clean Waters Act) are codified under 314 CMR 9 (Water Quality Certification). These regulations are available online at [www.lawlib.state.ma.us/cmr.html](http://www.lawlib.state.ma.us/cmr.html).

The MassDEP website also has the proposed regulations listed with an explanation at the following link: [www.mass.gov/dep/service/regulations/newregs.htm](http://www.mass.gov/dep/service/regulations/newregs.htm) (last item under "Proposed Regulations").



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**AJ Cardini, PE Receives the Prestigious 2007 Herzog Award from BSCES**

*by Salim Ayas, PE, Vine Associates, Inc.*

The Ernest Herzog Award was established by BSCES in 1985 in memory of Mr. Herzog's commendable career and distinct achievements. The Herzog award's program is intended to promote awareness to the public and the civil engineering community and to recognize innovative designs and improvements to the infrastructure projects that serve our needs in our communities. In June of 2008, the BSCES Infrastructure Group celebrated Herzog's achievements at a dinner meeting which was well attended by engineers, scientists, educators, and students. The Group was honored to announce AJ Cardini as the 13th recipient of this prestigious award. AJ Cardini is a structural engineer currently working for AECOM (formerly DMJM Harris) in Boston. AJ Cardini gave an interesting presentation on the long-term bridge health monitoring as he received the 2008 Ernest Herzog Award. His winning paper discusses the importance of the long-term structural health monitoring by recommending the use of strain gages, sensors, and the latest state-of-the-art technology to monitor bridge conditions and structural behavior in order to provide warning ahead of major changes in the structural integrity that would be indicative of major damage to either the steel girders or the concrete bridge deck. His paper also offers specific recommendations

explaining the inspection process, particularly with respect to fracture critical members, and urging the civil engineering community to request special inspection procedures through this inspection process where needed. The goal is to use existing, readily applied technology for SHM for long-term use on bridges that have raised concerns, due to corrosion inspections, overloading, or fatigue sensitive details. It also offers specific solutions to common problems encountered during the inspection process where places are very hard to get to and so costly on the owner. AJ recently published his winning paper in the Journal of Structural Health Monitoring on using sensors to monitor bridge conditions, which led to his receiving the Herzog Award.

For the past thirteen years, the BSCES Infrastructure Group has held the Herzog Award technical writing contest. The contest participants will submit an original technical paper describing the nature of the candidate infrastructure project, innovation, or idea in which the candidate was involved with as an owner, advocate, engineer, scientist, and/or contractor. The candidate in his technical paper should highlight the benefits how the project or innovative idea has improved service to the public and/or a community through the areas of innovation in the design, construction, operation, and/or financing. The candidate's

papers are judged based on the evaluation of the technical writing, public benefits, uniqueness of concept, cost effectiveness, and the technical significance overall. For the past three years, recipients have presented discussions on their papers at a joint event with the Public Awareness and Outreach Committee also celebrating the winners of the Ralph Salvucci Online Bridge Design Contest. The winners have geared their presentations to be readily understood by the student winners of the contest.

Technical papers for the 2008 Herzog Award are now being accepted and the deadline for submittal is March 13, 2009. If you interested in submitting your papers, for more details about the Herzog Award's Program, see the flyer attached to this newsletter, please mail them to the following address: The Engineering Center; One Walnut Street; Boston, MA 02108-3616; Attn: Infrastructure Group, Herzog Award Committee

The recipient of the 2008 Herzog Award may be invited to give a short presentation on the paper at the BSCES Infrastructure Group Awards Celebration event in May 2009. Also, original papers may be submitted (with authors permission) for publication in the semi-annual BSCES Journal. For additional details and more information, contact AJ Cardini at [aj.cardini@AECOM.com](mailto:aj.cardini@AECOM.com).

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For more information and to register for events, please visit [www.bsces.org](http://www.bsces.org)

## Land Development and Younger Member Groups Event

**Monday, January 19, 2009**

NEXUS Green Building Resource Center  
38 Chauncy Street, 7th Floor, Boston, MA

5:00PM Registration/Social

5:30PM Casual Dinner

6:00–7:00PM Presentations followed by Q&A Session

### Case Studies on Leadership in Energy and Environmental Design (LEED) Projects

DCAM/DYS Zara Cisco Brough Center, Westborough; Peter Glick, SMMA

Children's Museum, Boston

Dominic Rinaldi, BSC Group

Koch Science Math & Technology Center, Deerfield; Rebecca Sherer, Tighe & Bond

As a follow up to the 2008 joint presentation "The Civil Engineer's Role on LEED Projects", the BSCES Land Development and Younger Member Groups present a compilation of case studies on the LEED certification process.

Please see the Insert at the end of this month's newsletter for further details.

## Transportation Group Event

**Tuesday, January 20, 2009**

Radisson Hotel, 200 Stuart Street, Boston, MA

11:30 AM Registration

12:15 PM Lunch

1:00 PM Presentation

### The Metropolitan Planning Organization (MPO) Process—A Guide to Understanding the "BLACK BOX"

Steve Woelfel, Director of Strategic Planning  
Executive Office of Transportation & Public Works  
B. Clay Schofield, PE, Transportation Engineer  
Cape Cod Commission

Dennis A. DiZoglio, Executive Director  
Merrimack Valley Planning Commission

How Federal Funding is allocated to the regions across the Commonwealth; the planning process of the MPOs including the Regional Transportation Plan (RTP); Transportation Improvement Program (TIP) and the Unified Planning Work Program (UPWP); and the mechanisms used to prioritize the funding and programming of transportation projects will be discussed.

Please see the Insert at the end of this month's newsletter for further details.

## Structural Group Event

**Wednesday, January 28, 2009**

Radisson Hotel, 200 Stuart Street, Boston, MA

5:45 PM Registration

6:30 PM Dinner

7:00 PM Presentation

### Structural Provisions of the 7th Edition Massachusetts State Building Code

Rubin M. Zallen, PE, Zallen Engineering  
Chair, Loads Advisory Committee

Joseph J. Zona, PE, Simpson, Gumpertz & Heger Inc., Chair, Seismic Advisory Committee

The 7th Edition of the Massachusetts State Building Code has recently been published. With its mandatory use for new projects in Massachusetts by March of 2009, the importance and impact on Building Structural Engineers of the new provisions throughout the Commonwealth cannot be overemphasized. This presentation will focus on revisions from the 6th to the 7th Edition of the Code.

Please see the Insert at the end of this month's newsletter for further details.

## Waterways Group Event

**Thursday, January 29, 2009**

Radisson Hotel, 200 Stuart Street, Boston, MA

5:30 PM Registration

6:30 PM Dinner

7:00 PM Presentation

### Underwater Inspection: What Lurks Beneath the Surface?

David Porter, Childs Engineering  
Bryan Jones, Ocean & Coastal Consultants

This presentation explains what is eating away

at waterfront structures and how the extent of damage can be determined. Topics include current technologies used by engineer divers when inspecting waterfront structures, regulations covering dive inspections and case studies illustrating how structures deteriorate underwater. An update on the development of ASCE standards for engineer divers will be presented.

Please see the Insert at the end of this month's newsletter for further details.

## Environmental & Water Resources Group Event

**Tuesday, February 4, 2009**

Radisson Hotel, 200 Stuart Street, Boston, MA

5:30 PM Registration

6:30 PM Dinner

7:00 PM Presentation

### Pharmaceuticals and Personal Care Products in Water Supplies

Nicholas Anastas, Massachusetts Department of Environmental Protection

This issue has been gaining momentum in recent years and has served to remind us that the water is a limited resource. Wastewater treatment methods and technologies do not remove all of the medications and personal care products used by humans. Recent studies have shown that some of these contaminants have been found in drinking water supplies. Nicholas Anastas will present his research and help separate the fact from fiction on this issue.

Please see the Insert at the end of this month's newsletter for further details.

*continued on page 10*

**BOSTON ENGINEERS WEEK**  
FEBRUARY 12-13, 2009

Career Fair: Feb 12, 2009 4-7 pm  
Luncheon: Feb 13, 2009 12 noon  
Speaker: Helen Greiner,  
Cofounder of iRobot  
Hyatt Regency Boston  
One Avenue De Lafayette  
[www.engineers.org/cngwk.html](http://www.engineers.org/cngwk.html)

**Events** *continued from page 9*

**Geo-Institute Group Event**

**Tuesday, February 24, 2009**

Radisson Hotel, 200 Stuart Street, Boston, MA

5:30 PM Registration

6:30 PM Dinner

7:30 PM Presentation

**Transalpine Tunnels in Switzerland**

*Professor Herbert H. Einstein, Massachusetts*

*Institute of Technology*

Three major transalpine rail-tunnels with lengths of 57, 35 and 15 kilometers below overburdens of more than 2000 meters have been and are being built in Switzerland. This presentation will focus on the history of transalpine transportation and the political

decisions leading to the construction of the three new tunnels. The design and construction involving TBM and Drill-and-Blast excavation will be discussed, as well as a number of related issues.

*Please see the Insert at the end this month's newsletter for further details.*

leading authorities in their fields, session topics include water supply, hydraulics, surveying, wastewater, hydrology, transportation, soils, structures and economics.

*More information forthcoming. Please check the February 2009 BSCESNews for updates.*

**Spring 2009 BSCES Professional Engineer Refresher Course**

*Presented by the Continuing Education Committee*

**March 5 – April 16, 2009**

Scheduled to begin on Thursday, March 5, the BSCES Professional Engineer Refresher Course features 11 sessions covering all aspects of the Professional Engineer State Exam. Taught by

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STRUCTURAL ENGINEERS

Requires 3+ years experience in the design, inspection and load rating of bridges. Proficiencies in Autocad and Microstation is desirable. **CODE B-SE.**

Please forward resume in confidence, including job code, to: [CGagnon@Ammann-Whitney.com](mailto:CGagnon@Ammann-Whitney.com) EOE.



Appledore Marine  
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**Engineer Diver**—Qualifications: BSCE, 4 years experience and diving credentials, Certification: PE Preferred

**Entry Level Engineer**—Qualifications: BSCE, Certification: EIT Preferred

Looking for motivated individuals to work on challenging marine/waterfront projects throughout the United States and abroad. Individuals should have an interest in structural engineering applications involving waterfront structures. Position entails underwater inspection, evaluation and design of marine/waterfront structures and travel in a team-oriented environment.

This is an excellent opportunity for individuals interested in working on a variety of waterfront/marine projects throughout the United States and abroad for a growing company. Send resume to Appledore Marine Engineering, Inc., 600 State Street, Suite E, Portsmouth, NH 03801 or email [vswasey@appledoremachine.com](mailto:vswasey@appledoremachine.com)



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Monday, January 19, 2009

## **Case Studies on Leadership in Energy and Environmental Design (LEED) Projects**

**DCAM/DYS Zara Cisco Brough Center, Westborough  
Peter Glick, SMMA**

**Children's Museum, Boston  
Dominic Rinaldi, BSC Group**

**Koch Science Math & Technology Center, Deerfield  
Rebecca Sherer, Tighe & Bond**

**NEXUS Green Building Resource Center  
38 Chauncy Street, 7th Floor, Boston, MA**

**5:00PM Registration/Social, 5:30PM Casual Dinner,  
6:00-7:00PM Presentations Followed by Q&A Session**

**\$35 Members, \$45 Non-Members  
\$25 Public Sector Members, \$35 Public Sector Non-Members  
\$15 Student and Senior Members (65+)**

As a follow up to the 2008 joint presentation "The Civil Engineer's Role on LEED Projects", the BSCES Land Development and Younger Member Groups present a compilation of case studies on the LEED certification process.

Additional information including speakers will be provided as the date approaches.

**Registration Deadline: Tuesday, January 13, 2009**

**Information/Registration:** Register to attend and pay by credit card online at [www.bsces.org](http://www.bsces.org). Search for this program under Events. Click on Events then BSCES Events, locate and click on the program name and on the next page click Learn More. You can also register by contacting Jack Moran at [John.Moran@MHD.state.ma.us](mailto:John.Moran@MHD.state.ma.us). Register early, seating is limited. Cancellation received after Tuesday, January 13, 2009 and no-shows will be billed.

Tuesday January 20, 2009

**The Metropolitan Planning Organization (MPO)  
Process – A Guide to Understanding the “BLACK BOX”**

**Steve Woelfel**

Director of Strategic Planning  
Executive Office of Transportation & Public Works

**B. Clay Schofield, PE**

Transportation Engineer  
Cape Cod Commission

**Dennis A. DiZoglio**

Executive Director  
Merrimack Valley Planning Commission

**Radisson Hotel, 200 Stuart Street, Boston**

**11:30 AM Registration; 12:15 PM Lunch; 1:00 PM Presentation**

**\$45 Members, \$55 Non-Members**

**\$35 Public Sector Members, \$45 Public Sector Non-Members**

**\$15 Student Members and \$35 Senior Members (65+)**

How Federal Funding is allocated to the regions across the Commonwealth; the planning process of the MPOs including the Regional Transportation Plan (RTP); Transportation Improvement Program (TIP) and the Unified Planning Work Program (UPWP); and the mechanisms used to prioritize the funding and programming of transportation projects will be discussed.

**Registration Deadline: Thursday January 15, 2009**

**Information/Registration:** Register to attend and pay by credit card online at [www.bsces.org](http://www.bsces.org). Search for this program under Events. Click on Events then BSCES Events, locate and click on the program name and on the next page click Learn More. You can also register by contacting Donna M. Reardon at 508/620-2832 or [msinatick@earthlink.net](mailto:msinatick@earthlink.net). Cancellations received after January 15, 2009 and no-shows will be billed.

Wednesday January 28, 2009

## **Structural Provisions of the 7th Edition Massachusetts State Building Code**

**Rubin M. Zallen, PE**

Zallen Engineering

Chair, Loads Advisory Committee

**Joseph J. Zona, PE**

Simpson, Gumpertz & Heger Inc.

Chair, Seismic Advisory Committee

**Radisson Hotel, 200 Stuart Street, Boston, MA**

**5:45 PM Registration; 6:30 PM Dinner; 7:00 PM Presentation**

**\$55 Members, \$65 Non-Members**

**\$45 Public Sector Members, \$55 Public Sector Non-Members**

**\$45 Senior Members (65+), \$55 Senior Non-Members (65+)**

**\$25 Students**

The 7th Edition of the Massachusetts State Building Code has recently been published. With its mandatory use for new Projects in Massachusetts by March of 2009, the importance and impact on Building Structural Engineers of the new provisions throughout the Commonwealth cannot be overemphasized. This presentation will focus on revisions from the 6th to the 7th Edition of the Code. It will be given by Rubin Zallen and Joe Zona, two volunteer Chairmen for the State Board of Building Regulations and Standards for the Loads and Seismic Advisory Committee, respectively.

**Registration Deadline: Friday, January 23, 2009**

**Information/Registration:** Register to attend and pay by credit card online at [www.bsces.org](http://www.bsces.org). Search for this program under Events. Click on Events then BSCES Events, locate and click on the program name and on the next page click Learn More. You can also register by contacting Wayne Siladi at 617/250-4177 or at [wsiladi@ma.wai.com](mailto:wsiladi@ma.wai.com). Cancellations received after January 23, 2009 and no-shows will be billed.

Thursday, January 29, 2009

## **Underwater Inspection: What Lurks Beneath the Surface?**

**David Porter**

Childs Engineering

**Bryan Jones**

Ocean & Coastal Consultants

**Radisson Hotel, 200 Stuart Street, Boston, MA**

**5:30 PM Social/Registration; 6:30 PM Dinner; 7:00 PM Presentation**

**\$50 Members, \$60 Non-Members**

**\$40 Public Sector Members, \$50 Public Sector Non-Members**

**\$40 Senior Members (65+), \$25 Student Members**

Waterfront structures are subject to a destructive array of physical, chemical and biological attacks. The resulting damage is often undetectable from the surface even when structural integrity is compromised. This presentation explains what is eating away at waterfront structures and how the extent of damage can be determined. Topics include current technologies used by engineer divers when inspecting waterfront structures, regulations covering dive inspections and case studies illustrating how structures deteriorate underwater. An update on the development of ASCE standards for engineer divers will be presented.

**Registration Deadline: Friday, January 23, 2009**

**Information/Registration:** Register to attend this meeting and pay by credit card online at [www.bsces.org](http://www.bsces.org). Search for this program under Events. Click on Events then BSCES Events; locate and click on the program name and on the next page click on Learn More. You can also register by contacting Greg Robbins at 781/749-2530 ext. 205 or at [grobbs@vineassociates.net](mailto:grobbs@vineassociates.net). Cancellations received after January 23, 2009, and no-shows will be billed.

Tuesday, February 4, 2009

## **Pharmaceuticals and Personal Care Products in Water Supplies**

**Nicholas Anastas**

**Massachusetts Department of Environmental Protection**

**Radisson Hotel, 200 Stuart Street, Boston**

**5:30 PM Social/Registration; 6:30 PM Dinner; 7:00 PM Presentation**

**\$55 Members, \$65 Non-Members**

**\$40 Public Sector Members, \$55 Public Sector Non-Members**

**\$25 Student Members and Senior Members (65+)**

This issue has been gaining momentum in recent years and has served to remind us that the water is a limited resource. Wastewater treatment methods and technologies do not remove all of the medications and personal care products used by humans. Recent studies have shown that some of these contaminants have been found in drinking water supplies. Nicholas Anastas will present his research and help separate the fact from fiction on this issue.

### **Registration Deadline: Thursday, January 29, 2009**

**Information/Registration:** Register to attend this meeting and pay by credit card online at [www.bsces.org](http://www.bsces.org). Search for this program under Events. Click on Events then BSCES Events; locate and click on the program name and on the next page click on Learn More. You can also register by contacting Rhonda Forrester at [rforrester@woodardcurran.com](mailto:rforrester@woodardcurran.com) or 207/774-2112. Cancellations received after January 29, 2009 and no-shows will be billed.

Tuesday February 24, 2009



## **Transalpine Tunnels in Switzerland**

### **Professor Herbert H. Einstein**

### **Massachusetts Institute of Technology**

**Radisson Hotel, 200 Stuart Street, Boston, MA**  
**5:30 PM Social/Registration; 6:30 PM Dinner; 7:30 PM Presentation**

**\$55 Members, \$65 Non-Members**  
**\$40 Public Sector Members, \$55 Public Sector Non-Members**  
**\$25 Student Members and Senior Members (65+)**

Three major transalpine rail-tunnels with lengths of 57, 35 and 15 kilometers below overburdens of more than 2000 meters have been and are being built in Switzerland. The history of transalpine transportation and the political decisions leading to the construction of these tunnels will be reviewed first. The talk will then concentrate on the longest, the Gotthard tunnel. After describing the general geologic conditions, the design, and construction involving TBM and Drill-and-Blast excavation will be discussed. The geology ranges from hard and brittle rock to soil-like conditions requiring a variety of design and construction procedures including highly deformable supports. A number of related issues such as the effect of water inflow into the tunnel on settlements of arch dams and the reuse of muck will also be addressed. Cost and time estimates will be discussed in comparison with the actual values, which are strongly affected by factors other than geology. Finally, selected comments will be made on the other two tunnels; the 35-km-long Lötschberg tunnel that has been in operation since December 2007 and the 15-km-long Monte Ceneri tunnel that has started construction.

**Registration Deadline: Thursday, February 19, 2009**

**Information/Registration:** Register to attend this meeting and pay by credit card online at [www.bsces.org](http://www.bsces.org). Search for this program under Events. Click on Events then BSCES Events; locate and click on the program name and on the next page click on Learn More. You can also register by emailing your name, membership status, address and phone to [Ruby.Aguilar@jacobs.com](mailto:Ruby.Aguilar@jacobs.com) or calling 617/532-4383. Cancellations received after the registration deadline and no-shows will be billed.

## **ERNEST A. HERZOG AWARD CALL FOR PAPERS**

### **BACKGROUND**

Ernest A. Herzog was a nationally recognized civil engineer. During his career, he served a term as president of the Boston Society of Civil Engineers Section and was also a fellow of the American Society of Civil Engineers (1987).

Mr. Herzog began his career with Spencer, White and Prentis at the atomic energy facility in Oak Ridge, Tennessee. After World War II, he transferred to a Boston-based firm named Chas. T. Main Inc. Eventually, Mr Herzog joined the firm of Alonzo B. Reed Inc. where he progressed into the highest role of president and remained in that role for 20 years thereafter.

While in the transportation field, Mr. Herzog was actively involved in the design and construction of the monorail used at the 1962 Seattle World's Fair. This monorail, which is still in use today, has served as the prototype for several other monorail systems including those at Disney Land in Anaheim, California, Disney World in Orlando, Florida, and one in Tokyo, Japan. In fact, Mr. Herzog was a strong and persistent advocate of a monorail system to serve Boston's south shore communities to relieve the traffic congestion on the Southeast Expressway.

In 1973, Mr. Herzog co-founded Herzog-Hart, a full-service engineering firm that specializes in the design and construction of research and production facilities for the pharmaceutical and process industries.

Mr. Herzog was well known for his generous support of and encouragement to young college students and young professionals just at the onset of their careers. He lectured at Tufts University, Dartmouth College, University of Massachusetts, and Northeastern University. He also wrote and published numerous papers, particularly concerning the effects of transportation systems on society.

In memory of Mr. Herzog's commendable career achievements, the Ernest A. Herzog Award was established to promote an awareness of and to recognize innovative improvements to infrastructure.

### **PAPER GUIDELINES**

The award recipient shall submit a paper that identifies an infrastructure project, innovation, or idea in which the author was actively involved in as an owner, advocate, engineer, or end-user. The project shall have dramatically improved the service provided to the public through the improvement. Areas of innovation may include design, construction, operation, maintenance, or financing.

## **RULES**

1. The recipient shall submit an original paper that describes the nature of the candidate project, innovation, or idea. The paper should not be less than 1,000 words and not more than 4,000 words. It should highlight the benefits from the project. Graphic material including photographs should be included to highlight specific areas of the project. The paper may have been previously published in a journal.
2. 3 copies of the papers shall be submitted to:  
BSCES  
The Engineering Center  
One Walnut Street  
Boston, MA 02108-3616  
Attn: Infrastructure Group,  
Herzog Award Committee

An electronic copy should also be sent to [aj.cardini@dmjmharris.com](mailto:aj.cardini@dmjmharris.com)

Deadline for submittal: March 13, 2009

3. The recipient may be invited to give a short presentation on the paper at the BSCES Infrastructure Group Online Bridge Design Contest Awards Celebration in May 2009. Original papers may be submitted (with authors permission) for publication in the semi-annual BSCES Journal.

## **REVIEWERS**

The BSCES Infrastructure Group Herzog Award Competition Subcommittee.

## **EVALUATION CRITERIA**

Topics for the papers shall be related to infrastructure. Papers are evaluated by the reviewers on the following criteria: technical writing (40%), technical significance (15%), uniqueness of concept (15%), public benefit (15%), cost effectiveness (15%).

## **AWARD**

The award presentation will be made at the BSCES Infrastructure Group Online Bridge Design Contest Awards Celebration in May 2009. The recipient will receive a monetary award and a memorable gift.

## **THE BSCES INFRASTRUCTURE GROUP**

Infrastructure is defined as all existing public and publicly regulated facilities necessary to support social and economic need including, but not limited to, the following: streets and highways, bridges, railroads, mass transit, airports, seaports, water supply and distribution systems, wastewater collection and treatment systems, stormwater collection systems, dams and flood control facilities, solid waste disposal systems, parks, electric facilities, natural gas facilities, communications systems and buildings. The BSCES infrastructure group has the mission of spreading awareness of infrastructure within and beyond the engineer community. Anyone wishing to join the Infrastructure Group should contact our chair Robert Rottenbacher at [Robert.Rottenbacher@cityofboston.gov](mailto:Robert.Rottenbacher@cityofboston.gov). Meetings are held on the second Tuesday of each month.