Engineers Week 2007

February 18-24, 2007

E-Week 2007 Partners With New PBS Engineering Reality Competition Show That Educates And Inspires

"This is an age when too many children begin to consider themselves 'no good' at math or science or both...Design Squad shifts the emphasis from chore to challenge...

When they understand the necessary – and fun – roles that math and science play in achieving their goals, the more likely they will be to embrace these subjects."

Marketers say "tweens" – children between nine and 12 – are a particularly difficult audience to reach, but an upcoming live-action TV series where engineering is the star appears to be right on target. For 2007, Engineers Week partners with WGBH Boston on Design Squad, the new PBS program that uses reality television to introduce kids and families to the engineering design process.

It's educational, uses real life applications of math and science, and meets the toughest teaching standards. Design Squad features two teams of real high school kids who use their problem-solving skills to design, construct, and test engineering projects such as a machine that automatically makes pancakes, or a motorized red wagon that can reach speeds up to 20 mph. The brainchild of ZOOM producers WGBH Boston, Design Squad premieres the first of its 13 episodes on PBS stations nationwide during Engineers Week 2007.

To kick off the effort, the Engineers Week Foundation and WGBH will host a Design Squad Training Summit for its partner organizations and industry leaders on Thursday, November 9 at the National Academy of Engineering in Washington, D.C. At the summit, WGBH outreach staff will review the Design Squad TV series and web site resources including clips from the show, short video profiles of real engineers, and Event and Educators Guides. Summit attendees will, in turn, work with volunteer engineers across the country to support their national and regional outreach efforts and ongoing Engineers Week activities in classrooms, libraries, museums and science centers. More information about Design Squad and its outreach campaign can be found online at www.pbskids.org/designsquad.

Tyco Electronics, 2007 Engineers Week Co-Chair, has made a contribution to Design Squad. Dr. Juergen W. Gromer, Vice Chairman and President of Tyco Electronics, says his company decided to fund the Design Squad initiative because of its unique appeal to youngsters. "This is an age when too many children begin to consider themselves 'no good' at math or science or both," says Gromer. "Design Squad shifts the emphasis from chore to challenge, making it more likely that a student will rise to the challenge as compared to being defeated by the prospect of an insurmountable task. When they understand the necessary – and fun – roles that math and science play in achieving their goals, the more likely they will be to embrace these subjects."

Major funding for Design Squad is provided by the National Science Foundation and the Intel Foundation. In addition to Tyco Electronics, further funding is provided by the National Council of Examiners for Engineering and Surveying, The Harold and Esther Edgerton Family Foundation, the Noyce Foundation, Intel Corporation, the American Society of Civil Engineers, and IEEE. ■

Getting Through the Construction Phase

Who's In Charge Here?

Kurt V. Leininger, P.E., BCM Engineers

I'm often reminded of the many tenets of professional engineering practice that one encounters only during the construction phase. The following probably refers more to publicly-bid projects (which is my field), than to private or commercial, or design-build, types of projects, but the overall designer-owner-contractor relationship is always worth some thought regardless of the actual bidding process used.

During a design phase, the engineer attempts to meticulously outline the scope of the work on drawings and specifications. During bidding, addendums are issued to clarify contractor questions, and to button up the "loose ends" that are always uncovered after the design is finally bound together in one set of documents. During these phases, the engineer is in charge and at full liberty to revise previous instructions, or impose new or revised conditions on the subsequent construction phase.

Once the Owner receives bids and awards construction contracts, the project takes on a different tone. The contractor is now in direct control of the work. The engineer remains on the sideline as sort of a "coach" and overseer to serve the owner's interest as spelled out in the engineer-owner agreement for services during construction. When questions arise, such as the contractor requesting more detailed information or submitting a request for change order or time extension, the engineer provides information and recommendation for a final decision by the owner.

If an adversarial relationship develops, a common complaint one can hear from a contractor is, "We're not the engineer!" The engineer can equally respond, "We're not the contractor!" Such epithets don't resolve anything, but they do indicate the need to understand the necessary role of each party during construction and the need for teamwork.

Regardless of the best approach to managing the engineer-contractor relationship, conflicts are difficult (if not impossible) to avoid. The engineer and contractor each have their respective contractual relationship with the owner, but no contract with each other (except under a "design-build" type of project). The contractor must take the lead under the design engineer's oversight in protecting the owner's interests.

Even so, some engineers might still prefer to tell the contractor to "follow the specs" with no exceptions. Others might start with this tack, then give a little if the owner can get money back after the contractor proposes a less costly method. In my view, the owner has a right to expect a teamwork approach, with conflicts resolved by the time-tested process of full disclosure, persuasion and negotiation. "Full disclosure" has to work both ways. Contractors must provide their "schedule of values" tabulating the costs allocated to each element of construction, and engineers must provide the project criteria and "basis of design" for elements that the contractor may propose executing in a different way than indicated by the design.

A teamwork approach keeps the contractor in the driver's seat with the freedom to submit alternatives to the design, with the understanding that the engineer will consider and recommend them to the owner as appropriate. The need for the owner to "get money back" is dealt with case-by-case, rather than as a pre-condition that may foster an adversarial atmosphere and prevent contractors from submitting any "better-idea" options. I know from experience that good construction people can often find an easier way to accomplish a difficult task than can the design engineers with their multiple sketches.

Of course, most contractors are looking for alternatives that can reduce their cost (with minimal credit to the owner), and the engineer has a responsibility to protect the integrity of the design while remaining open to possible alternatives that could reduce the project time or cost. (Any alternative's cost reduction must include future operation, maintenance and replacement, as well as installation cost.) If a contractor's first transmittal for the project involves requests for construction changes, or substitution of equipment suppliers, their motives can rightly be questioned. This approach can cause a lack of trust that will balloon into eventual dissent and an adversarial relationship, until some milestone is reached that requires everyone working together for the overall goal.

Regardless of the project delivery or construction management approach used, design engineers should also remember the multiple purposes involved in communicating with contractors and reviewing construction submittals. One is to verify the quality of project execution in accordance with design specifications. A second purpose is to give the engineer a "final chance" to clarify or correct any design questions, before it's cast in concrete. (Only engineers with too much pride-of-authorship in their design would not recognize this as an opportunity.) A third purpose is to allow for considering new products or methods that were not available

"Construction" continued p. 19

"Risky" continued from p.

should consider both "natural" and "unnatural" solutions. Can a relocation at the end of your lease help avoid business disruption from flooding? What kind of pre-employment screening can you do to assure employees' integrity? What kind of periodic training would help remind employees of your standards? (By the way, are you walking the walk, or just talking the talk?) Should you change your pricing practices so that you have sufficient mobilization funds for the project to stand on its own, without significant operating capital? Do you know what is on the planning commission's agenda in your location? Will they be changing traffic patterns or road grades in a way that could affect you? When the utility is upgrading their equipment, are you providing forward-looking input, or just assessing your current needs? All this foresight is useless if you keep it to yourself, without follow-up and implementation.

As when you evaluated impacts, you are likely to discover that this analysis generates some further additions to your data list. That's not any more surprising here than it was in the last issue, since your analyses continue to move backward up the decision tree.

Now that you have identified your organization's critical assets (Step 1), established performance and operational goals, objectives, and criteria for your critical assets (Step 2), and assessed hazards (Step 3), evaluated the effect of the identified hazards upon your critical assets (Step 4), and designed solutions to deal with identified deficiencies (Step 5), you have a complete risk assessment. This time, I think that you should take the afternoon off. After all, your hard work has helped you prevent your business from being a Risky Business. ■

The "Risky Business" column offers articles covering liability from both the legal and engineering perspective. Mrs. Bowman's articles share general information and should not be relied upon as professional legal advice of either a general or specific nature. Rebecca Bowman is a civil engineer-attorney in solo private practice in McMurray, Pennsylvania for more than 25 years. Her practice is a certified woman-owned business. Her B.S. in Civil Engineering is from the University of North Dakota.

"Construction" continued from p.

or not yet on the marketplace during design, as well as allowing for contractor-proposed alternatives discussed above. A fourth purpose, often overlooked in a hasty review of contractor submittals, is to give the construction inspector, as well as the contractor's personnel, the most thorough set of instructions possible to do their jobs. The inspectors (or "resident engineers") are those with day-to-day responsibility for verifying design compliance and construction quality.

So the next time you review a contractor's submittal, put yourself in the shoes of the inspector or superintendent who reads your comments and is charged with seeing the design executed to best serve the owner's interests. Mark your comments so that he or she will understand the purpose of the submittal and what should be verified during field inspection. Even if the contractor is not a team player, any project's success requires that the owner's design and construction inspection staff work together as a team.

And that's the key – teamwork to execute the project. A teamwork approach is no doubt easier to use in a design-build type of project. But it can also work with traditional design-bid-build projects given mutual trust among all parties from the beginning. Senator Arlen Specter's autobiography, Passion for Truth, recalls Earl Warren's admonition to his legal team at the start of the investigation of the assassination of JFK: "Your client is the truth."

Similarly, I would say that during construction, "Your client is the success of the project." ■

PSPE Calendar of Events

29 30 1 2

2006

October 19-21 **NSPE Northeast Region Meeting**
The Saratoga Hotel & Conference Center
Saratoga Springs, NY

October 20 **Nominations to PSPE Nominating Committee for 2007-2008 PSPE State Officers**

2007

January 20 **PSPE Board of Directors Meeting**
Harrisburg, PA

March 23-24 **Pennsylvania MATHCOUNTS Competition**
Harrisburg-Hershey Sheraton Hotel

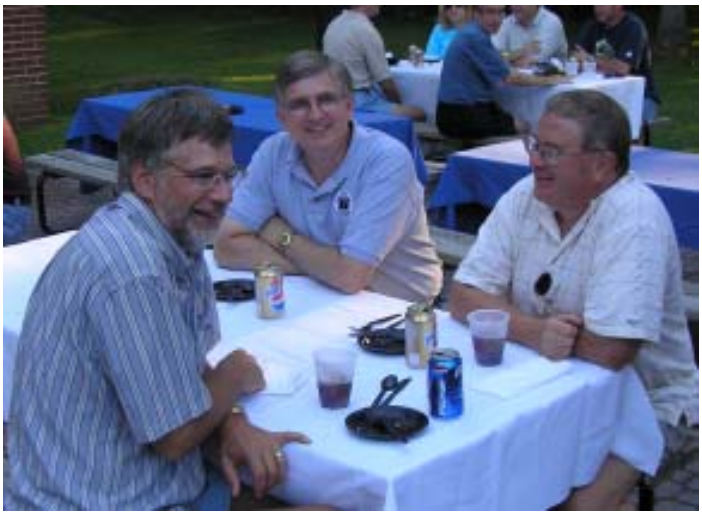
May 31 - June 2 **PSPE Annual Conference**
The Inn at Reading
Reading, PA

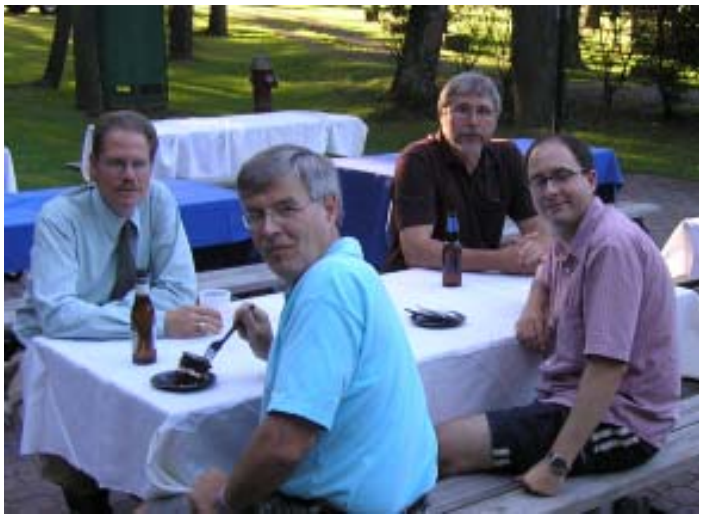
Johnstown Chapter Spotlight

The Johnstown Chapter Annual Picnic was held at the Greater Johnstown Water Authority, North Fork Dame, Picnic Grove on August 16, 2006. Attendance was great with over 80 engineers, of which less than half were members of the chapter. John Bradshaw, PE, PSPE Central Region Vice President joined the gathering.

The picnic started the chapter's program year. As in the past the chapter works with other local professional orgaizations (e.g. IEEE, the American Welding Society, ASHRAE, etc.) when planning the Engineers Week Banquet in February. This facilitates join meetings throughout the remainder of the year as well.

The chapter is in the midst of planning for the regional MATHCOUNTS competition in February. The University of Pittsburgh at Johnstown is generously contributing both facilities and faculty to help make this competition a success. Amy Miller, Assistant Professor of Mechanical Engineering Technology at UPJ, and Linda Tully, Mathematics Instructor at UPJ, serve as co-coordinators for the chapter competition. ■





Johnstown Chapter Officers 2006-2007

President
Rodney A Wolfe PE
CJL Engineering
rwolfe@cjlengineering.com

Secretary
David F Bacci PE
HF Lenz Co
dbacci@hflenz.com

Treasurer
Robert J Ford Jr. PE
HF Lenz Co
rford@hflenz.com

On Capitol Hill

John D. Wanner, CAE

Gannon Bills Get Public Airing

The House Professional Licensure Committee's Task Force on Victims' Rights conducted a public hearing on House Bills 2101, 2102, and 2103 on August 29 in Harrisburg. HB 2101, to be known as the Professional and Occupational Affairs Recovery Act, establishes the Professional and Occupational Affairs Recovery Fund as a mechanism for individuals aggrieved by professional or occupational licensees to recover losses incurred after discipline has been levied by a licensing board; provides for power and imposes duties and makes a repeal. The fund imposes a biennial license renewal fee of $10 in addition to the normal biennial renewal fee charged by a licensing board, and also sets a disciplinary fee for a licensee disciplined by a licensing board in addition to any penalty assessed. HB 2102, the Professional and Occupational Affairs Victims Advocacy Act provides for advocacy for victims of improper action by licensed professionals; and imposes functions on the Commissioner of Professional and Occupational Affairs and the Bureau of Professional and Occupational Affairs. The act provides for the ability of a citizen affected by the actions of a licensee to receive assistance in having his or her interests represented before a licensing board during disciplinary hearings against the licensee. The act provides for the creation of a Commissioner, who will be able to appoint victim advocates and counsels, among other duties. The act also establishes the position of Victim advocate within the bureau of the Office of Victim Advocate.

HB 2103 provides for the offense of intimidation of witnesses or victims, retaliation against witness, victim or party and for retaliation against prosecutor or judicial official. The bill defines various terms including "disciplinary proceeding", "licensing board", "professional or occupational license", in regards to intimidation or retaliation against victim, witness, prosecutor or judicial official. The bill would add to the definition of "victim", a person who has filed a complaint in the Department of State against the holder of a professional or occupational license. Additionally, the bill defines "witness" as any person who having knowledge of the existence or nonexistence of facts or information relating to a disciplinary proceeding or investigation.

Basil Merenda, Commissioner of the Bureau of Professional and Occupational Affairs (BPOA), told committee members, "There is no doubt that the intent of these legislative initiatives are consistent with Governor Rendell's vision of making BPOA and its 27 licensing boards more accessible, responsive and accountable to the legislature, licensees and, most importantly, to the public." He added that there are some problematic areas in the legislation which he said his office and staff would be willing to work directly with the committee staff to address. Merenda explained his concerns with the eligibility provisions in HB 2101 on who may be eligible to seek compensation from the fund established in the legislation and how eligibility is to be determined and how it should be done. He suggested the committee include a provision requiring a claimant to prove he or she is not the spouse of the debtor or the personal representative of that spouse, as is the case with the Real Estate Recovery Fund. Also he suggested another provision similar to the one found in the Real Estate Fund should be added which would specify that a claim must be based on an activity or transaction for which a license is required. Merenda also explained the need that the legislation specifies that recovery from the proposed fund shall be limited to losses from bad acts of the licensee as a licensee.

Another area of concern expressed by Merenda was the lack of a provision in HB 2101 that would permit a consumer-claimant to file a claim for compensation from the fund based on a civil or criminal complaint initiated by the claimant that resulted in a civil judgment or criminal conviction. He said permitting a consumer to file a claim based on these two grounds would provide the consumer an additional basis for relief because under the legislation the consumer is limited to filing a claim based on the facts underlying the bad acts of the licensee. Merenda told committee members, "I bring this issue to the Committee's attention because otherwise a very contradictory result could occur." He explained how a person victimized by a licensee would not be permitted to recover from the proposed fund if the BPOA prosecutor would decide to move against a licensee not on the facts underlying the bad acts of the licensee but rather on the basis of a criminal conviction against the licensee. Merenda suggested the committee add a provision requiring the filing of claims within a specified period of time after the alleged violation occurred in order to qualify to file a claim for payment from the proposed fund.

Merenda expressed concern with the provisions of HB 2102 establishing within BPOA a Victim Advocate and making the BPOA Commissioner the supervisor of the Victim Advocate. He told the committee members "our lawyers have informed us that as it stands now, HB 2102 would be in violation of constitutional due process safeguards all of our licensees have pursuant to the Lyness' decision if the Victim Advocate, which effectively serves a prosecutorial role, is placed under the supervision of the BPOA Commissioner." Merenda further explained it is a violation because the BPOA Commissioner sits as a voting member in disciplinary cases in 25 of

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Political Action Committee Report

2006 Sponsor Recognition

Many thanks to the following individuals who contribute to the PSPE Political Action Committee fund. The PAC fund allows PSPE lobbyists to influence bills on behalf of PSPE members. PSPE is very active at the Pennsylvania state capitol. Each session we monitor legislation that could impact PSPE members in their profession. Your contributions are critical as PSPE affects bills such as those found in the article "On Capitol Hill."

To receive monthly legislative updates from the PSPE listserv, simply send an e-mail message to jennifer@wannerassoc.com with the subject: "add me to the monthly update." To support to Political Action Committee, send a PERSONAL check to PSPE/PAC, 908 N. Second Street, Harrisburg, PA 17102. (PAC funds cannot accept corporate checks.)

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Send check to: PSPE/PAC, 908 N. Second Street, Harrisburg, PA 17102.

Thank you!

"Capitol" continued from p. 5

the 27 licensing boards. He suggested the committee correct the conflict with the Commonwealth Attorneys Act as it relates to the hiring of legal counsel in the Victims Advocate Office and provide authority to the Victim Advocate to assist not only victims of licensees, but also to permit the Advocate to assist individuals who are victimized by anyone engaged in the unlicensed practice of a profession.

Merenda described HB 2103 as "a solid piece of legislation". He recommended the committee consider adding a provision to cover intimidation of and/or retaliation against victims and witnesses in cases involving the unlicensed practice by individuals not licensed by any of BPOA.s licensing boards. Also he asked for the addition of a provision to add licensing board legal counsel to the list of BPOA judicial officials and prosecutors against whom intimidation is prohibited.

Rep. Major asked if the Lyness concerns raised by the provisions in HB 2102 could be addressed by adding an amendment placing the Victims Advocate Office under the supervision of the Secretary of the Commonwealth. Merenda said he believes it would.

Ellen Renish, chair of the Legislative Committee of the Pennsylvania Association of Realtors, described the concept of HB 2101 as "tragically ill conceived" and that it "would severely impact Realtors in the Commonwealth." She expressed the following concerns with the legislation:

- It will be costly to licensees.
- It will encourage unnecessary and frivolous licensing complaints.
- It undermines the civil law system.
- It undermines the Real Estate Licensing and Registration Act.
- It denies licensees due process.
- It makes the BPOA Commissioner judge and jury.
- It will be a detriment to the public good.

Renish told committee members, "We believe that the envisioned process would encourage the filing of frivolous licensing complaints, severely lacks due process for the defense of the licensee and creates a financial strain on all licensees through unnecessary awards of compensation and through the creation of a new bureaucracy within the BPOA."

The following groups submitted written comments: The Hospital & Healthsystem Association of Pennsylvania, AARP Pennsylvania, ACLU of Pennsylvania, and the Pennsylvania Institute of Certified Public Accountants.

Department of Health Announces Adoption of the 2006 Edition of the Guidelines for Design and Construction of Hospitals and Health Care Facilities

The Department of Health announced it will adopt the 2006 edition of the ''Guidelines for Design and Construction of Hospitals and Health Care Facilities''. As of February 3, 2007, the Department will apply these new requirements to all plans for new construction or renovations for hospitals and ambulatory surgical facilities. The established procedure requires construction plans to be submitted and the issuance of a final construction plan approval by the Division of Safety Inspection prior to the start of any new construction, renovation, modernization or changes in usage. Anyone interested in purchasing a copy of the 2006 edition of the ''Guidelines for Design and Construction of Hospitals and Health Care Facilities'' may telephone the American Institute of Architects' (AIA) Bookstore (small orders) at 1-866-SHOP-AIA, or online at www.aiabookstore.com. Questions regarding this notice should be directed to Peter P. Petresky, Director, Division of Safety Inspection at (717) 787-1911.

Legislative Activity

SB 1000 RE: Home Improvement Consumer Protection Act (by Sen. Tommy Tomlinson, et al)

States that no person would hold himself out as a contractor nor would a person perform any home improvement without first registering with the Bureau of Consumer Protection in the Office of Attorney General. The bill states that the bureau would maintain a toll-free telephone number from which a caller can obtain information as to whether a contractor is registered with the bureau. The bill outlines the procedures for registration as a contractor, and requires that each application for a certificate for a home improvement contractor or renewal of that certificate would be accompanied by a fee of $50, and would be renewed on a biennial basis. After completion of the application and payment of the fee, the bureau would issue the home improvement contractor a registration certificate identifying the name of the individual contractor, name and address of the business and a registration number. The legislation also outlines the requirements in home improvement contracts. The bill also provides for the offense of home improvement fraud, and provides for penalties. Lastly, registration under this act would preclude any requirement of payment of a fee or registration of any home improvement contractor by any political subdivision. Political subdivisions would be permitted to require building permits and local enforcement of the building code for that political subdivision, for which a reasonable fee may be charged.

Passed Senate, 6/26/2006 (36-14)

Referred to House Consumer Affairs Committee, 6/27/2006

Informational meeting held in House Consumer Affairs Committee, 8/23/2006

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SB 1104 RE: One-Call System (by Sen. Tommy Tomlinson, et al)

Amends the Underground Utility Line Protection Law further providing for the title of the act, for definitions, for duties of facility owners and for the duties of the One Call System; providing for liability, fees and governance of the One Call System; further providing for applicability; providing for the duties of project owners and for rights of the Auditor General; further providing for the governing board of the One Call System, for fines and penalties and for applicability to certain pipeline systems and facilities; providing for a voluntary payment dispute resolution process, for best efforts, for removal or tampering with a marking, for determination of position and type of lines and for impairment of rights and immunities; further providing for expiration; repealing provisions of the Propane and Liquefied Petroleum Gas Act, concerning the prohibition of certain liquefied petroleum gas facilities or distributors from being subject to the Underground Utility Line Protection Law; and making an editorial change.

Passed Senate, 6/26/2006 (50-0)

Referred to House Consumer Affairs Committee, 6/27/2006

Informational meeting held in House Consumer Affairs Committee, 8/24/2006

New Bills Introduced

No bills of interest to PSPE were introduced in the past month. The legislature is in recess until late September.

2006 House Fall Session Schedule

October 2 (non-voting), 3, 4, 16, 17, 18, 23, 24

November 13, 14, 15, 20, 21, 22, 27 (non-voting)

Fall Senate Fall Session Schedule

October 3, 4, 16, 17, 18

Post-election Senate schedule has not been announced

Session Ends on November 30

Copies of all bills of interest are available from the PSPE office, or they can be accessed via the Internet at www.legis.state.pa.us/WU01/LI/BI/billroom.htm ■

Pennsylvania Superior Court Expands Holding of Bilt-Rite

Allows Contractors to Sue Utilities for Downtime Caused by Poorly Marked Underground Lines

Kevin J. McKeon, Esquire

When a contractor hits an unmarked underground utility line and has to stop work, or is forced to slowly and carefully hand-dig to locate a poorly marked line, can the contractor sue the utility to recover downtime costs? Yes.

On July 7, 2006, the Superior Court in Excavation Technologies, Inc. v. Columbia Gas Company of Pennsylvania, ruled that contractors can sue utility companies to recover downtime equipment and labor costs caused when a utility is negligent in its efforts to comply with the Pennsylvania One Call Act. The decision expands on the precedent created by the Pennsylvania Supreme Court last year in Bilt-Rite Contractors, Inc. v. The Architectural Studio, which allowed contractors to sue architects and engineers for negligent misrepresentations in plans and specifications.

Several days prior to excavating to install a new waterline, the contractor in Excavation Technologies had made its One Call, but hit several gas lines and had to carefully search for others, alleging that some lines were improperly marked while others were not marked at all. The contractor filed suit against the gas utility seeking to recover $90,000 in downtime costs for equipment and labor, alleging that the utility negligently misrepresented the location of its lines.

In defense, the gas utility claimed that unlike the architect in Bilt-Rite, it was not in the business of supplying information for the guidance of others, such that it should be immune from liability and protected by the economic loss doctrine. Ironically, this doctrine would protect a utility from paying purely economic damages, like downtime costs, unless a contractor also had personal injuries or property damage from hitting a poorly marked line.

The Superior Court found that because the One Call Act created a statutory duty requiring the utility to mark its lines, part of its business was to supply location information that others would rely upon. Much like the exception created in Bilt-Rite, the Superior Court found that "the economic loss doctrine is inapplicable" to protect the utility against the contractor, and remanded the case to the trial court to give the contractor the opportunity to prove its allegations.

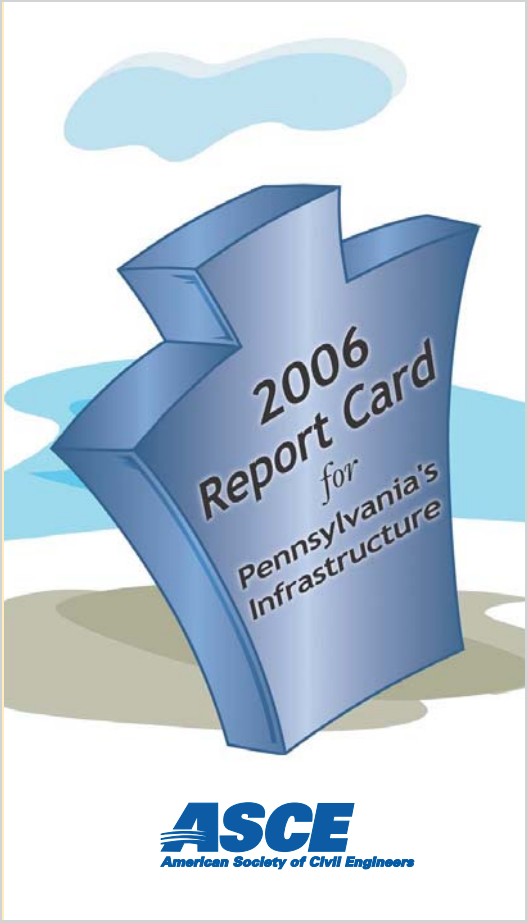
Of course, the gas utility is expected to try to appeal to the Pennsylvania Supreme Court. For the time being however, and unless and until the Supreme Court agrees to hear the case and overrule the Superior Court, it is clear that contractors can sue utility companies for downtime damages caused when a utility negligently fails to accurately mark its underground lines in accordance with the One Call Act. ■

Kevin J. McKeon, Esquire
Watt, Tieder, Hoffar & Fitzgerald, LLP
kmckeon@wthf.com

2006 Report Card for Pennsylvania's Infrastructure

A Continuing Effort

Christopher J. Menna, P.E.



Background

Over a three-month period (February through April 2006), the American Society of Civil Engineer's (ASCE) Pennsylvania Sections gathered background information for each of the infrastructure categories – including reports, studies, surveys and other research materials – from professional societies, non-profit associations, and local, state and federal agencies. (Visit www.pareportcard.org/resources for a complete list). More than twenty area civil engineers leveraged these materials to develop a detailed picture for our region, examining the condition of our infrastructure, its performance, funding and capacity versus need. Preliminary grades were then assigned to each category.

Before making final assessments, the Pennsylvania Sections took into account funding already budgeted to address the problems, as well as infrastructure renewal projects in progress. Grades were then adjusted accordingly.

On May 9, 2006, the District 4 Sections of the American Society of Civil Engineers —Central Pennsylvania, Lehigh Valley, Philadelphia and Pittsburgh— hosted simultaneous press conferences throughout the state, launching the first Report Card for Pennsylvania's Infrastructure. ASCE has provided regional information, assessments and recommendations for nine key infrastructure areas, including Aviation, Bridges, Dams, Drinking Water, Navigable Waterways, Rail, Roads, Transit and Wastewater.

Getting the Initial Message Out

Website traffic increased dramatically in the days surrounding the press event, with 1,078 hits the day before, 8,180 hits the day of, and 4,570 hits the day after the events..

During and after the press conferences, several ASCE members were interviewed for Report Card-related stories, including Gregory Scott, John Menniti, and John Kovacs (ASCE Pittsburgh); Christopher Menna (ASCE Philadelphia); Cheryl Rishcoff (ASCE Lehigh Valley); and Peter Terry (ASCE District 4).

Due to budgetary limitations, the Pennsylvania Sections relied on a quick web search and Bacons reports from National to track media coverage. According to our calculations, we received more than 4.2 million media impressions from print media alone. The Associated Press office in Philadelphia picked up the story, and we also received coverage on 14 television stations (including CBS National and PCN), six radio stations, and 14+ online outlets (including CapitolWire.com, MSNBC.com, and Yahoo! Small Business).

Lastly, our efforts did generate a media response from the Pennsylvania Department of Transportation. Though it did not agree with all of our findings, the

Department did appreciate our efforts in trying to raise awareness for infrastructure.

A Call to Action to Our Fellow PSPE Members

All PSPE members are strongly encouraged to visit the Report Card website – www.pareportcard.org so that that they can be informed on what progress has been made to date. The District 4 Sections would like PSPE constituents to join in our effort and help communicate our message to the general public, interest groups, and the Pennsylvania Legislature.

What the District 4 Sections are Doing Now

The group continues to monitor infrastructure activity through out the state. Planning meaningful activities amongst the Sections and government officials is ongoing. Each Section intends to testify at the upcoming Governor's Transportation Reform Commission Hearings.

What You Can Do Now

Interested PSPE should coordinate any Report card advocacy efforts with any of the four local ASCE Sections. Contact information is provided within the website. Transportation is an especially hot topic now. The Governor's Transportation Reform Commission has been working for the past few months and will be finalizing its report this November. Now is the time to contact your local representatives. The report Card is a powerful tool that can be wielded by anyone. The vehicle for change can be in your hands. Please step forward and use it!

Down the Road

The District 4 Sections are seriously considering planning a one-day visit to Harrisburg in the next few months. The group is looking to partner with PSPE and other technical societies. The ultimate goal would be to have a legislative briefing for all visitors and then have teams of two to three engineers visit every state representative The purpose would be to personally hand-deliver and discuss the 2006 Report Card. Additionally, we hope to reinforce that engineers should be recognized and regularly called upon to help make infrastructure policy and funding decisions. Interested PSPE members who would like to participate in a future Harrisburg Visit, please contact Peter Terry at pete@bencivil.com or Christopher Menna at Christopher.Menna@phila.gov.

In summary, a wonderful effort has been started by a dedicated group of engineers. The District 4 Sections of ASCE thank PSPE for its support and look forward to working together to improve the quality of life for all Pennsylvanians. ■

2006 Report Card for Pennsylvania's Infrastructure

Each category was evaluated on the basis of condition and performance, capacity vs. need, and funding vs. need.

A= Exceptional
B= Good
C= Mediocre
D= Poor

Aviation	C-
Bridges	C
Dams	C-
Drinking Water	D+
Navigable Waterways	D-
Rail	B
Roads	D
Transit	D+
Wastewater	D-
Pennsylvania's Infrastructure GPA	D

President's Message

Harve D. Hnatiuk, P.E., F.NSPE

"PSPE never did anything for me."

I heard that statement over the telephone when I called a member who had not renewed his membership in our organization. I was a bit stunned to hear that sentence and responded kindly by saying "I am sorry that you feel that way."

Later that day, I began thinking about that conversation and those remarks really began to irk me. I decided to sit down and write a letter to the person who said that PSPE never did anything for him. I do not know if the individual read the letter and time will tell whether he reconsiders his decision to leave PSPE. Writing the letter though framed some thoughts in my mind and I wanted to share some excerpts with you.

What does PSPE do?

"PSPE has provided, continues to provide and will continue to provide great value to professional engineers in Pennsylvania.

"For example, it was through PSPE's efforts that the preparation of designs for waste water treatment facilities remained solely a project on which a registered professional engineer works. The Sewage Enforcement Officials (SEOs) had attempted to rewrite legislation that defines their roles and responsibilities to include being able to provide such services...which are traditionally provided by civil firms such as the company from which you recently retired.

"Through our monitoring of all legislation to ensure that there is no such infringement of our title and through proactive lobbying efforts when such legislative plans are uncovered, PSPE provides a great service to its members, one that we alone as individuals would be hard-pressed to do.

"You mentioned that you were going to maintain your license. PSPE works to protect that license and has done so since its very beginnings and throughout your career.

"We face battles on at least two fronts now that are similar in scope to the SEO situation."

What's one reason to remain a member of PSPE?

"The more members that we have, the more weight we carry when we work with legislators in Harrisburg and when we go up against and have discussions with other groups who believe that they can do what the existing law says only we can do.

"Every member contributes to this process and reaps its rewards."

During a recent meeting in Harrisburg to discuss Senate Bill 655 with staff members of legislators who are the leaders of the committee that will review and hopefully move the bill to a vote soon, John Wanner and I were asked a number of questions. Two of them were:

"How many members does PSPE have?"

And, "how many professional engineers are there in Pennsylvania?"

Numbers matter in our world. In our case, our most recent statistics reveal that we have about 2300 members and there are well over 17,000 registered professional engineers who live in Pennsylvania. As a state, that puts us about in the middle of the pack in terms of the percentage of PEs who are members of their state's society of professional engineers.

Why should someone who is retired remain a member?

"PSPE also offers retired professional engineers the opportunity to re-engage with their colleagues at any time that it may be desired or necessary. Membership is one way in which to keep your finger on the pulse of the engineering community in which you live."

What else does PSPE do?

Clearly, there are a lot of answers to this question. Here is one that I mentioned.

"Somewhere along the line, someone most likely encouraged or helped Abc Defghijk become Abc Defghijk, P.E. I believe that transition was a valuable one for you, Abc. PSPE promotes this "process," encouraging young engineers and engineers who are more forwardly immersed in their careers to step forward and become registered and to assert and provide readiness for protecting the public welfare and safety."

Every member of every chapter counts and is part of a chorus of voices that stand for everything that is critical to our roles as professional engineers in our community, our state, and our nation.

Thank you for all that you do by being a member of PSPE. ■

Harve Hnatiuk, P.E.
2006-07 PSPE President
215.542.8700 x 133; harvehnat@aol.com

Retrofitting Stormwater Detention Basins

Frank X. Browne, Ph.D., P.E.; F. X. Browne, Inc.

The major source of pollution in the United States today is nonpoint source pollution. And one of the most significant types of nonpoint source pollution is stormwater runoff from existing developed areas.

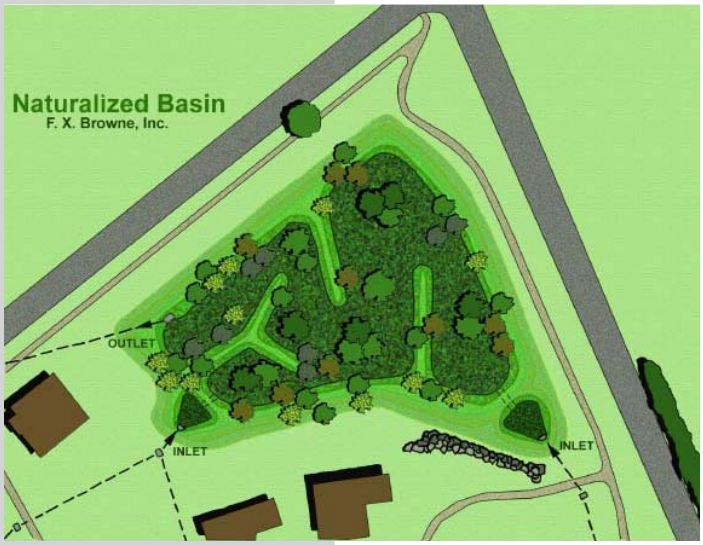


Figure 1 - Naturalized Basin for Planned Residential Community

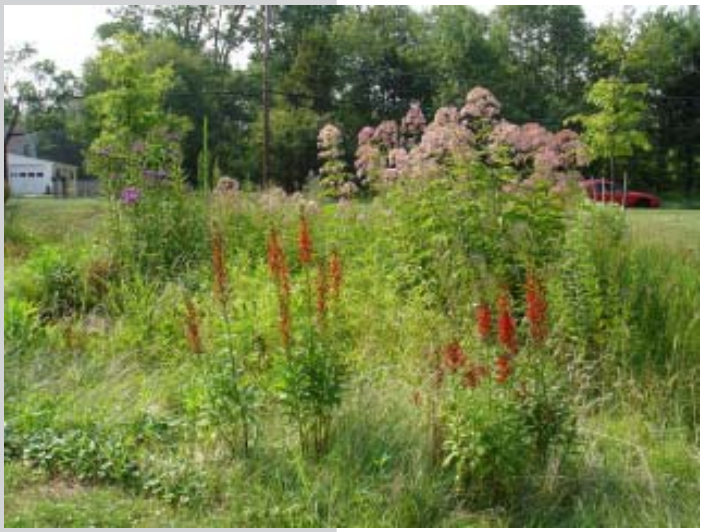


Figure 2 - Constructed Wetland Retrofit at F. X. Browne, Inc. Building

Stormwater runoff from developed areas contains a variety of pollutants including sediments, organic matter, heavy metals, bacteria, and nutrients such as nitrogen and phosphorus. Until recently, the only stormwater control measures used at development sites were conventional detention basins. Conventional detention basins are designed primarily to reduce the peak flow of stormwater runoff. These basins are designed to reduce localized flooding usually by maintaining the peak runoff flow at pre-development conditions. Conventional detention basins do very little to treat the polluted stormwater runoff and improve water quality in the receiving stream. Although they control the peak runoff rate, conventional detention basins do not reduce the volume of stormwater runoff. Large volumes of stormwater runoff enter receiving streams and cause streambank erosion, resulting in increased nonpoint source pollution downstream.

The new Pennsylvania stormwater management manual, presently being completed by DEP, provides criteria for controlling stormwater runoff from new development. These criteria will include peak runoff rate control, runoff volume control, and water quality control. The new Pennsylvania model stormwater management ordinance, being developed concurrently with the stormwater manual, also contains criteria for the control of peak flow rates, runoff volume, and water quality. Presently, the NPDES Part II Permit Application requires a post-construction stormwater management plan that manages the volume and quality of stormwater runoff from new developments. It is clear, therefore, that stormwater from new development will be controlled for peak rates, volume and water quality. The question is, however, how do we provide volume and water quality control for existing developments. One answer is to retrofit existing stormwater detention basins.

There are several ways to retrofit an existing conventional detention basin to provide volume and water quality control. Two of the most common and cost-effective methods are to convert existing detention basins into naturalized basins or constructed wetlands. Although naturalized basins and constructed wetlands can often provide volume reduction and water quality benefits, it is much easier to obtain water quality benefits. In order to achieve volume reduction benefits, the underlying soils in the existing detention basin must have a good infiltration rate and must not be compacted.

A naturalized basin is an attractively landscaped basin containing a variety of native plants including trees, shrubs, and wildflowers. It usually contains a forebay to settle out particulate matter and debris. As shown in Figure 1, a naturalized basin consists of one or more meandering paths to slowly move the water through the basin. These meandering paths have several functions. They reduce the velocity of the water, allowing more contact with the native vegetation. The plants and the epiphytic algae attached to the plants remove pollutants from the stormwater. Another benefit of the meandering paths is the elimination of short-circuiting, a common problem in conventional detention basins. A third benefit of the meandering paths is that the paths in unison with the natural vegetation encourages water infiltration, resulting in groundwater recharge, reduced surface water discharge, and increased stream base flow.

Unlike conventional basins which require frequent mowing, naturalized basins require little maintenance. The most significant maintenance of naturalized basins often occurs after the first growing season. At this time weeding of non-native plants is often needed. Once the native plants grow and dominate the naturalized basins, annual weeding can be significantly reduced or even eliminated. The trees, shrubs, and wildflowers in the naturalized basins also create an aesthetically pleasing environment. In addition to all these human-related benefits, naturalized basins provide wildlife habitat for birds, frogs, turtles, and other wildlife.

Converting a conventional detention basin into a naturalized basin is easy and economical. Listed below are steps needed to convert a conventional basin into a naturalized basin:

- Remove the impervious low flow channel.
- Modify the outlet structure so that smaller storms are held in the basin longer.
- Design and install a forebay to collect particulate matter and debris.
- Design and install one or more meandering paths (depending on the number of inlets to the basin) to slow the water and maximize contact with the native vegetation.
- Ensure that the retrofitted basin has the volume and hydraulic capacity of the conventional detention basin.

Constructed wetlands have all the features and benefits of naturalized basins. The main difference is that constructed wetlands are designed to maintain wetter conditions than naturalized basins. Because of these wetter conditions, the native plants must be more hydrophilic than those in naturalized basins. One problem with small constructed wetlands is maintaining the wet hydrological conditions required. In order to maintain these conditions, it is often required that the underlying soils have a low infiltration rate or even a zero infiltration rate. Because of this, constructed wetland retrofits usually only provide water quality benefits. Unlike naturalized basins that often provide volume control via groundwater recharge and evapotranspiration, constructed wetlands only provide volume control by evapotranspiration. Good examples of constructed wetlands retrofits are the F. X. Browne, Inc. retrofit shown in Figure 2 (and on the cover of this publication) and the Villanova University retrofit shown in Figure 3.

In summary, retrofitting of existing conventional detention basins using either naturalized basins or constructed wetlands can significantly improve water quality in receiving streams. Secondary benefits include the creation of an aesthetically pleasing environment and a habitat for wildlife. ■

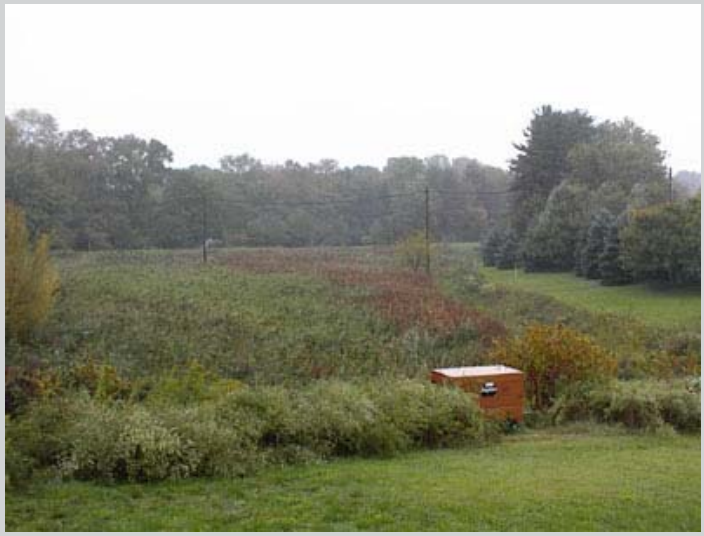


Figure 3 - Constructed Wetland Retrofit at Villanova University

Risky Business

Part V: Some Days the Glass Just might be Half-empty

Rebecca Bowman, Esq., P.E.

This is the final installment of a five-part series examining competent risk assessment. Just to refresh your recollection, there are five components required for a competent risk assessment. First, the organization must define critical assets. Second, the organization must agree on goals, objectives, and standards. Third, the organization must achieve agreement on reasonably foreseeable hazards to those assets. Fourth, the effects of these hazards on the critical assets must be evaluated. Finally, the design of the assets must be adjusted to address and incorporate loss prevention strategies to assure that the goals and objectives can be met in the event of a hazard.

We have talked about the need to set aside positive assumptions to assume the worst. We have explored the process of identifying your organization's critical assets. We have examined the process of setting performance and organizational goals, objectives, and standards for critical assets. We carefully considered the potential hazards and the impacts of those hazards on the critical assets.

After carefully reading the column in the January/February *PE Reporter*, you have completely identified your organization's critical assets, right? And, after carefully reading the column in the March/April issue, you have established the standards for your critical assets, right? After diligently reading the column in the May/June issue, I'm sure that you have completed an assessment of the hazards that could impact your organization. affect your critical assets. I know that you followed my suggestions in the July/August issue about evaluating the impacts of anticipated hazards on your critical assets.

Now, you are ready to proceed to Step 5, fixing the problems. Roll up your sleeves.

As engineers, we are trained problem-solvers. However, we sometimes forget that our skills are equally applicable outside our area of expertise.

This is the fun part. As engineers, we are trained problem-solvers. However, we sometimes forget that our skills are equally applicable outside our area of expertise. This is one environment in which we get to stretch those problem-solving muscles.

Only Step 5 involves developing actual back-up plans. If the Step 3 hazard occurs and the Step 4 anticipated effect on your Step 1 assets occurs, and the result violates your Step 2 goals and objectives, what are you going to do to change the result? Could a $200 uninterruptable power supply avoid the problem? Could having a supplemental supply of fuel reduce downtime to an acceptable level? Could you get monthly back-up disks from your payroll company? Could an off-site storage process protect your data and records? At the same time, what issues of its own does the off-site storage facility have that you need to deal with?

You already have uninterruptible power supplies for your computers. What about for your air conditioning? "Ah," you tell me, "we can sweat a little." I say, "Are you prepared for the computer malfunctions that can start at 78°? What about the employees who count on the dehumidifying effects of air conditioning to prevent an asthma attack?"

You may need to consider political involvement, too. For example, 1988's Disaster Relief and Emergency Assistance Act permits distribution of assistance to government agencies, certain nonprofit organizations, individuals, and families. Neither the Act nor the National Response Plan fully enable or encourage the involvement of private sector companies in relief planning or implementation. Engineers are certainly among those private sector companies whose staff should be able to obtain credentials to participate in immediate relief and restoration efforts. Only through active participation in political, legislative, and planning activities and building of pre-crisis relationships will we be able to fully participate in relief efforts.

The corollary to participation, though, is disclosure. In deciding to enhance participation, your organization must fully explore the implications. The new National Infrastructure Protection Plan calls for our companies to share more information. We have to balance protection of information against the government's need to know that same information to improve crisis response. If you disclose your vulnerabilities and your solutions, could a competitor obtain that information through a Freedom of Information Act request and exploit that information to damage you or to reduce your competitive advantage? The idea is to avoid nasty surprises.

Last time, we considered both "natural" and "unnatural" hazards. This time, you

"Risky" continued p. 19

"Risky" continued from p.

should consider both "natural" and "unnatural" solutions. Can a relocation at the end of your lease help avoid business disruption from flooding? What kind of pre-employment screening can you do to assure employees' integrity? What kind of periodic training would help remind employees of your standards? (By the way, are you walking the walk, or just talking the talk?) Should you change your pricing practices so that you have sufficient mobilization funds for the project to stand on its own, without significant operating capital? Do you know what is on the planning commission's agenda in your location? Will they be changing traffic patterns or road grades in a way that could affect you? When the utility is upgrading their equipment, are you providing forward-looking input, or just assessing your current needs? All this foresight is useless if you keep it to yourself, without follow-up and implementation.

As when you evaluated impacts, you are likely to discover that this analysis generates some further additions to your data list. That's not any more surprising here than it was in the last issue, since your analyses continue to move backward up the decision tree.

Now that you have identified your organization's critical assets (Step 1), established performance and operational goals, objectives, and criteria for your critical assets (Step 2), and assessed hazards (Step 3), evaluated the effect of the identified hazards upon your critical assets (Step 4), and designed solutions to deal with identified deficiencies (Step 5), you have a complete risk assessment. This time, I think that you should take the afternoon off. After all, your hard work has helped you prevent your business from being a Risky Business. ■

The "Risky Business" column offers articles covering liability from both the legal and engineering perspective. Mrs. Bowman's articles share general information and should not be relied upon as professional legal advice of either a general or specific nature. Rebecca Bowman is a civil engineer-attorney in solo private practice in McMurray, Pennsylvania for more than 25 years. Her practice is a certified woman-owned business. Her B.S. in Civil Engineering is from the University of North Dakota.

"Construction" continued from p.

or not yet on the marketplace during design, as well as allowing for contractor-proposed alternatives discussed above. A fourth purpose, often overlooked in a hasty review of contractor submittals, is to give the construction inspector, as well as the contractor's personnel, the most thorough set of instructions possible to do their jobs. The inspectors (or "resident engineers") are those with day-to-day responsibility for verifying design compliance and construction quality.

So the next time you review a contractor's submittal, put yourself in the shoes of the inspector or superintendent who reads your comments and is charged with seeing the design executed to best serve the owner's interests. Mark your comments so that he or she will understand the purpose of the submittal and what should be verified during field inspection. Even if the contractor is not a team player, any project's success requires that the owner's design and construction inspection staff work together as a team.

And that's the key – teamwork to execute the project. A teamwork approach is no doubt easier to use in a design-build type of project. But it can also work with traditional design-bid-build projects given mutual trust among all parties from the beginning. Senator Arlen Specter's autobiography, Passion for Truth, recalls Earl Warren's admonition to his legal team at the start of the investigation of the assassination of JFK: "Your client is the truth."

Similarly, I would say that during construction, "Your client is the success of the project." ■

PSPE Calendar of Events

29 30 1 2

2006

October 19-21 **NSPE Northeast Region Meeting**
The Saratoga Hotel & Conference Center
Saratoga Springs, NY

October 20 **Nominations to PSPE Nominating Committee for 2007-2008 PSPE State Officers**

2007

January 20 **PSPE Board of Directors Meeting**
Harrisburg, PA

March 23-24 **Pennsylvania MATHCOUNTS Competition**
Harrisburg-Hershey Sheraton Hotel

May 31 - June 2 **PSPE Annual Conference**
The Inn at Reading
Reading, PA