

Working Together... Making it Better

By Joe McMahon, P.E., CEO



Among the joys of being founder and CEO of a dynamic and growing engineering firm is watching the people

grow. I have shared my feeling before that a company is its people — every one of them.

For 20 years, McM has had annual planning sessions, where each staff member is given an opportunity to express their opinion. The initial planning session involved about eight of us sitting around a table eating pizza.

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Challenges Facing the Engineering Profession

by Rod Plourde, Ph.D., P.E., President

In our last McMahon in Motion newsletter, I cited two major challenges facing the engineering profession today. I addressed the first challenge, solving the contradiction between the availability of experienced out-placed/downsized engineers, versus the shortage of new graduate engineers, in some detail. In this article, I will address the second major challenge, finding an acceptable middle ground between generalized and specialized engineering education.

A new model law for licensing

Several national engineering societies are working with the National Council of Examiners for Engineering and Surveying (NCEES) to implement, over time, a new model law for professional engineering licensure. Like today's requirements, a new model law will require a combination of education, experience, and successful passage of licensure exams, but the timing and mix of these requirements may be different. The success of changes to the model law will depend on buy-in

from the profession, approval from NCEES member state boards of registration, and buy-in from state legislators to actually change their laws.

Middle ground between generalists and specialists

At issue from the education aspect is the fact that in recent decades many college engineering curriculums have decreased the total number of credits required for graduation. This action has resulted in either, or both, technical courses and nontechnical courses, such as writing, speech, and ethics, being dropped, hence the specialized versus generalized conflict.

To be a complete engineer, a graduate engineer should have sufficient technical and nontechnical educational background. In fact, some professional societies are advocating a "fifth year" to accomplish both of these educational objectives.

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On May 13-14, 2004, McMahon held a companywide annual planning session, as 107 staff from the regional offices gathered in PA to engineer a successful future for our firm.



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The Democratic National Convention Drives Transportation Security Measures

by Jason Adams, E.I.T., Project Engineer



Security measures for the DNC, held at the Fleet Center in Boston, MA, took transportation and commuter needs into account.

A high-profile event such as the 2004 Democratic National Convention (DNC) required a comprehensive safety and security plan. This year's DNC was held at the Fleet Center in downtown Boston from July 26 – 29. We at McMahon's Boston office, located just one block from the Fleet Center, had a firsthand look at the preparations to ready this city for such an enormous event.

Combining security with commuter needs

In addition to hosting the DNC, the Fleet Center is home to North Station, which serves approximately 25,000 commuters a day. To meet commuters' needs during the convention, the MBTA developed a comprehensive plan that involved changes to the subway station stops and service volume, roadway closures, changes to work schedules, and enticements to reduce commuter road traffic during the convention.

For example, The MBTA trimmed the number of commuters into North Station but still maintained connections to complementary lines of the Boston subway system: two subway

line stops at North Station were closed, and commuters were given alternate station options.

In addition to the MBTA service changes, Interstate-93, a central artery through Boston, was closed to northbound and southbound traffic during the late afternoon and evening hours. Southbound traffic exited I-93 at Exit 32 in Medford, MA, while northbound traffic exited I-93 at Exit 20 (the Massachusetts Turnpike, I-90) just south of Boston. As a result of the I-93 closure, I-90, eastbound and westbound, assumed very heavy traffic and backups, as did a number of local roads around the Metro Boston area.

For added measure, commuters were encouraged to simply stay off the roads during convention week. Many employees working in the vicinity of the Fleet Center and the rest of downtown Boston took time off or adjusted their work schedule to deal with the safety and security measures affecting their normal daily commute. That alleviated some of the congestion around the area. With the transportation plan in effect, commuting time was impacted as little as possible while the security of the DNC was preserved.

South Florida Park Goes to Bat for Cricket

by John DePalma, Associate & General Manager, and Kim D'Aprile, Administrative Assistant

Even though the City of Lauderhill is out of the running for hosting the 2007 Cricket World Cup, the joint efforts of the city and Broward County continue to build the Broward County Regional Park, which will feature a 5,000 seat cricket stadium, located on SR-7, north of Sunrise Boulevard. Jamaica received the privilege of hosting the 2007 Cricket World Cup. Lauderhill still hopes to host warm-up matches for the event. The increasing popularity of the sport of cricket in the United States makes it desirable for the city to host some part of the international event.



The City of Lauderhill, FL, is building a park to accommodate the growing sport of cricket.

The park consists of a cricket playing field, ample parking, a Caribbean style marketplace, a hotel, other playing fields, and a library/cultural center. Approximately 30 percent of Lauderhill's population enjoys the sport, and there will always be more opportunities and plenty of uses for the 110-acre park. The elected officials of the City of Lauderhill hope to make this park home for the U.S. Cricket Club and house their headquarters, currently in New York City. Several leagues exist and actively compete in

Florida, including the Florida Southeast Cricket League, which uses an existing park in the City of Lauderhill.

As the traffic consultant to the City of Lauderhill, McMahon is performing the traffic analysis and permitting, through the Florida Department of Transportation, for the driveway access points to the park, located on both SR-7 (at a proposed signalized access) and Sunrise Boulevard. This facility will be a great way to accommodate the sport that is becoming popular so rapidly in our area. By planning well for the traffic that comes with sports events, we seek to assist the city in realizing its dream of bringing cricket recognition to the United States.

NEW ENGLAND

- Traffic Impact Study for Wal-Mart, Raynham, MA
- Traffic Signal Justification Study for Shaw's Supermarket and Target store at Lynn Fells Parkway, Saugus, MA
- Paved Parking Proposal Development on behalf of the Greater Attleboro Regional Transit Authority, MA

FLORIDA

- Project Development and Environmental Studies (PD&E) Districtwide FDOT Six, FL
- General Transportation Engineering Services for the Northern Palm Beach Improvement District, Palm Beach County, FL
- Traffic Engineer Consultant, City of Delray Beach, Palm Beach County, FL

MID-ATLANTIC

- S.R. 0412 Improvements/3rd Street Traffic System Management Project for PENNDOT District 5-0, City of Bethlehem, Northampton County, PA
- Traffic Engineering Consultant, West Rockhill Township, Bucks County, PA
- Transportation Circulation Assessment and Transportation Design, Borough of West Grove, Chester County, PA

Challenges Facing the Engineering Profession

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Looking ahead together

"Buy-in" is the key word here. And with buy-in, I immediately think of words like "transition" and "compromise," when I think of the extremes of no change and complete change. I'm sure that NCEES, our professional societies, and engineers will come to an agreeable outcome on the shape of the future model law. In the meantime, engineers who fall under the present law, and engineering employers, should look ahead to the possible changes, and ensure they are equipped to transition to a new model law. Educational assistance programs by employers, and the availability of student loans, for supplemental or graduate study beyond the bachelor's

level, will go far to ease this transition.

Additionally, changes to the model law will have flexibility in terms of the path a graduate engineer can take to become a registered professional engineer, based upon graduate degrees, experience, and testing.

The engineering community will monitor these changes with much obvious self-interest. Our clients in industry and government, and the public, however, can rest assured that the ultimate "new" model for engineering registration will not diminish the requirements or the responsibilities placed on engineers to serve the public.

Advances in Land Surveying Technology

by Thurman Golightly, PLS, Chief of Surveys and
Keith Bergman, P.E., Associate & Senior Project Manager

Transit and linker rod equipment are terms of the past

Today, surveyors have many new and sophisticated tools at their disposal. One such tool is the Global Positioning System (GPS).

Technological advances have allowed GPS receivers to provide centimeter accuracy through the use of differential GPS. A GPS receiver is essentially a radio receiver. It receives signals sent from satellites orbiting overhead with each satellite sending out signals on different frequencies. Because of the satellites' distance from the earth's surface, these signals are very weak and subject to atmospheric interference and reflection from nearby structures. It is important for a receiver to mitigate and adjust to this interference. One of the ways this is done is to have a receiver set on a point with a known location. This receiver is known as the base. The other receiver is used to locate unknown points. Both receivers receive the same satellite signals, and because the position of the base is at a known location, the interference can be measured and corrected. These corrections are used to improve the locations of the points that are being determined.



Ken Swift, McM Party Chief, setting up Leica SR530 receiver to obtain GPS location.

Making corrections

One method of correction, the post-processed method, takes the data from the two or more receivers after the data is collected, downloads, and processes the data to arrive at the most probable locations of unknown locations. The second method, known as the RTK GPS, provides real time corrections. In this method, corrections are sent instantaneously through a radio or telephone link between the base and the receiver at the unknown location.

McMahon has the capability to provide both post-processed and RTK GPS solutions at centimeter level accuracy. With these units the surveyor can provide control, detail, and topographic surveys in addition to providing engineering, boundary, and aerial control surveys and stakeouts for construction. RTK GPS eliminates the need for time-consuming traverses necessary with conventional total stations. This can result in tremendous timesaving, depending upon the particular task. With GPS, survey crews can quickly and easily collect data with point descriptors for all surveying and GIS data collecting needs.

As with all tools, GPS has its limitations

GPS can be limited by overhead and nearby structures such as buildings and trees. Additionally, the vertical (elevation) component does not have the same degree of accuracy as the horizontal component. As a rule of thumb, the vertical error is twice that of the horizontal error. While GPS is a great tool, it is not suitable for every project and situation.

Using GPS technology with McM's experience

GPS will provide location solutions for most situations. However, there is always the question of the quality of the positions. This is where all GPS systems are not created equal. It is a combination of hardware, software, and knowledge of the equipment and conditions that determine the quality of the survey. By adding GPS to McM's current surveying equipment (robotic total stations) and experienced personnel, McM can handle almost all surveying needs.

Working Together ... Making it Better

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As the firm has grown in size and geography, we have had regional planning sessions. In May 2004, however, we had a landmark event! We brought 107 people from all of our offices to Pennsylvania for a companywide planning session. We had a full day of discussions plus an evening social event.

Preparation involved a firmwide competition to develop a theme. John Kim, Project Manager from Florida, came up with the winning theme that reflected our mission: "Working Together ... Making it Better."

Each member was asked to define what has become known as the "McMahon Family Feeling." At the beginning of the planning session, all 107 people stood before the entire group, microphone in hand, and read their definition — no small feat for many in the group. I was awed and humbled by the depth of caring and feeling expressed. For me, my wife, Peggy ("Mrs. M."), said it best: "You are all my kids, I love you all!"

In a staff-requested "Meet Senior Management" session, each of us told the group about our history, personally and within the firm. I was emotional as I recounted the 28 years of McM, its highlights and its low times, from almost losing the business in the early 1990s to our most significant addition — our President, Rod Plourde, my friend of 40 years, who joined our firm in the depths of 1991. Our subsequent ten-fold growth has been an increase from 12 people to 120 people.

Most important was the communication involved in all of us working together to produce an extensive checklist of "to dos," designed to improve our firm. The list is published on our Intranet. Every one of us is now committed to work together to implement the checklist, and we will hold each other accountable. But most of all, we will make sure that we all succeed because friends don't let friends fail!

Traffic Signal Operation Self-Assessment — Coming Soon!

by Matt Kozsuch, P.E.,
Senior Project Manager

The Institute of Transportation Engineers (ITE) is driving a national effort to bring attention to the importance of maintaining and operating traffic signals. They prepared the article to the right to describe the main purposes and benefits of traffic signal operation self-assessments. As a recognized leader in the design, inspection, and operation of traffic signals and signal systems, McMahon Associates encourages local and state government agencies to coordinate and participate in the assessment, when released later this year, in order to benefit the community, as well as the traveling public.

Complete the traffic signal operation self-assessment online at www.ite.org/selfassessment/SelfAssessment.pdf or mail it to ITE.

Results are due by
September 17, 2004.

Traffic signals are one of the most commonly used traffic control devices for traffic engineers. There are approximately 300,000 traffic signals across the country in jurisdictions of all sizes. Unfortunately, traffic signal systems are historically underfunded and understaffed. They are one of the first areas to be cut in tight budget times. And yet, investment in traffic signal operations is one of the most cost-effective means to improve transportation system operation. ITE, in partnership with the National Transportation Operation Coalition (NTOC) and Federal Highway Authority (FHWA), is introducing a traffic signal operation self-assessment as part of a national effort to bring more attention to the need for additional investment in traffic signal operations.

The purpose of the study

The traffic signal operation self-assessment has two purposes. The first is to give agencies a tool to help them understand opportunities for improvement of their own policies and practices. Secondly, for agencies that choose, the results of the self-assessments will be used (anonymously) in a national report card on traffic signal operations. The national results will become part of a national media event designed to focus attention on the need for more resources for traffic signal operations.

The self-assessment, which was released in early summer 2004, is intended for any agency with

responsibility for the ongoing operation and maintenance of traffic signals. Developed by representatives from several associations and traffic engineering practitioners, the self-assessment contains six sections:

- Management
- Coordinated systems
- Individual intersections
- Specialized operations
- Detection
- Maintenance

Self-scored and completed in less than two hours, the self-assessment calls for input from key staff responsible for traffic signal operations and requires no data collection. Completion is completely voluntary. For agencies that would like to support the national report card, self-assessment results will be collected (anonymously) and rolled together into a national view of traffic signal operations.

The national report card on traffic signals

The national report card results are targeted for release in 2005 possibly as part of the 2005 ITE technical conference. No agency's individual results will be discernible from the national report card. Rather, the national report card will document the need for funding traffic signal operations, identify the performance challenges due to limited resources, and

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Section	Weight (%)	Raw Score "s"	Weighted Score (Raw score/Total possible x weight = weighted score)
1. Management	20	___ of 25	(s/25) x 20 = ___
2. Signal Operation in Coordinated Systems	20	___ of 45	(s/45) x 20 = ___
3. Signal Operation at Individual Intersections	20	___ of 35	(s/35) x 20 = ___
4. Specialized Operation for Traffic Signals	5	___ of (5 x number of applicable questions)	[s/(5 x no. Qs)] x 5 = ___
5. Detection Systems	15	___ of 15	(s/15) x 15 = ___
6. Maintenance	20	___ of 45	(s/45) x 20 = ___
Total	100	S = ___ of 205 possible	S = ___ (Represents the score scaled to 100 pts)

Sections are weighted based on the relevance and significance for good traffic signal operations. Questions in each section are weighted equally. The weight of each section and the scoring mechanism is listed and summarized in the table above.

We Answer Your Transportation Questions

McMahon in Motion features one reader's question on transportation in each issue. Our professional engineers will answer your question in the following issue. Please submit your questions via email to janine.cocker@mcmtrans.com.

Question:

The Society for Marketing Professional Services (SMPS), a national organization for education and information in marketing professional services in the A/E/C marketplace, conducts a practice analysis of professional services marketing. Can you identify the six domains of practice that articulate and confirm the profession's body of knowledge and the skills most critical to professional competence?

Did You Know?

For the second consecutive year, McMahon Associates has been named to the 2004 Zweig Letter Hot Firm List of the 100 fastest growing A/E/C and environmental consulting firms in the country! This achievement recognizes firms that have

outperformed the economy and competitors to become leaders in their chosen fields. The Board of Directors of McMahon Associates, Joe McMahon, Rod Plourde, and Joe DeSantis, would like to personally thank the firm's valued staff and clients ... without all of you, this would not be possible!



Traffic Signal Operation Self-Assessment — Coming Soon!

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demonstrate the cost effectiveness of increased investment for traffic signal operations. The release of the national report card results will be the topic of a national press event.

Agencies that complete the self-assessment and provide their results for the national report card will be encouraged to conduct their own local press event in coordination with the national press event. Local agencies will receive information on how to use their results effectively with their local media. Ideally, local press events will be conducted in tandem with the national event for a coordinated "push" of information to the media and public.

How to get involved

If you believe more investment is needed in traffic signal operations, here's what you can do and how you can participate.

- Watch for the self-assessment,
- Complete the self-assessment,
- Provide your results for the national report card, and
- Conduct your own media event in coordination with the national press event.

These steps will take place between summer 2004 and spring 2005. This is your opportunity to make a difference. Please join the effort and participate!

McMahon Associates can help your community or agency with these assessments, or with any other questions you may have regarding traffic signal maintenance, operation, design, or approvals in Pennsylvania, New Jersey, Florida, and Massachusetts. For more information, please contact any of our regional General Managers.

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Inside

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