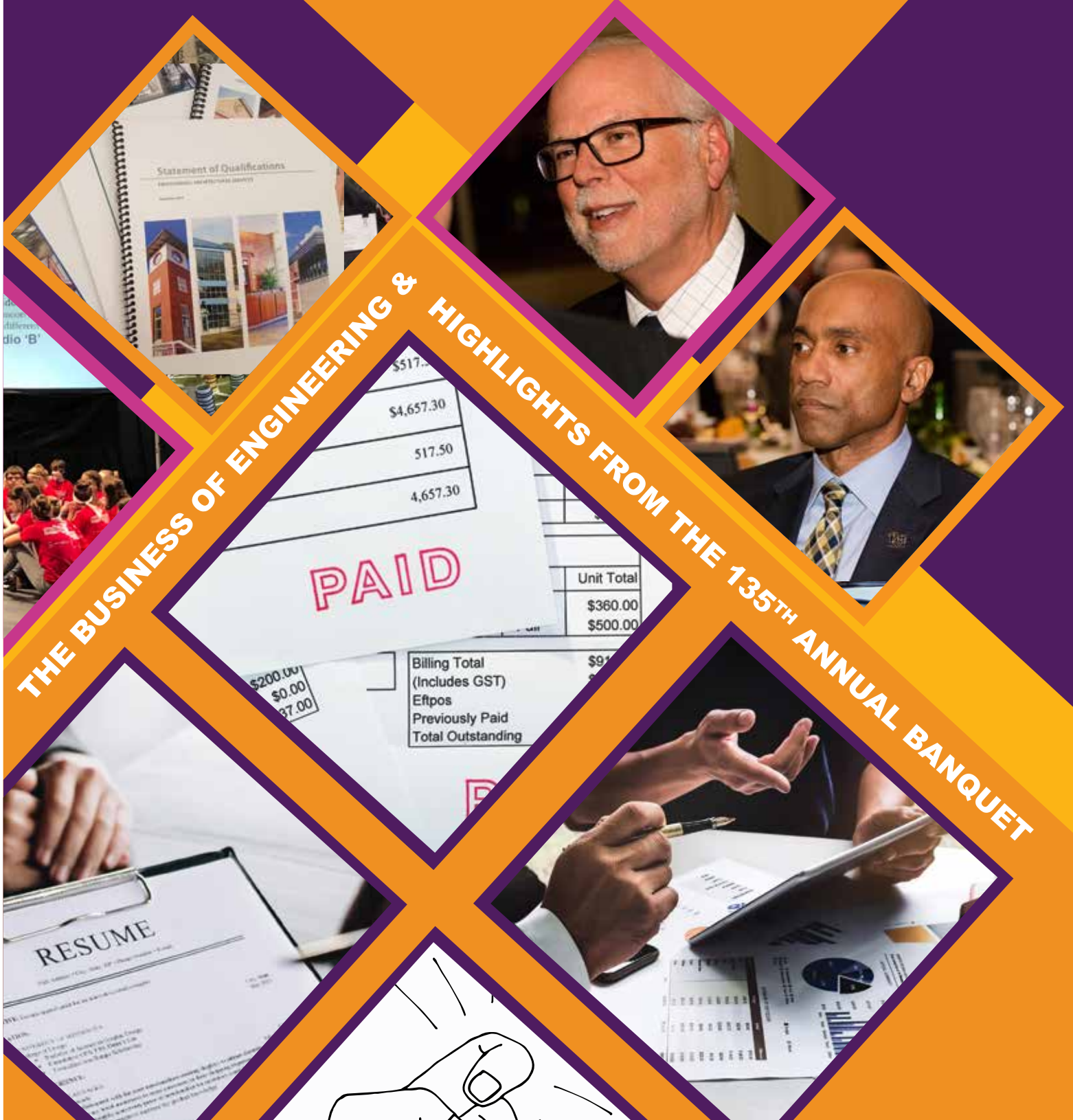


Pittsburgh

ENGINEER

WINTER 2018

Quarterly Publication of the Engineers' Society of Western Pennsylvania





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Pittsburgh ENGINEER

Quarterly Publication of the Engineers' Society of Western Pennsylvania

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Guest Editor Column

By: Tanya McCoy-Caretti

This issue of the Pittsburgh ENGINEER magazine focuses on the "Business of Engineering", but isn't that what we write about in every issue? Yes, it is, and we mostly find ourselves focused on the very interesting and technical aspects of those engineering projects. In this quarter's issue titled, "The Business of Engineering" we thought we would focus on several of the pieces of the business that not only add value to your engineered solutions, but also ensure that we remain in business for the long term.

We are all very familiar with the support provided us each day by our human resources, legal, and accounting teams, without their diligent attention to detail there is no telling where we all might be. But what about those unsung heroes in our everyday world? Have you needed to call upon a staffing firm to supplement much needed resources to support your project delivery? How about the staff who maintain and manage your client and customer databases and sales pipeline; have you needed to make anticipating bookings projections, forecast next year's opportunity list, coordinate attendance at a conference or develop content marketing material lately? Let's face it these priceless providers of support make us look very good every day.

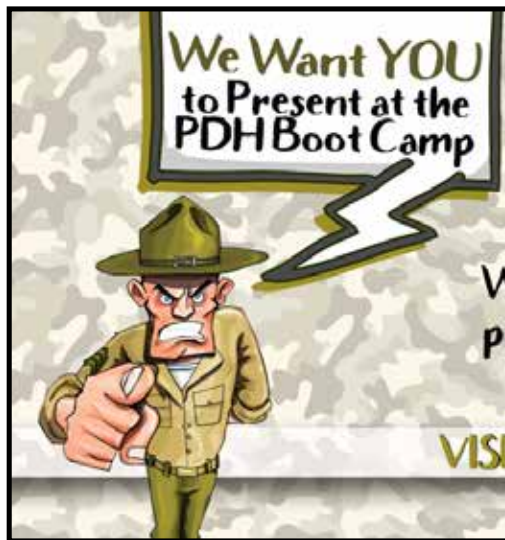
Those who know me well will see/hear me smile and respond, "No, I'm not an engineer, but I play one of TV"... and yes, to answer your question, I probably did stay at a Holiday Inn Express last week. For nearly 30 years I have found myself in any number of roles surrounded by some of the most amazing talent in the engineering world, and my role has always been one of support. For the first 15 years of my career I supported the engineering community as the client, taking my role in scope

preparation, RFQ/P development and contract procurement very serious; without clear and concise direction both the client experience and the project can find themselves upside down. During the past 15 years I've found myself on the other side of that equation and today serve as the Nation Client Development Director for Arcadis' Water Business. Today I support the "Business of Engineering" in a very different way and the one thing that hasn't changed is my love of the industry. I remain humbled by the technical prowess, attention to detail and ingrained desire to design a solution, where it seems nothing, but problem exists. Thank you all for what you do, and in this issue of the quarterly magazine a special thank you to all those who support what you do each and every day... perhaps those who make your work shine a little brighter.



Tanya McCoy-Caretti

Tanya McCoy-Caretti, Senior Vice President and National Client Director for Arcadis is a member of the ESWP Board of Directors and resides in Southwestern Pennsylvania. Arcadis is the leading global Design & Consultancy firm for natural and built assets. Applying deep market sector insights and collective design, consultancy, engineering, project and management services we work in partnership with our clients to deliver exceptional and sustainable outcomes throughout the lifecycle of their natural and built assets. We are 27,000 people active in over 70 countries. Arcadis. Improving quality of life.



Call for Presentations

PDH BOOT CAMP

We are looking for a few good men and women to present your continuing education program at our August 22, 2019 PDH Boot Camp

VISIT ESWP.COM TO SUBMIT YOUR ABSTRACT

ESWP Young Member Corner

The Engineers' Society of Western Pennsylvania Young Member Forum (YMF) provides an opportunity for engineers to start networking early in their careers. This ESWP membership is available to all members age 35 and under (also known as U-35), and is intended to help young engineers build their professional network, earn continuing education credits at our technical programs, and interact socially at various events planned throughout the year. We also strive to connect with universities and high schools to promote STEM activities by visiting and discussing what engineering is and how we can advance their careers to the next level.

- Our Mission is to develop and support future engineers by:
- Mobilizing and activating our younger members
- Collaborating with local universities
- Promoting and participating in STEM activities

Our most recent event was our Engineering Career Fair that took place on Friday, February 8, 2019 at the Engineers' Society of Western Pennsylvania. Our career fair provided a rare opportunity for students and professionals to meet employers and company representatives in the engineering field all in one place.

This year, 25 companies participated in greeting over 140 students from the tri-state area. The students were eager to participate this year, as ESWP had a waiting room of approximately 20 students before the start of the event on Friday. At the end of the event, companies commented "This was the best career fair yet" and "This event gives us an opportunity to talk to students from various schools, it is very beneficial for us to attend."

In addition to the career fair, we had almost 25 students take advantage of the mock interviews that were offered. This was an opportunity for students and professionals to interact and get quick feedback on their resume and interview skills. The actual qualifications required for the job were provided by the employers prior to the interview. This includes factors such as work experience, minimum educational qualification, and average salary offered. The students that participated appreciated the feedback and experience.

ESWP recommends that students consider these five things after attending the ESWP Engineering Career Fair:



Get organized.



Follow-up with employers.



Maintain the connection.



Practice your interviewing skills.



Reflect on your experience at the ESWP career fair.

These five items will better prepare students for a future opportunity. For more information about upcoming student or young member events, visit <https://eswp.com/events/>.



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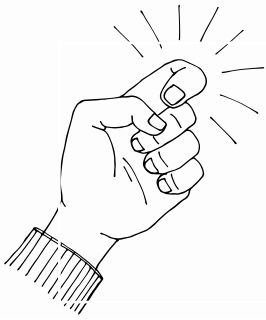
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MARKETING:

It's Not Just for "Marketers"

By Sheena M. Sundin, CPSM

Whether you're part of a small, five-person firm or a large national firm with a local Pittsburgh office, marketing is extremely important in the highly competitive Architecture/Engineering/Construction (A/E/C) industry. If you're a medium or large company, perhaps you have a marketing department or at least one or two members of your team assigned to support marketing and business development efforts. Or perhaps you're taking this role on yourself as a Principal or Owner. Whatever your situation may be, let's take a look at what marketers do and why marketing is a team effort in today's marketplace.

Marketers are expert multi-taskers, and their job can be most directly compared to the job of a project manager – in the sense that they are often managing many different marketing projects and priorities at once, and coordinating with and answering to many different “stakeholders”, both internal (principals, marketing directors, project managers and technical teams) and external (current and prospective clients, and other consultants and their marketing professionals).

Many marketers, especially those with smaller companies, balance not only proposal and interview deadlines, but also other marketing tasks like maintaining a company's website and social media accounts, representing their companies at conferences and events, and developing relationships to get more business for their firms.

Marketers wear many hats: coordinators, designers, visionaries – they are often tasked with pulling together ideas and various bits and pieces of information into proposals or presentations, “decoding” and editing this information to determine the correct organization and format, including identifying any missing pieces and communicating appropriate reminders (such as an email, phone call or in-person if need be!), ensuring all final reviews and approvals are made, and making sure the ultimate priority is meeting the deadline – hopefully more than five minutes before it's due, but definitely not after! Meeting all of those deadlines, keeping all of those wheels turning at once, and delivering a winning proposal or presentation to a client is difficult!

A key challenge for a marketer is motivating technical professionals who are already being pulled in many directions with billable project work to take the necessary time to focus on marketing efforts. It's particularly important to tap into key professionals' technical expertise to further tailor these marketing efforts to

specific audiences. I think we can all relate to this challenge and the importance for marketers to do their part to help save time and forecast appropriately. This can include helping their team identify and build relationships before the RFP hits, determine strategies to meet the clients' real needs and differentiate from the competition during the proposal and interview stages, and then hurdle towards the finish line to being awarded that next big project.

Marketers can help by reminding engineers and other technical staff to take the time to think outside the box and consider their audience first, suggestions such as limiting industry jargon (especially with all of the acronyms in this industry!), and writing for an audience that may not have technical background or who may not be able to read proposals or other marketing content word-for-word can be helpful reminders. This could include focusing on ways to tailor not only proposals but also qualifications context, being concise, using quotes or pull-out boxes to emphasize key points for those reviewers who are not able to read every last word, and using interesting graphics, tables, and charts to

simplify complex information and present it in a way that is graphically appealing.

What does it take for marketers to work together with other team members to be successful? It takes a team made up of various backgrounds, respect in each team member's specific expertise, a work

environment where new ideas are accepted, top-down buy-in on the importance of marketing and business development, and everyone striving to learn, improve, and find what works for your particular firm.

As mentioned previously, marketing is important for firms of all sizes. Small firms may not even have a marketing professional on staff, so it's important to keep in mind that marketing is everyone's responsibility, from the first person greeting your clients when they walk in the door, to new employees right out of college that communicate your culture to fellow colleagues, to principals and owners. Perhaps you have heard some of the buzz about “seller-doers”, and the increased importance that technical staff have in marketing the firm and creating relationships. Marketing should be a team effort—you never know where the next project might come from. Perhaps your human resources manager or summer intern runs into someone they know at a community function that needs your services for an upcoming project and they happen to be in the right place at the right time. You just never know.

“Marketers can help by reminding engineers and other technical staff to take the time to think outside the box and consider their audience first”

Since architects, engineers, construction personnel and other professionals at your firm may not have taken a class about marketing during their formal education, the good news is there is no shortage of professional organizations and societies that provide learning opportunities such as educational programs, networking events, and opportunities to build a network and also provide professional credibility by taking on leadership roles and competing for industry awards. On a personal level, I can tell you that the main reason I have found for being involved in a professional organization is so that you never stop learning. Whether you're a marketer, engineer, principal or project manager, it's important to keep learning not only about your profession, but the industry, local decision makers, teaming partners, upcoming projects, and new technology and trends. A good place to start is by joining a professional organization that focuses on marketing in your specific industry.

There are nearly 100,000 trade and professional organizations in the United States, but the Society for Marketing Professional Services (SMPS) is the only one dedicated to creating business opportunities in the A/E/C

industry, offering leadership and professional development opportunities, industry research, educational and relationship-building events, and marketing resources. From the beginning, SMPS was created to highlight the value that marketing and

business development brings to these industries. Professionals of all levels and titles can benefit from this organization: SMPS connects you with a wealth of ideas, education, and a network to make your marketing smarter. For more information on how you can become a member and get involved in SMPS, visit the SMPS Pittsburgh Chapter website at www.smpspittsburgh.org or www.smeps.org. Whether you choose to join SMPS or another organization, choose one that makes the most sense for you and your firm's markets and services, and make the most of it by getting involved!

Sheena Sundin is the Marketing Manager at Hayes Design Group Architects and has over ten years of experience in proposal coordination, marketing, business development, social media, and community involvement in the A/E/C industry. She holds a Bachelor's Degree in Communication from Clarion University of Pennsylvania. Sheena currently serves as the Vice Chairperson and Current Chair of the Public Awareness Committee of the Southwestern Pennsylvania Engineering Outreach (SPEO) and the 2018-2019 President of the SMPS Pittsburgh Chapter. She recently earned her Certified Professional Services Marketer (CPSM) credential.



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STEM's IMPACT

on the Civil Engineering Profession

What we can do as industry leaders to help rejoin this seemingly vast divide

By: Randy Gilbert

Most Civil Engineering and Human Resource Professionals have heard rumblings that talent pools are drying up and many close to the hiring process can attest firsthand to dwindling human capital. So, are we facing a long term trend or is this simply a temporary reduction in talent?

Employers are continuously searching for highly specialized skill sets that are often unmet by general education programs. As a result, the candidate pool suffers in both quality and quantity, leaving recruiters scrambling to find the best talent.

Let us first consider what the average American believes is occurring in our country. According to the fourth annual STEM survey by Emerson, a Missouri-based technology and engineering firm, research indicates that two out of five Americans believe the STEM worker shortage has reached a crisis level.

Evidence of this shortage is readily found at staple Fortune 500 firms who are now instituting nontraditional recruitment strategies. Google, Apple and Ernst and Young have begun implementing extreme talent selection processes by means of considering candidates with technical backgrounds, but have not obtained traditional college degrees.

Although these are extreme examples, we should reflect for a moment as industry professionals. Could similar survival tactics one day become a reality in the civil engineering world? Let's honestly ask ourselves, is the engineering industry entering into a crisis scenario?

If perception alone is enough to motivate the next generation, that's a good start. A recent survey of 2,000 Americans showed that students are

now twice as likely to study STEM fields compared to their parents, and 52 percent of parents said they believe there will be an increase in STEM jobs in the coming decade. The conversation, real or perceived, has spring boarded a movement, but will the next generations drive and numbers be enough, or are we walking blindfolded into the fourth quarter?

Projections indicate the U.S. will need to fill 3.5 million STEM jobs by 2025. However, given current trends more than 2 million of these jobs will remain unfilled because of a highly skilled candidate deficiency.

Given such a wide margin, what then can we do as industry leaders to help rejoin this seemingly vast divide?

A survey from the National Association of Colleges and Employers reported that STEM fields have the four highest projected average starting salaries.

To begin, there is a general lack of sufficient education in K-12 school systems, as well as higher educational institutions informing future workforce generations about the value in STEM-related professions.

Another concern is the overarching consensus that younger generations don't understand how STEM skills translate into real-life applications. In other words,

younger generations do not see the value in STEM because they do not understand it, and the generations before them have not

completely explained it. Too often these types of misunderstandings result in common criticisms of STEM, unduly labeling programs as rigid and lacking excitement. But perhaps the most relevant matter facing STEM programs is the narrow window of visibility detailing the hands on world of civil engineering.



Engineers work alongside students in "hands-on" activities during National Engineers' Week activities held at the Carnegie Science Center.

By now you may be asking yourself as a professional, it shouldn't be that difficult to get the next generation interested, right?

To that point a Randstad survey found 52 percent of student's ages 11 to 17 indicated they didn't know a single person with a STEM career. By comparison, 64 percent rated creating video games for a career as "very fun." The research also revealed half of the students said they don't know what kind of STEM jobs exist, and 76 percent reported not knowing what engineers even do.

So where is the good news? Well, there are numerous avenues for aspiring students and parents to pursue once the conversation is started. For example, to help make programs hands-on for younger students the Next Generation Science Standards, developed by the National Research Council and the National Science Teachers Association (NTSA), recommends making exploration and experimentation an integral part of education, not just learning about it from a textbook or a lecture.

In addition, the U.S. government is also committed to cultivating talent. The White House Science Fair features innovative projects, designs, and experiments from K-12 students across the U.S. These investments extend to federal agencies, such as The National Science Foundation, which offers grants in a number of different STEM education initiatives. There is even a nonprofit organization, Change the Equation, to help close the gap.

Aspiring students should also be informed early on of the financial rewards and long term career sustainability associated with ob-



STEM outreach program like ESWP's Design Lives Here brings together more than 300 students each year working alongside "real life" engineer mentors.

taining a civil engineering degree. A survey from the National Association of Colleges and Employers reported that STEM fields have the four highest projected average starting salaries. If we as industry leaders can begin to make our presence felt early on as well then perhaps young people be more inclined to pursue engineering career paths.

Ultimately, the burden of turning the tide cannot lie with a single entity. However, as professionals we should pay it forward to the next generation by being good STEM torchbearers and increasing our availability for training program activities, relationships with educators, connections throughout our communities, and various engineering society initiatives. At its most basic level, firms can

begin to start supporting programs by providing outreach efforts in which students can simply talk to an engineer to help introduce them to the field and gain a better understand of STEM and its everyday impacts to the world around us.

Has the rumbling noise increased? Many of us wish the solution was easy as Pi; however, ensuring success for future generations will take a substantial collective effort and long-term approach to ensure a success outcome.

Randy Gilbert is the PA-WV-OH Human Resource Manager for HDR, Inc. He possesses nearly 20 years of in depth Human Resource practitioner experience. His Human Resource related credentials include a BSBA, MSHRM, and PHR, CCP, CBP, WLCP, GRP, and HCS certifications.



It's not that far away...

The ESWP Annual Golf Outing

Monday, July 22, 2019 at Treesdale.

SAVE THE DATE

OH! What a Night!!

ESWP's 135th Annual Banquet was held on February 7 at the Westin Convention Center Hotel with great fanfare! More than 430 guests attended the event, believed to be among the longest running awards dinner in the United States! Rick Sebak of WQED Multimedia once again performed the role of Master of Ceremonies, and following the rousing rendition of the National Anthem performed by Jeff Jimerson, guests enjoyed a sumptuous dinner. Following, awards were presented in several categories as identified over the following pages. For a full description of the awards, along with video highlights, visit the ESWP Annual Banquet web page, found at eswp.com/about/annual-banquet/. All photos by Larry Rippel.



Master of Ceremonies Rick Sebak



Rick Sebak and Fr. Lou Vallone



Vocalist Jeff Jimerson



Members of the ESWP Board of Directors



Awards Presentation



Recipients of ESWP's Emergency Rehabilitation Project of the Year for Route 30, Dave Sciuillo, Chuck Niederritter, Jackie Evans, Eric Klimas, Cheryl Moon-Sirianni, and Brian Heinzl



Pitt's George Washington Prize team of Kaylene Stocking, Nate Carnovale, James Martin and Rafael Rodriguez



CMU's George Washington Prize team of Annette Jacobson, Jasmine Lim, Nicole Lau, Dominique Escandon Valverde, and Christopher Liitrell



Past President Alex Sciulli and family



Past Presidents Steve Dake and Bernie Fedak



Members of ESWP's Metcalf Club



John Kovacs, Mark Magalotti, and Art Hoffmann



PennDOT's Jason Zang, Jacqueline Evans, Cheryl Moon-Sirianni, and Shane Szalankiewicz



Dave Borneman presented ESWP's Industrial Project of the Year for the Tenaska Power Plant to Mike Roarty, Robert Mayfield, Todd Oppeau, and John Spatafore



Mary Conturo and the President's Award



Dave Borneman (l) presented ESWP's Transportation Project of the Year Award for the Liberty Bridge to John Cravotta, Tyson Hicks, Jason Zang, and Cheryl Moon-Sirianni



More than 430 guests attended ESWP's 135th Annual Banquet, ESWP Director Kimberly Kennedy (c) among them

ESWP Member News

More than 75 firms are represented in the Corporate Member program of the Engineers' Society of Western Pennsylvania (ESWP). Corporate Memberships are available at 3 levels: Gold, Silver and Bronze. Gold members are entitled to 14 memberships that can be exchanged by employees; Silver, 9; and Bronze, 5 — annual dues are \$2400, \$1700, and \$1000 respectively. In addition, ESWP Corporate Member Firms may add 2 additional individuals in our Under-35 age category at no additional cost!

We also offer Individual Memberships, including a new "Under-35" category, which allows for full member privileges at annual dues of \$25 and a Government rate (full-time), with for \$50.00! Also, our new Dining Membership allows use of the Executive Dining Room for conducting client entertaining in a great private club setting, all for only \$50 annual dues, plus regular entry fee. More information can be found at eswp.com. Please contact the ESWP Office (412-261-0710) for additional details.

Membership in ESWP comes with a long list of benefits! From our continuing education opportunities earning you Professional Development Hours (PDHs), to the business networking events in our Executive Dining Room, there is something for everyone in your organization. Also, ESWP is helping the next generation of engineers with student outreach programs, giving you the opportunity to participate in many rewarding programs.

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LOCHNER





Mark Magalotti and friends



Mark Magalotti



Dave Borneman presents the Transportation Project of the Year Award for the Liberty Bridge



Chantal and Greg Reed



The Allegheny Ballroom of the Westin Hotel



James Martin and Nate Carnovale, recipient of Pitt's George Washington Prize



Noel Lau, recipient of CMU's George Washington Prize and Annette Jacobson



ESWP's Past Presidents Alex Sciuilli, Steve Dake, Bernie Fedak, Tony DiGioia, Bob Ward, Dan Cessna, and Charles Toran



Engineer of the Year Bob Weimar



Gannett Fleming's table



Mark Magalotti and family



Pitt's Dean of Engineering James Martin



Mark Magalotti accepts the William Metcalf Award, presented by ESWP annually since 1963



ESWP's Executive Committee David Borneman, Tammi Halapin, Bob Ward, Jamie McMaster, Amy Veltri, & Dan Cessna



Mark Magalotti



Bob Ward and Mary Conturo



Bob Ward and Robert Weimar



ESWP's Commercial Project of the Year winner for CMU's Tepper Quad Matt Wetzel, Andrew Reilly, Mike Kelley, Jody Horn, and Eric Hoover



Competing for Talent in a **BOOMING MARKET**

By: Zach Huth

These days there aren't enough people to meet the hiring needs of the most employers. At this very moment, there is an abundance of work in this area, from schools and hospitals, to advanced manufacturing and processing facilities. So it is no surprise that technical professionals and people in the skilled trades are some of the highest in demand in the Greater Pittsburgh Region; in particular engineers of all disciplines. Whatever the long-term solution is, the current problem for employers is that the job market is an employee's market. Employers trying to recruit today should accept those market conditions and begin looking for different solutions. As of January 2019, the U.S. is currently at a 4.0 percent unemployment rate. Retirements are happening more and more every day and there are not enough available mid-career professionals with the skills and experiences necessary to fill the gap that is left by those retiring from the workforce.

Whether you are a general contractor, a plant operator or owner, a specialty contractor, or supplier of services or products, your company is facing the challenge of finding qualified talent. So this has everybody asking same question:

how do we fill these positions? It may be easier to start at the end and work our way backwards, which is accepting the fact that there are not as many individuals in the workforce possessing the desired skills that employers need to fill the jobs left by those retiring. Due to the industry change over the last year or two, firms need expertise in recruiting engineers, project managers, business operations professionals, and executive management for manufacturing, construction, and power generation companies. The change includes a shift in the direction of hiring degreed engineers to handle everything from design to construction management to sales, and even customer service.

So the real question is: how do we do more with less at all levels within an organization? In regards to making a workforce more efficient, there have been advancements in internet/on-line based programs, tools, and communications, and we are seeing

the industry adopting these different tools at a rapid pace. By utilizing these technology tools, a lot of out-of-town employers are maintaining office employees in Pittsburgh and other in other regions in which they do not normally operate. We often see this more in the fields of IT and software, but, based on the number of employers exercising the "work from home" model, we feel it's going to become a lot more common in the engineering world, as well as other industries, at least for the first few months or even first year of doing business. It is no secret that in the last few years local Pittsburgh engineering firms have lost some key talent to out of town firms who are now operating and competing for business in this region.

So back to competing for talent, the basic solution for any company facing the challenge of not finding qualified talent is to hire better people, as opposed to hiring more people. That's easier said than done. For senior level positions, we are seeing an average of at least a 15 percent rate of pay increase needed to even begin to attract new hires. We are seeing companies making offers to candidates that far exceed their current pay rate in order to fill positions fast. The flip

side of this market condition is that these individuals may find themselves back on the market when work is not so abundant; or they may be at a higher risk of being downsized or replaced. This kind of premium pay bump can also create unrealistic expectations for their next position, which could very well disrupt continuity of their career.

Thinking "outside the box" when it comes to the hiring process is a must. Most employers can expect a six – nine week time frame to source, interview, and onboard new employees. As far as recruiting individuals go, it will be tough no matter what your approach is. As stated above, unemployment is close to an all-time low, so job advertisements are at an all-time high. That means your ad will more than likely be overlooked within a few days of posting unless actions are taken to secure its place on the first one or two pages of search results.

"However, you decide to manage and build your future workforce and project teams, the question that needs to be asked is, how do we do more with less?"

Search firms are best utilized when a company has exhausted their own resources and networks. Performing a search for a company while they are advertising may result in duplicate candidates and waste the time of both the company and the candidate. Relocating candidates is also at an all-time high. That's a good thing for local firms since Pittsburgh is becoming a destination for a lot of young professionals who specialize in any number of fields. To improve hiring success, companies continually refine their interviewing processes and also implement the use of cognitive and aptitude tests. Companies hiring engineer to work in capacities outside of design often use specialized firms for assessing and surveying soft skills during the interview process. The resulting hard data from the tests gives a better understanding of how to maximize the employee's strengths, and be aware of weaknesses that may exist. This data also helps provide insight into how to motivate employees based on their personalities.

When all is said and done, effective recruiting is only a small part of the process, the next step is to evaluate performance and how well the employee can perform their job in order to make

the company successful and, intern, evaluate the employee's happiness and contributions in their new position. Whether we're talking about a thousand-person company or a company with

five employees, it all comes down to contributions, performance, and retaining key talent. For that reason, we are seeing more employers executing compensation plans based on performance, which usually consist of some kind of bonus or incentive paid throughout the year as goals or milestones are reached or when a project is completed. However, you decide to manage and build your future workforce and project teams, the question that needs to be asked is,

how do we do more with less?

Zach Huth is President of Huth Technologies, LLC | Technical Recruiting Solutions, a Pittsburgh based consulting firm. Mr. Huth is a member of the ESWP and co-chairs the ESWP Publications Committee.



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Enterprise Tools FOR ENGINEERING FIRMS

By: Don Olmstead, P.E.



Enterprise software a.k.a enterprise resource planning (ERP) software has become an almost indispensable tool for all but the smallest of engineering firms. Broadly speaking, these are tools for organizations to manage their business functions within a centralized and integrated system. Initially deployed in the manufacturing sector, these tools have been expanded to serve other sectors whose revenue is based on selling labor hours project-by-project, like engineering. In addition to the Project Management aspects, other applications and benefits include Human Resources, Payroll, Accounts Receivable and Accounts Payable. For those who've never used the software may find it difficult to understand why it is valuable.



To name but a few of the advantages: the elimination of double and even triple entry of data for payroll, expenses and invoicing, and the associated paper reduction simplifies life tremendously and reduces

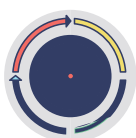
error. If external hosting is selected, staff in the field can enter their hours and expenses from the field or home. Projects can be set up to accommodate a variety of billing scenarios. Project managers can access data easily and generate reports. Onerous tasks such as audits are accomplished more easily.

Some recall the days of working with cumbersome rebranded accounting tools, when you only could get an accurate report when you saw a draft invoice. Project managers tracked labor and expenses independently, on spreadsheets. On projects with more than a few people, a successful project manager had to be able to see around corners, because any reports from accounting were just too late to be helpful. An enterprise tool allows you to manage your projects proactively, rather than reactively. It allows Project Managers to retrieve data on a real-time basis and create active, up to the day reports.

Publicly owned engineering firms appreciate proposal management tools such as these. As a publicly traded firm, they need to predict revenue, and tools like ERP made it easy for the various business development groups to roll up outstanding proposals, status them and apply win probabilities.

ERP suppliers can further elaborate on the advantages of their software. Without intending to endorse, and with apologies to

On projects with more than a few people, a successful project manager had to be able to see around corners, because any reports from accounting were just too late to be helpful



those I have overlooked, Deltek and Clearview are two well-established providers of project-based ERP software for Architects & Engineers. For smaller firms, Quickbook's Online Plus has features to charge time to a project along with any expenses, create an invoice for the customer, and produce some basic reports such as a profit and loss. Sage Timeslips is another option that has been used by engineering firms. These are not the only options; a more complete list may be found here: <https://www.g2crowd.com/categories/project-based-erp>

ERP suppliers are less likely to hear about the limitations of ERP software, apart from the usual generic grumbling. While the basic platforms function well, the more advanced features are not fully utilized by our peers, and that relates back to cost and frustration. Speaking as a mid-sized engineering firm that has tried to make more use of an ERP tool than many of our colleagues, some comments and issues for consideration include:

- Before deployment, we had to develop a work breakdown structure (WBS) compatible with the tool. That was a worthwhile effort, and we have refined our WBS since.
- The purchasing module was a great addition for us but was slow to deploy because our team was accustomed to ad hoc practices. Editing purchase order language to reflect terms negotiated with a supplier

was restricted by the tool and that had to be understood and worked through.

- While the timesheet and expense sheet interfaces were easily mastered, it took some time for staff to get familiar with how to navigate the system, and for PMs to learn how to generate the reports they need and their limitations. Cost reports will include unsubmitted timesheet hours, reports with analysis are based only on posted hours. Setting up new projects was delegated to a dedicated person. Similarly, entering new employees into the system, and changing status or salaries was delegated to a single person. Cross-training has occurred, so our processes can remain robust.

- It takes time to "debug" – one issue we had was a rate sheet job that had revenue recognized based on multiplier. That was corrected but the planning tool's forecast to complete is still based on multiplier only, not rate sheet and we have not been able to fix it.



- It is difficult and cumbersome to accommodate a large number of “client-specific” rate schedules.
- Line item approval of hours is easy for PMs overlook; they rarely did it and when we were smaller, it was not essential. Now that we are larger, we will be revisiting this decision, as the line item approval feature obliges the PMs need to better manage their projects and who is charging to them.
- The project planning tool has proven troublesome. We were trying to use it for a detailed look at backlog and to see who is busy and who is not. In our world, planned hours and hours logged rarely sync. With no tasks, and thus no links between tasks, hours are not automatically adjusted. Using a spreadsheet for scheduling is easier. The adjustment of hours for every person on a project was a nuisance; it is a tedious process of manually entering adjusted hours in cells. This creates work for a project manager, or if you are big enough, a project services group. Compatibility between ERP schedule, MS Project and Excel has yet to be proven.
- Terminology of systems is not universal, nor necessarily intuitively obvious. A user’s guide or glossary would be beneficial, but does not seem to exist.



The basic features have worked really well for us and deployed rapidly. For the more advanced features, deployment is not instant. You really need a vendor rep to work with you. When you get things where you want them, you will reduce error, reduce clerical time, expedite reports, and expedite invoicing, purchasing and associated approvals. As a user, I am a fan. As with any purchase, caveat emptor. Talk to people in your business before making a selection and consider carefully what is essential versus what is just nice to have.

Donald Olmstead P.E., P.Eng., has 40 years of engineering experience, working in equipment fabrication, environmental consulting, design and construction. He holds a Bachelor engineering degree from the University of Guelph, Ontario, and a Masters degree from the University of Pittsburgh, Pennsylvania. He can be reached at (412) 231-5890 x 302, or at dolmstead@ventureengr.com.



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Here's a cure for **THESUMMERTIMEBLUES**

By: Hayley Caretti

"Some things cannot be taught; they must be experienced. You never learn the most valuable lessons in life until you go through your own journey." This quote by Roy T. Bennett summarizes my summer as an intern with the Pennsylvania Department of Transportation (PennDOT). I had the opportunity to intern with PennDOT in the field of Construction Inspection. The project assignment was a road rehabilitation in Blair County. This type of internship was a new journey for me, and I had no idea what to expect. I knew the definition of inspection, but I was not aware of how the job was performed.

I received some advice before my internship that proved to be very beneficial. That advice was to keep a journal and record daily the things I learned and tasks I got to perform. I took this advice and every day I wrote something in my journal. This is something I would recommend to anyone doing an internship or even a permanent job. Using a journal is something I will continue to do throughout my engineering career because it will help me update my resume and as a record of tasks that I have learned or completed in my career.

On the road rehabilitation project there were many things I got to experience, some that I had learned about in school and some that were completely new. I had learned in school about concrete joints and if they had any dust left in them, then the sealant would not adhere to the concrete. Sawing and sealing of the concrete pavement joints was one thing that I got to inspect while an intern. I got to see all of the steps taken to reach the final result. Not only did the contractors have to saw out the old joints and put new sealant in, they also had to clean the joints and insert the backing rod. Another thing I learned about in school was concrete testing. In class we made our own concrete and completed the compression testing lab, but we did not have time for the slump or air tests. In the field I got to see all three tests performed. For the sidewalk project, we used concrete with a low slump of about four and then accelerated concrete with a higher slump of about seven for the patches. The difference between how the concrete behaved was incredible.

Halfway through the summer, our inspection staff was assigned to another project. This project was a safety improvement, which included updating the ADA Ramps and signals,

as well as paving. This new project intersected the other project at the end limits. The project began with excavation and replacement of the ADA Ramps. This was my favorite operation of the summer. Before starting the sidewalks I did not know how many steps were involved. Each step had to be done in order and correctly before the next steps could begin. When the operation began, my job was to keep track of which ADA ramps were worked on and the day the work was done. This helped me learn how to use the plans and the tab sheets along with the stationing along the road. I also helped take measurements and watched the concrete testing.

This summer happened to be very rainy, which created some challenges. Some days the work was suspended because of heavy rain and other times they worked in the rain, if the operation allowed. One problem we experienced was a lack of inlets near the construction site, which resulted in our excavated sidewalks filling with water. We then had to make sure all of the water was out of the area and the soil had non-movement before they could proceed with the work. I learned that plans will be changed when out in the field because of unpredictable circumstances and that you need to be flexible.

Overall, this summer was a great experience. I learned a lot about not only inspection, but engineering and the construction process. I now know more about how inspection is done. I helped take measurements for the excavation, length of curb that was poured, yards of concrete used in the sidewalks, and more. I also kept record of the work that was done each day and learned how to write and submit a project site activity (PSA). Everything I learned and worked on, is important in becoming a good inspector.

As I head back as a junior to the University of Pittsburgh at Johnstown, I will take these experiences and lessons that I have learned and apply them to my studies of Civil Engineering. I am excited for this new school year and more opportunities to arise to be able to expand my knowledge.

Hayley Caretti is an engineering student at the University of Pittsburgh Johnstown and daughter of Tony and Lora Caretti, Ebensburg, Pennsylvania.



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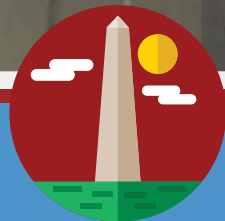
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