February 2014

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Estimating TODAY
February 2014

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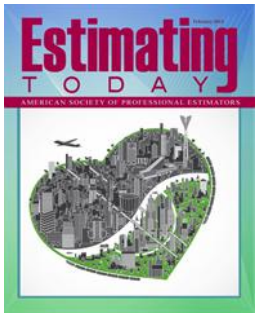

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MESSAGE BOARD

Chapters that plan to submit Award applications, must have their *Intent to Submit* form turned in to the Society Business Office by **March 15, 2014**. This form and the complete award guidelines are available on the national website, www.aspenational.org under the Membership tab.

Be sure that your information is up to date. To update your mailing address, email address, phone, etc., please login to the online database. *Instructions are posted online and in your 2013-2014 Annual Guide.*

Message from the President

Joe Flemming, CPE, LEED® AP
National President

I remember shortly after I became a member and earned my CPE, I was "encouraged" to become a chapter committee chair. Actually, I was at a chapter educational meeting when the president came up behind me, put his hands on my shoulders and publicly stated that it was very important for members, especially CPEs to serve in the chapter. I volunteered (under pressure) and was chosen for chapter Education Committee Chair. As a committee chair, I attended the Board of Director's meetings and was elected a board member the next year. Learning from the more seasoned members helped me along. I realized the way to get what you wanted out of the Society was to be actively involved in the planning and decision making at the chapter level.

After several years with this chapter, I relocated and led a recharter effort and became Chapter President. Those two years as Chapter President were the most rewarding time of my professional career. As a new member, all it took was a little encouragement to get me involved. We are all volunteers in our Society. Everybody has family commitments, long work hours and many other reasons not to volunteer. But I am here to tell you that you will get out more than you put into ASPE. Run for chapter office or take on a committee. If someone "encourages" you to run for a position, take that as a compliment. Get involved and get what you want from your ASPE.

Board of Trustees elections are coming up. By now nominations have been submitted and I applaud those who volunteered to lead the Society. You, as members, owe it to them to vote. When you get your electronic ballot, take a few minutes to review the candidates and vote. Don't put it off until later because you will probably never get back to it.

…and get involved in your chapter leadership. ET

NETWORKING TO BUILD AN ESTIMATING CONSULTANCY

Submitted by:
Jerry Mollenhauer, CPE
Viking Chapter, #39

Traditional networking, (no password required), means that the more people one knows, and knows well, the wider the network. Networking is a valuable resource and many businesses depend on it for survival. It means we can foster growth through introductions to new contacts by people we know, people who can offer personal references as to our skills and reliability. Well executed networking can transition into a business asset termed "blue sky", which can accrue as a saleable commodity in some business models.

In post WWW terms, the usefulness of networking is undiminished, but the venues have definitely changed. Where networking formerly fit the above hands-on, in person description, net applications have challenged this concept, with a broadening effect. But my thoughtful opinion is that these new tools have not allowed the personal network to reach as deeply as in person networking.

Applications such as LinkedIn, Facebook and Twitter make it possible for us to pitch a comment or make a connection to a wide audience. But we may only make gains in the area of name recognition and the effort may not do much to provide a lasting and favorable impression on our new audience. Our connections on LinkedIn may recognize our corporate logo or name, but without really making a true connection as to what role our service might play in their business pursuits.

Although I could gain a reputation as a social commentator, a political pundit or a comedian, depending on what I post, I might do so without my connections ever understanding that I am interested in working with them. My need then, is to help them understand that we offer our services to them in a way that will enhance their business lives and reputations.

Consulting estimators offer a program of services that our clients absolutely MUST be able to rely on for timeliness, accuracy and insightfulness. Our clients' reputations ride on the back of our good work. They need to trust us more, and believe in our abilities and integrity more, than many other business services they engage.

We cannot expect a busy prospective professional client to hold and honor an image of us that was formed by seeing our networking on the internet for any longer than it took them to view it. We offer an intangible service, a cost opinion that we work very hard to make reflective of current market conditions. Can we expect them to really believe we can provide their cost estimation needs reliably just because we tell them we can on our website?

My personal belief is that "six degrees of separation", to steal a catchphrase, is just too much of a span to build this kind of confidence. I do not intend to disparage internet media type networking, as those applications definitely serve their purpose. But I do want to point out that by relying solely on social media applications, there simply is not sufficient opportunity for the networking efforts to take hold as deeply as they must to somewhat assure our clients of satisfaction even before they contact us.

The trick is to establish a business presence in the minds of our audience that not only lets them connect our name to a Tweet, or to a post on LinkedIn, but actively encourages prospects to think of us when they decide to compete for the new RFP, or when they meet with a new client.

What can drive a new prospect to call us, rather than staying in safe haven with their current methods of cost estimating? When a contractor or a designer needs solid estimating skills, does he automatically look for us on LinkedIn, does he check out business listings in construction directories, or would he be most likely to call someone he knows personally?

True networking is the art of building PERSONAL professional relationships. It includes using social media, but it must also use traditional networking approaches that include personal contact, substantial effort and expense and involvement in the design and construction cultures that foster new client contact.

To make our networking a personal effort, we must seek opportunities to meet new clients and interact with current ones at events like trade shows, AGC meetings, and AIA conventions, and trade luncheons. One of my favorite ways to make an impression is to invite a small office full of architects to a box lunch presentation. Architects are always hungry and always busy. Give them the opportunity for a free lunch right in their office and they do not soon forget you. The reality of this is while I don't have enough time to do box lunch presentations

very often, I have never failed to derive business from even one such event.

Networking events afford a great chance to meet folks that may not be aware of our services in a way that can give them a lasting impression they can carry back to the office. We get a chance to let our personalities shine and to enjoy meeting them and to hear their viewpoints as well. We get the chance to dispel their impressions as to the cost and accuracy of our services, and more to the point, the potential greater cost of not working with a reputable cost consultant. We can answer questions, offer tips and generally convey our business spirit and values to new clients. We get to establish common ground with those whom we would like to work. These types of impressions are much more favorable and long lasting than any of my random posts on LinkedIn.

To make this process happen, there are a number of actions we must take. Remember my "substantial effort and expense and involvement" comment above?

1. Quit thinking about it and act. Apathy and uncertainty will not get us admitted to the next trade show. Target these opportunities, note the cost of attendance, or a booth, or sponsoring, decide which ones will best serve your needs and reserve the time and space to take part.

2. Get there early, be well organized. Being early can also give you the chance to make contact with early clients in a less competitive environment. It can also give you a chance to meet your co-exhibitors, who can be a source of good contacts and ideas.

3. Get past the nervous! Make contact with folks in the aisle, get your feet wet (and maybe get a couple of lumps), but do not just stand there. You have a display space, so do your best to politely draw people in. Be subtly welcoming. We like to ask people to sign up for theater ticket drawings. Conversely, do not be concerned about the show visitor that walks the center of the aisle consciously avoiding eye contact with all exhibitors. There are some at every show, and those folks will only resent being "bothered". Our goal is to put people at their ease.

4. Is there anything more forgettable than an unsolicited business card? A brochure handed to you out of the blue by a pushy exhibitor? If you want them to keep your card, don't hand it to them initially, make it almost the last item of the interaction. See if you can make prospects ask for your card, verbally, or better yet, have your cards available in an easy to notice holder for your new contact to select one. They will if they are truly a prospect. We put out our cards in batches of 25. That makes it easy to gauge how much interest we are getting.

5. Engage people who stop to talk, ask about their business and their lives. Everyone has something going on, something on their mind that they would maybe like to share. Listen reflectively. Demonstrate compassion. Make the visit fun. Learn to

love people and they will return the same. Share your time.

6. Be sure to follow up with the folks who expressed an interest in your services. Email them and say thanks for stopping by the booth. Ask if they would like to have you bring them lunch at their office, and meet their associates.

7. Initiate prolonged contact with a select group of prospects with whom you enjoy a specific rapport. Do this by dropping them occasional emails, cards at Christmas, call them when you see their firm mentioned in the news, or in trade publications.

We all have our favored ways to bring in business. There are other great ideas out there on how to build a business network that also work well. I know this because I belong to CERT, and participate in their on line LinkedIn forums.

Whatever way you choose to promote your estimating business, I have learned that the time honored adage that "the best advertizing is word of mouth" is golden when it comes to a cost estimating consultant trying to build a business. Nothing rivals the feeling you get when you are at an event visiting with a new prospect and a current client jumps briefly into the conversation just to say HI! ET

Jerry Mollenhauer, CPE, is a Certified Professional Estimator, based in Elysian, MN. His firm, Reliance Estimating Inc., VCEF is a Validated Consulting Estimating Firm by CERT, the Consulting Estimators Round Table. He can be reached at jerry@relianceestimating.com

The issue of networking for the consulting estimator is part of a regular discussion on the CERT (Consulting Estimators Round Table) site on Linked-In, along with good forums on many interesting issues related to having your own estimating business. Please join us there to express your concerns, ask questions, and help formulate your own personal strategies to help us all be better, more responsive and responsible business consultants.

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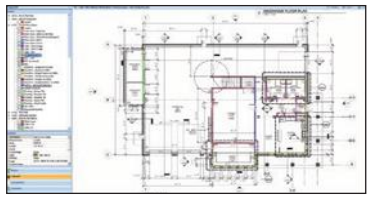


HOW TO ESTIMATE THE COST OF

Clean Room and Data Center Equipment Electrical Work

By: A.David Taylor, CPE

Table of Contents

A. David Taylor, CPE is the Senior Estimator for J.D. Parrella Electric Inc. of Newburgh, NY. David began working for JDPE part time in 1985 and accepted a full-time position after receiving a BS in Electrical Engineering from Lafayette College in 1987. In addition to estimating David has done everything from driving deliver trucks to bookkeeping, purchasing, project managing and designing. He has been involved in a wide variety of construction projects including new schools, prisons, water and wastewater plants, bridges, industrial manufacturing plants and data centers.

He has been associated with organizations such as NFPA, NECA, Construction Contractors of the Hudson Valley, and ASPE.

1. INTRODUCTION

The intent of this technical paper is to explain the basic techniques involved in producing an estimate for the electrical work associated with data center and clean room equipment installations. Today's modern manufacturing facilities and data centers require more and more extensive electrical systems including large and redundant power supplies, multiple environmental systems, complex control and automation systems and significant quantities of communication cabling. These facilities require minimum downtime and clean, high quality installations. There are some special challenges to working in this environment and there are many specific skills an estimator needs to produce accurate and competitive bids in this field.

Main CSI (Construction Specifications Institute 2004 MasterFormat) Division

Division 26 Electrical

Main CSI (Construction Specifications Institute 2004 MasterFormat) Subdivisions

26 05 19 Conductors and Cables (600 Volts and Below)

26 05 33 Raceway and Boxes for Electrical Systems

26 22 10 Dry-Type Transformers (600 Volts and Less)

26 24 16 Panelboards

26 27 26 Wiring Devices

Brief Description

This paper will explain the steps involved in producing a lump sum competitive bid for electrical work associated with installation of equipment in an existing data center or clean room manufacturing facility. It is assumed that an electrical design package has been provided that includes a schematic that identifies the size and type of services to each piece of equipment and a scalable layout plan. Material specifications and any installation requirements beyond the National Electrical Code should also be provided. The following steps will be taken to arrive at the lump sum bid:

Takeoff: The measurement of all branch circuit and feeder runs and the count of all devices, pieces of equipment and other labor operations.

Listing and Applying Material Costs and Labor Units: The accumulation of takeoff quantities, application of material cost to takeoff items, determining and applying the proper labor unit to takeoff items. This results in total material cost and labor hours for the bid.

Summarizing: The converting of labor hours to labor dollars. Estimating direct job expenses and adding the total of material, labor dollars and direct job expense to obtain total prime cost. Applying overhead and profit percentages to the prime cost to arrive at the bid price.

These steps will be illustrated manually. Many software packages have been developed to automate these processes but an understanding of the mechanics of developing an estimate are important to producing accurate bids.

Some of the special conditions seen in data center and clean room work and how they affect the estimator will also be discussed.

2. TYPES AND METHODS OF MEASUREMENTS

The nature of electrical work is that it is made up of not a few large components but a large collection of small components. Therefore a methodical approach to measuring and quantifying a project is essential to producing an accurate bid.

In general an electrical takeoff involves the counting of devices and equipment and the measurement of feeder, branch circuits or other cable runs. A run is a length of raceway and wire (or cable) installed between two points of termination. The measurement of a run yields the quantity of raceway and the quantity of wire within the raceway. These counts and measurements are collected and summarized in order to apply material and labor units and produce a lump sum price. Since electrical drawings and schematics can be very complex, the estimator must develop a system of marking the drawings (checks marks, highlighter) to identify which items have been taken off. This ensures accuracy and permits an estimator to work on a bid over multiple sessions.

Most electrical work can be broken down into defined subsections. Sections pertinent to this example are listed below:

Branch Circuit Wiring: The estimating definition (which is slightly different than the National Electrical Code definition) of this subsection is typically circuits with raceways 1" and under. Branch circuit run takeoffs should be segregated by raceway size and number of conductors but may be taken off in groups depending on the experience level of the estimator. In addition to the quantity of conduit the branch circuit measurement should also include the following items:

- Fittings: Including Couplings needed to join lengths of conduit (can be a percentage of the total length of conduit), Connectors and bushings at ends of conduit runs to transition to boxes and enclosures, boxes and condulets used for pulling points/changes of direction, and flexible conduit whips required to connect to certain types of equipment for vibration isolation.

- Supports: Fitting and hardware used to properly support conduit. This quantity can also be determined as a percentage of the total length of conduit (for example - 1 support/8 feet of conduit results in 24 supports for a 200 feet of conduit).

- Conductors: Since runs are grouped by number of conductors a separate measurement is not required. It is necessary to account for excess wire at terminations used for splicing and connections for equipment. For example:

Total runs of ¾" EMT with 4#12 THHN: 500'

Conductor Length (4 conductors x 500'): 2,000'

Wire makeup adder (10%) 200'

Total Quantity of #12 THHN 2,200'

- Other Labor Operations: Including labor for penetrating block/concrete wall or floors and field cut knockouts for conduit terminations at enclosures without hubs or prepared knockouts.

Feeder and Large Branch Circuit Wiring: Most of the procedures used in measuring branch circuit runs apply to feeders and large branch circuits. Since material and labor costs rise exponentially as conduit and wire sizes increase some additional steps are needed for this takeoff. Usually feeder runs are taken off individually instead of in groups. Field bends are assumed to be included in branch circuit runs, but manufactured elbows or field bending of conduit should be counted for feeder runs. Specific wire adder lengths based on the type and size of equipment connected should be used instead of a percentage allowance. When large conduit and wire runs are installed in parallel, they should be identified during takeoff so that labor discounts may be applied due to fewer setups being required.

Equipment and Devices: These are counted and abulated per unit. Items included are panelboards, transformers, circuit breakers, safety switches and wiring devices and associated plates and boxes.

Usually measurements of runs can be obtained by scaling drawings that show locations of the equipment being installed and the facilities to which they are connected. Vertical runs are usually not shown and the estimator must account for distances from equipment to proper conduit elevations (including between levels of a multi-floor facility). This involves becoming familiar with the facility either through architectural plans or inspection of the site. In some larger facilities column numbers remote from the project area may identify sources of conduit runs. This requires the estimator to apply knowledge of the facility (layout, column spacing) to obtain run measurements. In some cases plans may show groups of services within a particular area

without specific locations. The estimator can use the geometry of the area and location of the source to determine an average length for these runs.

Due to the large number of conduit runs in any building, routing is usually not show on layout plans and has to be determined by the estimator. Conduit runs are generally required to be installed parallel to building lines and not directly from point to point. The estimator may also need to adjust routing of conduit runs to avoid obstructions or to improve labor efficiency (such as running above an accessible hallway ceiling instead of a congested or secure area).

3. SPECIFIC FACTORS TO CONSIDER AFFECTING TAKEOFF AND PRICING

There are several factors specific to data center and clean rooms that an estimator should consider:

Cleanliness: Facilities that house expensive and sensitive equipment have very strict requirements for their air environment and construction work in these areas may have more stringent rules than normal new construction. Workers may be required to wear special gowning and wipe down tools and material. Dust producing activities may require special tools or temporary dust enclosures. Cutting and fabricating activities may be confined to areas remote from the work area. All of these will impact productivity and should be considered when applying labor units.

Space Coordination: Data center and clean room equipment requires many different mechanical and electrical services. Since these facilities have very high per square foot costs to build there is great demand to maximize utilization of the space these services occupy. Many projects will require coordination meetings with other trades to identify areas where electrical services can be run so as not to interfere with the overall installation. This may be a labor operation an estimator should account for in a takeoff.

Schedule Coordination: The nature of equipment installations is deadline driven. They involve expensive equipment that is desirable for an owner to get operational as quickly as possible. Therefore an estimator should be aware of equipment arrival dates and completion deadlines and analyze how they will affect costs. Tight deadlines may result in extra coordination meetings with other trades and vendors, lower productivity due to over manning and limited access to work spaces, off hours work with higher pay rates or higher material costs due to expediting.

Quality Assurance: Since equipment installed in these facilities is very expensive and can have great impact on an overall operation, some owners may require additional quality assurance measures. These include megger testing and reporting for some services and risk analysis reports when branch devices are added or connected in existing distribution equipment. These items may require the estimator to add labor cost to an estimate.

4. OVERVIEW OF LABOR, MATERIAL, EQUIPMENT, AND INDIRECT COSTS

Once takeoff quantities have been collected accurately and organized onto pricing sheets the estimator then can apply material unit costs, labor units, and labor rates to the takeoff quantities and the result will be total direct cost for the work. Adding indirect cost results in total prime cost. Applying overhead and profit markups to the prime cost results in the bid price.

Material Cost: Material costs are divided into two types: standard and quoted material.

- **Standard Material:** This generally includes basic electrical products – conduit, wire fittings, devices, and hardware. There are several subscription services that provide updated prices for the thousands of different electrical products. To get the best accuracy, the estimator should keep their database of electrical prices as current as possible to best reflect what the purchase price for material will be if awarded the project. In particular commodity items like copper wire and steel conduit can fluctuate greatly and should be monitored closely by getting current information from vendors and even checking the current market price for these commodities.

- **Quoted Material:** This includes uncommonly used, engineered, specially manufactured items such as distribution switchboards, lighting fixtures, communication, signaling and control systems and generator sets. It may also include basic electrical items that occur in unusually large quantities on a particular job. These items require project specific pricing and it is important for the estimator to

identify these items early in the bid process in order to get vendors the quantities and specification needed to provide timely pricing. In some cases quoted material will be priced lump sum instead of in units. In this case these items should be separated from the unit price tabulation and the lump sum added at the end when arriving at the total project material cost.

Labor Cost: Arriving at the labor cost for a project is a two step process – applying labor units to takeoff quantities to get total labor hours and multiplying labor hours by a dollar rate per hour to get labor cost for the project.

- Labor Units: A labor unit is a data figure indicating the amount of time for installing a given material item or performing a labor operation. Systems of labor units have been developed from historical cost data from contractors over the last hundred plus years. A labor unit consists of a few basic components:
  - Material and tool handling: Labor to move items needed for an installation from delivery trucks, storage areas and lay down areas to the point of installation and the associated cleanup.
  - Measurement and layout: Labor to determine the proper size and type of material to be used, determination of the proper installation location including measurements and direction given to workers.
  - Installation: Labor to physically install electrical materials.

Certain job conditions will require adjustments to labor units including longer than normal time needed to access work areas due to security or gowning requirements, unusually long or short conduit runs, and parallel conduit and wire runs.

- Labor Rate: A labor rate should capture all of the costs associated with an hour of labor. This includes not only base rate of pay but benefits, taxes and insurance that is based on labor. A crew that is comprised of workers at different pay rates can be converted to a composite crew rate as follows:

Rate Classification	Number in Crew	Rate
Foreman	1	$95.00 (1/6 of Composite Rate)
Journeyman	4	$87.00 (4/6 of Composite Rate)
Apprentice	1	$45.00 (1/6 of Composite Rate)
CREW TOTAL	6	
COMPOSITE RATE	$81.33	

Indirect Costs: These are costs that are not material or direct labor but are a direct result of doing a particular project. These can include permit and inspection fees, freight charges for expediting materials, field office expenses, special tools purchased or rented specifically for a job, and bonding costs.

Markups: Markup over costs are separated into overhead and profit and are usually expressed a as a percentage added to prime cost. Overhead is the cost of an electrical contractors overall operation not resulting from a specific project (home office, vehicles, standard tools) and is developed by management based on financial statements and anticipated volume. Profit is the margin cleared after all of a contractors job and overhead costs have been covered and can be adjusted by management to suit market conditions.

5. SPECIAL RISK CONSIDERATIONS

There are specific risks associated with data center and clean room electrical work that can impact costs and warrant consideration by the estimator:

Tie-in to existing services: Equipment installed in existing facilities requires the electrical contractor to connect to and sometimes modify energized electrical equipment. Ideally this work would be accomplished by locking and tagging out the source of supply to the equipment. However, the nature of these facilities is that shutting down live equipment can be costly and disruptive. Therefore, a contractor may be requires to work on live equipment. This calls for determining the level of arc-flash protection required by NFPA 70E and

can involve expensive personal protective equipment and added labor hours.

Working on Raised Floors: Work in data centers and clean rooms usually involves installing services under the tiles of raised access floors. Removed raised floor tiles present a hazard to personnel in a working facility and protection must be provided in the form of special barriers. These areas may also require mechanics to work in teams to ensure openings are not left unprotected.

6. RATIOS AND ANALYSIS – TESTING THE BID

The best method for testing these types of bids is against actual job cost data. Labor hours collected and totaled for a job should be compared to the estimated labor hours. Vendor invoices for a job can be compared to the estimate for both material prices and estimated quantities.

The estimated material to labor dollar cost ratio can be compared to previous estimates to test if a bid is reasonable. This ratio tends to be consistent for similar bids.

An estimator may want to develop assembled prices for commonly used circuit and device combinations with a typical length to compare against future estimates.

7. MISCELLANEOUS PERTINENT INFORMATION

There are many other wiring methods that may be required or considered by an estimator for this type of work including cable assemblies installed in cable trays or fastened directly to the building structure and UL Listed under floor whips that require no support.

The methods described above for power wiring may also be applied to low voltage systems for control and monitoring such as fire alarm, security, data, HVAC control, and leak detection. Additional costs to consider for these systems include special test equipment and training for cable installation and hiring of programmers or systems integrators to add devices to existing systems.

8. SAMPLE SKETCH

See page 17 for section 8; sample sketch.

9. SAMPLE SCHEMATIC

See page 18 for section 9; sample schematic.

10. SAMPLE TAKE-OFFS AND PRICING SHEET

See page 19 -21 for section 10; sample take-off and pricing sheets.

11. GLOSSARY

National Electrical Code/NEC/NFPA 70

Published by the National Fire Protection Association, NEC contains standards for safe electrical installations. Most state and local governments in the US mandate adherence to the NEC.

Raceway

An enclosed tube or channel designed specifically for holding electrical wiring.

NFPA 70E

A National Fire Protection Association standard that addresses electrical safety requirements in the workplace.

Locking and Tagging (also Lockout/Tagout)

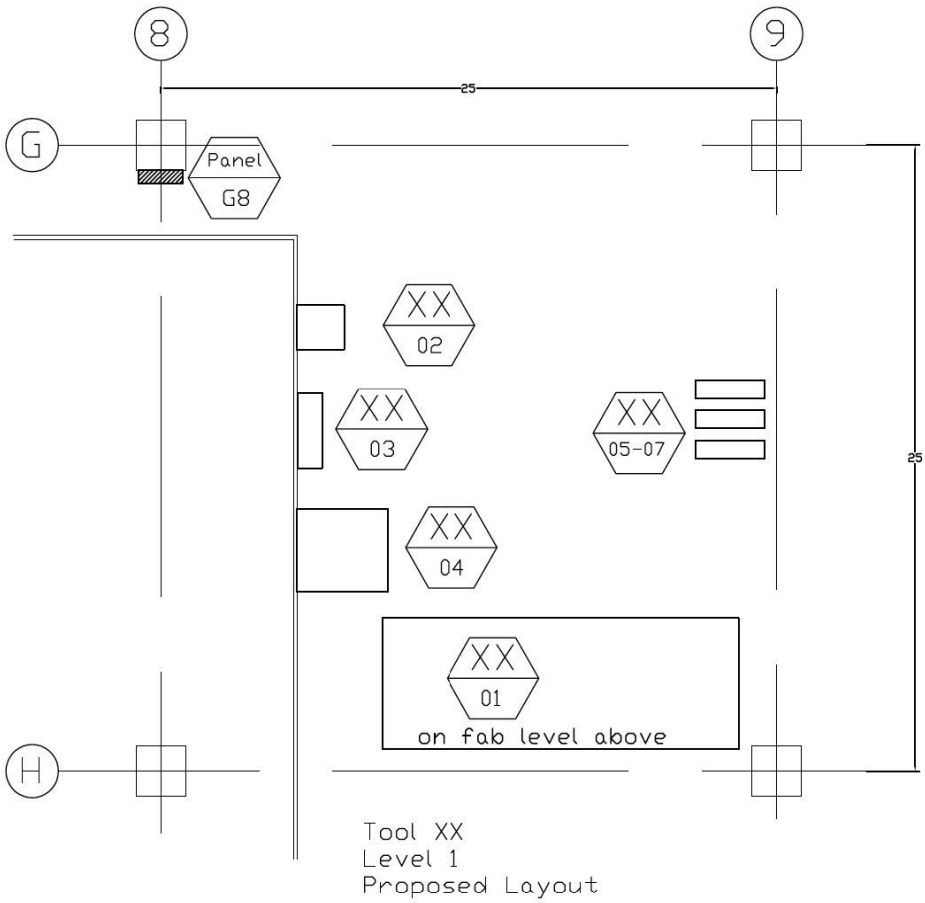
A safety procedure for ensuring that a dangerous electrical source is deenergized.

Arc Flash

An explosion resulting from a phase to phase or phase to ground short circuit.

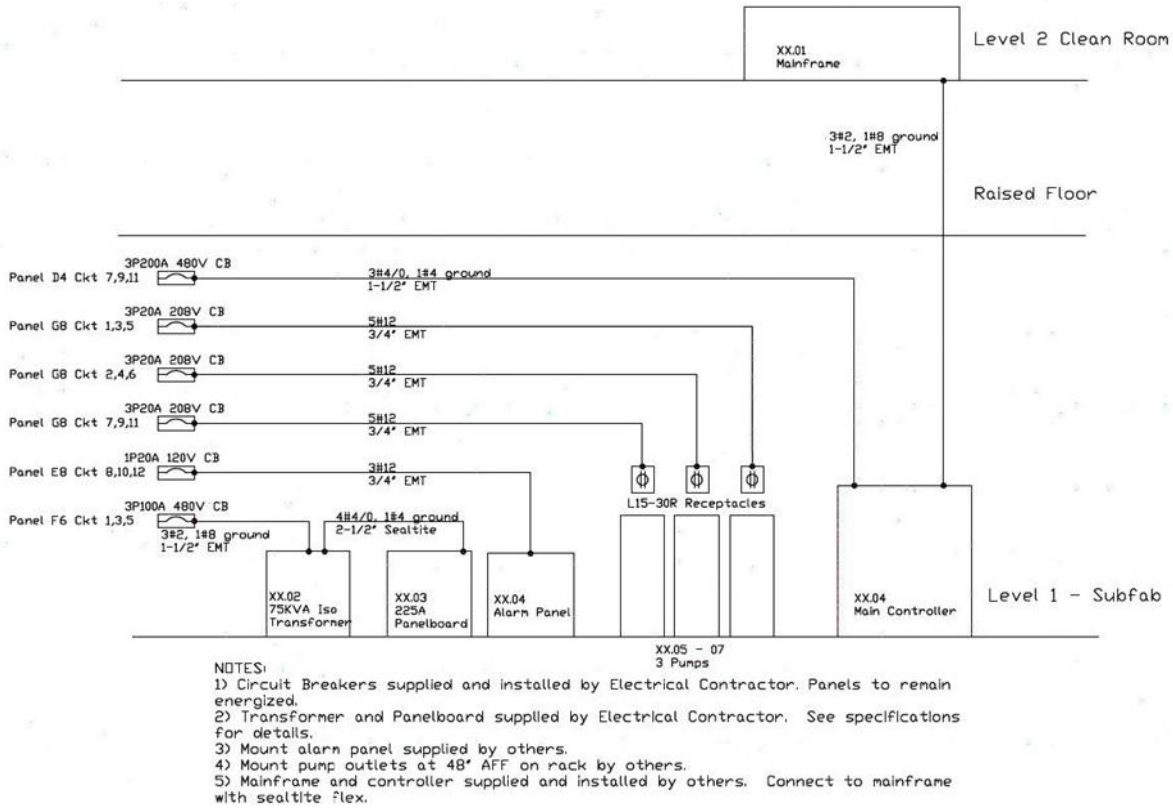
All Sample Sketches & Estimates are available in PDF format. Simply click on the pictures/graphics.

Section 8 Sample Sketch



The locations of the various components to be wired are shown in this sketch. For this example the column dimension (25' to center) will be used to determine horizontal measurements. The panel designations indicate to column locations of panels not shown on the sketch. It will be necessary to add the vertical measurements to the area where conduits can be run and between floors.

Section 9 Sample Schematic



This schematic shows the size and type of conduit and wire required to be run. Also shown are equipment and devices to be supplied and installed and other installation notes.

Section 10 Sample Estimate – Takeoff and Pricing Sheets

Figure 1 – Takeoff Sheet

Job Tool XX **Estimator** ADT
Date 6/9/10
Takeoff Sheet 1 of 1

Feeder Takeoff

			Raceway							Wire					
	From	To	Size	Type	Length	Connector	Grn Bush	Condulet	Elbows	Size	Type	#	Length	Total	Equip Term
1	Panel D4	XX.04	2"	EMT	220'	4	2	1	6	4/0	THHN	3	236	708	6
										#4	THHN	1	236	236	2
2	XX.04	XX.01	1-1/2"	EMT	30'	2	1	1	3	#2	THHN	3	46	138	6
			1-1/2"	Flex	6	2	1			#6	THHN	1	46	46	2
3	Panel F6	XX.02	1-1/2"	EMT	120	2	1	1	3	#2	THHN	3	136	408	6
			1-1/2"	Flex	6'	2	1			#6	THHN	1	136	136	2
4	XX.02	XX.03	2-1/2"	Flex	6'	2	2			4/0	THHN	4	18	72	8
										#4	THHN	1	18	18	2

Branch Takeoff

			Raceway							Wire					
	From	To	Size	Type	Length	Connector	Grn Bush	Condulet	Elbows	Size	Type	#	Length	Total	Equip Term
5	Panel G8	Pumps	3/4"	EMT	120'	6				#12	THHN	5	138	690	15
6	Panel B8	XX.04	3/4"	EMT	250'	4		1		#12	THHN	3	288	864	6

Equipment/Misc Takeoff

	Description	Quantity
7	75 KVA XFMR	1
8	225A Panel	1
9	3P200A 480v CB	1
10	3P100A 480v CB	1
11	3P20A 208V CB	3
12	1P20A 120V CB	1
13	L15-20Rw/box,plate	3
14	Mount Alarm Panel	1
15	Mounting Channel	20
16	Megger Feeders	4
17	Panel Hot Work	5

Feeder and branch conduit runs are measured, and the associated conduit, wire and fittings are tabulated for each run. Devices, equipment and other labor operations are counted and listed.

The descriptions and quantities from the takeoff sheet are transferred to the pricing sheet where material prices and labor units are applied, extended and totaled (see **Figure 2** – next page). Materials that require special pricing are noted and will be accounted for in the bid summary.

Section 10 continued

Figure 2 – Pricing Sheet

	Material Description	Quantity	Material Price	Per	Material Extension	Labor Unit	Per	Labor Extension
1	2" EMT	220	185.00	100	407	8.00	100	17.60
2	1-1/2" EMT	150	148.00	100	222	7.00	100	10.50
3	3/4" EMT	370	49.00	100	181	5.00	100	18.50
4	2" EMT 90d Elbow	6	3.66	1	22	0.50	1	3.00
5	1-1/2" EMT 90d Elbow	6	2.51	1	15	0.40	1	2.40
6	2" EMT Connector	4	3.66	1	15	0.60	1	2.40
7	1-1/2" EMT Connector	4	2.51	1	10	0.50	1	2.00
8	3/4" EMT Connector	10	0.51	1	5	0.30	1	3.00
9	2" EMT Coupling	28	2.76	1	77	0.40	1	11.20
10	1-1/2" EMT Coupling	21	2.01	1	42	0.30	1	6.34
11	3/4" EMT Coupling	46	0.53	1	24	0.14	1	6.48
12	2-1/2" Grounding Bushing	2	8.63	1	17	1.21	1	2.41
13	2" Grounding Bushing	2	5.94	1	12	1.01	1	2.01
14	1-1/2" Grounding Bushing	4	4.46	1	18	0.80	1	3.22
15	2" Conduit Hanger w/beam clamp	28	1.12	1	31	0.28	1	7.88
16	1-1/2" Conduit Hanger w/beam clamp	18	1.05	1	19	0.27	1	4.89
17	3/4" Conduit Hanger w/beam clamp	46	0.77	1	35	0.24	1	11.10
18	2" LBD	1	72.21	1	72	1.50	1	1.50
19	1-1/2" LBD	1	69.23	1	69	1.00	1	1.00
20	3/4" LBD	1	19.18	1	19	0.50	1	0.50
21	2-1/2" Sealtite Flex	6	4.51	1	27	0.40	1	2.41
22	1-1/2" Sealtite Flex	12	1.34	1	16	0.20	1	2.41
23	2-1/2" Sealtite Flex CONN Straight	2	65.52	1	131	0.40	1	0.80
24	1-1/2" Sealtite Flex CONN Straight	4	7.85	1	31	0.30	1	1.21
25	#12 AWG THHN/THWN	1554	130.00	1,000	202	6.00	1,000	9.32
26	# 6 AWG THHN/THWN	182	550.00	1,000	100	11.00	1,000	2.00
27	# 4 AWG THHN/THWN	254	870.00	1,000	221	13.00	1,000	3.30
28	# 2 AWG THHN/THWN	546	1080.00	1,000	590	17.00	1,000	9.28
29	#4/0 AWG THHN/THWN	780	4090.00	1,000	3,190	29.00	1,000	22.62
30	12AWG Term	21	0.00	1	0	0.16	1	3.36
31	6 AWG Term	4	0.00	1	0	0.22	1	0.88
32	4 AWG Term	4	0.00	1	0	0.25	1	1.00
33	2 AWG Term	12	0.00	1	0	0.30	1	3.60
34	4/0 AWG Term	14	0.00	1	0	0.50	1	7.00
35	75 KVA Transformer	1	QUOTE1	1	0	18.00	1	18.00
36	225A Panelboard 42ckt Surface	1	QUOTE1	1	0	8.00	1	8.00
37	3P200A 480v CB	1	QUOTE1	1	0	2.00	1	2.00
38	3P100A 480v CB	1	QUOTE1	1	0	1.28	1	1.28
39	3P20A 208V CB	1	QUOTE1	1	0	0.71	1	0.71
40	1P20A 120V CB	1	QUOTE1	1	0	0.34	1	0.34
41	L15-20R Twist Lock	3	25.47	1	76	0.40	1	1.20
42	Matching SS plate	3	2.20	1	7	0.10	1	0.30
43	Alum. FS outlet box	3	14.33	1	43	0.60	1	1.80
44	Unistrut	20	5.00	1	100	0.33	1	6.67
45	Mount Small Control Panel	1	0.00	1	0	1.00	1	1.00
46	Megger Feeder	4	0.00	1	0	1.00	1	4.00
47	Panel Hot Work	4	0.00	1	0	2.00	1	8.00
				Material	6,046		Labor	240

Section 10 continued

Figure 3 – Bid Summary

Bid Summary

Material Pricing Sheet Quote 1 - Distribution Equipment Sales Tax (8.13%)		 $6,046.00 $4.150.00 $828.00
Total Material		**$11,024.00**
Labor Direct Labor Supervision	 240 Hrs@$81.33 per hour 15 Hrs@ $98.00 per hour	 $19,519.00 $1,470.00
Total Labor		**$20,989.00**
Job Expense		**$800.00**
Subcontracts		**$0.00**
Prime Cost		**$32,814.00**
Overhead	20%	**$6,563.00**
Profit	10%	**$3,281.00**
Job Total		**$42,658.00**

The material section has the total from the pricing sheet plus a vendor quote for the items marked QUOTE 1. Local sales tax cost is added to the total material cost.

The labor section takes the labor hours total and multiplies by the composite rate from Section 4. This can be expanded by manually spreading the labor hours over multiple classifications or cost types such as overtime or shift work. The supervision line is for overall project supervision such as project meetings or trade coordination. Direct supervision of the installation is included in the labor units.

A separate list of specific expenses can be made to arrive at the total for job expenses. For a project that is part of an ongoing operation at a particular site a contractor could use historical data to develop an expense adder that is a percentage of material and labor costs.

Costs for any subcontractors are added separately.

Overhead and profit are applied as a percentage of the prime costs (the sum of material, labor, expense and subcontract cost). A contractor may want to apply different markups to each of the cost types. ET

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Did the CPE Renewal Process Change?

All the info has been posted online for everyone to view.

CPE Renewal Program Updates: The Growth Coach (PDF)

Audio Conference explains above document - click here.

AGC Faculty Internship Report

By: Dr. Hisham Said Assistant Professor - Santa Clara University Faculty Intern - Blach Construction Co.
Preface by: David Kramer, Director of Preconstruction Services and ASPE Member, Chapter 55

Preface

Blach Construction was fortunate to have Dr. Hisham Said, Assistant Professor at Santa Clara University, work for us as part of the AGC Faculty Internship program. Blach is highly invested in developing the next generation of estimators. As such, the company is an active participant in ASPE --four of our employees are active members of Chapter 55, one of whom is Past President of Chapter 2.

In recent years, Blach Construction has experienced a chronic shortage of qualified estimators, at least in our region. We have decided to look at the problem from a long-term perspective by implementing a vigorous rotation program that gives our project engineers the opportunity to spend 6 to 12 months in our preconstruction department. We firmly believe that this experience makes them better project managers and executives and allows us to identify who has a passion for this part of the construction process.

When Dr. Said expressed a desire to work in our preconstruction department, we jumped at the chance to be able to share our real-world approach not with just one student, but eventually every Santa Clara University student interested in construction management. He was very productive in the junior estimator role, and we were also able to take advantage of his teaching skills for internal training.

Dr. Said writes about his experience below. I would encourage all of my ASPE colleagues to seek out opportunities like this—it's a wonderful way to promote estimating as a career.

Executive Summary

This report presents the AGC Faculty internship experience that I (Dr. Hisham Said) spent at Blach Construction Co. (BCC) during the summer of 2013. The internship was equally supported by AGC's Education and Research Foundation (lead sponsoring organization), Blach Construction Co., (AGC member and hosting company), and Santa Clara University (SCU) as my home institution. With the help of BCC, I designed the internship to benefit my teaching and instruction in SCU construction management courses by dividing it into two segments: (1) two months on the site of one of the BCC construction sites as a project engineer intern, and (2) one month in BCC's main office as a junior estimator. This faculty internship had a great positive impact on all of its participants. Positive feedback was received from BCC managers and engineers stating that I provided high-quality work within the internship period, which supported the company operations both on the site and in the main office. Also, I finished this internship with a lot of ideas and case-studies to implement in my courses to better mentor and guide my students to acquire the required skills of construction operations management, planning, and estimation. This, in turn, will have a broader impact on the larger group of students at SCU by motivating them to seek successful careers in the construction industry. At the end of this report, I provide some recommendations to attract more faculty and AGC support for the program as a great venue to improve the education and research of construction management.

Continued page 24

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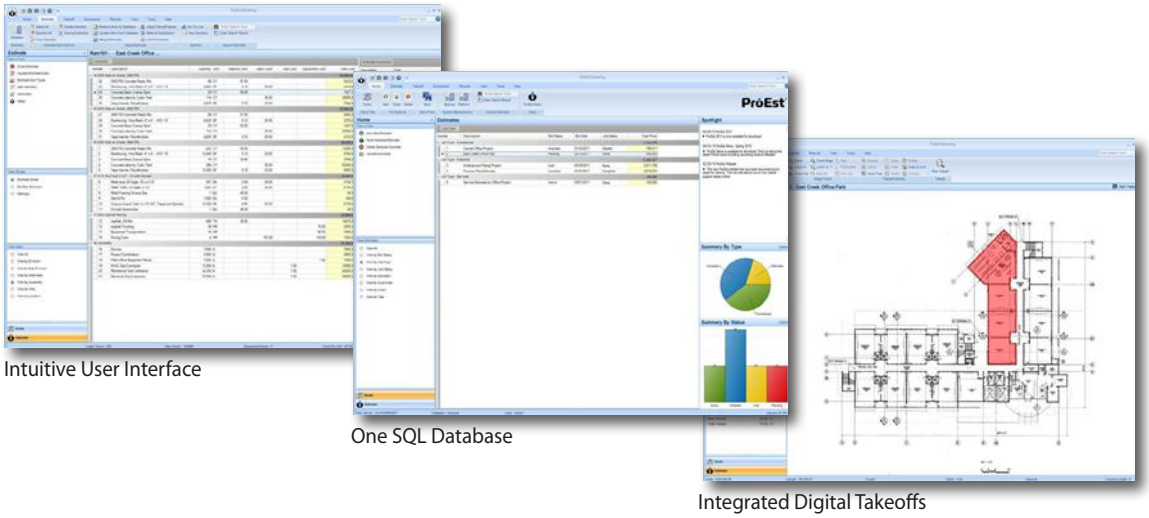

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Continued from page 22

Introduction

It was my honor and pleasure to be selected for the second round of faculty internship awards sponsored by the AGC's Education and Research Foundation. I knew of the internship program from a colleague who recommended it for me based on his experience with a similar program within his academic institution. My colleague mentioned that hands-on and real-life experience helped him to improve his teaching techniques and quality. I therefore sought the financial support of my home institution (Santa Clara University - SCU) and Blach Construction Co. (BCC), which has a strong alumni relationship with SCU. The idea was really welcomed by BCC, specifically Gaye Landau-Leonard (vice president for human resources) and Paul Kehoe (project executive) who were my first contacts in BCC.

In the application, I set a plan for my internship period with BCC to relate to the specific construction management courses that I teach at SCU. Thankfully, Paul and Gaye helped in setting up the internship plan by providing possible construction projects where I could work and better match my teaching curriculum needs. Accordingly, the internship was divided into two segments: (1) two months at one of BCC's construction sites as a project engineer intern, and (2) one month on BCC's main office as a junior estimator. Before starting the internship, I was invited with other student interns by BCC to participate in the Summer Boot Camp to be introduced to key persons in the company and learn about the different aspects of the company operations (see Figure 1).

Figure 1: Internship Boot Camp

The following sections provide a brief description of my tasks and experiences for the office part of my internship. Also, I lay out a plan of how I will use these experiences in my specific courses.

Preconstruction Services Experience

In the second part of the internship, I spent one month with BCC's estimating group in the main office in Santa Clara, CA. I was involved in two main tasks: quantity takeoffs and cost estimating of project work items. It was a rewarding period for me as I had the chance to work with experienced and senior cost estimators.

1. Quantity Takeoff: I was assigned the task of taking off the quantities of a two-phase student housing renovation project and a new church project. This was a good mix as I had the chance to see the difference between renovation and greenfield projects in terms of scope definition and estimation of work volumes. Also, both projects were at different design development levels. The church project had 90% construction documents (90% CD) available, while the student housing had only 50% and 100%

design development documents (50% DD and 100% DD). The scope definition in the student housing renovation project was much harder than the church project because we needed to identify what building items needed to be removed, fixed, and/or replaced. Once scope definition was complete, I used On-Screen Takeoff (OST) software to estimate the quantities of the work. It was the first time for me to use OST, and I was amazed by how quickly and accurately I was able to produce quantity takeoffs using this tool. I learned OST myself by watching tutorial videos and mastered it through using it on the projects assigned to me. I became known in BCC for effectively using OST to the point that senior estimators asked my help to teach them my tricks! I developed a "Quick Hints Sheet" to help future BCC estimators in using OST, as shown in Figure 6.

On-Screen Takeoff (OST)

Quick Hints!

Grab your Blueprints!

First thing to do to takeoff a project is to upload the project drawings (called images in OST)

Set and Check your SCALE!

Before you takeoff, set the scale of your images (sheet)! You can trust the mentioned scale in the sheet and pick it from OST dropdown menu. OR, you can use OST to measure the scale. Just pick a clear dimension and use it!

Do TAKEOFF to get WHAT YOU WANT!

The takeoff of work items is performed using THREE main "Conditions" (i.e. takeoff sketching tools): Linear, area, and count. Each of these conditions comes with its default value that you automatically obtain (i.e. LF for linear, SF for Area and EA for count). You can define and obtain additional values to twist the condition in your favor!

Condition	Value	Dimension to Define	Possible Uses
Linear	Length	--	Lengths of pipes, ducts, beams, etc.
	Surface Area	Height	Takeoff a wall area by just measuring its length from a plan.
	Segment Count	--	Obtain the number of lifts to erect structural steel beams.
Area	Area	--	Area of ceiling, flooring, asphalt, etc.
	Perimeter	--	Saw cutting of PCC, patching areas
	Volume	Thickness	Obtain excavation volume from the pit area taken from a plan.
	Tile Count	Tile dimension	Obtain the number of tiles in ceramic floorings, acoustical ceiling, etc.
	Area Count	--	Obtain number of rooms while getting their areas.
Count	Count	--	Count of fixtures, doors, windows, equipment, etc.
	Total Height	Height	Obtain the total height of columns that has the same ceiling height

ORGANIZE your Takeoff!

Sometimes it is useful to organize and lump your takeoff items by packages, such as exterior vs. interior, floors, buildings, etc. You can organize your takeoff conditions in two main ways:

- Organize by Areas: refer the takeoff conditions in a whole image (sheet) to a specific area that you define (building, floor, etc.)
- Organize by Zones: defined and created similar to the Area condition. Simply any takeoff condition falling within this zone will belong to it! You can draw multiple zones in the same image (unlike the area), but you cannot overlap them (logical, right?)

Figure 6: Developed Quick Hints Sheet for On-Screen Takeoff

2. Cost Estimates: After calculating the quantities of different work items, I used Sage Timberline Estimator software to estimate project costs. I learned how Timberline is a good estimating tool that helps by unifying company's estimates and using historical cost rates available from previous projects available from the implemented cost control and reporting system (see Figure 4). I learned also that estimator skill and experience is still necessary to change template cost account and rates to estimate work items not performed before in previous projects.

Academic Use of Internship Experience

I will use the experience I gained in my AGC Faculty Internship by developing new case-studies, group assignments and computer application exercises. Accordingly, I plan to improve the content of three main courses, as following:

1. ***CENG 184 Construction Administration:*** I teach in this course project delivery systems, preconstruction operations, project reports and records, electronic project administration, labor laws, safety, meetings and negotiations, risk and liability sharing, payments and change orders, project closeouts, claims and disputes. I will improve this course by adding case-studies and real-life exercises of RFI's and change orders. I will also introduce Lease-Leaseback agreements as a new and innovative public project delivery system.

2. ***CENG 186 Construction Planning and Control:*** I teach in this course Work breakdown structure; work sequencing and logic; activity duration estimates; schedule network representations; critical path method; resources loading, allocation, and leveling; planning of repetitive tasks; cost estimates; time-cost tradeoffs; project cash flow analysis; and time-cost control. I will improve this course by incorporating computer labs to teach and use On-Screen Takeoff and Timberline Estimator. I also plan on using the BCC's value engineering case-study as an exercise in a lecture that has the same title.

3. ***CENG 194 Senior Design (Capstone) Project:*** I will use my connections in BCC to seek their support and mentorship to SCU student groups performing their senior design projects.

Beside teaching improvements, I will also expand my research portfolio by collaborating with BCC on investigating the use of offsite prefabricated and modular construction. I knew by the end of my internship that BCC is considering the use of prefabricated panels and modules in their projects. The reason behind this is BCC's unique business portfolio that includes mainly educational projects over short time periods (summer time). Prefabrication and off-site construction is expected to help in shortening project duration and performing some of the work outside of the summer busy time. I had a preliminary understanding with BCC preconstruction group to help them analyzing the benefit of such business change through academic research studies that can be open for undergraduate research involvement and senior design projects. ET

Estimators, You're on the Top Occupations' List!

Author: Suzanne Breistol
Gold Coast
Chapter #49

In 2010, at the height of the recession, I was asked to do a presentation for ASPE (American Society of Professional Estimators) Chapter 49, titled, "The 2010 Estimator: Marketing Yourself and Your Skills for Employment." So many of our chapter members found themselves in the unemployment line, as I'm sure many of you did. The Bureau of Labor statistics reported that cost estimators held about 217,800 jobs in the U.S. in 2008. By 2010, the number had dropped to 185, 400. The construction industry employs approximately 59 percent of estimators; manufacturing, another 15 percent; and the remainder work in a wide range of other industries, including legal, healthcare and banking, to name a few.

Ready for some great news, estimators? Cost estimators are on the Bureau of Labor Statistic's fastest-growing occupations based on projections to 2020. The projections by the year 2020 are that 252,900 estimating jobs will be available in the U.S., and approximately 150,000 of those will be in the construction industry. The nearly 40,000 newly created construction estimating positions do not take into consideration the immense amount of turnover we have in our industry.

How do we improve the turnover stats and, if you are still an unemployed estimator, what do you do to get hired? Let's start by looking at defining the estimators who are currently employed in the industry and some trends we see happening.

Over 93 percent of construction companies in the U.S. are considered small businesses and employ, typically, no more than three estimators within their organizations. Seven percent of mid to large companies will employ ten times as many estimators or more nationally, but dependent on how they are structured, some of their local offices may have fewer than five estimators at any one location. With expanded technology and ease of travel, we are seeing many companies consolidate estimating into a corporate location supporting multiple satellite offices throughout a region or the country.

There are very few general contractors that are requiring estimators to do full take-offs on all divisions. Subcontractor and specialty trades are typically employing the estimators who perform the full breakdowns; and the general contractors are focusing on estimators within their organization who have strong phone and interpersonal skills, can communicate effectively in writing, review tight scopes of work, spot check numbers as needed to ensure accuracy and, of course, assemble the full bid package. Divisional specialists working within organizations are hired to know their trade down to the last detail, know value engineering, and are full experts in price, scope, vendors and the particulars of the division they represent, whether acting as a sub or sometimes prime. The estimators who remained employed in the recession were typically the people that have the top 10 list of skills for an estimator (see box), or they were the right hand to owners or rain makers, providing them the details they needed to land projects.

The industry has changed a lot from the early days. There are exponentially more products and vendors to choose from, requiring more research than ever before. Technology is changing at the speed of light, including new estimating software programs that assist from takeoff to buyout and one- touch contracts and purchase orders. Education for the estimator includes understanding contract legalities, labor issues, contract types, and delivery process, to name a few. After the recession, estimators need to ask the right resource questions to ensure that their previous favorite contractors and subs currently have the personnel, equipment and cash flow reserves to complete a project according to the specs and schedule.

What should both the estimator and the employer be looking for when considering working with one another?

Experience should be a match. This includes which construction discipline: vertical building, infrastructure, division specific, etc.; and project type match, such as healthcare, stadiums, residen-

tial, bridges, underground utilities, commercial, new construction, renovation, etc. You should agree to the geographical area served and whether travel is necessary and how often. Some of the items are less important if the estimator is going to have someone to train him and has the ability to learn the discipline with time.

During the interview process, technology, procedural and communication standards, and key relationships, both internal and external, should be discussed, ensuring that both parties are not walking into any surprises from what is not known or assumed, but required. Discussions should include how the estimator will work and the structure of the company. Will he be the sole person supporting operations or will he be part of a team? Will he lead people or just work through processes? Who does he go to for training or support, if needed? What are the other specifics pertaining to the company; such as, private office or open environment; the type of takeoff and estimating software; dual screen or single screen monitors; extended working hours, etc. Are local marketplace or industry contacts required?

Estimators, the top employers will be looking to verify your dependability, loyalty, honesty, integrity, positive and proactive attitude, willingness to work, flexibility, motivation, accuracy/preciseness and professionalism. In exchange, you should be asking questions to make sure that they possess the core value and character traits you are seeking in an employer. This is verifiable on both sides through reference checking and open communication with provable facts.

In closing, I am going to remove some fallacies and give a few tips for making sure it's a match before you employ:

Fallacy #1- A bigger company does not mean a bigger paycheck, better work environment, more stability or more advanced technology. It is all dependent on the leadership at the top and the culture and standards and smart business practices set forth.

Fallacy #2- Estimators are not valued within an organization as much as operations. Although many estimators express feeling this way, it really has more to do with perception than reality and, again, leadership and the culture they set forth. Estimators are typically motivated and rewarded differently than operations and typically assumed to be a required compliment to operations.

Fallacy #3- An estimator who has never worked in the field is not as knowledgeable as one who has field experience. The truth is that estimators who have field experience typically understand others' roles within the organization better and tend to recognize if something on paper will actually work as drawn and can be built. That doesn't make them more knowledgeable; it just gives them a broader knowledge base. At the end of the day, the estimator who has great estimating skills, sound estimating experience, a great attitude, is a team player, and is humble enough to ask for assistance is the guy who gets the job and performs the best.

Prequalifying tips:

•A minimum of two face-to-face interviews with open discussion of the topics outlined in this article.

•Take time to check three to five references of people they have worked directly for or directly with; i.e., past employers, coworkers in estimating, subs, suppliers, architects, etc.

•Ask to see a sample bid or ask them to prepare an estimate on a project you have already estimated.

•Administer an assessment testing, like the DiSC profile, that will show their level of conscientiousness and how they communicate and relate to a team; however, the results of the DiSC should not be weighted to more than one-quarter of the decision-making process.

Top 10 Skills for an Estimator
1. Estimating
2. Writing
3. Communicating
4. Researching
5. Negotiation
6. Purchasing
7. Computer
8. Presentation
9. Closing
10. Networking

Suzanne Breistol has been a member of ASPE Chapter 49 for the past 16 years and the Chapter secretary for the past 14 years under her South Florida recruitment and consulting firm, FLCC, Inc. In 2009, Suzanne cofounded with Kent Leighton, her business partner, ConstructionConnection.com, an on-line community for the construction industry, offering free employment match, education and encouragement to business leaders and individuals throughout our industry. Suzanne is a certified insight training distributor, public speaker and is known in South Florida as the "matchmaker" to the industry, facilitating employment, joint ventures, company mergers and more. Her motto is, "you bring like-minded professionals together for a common purpose, great things happen." Make sure to become one of the more than 50,000--and growing--members of Construction Connection and join with Suzanne to share knowledge for mutual success! http://www.constructionconnection.com. ET

Professional Recognition Committee
Needs a Hand from Members to Achieve Goals.

PROMOTING ASPE IN GENERAL & CPE CERTIFICATION IN PARTICULAR;WHAT YOU CAN DO TO HELP

By: Gary Gilbert , CPE
Southwestern Ohio #38

The Professional Recognition Committee consisting of Bill Manfrendonia CPE, Tom Norton CPE, Martin Lee CPE, Kurt Tsai CPE & Charlie Rachuig CPE & chaired by myself, is working to assemble information for the SBO on state agencies who solicit bid documents to estimators. We are working to get CPE status to become part of the bidding process, whether requiring a CPE is part of any bid turned in, or having a CPE as an employee turning in a bid an extra "point".

The Society Business Office is sending out information to state agencies starting with the Department of Transportation for each individual state and following up shortly with other state agencies as our committee uncovers them. Obviously there are only a few of us, but thousands of ASPE members. We need your help to make this project a success.

Once the SBO sends out the information, we are hopeful that some of the agencies may contact ASPE's office to ask for more information. Obviously, most will not. You can help us in contacting these state agencies and make them realize using CPE's is in their best interest. That would help further the ASPE cause. Please help us help you by assisting us in getting the word out about CPE's. All of us together are infinitely stronger than any individual or group.

We have been working on putting together a list of talking points that the SBO can give you along with the name of the person and agency they have sent the information to for your region or state. Obviously the more times an agency is contacted, the more likely they are to give an idea serious consideration. It is up to all of us to help promote using CPE status as an award criterion for construction projects. Once the root takes hold, think of how it will help us all as individuals and the association in general.

We hope to continue to develop more governmental agencies that we can target to help get the word out. If every chapter has someone, or a group, that can dedicate a few hours a month, think of the impact 61 chapters could have.

Respectfully,
Gary Gilbert CPE,
Professional Recognition Committee Chairman

PS: Mr. Charles Munroe FCPE had an excellent article in the April 2013 edition of ET on this subject. He points out how a few members spoke to the California State Architect and were able to have CPE status written into the preliminary budget estimate qualifications for any architect completing preliminary estimates for the state. He makes several great points in this article.

List of possible talking points:

WHY USE A CERTIFIED PROFESSIONAL ESTIMATOR?
This question seems to answer itself doesn't it?

What are the benefits of specifying a CPE prepare the estimate for your next project?

- Peace of mind knowing that a professional estimator is preparing the estimate using their knowledge, dedication and experience.

- Knowing that the estimator working on your project has a minimum of 5 years of experience working on construction estimates and projects.

- Being assured that the estimator understands ethical practices and will follow them.

- Knowing that someone who understands the entire bidding process from conception to completion is working on your project.

- Why does using a CPA give you a better feeling about your accounting? Why not get that same feeling about the cost of your next project? ET

Building Information Modeling (BIM) Symposiums at the National Institute of Building Science [NiBS]: 2014 Building Innovation Conference Series

Report by: Brian S. Wright, CPE, Industry Awareness Committee Chairman, Arizona #6

My first BIM Project Management experience was as a P.M. / Estimator while assigned to Arizona State University. The project was the Change Maker Central space remodel. Circle West Architecture used BIM to develop renderings with amazing variety and schematic costs. With a collaboration of estimating and their schematic drawings, multiple cost scenarios were presented to the stakeholders. These multiple renderings, that used to cost $2,000 per set when drawn manually and added days to the design timeline, now enabled the stakeholders to quickly decide how to create a space at a fraction of the cost and time previously required. The space was truly inspirational and the BIM drawings were then utilized for the equally impressive 3D interior design. Subsequently the construction drawings were issued in a matter of days after D.D.'s due to BIM. I was part of the leading edge of the BIM revolution with a very positive experience not shared by many first time project managers and stakeholders. Many other stakeholders projects left them feeling they were on the bleeding edge of BIM. Circle West had, however, demonstrated the highest degree of client care providing an amount of detail that was "just right".

In the past few years multiple efforts have been made to create specifications to help clients understand and contract for BIM's many features and specify and receive what is "just right" for that specific project.

NiBS has been an excellent organization in taking the lead in this effort. NiBS is a truly amazing organization based in Washington, D.C., that has taken up the BIM challenge, along with multiple other building specification challenges we all experience to help lead the building industry. The task of creating specifications for the world is as complicated as the many features of BIM itself. NiBS has published BIM spec version 2, and version 3 is hoped to be available midyear. These standards have been in the works for years and one presenter estimates version 2 covers 2% of what needs to be completed and version 3 will cover 4% of the end goals. Having said that we have come a long way. To understand the worlds take on BIM, many locations around the world regularly call in to the NiBS BIM standards development conference calls, past midnight in their local time zones. The world is committed to forwarding BIM and we should be aware of that and message that urgently to forward BIM's advantages.

Thomas A. Gay, Assistant Vice President of Engineering and plan services at Factory Mutual gave an excellent presentation on calming the fears of clients by coining the term "Bim Light" for his clients. For Factory Mutual Engineering, a "Level of Detail" now referred to as LOD-100 is quick, low cost and shows a simple 3-D site rendering to evaluate what they do best, manage risk. BIM light can be pictured by visualizing a plastic monopoly home or the simplest 3d representation of the buildings exteriors. This rendering is then used to simulate floods, hurricanes, and other potential acts of God to plan for and manage risk, one client at a time worldwide. Note that BIM light does not meet current minimum BIM standards, but could be referred to as an excellent, but simple, 3D site rendering with current language. For their clients, "BIM Light" is just right and keeps insurance rates as low as possible.

At the other end of the BIM spectrum is "level of detail" or LOD 500. This level of detail would represent a shop drawing such as fire sprinklers and would be used to manufacture assemblies and permit/install fire sprinklers. Steve Hutsell, Chief, Geospatial Section, US Army Corps of Engineers, presented on the D.O.D requirements for a high level of BIM detail. They require fully designed fire drawings as part of the construction documents. This is a unique approach that should be considered industry wide. How many short duration, fast track, projects are delayed due to the fire sprinkler subcontract being awarded after a Notice to Proceed, let alone the structural conflicts it prevents? Most times the owner is not even aware of the fire sprinkler design process. The sprinkler subcontractor then takes a month or more to design and permit through the local authority having jurisdiction for plan review. On a fast track, two month duration, project this leads to a missed completion date.

So what level of BIM is just right for your stakeholder? Penn State's John Messner, PhD, and Professor of Architectural Engineering presented their "Project Execution Planning Guide for Owners". A quick and detailed read, this guide could be your starting point to understand what level of detail is just right for them by searching Bim.psu.edu.

After reading up on BIM and developing your thoughts on what is "just right" for your project, a first step to specifying your needs would be including NiBS version 2 BIM standards. A start could be referencing "Minimum BIM", per version 2, which is a chart included in that standard listing multiple aspects that BIM can afford and what level of detail you require. As a reference on a large BIM project, many users would relate to current mainstream BIM at about a level of detail or LOD of 350. This would specify structural and M.E.P. collisions and allow visualizing most major interior components of the building.

Next, could be a reference to the COBie standard, [Construction Operations Building information exchange]. The National Aeronautics and Space Administration and the White House Office of Science and Technology Policy first started COBie. NiBS subsequently collaborated to refine the specification. This is an information specification that should be incorporated into BIM specs for individual equipment

specifications. This data will enable the Facility Manager's future success in the building's life cycle. There is a COBie certification course offered by NIBs that enables you to understand and audit that the BIM deliverable specified, meet your COBie specifications. Short of obtaining that certification at the 40,000 foot flight level, is an excellent 6 part You-Tube COBie training video series available on the NIBs site link below. At a minimum, this series should be viewed by all BIM users to be aware of the pitfalls a weak specification or a poor BIM project can deliver. This video is one example of why many clients currently have a negative view of BIM and what we need to specify and confirm at close out, to correct this issue. http://www.nibs.org/?page=bsa_cobie&hhSearchTerms=%22cobie%22

A specification reference to the United States "National Cad Standard", [N.C.S.] for CAD layer guidelines, drawing set organization symbols, line weights etc, and C.S.I.'s Omni class I.S.O. Masterformat specification organization guidelines should also be incorporated into your specification.

One of the most thought provoking presentations of the week was given by FLOUER Corporation's Senior Vice President Robert Prieto. To paraphrase, "we need to design and build for the entire life cycle of the building" was just one of his many points. The life cycle includes considering building design for the next possible occupant to truly be sustainable and deliver on the investment for life cycles and subsequent refinances for as long as 125 years. BIM is one tool to help us get there!

The good news about BIM: As an estimator, on a 100 million dollar project, BIM is 5% of the total project costs. When economy of scale is reduced to under 200k, BIM increases to 12% - 18% of project costs depending on the LOD required for that project, [A Bio level 5 lab or Class 1 clean room vs. a simple retail store requires a large disparity in LOD to construct]. These costs can now compare with non-BIM projects. We need to frequently message to clients that BIM improves quality and the previous high costs for BIM have aligned downwards as skills and technology of the labor involved ramped up.

Let's be transparent and honest with where we are at. We all need to keep up with BIM for the many improvements it brings to the building process. How many VAV boxes and other items are not accessible or even locatable without building modification in the USA? What facility owner would not want COBIE certified drawings and their facility data it documents, to maintain and modify the facility? BIM is the tool that can give a stakeholder the building we promised. We all want to deliver the highest quality product and compete with the world. BIM is an excellent tool to help move us all forward.

Brian Wright, CPE, is Project Manager and Mechanical Engineer assigned to the JLL INTEL Pacific Region account.

Membership Update

The SBO, Board of Trustees, and ASPE membership would like to welcome our newest Members.

NEW MEMBERS

December 2013

MEMBERS	CHAPTER NAME	CH#	MEMBER COMPANY
Ryan S. Schwartz	Arizona	6	SimplexGrinnell
John D. Herink	Arizona	6	Currie & Brown
Gavin W. Olson	Arizona	6	Currie & Brown
Jared E. Wright	Sacramento	11	Flint Builders, Inc.
Andrew S. Gregson	Greater D. C.	23	Hazen and Sawyer, P.C.
Sarah E. Brown	Arkansas	33	UALR
Roman M. Lipiec	Dallas/Ft. Worth	43	Nelson Forensics
Bill K. Green	Dallas/Ft. Worth	43	**Green Specialty Woodworks, Inc.**
Juan M. Garcia	Silicon Valley	55	**Blach Construction Co.**
Michael A. Green	Central Indiana	59	**Anthony Anderson Corp**
Matt M. Bladel	Quad Citites	71	**DPT Mechanical**
Collin D. DeBuysere	Quad Cities	71	Roofing Technology, Inc.
Christopher M. Taylor	Richmond	82	**Downey & Scott, LLC**
Donald D. Daigle	Richmond	82	**Downey & Scott, LLC**
Craig S. Leavitt	SW - M-A-L	91	**US Air Force**

NEW CPES

NAME	CHAPTER NAME	CH#	MEMBER COMPANY
Arthur Christy	New York	10	AC Construction Corp
Samuel Cremades	Golden Gate	2	M. Lee Corporation
Christopher Newman			Community Housing Partners
James Schaefgen	M-A-L SE Region	93	In-Line Consulting
Chris Staker			Palace Construction

CERTIFICATION

Applications, Brochures, Forms, & Information

http://www.aspenational.org/CPEapplications.aspx

CONSTRUCTION APPS FOR ESTIMATORS

Description
Create professional estimates on the jobsite – fast – and WIN MORE JOBS!

Joist is a FREE tool for contractors that allows you to estimate, invoice, record, payments, and manage projects from anywhere.

CONTRACTORS LOVE JOIST BECAUSE:

• WIN MORE JOBS - Send your client an estimate before you leave. Be the first to get an estimate in their hands, and give them the opportunity to say YES on the spot.
• REMOVE THE BOTTLENECK OF ESTIMATING & INVOICING - Build estimates and invoices quicker by creating and selecting from your list of commonly used materials and labor rates.
• EASILY MANAGE CLIENTS - Create, organize, and store valuable client info, so you can access their info anytime, on the go.
• SAVES TIME - Complete work at the jobsite or in the truck, rather than spending your evenings and weekends catching up on paperwork after a long day
• LOOK PROFESSIONAL - Show your clients that you're the contractor they should trust for the job; with customized, professional looking estimates and invoices.

FEATURES:

- Easily calculate material & labor costs
- Build a list of commonly used items
- Customize your estimates & invoices with your company info, logo, etc.
- Attach a client contract and collect a signature directly on the spot
- Attach photos to your estimates and invoices
- Preview estimates & invoices before you send
- Print or email estimates & invoices on the spot
- Create a personal message for your clients
- Convert estimates into invoices
- Keep track of customer payments and how much you're owed
- Manage and save your clients information
- Set your tax rates
- Export everything into your accounting program (reduce bookkeeping costs)

from the Executive Director

Patsy M. Smith
Executive Director

The Winter weather will be subsiding and the first signs of Spring are not that far away...

...Another time of the year that isn't that far away is Convention Time!

The Society Business Office will soon be very busy putting the final touches on all the planning and preparing for the 2014 Estimating Academy and Annual Convention to be held in Indianapolis, Indiana.

We look foward to seeing everyone again and would like to extend an invitation to our members that have not yet attended a convention to join us in July. Now is the time to spring forward with you travel plans.

We will be releasing speaker and course details as available . . . but in the mean time, the information below will allow you to book your travel arrangements.

Dates: Estimating Academy: July 16-17, 2014
Convention: July 17-19, 2014

Hotel: Sheraton Indianapolis City Centre Hotel
31 W. Ohio St.
Indianapolis, IN 46204
Phone: 317-635-2000, 888-627-8186
ASPE Rate: $140.00

Hotel Description: Located on the historical Monument Circle in the heart of beautiful downtown Indianapolis, means the best of the city is all within easy reach. Downtown Indianapolis is a safe and clean city full of activities for those at work or play. All major shopping, retaurants, and sports arenas are within six blocks of the hotel. Return from your outings to relax by the rooftop pool. ET

State by State. Chapter by Chapter. Fellowship.

BECAUSE PROFESSIONAL ASSOCIATIONS REALLY MATTER.

ARIZONA

Arizona Ch. 6
Where: Doubletree Suites Phoenix Sky Harbor - 320 44th St., Phoenix
Date: 2nd Tues. of the Month
Time: 5:30pm Social Hour • 6:30pm Dinner • 7pm Meeting
Contact: Alan Skinner: 602.997.0000 alan@sis-corporation.com

Old Pueblo Ch. 53
Where: Varies: Call if not on email list.
Date: 1st Wed. of Month
Time: 5:30pm Social Hour • 6:00pm Dinner • 7:00pm Program
Contact: Phillip Rosenberg 520.975.5831 phillip@pgrconstruction.com

ARKANSAS

Arkansas Ch. 33
Where: TBD
Date: 3rd Fri. of Month
Time: 12:00 Noon
Contact: Chuck Hesselbein, CPE • 501.374.8677 • chesselbein@baldwinshell.com

Razorback Ch. 79
Where: Varies - www.razorbackaspe.com
Date: 3rd Fri. of month
Time: Varies
Contact: Heath Rheay • 479.751.8606 • hrheay@kinco.com

CALIFORNIA

Los Angeles Ch. 1
Where: The Barkley Restaurant
Date: 4th Weds. of each month (Except Nov. and Dec.)
Time: 6pm Social • 7pm Dinner & Program
Contact: John Swartz, CPE • 213.637.9146 • john.swartz@lenax.net

Golden Gate Ch. 2
Where: AIA East Bay Regional Office, 1405 Clay St (NW corner), Oakland
Date: 2nd Weds. of each month
Time: 6pm Social • 6:30pm Dinner & Program
Contact: Bob Murelli • 510.267.8220 • rmurelli@tcco.com

Orange County Ch. 3
Where: Ayres Hotel
Date: 2nd Wednesday of Month
Time: 5:30pm Social • 6:00pm Program • 6:30pm Dinner
Contact: Tom Smithson • 310.427.7251 • tom.smithson@gmail.com

San Diego Ch. 4
Where: TBD
Date: 3rd Tues. of Month
Time: 5pm Social • 6pm Dinner • 7pm Program
Contact: Frank Young, FCPE 619.980.4025 • pancho77@cox.net

Sacramento Ch. 11
Where: Vanir Construction - 4540 Duckhorn Dr. #300, Sacramento
Date: 2nd Friday of every month
Time: 11:30 Social | 12pm Program
Contact: Javier Silva • 916.444.1130 • jsilva@silvacostconsulting.com

Silicon Valley Ch. 55
Where: Varies
Date: 3rd Monday of Month
Time: 11:30am Social • 12pm Lunch & Program
Contact: Rich Jensen • 408.828.4023 • rajensen@joimail.com

Inland Empire Ch. 68
Where: Richie's Diner | 40651 Murrieta Hot Springs Rd., Murrieta
Date: 3rd Tuesday of Month
Time: 5:30pm Social • 6pm Dinner • 7pm Program
Contact: Larry Hendrick • 858.444.0025 • lhendrick@gilbaneco.com

COLORADO

Denver Ch. 5
Where: VQ Hotel at Mile High, 14th Floor - 1975 Mile High Stadium Circle, Denver
Date: 2nd Tues of Month Sept. - May
Time: 5pm Social • 6pm Dinner • 7pm Program
Contact: Stacie Flynn • 720.570.5750 • stacie@jordyconstruction.com

CONNECTICUT

Nutmeg Ch. 60
Where: Confetti Restaurant - 393 Farmington Ave., Plainville
Date: 2nd Wed. of month
Time: 6pm Social • 6:30pm Dinner • 7:15pm Program
Contact: Brett Gunn, CPE • 860.284.7480 • bgunn@kbebuilding.com

Yankee Ch. 15
Where: Varies
Date: 3rd Thursday of each month
Time: 6pm Social • 7pm Dinner & Program
Contact: Bill Jacabacci, CPE • 203.257.3928 • jacabacci@gmail.com

DELAWARE

Delaware Ch. 75
Contact: Society Business Office 615.316.9200 • psmith@aspenational.org

DISTRICT OF COLUMBIA

Greater DC Ch. 23
Where: Hill International, Inc. - 1225 Eye Street, NW, Suite 600
Date: 3rd Wed. of month
Time: 6pm Program
Contact: Keith Buchanan, CPE 202.408.3043 • keithbuchanan@hillintl.com

FLORIDA

Tampa Bay Ch. 48
Where: Brio-Tuscan, International Plaza, 2223 N. West Shore Blvd. Tampa
Date: 3rd Thurs. every month except July & Aug
Time: 6pm Social • 6:30pm Dinner • Program Varies
Contact: David Lenz • 813.714.6935 • ssi_estimating@yahoo.com

Gold Coast Ch. 49
Where: Nikki's On The Green, Orangebrook Golf Club - 400 Entrada Dr., Hollywood
Date: 3rd Tues. of month
Time: 5:30pm Social • 6:30pm Dinner & Program
Contact: Don Rolfe • 954.585.4318 • drolfe@balfourbeattyus.com

Orlando Ch. 50
Where: Crave Restaurant @ Mall of Millennia
Date: 3rd Tues. of month
Time: 5:45pm Social • 6:15pm Dinner • 7pm Program
Contact: Danny Chadwick,CPE 407.739.8912 • dkchadwick@bellsouth.net

GEORGIA

Atlanta Ch. 14
Where: Cross Creek Café - 1221 Cross Creek Parkway, Atlanta
Date: 3rd Thurs. of month
Time: 12:30pm Lunch & Program
Contact: LaTarsha Bailey • 404.609.9006 • lbailey@palaciocollaborative.com

ILLINOIS

Chicago Ch. 7
Where: Brio Tuscan Grille - 330 Yorktown Shopping Center, Lomard
Date: 3rd Thurs. of Month
Time: 5pm Social • 6pm Dinner • 7pm Program
Contact: Bob Svoboda, CPE 630.678.0808 • bsvoboda@ccsos.com

INDIANA

Central Indiana Ch. 59
Where: Varies each month
Date: 3rd Thurs. of month
Time: 5:30pm Social • 6pm Dinner • 7pm Program
Contact: Keith Parker,CPE 317.787.5746 • keithparker@circlebco.com

Old Fort Ch. 65
Where: TBD - www.aspechapter65.org
Date: TBD - see website
Time: TBD - see website
Contact: Chad David • 260.490.7449 cdavid@weigandconstruction.com

IOWA

Quad Cities Ch. 71
Where: Granite City Food & Brewery - 5270 Utica Ridge Road, Davenport, IA
Date: 4th Tuesday of the Month
Time: 5:30pm Social • 6:30pm Dinner • 7pm Program
Contact: Dave Furness 563.386.5151 dave.furness@treiberconstruction.com

Greater Des Moines Ch. 73
Where: Varies Monthly
Date: 3rd Thursday of the Month
Time: 5:30pm Social • 6:00pm Dinner •6:45pm Program
Contact: Ken Horner, CPE 515.208.9638 • khorner@waldinger.com

LOUISIANA

New Orleans Ch. 9
Where: VooDoo BBQ & Grill, 7th Avenue, Metairie, LA
Date: 2nd Wednesday of Month
Time: 6:00pm
Contact: Jean-Prieur Du Plessis, CPE 504.274.0060 • jduplessis@mkainc.com

MAINE

Maine Ch. 37
Where: Embassy Suites Hotel -1050 Westbrook St., Portland
Date: 1st Wed. in Oct., Dec, Feb, Apr & June
Time: 6pm Social Hour • 6:30pm Dinner • 7:15pm Program Varies
Contact: John Brockington, CPE 207.774.2756 ext.3251 • jbrockington@woodardcurran.com

MARYLAND

Baltimore Ch. 21
Where: TBD
Date: 2nd Thurs. of month Sept. - June
Time: 5pm Social • 6pm Dinner & Program
Contact: Shana Carroll 410.461.0711 • shana.m.carroll@gmail.com

MASSACHUSETTS

Boston, Ch. 25
Where: Courtyard Marriott of Cambridge | 777 Memorial Drive
Date: 3rd Weds. of Month
Time: 5:30pm Social • 6:30pm Dinner • 7pm Program
Contact: Gail Cullatti •617.394.6291 • gcullatti@bondbrothers.com

MICHIGAN

Detroit Ch. 17
Where: See www.aspe17.org/meetings
Date: Vaires
Time: TBD
Contact: Amy Johnston • 313.437.2773 • amy.johnston@aspe17.org

Western Michigan Ch. 70
Where: Grand Rapids BX - 4461 Cascade SE, Grand Rapids
Date: 1st Thurs. of Month
Time: 7am
Contact: Jeremy Sompels • 616.643.4062 • jeremy.sompels@gmail.com

MINNESOTA

Viking Ch. 39
Where: Varies
Date: 3rd Thurs. of month
Time: 5:30pm Social • 6-8pm Dinner & Program
Contact: Steve Wielock • 952.831.0142 • swielock@thebluebook.com

MISSISSIPPI

Magnolia Ch. 81

Where: Cafe at Trustmark Park, Pearl
Date: 3rd Fri. of the month
Time: 11:30am Social • 12pm Lunch & Program
Contact: Jamie Meyers • 601.706.0412 • jamie.myers@adamevanswaterproofing.com

MISSOURI

St. Louis Metro Ch. 19

Where: Various locations
Date: Varies
Time: Varies; Breakfast or Dinner
Contact: Andy Riva • 636.561.9500 • aariva@paric.com

Heartland Ch. 32

Where: TBD month-to-month
Date: Last Tuesday of the Month
Time: 5:30pm Social • 6pm Dinner
Contact: Kelly Jarman,CPE 816.292.8671 • kelly.jarman@jedunn.com

NEBRASKA

Great Plains Ch. 35

Where: Grisanti's Italian Restaurant - 10875 W Dodge Rd, Omaha
Date: 2nd Weds of the month
Time: 11:30am
Contact: Justin Monroe • 402.977.4530 • justin.monroe@kiewit.com

NEVADA

Reno Ch. 12

Where: Varies
Date: Varies
Time: TBD
Contact: Neil DeMent • 775.745.8791 • neil@ndireno.com

Las Vegas Ch. 72

Where: Desert Pines Golf Course
Date: 2nd Thurs. of each month
Time: 5:50pm Social • 6pm Dinner & Program
Contact: Terry Barnes • 702.866.2100 • paulterry_b@cox.net

NEW JERSEY

Garden State Ch.26

Where: TBD
Date: 4th Tues. of month
Time: 6pm Social • 7pm Dinner
Contact: Jeff Senholzi • 570.856.8760 • jpsen62@ptd.net

NEW MEXICO

Roadrunner Ch. 47

Where: Fiesta's - 4400 Carlisle NE, Albuquerque
Date: 1st Wed of month
Time: 5:30pm Social • 6pm Dinner • 6:30pm Program
Contact: Glynnette Hale,CPE • 505.823.4449 • ghaleyes@msn.com

NEW YORK

New York City Ch. 10

Where: TBD
Date: TBD
Time: TBD
Contact: Peter Wellstood • 914.665.0083 • imagineering@verizon.net

Empire State Ch. 42

Where: TBD
Date: Quarterly - Sept., Dec., March, & June
Time: TBD
Contact: James Madison, CPE • 845.473.3600 • jmadison@arriscontracting.com

Western NY Ch. 77

Contact: Society Business Office 615.316.9200 • psmith@aspenational.org

NORTH CAROLINA

Charlotte

- Chapter in Development
Where: Dressler's in the Metro
Date: 3rd Wed. of month
Time: 3-6 pm
Contact: Peter Martinez • 216.973.6184 • pmartinez@a-p.com

OHIO

Buckeye Ch. 27

Contact: Del Farley, II 513.444.8004 • info.chap27@gmail.com Facebook Link

Northeastern OH Ch. 28

Where: TBD
Date: TBD
Time: TBD
Contact: Larry Lacure • 216.696.2876 • llacure@ozanne.com

Southwestern OH Ch. 38

Where: Embassy Suites Hotel - 4654 Lake Forest Drive, Blue Ash, Ohio
Date: 3rd Thurs. of month
Time: 5:30pm Social • 6pm Dinner • 6:30pm Program
Contact: Troy McAndrews • 513.961.4800 • tmcandrews@cinci.rr.com

OKLAHOMA

Landrun–Oklahoma City Ch. 80

Where: Wine Room at Ingrid's Kitchen - 3701 N. Youngs Blvd, Oklahoma City
Date: 1st Weds. of month
Time: 11:30am – 1pm Lunch & Program
Contact: John Smartt, CPE • 405.254.1050 • jsmartt@manhattanconstruction.com

OREGON

Columbia-Pacific Ch. 54

Where: University Place - 310 SW Lincoln St., Portland
Date: 3rd Tues. of month
Time: 5:30pm Social • 6:30pm Dinner & Program
Contact: Curt Kolar, CPE 503.962.8840 • kolarc@trimet.org

PENNSYLVANIA

Greater Lehigh Valley Ch. 41

Where: Notices will be emailed.
Date: TBD
Time: TBD
Contact: James G. Hanna, CPE 484.357.6466 • jgh@dhuy.com

Three Rivers - Pittsburg Ch. 44

Contact: Society Business Office 615.316.9200 • psmith@aspenational.org

Philadelphia Ch. 61

Where: Double Tree Hotel - 640 W. Germantown Pike, Plymouth Meeting
Date: 3rd Wed. of month
Time: 5:30pm Social • 6:30pm Dinner/ Program
Contact: Karla Wursthorn, CPE 610.649.0400 • kwursthorn@tnward.com

Central PA Ch. 76

Where: TBD
Date: 2nd Wed. of Month
Time: 6pm Social • 6:30pm Dinner & Program
Contact: David Rodney, CPE 717.732.8210 • drodney@pyramidconstruction.us

TENNESSEE

Middle Tennessee Ch. 34

Where: Kraft CPA - 555 Great Circle Road, Nashville
Date: 1st Fri. of Jan, March, May, August & October
Time: 11am Social • 11:30am Lunch • 12pm Program
Contact: Ricky Sanford: 615.895.9000 • ricky.sanford@rogersgroupinc.com

TEXAS

Houston Ch. 18

Where: Spaghetti Westerns - 1608 Shepherd Dr., Houston
Date: 2nd Mon. of month
Time: 6pm Dinner - 7pm Program
Contact: Dennis Pyland,CPE • 713.808.8098 • dpyland@valerus-co.com

Rio Grande Ch. 40

Where: Varies
Date: 1st Thurs. of each month
Time: 5:30pm Social • 6pm Dinner • 6:30pm Program
Contact: Jesus Cardendas • 915.532.1735 • email@elpasobid.com

Dallas/Fort Worth Ch. 43

Where: Texo - Dallas AGC Office
Date: 3rd Thurs. of each Month
Time: 6pm Dinner • 6:30pm Program
Contact: Frank Haas, CPE • 214.517.3087 • fhaas89@gmail.com

San Antonio Ch. 57

Where: TBD
Date: TBD
Time: TBD
Contact: Jay Brown • 210.744.7223 • jnbrown@portageinc.com

UTAH

Salt Lake City Ch. 51

Where: TBD
Date: TBD
Time: TBD
Contact: Tek Hipwell • 801.261.4224 • tek@msfence.com

VIRGINIA

Richmond Ch. 82

Where: Baskervill Architects - 101 15th St., Richmond
Date: 4th Weds. of Month
Time: 5pm Social • 5:30pm Dinner • 6pm Program
Contact: TK Farleigh • 804.343.1010 • tfarleigh@baskervill.com

WASHINGTON

Puget Sound Ch. 45

Where: Swedish Cultural Center, 1920 Deter Ave. N, Seattle, WA
Date: 3rd Tues. of Month (No meeting in December)
Time: 5pm Social • 6pm Dinner • 7pm Program
Contact: Mike Booth, CPE • 206.793.8504 • electricbooth@msn.com

WISCONSIN

Brew City Ch. 78

Where: Charcoal Grill - 15375 West Greenfield Ave., New Berlin
Date: 2nd Tues. of Month
Time: 5:30pm Social • 6pm Dinner & Program
Contact: Deanne Goodlaxson,CPE • 608.838.2985 • dgoodlaxson@casgroupinc.com

All Chapter Meetings are on a monthly basis unless otherwise noted.
If you do not see a Chapter Meeting listing in your state/area call 615.316.9200.
Chapter Presidents should contact the SBO with any updates needed.

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