
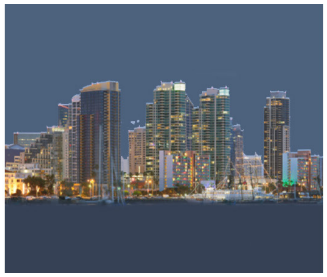

THE BROAD DIMENSION

the newsletter of tbd consultants - 3rd quarter 2017

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In this Edition:

Generations in Construction

The oldest Baby Boomers became eligible for an AARP card in 1996, when they would have turned 50 years old. They still constitute about 26% of the US workforce, and probably a higher percentage in the construction industry, but they are now passing the traditional retirement age, and are beginning to pass the baton to the generations coming behind.

Boomers grew up in a world where computers were machines that took up entire rooms and required their own HVAC systems, televisions were black and white and the broadcasting stations only operated for part of the day. That gave plenty of time for them, as kids, to be out playing in the streets or riding around on their bicycles without helmets. Telephone booths were not just ways of entering the Ministry of Magic (for Harry Potter fans) or for travel through time and space (Dr. Who), but people actually made phone calls from them. Cellphones were

unknown. Safety was not so much an issue, and families were into do-it-yourself, so kids grew up with at least some knowledge and feel for construction.

The youngest Boomers were born in 1964 (although year boundaries for generations can vary, depending on who's talking) and then Generation X (those born between the years 1965 and 1980) started to arrive on the scene. Boomers, such as Bill Gates and Steve Jobs, brought us the age of personal computers, and another Boomer, Tim Berners-Lee, gave us the World Wide Web, but it was GenXers who took and developed those to bring us into the age of smart phones and social media.

GenXers tended to be raised by wealthier parents than those of the Boomers, and saw less of their parents doing work around the house. With both parents often working, they saw less of their parents, period, and this became known as the age of latchkey kids. It has been suggested that this is why they tended to steer clear of jobs like construction, and went for jobs with more regular hours, so they could 'be there for their kids' when they got older. Currently the GenXers make up about 31% of the national workforce.

The generation that followed, GenY, better known as the Millennials, are those born between 1980 and 1997, and they grew up never knowing a world without personal computers, and were raised on broadband. Having graduated from college, they now constitute 31% of the workforce, probably fractionally more than the GenXers, but that percentage will grow and they are likely to be even more of a driver for change.

They started entering the workforce around the time the Great Recession hit, with the result that many of them have had to make compromises when looking for work, and they have seen that being loyal to a company does not guarantee continued employment. Their parents had been taught to treat their children as something special, and told them that could achieve anything they wanted. Those parents also wanted to protect their kids and give them lots of experience, so they were shuttled from tutors to sports and music classes, etc., and free time was spent safely playing video games and texting their friends. Consequently, the Millennials tend to be extremely tech-savvy, feel that they are special and capable of rising through the corporate structure rapidly, and expect things to happen at least as rapidly as they get responses from friends to their texts. Happily, they are also more than willing to be tutored or coached, because many need tutoring in subjects like appropriate dress code for business. Emphasizing the benefits that kind of thing will have for their advancement will give the message more meaning for them. Coaching can also go in the reverse direction, with Millennials coaching their Boomer managers in technology.

Millennials are also used to near instant feedback, and will expect it at work too, or they may feel their effort isn't appreciated. They are ideal for working with BIM, and cloud-based software, and they embrace concepts like green-construction because they want to make the world a better place. While Millennials are likely to feel at home in a design team office, especially if their desire for flexible hours and opportunity for working from home or the coffee shop is accommodated, they (like the GenXers) are less likely to see construction sites as their work location of choice. But those that do find themselves there will probably be driving the introduction of more technology.

Following on from the Millennials we have Generation Z, who currently form about 12% of the workforce, but they are only just starting to enter it. These are even more tech-savvy and less tolerant of legacy software than Millennials, but they are not as tech-centric. The Web, social media, and similar technology was new and exciting, and it became central to Millennials. Not so much with those of

Gen Z. They know its capabilities and how to use it, but they are more likely to want personal interaction, rather than just texting everyone like their preceding generation.

Those of Gen Z are more likely to prefer to be in the office than Millennials, but like them they tend to prefer to have more cooperative spaces, rather than personal space. They also like the office to be easy to walk or bike too, or at least be near to transit, rather than having to drive. With some of the traffic snarl-ups we have been seeing, perhaps the generations have been getting smarter after all.

Construction PDF Coalition

PDF, or Portable Document Format, started out as a proprietary file format of Adobe, but they released it as an open standard in 2008 and it is now controlled by the International Organization for Standards (ISO). Being a format that is readable by multiple applications on just about every operating system for desktop computers and mobile devices, it has become the preferred way for transmitting many documents, including construction documents.

A problem has been that PDFs can be created in different ways with differing amounts of information attached to them. A PDF produced by scanning a printed document is literally 'what you see is what you get', while a PDF produced by the application used to generate the original document might contain a wealth of metadata, and be searchable. A PDF of a floor plan, for instance, might even contain hyperlinks to PDFs of the associated details and sections. The more information a PDF document contains, the more potential use it has for a contractor or someone else on the design team, and that PDF file size may be considerable smaller than that of a less-useful scanned document.

The PDF Coalition, a consortium of contractors and design professional, has come up with a set of Guidelines for Construction PDF Documents. This gives recommendations as to what might be included in PDF documents prepared for construction purposes. It doesn't mandate specific requirements, but offers suggestions that design teams can incorporate into their Project Execution Plan, as they deem appropriate. It has been said that the goal is to get 'All PDFs created equal', but they really mean all PDFs for a particular project to be created equal. However, they'd be delighted if all projects did fully adopt the guidelines.

Some of the guidelines relate to consistency of documents across disciplines, covering such things as sheet size and orientation, consistency of scales for the same level of detail, naming conventions, and consistent visibility of gridlines.

Other guidelines relate to the creation of the PDF itself, and include recommendations to create the PDF directly from the authoring application, using vector graphics and True Type fonts (which aid in making the document searchable), using efficient hatching (to keep file size down and avoid graininess when enlarging the view), and maintaining scale.

The guidelines also suggest having a lead document manager in charge of maintaining document consistency within the team, deciding early on if documents will be issued as sets or as individual sheets, and has recommendations for what metadata to include.

More information on the Construction PDF Coalition is available at www.CPCoalition.com, from where you can also download a copy of their Guidelines. And if you want to add your input into how PDF documents should be produced, and what they contain, you can sign up to join the team.

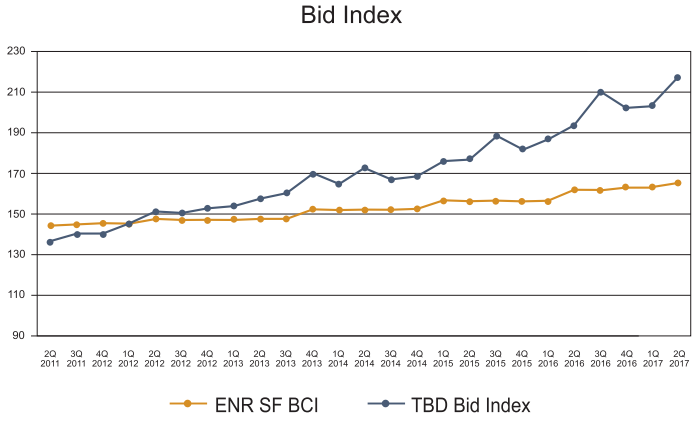
Intrigue & Increases

At the time of writing (May 2017), the news out of Washington, DC, has been more on the lines of political intrigue and accusations, rather than word of movement on the promised tax changes and infrastructure initiative. But the economy is still moving along nicely, as shown by the continuing rise in employment levels. Certainly the volume of construction work remains high.

The hot market, and shortage of staff, means that contractors can be selective in what they bid on, reducing the number of potential bidders and increasing bid prices.

The following (adapted from our 2007 Q4 newsletter) summarizes the issues that are driving bid prices up:

It has been established that a reduced number of true bidders results in an increase in bid prices. On average, under normal market conditions, bids can be expected to be up to about 15% higher than estimated where only one or two bids are received. The reduced number of bidders and the increase in bid prices are both reflections of the bidding market.



The industry is experiencing a shortage of skilled workers, due to people having left the industry during the recession. The prevalent, prolonged effect of overtime also has adverse effects on productivity and labor costs. It has been shown that in a period when contractor's work-books are full, prices can be up to 30% or more above the "norm". While there is undoubtedly a measure of overlap in this issue and the preceding one, they both have measurable effects on pricing levels. This factor will (in general) be consistent across the bid packages, and reflects the added costs of doing business in a busy market, over and above normal escalation/inflation.

Another factor of a strong construction market is that contractors can get choosier about projects, and bid accordingly. Work that is straightforward (e.g. new construction) will attract more attention and have some competition, whereas work that is unattractive will (if bid at all) be priced at a level that covers all current and future risks, and possibly more. Renovation work generally would fall into this "problematic" category for many trades, and the premium (over and above the other premiums) could be up to 50%. This factor will vary, depending on the type of work.

To summarize the above three factors affecting bids, we have the following range of effects:

	Low Range	High Range
Lack of bidders	0%	15%
Hot market conditions	5%	30%
Attractiveness markup	0%	50%
Total effect	5%	95%

Geoff Canham, Editor

Newsletter designed by Katie Levine of Vallance, Inc.