

Breaking Ground

THE MAGAZINE OF THE MASTER BUILDERS' ASSOCIATION OF WESTERN PENNSYLVANIA

MARCH/APRIL 2013

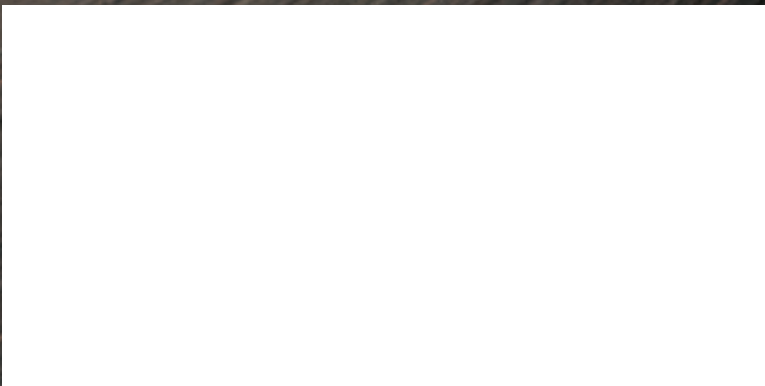
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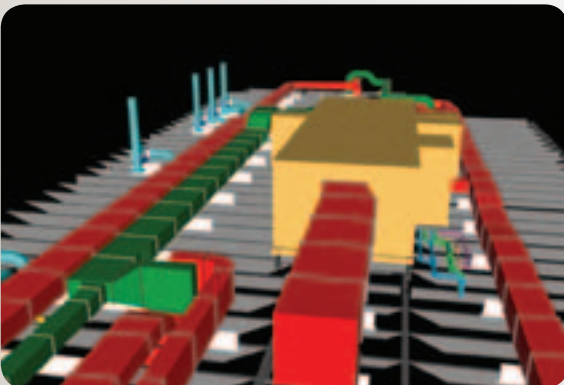
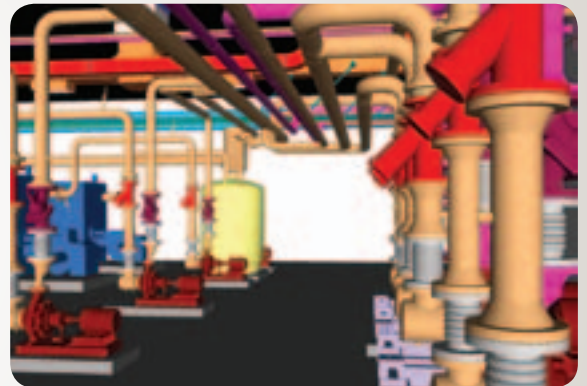


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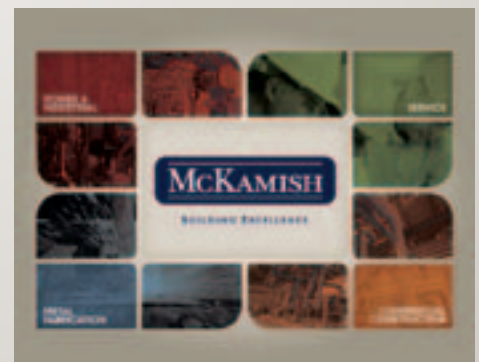


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BreakingGround is published by
Tall Timber Group for the Master
Builders' Association of Western
Pennsylvania, 412-922-3912 or
www.mbawpa.org

Archive copies of
BreakingGround can be viewed
at www.mbawpa.org

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Publisher's Note

One of the realities about technological development is that it is always accelerating. The prediction made by Intel co-founder Gordon Moore – that the number of transistors on a chip would double every two years – has been broadened to apply to the pace of development for all technology. What is known as Moore's Law seems to play out in computers, entertainment, software, and on and on. In reality, of course, this is not entirely true.

What is entirely true about the pace of technology advancement is that regardless of the actual speed, when you look back ten years it's as though you're looking at another world.

That point came home to me a few weeks ago when I encountered some icy spots returning from a Pitt basketball game and had only to put on the brakes and steer to get through them safely. For someone who learned to drive in a '69 Galaxy 500 in the mountains of Central PA – pumping the brakes and steering into the slide – I was struck by how much the braking technology in cars had changed in my driving lifetime (and yes, I know that's more than ten years).

Why the nostalgic 1970's story (again), you may ask? Well, I was looking for an everyday example of a technology advancement that we take for granted. In the part of the world we think of as high-tech – computers, TV's, Internet – the changes are so rapid that you literally can't keep up. But construction, not so much.

There's an irony to the seeming resistance to technology adoption in construction in that the business is almost entirely about productivity and information exchange. The process of building is the accumulation of a lot of small techniques used to more effectively put the components of a building together. Surrounding that physical assembly process is a complex and voluminous exchange of ideas, specifications and details (although not as many as should be exchanged). I doubt there is a process more suited for technology advance than construction.

The knock on the construction industry is that it is full of dinosaurs, unwilling to change for the sake of inertia. That's an unfair oversimplification. People don't like change, for the most part, but for construction there is a strong disincentive to change because of the liability. 'If it ain't broke don't fix it' has real resonance in a profession where mistakes lead to big losses or worse, big accidents.

At the same time our industry is actually very 'broke.' A staggering amount of time and money is still spent redundantly on every project. The velocity of decision-making has not kept pace with the velocity of questioning. Fee or margin compression from competition has made profitability more difficult at all levels of the design/

construction food chain. To me, the best first step towards healing the business is more integration.

The steel industry made one of its giant leaps forward when it adopted Andrew Carnegie's concept of vertical integration. So did automobile manufacturing when Ford fully integrated its Rouge River Complex. Of course, the idea of putting the whole supply chain of construction under one corporate umbrella is totally impractical. But the idea of assuring that a decision or piece of information created at one point in the process does not need to be re-decided or re-designed later in the process is highly practicable and ridiculously desirable.

Yes, there is a big difference between mass production and custom building but the issue in construction isn't customization. It's compartmentalization. When an architect or owner decides on a window style or heating system, that selection shouldn't be a secret from the industry until the job goes out to bid. I don't think it's anyone's intention to be secretive. Nor is it anyone's intention to select windows with a 14-week production schedule on a 12-week job, but it happens. The technology exists now to avoid an enormous number of minor problems – and isn't that what piles up and leads to losses – by simply sharing information throughout the process.

It isn't the technology that is the issue, of course. It's human behavior and changing that is more difficult than advancing technology.

Back in 2007, I had the chance to moderate a BIM panel that included the late Scott Womack, who was with WTW Architects. It was Womack who had the most revealing comment of the night. He answered a question about the difference in a BIM project or something to that effect and responded by saying that the collaboration in BIM required trust. In what was supposed to be a technical presentation the most important factor was a human quality, and one that is in short supply in construction.

Construction as it exists in 2013 – as an industry perpetually chasing lower numbers – is not on a sustainable course. Everyone in the equation of construction needs to make a little more than they are right now. As I do the math, the surest path to that ending is an integrated process where everybody involved in a project is looking to get to the end in the smoothest way possible. To do that there must be more sharing of information at critical times. There are hardware, software, devices and apps galore to manage the information. The human-ware is what needs the updating.



Jeff Burd



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REGIONAL UPDATE

The optimism that marked the end of 2012 has quickly chilled during the first two months of 2013. While all the fundamental conditions of the economy in Western PA point towards more construction opportunities this year than last, the duration of this cooling off period will determine whether or not there is recovery or more difficulty waiting in store.

Caution has crept back into the marketplace for macro-economic rather than micro-economic reasons. The main factor is the return – or continuation – of the uncertainty surrounding the federal government's debt negotiations. Even with the so-called 'sequestration' spending cuts in place by default, the possibility exists that an actual budget deal could override them, especially if negative effects from the cuts become more obvious during the second quarter. A budget deal is a desirable result but the terms of such a deal could create economic pain, hence the uncertainty.

At the grass roots level, the federal spending standoff hasn't completely dampened plans for hiring or expansion by local businesses. But the cuts raised the prospects of fewer federal research grants, lower Medicare reimbursements and an unemployment picture that would keep interest rates low and cool consumption, conditions that have a negative impact on the region's biggest economic drivers.

The financial services sector has been an employment driver since the financial crisis. A looming end to the Fed's quantitative easing and low interest rates are combining to provide headwinds to the banking industry's profitability. As a category, banks are cutting costs in 2013. Even though the strong banks in Western PA don't appear to be in any duress they are feeling the pinch to grow profits.

Giant Eagle was poised for a year that included major renovations to a number of big stores and an increase in new stores but the grocer has cut back on those plans, putting most of its projects on hold. Aside from the lost construction opportunities, a change in sentiment by Giant Eagle signals less confidence about the economy.

For the region's largest employer the fallout from the federal government's problems is more direct. The University of Pittsburgh Medical Center saw its operating income decline to \$85 million during the first six months of its 2013 fiscal year. According to their CFO Robert DeMichie, the decline was due to \$49 million in insurance rate compression, \$39 million in increased investment in physicians and general expense inflation. The highly competitive insurance market is expected to keep pressure on income, while expenses related to the Healthcare Reform Act continue to be assessed. These conditions are pressures on UPMC that will limit capital spending and the federal budget deal has created uncertainty about near-term future of NIH grants, upon which UPMC depends to fund much of its research.

As a result of these factors, UPMC is expected to spend significantly less on construction through the remainder of its fiscal year, which ends June 30. Moreover, it is reported that most of the major capital projects UPMC had been planning will be on the shelf through at least the first half of fiscal 2014, meaning that projects like the St. Margaret's expansion and the Center for Innovative Science will be pushed out of 2013 and Mercy's Energy Plant will be delayed until later this year. The net impact of this freeze would be approximately \$300 million less construction in the region this year.

Two of the system's projects are moving ahead. As of early March, the \$18 million Children's Hospital satellite in South Fayette Township was out to bid and plans to bid the 1,000-car parking garage just north of the Shadyside Hospital campus were still in place, although several approvals still remained to be given.

Projects for companies in the gas industry supply chain continue to develop, especially along the I-70 corridor near the Mon Valley in both Washington and Westmoreland Counties.

Economic pressures are also impacting the region's other large health system. Highmark and West Penn Allegheny Health System still face both internal and external hurdles to consummating their marriage. Competitive pressures have also limited the progress of the \$1 billion-plus capital program that was to result from the merger. Highmark currently has construction underway on its Monroeville medical mall – which is perhaps a \$10 to \$15 million project – and has taken bids on foundation and steel packages of its \$100 million Wexford medical mall. The insurer also has moved along plans for roughly \$75 million in expansion and improvements to emergency, radiology and outpatient facilities at their partner Jefferson Regional Medical Center, but plans for additional medical malls and significant projects at Allegheny General and West Penn Hospital are on hold.

The major hospital project that is moving ahead is the West Virginia University Hospital's \$140 million South Tower expansion. The WVUH system interviewed four construction management finalists on February 22. WVUH is in the early stages of advancing their new children's hospital, although an architect has yet to be chosen.

While the competitive and regulatory hurdles facing the hospitals are going to cause economic headaches in the near term, it's worth remembering that the long-term picture for healthcare is still favorable. Demographics and lifestyle expectations support more healthcare services than are being provided currently. The difficulty of the solution to the problem of paying for healthcare shouldn't be understated but the outlook for hospitals, both regionally and nationally, is still positive.

Even as the regional construction market slows due to uncertainty, activity in the energy sector – particularly in natural gas – continues to provide opportunities for new construction.

Projects for companies in the gas industry supply chain continue to develop, especially along the I-70 corridor near the Mon Valley in both Washington and Westmoreland Counties. Equipment and engine dealer Waukesha Pearce Industries is in the process of selecting a contractor for a new facility in

Alta Vista Business Park, where Industrial Scientific is planning a 35,000 square foot building. Also in Alta Vista, Weatherford Industries is reported to be looking at an expansion and a large defense-related user is rumored to be considering the park.

Activity is even hotter on the Ohio side of the shale play. MarkWest opened a 200 MCF-per-day processing plant in Wetzel County in January and is working on a \$500 million plant in Cadiz and a second processing plant in Noble County. In Louisville, outside Canton, Chesapeake Energy is building an 85,000 square foot Utica Shale headquarters. Drilling service and engineering company, Baker Hughes is planning a \$64 million regional headquarters near Massillon, OH.

Noble Energy is continuing its search for a regional headquarters office, looking for up to 150,000 square feet. Noble is conducting the search at the same time it is developing a new 20-story, 456,000 square foot headquarters at its campus outside Houston, TX. The other big energy player rumored to be moving quicker on a regional headquarters is Chevron, which has selected a site near the I-376 Montour Run exit in Moon Township.

As a counterpoint to the bad news that the healthcare industry is digesting, global developments in the energy market are reinforcing the positive outlook for the Marcellus and Utica Shale exploration and production.

Municipality	#SFD	#SFA	Total
Single-Family Detached			
Peters Township	108	6	114
Cranberry Township	83	263	346
Pine Township	83	50	133
South Fayette Township	81	14	95
Economy	76	12	88
Moon Township	76	12	88
Pittsburgh	76	205	281
North Huntingdon Township	72	4	76
North Strabane Township	69	40	109
Adams Township	66	71	137
Single-Family Attached			
Green Tree	0	272	272
Cranberry Township	83	263	346
Pittsburgh	76	205	281
Murrysville	29	140	169
Adams Township	66	71	137
Total Pittsburgh MSA 2011	1,670	1,202	2,872
Total Pittsburgh MSA 2012	1,936	1,643	3,579
% Change	15.9%	36.7%	24.6%
By County			
Allegheny	854	917	1771
Beaver	182	39	221
Butler	248	348	596
Fayette	82	12	94
Washington	327	110	437
Westmoreland	243	217	460

The municipalities with the highest number of permits for single-family detached and attached houses started in 2012.

The Department of Energy is reviewing 16 applications from gas producers to export liquid natural gas (LNG) to countries that don't have free trade agreements with the United States. Most pressing among the non-FTA nations is Japan, which is seeking to replace nuclear energy generation with LNG-fired plants in the wake of the earthquake at the Fukushima Daiichi plant.

Japanese use of LNG for power is estimated to boost LNG demand by ten percent. Japan already imports one-third of the world's LNG – by far the world's largest importer and six times the imports of China – and the Japanese government has put up one trillion yen in credit guarantees to fund development of terminals. The government of Fukui Prefecture is working with the national government to develop an LNG terminal on the western coast of Japan to import gas from the U. S. Later this year Singapore LNG Corp. will open an LNG terminal on Jurong Island that will be an even more desirable opportunity for U. S. producers, since Singapore has a free trade agreement with the U. S.

The output from the Marcellus Shale exploration isn't connected logistically to the Far East but the terminals in the Gulf Coast are. Because local wet gas production is distributed to the Gulf through the existing infrastructure, approval to export LNG through Louisiana will pull LNG from the shale gas fields to the Gulf.

A recent University of Texas study also shed a positive light on the shale gas opportunity. The study, which

was funded by the non-partisan Sloan Foundation, looked at 15,000 wells over a ten-year period in the Barnett formation in Texas. The study concluded that production of low cost gas would continue to grow through 2040 and would slow only slightly thereafter. Moreover, it is estimated that natural gas could be produced profitably at \$4/million BTU, roughly 50 cents above the current price. Such availability would allow for exports and cheaper energy for U. S. manufacturing. The supply would also give the U. S. flexibility to use natural gas to achieve energy independence. All of these scenarios will give rise to bigger markets and increased employment for U. S. companies. They also mean the growth of the natural gas industry in Western PA is mainly still to come.

Pittsburgh's housing market remains in a steeply upward path. Revised data from the Pittsburgh Homebuilding Report showed that the number of starts previously reported for 2012 was lower than the final tally of 3,579. Year-over-year growth for new construction of housing was almost 25 percent. While the biggest jump was in multi-family units, the increase in single-family construction was 15.9 percent, with just under 2,000 units started.

The underlying support for new home construction is solid. Existing home sales were strong in 2012, with sales and price increases above 10 percent. Those are conditions that beg for new construction as a relief valve but the dynamics of homebuilding here have been constraining that part of the market. A handful of builders have more than 70 percent

market share and the year-end acquisition of Heartland Custom Homes by NVR Inc. means that market leader Ryan Homes has even more leverage for development projects. That disparity in share resulted in fewer available lots going into the recession and the lack of financing since has exacerbated the problem. Coming into 2013, however, residential development has picked up markedly and there should be opportunities for buyers to see more new construction selection in the third or fourth quarter of the year.

Positive regional economic conditions should provide the demand to push residential construction higher than originally forecasted. Assuming that the multi-family projects already in the pipeline for 2013 are started, permits for residential construction should top 4,500 units. That's a 20 percent increase over 2013. Starts should be split fairly evenly between attached and detached units.

Non-residential construction will see lower volumes than previously anticipated. Starts for January and February failed to reach \$200 million. The deferral of several significant projects should keep non-residential contracting below \$3 billion for the year. One source of hope for non-residential construction is the continued high activity level of the architects and engineers, which suggests higher contracting late in 2013. As spring looms, the prospects for the transition from the volume in design to construction appears to be hanging on the economic response to the federal government's latest attempt to balance its budget. **BG**

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NATIONAL MARKET UPDATE

The loudest economic story of the first quarter was the same story that received the most attention in the fourth quarter: the federal deficit deal. Markets and leaders breathed a collective sigh of relief when the tax deal was cut as the New Year broke but the relief didn't last long.

It is probably more baffling that consumers and businesses responded so positively to the January 1 'deal' that settled on tax increases but pushed the mandatory spending cuts off until March 1. As could have been predicted, the optimism surrounding that arrangement was short-lived. While the deal succeeded in fixing some of the uncertainty about permanent tax rates it also ensured that the next round of negotiations would focus only on spending. With a set of across-the-board cuts already in place, Republicans had no incentive to negotiate on lesser cuts and Democrats seemed willing to let the so-called 'sequester' cuts happen so that the repercussions could be blamed on the GOP. On whose shoulders the blame for any negative economic results will rest is still to be determined.

Because the Tax Reform Act had the most impact on the types of income that come from real estate and other investments, the increased rates for dividends and capital gains have the potential to cool off development; but it's more likely that any economic damage will come from demand that is cooled off by the ripple effect of the spending cuts.

The total of the sequester cuts is actually fairly muted – a fact that most Democrats fear will mute any reaction to them – with only about \$45 billion sliced from the 2013 outlay. At this point the greater damage seems to be coming from the rhetoric surrounding the negotiations – or lack thereof. Much like in the 2012 election cycle, both parties are describing the other's position in extreme terms, which is having a chilling effect on confidence to some degree.

The cuts grow to \$85 billion in 2014 when they apply over a full year, but even that austerity amounts to just over three percent of all discretionary federal spending. The Congressional Budget Office estimates that the cuts will trim 0.6 points off GDP and will result in the loss of about 750,000 jobs. Those are not catastrophic numbers but the impact could tip the economy into recession. Government purchasing declined in November ahead of the year-end deadline and the effect was sufficient to cause GDP to go negative in the fourth quarter. Such a damper on the economy would come at a time when the fundamental support for increased construction was recovering.

Real-estate consulting firm Reis Inc. reported that vacancy rates fell for apartments, retail and office buildings during the last quarter of 2012. Rents for apartments rose 0.6 percent in the quarter and 3.8 percent from 2011. Declining vacancy rates – falling to 8.6 percent – permitted retail rents to rise 0.2

percent in the fourth quarter, the sixth consecutive quarter of similarly modest increases. And office asking rents increased by 0.8 percent for the quarter and 1.8 percent for the full year, while the vacancy rate fell to 17.1 percent.

For each of these building types the amount of new space added in 2012 was well below the historical construction levels. Both offices and retail construction were less than one third the volumes built during the 2005-2007 period. Barring a reversal in the job creation trend or a decline in consumer spending, these categories should see increased activity in 2013. Perhaps the most damaging outcome from the triggering of the sequester cuts will be if there is a slowdown in the economy that pushes planned commercial projects back on the shelf.

For the time being, there should be no negative side effects from the political wrangling that will slow down the construction of multi-family units. There are the first signs of potential problems for multi-family housing – increased interest rates would make permanent financing difficult for large projects, further improvements in the single-family market could shift demand – but the overwhelming support for multi-family housing will keep the product hot for at least 2013.

*The Census Bureau
reported construction
spending totaled \$883
billion in January at a
seasonally adjusted annual
rate, up 7.1 percent from
January 2012.*

National Multi-Housing Council president Doug Bibby spoke about the market at the NMHC's recent annual meeting. He cited limited concerns by members about potential overbuilding and identified three potential problems that could chill the hot multi-family market: (1) housing finance reform could fix single-family while damaging multi-family; (2) further tax reform including carried interest that is important to the many 'pass-through' corporations that own multi-family properties; and (3) another financial crisis. Bibby says all of these concerns are overwhelmed by what he calls the "math."

"By that I mean the demographics," Bibby explains. "Household formation, immigration, the undersupply of rental units, renewed interest in downtown living in urban America, all of which are in our sweet spot."

Census Bureau reports of January housing starts show that strength is slowly returning to the single-family housing market as well. Although the data showed a decline in overall housing starts from December – which had spiked particularly in multi-family – the number of single-family starts increased by 0.8 percent over December and jumped 20 percent compared to January 2012. Building permits – which are an indicator of future starts – edged up 1.9 percent over December and 29 percent year-over-year.

Homebuilders remain almost evenly divided between those who view conditions as good or poor, based on the National Association of Home Builders (NAHB)'s report on Tuesday of

its monthly Housing Market Index, which dipped one point in February to 46, near the breakeven reading of 50. Builder responses have remained between 45 and 48 for four months.

For non-residential construction the story is one of two divergent market sectors. In the private sector, spending for construction continues to be on a steady upward trend that is now two years old. While January's starts were below the December levels, the overall activity is more than 22 percent above the cyclical low in January 2011. Looking forward, the indicators are also positive. The AIA's most recent Architectural Billing Index showed a large increase in January to 54.2, a level that has not been seen in more than five years. Likewise, inquiries jumped to 63.2. Both of these responses point to increased construction six-to-nine months out.

On the public side of the ledger, however, construction spending continues to decline, falling to an annualized \$270 billion. That is some \$50 billion below the spending volume that peaked when the American Recovery and Reinvestment Act of 2009 was in effect.

Data from three national sources validated this trend in January. McGraw-Hill Construction (MHC) reported total construction starts in January increased 11 percent from the same month a year ago. Because of the declining public spending, nonresidential building starts declined one percent.

The Census Bureau reported construction spending totaled \$883 billion in January at a seasonally adjusted annual rate, up 7.1 percent from January 2012. The November and December totals were each revised up by over \$15 billion, reflecting a surge in power construction as contractors rushed to finish wind energy projects to qualify for tax credits by year-end. Private nonresidential spending rose four percent year-over-year, while public construction spending fell three percent.

The AIA's most recent Architectural Billing Index showed a large increase in January to 54.2, a level that has not been seen in more than five years.



Reed Construction Data reported that the value of nonresidential construction starts in January soared 25 percent from the previous January. Their data showed nonresidential building increasing 20 percent, but there were unusually large increases in industrial starts (more than 200 percent), institutional starts (27 percent) and what Reed calls heavy engineering (up 38 percent). It's likely that the extraordinary moves in any or all of these categories were due to a single monumental project or a timing issue in their reporting. Even though the magnitude of Reed's reported increases may be corrected in coming months the trend is likely accurate.

An important ingredient for commercial construction growth appears to be back in the recipe in

2013. While financing still bears no resemblance to the market in 2006 or 2007 – nor is it back to normal – the appetite for real estate risk seems to be returning.

Given that loan durations are short for commercial properties, lenders can see less rate increase risk compared to other mortgage types. With rates remaining low for at least another 18 months, commercial real estate may be the only place where increasing exposure makes sense. Federal Deposit Insurance Corp. data for the fourth quarter of 2012 showed that commercial real estate loans grew by \$14 billion on bank balance sheets. At the Mortgage Bankers Association (MBA) annual conference in Dallas, TX it was clear that commercial real estate was one area that lenders were willing to work with in 2013. According to Dan Puntl, senior vice president for Grandbridge Capital Real Estate, the mood at the MBA's conference was very upbeat.

"I think everyone is feeling better about commercial properties. The life insurance companies all increased their allocations for commercial real estate again. CMBS is coming back in a big way," Puntl explained. "The relative value of commercial real estate to the bond market is very favorable."

Real estate as an asset class is generally measured against the 10-Year Treasury bond for relative risk. For investors looking for yields with that term, the T-Bill was bringing 1.86 percent as of March 1. With commercial property values rising – the Urban Land Institute Emerging Trends 2013 showed

increases in 45 of 51 markets – and other asset classes offering little return or volatility, capital is chasing the yield in commercial real estate.

The commercial mortgage-backed security (CMBS) is exhibiting the kind of capital competition that should finally break CMBS volumes out of the doldrums. After CMBS deal volume plummeted from \$270 billion in 2007 to no deals in 2009, investors bought only about \$30 billion CMBS bonds annually since but the conditions are changing. CMBS buyers are focusing on debt service coverage and the decreased delinquency rates for commercial mortgages to bid up deals. Puntl tells of a recent deal where bidders for a deal – including Goldman Sachs – pushed debt yields up above 10 and saw spreads fall 25 basis points during the competition.

"We're seeing an increase in proceeds, a drop in the CMBS [default] swap and spreads on deals dropping," he says.

All of those conditions are more favorable for borrowers. When lenders offer higher loan-to-value and have less fear of default – as indicated by the lower cost of default swaps – there will be more credit flowing. With commercial properties making more sense to build from the standpoint of fundamentals, and with private construction becoming the driving segment of the market, a normalization of financing could offset the uncertainty developers may be feeling about macro-economic and political factors. **BG**



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WHAT'S IT COST?

Inflation at the end of 2012 hovered steadily at levels that are low by historical standards. In January, inflation remains a non-factor in the aggregate but prices for several construction products have begun to break upward. Prices jumped for drywall, lumber and gas/diesel in recent months, with advances in the last 30 days making up most of the increase.

The Producer Price Index (PPI) for all finished goods rose 0.2 percent in January, according to the U.S. Bureau of Labor Statistics report of February 20. Prices for finished goods had declined 0.3 percent in December and 0.4 percent in November. The PPI for inputs to construction

- a weighted average of the cost of all materials used in construction plus items consumed by contractors such as diesel fuel - increased 0.7 percent for the month and 1.3 percent year-over-year. The prices contractors said they would charge for new nonresidential buildings and subcontractors' prices roughly matched the rise in input costs.

Prices for metals were mostly lower again. Copper was up 0.6 percent; aluminum rose 0.3 percent and steel prices declined 0.1 percent. Both steel and aluminum were down from January 2012.

Because of the timing of the report - the data reported was gathered on January 21 - the pricing for oil and

diesel showed little change from December or from the previous January. Since then, however, the price of diesel has spiked, rising seven percent to over \$4.18/gallon over the highway. Demand for oil and diesel has hardly been growing during the typically slow month of February but supply has been dwindling, as several refineries have been shuttered. The nation's biggest refiner, Valero, estimated that nearly 1 million barrels a day of refinery capacity has been closed on the East Coast or in the U.S. Virgin Islands in the past two years, which Valero said allowed it to increase profit margins.

Diesel has a direct and derivative impact on construction prices, as both construction equipment and trucks delivering products burn diesel fuel.

The more alarming uptick is for the materials that are being boosted by the increase in homebuilding. Among those, gypsum prices soared 12 percent in January and 20 percent from a year ago and lumber and plywood rose 4.2 percent and 15 percent respectively. Smaller but significant increases were seen in insulation and paints. There have been concerns that the massive scale of the

PERCENTAGE CHANGES IN COSTS			
	Jan 2013 compared to		
	1 mo.	3 mo.	1 yr.
Consumer, Producer & Construction Prices			
Consumer price index (CPI-U)	0.3	-0.4	1.6
Producer price index (PPI) for finished goods	0.6	-0.8	1.4
PPI for construction	0.7	-0.5	1.3
Costs by Construction Types/Subcontractors			
Residential buildings	0.7	0.1	2.1
New industrial building construction	0.6	0.6	1.4
New warehouse construction	0.9	0.9	2.9
New school construction	0.3	0.0	0.9
New office construction	0.4	0.5	1.0
Concrete contractors, nonresidential	0.7	0.3	0.8
Roofing contractors, nonresidential	0.3	0.3	2.1
Electrical contractors, nonresidential	0.2	0.2	-0.1
Plumbing contractors, nonresidential	1.3	1.2	1.6
Costs for Specific Construction Inputs			
#2 diesel fuel	0.7	-8.8	-1.0
Asphalt paving mixtures and blocks	0.6	0.3	3.7
Concrete products	0.5	1.2	2.2
Brick and structural clay tile	-1.1	-1.1	-1.4
Plastic construction products	0.2	0.9	4.0
Gypsum products	11.8	12.0	20.4
Lumber and plywood	4.2	8.2	15.1
Architectural coatings	1.1	0.6	0.5
Steel mill products	-0.1	-0.5	-8.3
Copper and brass mill shapes	0.6	-1.3	2.9
Aluminum mill shapes	0.3	-0.1	-0.1
Fabricated structural metal	1.0	0.6	1.7
Prefabricated metal buildings	0.5	-0.1	-0.7
Crude petroleum (domestic production)	8.5	1.8	-6.5
Asphalt (at refinery)	-6.0	-14.8	-10.6
Cement	1.8	2.0	3.6
Iron and steel scrap	0.3	13.4	-19.9
Copper base scrap	1.8	3.5	1.2
Source Bureau of Labor Statistics, Updated February 20, 2012			
Compiled by Ken Simonson, AGC Chief Economist			

“Any price spikes will be short-lived and may have already occurred. I don’t think Sandy is having much of an impact on the price of materials,” Simonson notes. “I think what is driving up prices is the marked increase in demand for single-family housing and to an extent from multi-family housing.”

damage from Hurricane Sandy would create shortages and price spikes in residential products, especially since manufacturing capacity for these kinds of products was slashed during the recession. But the AGC’s chief economist, Kenneth Simonson, feels that the extended duration of the rebuilding will mitigate any impact on supply.

“Any price spikes will be short-lived and may have already occurred. I don’t think Sandy is having much of an impact on the price of materials,” Simonson notes. “I think what is driving up prices is the marked increase in demand for single-family housing and to an extent from multi-family housing.”



Year-over-year change has declined significantly for producer prices since January 2012. Source Bureau of Labor Statistics.

With the housing market rebound only in its infancy, demand for products like drywall, lumber, roofing and construction plastics should grow steadily over the next few years. Plant capacity exists in mothballs for many of these materials and can be restarted once volumes begin to approach the historical norms for residential building materials. In the meantime, any price spike in residential products that also have non-residential application – like drywall, lumber, plywood and paint for example – will put unwelcome pressure on budgets for non-residential construction.

The recovering housing market and nascent commercial construction rebound will also put upward pressure on labor costs. Because of several factors – the steep decline in construction, the length of the downturn, the unfavorable immigration climate, to name a few – wages for construction workers have remained lower for long enough that a portion of the workforce left the industry. Combine that with the growing retirement of

Baby Boomer workers and the additional costs from healthcare reform and conditions are ripe for increased labor costs above the rate of inflation.

For the balance of the 2013 building season, costs for construction should remain within the three-to-five percent inflation range that has been experienced the past few years, with the exception of residential building. For owners who have had projects on the shelf for several years, the increased input and labor costs may come as an unpleasant surprise in another year. **BG**

We live in a world with extraordinary advances in technology that have made extraordinary advances in the quality of our lives. The ills of the world still exist and whether or not you think those ills are greater than before, there is no disputing that the ease and accuracy with which we do things is greater than ever.

While the most obvious examples of advancing technology may be objects – phones with the processing power that a mainframe computer had 20 years ago or missiles that can be guided to a specific target from a continent away – the most lasting benefit of those advances are in the changes in our behavior.

Construction is one of the human endeavors where the change in behavior significantly lags the improvements in technology. There is no argument that virtually everyone involved in the design and construction of buildings does their job differently than they did 20 years ago but those differences are largely superficial and physical. You could make an effective argument that there have been more meaningful shifts in attitude and behavior by the workers who make a living with their hands than those who do not. The job site is safer and work is more accurate and collaborative because of the improved tools and communication.

*A wall built from digitally fabricated components.
Photo courtesy Carnegie Mellon University.*

FEATURE STORY



Integration is the Next Big Thing in Technology

FEATURE STORY

IN the offices where projects are conceived, designed and estimated, the work is still more compartmentalized and proprietary than it could be. What is missing is the integration of the process of project delivery.

Imagine undergoing surgery in the manner that a construction project comes together. Would you want the surgeon to work with an anesthesiologist who knew how long you were supposed to be under but didn't have your medical history? What if the gloves that fit the surgeon weren't available until two hours after the start of the operation or if the power was going to be turned off to the operating room for 15 minutes halfway through the procedure? We expect integration from our medical professionals. Technology is improved regularly to make medicine that much more integrated, yet for construction the tools for integration go largely unused.

It's been almost a decade since the 2004 report by the National Institute of Standards and Technology that quantified the value of losses to the industry from poor data management at \$15.8 billion, which was almost four percent of total construction. The Construction Users Roundtable (CURT) called for the revolutionizing of project delivery in

its White Paper 1003 in July 2006. Countless other papers and studies have pointed out the structural impediments to collaboration that exist in the traditional – and even alternative – delivery methods.

Creating a system that delivers construction projects efficiently and profitably doesn't require additional breakthroughs in technology. What is required is a breakthrough in human behavior. And it requires trust.

Getting Over The Digital Hump

One of the roadblocks to advancing technology in the construction industry has historically been simple inertia. Unlike in consumer electronics or personal computers, falling behind in the adoption of new technology has had less negative impact in the construction industry. Failing to see how a new technology could improve speed or user experience can result in an almost immediate loss of market share – Palm Pilots for example – in computers or electronics; but in construction that level of caution has meant not taking an unnecessary risk by changing. Considering the liability involved in construction, the caution is understandable.

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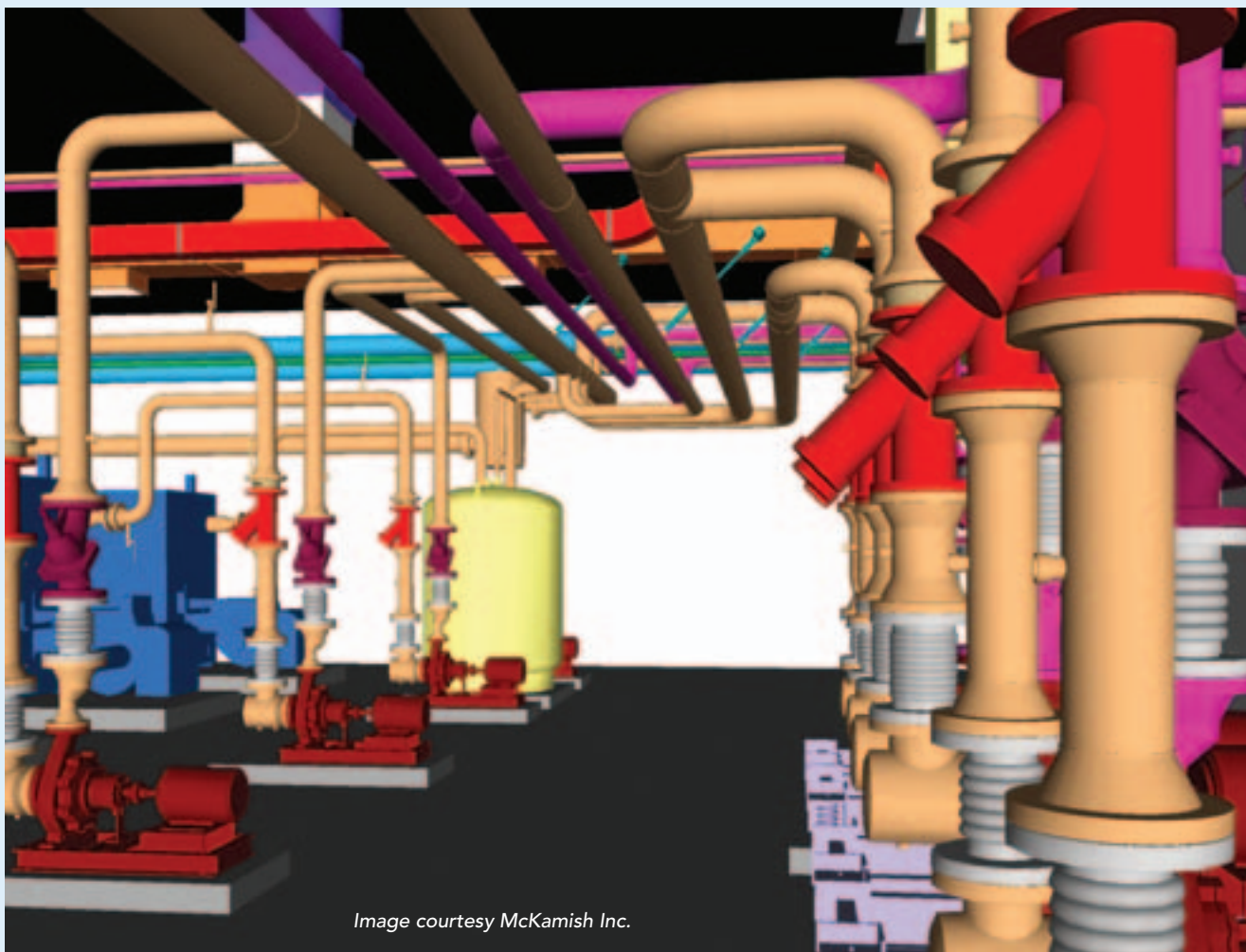


Image courtesy McKamish Inc.

Another characteristic of the construction industry that separates it from tech-centric endeavors is the slow pace of development. From the start of design to occupancy on a new construction project, the process is generally more than a year – although there is no such thing as an average duration. Compare that to the cell phone business. In October 2011, the iPhone 4S was introduced; the iPhone 5 was rolled out 11 months later.

Of course, a bad design or hurried assembly on a cell phone results in lost sales and unhappy customers but no one dies from it. The same can't be said about construction mistakes.

So in many of the areas of construction where new technology could be applied there has been no shortage of people wondering why the way things always worked has to be changed. Moreover, for businesses serving the industry there is money to be made in the way things always worked. Until compelling cases can be made for making more money by changing how things always worked, things won't change easily.

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Design and construction is all about the distribution or sharing of information. Plans and specs, pre-bid meetings, cut sheets and samples are all just different forms of information that has to be shared in order to be included in a project. Yet it is the lack of sharing that inhibits efficiency

in design and construction. There are lots of reasons for playing it close to the vest, almost all of which relate to gaining or keeping a proprietary competitive edge, but at some point in a project the active participants have to show those cards. Building information modeling was

created to get the cards on the table as early as possible, for until the whole deck is exposed the game can't actually begin.

BIM was supposed to be the sea change that finally provided the incentive to expedite the critical sharing of information but thus far adoption of BIM has been gradual and the related advance of integrated project delivery has lagged well behind. Even in the many projects that are now delivered as BIM models there are still walls between the participants.

Mark Dietrick is an architect who provides integration support and training for BIM customers of Autodesk reseller Case Technologies. Dietrick is the past president of AIA Pittsburgh and was formerly director of research for Burt Hill (now Stantec). From his perspective, BIM is still being used as mostly a production tool rather than a strategic and collaborative one.

"Many of the calls we get are from people who are scrambling to figure it out," he chuckles. "It's not that they have made the decision to use BIM but they are working on a project with collaborative BIM requirements and they are not sure what it all means because it represents such a big change in process."

Dietrick explains that it's not uncommon for participants in the project to contribute information to the model selectively that only supports their own uses rather than broader project life-cycle uses. Also, the open sharing of full information models is still not certain to happen on all projects. The reasons for this less than optimal use of BIM are project delivery systems that do not encourage early involvement of key

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subcontractors and therefore collaboration. Furthermore, problems with interoperability still limit how data in the model relates to other data as many different tools are used throughout the process, but the problem is just as much a human one. Lack of trust and the fear of a loss of control are still there.

Control isn't really an issue however, at least no more than it ever has been. Subcontractors and suppliers who need the documents to add their specific details or shop drawings that aren't part of the bid set have always done so, whether the medium for communication is paper or a model. The tools are different but the process is unchanged.

It is the process that is more flawed than the tools. Whether the medium for assembling the information about a project is a BIM model or hand drawn sketches on paper, the way the project is delivered is what makes the most difference in the efficiency with which the work is done. At the end of the day there is virtually no way for a project to be delivered in an optimal fashion without bringing all the key parties to the table before the client's needs and expectations are represented in documents. Even if it were possible for an architect or engineer to fully document the client's project – and it is not – it isn't possible for them to fully anticipate how the market will respond to those documents when the project bids. For a project to be delivered most efficiently, all the information that can influence the project must be shared during the design process. That means no hard bid, no taking the most advantage of the competitive market. It means giving the project over to an integrated approach to solving the client's problems. In Western PA it means delivering projects in a way that most are not.

"There is a lack of a collaborative business model. Most owners in this part of the country just can't get

themselves away from hard bid," says Dietrick. "Many owners don't yet understand that more collaboration and integration can provide advantages of fewer errors, less re-work, less repositioning of resources at the site. It makes the project more efficient for everyone."



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Architectural student works in CMU's dFAB digital fabrication lab, which uses design-to-fabrication tools to make building components.

Getting A Glimpse Of The Promised Land

One of the things that frustrates technology proponents in Western PA is the fact that integrated projects are being done in much greater numbers in other regions. Mark Dietrick, for example, is a member of the national leadership group of the AIA's Center for Integrated Practice and is always amazed to hear that projects have been delivered using integrated delivery systems for years in California and other regions. A bit closer, in Akron, OH a project is being delivered with an actual IPD contract. Neither of those markets is flush with work or uncompetitive so the difference is that the owners have decided that the perceived savings from competitive bidding don't offset the benefits of integrated design.

Perhaps it would be easier to understand the integrated approach if it were separated from the buzzword it can be. The illustration from Fiotech – a consortium of business and universities dedicated to the development of innovative practices in construction – is a rather compli-

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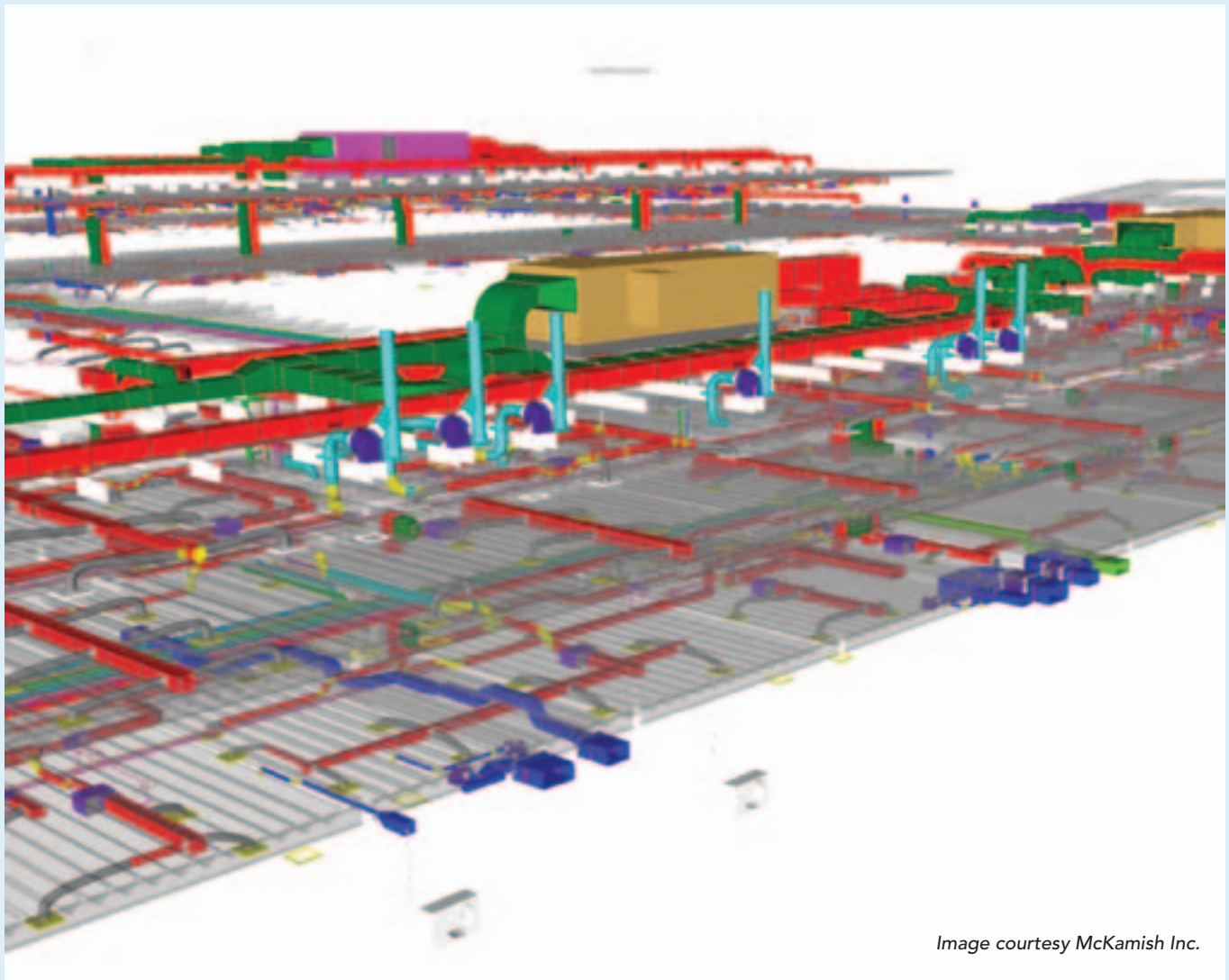


Image courtesy McKamish Inc.

cated flow chart of the integrated approach. In words, the integrated approach to project delivery engages all the parties to a project that could influence design and construction and attempts to bring to bear their collective intelligence and experience. The Fiatch model is for a wholly integrated facility, not only designed and constructed collaboratively but operated and maintained using the same information and process. Their illustration takes the integrated approach to its ultimate conclusion but most of the Fiatch stakeholders would happily settle today for a small slice of that road map to be reality.

In practical terms for 2013, a huge improvement would be made if the process of designing a project were to include the contractors whose work was going to influence

the budget and schedule. For most projects this would involve the mechanical and electrical contractors, structural fabricators and the general contractor or construction manager.



Taking a few more steps towards the integrated approach would mean creating contractual arrangements that more closely aligned the parties to the project with the project's success. This means identifying the key measures of success for the client – budget, schedule, safety or claims for example – and tying the compensation of the participants to benchmarks in those measures. The logical conclusion of this kind of arrangement is a formal IPD contract, in which the owner, architect and construction team indemnifies each other from liability and shares the risk proportionally.

arrangement is a formal IPD contract, in which the owner, architect and construction team indemnifies each other from liability and shares the risk proportionally.

This kind of contract is hardly the norm anywhere. But the Cleveland Clinic has been using agreements such as this for several years on their major capital projects. Executives there implemented incentive-based agreements in an attempt to get certainty about budgets and experience fewer surprises during construction.

Integrated project delivery can also work under less formal conditions. In the spring of 2011, Carnegie Mellon University decided to address deteriorating exterior conditions at Margaret Morrison Hall. Architects Perfido Weiskopf Wagstaff Goettel were brought in to design a solution to the crumbling terra cotta and brick but almost from the beginning of studying the problem it became clear that there were larger problems. Water had damaged the structural steel and significantly more work was going to be required. Within a month or so, in July 2011, CMU decided upon Jendoco Construction as construction manager to help PWWG with constructability and budget issues. Work started in the fall of 2011 and wrapped up at the end of last year.

"It was absolutely the right approach not to bid this kind of thing," says Sheldon Goettel. "Carnegie Mellon decided to take something they had to do and not waste a crisis. There's no way in the world to bid this kind of project unless

you had much longer to investigate and design. That would have been much more costly."

With a broader range of perspectives in the room during planning, it was decided that opening up the parapets and sections of the exterior wall gave them the opportunity to put new services in for chilled water and electrical. New risers were built while the walls were open. The involvement of key subcontractors allowed for better coordination and cost control. The restoration of Margaret Morrison Hall was a \$2 million job that arose out of an emergency but the approach to solving the problem integrated the design and construction teams with the owner from the earliest stages and gave CMU the chance to communicate its needs at every step.

Jendoco is one of a dozen or so contractors that bid work at Carnegie Mellon and one of just a few that CMU has worked with for decades. At some point in the process it's possible that someone on the owner's team had the impulse to check Jendoco's prices but the contractor was in that position in the first place because the level of trust that exists between them and the university is above examination. That's a description that seems out-of-step in construction but nearly every contractor or designer or owner has a similar relationship with another in the industry. Integration requires a level

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of trust that goes beyond that needed to get on a prequalified list of bidders but parties to the construction practice have proven to be capable of such trust on a limited basis already.

Putting a team together early in the process also helps bridge a gap that exists between design and means and methods of construction. One emerging technology that is helping to bridge that gap is digital fabrication.

Digital fabrication uses 3-D printing, thermal forming or robotics to build components or assemblies from a computer model or file. Digital fabrication allows highly customized components to be built for a project in a more cost-effective way or offers an accurate and safe way to accomplish a task in the field that is either very difficult or dangerous. The equipment that executes the fabrication has grown in scale so that it can become practical to actual construction projects.

Carnegie Mellon's School of Architecture now includes a digital fabrication lab. The students who work with the dFAB get to try creating complex or highly creative fabrications but the experience also puts them in the position of making the things they design. That's an experience that

dFAB director Jeremy Ficca feels makes the architectural students more collaborative with those people who will build the projects they design. Ficca believes that is a step in the right direction towards moving the profession back to a position of relevancy.

Relevancy is built upon credibility and it is critical for participants in an integrated approach. An IPD project should not put the architect in the position of defending a design but an architect whose designs are practical from the standpoint of budget or construction is a better member of the team. That requires that architects be as accountable for means and methods as the contractors. Jeremy Ficca says that his students working in the dFAB labs are embracing being responsible for how their designs are built.

"For many of the students, when means and methods are merged with design they get very excited," he says. "It brings more immediacy to the process."

Integration As Business Model

Architecture has been criticized for some time for its lack of immediacy. Perhaps the loss of immediacy has come from

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a concurrent effort to remove the profession from as much of its professional liability as possible. The 2007 revisions to the A201 contract documents seemed to be aimed at reducing the architect's risk rather than increasing responsibility and no provisions for collaborative agreements were included in the first release. Moving the profession further away from direct involvement with the projects has not mitigated liability but it has pushed architects further away from some of the services they were trained to provide – and reduced their justification for compensation.

Integrated project delivery puts architects at the same table as the contractors in developing a project for their mutual client. That's a table architects have been reluctant to share but it's one that contractors have been happy to occupy with them. In fact, according to Case's Dietrick it is contractors that are driving the growth in BIM at the moment. Use of BIM reached 50 percent of firms in 2009 and McGraw-Hill's 2012 survey showed that more than 70 percent of all architects had used BIM on a project. BIM is still being used in a minority of the projects delivered, however and the adoption has shifted from designers to contractors.

"Contractors have blown past engineers and architects and now lead all firm types in their adoption of BIM according to the McGraw Hill survey," Dietrick notes. "They clearly see and have quantified the value and the time saved in the field."

With the share of design/build projects rising again, contractor usage of BIM may signal a further shift in the responsibility for project design. The design/build model places the contractor in a contractual relationship with the owner

that subordinates the architect. BIM informs all participants in a project and a contractor with extensive BIM experience would possess the information to serve the client in a way similar to how an architect would. Integrated design moves design back to the architect's side of the table even as the approach means sharing the process of design. It also moves accountability for the design back to the architect but it is a shared accountability.

An integrated approach to project delivery isn't a magic pill that changes the behavior of the industry. Rather, integration recognizes the inherent dysfunction of the traditional and alternative delivery systems and establishes conditions that allow – if not encourage – collaboration among the parties. Traditional contracts and approaches encourage defending self interest instead of the interests of the project. Risk management often dictates doing nothing rather than trying to solve a problem.

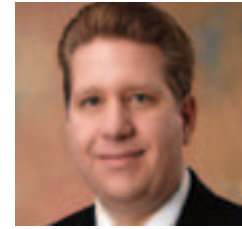
Integration and collaboration as a delivery system expect that participants do exactly the opposite. Agreements that formalize the integrated delivery approach provide the best incentive to acting in the best interest of the team and project, since they hold the counter parties harmless from damages that may arise from errors or omissions. But an integrated approach can be undertaken using traditional agreements.

The key ingredient to collaboration is still the willingness to freely collaborate, to subordinate self interest to the success of the project with the faith that the project's success will ultimately best serve your self interest. That, of course means trusting that the other participants are equally committed to the success of the project first.

Trust is not a high technology tool. For those skeptical that trust can become a defining characteristic of construction, it may be useful to reflect on the general level of satisfaction with the way the industry functions today. Integrated project delivery is not yet the norm but it offers a solution to the most prevalent complaints about construction and could well be the wave of the future. Ignoring opportunities to collaborate could well leave you dis-integrated. **BC**

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MAYA DESIGN HEADQUARTERS

"Cities have main roads but they also have back roads. There are neighborhoods and cities that also have a center or market-place that all roads lead to," explains Joseph Ballay, co-founder and principal at MAYA Design. "That is sort of the cultural center where people meet and work together. The reason good cities work is that they have all those elements in the right balance."

What Ballay is describing is his vision for how architects Anne Chen and Gary Carlough would create a space that would accommodate and mirror MAYA's collaborative work culture. The metaphor of a city has worked in their previous space, allowing people to move freely throughout the office and providing large and small separate spaces for the staff – who Ballay refers to as Mayans – to come together to solve problems away from their formal work stations. This collaborative space was represented in what has been MAYA's signature space for 20 years, a large round room they call the 'kiva.'

The project was undertaken primarily because of MAYA's growth. Their lease in South Side Works was expiring and the company needed some additional contiguous space. They began a search

of buildings throughout the extended Central Business District, including downtown, South Side, North Shore and the Strip. In mid-2011, they selected Four Gateway Center as their new home because of both convenience and cultural reasons.

"For one, we do a lot of work out of town, which means we are heading out to the airport or customers are heading in and Gateway Four is ideal for that," says Dutch MacDonald, MAYA's COO. "The other reason was we were thinking about quality of life issues – a variety of restaurants and night life. We had the South Side Works experience but this has exceeded our expectations. In fact, we now have three or four employees living downtown."

As might be expected, MAYA approached the planning of their new space in the same collaborative fashion with which they work. EDGE studio had been a customer of MAYA's, having consulted with the architects on what they call information architecture during EDGE's design of the Carnegie Library's main branch. And there was also the fact that MacDonald was a founding partner in EDGE studio, working there for more than a decade. Bringing them into this project was natural.



"It was flattering that Dutch was a previous partner and that he was willing to hire us," jokes Carlough. "He knew all of our shortcomings and still considered us!"

Anne Chen was the project architect for EDGE. It was her request of Ballay that led to his description of the city as a model for good office design. Chen feels that the nature of MAYA's business – the firm is a technology design and consultancy – made them a more communicative client.

"They were a client that knew how space affects their design. MAYA's philosophy is that design is supported by the space in which they work," she says. "Certain spaces were critical to their work efforts. This analogy of a city and all the community subcomponents was a good way to express their program."

What the city analogy meant to the design was that there would be an overall open floor plan that had few distinct boundaries but that had areas that were demarked by intentional changes in the office's design and materials. There would be main corridors that connected the areas where the like-minded designers worked – the neighborhoods – to the central core of the space, but there were also to be secondary paths to allow for shortcuts from one neighborhood to another or to support spaces like copier or server rooms. Part of the open plan was to maintain open sight lines from the offices to the main corridors of downtown, so that workers had clear views up Liberty Avenue or

the Ohio River or to the Point. At different places within the office there would be niches or other places intended to allow groups of two or three to gather away from their main work station to solve a problem. And at the heart of the space was the kiva.

Joe Ballay compared the kiva to the cathedrals that tended to be built in the center of European cities. A kiva is a small structure or room – usually round – that was used for ceremonial or religious purposes by the Hopi and Pueblo tribes in the American southwest. In MAYA's culture, the kiva is a round room with marker board walls where 'Mayans' and customers can gather to work together and present ideas.

MAYA'S PHILOSOPHY IS THAT DESIGN IS SUPPORTED BY THE SPACE IN WHICH THEY WORK, ...

"This area of the kiva was developed into more than a collaborative place," explains Chen. "At the center of the office they have a mega kiva that can hold all their employees or clients. It represents the evolution of the concept." When design of the project was complete there were a total of three kivas included.

The Four Gateway building was an interesting part of the process as well. For starters, there was some remedial work that needed to be done to prepare the floor for construction. Asbestos was abated from above the ceilings and the building's systems were left exposed. The configuration of Four Gateway also presented an opportunity as its shape gives tenants a 240 foot long exterior wall to work with. The challenge was to keep people meant to collaborate connected instead of separated.



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AT DIFFERENT PLACES WITHIN THE OFFICE THERE WOULD BE NICHES OR OTHER PLACES INTENDED TO ALLOW GROUPS OF TWO OR THREE TO GATHER AWAY FROM THEIR MAIN WORK STATION TO SOLVE A PROBLEM.

The solution was to create architecture that gave the working groups of designers their formal workspace along the west-facing outside wall or in corners where they could get the benefit of the light and views from the windows. (Ballay says, "The Mayans deserve to be by the windows. They do all the work.") These were the eight neighborhoods into which the MAYA staff was divided. As many as six different 'back roads' – corridors that go from west to east – give access from one neighborhood to another. Employees feel an identity about their neighborhood – each is named – and the adjacent architecture is different from one neighborhood to another.

Anne Chen thinks the challenges that the building presented were offset by the attributes of Four Gateway Center. She points to the floor-to-ceiling glass, the perimeter hot water system and the separation from the elevator core as qualities that foster good design and Chen likes what Gateway Center represents.

"Those Gateway buildings represent the industrial heyday of Pittsburgh. Now there's this new Renaissance but these buildings were built when Pittsburgh was at the height of its strength," she says. "There's still modernity about them. Gateway Four is such a wonderful space to design in."

While the program was being translated into an early design, MAYA decided to bring a contractor on board. Rather than bidding the project out, MacDonald sought out the building's owner to recommend contractors. One contractor that had done work in the complex through most of its history was F. J. Busse Co.

"They brought us in because we had worked in Gateway so much. MAYA asked Hertz and Jeff O'Donoghue recommended us," says John Paul Busse. "We had never worked with EDGE until a job at CMU that summer. During that project Gary Carlough mentioned that they had this project downtown we would be looking at."



Photo ©2012 Ed Massery

“IT SHOWS YOU CAN GET GREAT SPACES ON A BUDGET.”

Design on the space had been driven by MAYA's programmatic needs without consideration for budget by that time, or at least without checking costs yet. MacDonald wanted to have contractor input as they worked on creative solutions, both to keep the budget in mind but also to assure that design ideas were practical.

“We did the original estimate and it came in \$500,000 over budget,” says Busse. “So we did value engineering and started looking at things as they were being included in the design.”

“It helped to work with somebody like Busse brought in early on,” says Chen. “They were very responsive and very much part of the team. It shows you can get great spaces on a budget.”

MAYA's space on the 16th floor was only 18,000 square feet so decisions with high costs associated with them could magnify the effect. For MAYA the magnifiers were in the details and the

“We brought Busse in pretty early in the process; I think we had schematics done,” remembers MacDonald. “I had never worked with John Paul before but they had done a lot in this building. It was a very integrated process from then on.”

most spaces were not demised by hard walls or ceilings. Cork flooring was used where the public spaces were. Wood panels marked the areas where there was collaboration. And then there were those round kivas.

“There's a reason there aren't sliding radiused doors everywhere,” laughs Chen. “They work really well and it characterizes how MAYA works but it's not easy to do!”

Busse says that the kivas posed two main challenges – not that there were only two problems. One was that the marker boards were being used in a unique application on the curved walls. The other was that the design called for a series of five sliding doors that would open completely like pocket doors or close in a sequence to give partial or complete separation from the rest of the floor. Each of these had a customized solution that included some trial and error.

“The marker boards are porcelain on steel and they are usually pre-adhered to the drywall but we didn't have that option because of the radiused wall,” explains Busse. “We couldn't get them to adhere and no [manufacturer] would give us advice! We tried contact cement and that failed. We had to be careful with the panels because a wrong turn would leave the steel kinked. We tried a bunch of adhesives and ended up using a trowled-on adhesive for exterior walls.”

The solution for the sliding doors involved mounting Unistrut barn door tracks with barn door rollers on the floor and ceiling. The tracks were custom bent to the radius of the extended wall curve.

collaborative spaces. While most of the office spaces are symmetrical they are also offset or angled from other sections of the office. Because so much of the space was open, the design called for a variety of finish details to distinguish one area from another.

“It wasn't like you could run with ten straight offices. There were all kinds of transitions between different spaces and materials,” explains Busse. “It was customized with so many little details like bulkheads, door jambs, radiused walls, different elevations and a lot of different materials coming together. We had to figure out how they would all fit together.”

The transitions were intentionally put in place to demark the purpose of one space from another, since

Mounting them to the ceiling deck meant that there was no way to make adjustments and the bending inevitably created flat spots in the track.

Fabricating the doors was just as great a challenge. That task fell to specialty millwork contractor Master Woodcraft Corp. of Washington, PA. The design called for five panels that had an equal radius to open and close parallel to each other. The doors were built of a veneer on three layers of laminated plywood.

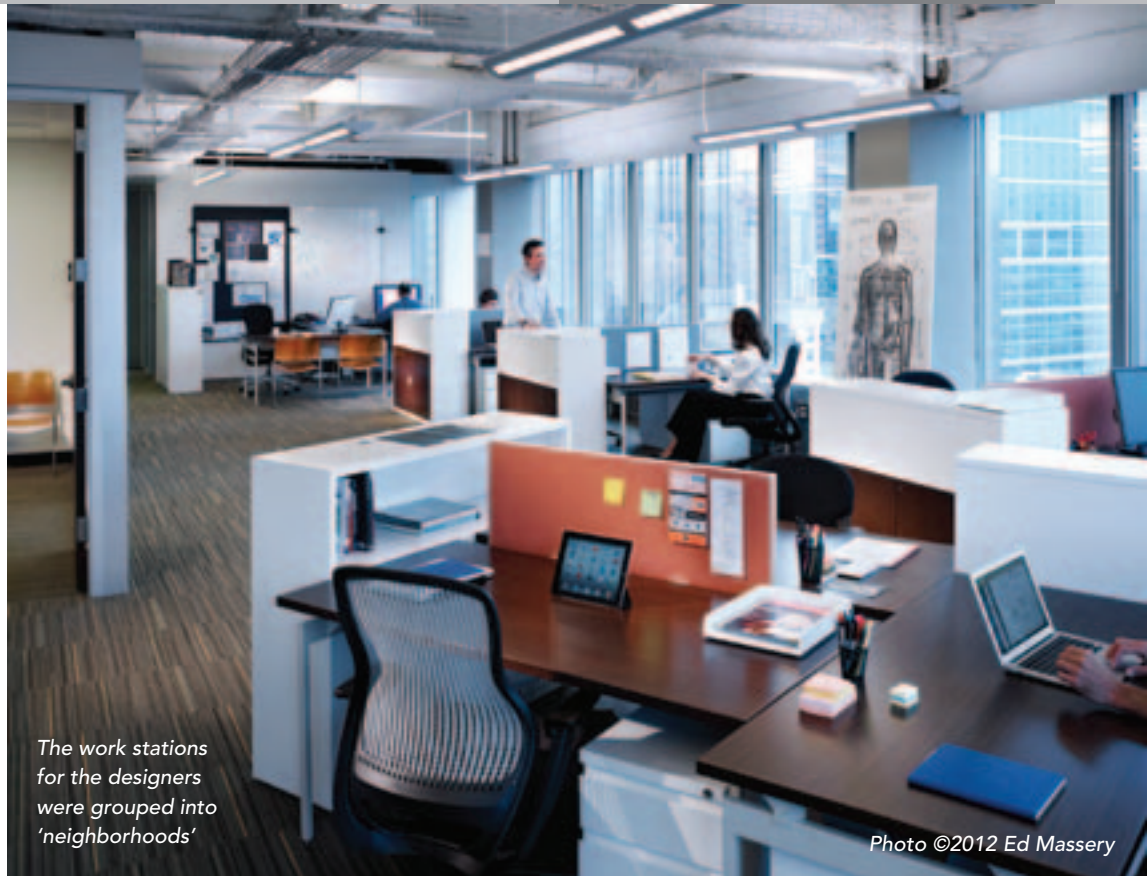
"They formed the doors by putting wet plywood on forms and then bending them to the proper radius," says Busse. "When the doors were installed they tried to relax back to straight. To solve the problem they put a stainless steel channel on the top and bottom of the door panel with caps to hold the radius of the door."

Busse describes another set of special purpose doors in the office. "The training room had four jalousie doors that pivot to close with marker boards on one side and wood veneer on the other or to have the wall look wide open when they pivoted up. The wood was a reconstituted walnut veneer made from pieces of waste cut-offs. That was a pretty cool idea."

It fell to Busse's superintendent Ed Lisowski to make all these details and transitions work within a reasonable but tight schedule. Work started in late December of 2011 and MAYA took occupancy in April 2012. One of the bigger challenges was managing trades people who were accustomed to production but had to stop regularly to install a component in a way that was different than the normal application. It was those creative applications and details that distinguished the MAYA project.

Dutch MacDonald came away from the project with an interesting perspective about the planning after being very engaged in the project from the beginning.

"There were so many details about how we work as a company that really informed what was designed. I made a lot of sketches over top of drawings – a lot of little quirks that I would never have conceived of if I were the architect for the project," he notes. "I kept thinking how did I do this for a living?"



The work stations for the designers were grouped into 'neighborhoods'

Photo ©2012 Ed Massery

"The design is an aesthetic that ties the space together. We weren't trying to make the neighborhoods look like Little Italy or Polish Hill – there is definitely a unifying theme," Chen points out. "It's about MAYA's work effort. It's about them and what they do. It's not about branding the space but about how they occupy this space and use it." **BG**

PROJECT TEAM

F. J. Busse Company.....	General Contractor
EDGE studio	Architect
Cintar Corp.	Building MEP Consultant
Lugaila Mechanical.....	HVAC
Precision Electrical Contractors.....	Electrical
Fayette Plumbing	Plumbing
Grunau Co.....	Fire Protection
Master Woodcraft Corp.	Millwork/Casework
Flooring Contractors of Pittsburgh	Carpet/Flooring
Thomarius Painting.....	Painting
Tim Greer Tile Co.	Ceramic Tile



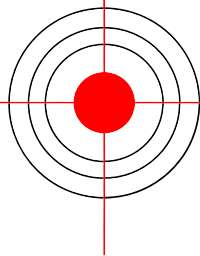
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Precision Laser & Instrument, Inc.

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By Deborah Knox

Construction sites have become high-tech arenas with the advent of sophisticated software, GPS and BIM, and Precision Laser & Instrument, Inc. has evolved with the industry. When the business started in 1990 as a construction

laser repair business with three employees, the owners could not have imagined the trajectory in advancing the technology used today. Now the company, headquartered in Ambridge, has more than 50 employees with

Ohio offices in Columbus, Cincinnati, and Akron and in Charleston, WV. "There has been huge growth in the company over the past 10 years," said Andy Heist, Inside Sales Manager, "It's mind-boggling."

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Precision Laser owners Rob Barth and Rod Creese with Mark Maximovich, director of operations/controller.

The company provides both traditional and new equipment and instrumentation to support construction, survey, mapping and GIS projects. The biggest change for them has been advancing the service, training and tech support areas of their work. They've had to hire specialists with a combination of field experience and technical expertise.

Entering the shop, there's a retail store with a wide selection of traditional site and safety equipment – everything from safety vests and flags, prisms and tripods, drafting supplies and a sampling of hand-held electronic units. "We have one of everything that we carry on the sales floor," said Heist.

"Everything that we sell, we also service in-house," he continued. "Everything now is electronics-based. We repair almost everything that we sell and have a quick turn-around time." The company is a designated warranty and repair facility for Trimble/Spectra Precision, Geodimeter, Leica/Laser Alignment, Inc., CST/Berger, AGL/Apache, LCI, Laser Reference, PLS and Nikon. Their key manufacturer is Trimble.

Because of the service component, he added that a lot of other distributors that utilize Precision Laser rather than send units to the manufacturer, saving time. "Send it to the manufacturer - it'll be back in two to three weeks. Send it to us and it is repaired and returned in three to five days," he explained.

One significant feature of the Ambridge facility is the Range Room – a testing station created to analyze instruments with regard to

elevation, angle and distance. The floor in the center is solid concrete, formed when they excavated down to bedrock and poured it separately. The result is that there are no transmitted vibrations from people or other business activities – an independent structure.

Their service department has specialists in optical and laser, software and general computer repair, such as screens and the mechanical parts of the equipment. They also rent all of the equipment they sell. "It's a very good revenue center for us," said Mr. Heist.

There are also in-house support professionals to take calls from the field to troubleshoot problems with equipment operation or





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they can provide in-field support. They have a training room that holds up to 30, or they can go to a site, like the Greater Pittsburgh Regional Council of Carpenters. Their training branch offers half-day and two-day Trimble Certified Training programs, and also offer one-on-one training for first time users of rental hardware/software and MGIS equipment. Another support function is the ability to transfer files to and from the data collectors, and data processing with analysis of the data files.

Co-owners Rod Creese and Rob Barth have separate areas of the business to manage. Rod is responsible for everything construction related, and Rob manages customer support, sales MGIS, and survey equipment and software. The management team also includes, Mark "Max" Maximovich, who is the Director of Operations and Chief Financial Officer.

In the late 1990's the company focused on machine control for heavy highway contractors, putting GPS receivers on machines for guidance, and providing positioning equipment for layout of bridges, roads, parking lots – all things used in site development. During that period, the company grew to six employees providing optical levels and conventional transits. In the early 2000's, the staff grew to 13 and in 2005 the staff jumped to 45 people, needed to meet the ever-growing demand.

Around that time, the management team saw a significant demand to provide field support and training. According to Rod Creese, "It's moving so fast in this industry that supporting and training folks is the most important thing." The industry grew as software was developed for layout and solutions. Now the demand is for robotic stations with integrated radio and integrated technologies - leading to one-man field operations.

Now in the past few years 3D scanning has been introduced into the construction world. For the owners, every development is a new sales opportunity, a training opportunity, and a support opportunity.

"In the coming years, most of our work will be software using existing hardware," explained Mr. Creese. "And it's all for the BIM world. We have the tools to go out in the field with these models like a tablet or small PC to layout these projects, the GC and specialty contractors – they have all of the information at the site in 3D – not just on drawings, or maybe instead of drawings. It's especially important in more complex buildings." None of the technologies are simple, but the units are simple to use in the field.

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He continued, "We also have another part of the puzzle. The 3D scanners can scan an entire room, and model it and mold it into other office or retail spaces" for renovations and adaptive reuse projects.

"Our big challenge of the next 12 to 18 months is all going to be software-related," said Mark Maximovich. "We already have the scanners and robots in the field and we're supporting them. The next step is the software to help the communication between the designer, builder and the owner-operator." The software continues to become more refined and condensed. They predict that soon, field staff will be able to do all of the tasks on a cell phone or similar hand-held device. In addition, they predict that the scanners they sell will be in more demand with architects.

The company has developed with the technology. "When you get to our middle age; a lot of what we knew is now antiquated," said Andy Heist. Mark Maximovich added, "Basic business and finance knowledge is the same, and we have to convey to our clients our service and support work.

Creating the staff blend to meet their growing capabilities has been a challenge. "We had to find the right people," said Maximovich. "We have to find the younger generation and integrate them into these new systems. The people we have on staff help us to recruit, and we know we have to pay and retain them with competitive salaries and benefits. Sometimes they recruit through Linked In, and almost every engineering firm and most companies (though he noted not every construction company) have focus groups to follow, from a technical standpoint." They also recruit through Monster.com and use selection entities, along with word of mouth. For them, the days of using headhunters are long gone.



They used to sell the hardware and the software followed it. Now they are selling software and the hardware's following it. The residual benefit of consulting, training and support, will lead to hardware sales. Now, 70 percent of their sales are still hardware and in a few years, they predict the hardware/software components will be 50-50 hardware and software.

In 2005 to 2006, their main product provider, Trimble, partnered with Caterpillar. As a result, Precision Laser divested the Heavy and Highway Division to Caterpillar and 18 of their employees went with the acquisition. All of those who moved to the new company are still employed.

In the past year, they've been rebuilding the company, and refocusing on the construction trades. The gas and oil industry, especially Range Resources, has given the company a boost, and complements their workforce. The company hired seven new employees in 2012, fortifying their service, repair and training programs, and plan to hire two to three more in 2013. **BG**

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Legal Perspective

Controlling Electronic Discovery Costs: Cutting "Big Data" Down to Size

By Brian E. Calla, Scott D. Cessar,
and Christopher R. Opalinski

Big data is one of the hot electronic discovery buzzwords of 2012. Big data describes the growing volume, variety, and velocity of information that exceeds the processing capacity of conventional database systems. Some real life examples of big data are:

- 10,000 payment card transactions are made every second around the world
- Walmart handles more than 1 million customer transactions per hour
- 340 million tweets are sent per day. That's nearly 4,000 tweets per second!
- The Radicati Group, a technology market research firm, estimates that by 2013, 507 billion e-mail messages will be sent each day.

Big data poses challenges for litigants by increasing the already expensive process of e-discovery, requiring an even bigger solution. Corporations spend millions of dollars to preserve and analyze huge amounts of data in order to locate information that is responsive to discovery requests and to isolate the relevant electronically stored information (ESI). As the associated costs of managing this data continue to grow, e-discovery vendors are developing new tools and best practices to help corporations manage the ever increasing amount of data involved in discovery.

Earlier this year, the RAND Corporation Institute for Civil Justice (ICJ) completed a study entitled "Where the Money Goes: Understanding Litigant Expenditures for Producing Electronic Discovery." The study addressed "one of the most persistent challenges of conducting litigation in the era of digital information: the costs of complying with discovery requests, particularly the costs of review." The ICJ found that the cost of document review is approximately 73 cents of every dollar spent on ESI production. The document collection

and processing phases of complying with discovery requests represent about 8 cents and 19 cents, respectively.

The key to reducing the costs associated with ESI review and production is to reduce the number of documents involved in the process. Two primary ways to reduce the number of documents involved in the process of document review are to develop a defensible document retention and destruction policy and to take advantage of predictive coding technology. These methods will reduce the number of documents that need to be reviewed by attorneys thereby decreasing the overall cost of complying with discovery requests.

Developing a document retention and destruction policy that is actively enforced and audited is an effective way to reduce the number of documents involved in ESI production. The policy should define the use and storage of not only common storage media such as mainframes, servers, personal computers, backup tapes, etc., but also technologies such as smartphones, instant messaging, and social media.

A defensible document retention policy that addresses retaining and deleting ESI should achieve three goals:

- 1.) Preserve business records while they have a useful life.
- 2.) Provide a defensible explanation as to why certain documents may no longer exist in the event that litigation does arise after documents have been deleted.
- 3.) Limit the number of areas where ESI may be stored (thereby making the process of gathering ESI to comply with discovery requests more efficient and economical.)

Outside of industry specific regulations and litigation hold requirements to preserve information related to ongoing or reasonably anticipated litigation (as well as government investigations or financial audits), a company need only keep ESI as long as necessary for business purposes. For example, emails relating to a construction project should be retained for the duration of the project, but once the project is completed, the documents have served their business purpose and can be deleted. Remember, once information is subject to a litigation hold or if you reasonably anticipate litigation, the information must not be deleted.

A defensible retention policy will classify information in accordance with



a retention schedule that dictates how long each record classification should be kept and when it can be destroyed. The retention schedule should reflect a reasonable document disposal plan that serves legitimate business needs. The policy will also contain citations of applicable document retention regulations in order to ensure compliance with regulations and industry standards. Once a document retention policy is in place, it is critical for the organization to strictly and consistently follow the policy. Strict adherence to the policy is key to the defensibility of the process. The business will always want to be in a position to demonstrate how the elimination of documents is in compliance with a reasonable document destruction plan that serves legitimate business purposes.

Another hot electronic discovery buzzword of 2012 is Technology Assisted Review (TAR). TAR is also referred to as “predictive coding” or “machine learning.” The use of TAR is also an effective way to reduce the number of documents involved in an ESI production. TAR is the use of computer technologies to categorize an entire collection of documents as responsive or non-responsive to the litigation based on human review of only a subset of the document collection. As the ICJ categorized it, predictive coding allows computers to do the “heavy lifting” in document review by reducing the number of docu-

to decide whose preferences are “like” yours and which products are “like” the ones you have viewed online.

In the context of the review of a document collection, TAR ranks documents according to the likelihood that they will be responsive to a given request for production. The ranking is based on how the documents have been categorized by the attorney who reviews the documents. Through an iterative process of “learning” from the attorney’s categorization of documents as being responsive or not responsive to the litigation, the predictive coding system feeds the likely responsive documents to the reviewer. As the review progresses, and the attorney continues to make responsiveness decisions, the documents that the machine has identified as being non-responsive are set aside (much like when your email system identifies emails that you do not want to read as “spam” and sets them aside.) The non-responsive documents will not be reviewed. Since the percentage of non-responsive documents in a collection can be as high as 70%, predictive coding can provide real cost savings by eliminating the need to review the majority of the documents in the collection. The responsive documents in the collection will be identified through the process of predictive coding, reviewed by the attorney, and produced to opposing counsel. The remaining non-respon-

Two primary ways to reduce the number of documents involved in the process of document review are to develop a defensible document retention and destruction policy and to take advantage of predictive coding technology.

ments that must be reviewed by attorneys, thereby reducing the overall cost of document review and production. Although the technology for machine learning has been around for quite some time, it has only recently gained momentum in the context of reviewing documents for ESI production. Earlier this year, we saw the first two cases where the Court approved of the use of predictive coding technology: *Da Silva Moore v. Publicis Groupe*, No. 11 Civ. 1279 (ALC) (AJP), 2012 U.S. Dist. LEXIS 23350 (S.D.N.Y. Apr. 26, 2012) and *Global Aerospace v. Landow Aviation No.*, CL 61040 (Va. Cir. Ct. Apr. 23, 2012).


If machines making responsiveness decisions on documents sounds like a complicated proposition, you are correct. The technology behind it is complicated, but the implementation of it is not. In fact, it is likely that you experience the use of predictive coding technology in everyday life when your email account identifies emails that are likely to be spam and it filters these emails for you. Also, when you shop or browse online, you experience predictive coding. Predictive coding is how a retailer takes what it learns about you with every website visit and uses the information to make predictions about what you might want to buy based on what others with similar preferences have purchased. The program uses predictive coding

sive documents will be sampled to ensure accuracy, but the majority will not be reviewed.

In addition to the potential for tremendous cost savings, there are other possible benefits to using TAR. Studies show that predictive coding is possibly more consistent and accurate than review by humans.

The rapid growth of the amount of electronically stored information that organizations generate has prompted companies to seek ways of meeting their electronic discovery requirements in a cost effective manner. Since document review accounts for the majority of the costs of complying with discovery requests, many of these efforts have focused on reducing document review costs. Developing a defensible document retention and destruction policy and utilizing predictive review technology are two primary ways to help manage the amount of ESI involved in the discovery process, thereby reducing document review and processing costs.

Brian Calla, Scott Cessar and Chris Opalinski are attorneys in the construction practice of Eckert Seamans Cherin & Mellott LLC. BG



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Financial Perspective

How does the Taxpayer Relief Act affect you?

By Ronald A. Kramer

On January 1, 2013, in an eleventh-hour deal to prevent the largest tax increase in American history from occurring and to avert the tax portion of the so-called "fiscal cliff" for approximately 99% of American taxpayers, Congress passed HR 8, The American Taxpayer Relief Act of 2012 (ATRA). President Obama signed ATRA into law late on January 2, 2013. Without ATRA, the Bush-era tax cuts would have fully expired for all taxpayers, imposing more than \$500 billion in increased taxes on U.S. taxpayers and the American economy.

On the individual tax side, ATRA permanently extends the Bush-era tax cuts for all but the wealthiest of American taxpayers. Individuals with taxable incomes above \$400,000 and families with taxable incomes over \$450,000 will pay more in taxes in 2013 because of a higher 39.6% income tax rate and a higher 20% maximum capital gains and qualified dividends tax rate. ATRA also provides a permanent patch to the alternative minimum tax (AMT) for 2012 and beyond.

On the business side, ATRA reinstates the research tax credit for 2012 and 2013, provides for the extension of 50% bonus depreciation through 2013, and extends the enhanced Code Section 179 small business expensing dollar limits for 2012 and 2013. The 2012 Act also extends many other expired or expiring business tax and energy incentive provisions.

In the estate and gift tax area, ATRA retains the \$5 million gift and estate tax exclusion and increases the maximum gift and estate tax rate to 40% from 35%.

Notably, despite the fact that ATRA is touted as preventing income taxes from rising on more than 99% of Americans, and the middle class in particular, taxes on most American workers will in fact rise in 2013. ATRA did not extend the 2% FICA payroll tax holiday for 2013. Thus, most American workers and the self-employed will see their take-home pay decrease by 2% of wages or earnings during 2013.

How will ATRA affect you and your business?

Individual Tax Rates

ATRA **permanently** extends the Bush-era tax cuts for all but the wealthiest of U.S. taxpayers. Starting in 2013, the 10%, 15%, 25%, 28%, 33% and 35% Bush-era tax brackets will remain in place. However, a new 39.6% tax rate on wealthy taxpayers will begin at the following taxable income thresholds:

- Married Filing Jointly: \$450,000 of taxable income
- Single: \$400,000 of taxable income

President Obama and Congressional Democrats had proposed to extend the Bush-era tax rates only to individuals earning \$200,000 or less, or families earning \$250,000 or less. Under the President's plan, individuals earning over \$200,000 and families earning over \$250,000 would have been subject to tax at the pre-Bush-era tax brackets of 36% and 39.6%.

Capital Gains and Dividends

ATRA raises the top tax rate for qualified dividends and capital gains from 15% to 20% for taxpayers who are subject to the new 39.6% bracket. Starting in 2013, the tax rates on long-term gains and qualified dividends will be:

- 0% if income falls below the 25% tax bracket
- 15% if income falls at or above the 25% tax bracket but below the new 39.6% rate
- 20% if income falls in the 39.6% tax bracket

Note that un-recaptured Section 1250 gains are taxed at a maximum rate of 25%, and net long-term gains from collectibles and certain small-business stock are subject to a 28% maximum capital gains rate.

Beginning in 2013, the 3.8% Medicare Net Investment Income Tax (NIIT) will apply to certain U.S. taxpayers. Accordingly, if the NIIT applies, the effective tax rates for qualified dividends and capital gains beginning in 2013 will be 18.8% (15% + 3.8%) and 23.8% (20% + 3.8%), respectively, and could be as high as 28.8% on un-recaptured Section 1250 gains and 31.8% on collectibles and small business stock.

Some taxpayers may wish to consider electing out of installment sale treatment for gains recognized in 2012 to avoid higher 2013 tax rates and the possible application of the new 3.8% Medicare tax beginning in 2013.

Alternative Minimum Tax

ATRA provides a permanent patch (indexed for inflation) to the alternative minimum tax (AMT) retroactive to 2012.

Itemized Deductions and Personal Exemptions

The Pease limitations on the total amount of itemized deductions and the personal exemption phase-out (PEP), will be reinstated for 2013. The Pease limitation reduces most itemized deductions by 3% of the amount by which the taxpayer's adjusted gross income (AGI) exceeds \$300,000 for married couples or \$250,000 for singles up to a maximum reduction of 80% of itemized deductions. Personal exemptions will be reduced by 2% for each \$2,500 (or fraction thereof) by which adjusted gross income exceeds the same thresholds.

The Pease limitation has the effect of raising a taxpayer's effective tax rate by 1.2% in the 39.6% tax bracket.

Federal Gift and Estate Taxes

ATRA reinstated the estate, gift and generation-skipping tax exemptions at \$5 million, indexed annually for inflation. The exemptions are set at \$5.25 million for calendar year 2013. The top marginal estate and gift tax rates have been raised to 40%, and portability has been made permanent.

Business Tax Extenders and Energy Incentives

Although ATRA's individual tax provisions are more publicized, ATRA does extend numerous business and energy tax incentive provisions to 2012 and 2013, some of which are directly beneficial to the construction industry.

Some of the more notable business and energy tax extenders in ATRA applicable to the construction industry are:

- The Research Tax Credit is reinstated for two years, retroactively, for qualifying research expenses (QREs) paid or incurred from January 1, 2012, through December 31, 2013 (refund opportunities may be available for contractors with QREs not claimed in fiscal years that ended in 2012). Note that QREs generally occur for a construction contractor when construction "standards" are being established. These construction standards may focus on improving safety, structural integrity, components, or construction efficiency. Consider

the credit for 2012 and 2013, and possibly for prior years.

- Section 179 Expensing is increased to \$500,000 for tax years beginning in 2012 and 2013, with a phase-out beginning when the total amount of eligible Section 179 property exceeds \$2 million. Also, ATRA reinstates the provision that allows a taxpayer to elect up to \$250,000 of the \$500,000 Section 179 deduction limit to apply to certain qualified real property improvements.
- 50% Bonus Depreciation is extended for investment in qualified property placed in service in 2013 and is available for regular and AMT tax purposes. An additional year is allowed for certain long-production period property and certain aircraft. For contractors subject to the percentage-of-completion method (PCM), ATRA provides that for purposes of determining the percentage of completion (POC) of contracts, the cost of qualified property is taken into account as a cost allocated to the contract as if bonus depreciation had not been enacted. Previously (other than in 2010), claiming bonus depreciation on property used in POC projects accelerated contract revenue, which reduced the cash flow benefits of the additional depreciation deduction. This change allows contractors to take advantage of bonus depreciation for a project that is not complete by the end of 2013 without accelerating income. Qualified property is property otherwise eligible for bonus depreciation that has a MACRS recovery period of seven years or less and that is placed in service during 2013.



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Some taxpayers may wish to elect out of bonus depreciation and Section 179 expensing for 2012 to preserve higher depreciation tax deductions for higher tax rate years beginning after 2012.

- The work opportunity tax credit (which includes the returning heroes and wounded warriors work opportunity tax credits) and the 20% small employer (less than 50 employees) wage credit for employees who are active military duty members is retroactively extended for two years through 2013. These credits should be considered in hiring your workforce.
- The S corporation recognition period for built-in gains (BIG) tax is extended and reduced for 2012 and 2013, with a 5-year period instead of a 10-year period. (Consider electing out of installment sale treatment for any gains recognized in 2012 to avoid higher 2013 tax rates and the possible application of the new 3.8% Medicare tax beginning in 2013). The shorter recognition period may allow for the conversion of non-productive assets to cash without incurring the BIG tax.
- The \$1/gallon tax credit for biodiesel and biodiesel fuel mixtures, and the \$.50/gallon tax credit for use of straight alternative fuels or alternative fuel mixtures, has been extended for 2012 and 2013. Credits are available for on or off-road heavy equipment fueled with biodiesel or for off-road vehicles designed for carrying or towing loads from one place to another (like forklift trucks). Contractors who are concerned with green practices and are mixing diesel and biodiesel

fuel should be sure to avail themselves of the biodiesel fuel mixture credit.

- The New Energy Efficient Home Credit is extended for 2012 and 2013. Qualified homebuilders may claim a credit of \$2,000 for each qualified new energy efficient home they build and sell. Newer construction standards will apply, substituting the 2006 International Energy Conservation Code for the 2003 version.

Summary

Beginning in 2013, contractors will face higher tax rates on ordinary income and on capital gains and dividends under ATRA. In addition, the .9% Medicare payroll tax and the 3.8% Medicare NIIT take effect in 2013, increasing the tax burden further. On the bright side, ATRA did extend some beneficial business and energy tax incentives for the construction industry.

We recommend that you review your 2012 individual and business tax situations prior to filing your 2012 tax returns to be sure you take full advantage of all tax planning opportunities as we face the rising tax rate environment of 2013.

Ron Kramer is director of strategic tax planning at Schneider Downs & Co. in Pittsburgh. Schneider Downs provides accounting, tax and business advisory services to large and small businesses across all industries. For more information about their construction industry practice contact Gennaro DiBello at gdbello@schneiderdowns.com. 

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Management Perspective

Digital Document Management Delivers on Paperless

Del Walker, the executive director of the Pittsburgh Builders Exchange (PBX) found himself looking at a surprising hole in his sales budget in the fall of 2012. Part of the services that the PBX provides is bid document reproduction of selected sections for subcontractors and suppliers. As he was preparing for the 2013 budget Walker saw that his reprographic revenues – which are tied directly to volume – were going to be down by half and he sought an explanation.

Like most executives, Walker looked internally first and thought that perhaps the reduced public construction activity was the key to the reduced orders but when he decided to reach out to other reprographic service providers he found that almost all were experiencing a similar drop-off. It looked like 2012 was the year that the industry was finally starting to go paperless.

Construction is an industry that is knee deep in inefficiency. The business is filled with very smart people trying to be efficient at all levels but the process tends to lend itself to chaos rather than order. And one of the more chaotic processes in the life of a project is the management of documents from bidding through construction. Services to manage the process electronically have been in the marketplace for almost two decades, with ever-increasing sophistication and utility. Yet, most of these services over the years had come up short of being the comprehensive or 'one stop' solution they sought to be.

The bidding process is hard to fully understand unless you are the one administering it. Design professionals often underestimate how widely their bid documents get distributed and how selectively the second and third tiers respond to bid invitations. General contractors have as many different philosophies about invitations as there are chief estimators. Successful contractors operate by limiting their subcontractor roster to just a few key firms and by taking any and all comers, as well as all business models in between.

Another aspect of the process that is overlooked is the lengths to which contractors can go to assure there is adequate response to a project. Even in lean times, suppliers and subcontractors still get multiple bid invitations daily (and nightly), sometimes dozens each day, and not all the invitations are from customers or prospects. To assure coverage, general contractors will devote hours to calling the firms they invited to qualify that there will be bids coming.

Of course, the more chaotic piece of the puzzle is the document management itself. Even in relatively simple projects there are still addenda, RFI responses, pre-bid meeting minutes, photos and other documents that need to be distributed to all those interested in bidding. Bidding documents have become less accurate during the past decade or more so the real-

ity is that almost as much information gets distributed after the plans and specs are done as before. Allowing the participants to fend for themselves is a recipe for headaches after the bid.

Part of the history of the digital document management marketplace has been the problems that arise from trying to be the one-stop shop. Reporting services like the PBX or Dodge Reports managed plan rooms when bidding documents were all paper and most migrated those services over to electronic plan rooms as well. Dodge was the first to plant a bid invitation system with its BidFax service but its efforts to leverage BidFax into more access to document management didn't fare as well and the company sold BidFax. Many other services have cropped up – with names like Buzzsaw, GradeBeam, Power Tools, BidGenius or Pipeline – but few have succeeded in reaching across the whole bid process. In many cases, the problem is that broadening the services offered into new technologies can pose a threat to a providers' existing technology business. That is certainly the case with reprographics companies.

The more active reprographic companies in Pittsburgh also started on-line services and digital reproduction services a decade or more ago but one of the aims of those services was to protect their print reproduction business. They provided value-added document management services to the contractors and architects that are in jeopardy now that printing volume is off.

"Typically, reprographic houses would perform document management for customers free-of-charge because there was enough profit from the printing work to cover the time spent," explains D. J. McCleary of Tri-State Reprographics. "That involved quality control checks - organizing files, checking naming conventions, making sure that drawings in the file are organized so they can be reviewed or reproduced for a subcontractor. With big declines in printing work, the repro house is still organizing the files, making sure all files can be opened and are named properly but we are getting resistance to charging for these services."

The time spent on document management makes it more efficient for the general contractor and the subcontractor but the reprographics companies are having a difficult time making the case for the time spent on the organization and quality control. McCleary says the time spent goes beyond efficiency.

"The important part of document management is the updating process and administering the distribution. When changes are made we send out an addendum and also integrate the changes into the original documents so any new subs can work with one complete set of drawings," says McCleary. "We keep track of when files were distributed to whom so that if there is legal action no one can claim it wasn't on their set of drawings."

Perhaps some of the difficulty in establishing value that the printing companies battle comes from the fact that they are

limited in their role until after the invitations to bid have been issued. Even though the digital plan rooms still put important parts of document management back in the architect's or contractor's hands, they provide value by making the ITB process easier or more robust.

Eric Pascucci, chief estimator at PJ Dick Inc., points to project management software as a sea change that led to changes in their bid invitation software. PJ Dick uses Constructware to manage communication during the project and that has streamlined their processes, says Pascucci. He points to the speed of transactions, the wider access and the elimination of paperwork as the principal changes.

"It has certainly changed the way we do business and the way subs do business," he says. "We don't have to make eight copies and send by mail to everyone. [Constructware] gives us a centralized system for documents and document changes. Depending on your access level you can get on to the Internet from anywhere and see meeting minutes or the latest costs or revisions."

Because Constructware is project management software and requires significant upkeep it isn't as well suited to act as an invitation to bid (ITB) service. Pascucci says PJ Dick uses Smart-BidNet because it gives them a way to manage the invitation process without managing the plan room, plus he can have some flexibility with his database.

"It allowed me to have an estimating database that isn't perfect. I can meet someone and add their contact information and get them an invitation without putting them into the Constructware system," he says. "It gives us a way to solicit bids from subs and give them direct access to the plans and specs digitally. When they get the invitation they can click 'yes' and go right to the documents."

Massaro Corporation uses third party ITB service GradeBeam to manage invitations. Estimator Josh Wells explains that there are limitations to how that service works. "It's a third-party FTP site. They get your database and you highlight who you want to send to and they send out by email or FAX," he says. "What we're finding is that a lot of emails get caught in spam filters and kicked back."

The PBX has been operating an online plan room and a password protected Private Plan Room for years. They are in the process of launching an upgraded plan room called Private Plan Room Plus that will integrate the ITB features with the document management in a way that attempts to solve several problems at once. Del Walker has been testing the service out with several local general contractors and monitoring the progress of a similar service that the Cleveland Builders Exchange



PBX Plan Room Plus provides reports on invitations to bid and tracks the documents being viewed.

does. He sees the management of the invitation to bid process as a key to integrating the various components of document management.

"The general contractor often still has a cumbersome system for how they invite their bidders. We could see that there was a need for that as contractors were turning to other types of services to manage their invitations," notes Walker. "We thought there was a need to integrate the invitation to bid system with the plan room."

While the PBX Plus system will still rely on the contractor to provide a subcontractor and supply chain database, there will be partitioning of lists to pre-create lists for specific kinds of projects or owners. Contractors that bid UPMC projects can have lists of subs that have pre-qualified with UPMC as bidders, for example. Contractors can also access the PBX database of some 20,000 firms to find subcontractors or suppliers to augment their own list. What Walker thinks will differentiate the Plan Room Plus will be the feedback and control for the general.

"The contractor will see if the email or FAX invitation went through and what documents the subcontractor viewed or downloaded," he says. "If the invitation doesn't go through we'll research and fix the problem. I have a full-time person checking the invitations and if one doesn't go through we will call that entity, find out why the invitation didn't get through and fix it immediately."

That last feature is one that should get the attention of those in estimating departments responsible for maintaining lists. Whether or not the PBX is taking on something that will be overwhelming will be discovered over time but the marriage of contact management with document management is a level of integration that hasn't been successfully delivered in this market before. The technology is there to deliver that level of integration but it still requires an element of proactive follow-up and there are still elements of the entire document trail – none of these services is proposing to integrate ITB through shop drawings – that are missing.

What seems clear from the market is that the industry has taken another step further away from clicking and printing, regardless of who is doing the reproduction. **BG**



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MBE/WBE Company Spotlight



Tracy Szemanski refers to her first years as the owner of Specialized Contracting Services as a "baptism by fire." Specialized Contracting is a commercial and industrial painting contractor based in Dravosburg and running the business was not part of her plan.

Szemanski took the reins of Specialized Contracting when her husband Larry passed away in December 2009. Larry Szemanski founded the company in 1997 after a 20-year career working his way up from the apprentice ranks and building a base of repeat industrial customers. Tracy says that they were one of those couples who couldn't work together so they had agreed that if anything ever happened to Larry she should liquidate the company.

That plan was never put into action, however. Tracy says she made the decision to continue to operate Specialized Contracting the day after her husband died. "I went in to talk with the foremen about the work in progress," she recalls. The company was in the middle of a four-year project at First Energy's W. H. Samiss power plant in Stratton, OH and had a variety of projects going for repeat clients. "I decided I could either try it and fail or not try it and regret it. Once it was 'no', it was going to be 'no.'"

In giving it a try, Szemanski faced several challenges immediately. The most pressing was that she wasn't a painter and had spent little time with the business. She was going to have to rely on the field supervision to manage the projects while she learned the business. Managing her people,

whether foremen or journeymen painters, was something else she was going to have to grow into. And Specialized Contracting, while successful, was behind the curve with technology.

"Larry was not tech savvy," Tracy says. "We had to build a website from scratch, get smart phones for the guys."



Tracy Szemanski

What Szemanski didn't have to worry over immediately was a backlog of business. In addition to the Samiss plant, Specialized Contracting had other work with First Energy, Allegheny Technologies and handled warranty work for roofing and siding manufacturer CENTRIA. The work that had been secured during the booming years helped carry the company through the last recession and helped Szemanski work through some of the cultural changes at Specialized Contracting.

Like any new boss, she had to establish her management style and allow the long-term employees time to adjust. "In the field, I saw that some of the older employee didn't always share, didn't help the new people learn," she says. "I thought that was holding some of the people back."

Szemanski eventually let some of the employees go who weren't team players. Those decisions allowed some of the newer people to grow into more responsibility and allowed her to bring some new people into supervisory positions. That strategy paid dividends during the past year when she lost two experienced foremen to illness. The year 2012 turned out to be a transition year in several ways.

"We had been doing so much work that I didn't have the time to network or get new clients. We didn't need to but it really hit us in 2012," Szemanski explains. "There was no power plant work and the CENTRIA work was slow."

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Szemanski says she is not a natural networker or salesperson, so rising to the challenge of finding new work was difficult at first. But she persevered, moving beyond Specialized Contracting's industrial base and picking up projects with commercial contractors. "We have always been industrial but sometimes you have to diversify. We're expanding now and getting new customers," she says. "I can really say that these are no longer Larry's customers."

Specialized Contracting Services performs lead-based paint abatement, water and sand blasting in addition to painting. They operate with a staff of between 10 and 30, depending on the flow of work. Their work for CENTRIA takes them all over the country and Specialized Contracting is currently working on a defense-related project at Cape Canaveral, but most of their work is in the Tri-state area.

Tracy Szemanski isn't likely to face challenges as difficult as those of the last three years. When asked about her future plans for the company she jokes, "Onward through the fog. That's what Larry used to say." 

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| March 28 | Lunch Program Presentation by Craig Davis, VisitPittsburgh at Rivers Club |
| April 23 | Lunch Program featuring Dennis Yablonsky, Allegheny Conference on Community Development at Rivers Club |
| May 14 | Annual Golf Outing at Allegheny Country Club |
| May 21 | Wine/Cheese and Learn for MEMBERS-ONLY at Scalo Solo (re: Green Roofs and Solar Panels) |
| June 21 | CREW/NAIOP 5th Annual Sporting Clays Shoot at Seven Springs |

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INDUSTRY & COMMUNITY NEWS

Evening of Excellence Awards

The Master Builders' Association recognized the best construction projects in the region on February 28th at its annual Evening of Excellence at Heinz Field. A record crowd of 985 attended the ceremony, which also benefitted Rebuilding Together Pittsburgh. The winners were Renovation Construction Over \$10 Million: BNY Mellon Exterior Rehabilitation. Contractor: Burchick Construction Company, Inc.; Architect: DRS Architects; Owner: Bank of New York Mellon. New Construction Over \$25 Million: Three PNC Plaza & Fairmont Hotel. Contractor: PJ Dick Incorporated; Architect: Gensler; Owner: The PNC Financial Services Group, Inc. New Construction Between \$10-\$25 Million: Chevron Science Center. Contractor: Burchick Construction Company, Inc.; Architect: Wilson Architects, Renaissance 3 Architects; Owner: University of Pittsburgh. New Construction Under \$10

Million: Frank A. Cassell Hall. Contractor: Rycon Construction, Inc.; Architect: FortyEighty Architecture; Owner: University of Pittsburgh at Greensburg. Renovation Construction Under \$10 Million: Wheatley Center Renovations & Additions. Contractor: Landau Building Company; Architect: Ross Bianco / Intelligent Design Group; Owner: Robert Morris University. Design/Build: Carr Hall Renovations. Contractor: Massaro Corporation; Architect: Perfido Weiskopf Wagstaff & Goettel; Owner: Allegheny College. Excellence in Craftsmanship – Interior: MAYA Design. Contractor: F.J. Busse Company, Inc.; Architect: Edge Studio; Owner: MAYA Design. Excellence in Craftsmanship – Exterior: Convention Center Riverfront Plaza. Contractor: Mascaro Construction Company, L.P.; Architect: LaQuatra Bonci Associates; Owner: The Sports & Exhibition Authority of Pittsburgh and Allegheny County



Jason Sigal of Massaro Corp. (left) with Frank Cartieri and Dr. Ginger Takle from the Pittsburgh Zoo and Lighthouse Electric's Frank Bruno



Harold McDonald (left) and Mike Welsh from the Greater PA Regional Council of Carpenters.



Joel Kreider from Newmark Grubb Knight Frank, Landau's Sharon Landau with IKM's Patty Swisher and Jeff Brown (right).

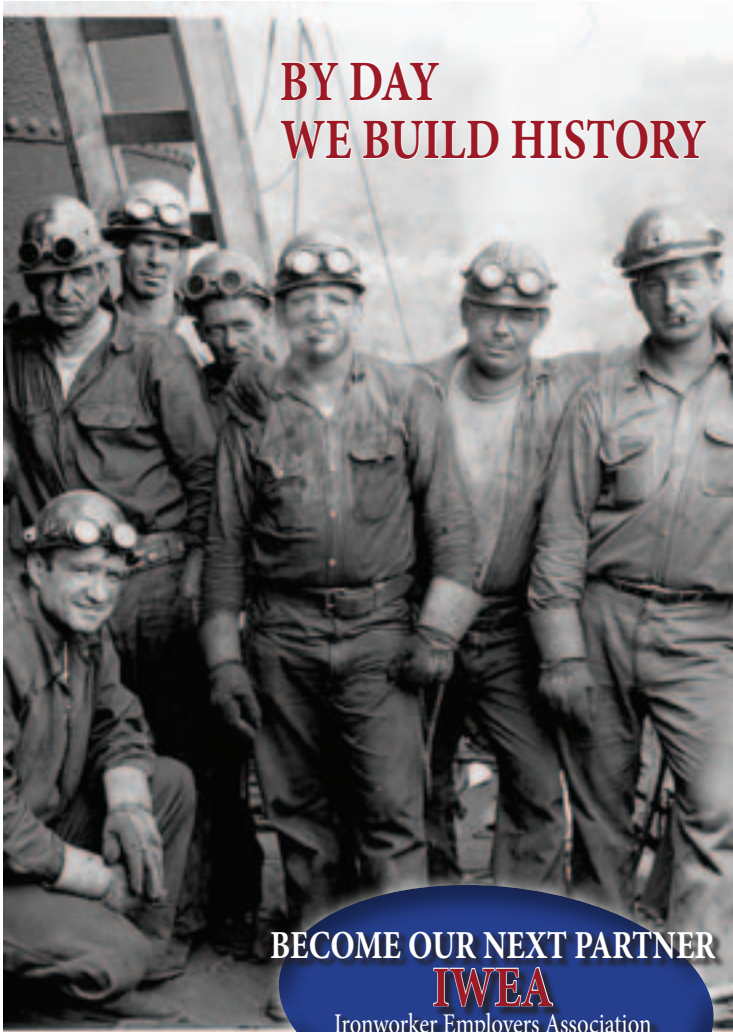


(From left) Joe Burchick, Jack Ramage, BNY Mellon's Bernie Koblinsky and Burchick's Dave Meuschke.



(From left) Anthony Martini, John Paul Busse and Ray Volpatt Jr.

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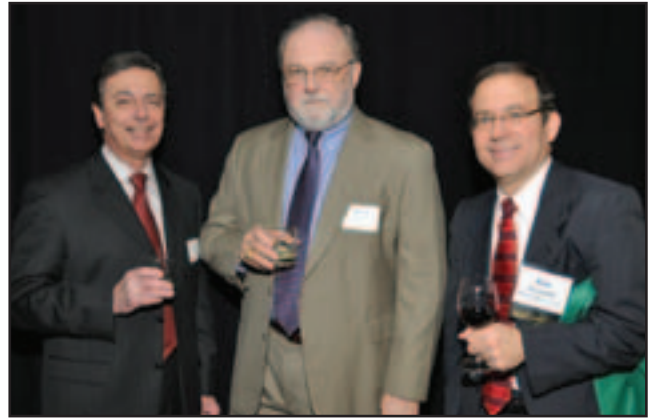
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MBA president Dean Mosites with Pitt's Dan Marcinko



Astorino's Ron Dellaria and Dennis Smoley with Ron Emanuele from Michael Baker Jr. Inc.



MCA executive director Regis Claus (left) with Ross Fazio of FMS Construction.



CEC's Steve Donaldson with MBA executive director Jack Ramage.



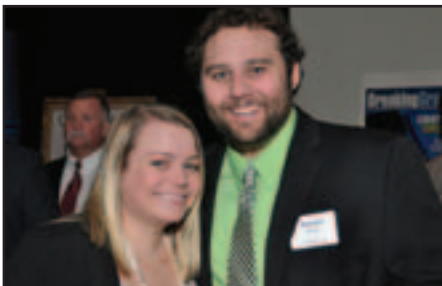
Mark Minoski from Duquesne University
with PJ Dick's Phil Linton



Andy Vater and Scott Tovisi of BXBenefits (right)



Bill Bates of Eat 'n Park with McKamish's Blare
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Katie Brown Hofer from PJ Dick with
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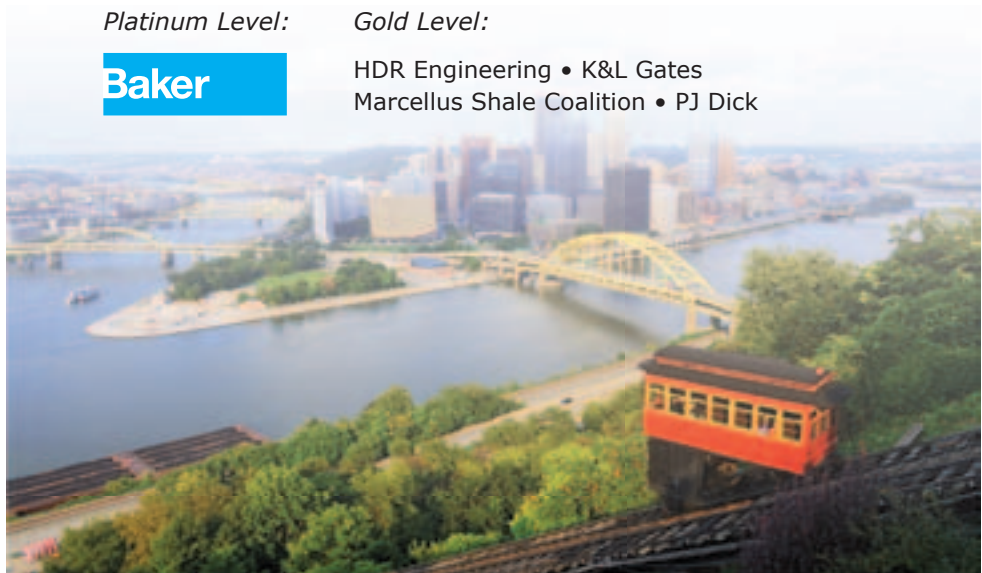
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Brittany Coscia and Luke Treskovich
from Dick Building Co.



(From left) Gordon Giffin, Zurich's
Stephen Arnold and Rycon's Todd
Dominick.

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directed by
Pamela Berlin

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Rick Avon from Lami Grubb (left) with Jendoco's Domenic Dozzi and Cherie Moshier of Moshier Studio.



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MBA and CAP Award Scholarships

The Master Builders' Association (MBA) and the Construction Advancement Program (CAP) awarded two scholarships this year at the MBA's Annual Membership Meeting, held on Friday, January 18, at the Duquesne Club. The two scholarship awardees were Natalie Celmo, who received a \$5,000 scholarship, and Anthony Lester, who received a \$2,500 scholarship. Both students are enrolled at the University of Pittsburgh School of Engineering's Construction Management/Civil Engineering Program.

Ms. Celmo is a graduate of Bishop Canevin High School and Mr. Lester is a graduate of Penn Manor High School.

Since the MBA & CAP teamed to provide annual scholarships in 1998, over \$100,000 in scholarships have been provided. This year's recipients were honored at the 2013 MBA Annual Membership Meeting,.



Pitt athletic director Steve Pederson, PJ Dick's Cliff Rowe and Jack Ramage, executive director of the MBA.



Scholarship winner Anthony Lester with Steve Pederson and TEDCO's Jim Frantz (right).



Scholarship winner Natalie Celmo with guest speaker Steve Pederson and TEDCO's Jim Frantz from the MBA's Education Committee (right).



Jim Miller, Ashley Passero and Marc Felezzola (left-to-right) from Babst Calland at the MBA Young Constructors kick-off at Olive or Twist on February 21.



At the Rivers Casino are RAM Acoustical's Rich Ostrom (center) with Will Gurtner and Bill Gurtner of Gurtner Construction.



Randy Hartsock (left from Massaro with Highmark's John Norbut at the American Subcontractors Association networking event at the Rivers Casino.

Congratulations to the 2012 MBA Building Excellence Award Winners.

PROJECT: Three PNC Plaza & Fairmont Hotel
Contractor: PJ Dick Incorporated
Architect: Gensler
Owner: The PNC Financial Services Group, Inc.



PROJECT: Chevron Science Center
Contractor: Burchick Construction Company, Inc.
Architect: Renaissance 3 Architects/ Wilson Architects
Owner: University of Pittsburgh



PROJECT: University of Pittsburgh at Greensburg Frank A. Cassell Hall
Contractor: Rycon Construction Company
Architect: FortyEighty Architecture
Owner: University of Pittsburgh



PROJECT: BNY Mellon Center Exterior Rehabilitation
Contractor: Burchick Construction Company, Inc.
Architect: DRS Architects
Owner: BNY Mellon



PROJECT: Wheatley Center Renovations & Additions
Contractor: Landau Building Company
Architect: Ross Bianco / Intelligent Design Group
Owner: Robert Morris University



PROJECT: Allegheny College: Carr Hall Renovation
Contractor: Massaro Corporation
Architect: Perfido Weiskopf Wagstaff & Goettel
Owner: Allegheny College



PROJECT: MAYA Design
Contractor: F. J. Busse Company
Architect: Edge studio
Owner: MAYA Design



PROJECT: Convention Center Riverfront Plaza
Contractor: Mascaro Construction Company, L.P.
Architects: Michael Baker, Jr., Inc. LaQuatra Bonci Associates
Owner: The Sports & Exhibition Authority of Pittsburgh & Allegheny County



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AWARDS & CONTRACTS

The Doubletree by Hilton awarded a contract to **F. J. Busse Co.** for a \$1.7 million expansion and renovation to their ballroom at the Doubletree in Green Tree. The architect is Desmone & Associates Architects.

F. J. Busse was the successful contractor on the \$150,000 Phase 2 renovation of the Urban Lending Solutions tenant space at the Liberty Center. The architect is The Design Alliance.

TEDCO Construction is the successful bidder on \$200,000 renovation projects at Mervis Hall and Alumni Hall at the University of Pittsburgh Oakland Campus.

UPMC Health Plan awarded a contract to **TEDCO Construction** for renovations to the 7th, 11th and 31st floors at 600 Grant Street. The architect for the \$3.6 million project is The Design Alliance.

Rycon Construction, Inc. was awarded a \$1.8 million contract to build a 6,000 sq. ft. addition to Duquesne Light Company Independent Alternate Operations Center in Penn Hills. The project is scheduled for completion before the fall season. The project was designed by Michael Baker Jr. Inc.

Rycon Construction was the successful bidder on renovations to 500 Smithfield Street for PNC Financial Services. The \$18 million project involves conversion of the former Lord & Taylor store, which was originally Mellon Bank, into administrative office space. Gensler is the architect.

Renovations to Fifth Third Bank Homestead Branch and Wilkesburg Branch are being completed by **Rycon's Special Projects Group**. Both projects were designed by MS Consultants and are scheduled for completion in April.

Rycon Construction was selected to build-out a condominium on the 17th and 18th floors of the Residences Pittsburgh at 3 PNC Plaza. Philip H. Cerrone is the architect.

Nello Construction was awarded a contract for the new Dozen Bake Shop at Donaldson's Crossroads in Peters

Township. The 4,000 square foot buildout was designed by Jill Joyce of Joyce Design Group.

Mascaro was the successful bidder on the \$2.2 million Marshall University East Hall Renovation project. The project scope includes building system upgrades and renovation to interior space. Edward Tucker Architects designed the project.

Mascaro Construction is providing preconstruction services to The Pennsylvania State University for the renovation of the historic Steidle Building at the University Park campus. The multi-phase \$40 million program involves major interior and exterior upgrades to an 86,000-square-foot building that houses the College of Earth and Mineral Science's Department of Materials Science and Engineering. Einhorn Yaffee Prescott is the architect.

Mascaro is an EPC contractor for a \$20 million pipeline replacement project.

Mascaro was awarded a contract to install concrete foundations for the installation of SCR equipment at Conemaugh Generating Station in Seward, Cambria County, PA.

Carl Walker Construction was awarded a contract by by USAA Real Estate Co. for the construction of Parking Garages #1 and #3 at Park Place in Findlay Township. Garage #1 is a 323-car, 89,500 square foot structure. Garage #3 is a 330-car, 91,856 square foot facility. Churches Consulting designed the \$10 million project.

St. Clair Memorial Hospital awarded a \$1.76 million contract to **Volpatt Construction** for the 16,000 square foot tenant build-out of the second floor of the Peters Outpatient Center in Peters Township. IKM Inc. is the architect. Volpatt was also awarded a \$1.5 million renovation to 12,000 square feet of medical office space at 2000 Oxford Drive by St. Clair Hospital. IKM is the architect.

Volpatt Construction was the successful contractor for the University of Pittsburgh's University Press, a \$991,350 renovation of the Thomas Boulevard book depository. The architect is RSH Architects.

University of Pittsburgh awarded **Volpatt Construction** a construction management contract for renovations to the William Pitt Union.

Volpatt Construction was selected as contractor for First National Bank's Monroeville office renovation. Design 3 Architecture designed the \$400,000 project.

dck north america, a **dck worldwide company**, just signed a contract with Peoples Natural Gas to be their Program Manager on \$50 million of Transmission Pipeline Replacement projects in Western Pennsylvania. The project, which is scheduled to take place over the next year and a half, involves more than 40 miles of natural gas pipelines.

dck worldwide is pleased to report that construction of its Emerald Breeze Resort project is underway. **dck**, doing business as The Emerald Breeze Resort Group, has been planning for the past three years with the Air Force and its consultants to provide the best use of an underutilized parcel of beachfront at Eglin Air Force Base on Okaloosa Island in Ft. Walton Beach, Florida. A groundbreaking was held for the first phase of this project, which includes a \$25 million, 152-room Holiday Inn resort on a 17-acre parcel of land.

Oakview dck, a **dck worldwide company**, has been awarded its 44th project for Wal-Mart. The \$13.8 million project is in Council Bluffs, Iowa. The 179,672 square foot building is of the prototypical design, but the amount of site work on the project will make it unique. **dck's** scope of work includes demolishing and removing an existing hotel and the retail store.

Oakview dck, a **dck worldwide company**, was awarded its first project from JoAnn Fabrics. The \$438,000 project, which is located in Lincoln, Nebraska, involves **dck** completely gutting and renovating an existing 31,209 square foot space.

Landau Building Co. was the successful contractor on the \$1.5 million NSF-Supported Laboratory Renovations at Mellon Hall, Duquesne University. The architect is Renaissance 3 Architects.

The Western Pennsylvania School for the Deaf selected **A. Martini & Company** to build a new \$6.5 million dormitory in Swissvale. The architect for the project is MacLachlan Cornelius & Filoni.

PNC Financial Services selected **A. Martini** as the successful contractor for \$1 million toilet room renovations at Allegheny Center.

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A. Martini is the contractor for repairs to St. Clair Country Club. Chambers from Baltimore is the architect. Martini is doing tenant improvements for the Bakery Social Restaurant at Bakery Square.

Walnut Capital selected A. Martini & Co. to build the townhouses in the Bakery Village portion of Bakery Square 2.0. Construction should start in June on ten units. Strada Architecture LLC is the architect.

Rob Roy Industries awarded a contract to A. Martini for \$800,000 renovations to their offices in Verona. The architect is NEXT Architecture.

PJ Dick is providing Construction Management at Risk Services for the start of constructing Bakery Square 2.0 in East Liberty. The 5-story, 176-unit apartment building also includes a below grade parking garage.

PJ Dick is providing General Construction services for a 33,000 sf renovation of an existing warehouse for Highmark, Inc.

PJ Dick is providing Construction Management at Risk Services for a 37,000 sf tenant fitout on the first floor of the old Nabisco building in the Bakery Square complex.

The UPMC East Hospital, where PJ Dick served as Construction Manager in a Joint Venture with Barton Malow, was awarded the 2012 Commercial Project of the Year from the Engineers' Society of Western Pennsylvania.

The North Shore Connector was awarded the 2012 Transportation Project of the year from the Engineers' Society of Western Pennsylvania. PJ Dick's sister company, Trumbull Corporation, provided General Contracting services on the project.

James Construction was selected by Children's Hospital of Pittsburgh of UPMC as the prime contractor to renovate both their Sensory and Induction Rooms. Stantec is the architect on the project.

West Virginia University Healthcare awarded a contract to Massaro Corporation for the construction of its new Outpatient Center at the University Town Centre located at the Cheat Lake exit of I-79. The \$40 million, 109,000 square foot facility is being designed by Perkins & Will. ^{BC}

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FACES & NEW PLACES

Michael R. Mascaro, vice president and chief communications officer of **Mascaro Construction** was named a winner by Engineering News Record in its Top 20 Under 40 competition in the Mid-Atlantic region, which celebrates the excellence of young design and construction professionals in Delaware, Maryland, Pennsylvania, Virginia, and the District of Columbia.

The MWDBE Governmental Committee elected **Kathy Agostino** from **Mascaro** as one of two inductees into the MWDBE Governmental Committee's Hall of Fame for 2013. This award is reserved for an individual and/or organization that has demonstrated a long-term strong commitment to the quest of improving the economic climate for historically underutilized businesses.

Rich Krapp joined the **Mascaro** estimating team as a lead estimator. Beginning his career in 1987, Rich has a well-rounded background having held the positions of carpenter, assistant site supervisor, project manager, estimator, chief estimator, and partner. His credentials include Certified Professional Estimator (CPE) and LEED AP BD+C.

Steve Manukas joined **Mascaro** as a lead estimator. Steve brings over 20 years of construction experience to our team in estimating, scheduling, and project management. Steve served our country from 1985 to 1988 in the U.S. Marine Corps and received a Masters in civil engineering from the New Jersey Institute of Technology.

Mascaro Construction also added the following to their team: **Dianne Spisak** joined Mascaro. Dianne brings 17 years of network management experience. **James Sallows** joined Mascaro as a project safety manager. He is a 2011 safety and environmental management graduate of Slippery Rock University. **Greyson Nolder** joined Mascaro. He has a bachelor of science in surveying and mapping from The University of Akron. **Cory Sliker** is an engineering graduate of the University of Southern Mississippi in Hattiesburg, Miss. and joined Mascaro as a project engineer. **Kelly Glisan** joined Mascaro as an engineering assistant. Kelly has an associate degree in architectural engineering from Penn State University. **Amanda Presto** graduated with her bachelor of safety and environmental management at Slippery Rock University and joined Mascaro as a full time employee on September 5, 2012. **Scott McLaughlin** joined Mascaro as a project engineer. Scott is a 2011 structural design and construction engineering graduate from Penn State University.

Bill Beck joined **PJ Dick** as a Project Manager. Bill brings 18 years of experience to the PJ Dick team.

Rycon Construction, Inc. has added **Brad Graves** as a Field Safety Manager. Brad brings four years of safety management experi-

ence to Rycon. He is a graduate of Slippery Rock University's Safety Management Program and will manage day-to-day project safety.

Jason Striner joined **Rycon's** Building Group as a Senior Estimator. Jason received a Bachelor's Degree in Civil Engineering from Carnegie Mellon University. He brings over 12 years experience in the construction industry to Rycon's team.

Tuwanna Samuel joined **Rycon Construction, Inc.** as a Close-out Specialist. She brings three years administrative experience to Rycon.

Michelle Gruseck has joined the team at Massaro Corporation as the Executive Assistant and Office Manager. Michelle was a valued member of the team for over 9 years at The Apollo Group, Inc. where she gained knowledge in operations and analysis. She earned her bachelor degree from The University of Phoenix in Business Management.

Massaro Corporation welcomed new team member **Robin Lang** to the organization. Robin is working in an administrative capacity supporting the needs of the design/build, estimating and pre-construction teams. She has over 14 years' experience and has a bachelor's degree from the University of Phoenix in Business Administration.

Andrea Hinchberger recently joined **Massaro Restoration Services, LLC** as a Business Development Representative. Andrea has several years of experience in both customer service and sales with a concentration in marketing while working for Fifth Third Bank as a personal banker.

Giffin Interior & Fixture Inc. has named **Dustin P. Giffin** president. Giffin graduated from Robert Morris University with a BSBA in Business Management and joined Giffin Interior in 2007, working in sales, estimating and operations.

Leech Tishman is pleased to announce the election of **Ericson P. Kimbel** as a partner of the firm. Eric practices in Leech Tishman's Construction and Litigation Practice Groups. Eric focuses his practice on construction litigation, arbitration and mediation. Eric represents subcontractors, contractors, design-builders, owners, and construction managers on both public and private projects in a wide range of areas including commercial, federal contracting, industrial, institutional, heavy and highway, and oil and gas construction projects. **BG**

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Closing Out

By Stephen Lee, AIA, LEED-AP

Scripting, processing, hacking.
Robots, lasers, polylactic acid.
Radiance, Fluent, Trynsys.
Emergence, bio mimicry, nanotechnology.

Why do so many of my conversations these days include these words? What is going on in the academy? What is going on in practice? Unprecedented change, that's what!

Historically, the construction industry is large, complex and slow to change, but we are witnessing a revolution. There has never been such a rapid pace of transformation as the one we are experiencing today. I would argue that the architecture profession itself has always looked forward – embracing new theories, new tools and new techniques – but today's revolution seems to be across the entire AEC industry.

The post-war period of the last century was a time of great idealism for architects leading to grand visions for society that ultimately were judged as failures. In the aftermath, it seemed that architects retreated into a self-referential world, losing their relevance; but now I see that we have the opportunity to once again be major contributors to improving the quality of the built environment. This opportunity emerges partially from the transformational nature of adopting these new tools and techniques.

What will be the impact of this transformation? What will our built environment look like in fifteen years?

- *Here is a sampling from Design Intelligence of some of the more compelling scenarios of 2025¹. "The global population will soar to 8.35 billion people, the majority of whom will live in cities.*
- *Robotics will dominate construction sites. This will lower costs, speed construction, and reduce waste.*
- *Everything will be smart, with microprocessors and chips responsive to light, heat, noise, odor, and electromagnetic fields.*
- *Computers will exceed human intelligence and will take responsibility for designing environments both internal and external.*
- *Sustainability sciences will become central policy concepts as well as organizing principles in professional licensing and continuing education. Nanotechnology will play a significant and growing role in building materials from windows to roof panels."*

The thought leader and designer Bruce Mau states, "..... that's the challenge of our new era: to synthesize incredibly complex inputs and reconcile those inputs into one coherent way of proceeding. And that applies to organizations governments, businesses, manufacturing problems, product problems, intellectual problems, learning problems; I mean, this kind of methodology is the methodology we need to develop."²

So at this important juncture, looking positively to the future, how must the academy change to provide the best possible education for the next generation of "shapers" of the built environment?



In the School of Architecture, we recognize the importance of synthetic problem solving ability. In our recent strategic planning process, the faculty members primarily characterized themselves in two ways – as systems thinkers and inventors. We have a high percentage of faculty engaged in funded research. All of this bodes well for continuing to be on the leading edge of innovation, but as is evident in the citations above, we also need to find ways to teach collaboration more effectively. We want to graduate "T-shaped" individuals that have the knowledge and the ability to gain the experience to change the built environment in positive ways. The vertical bar of the "T" represents deep disciplinary knowledge, while the horizontal bar of the "T" represents the ability to work across disciplines with experts in other fields.

We are in the process of updating our curriculum to improve our teaching and to anticipate the skill sets required in our rapidly changing world. Studio remains the foundation of our BArch curriculum and we believe that it is absolutely relevant now and into the future. It is the perfect place to develop and refine one's problem solving and synthetic skills, but how can we improve studio to provide a better platform for learning collaboration? We need to plan for the inclusion of engineers, constructors, planners, financiers, etc.

From 1st year through 5th year (and beyond to graduate school if one desires) we have continuous streams for our students in computational design, digital fabrication, computer-based performance simulation and information modeling. Yet in the face of an increasingly digital world, we still teach two semesters of hand drawing! We simultaneously embrace digital and analog tools in both studio and coursework. Our faculty members represent a diverse set of educators, practitioners and researchers following a comprehensive pedagogy that spans the teaching of fundamentals and case-based knowledge and the synthesizing of solutions.

Looking to the future, the industry will still require creative people that have a clear vision, the ability to collaborate, the skills to solve problems synthetically and the knowledge and experience to utilize the tool that is appropriate for the task. We all need to remain nimble and have the knowledge and confidence to adjust to the changing world around us. Whether it is a T-square, a calculator, or a script; whether it is a hand saw, a router or a robot – a tool is just a tool. The tools will not make our built environment better in and of themselves – it is what we do with the tools that will make the future a better place.

¹ 2025 Predictions from Design Intelligence, January 14, 2012

² Hyde, Rory; Future Practice: Conversations from the Edge of Architecture; Routledge, 2012.

Steve Lee is the head of the School of Architecture at Carnegie Mellon University and the co-founder of Tai + Lee Architects.



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