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SEPTEMBER/OCTOBER 2017

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## 07 REGIONAL MARKET UPDATE

## 13 MARKET METRICS

## 15 NATIONAL MARKET UPDATE

## 19 WHAT'S IT COST?

## 20 FEATURE The State of Public Construction

## 33 PROJECT PROFILE University of Pittsburgh Clapp Langley Crawford Hall Modernization

## 41 FIRM PROFILE Ferry Electric Company

## 46 LEGAL PERSPECTIVE Assessing the 2017 AIA Contract Document Revisions

## 48 FINANCIAL PERSPECTIVE The Value of Modeling for Predicting Energy Savings

## 53 MANAGEMENT PERSPECTIVE New Silica Standards are Looming

## 57 BEST PRACTICE What Owners Should Know About Their Buildings

## 63 INDUSTRY & COMMUNITY NEWS

## 67 AWARDS & CONTRACTS

## 71 FACES & PLACES

## 75 CLOSING OUT Dr. Karen Whitney, Chancellor Pennsylvania State System of Higher Education

## 77 2017 BUYER'S GUIDE

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# PUBLISHER'S NOTE

It's time for us taxpayers to tell our state and local legislators that it's okay to raise our taxes. There, I've said it. I can't believe it either but there it is. I'm sure to catch a lot of flak over this but I plunge ahead.

So right off the bat let's have this disclaimer. As a small business owner and someone bearing down on retirement age, I am not personally excited about the idea of giving more of my money to the government. I'd also like to see the government spend less too but it increasingly appears that the people that we have elected to make the hard decisions about how much to spend and how much to raise have abdicated that responsibility. It is my observation that the principal reason for that abdication is a fear of how we taxpayers will react. So I think it's time to give them permission.

The fear I'm talking about is de-motivating people on both sides of the aisle. Democrats seem quite reluctant to make the government smaller by cutting their favorite spending programs and Republicans don't want to see their favorite programs cut either. Republicans may get more of the ink for opposing tax hikes but very few, if any, Democrats actually want to run behind increased taxes either. The problem is there are things that need to be done regardless of whether they're going to be comfortable for our lawmakers or not.

During the research of this edition of *BreakingGround*, which focuses on public construction, I had the opportunity to speak to a wide variety of participants in the public sector. I found no one who was happy or optimistic with the prospects for their sector. That is unusual. Over the 35-plus years I've been involved with the construction industry there has usually been one sector or another up when another is down. That isn't the case today. Whether it is because of disillusionment with the dysfunctional government in Washington and Harrisburg or just a general concern about the lack of opportunities, few people involved in public construction see much to feel good about.

It's not so much that there aren't going to be some good years coming in some sectors of public construction but rather that business owners looking at the long-term don't see a sustainable future. In the public sector that's not just bad for business; it's bad for our society too.

To my way of thinking the root of this situation is the reluctance to raise taxes. We can refer to raising revenue in a variety of euphemisms, but at the end of the day you are asking the taxpayer to pay more. As a fiscal conservative, I embrace the argument against higher taxes. Government has done very little to show me that they will do productive things with my money. But at the same time, there is a practical limit to frugality. No matter how fiscally conservative I want to be with my own household, if there is a hole in the roof it needs to be fixed. It would be wonderful if I had set aside funds for just that

contingency but if I haven't the hole still needs to be fixed.

That analogy seems to be where we're stuck today. Whether your representative is a fiscal conservative or a tax-and-spend liberal, it is hard to imagine that they would argue against the necessity of fixing the bridge or road that was dangerous. The same is true of an inadequate school. But most of our current representatives can't even deal with urgent problems without tying a political problem to the solution. The Hurricane Harvey relief/debt ceiling deal is but the latest example of this gamesmanship.

We do have a blueprint for finding our way out of this funk. We can stop depending on Uncle Sam and look to the government that is closer to home.

Anyone who wants to argue that Harrisburg is as bad as Washington won't get much pushback from me. But we have seen our state representatives respond to our outcries in ways that the U.S. Congress has not. In July 2005, the PA General Assembly voted itself a raise in the wee hours of the night. The raise was repealed a few months later but dozens of legislators and a few judges lost their jobs because of it the following year. In November 2013, the General Assembly voted no on a highway funding bill – yes, a tax – that had the support of corporate leaders, small businesses, labor unions, economic development groups and contractors. The resulting outcry forced a new vote the following day that was a resounding turnabout.

There are dozens of similar examples each year of citizens influencing county and municipal governments or school boards. I have more trust that my money will be used the right way by the government that is closer to my voice.

So, for the sake of our bridges and schools and state universities, I would like to give my state and local representatives the green light to reach a little deeper into my pocket. I know, I know, that is giving them a license to steal. I don't actually trust the bums either. But I don't know of any other way to have them face the inevitable truth about depreciation. In the final analysis, it will be small consolation to know that my representative was being fiscally conservative when my sewer plant overflows or the bridge I'm sitting on collapses.



Jeff Burd



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# REGIONAL MARKET UPDATE



**D**uring the final months of summer, strong demand from users and a strong economy continued to quietly push the construction market higher. Given the renewed activity in the natural gas midstream and the acceleration of construction at the Shell Franklin plant in Monaca, contracting activity for 2017 should top the \$3.65 billion in construction starts in 2016. For all of the strength in the market in 2017, however, there has been significant action on major projects that won't hit the market until 2018 and 2019.

The abundance of work is likely to be a real problem for Pittsburgh's contracting community, as skilled labor is already thin. That problem is one to solve for next year, as the health of several key industry drivers is improving.

On September 7, an announcement by Amazon that it was looking for a site for its HQ2, a second North American headquarters, sparked excitement in Pittsburgh. Mayor Peduto responded to the news with immediate social media messaging that indicated the city was already working on a proposal to win the 50,000-job facility. Several national technology publications quickly wrote articles about the search and named Pittsburgh as one of the handful of cities that should be considered. The enthusiasm for the opportunity was another boost to Pittsburgh's business morale but the reality is that Pittsburgh's limited sites and dependence on Harrisburg for incentives are handicaps that will be tough to surmount. On the plus side is what the speculation says about Pittsburgh's economic health and reputation.

At the same time as Amazon was making noise about its 500,000-square foot HQ2 project, more realistic opportunities were quietly appearing on Pittsburgh's radar screen. Three plastic manufacturing companies were searching Western PA for properties to build a total of 260,000 square feet of capacity. These are among the first indicators of the kinds of businesses that might locate in the region following the opening of the ethane cracker(s). Regional leaders continue to get signals from PTT that the global chemical company intends to make its final investment decision regarding the Dilles Bottom, OH site later this year.

RIDC held a ceremony on August 8 at the Almona Mill 19 site to announce that the Advanced Robotic Manufacturing Institute (ARM) will be the anchor tenant in the first of the three buildings to be built within the structure of the 1,500-foot long former steel mill. ARM received a \$253 million grant from the Department of Defense and related partners to fund

research and start up companies involved in U.S. manufacturing automation. RIDC CEO Don Smith hinted that another large tech company was negotiating to take space in the yet-to-be-built building. While a start date wasn't announced for the building, ARM CEO Gary Fedder said he wanted to be in by March 2018.

How many of these projects become real construction sites will be revealed in the next couple of years. More striking than any individual opportunity is the fact that less than a decade ago (remember Jim Rohr kicking off Imagine Pittsburgh?) such opportunities would have been considered a fantasy. Such is the nature of Pittsburgh's economic reversal. While Rohr spoke to the attitude of the region's residents in 2008, the data speaks of progress that is tangible.

Metropolitan Pittsburgh's seasonally adjusted unemployment rate decreased 0.8 percent from 5.7 percent in July 2016 to 4.9 percent in July 2017. During that period, the number of people in the labor force decreased by 14,800 while the number of unemployed decreased by 7,400.

Employment in Pittsburgh increased by 11,300 jobs in July, an increase of one percent over July 2016. The tepid pace of job growth in the region is an area of concern. The July data was encouraging for Pittsburgh's economy but only relative to the pace of job creation over the past few years. July's increase still ranked poorly compared to the 22 benchmark cities around the U.S. Only Milwaukee experienced lower year-over-year growth.

One area where Pittsburgh is seeing better change is in wage growth. Sparked by the surge in technology jobs and, to a lesser extent, the rejuvenation of the natural gas industry,



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**October 19: ASA monthly dinner meeting at the LeMont**  
**November 15: ASA monthly dinner meeting at the LeMont**  
**SAVE THE DATE: February 8, Annual Networking Event**

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The average weekly wage in Pittsburgh climbed 7.1% from 2016 to 2017. Source: Pittsburgh Today, Bureau of Labor Statistics.

year-over-year wage growth in Pittsburgh was 7.1 percent in the second quarter of 2017. Pittsburgh Today released its comparison of wage growth in Pittsburgh on September 8, 2017 and Pittsburgh was virtually even with the 7.2 percent growth in Charlotte, NC and the average for its benchmark cities. Wage earners in Pittsburgh saw their weekly pay grow more than \$100 since 2012.

The Federal Reserve Bank of Cleveland, which covers the Pittsburgh market, offered several interesting insights into the Pittsburgh consumer's economics in its mid-year Fourth District Metro Mix publication. The Fed publication offered data that highlighted the strength of the consumer balance sheet for the average Pittsburgher.

Home appreciation remained one of the foundations of the consumer balance sheet. The price of a home in Pittsburgh appreciated five percent year-over-year at the end of June 2017. That's behind the national rate of appreciation but higher than the 4.6 rate statewide. More importantly, Pittsburgh average annual appreciation rate since the Great Recession ended, 3.2 percent, is far stronger than the 0.6 percent average statewide or the 1.9 percent national average.

Consumer debt grew faster in Pittsburgh year-over-year than in the rest of Pennsylvania or the U.S., jumping five percent. The higher growth rate belies the conservative household debt levels in Pittsburgh, where the average household consumer debt level remains below \$25,000, compared to the U.S. average of \$39,000.

The man responsible for the Pittsburgh office of the Federal Reserve, Guhan Venkatu, group vice president and economist at the Federal Reserve Bank of Cleveland, expressed concern about the stagnant job growth, noting that the

unemployment rate in Pittsburgh lagged the national rate by 70 basis points. Venkatu also commented on the strong balance sheet of the Pittsburgh resident. He noted that per capita consumer debt levels have increased steadily in the Pittsburgh metro area, growing almost five percent from mid-2014 through the first quarter of 2017. "Nevertheless," says Venkatu, "the metro area's per capita consumer debt levels -- and its credit card delinquency rates -- remain below those for the state and the nation."

Through August, Pittsburgh's construction economy was maintaining a pace of construction that result in about \$4 billion in commercial and non-residential starts by year's end. Thus far, contracting and construction starts through August 31 reached \$2.57 billion. Both contractors and architects were reporting strong request-for-proposal activity for late summer.

In the residential market, new construction activity continues to run ahead of last year's pace for single-family homes.

With what is in the pipeline, the number of multifamily units that will start in 2017 will fall below the 2,000-unit level for the first time since 2012. Like in many cities, Pittsburgh had pent-up demand for new apartments when the decade started and has seen an extended period of construction well above the norm. Unlike most cities, however, supply does not seem to have outstripped demand as yet. Apartment operators are reporting that occupancy levels have risen again and rents are floating upward. According to a recent study, the coming demand for apartments in Pittsburgh should limit new construction in the coming decade.

Pittsburgh ranks 26th out of 50 metro areas in terms of hardest cities to add new apartments, according to new research from Hoyt Advisory Services (HAS), commissioned by the National Multifamily Housing Council (NMHC) and the National Apartment Association (NAA). The research examines and ranks 50 metro areas based on specific factors, including local regulations and the amount of available land to develop.

The more critical findings of the study exposed a divergence between the current sentiment on multi-family development and the demand for the product. Lenders and developers have cooled on apartments, as rents have softened with higher vacancy rates; however, the study found that the United States needs at least 4.6 million new apartments by 2030 to meet the expected increase in demand. That would mean an increase of 33.2 percent compared to the volume built during the recent boom between 2012 and 2016. Worth noting is that the research concluded that the availability of affordable units was dwindling while overall occupancy fell. That affordability issue is prevalent in Pittsburgh, where

efforts to use regulatory requirements as an incentive to build affordable housing are on the rise.

According to the research, Pittsburgh is one of the markets that will not require as robust a construction effort. The study concluded that demand will be met with an additional 10,000 units by 2030. Meeting that demand would require construction of around 770 units annually, a volume that is just one-third the average of the past five years. Meeting the demand for the full spectrum of apartments will be more of a challenge than simply constructing a sufficient number of units.

"The Pittsburgh metro area will need all types of apartments and at all price points," said Linda Hindmarch, a member of the Board of Directors, Pennsylvania Apartment Association West.

The multi-family category that is expected to see higher-than-normal construction is senior housing. Separate from the private apartment market, more than 825 units of senior housing, both independent living and skilled care facilities, have been started or put under contract in 2017, totaling \$166 million. Favorable demographics and an investment environment that is an incentive for equity make development of senior living facilities a good bet. Western PA's older population means that the demand for such facilities should not wane until after 2030.

Demographics and pent-up demand are also the key drivers behind the hottest segment of the construction market, which is healthcare. Providers and insurers have been adjusting to the new realities of reimbursement since the implementation of the Affordable Care Act of 2010 (ACA). Although there will continue to be revisions to the ACA – and the possibility still exists that the law could be replaced – the healthcare industry is responding to structural changes in how healthcare is being delivered that should survive whatever happens in the insurance market.

Primary among the shift in delivery is the expectation that patients will receive care where they live, rather than in central or urban hospitals. This shift is not exclusive to Pittsburgh

but the impacts are clear to see here.

A number of significant construction projects remain at the main hospital plants of UPMC and Allegheny Health Network (AHN) but both systems have pivoted from years of updating and infrastructure improvements to investing in regional facilities.

AHN has moved forward with its \$50 million Cancer Institute expansion at Allegheny General Hospital, hiring IKM and Massaro as the design and construction teams. Plans are also moving forward in Erie, where AHN St. Vincent Hospital is getting \$110 million new facility. AHN also continues to invest heavily in its facilities at Forbes Regional Hospital and Jefferson Hospital.

The big news in the hospital market has been coming from 600 Grant Street. UPMC is moving forward with more than \$800 million in new construction over the next three years. The healthcare system is in negotiations with construction managers on four major projects as summer 2017 winds down. Its \$211 million South Fayette hospital, at the Newbury Market site, received the needed zoning variance in July. UPMC also has plans for a new mini-hospital and senior care facility, reported to be worth \$125 million in Jefferson Hills/Pleasant Hills area; the previously-announced \$200 million-plus UPMC Ophthalmology research and hospital facility at the Mercy Hospital campus; and a vertical expansion of the Children's Hospital in Bloomfield that will be \$150 million or more. Construction on some, or all, of these projects should begin by the end of 2018.

The surge in hospital construction is good news for the industry but there is a cloud that comes with the silver lining. The labor market, which is already thin, will be impacted dramatically by the construction over the next three or four years. UPMC's plans alone could have a more significant impact on Pittsburgh's construction workforce than the Shell Franklin project. Shell's volume of construction put-in-place will be four times what UPMC and AHN spend but the hospital projects will demand a broader spectrum of trades people. Moreover, the specialty contractors that work on the hospitals will certainly be the local contractors that service the hospitals regularly. These "steady Eddie" employers could well be more attractive to the craft workers that are also being recruited to work in Monaca, where the employment will end in 2021. Whether the labor force jumps at the chance for extraordinary earnings at the Shell project or stay on their current employer's payroll, the bubble of construction coming over the next few years will require attracting skilled workers from outside the Pittsburgh market. BG



Comparisons of Pittsburgh's per capita GDP show growth slowing but higher than both the state and national per capita output. Source: Fourth District Metro Mix, Federal Reserve Bank of Cleveland.



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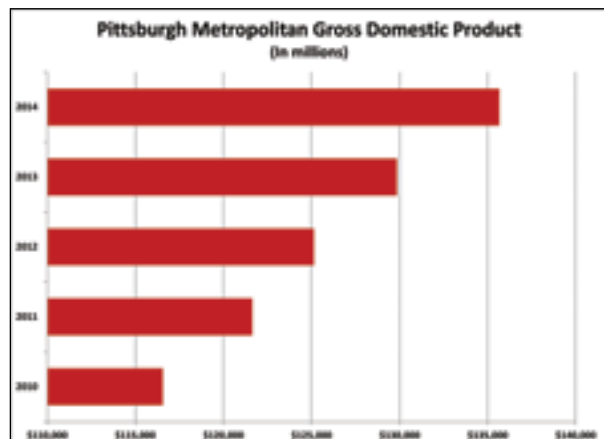
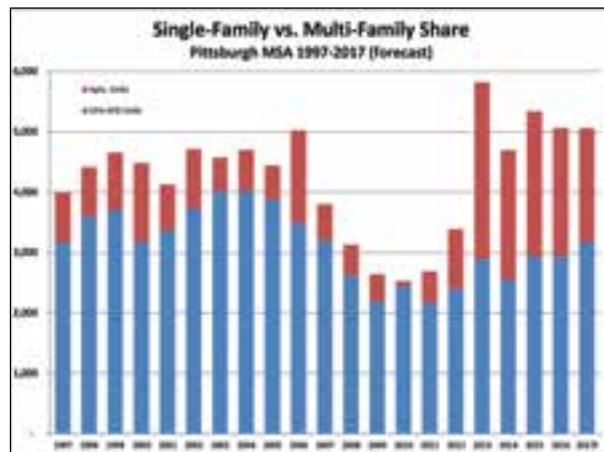
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# MARKET METRICS

BENCHMARK	Jan-Aug 2016	Jan-Aug 2017
Total SFD units	1,265	1,268
Total SFA/Multi-unit	1,492	1,208
Total residential \$\$	\$544.7 million	\$711.9 million
Total non-residential \$\$	\$3.39 billion	\$2.85 billion
K-12 additions/renovations	\$261.9 million	\$144.1 million
Higher Ed construction	\$223.3 million	\$135.8 million
Hospital construction	\$103.3 million	\$93.2 million
Hotel construction	\$115.9 million	\$67.2 million
Industrial construction	\$1.544 billion	\$671.5 million
Office construction	\$195.2 million	\$372.7 million



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# NATIONAL MARKET UPDATE

**A**s summer winds down, two events may hold the key to how smoothly the U.S. economy performs into 2018. The impact of the devastating hurricanes, Harvey and Irma, will last years and is going to be difficult to judge for months. Both the cleanup and reconstruction will require enormous resources. The second looming event, which may end up related to the hurricane relief funding, is the potential battle over the U.S. debt ceiling. Treasury Secretary Mnuchin has indicated that the ceiling must be lifted earlier than the original September 29 deadline. The battle over the debt ceiling could become contentious, possibly resulting in a shutdown of the federal government.

Legislators and the president seem to warm to the idea of attaching aid to Harvey's victims to the debt ceiling solution, a deal that would make it difficult for Democrats and conservative Republicans to oppose. Regardless of how the politics play out, a solution that keeps the government functioning without interruption is desirable for business. That's especially true in a climate in which business is thriving.

"(A) government shutdown would be incredibly damaging to the economy. We do not believe this is likely to happen, but

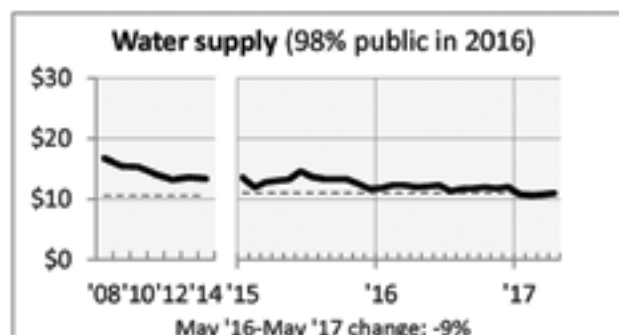
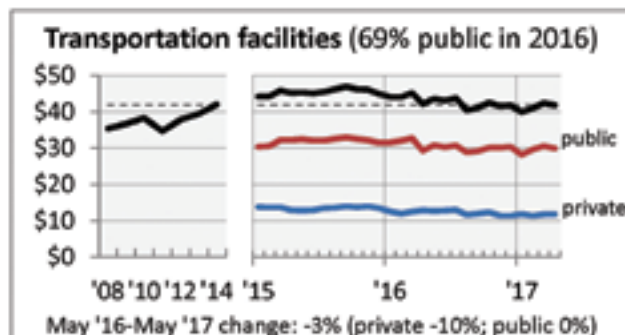
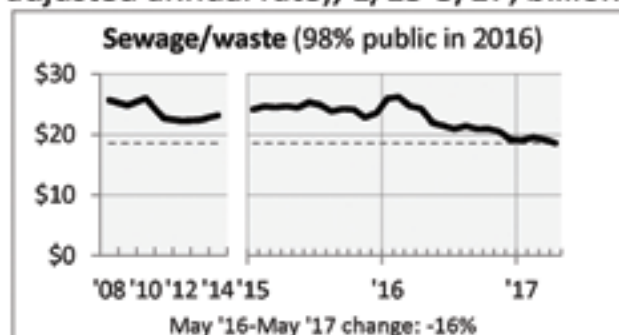
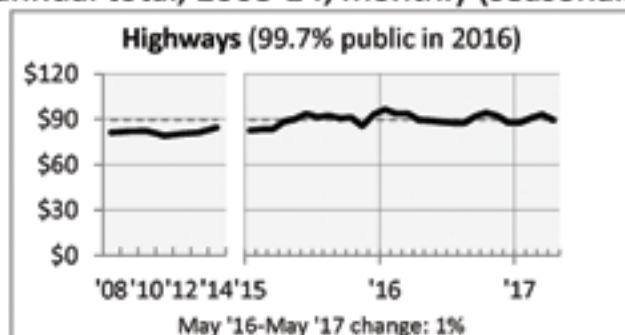
the increasing animosity between the administration and key Senate leaders does not instill confidence," offered JLL Chief Economist Ryan Severino in his August 30 report. "Congress will need to act quickly when it returns from summer recess in order to pass funding for the government before it runs out of money. In addition, Congress needs to raise the debt ceiling before the government defaults on its obligations. Both houses of Congress are jointly in session for only 12 days in September, which leaves a very thin margin for error. It would be unfortunate if political issues tanked the economy at a time when the data looks optimistic."

Evidence of a solid overall economy has been plentiful during the dog days of summer.

The second revision of U.S. gross domestic product (GDP) showed a more robust economy in the second quarter. The 3.0 percent rate of growth surprised most economists. Consumer spending and better-than-expected business investment drove the economy higher than the 2.5 to 2.7 percent consensus forecast. The improved second quarter boosted confidence in the forecast of two percent or higher GDP expansion for all of 2017.

## Construction spending: public works

annual total, 2008-14; monthly (seasonally adjusted annual rate), 1/15-5/17; billion \$



A majority of construction company owners plan to expand by hiring over the next year, while a similar number are finding it difficult to hire craft workers. Survey and image by Associated General Contractors of America.



US manufacturing companies continue to show more strength. While the high-flying US dollar remains a stubborn obstacle to exporting, other factors influencing manufacturing are improving. Low energy costs in the US are a significant input advantage for makers of energy-intensive products; and, key global markets have seen improvement in their economies. This is especially true in Europe where, after a decade of declining or flat GDP, most nations are seeing growth again. Japan's economy, the world's third-largest, saw a surprising one percent jump in its second quarter output. In another pleasant surprise, China's economy grew by 6.9 percent in the second quarter, bouncing back from several quarters of slowing growth. Among emerging economies, only India saw GDP growth slow. Of major concern in that fast-growing market is the rapidly rising level of non-performing loans, which approached ten percent in 2016.

The September 1 jobs numbers came in slightly lower than expected, with employers adding 156,000 non-farm jobs in August. Economists forecasted gains of 176,000, which is in line with the eight-month average of 177,000 new jobs for 2017. Although the August numbers were mildly disappointing, the unexpectedly strong gains in manufacturing jobs (up 36,000) and construction (up 28,000) were indicators that the economy's foundations remain strong. Unemployment rose 10 basis points to 4.4 percent.

Wage growth in August was also somewhat disappointing (up only 0.1 percent) but the year-over-year wage gain of 2.5 percent was in line with the current trend. The tightening labor market, while creating upward wage pressure, is being offset by lower productivity gains (2.2 percent) and sluggish core inflation.

The gap between wage growth and inflation is showing up in consumer confidence and spending. The two leading measures of consumer confidence remained strong in their latest readings.

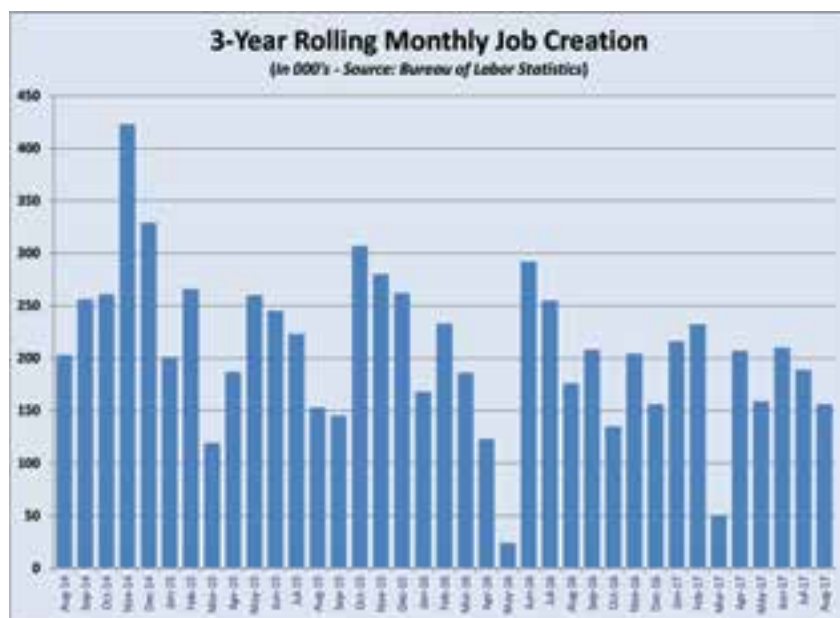
On August 29, the Conference Board reported that its index

of U.S. consumer confidence rose to 122.9 in August from a revised 120.0 in July. That's a strong rebound from surveys in late spring, although those levels were high compared to historical norms. The University of Michigan's Consumer Sentiment Index fell slightly in July to 93.4, a level that was still higher than the 90 reading of July 2016. Michigan's survey results peaked above 98 in December of 2016 and January 2017, as consumers seemed to respond to the economic optimism of the Trump election. Consumer sentiment has moderated since but is also at elevated levels. Echoing the confidence surveys, consumer spending – which makes up about 70 percent of GDP – increased by 0.3 percent in July, following a 0.2 percent increase in June. Lower-than-expected consumer inflation tempered the spending growth.

In the face of this market strength, it's easy to understand Severino's concerns. The economy took a hit in August 2011, when Congressional intransigence about the debt ceiling led to Moody's downgrading of the U.S. coveted AAA credit rating, and again in 2013, when the government shut down for 17 days during an attempt to tie the debt ceiling to a repeal of the Affordable Care Act. In both cases, GDP growth was constrained by nearly a point.

Assuming the government does not get in the way of the economy, the outlook for construction remains solid for the remainder of 2017. Economists evaluating the first half of 2017 have softened their forecast for the full year somewhat, but are still expecting growth that is unusual for this stage in the business cycle.

Several trends that are influencing the near-term forecast are the poor public construction funding environment, the low inventory of new residential construction lots, the growing vacancy rate in multi-family, and the unexpectedly better global economy. The specter of rising interest rates is having little impact on development at this point and, in fact, the historically low rate environment is still supportive for both private borrowing and public bond issuance.



While August's hiring report was slightly below expectations the monthly average of 177,000 jobs created is running above forecasts for 2017.

One of the more reliable indicators of future construction remains solidly positive. The July Architectural Billings Index (ABI) from the American Institute of Architects (AIA) was 51.9. While that was down from June's 54.2 reading, the ABI hasn't been in the red (i.e. below 50) since January. Other scores, however, were up from the previous month. The projects inquiry index increased by 0.9 from 58.6 to 59.5 and the design contracts index increased from 53.7 to 56.4. A similar trend occurred last year, followed by a dip in August that continued into the fall. That short-term decline in billings did not translate into a slowdown in construction thus far in 2017.

AIA's Chief Economist Kermit Baker reported that the mid-year report from the seven-member AIA Consensus Forecast panel had nonetheless lowered its growth forecast for non-residential construction in 2017 to 3.8 percent. The panel also reduced its original forecast of 4.9 percent



Non-residential construction remains near cyclical highs but spending has slowed during the middle of 2017. Source: U.S. Census Bureau.

growth in 2018 to 3.6 percent. Citing slowdowns in the institutional and industrial sectors as the main factors driving the slight decline, Baker said that the lower forecast did not reflect concerns that the overall economy was slowing.

The Census Bureau's estimate of construction spending in July showed somewhat slower year-over-year growth than the AIA Consensus forecast, with the \$1.21 trillion annual rate coming in 1.8 percent higher than July 2016. For the year-to-date, however, construction was up 4.7 percent at \$691.2 billion. July's figures illustrated the disparity between public and private spending on construction. Including residential construction (which is primarily private), private investment in construction totaled \$945.5 billion. Non-residential construction was \$428 billion in July, 1.9 percent below June's spending level.

Residential construction activity continues to reflect the two dominant trends: limited lot inventory and slower apartment demand. The August 19 report from the Census Bureau on new home construction found single-family starts in July at 860,000 units, a 0.5 percent decline from June but an increase of 10.9 percent from July 2016. Building permit activity was 13 percent from July 2016. New multi-family starts – defined by starts of five or more units – were off dramatically from the year before, falling 35.2 percent to 287,000 units. Permits for new multi-family projects remained higher, at 377,000 units, but the disparity between permits and starts suggests that many of the apartments that have been permitted will not start.

July's activity reflects the structural issues facing the housing market. After half a decade of boom, the apartment market is cooling off. Occupancy levels have fallen slightly, although to roughly 95 percent, and rent growth has slowed. Recent home buying activity from Millennial generation occupants suggests that vacancy levels will increase. Lenders have become warier about multi-family, likely keeping more projects in the pipeline than in recent years. For single-family homes, the lack of acquisition, development and construction (AD&C) loans since the financial crisis has created a lot shortage. The National Association of Realtors reports that the unsold inventory of homes fell to 4.2 months' supply in July, as inventories fell nine percent year-over-year to 1.92 million existing homes for sale. Such short supply of existing homes should be a boost to new construction but the pressures on development and AD&C lending remain. **BG**



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# WHAT'S IT COST?

**W**hile the conversation surrounding inflation has shifted to signs of lower inflation in general – or disinflation – pricing for construction in recent has accelerated rather than slowed. As the Bureau of Labor Statistics (BLS) report on July inflation showed, inflation in the construction industry has decoupled from that of the general economy.

This increasing rate of construction inflation is showing up both in the overall trend for specific products and materials, and in the producer price index (PPI) for completed building types. A glance at the table below reveals that all major categories of construction components and buildings are costlier compared to 2016. And, while the short-term trend for some inputs are reversing, it's clear that the shortage of workers is beginning to impact building costs. This is not necessarily evident in wages as of July, but the higher costs suggest that lower productivity has started to push completed prices higher.

Year-over-year demand for non-residential construction is growing at a slower pace but is still seven percent higher than the first half of 2016. A consensus group of seven construction economists are still forecasting that non-residential construction will be between four and five percent higher for the full year. That will keep pricing pressure on manufacturers serving the U.S. market while growth is returning in most global markets. Surprising gross domestic product gains in Japan, China and Europe should keep demand for construction products elevated into 2018.

In the August 10 BLS report, the PPI for final demand in July declined 0.1 percent from June but increased 1.9 percent compared to July 2016. The PPI for final demand construction, however, rose 1.1 percent for the month and 3.2 percent year-over-year. The PPI for new nonresidential building construction grew 3.1 percent over the previous year. According to the Associated General Contractors' analysis of the report:

Increases ranged from 2.4 percent year-over-year for office buildings to 2.4 percent for health care buildings, 3.8 percent for schools, 4.1 percent for warehouses and 4.5 percent for industrial buildings. PPI changes for new, repair and maintenance work on nonresidential buildings ranged from 2.8 percent year-over-year for roofing contractors to 3.4 percent for electrical contractors, 3.5 percent for plumbing contractors and 3.7 percent for concrete contractors. The PPI for inputs to construction...increased 2.5 percent year-over-year. The PPI for all goods used in construction rose 3.0 percent year-over-year, as the sub-index for energy climbed 6.5 percent...

Major components used in construction that had significant increases over the past 12 months included copper and brass mill shapes (15 percent); steel mill products (10 percent); and gypsum products (9.9 percent). The largest year-over-year

increase belonged to diesel fuel which jumped 20 percent from July 2016 (and 8.7 percent from June). Spikes since Hurricane Harvey have been between 30 and 50 cents per gallon, with no indication as of Labor Day when normal supply channels will be re-established with Gulf of Mexico refineries. Early indications are that products tied to polyester resins and polyethylene will spike; and demand should also skyrocket for products used for temporary measures, like plywood, lumber, wallboard and sheathing. Product allocations may present bigger medium-term problems than higher prices.

For owners and designers, the positive news is that recent pricing on products and materials has remained stable. Freight-sensitive components will likely see short-term spikes while diesel remains elevated but most manufacturers have either put their 2017 increases through (with varying levels of success) or plan few price hikes through the end of the year. The disruption from Harvey and Irma will be the wild card impacting manufacturers as the fall approaches. **BG**

PERCENTAGE CHANGES IN COSTS			
July 2017 compared to			
	1 mo.	3 mo.	1 yr.
<b>Consumer, Producer &amp; Construction Prices</b>			
Consumer price index (CPI-U)	(0.1)	(0.0)	1.7
Producer price index (PPI) for final demand	(0.1)	0.2	1.9
PPI for final demand construction	1.2	1.5	3.2
<b>Costs by Construction Types/Subcontractors</b>			
New warehouse construction	1.3	1.7	4.1
New school construction	1.7	2.2	3.8
New office construction	0.5	0.5	2.3
New industrial building construction	2.3	2.5	4.5
New health care building construction	1.4	1.7	2.4
Concrete contractors, nonresidential	1.4	1.9	3.7
Roofing contractors, nonresidential	0.0	0.8	2.8
Electrical contractors, nonresidential	1.6	1.9	3.4
Plumbing contractors, nonresidential	1.5	1.6	3.5
Construction wages and benefits	N/A	0.6	2.2
Architectural services	0.6	0.9	1.9
<b>Costs for Specific Construction Inputs</b>			
#2 diesel fuel	8.7	15.2	20.4
Asphalt paving mixtures and blocks	0.8	2.2	2.2
Cement	(0.1)	2.1	4.8
Concrete products	0.2	0.0	2.9
Brick and structural clay tile	(0.1)	0.6	1.8
Plastic construction products	0.1	0.3	1.4
Flat glass	(0.1)	(0.3)	0.3
Gypsum products	0.7	0.3	9.9
Lumber and plywood	0.0	0.3	5.2
Architectural coatings	0.6	1.3	1.1
Steel mill products	0.3	1.5	10.2
Copper and brass mill shapes	1.1	(1.2)	15.0
Aluminum mill shapes	(1.7)	(1.9)	7.4
Fabricated structural metal	0.4	4.7	3.6
Iron and steel scrap	(0.4)	(2.9)	20.3
Source: Bureau of Labor Statistics, Updated August 10, 2017			
Compiled by Ken Simonson, AGC Chief Economist			



It was supposed to be a good year for public work. For all the toxicity of the 2016 presidential election cycle there was one subject that represented common ground for the candidates: infrastructure. With a Republican candidate for president promising to outspend the Democrats on infrastructure, it seemed like a return to the public construction market of the 1990s was inevitable. Alas, the focus of Congress and the new administration has been elsewhere.

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ATTORNEYS AT LAW

Twenty years ago, Western PA was in the midst of a public construction boom. The K-12 public education market was the largest segment of the construction industry. The Millennials were just entering the system and school districts responded with lots of new capacity. Governor Robert Casey's \$2 billion Operation Jump Start energized projects at the PA State System of Higher Education (PASSHE), most of which got into the market after 1995. Pittsburgh's so-called Plan B – new stadiums for the Pirates and Steelers and a new convention center – were about to begin, bringing roughly \$1 billion worth of construction to the riverfronts.

Some of these projects accomplished what was intended by the public investment. Bridges and highways remain woefully neglected but those that were repaired or built served their purposes. The construction of the two professional sports stadiums were the catalysts for the redevelopment of the North Shore. Pittsburgh's new convention center has not yet turned the city into a top tier convention site but the LEED Platinum David L. Lawrence Convention Center is drawing the kinds of national and international gatherings that its predecessor did not.

Many of the projects were not as successful. Spending on highways failed to add much in the way of capacity, putting Pennsylvania (and Pittsburgh) further behind in infrastructure competitiveness. The PASSHE schools took full advantage of the increased funding – as well as a bond issuing mechanism that allowed their foundations to raise capital – to build long-overdue new facilities. More than a few of those projects, however, have proven to be unsustainable and have saddled the institutions with debts that aren't being offset by usage fees as planned.

In the years since those halcyon days of public work, government has become fiscally dysfunctional. Unable to reconcile the need for investment with the cost of governing, politicians at local, state and federal levels have failed to sufficiently reduce the size of government or make a case for more revenue. The resultant stalemate leaves public institutions with funding levels that have not changed in decades, or that have been reduced. Public facilities have been undercapitalized, without regard for the reality that their maintenance is unavoidable. Once the driver of the construction industry, public spending on construction represents less than one-fourth of the total construction spending in the U.S.

The September 1, 2017 report on construction spending by the Census Bureau showed public construction at an annual rate of \$266 billion, 1.4 percent less than June. That's 22 percent of the

U.S. total and just 28 percent of the total private spending for July.

A look at history shows that this will change. Political tides will shift. More than any other factor, the sheer dilapidation of public facilities will eventually require investment. Until that market shift occurs, there is still a significant piece of the construction industry that is publicly-funded. What remains in public construction is some good, some bad and some ugly.

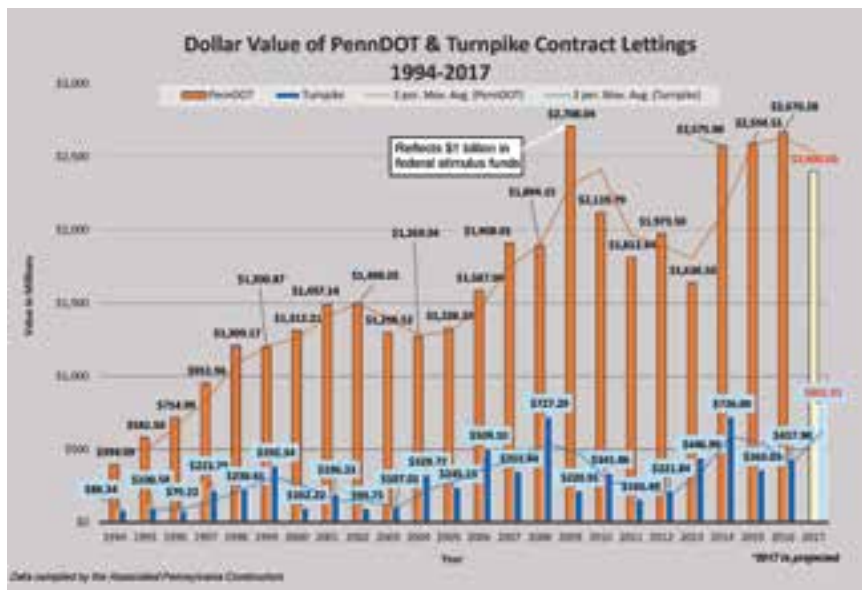
## THE GOOD: INFRASTRUCTURE

Rich Barcaskey, executive director of the Constructors Association of Western PA (CAWP), isn't prepared to argue with the theory that the Commonwealth's unprecedented 2013 highway bill – Act 89 – could not get done today. The coalition of corporate, civic and political leaders, aligned with contractors, engineers and labor, produced a steady funding source for highway construction that is now reaching its zenith; but such a coalition is hard to imagine in 2017. Barcaskey notes that like most political actions, Act 89 has seen some erosion that is limiting its effectiveness.

"Act 89 was passed with the premise that the funding for state police would be capped at \$500 million and that hasn't happened," he says. "The contribution from the Motor License Fund has gone to \$802 million out of the total \$1 billion spent on the state police.

Barcaskey is referring to part of the Act 89 bargain that earmarked part of the gasoline tax increase for funding the state police's efforts in small communities where the municipality cannot afford its own police force. The problem is something of a political hot potato. Representatives of the small towns that need police assistance are reluctant to cut the patrols by the state police. Pulling back on patrols and spending leaves politicians vulnerable to criticism in the event serious crime later occurs. There are initiatives to create a per capita charge in those communities using state police in lieu of a local force but the solutions vary.

Rep. Mike Sturla of Lancaster, PA has proposed an \$11.69 per capita charge that would rise annually to \$109.99 in 2027. Lancaster County is one of the areas with



Act 89 of 2013 delivered a boost to the amount of highway construction but volumes have leveled off as funding has been diverted to other needs. Source Pennsylvania Highway Information Association.

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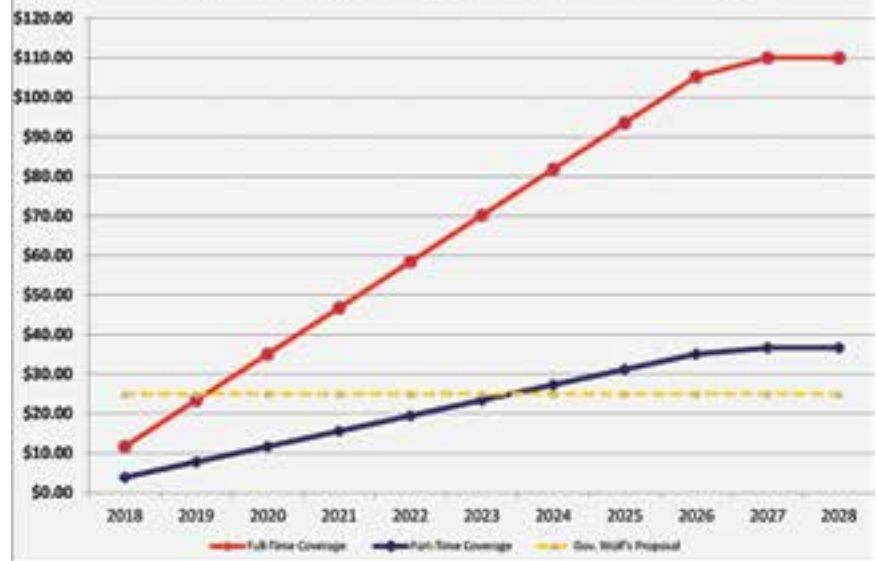
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## Proposed Per Capita Fee for State Police Support



A proposal by Rep. Mike Sturla would replace diverted highway funds over the next decade, compared to the proposal from Gov. Wolf that is fixed at \$25.

a higher share of communities receiving state police support. Gov. Wolf, for his part, has proposed a \$25 per capita fee for those communities that would remain static. As might be expected, there is a dispute over whether or not either proposal would cover the additional costs. The Pennsylvania State Police claim that it costs \$234/person for their services, while an LNP Media Group study found that state police services cost the Commonwealth \$157/person annually.

Regardless of which estimate is correct, without an offsetting revenue source the additional spending on state police patrols from the Motor License Fund has reduced the funds available for bridge and highway construction by more than \$850 million since Act 89 went into effect. On August 29, Gov. Wolf authorized the transfer of \$700 million from the Motor License Fund, sending \$450 million to the state police and \$300 million to the General Fund. That action has Barcaskey concerned.

"That money is supposed to be paid back by February of 2018, but if no budget deal gets done by then I can't imagine it won't impact the highway lettings," he warns.

A slowdown in mid-winter lettings would have a negative impact on the construction industry, especially since PennDOT seems to be strategically scheduling its lettings to front load the construction year. One of the problems Act 89 unintentionally caused was opening the flood gates to funding for projects that weren't ready for the market. Because Act 89 passed in late November, PennDOT effectively fell a year behind its impact. It wasn't until 2017 that the department seemed to be back on its normal cycle, which should see an increased number of projects out to bid in the fourth quarter to get a running start on 2018. While PennDOT has not announced such a plan, the volume of its lettings thus far telegraphs that intention.

The PA Highway Information Association estimates that the combined lettings for PennDOT and the Turnpike Commission will be \$2.4 billion in 2017 (down from \$2.67 billion in 2016). Through August 31, the lettings have totaled roughly \$1.9 billion, leaving an anticipated \$500 million in projects to bid in the last few months of 2017. That gives contractors an opportunity to build backlog going into the first



quarter of 2018, when another heavy schedule of lettings is expected.

CAWP has tracked \$743,349,267 in PennDOT lettings in Western PA as of September 1, 2017, with the Turnpike Commission bidding another \$125,255,556. That should mean roughly \$200 million in late 2017 lettings for this region.

Among the major projects let in Western PA in 2017 are the \$87.9 million Ohio River Boulevard reconstruction, \$91 million Southern Beltway Section 55A-1, \$90 million Southern Beltway Section 55B, \$117.8 million I-70 reconstruction. Another \$90 million section of the Southern Beltway (55C-1) bid on September 17.

The region's biggest – and most anticipated – project should finally be on the move in 2018. Dating back more than a decade, the consent decree negotiated and renegotiated between ALCOSAN and the Environmental Protection Agency (EPA) has resulted in extensive planning and public scrutiny. Now it appears that those efforts will yield construction.

The result of the decree, ALCOSAN's Wet Weather Plan, requires that the authority take steps to eliminate the millions of gallons of sanitary sewage outflow into the rivers that is the result of the many combined storm and sanitary sewer systems. Built long before there was an EPA, many of the sewer systems in Pittsburgh's many small towns (and in much of the City of Pittsburgh itself) are combined systems that carry sanitary waste and stormwater to ALCOSAN to be treated. Heavy rains create overflows from these combined sewer systems, spilling the contents into the rivers. Because of the excessive cost of separating many regional sewer systems, ALCOSAN pushed back against the decree and sought to develop a varied solution to the wet weather problem that is affordable and acceptable to the EPA.

As the planning and negotiations proceeded over the early years following the consent order, it became obvious that the cost of remedying the problem at the plant level would be exorbitant. ALCOSAN insisted that a cost in excess of \$2 billion was unrealistic. To achieve that budget the Wet Weather Program evolved into two major pieces: a \$1.5 billion upgrade and renovation of the ALCOSAN treatment plant on the Ohio River and a \$500 million investment in the regional system of community sewers and treatment plants to reduce the amount of water that would reach the plant.

Over the past three years, sanitary authorities throughout ALCOSAN's footprint of 83 municipali-

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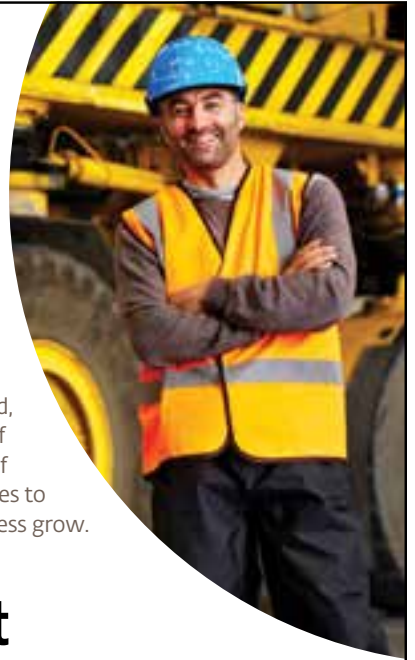
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The variance between public and private construction spending continues to reach record levels. Source: U.S. Census Bureau.

ties have undertaken projects to upgrade regional sewage treatment, separate sewers or initiate green stormwater solutions that kept rainwater out of the sewers. ALCOSAN hired ALEM Consulting as program manager for the project and, in May 2017, invested \$280,000 to test drill to a 300-foot depth in preparation for the construction of a massive underground overflow tank, which is the heart of the authority's "grey" solutions.

Beginning in 2018, ALCOSAN plans to increase its capital spending dramatically, going from about \$10 million annually to more than \$50 million in each of the coming four years. In 2021, the plan is to undertake the major part of the ALCOSAN plant expansion, which should result in construction spending of around \$200 million through 2026. Concurrent with that investment, the municipal authorities will continue the construction projects to control and treat the sewage and stormwater entering the system.

## THE BAD: HIGHER EDUCATION

Not all of Pennsylvania's many public colleges and universities are struggling to meet operating or capital budgets. The Commonwealth's biggest university – Penn State – is in the middle of a continuing, and ever increasing, multi-billion dollar rolling five-year capital plan. The University of Pittsburgh has completed its revisions to its ten-year institutional master plan and expects to begin design and construction on its bigger projects in 2018. For the rest of Pennsylvania's public universities, the capital spending remains meager.

Pennsylvania's State System of Higher Education has been fighting to deal with a \$90 million reduction in funding that was part of the budget deal in 2011. PASSHE schools were big beneficiaries of the Jump Start program in the 1990s. Department of General Service (DGS) contracts for new

academic buildings were written at all state universities during the 1990s. During that period, PASSHE schools also took advantage of a ruling that allowed the private non-profit booster or alumni associations to issue bonds to finance construction. This mechanism led to a boom in student centers, apartment-style residence halls and convocation centers that lasted up until the Great Recession.

That wave of student-centered construction was supposed to be funded by the fees that students would pay for using the facilities or renting rooms. The new facilities opened at the beginning of a structural downturn in enrollment demographics, one that is only beginning to turn as we enter 2018. During the recession, Governor Rendell also doubled the capital spending budget for PASSHE schools to \$130 million. When Governor Corbett slashed that budget back to \$65 million in 2011, many universities were caught with twice as much construction as they had budget to pay for. The "rob Peter to pay Paul" strategy meant that PASSHE projects ground to a halt.

Part of the structural problem facing PASSHE is the enrollment decline but that is beginning to be reversed. For construction, the bigger impediment is that the \$65 million allocated is the same budget as two decades ago. Costs have more than doubled in that time, meaning that the universities can only do half the work they would have done in 2000.

There are some significant projects in the PASSHE system, however. In Western PA, two major projects have recently been put on the market as best-value procurements. Clarion University's \$42 million Tippin Gymnasium was recently awarded, and the \$25 million Miller Hall auditorium project at Slippery Rock University is currently being evaluated. The \$11 million Coover Hall project at California University is beginning construction.

Fewer projects are in the planning pipeline on this side of the state. A \$90 million Walsh/Weyandt Hall project at Indiana Univer-



Spending on all major categories of public works spending has declined since the end of 2015. Source: Associated General Contractors of America.



sity awaits a design selection and the renovation of the Slippery Rock Success Student Center should go out for design proposals in 2018.

Among the projects planned for throughout the system over the next five years are a \$136 million Commons at West Chester University, a \$76 million information commons at East Stroudsburg, and a \$45 million Cope Hall renovation at Cheyney University. The funding for these projects has not been allocated.

Hanging over the PASSHE schools is a decision on the system as a whole. The legislature has not been able to prepare a balanced budget yet for 2017-2018 and funding for the PASSHE system is always at risk. There are rumors of closings of universities, particularly those in more remote areas with smaller enrollments, like Lock Haven or Mansfield. PASSHE's 2020 strategic plan is heavy on plans for alternative funding sources and further efficiencies. To remain sustainable, however, the system will have to find a place in the Commonwealth's plans that ensures stable funding. Until then, construction and maintenance dollars will underperform the demand.

At Penn State, the university is in the final two years of a \$3.28 billion capital plan. The plan's biggest projects, the \$173 million North Hall/East Halls residence program has been under construction for two years. Major projects in varying stages of design or planning at University Park include the \$140 million Chemical and Biomedical Engineering building, the \$41 million Ag and Bio-Engineering building, and the \$62 million water treatment plant. Penn State is also in the midst of fundraising to meet major gifts to build a \$110 million College of Engineering, an \$80 million social sciences building and a \$60 million modernization of the Hosler Building.

The university also is investing about \$170 million in capital projects at its Commonwealth Campuses and is in the midst of a major capital upgrade at the College of Medicine in Hershey. A \$30 million design/build parking garage is in the selection process in September. The major project planned is a \$250-to-\$350 million Innovation Pavilion for medical research.

Another bright spot in post-secondary education is the region's community colleges. Driven by demand for workers with technical skills and two-year degrees, community colleges throughout Pennsylvania are seeing a resurgence. Near Pittsburgh, Westmoreland County Community College is in the midst of constructing a \$40 million expansion, for which Turner Construction is the construction manager. On September 5, Governor Wolf participated in an announcement of a new \$20 million Workforce Training Center at Community College of Allegheny County's North Side campus. CCAC is also exploring options for expanding or replacing its North Hills campus.

## THE UGLY: K-12

Much as a perfect storm of reimbursements, demographics and growth produced a school building boom in the mid-late 1990s, population and political events today have aligned to create a void in K-12 construction.

*Contracting for the \$1.5 billion multi-year expansion of ALCOSAN's Preble Avenue plant should begin in 2018. Photo courtesy Allegheny County Sanitary Authority.*







State College Area School District's \$117 million new high school is the largest K-12 project ever built in Western PA. Photo by Massaro CM Services.

path to seeing PlanCon reinstated or revised in 2018. The moratorium was the second such freeze in four years, following a two-year halt on processing projects from 2012 to 2014 during the Corbett Administration.

The result of this double whammy has been devastating to the school construction market. During each moratorium, there have been projects that were under construction or had been in the process when the moratorium applied. As damaging as that problem was in the short term – the districts eventually were paid back – the bigger impact has been felt in the shift in how school districts think about their facilities.

"The difference today is projects are less holistic. They are targeted to meet immediate needs rather than long-term plans," remarks Dan Engen, partner at VEBH Architects. "The educational program improvements aren't getting covered in those kinds of project scopes. They aren't really large enough."

Engen says that the projects VEBH is working on are mostly fixes: roof replacements, vestibule security renovations, HVAC and electrical equipment repairs. He worries that many of his clients are paying too much over time because they lose the economies of scale by doing five small jobs rather than one large one.

"We're finding that districts that have to take on a large-scale building project are doing it on their own. School districts are doing their own bond issue or their own capital program independent of PlanCon," agrees David McLean, president of McLean Architects. "The other category we're seeing is things that can't wait: window replacements, roofs, sidewalks, things that are safety- or access-related."

The Baby Boomer generation's child rearing caused a demographic wave that drove school districts to expand and upgrade facilities in response to record enrollments in the 1990s and 2000s. An unusual number of school districts were eligible for Pennsylvania's PlanCon reimbursement mechanism, which funds up to 20 percent of the capital cost every 20 years. As those children, the Millennials, graduated from public schools and have since delayed child-rearing, a structural decline in construction was inevitable – if not healthy. Many districts foresaw reorganization of their physical plants and consolidation of inefficient systems. What wasn't expected was a political move that exaggerated the anticipated slowdown.

In May 2016, a moratorium on PlanCon approval went into effect, meaning that projects that weren't already at a certain level of planning would not be approved and could not expect reimbursement if the project moved forward. That planned one-year moratorium was not lifted this year and there is not a clear

Both architects commented on a trend that is prevalent among all firms. With few exceptions, the K-12 construction project runs no more than \$3 million to \$5 million. Engen admitted that while VEBH is working with 20 school districts it only has a handful of projects in that range. McLean points out that the bigger projects working through his office, like athletic facilities, now usually don't qualify for reimbursements. That's the case for his largest project on the boards, a \$16 million new natatorium and related facilities for Upper St. Clair School District.

"When you're doing a big project, like a new high school, the sports facilities come along with it. But if you're waiting for PlanCon to come back, you might think it's smarter to work on the piece that isn't reimbursable," McLean explains. "If a district has a larger project in the works, they don't want to work on the piece that is reimbursable now."

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That sort of strategy is evident in the project data. The number of K-12 projects started are down and the dollars spent have plunged, but ironically, in the midst of a funding squeeze for capital spending some of the largest K-12 construction projects in state history have been started. In Jefferson Hills, a new \$67 million Thomas Jefferson High School is halfway to completion; State College Area School District awarded contracts in early 2016 for a \$117 million high school; and Cumberland Valley School District has two new schools, totaling about \$76 million, under construction east of Harrisburg.

That trend holds true in Pittsburgh, where almost 65 percent of the construction projects have been over \$10 million. In metropolitan Pittsburgh, more than \$800 million in school construction and renovation projects have been started in the last three years. That's roughly the same level of investment in K-12 construction – in nominal dollars – that was spent annually during the 1995-2000 period, a time when school construction was about \$100 per square foot. During the 2014-2017 period, moreover, \$516 million of that total was spent on two dozen projects over \$10 million.

There are a lot of school districts not spending money on construction in Pennsylvania beyond what is needed as a Band-Aid.

"This environment makes master planning very difficult because everything seems unattainable. Prior to the moratorium a school district could look at its needs ten years out and plan for the budgeting for the projects to come. They could count on the reimbursement to assure that they could afford it," notes Engen.

"Ten years ago, school districts were encouraged by the state to go through one major program at one time, and then not worry about it again for 20 years or more."

A handful of school districts with the wherewithal to fund construction projects are moving major projects forward. These districts have commercial districts or residential growth that assures a revenue stream to repay bond issuances, regardless of the status of Plancon. Peters Township School District is planning a \$90 million high school. Penn Manor, outside of Lancaster Pennsylvania, has an \$87 million school on the boards. State College Area School District has a \$55 million elementary school program in the works. Franklin Regional also plans to spend \$50 million on elementary schools.

These major projects aside, it's clear that a functioning PlanCon system, and a state budget that adequately funds it, is essential for school districts across the Commonwealth to maintain facilities that allow equal educational opportunity.

"One thing I felt in 27 years of practice was that PlanCon was a good system because it helps school districts with difficult demographics to compete. In the current situation, I worry that we will end up where Ohio was," says Engen. "If no funding exists, school districts with sufficient income base will go ahead with improvements but others won't. We're going to have inequity. The PlanCon system was started in part to avoid just that kind of disparity."

Adam Warner, IKM



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## NO HAPPY ENDING IN SIGHT

A seismic shift in these good/bad/ugly conditions isn't on the horizon. The Trump Administration and Congress are not moving in a harmonious direction at the moment and agreement on higher spending seems impossible. Within 90 days, 435 representatives and 34 senators will begin re-election campaigns. Pennsylvania's gubernatorial election will dominate state politics in 2018 as well. Infrastructure projects and new schools used to be good campaigning tools. Now that kind of politics gets an incumbent labeled "tax and spend."

The current public construction market is not for the faint at heart. As volume plummeted over the past decade, competition for projects intensified. During the Great Recession, public owners routinely received ten or more bids. Multi-prime bidders' lists were numbered in the dozens. Prices for construction of schools in 2017 remains at or below those for schools bid in 2008, when oil prices reached \$144/barrel. This trend seems unlikely to continue as the labor supply tightens but tight competition won't abate.

There is some time to figure out the K-12 situation, since the Millennial generation – the largest cohort ever born in America – has deferred child rearing by roughly five years from the norm. In another five years, however, there will be another wave of school aged children in need of education. As they did a generation earlier, public school boards will need to respond to the needs of this increasing enrollment. That response may come in the form

of more efficient building use or a technology answer that mitigates the need for more classrooms. Regardless of the solution, the problem of more kids in schools will have to be managed by the mid-2020s.

Unlike school districts, the federal government has shown willingness to kick the can down the road on problems. State governments will do well to create their own solutions. The share of spending by non-federal sources is already climbing.

According to the Census Bureau's report on September 1, highway spending was \$100 million higher in July, at \$84.8 billion. That's roughly double the contribution expected from the federal government's FAST Act of 2015. Signals from the Trump Administration are that shifting the share of highway spending from the federal to the state and local level is part of its infrastructure solution. That means that a stagnant Act 89 will need to be revised if Pennsylvania's roads and bridges are to be maintained.

"There is still hope that there will be something developed out of Washington DC. Our industry was excited about two candidates talking about infrastructure but talk is cheap," observes Rich Barcaskey. "People are already talking about creating a new Act 89. I don't see anything coming along right now but, in this industry, money eventually comes along." BG

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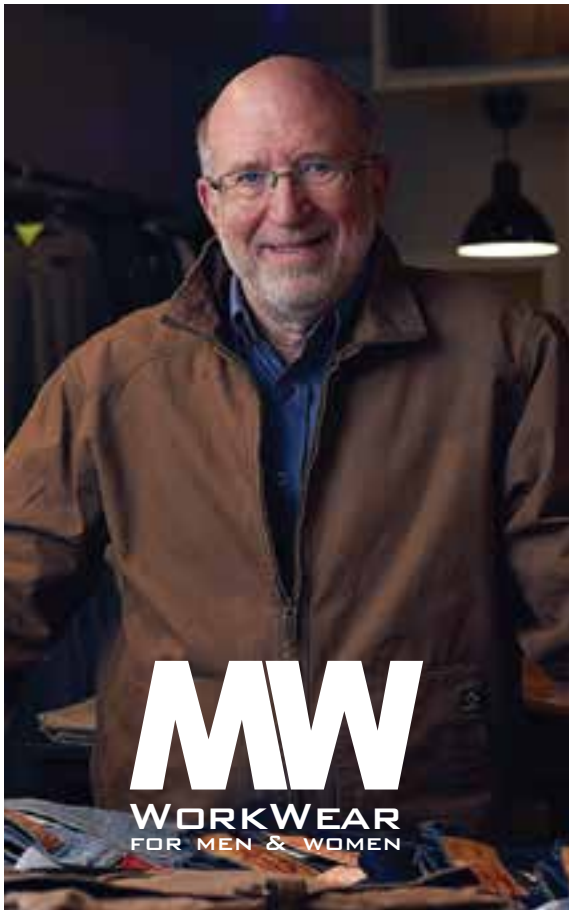
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*The exterior of the historic structures was cleaned and repaired.*

## CLAPP LANGLEY CRAWFORD COMPLEX MODERNIZATION

**T**he University of Pittsburgh under Mark Nordenberg began taking active steps to change its public perception. Long a dynamic research university, Pitt began upping its admission standards and, as part of its institutional master plan, developed projects that would support the education and research of those students. Most particularly in its science buildings, Pitt committed to spending tens of millions transforming their labs into state-of-the-art facilities.



During the past decade, the university has undertaken major modernization and upgrades at Benedum Hall, Chevron Hall, Salk Hall and the Clapp Langley Crawford complex. The first three projects involved some amount of new construction. While that hardly made the projects easier, the new construction gave a more modern context to the updating that was occurring in the laboratories. Clapp Langley Crawford, which was the last of the projects, had a different contextual setting. A Gothic Revival building designed by architects Trautwein and Howard, Clapp Langley Crawford was getting a complete renovation without new construction. That posed different challenges for the architect and the university.

"It was the complete and total infrastructure renovation of the Clapp Hall building, which is the home of the Department of Biological Sciences and was built in 1956," notes Dave Klimchok, project manager for the University of Pittsburgh. "I don't want to say the building hadn't been touched before but the project was a well-needed upgrade of a major science building on the campus."

"It's a mixture of teaching and research labs for the College of Biological Sciences. It's an oddball building and from an era when they didn't put the same kind of systems in as we do now for safety sake," notes Alex Wing, principal and project architect for Stantec. "When this building was built it designed in what's called a cellular approach, which is a bunch of small labs separated by a double loaded corridor. Nowadays, especially with research labs, we tend to have much larger open spaces that are flexible, that can be rearranged as they swap out researchers. There were a number of places where we eliminated the center corridor and created large suites of space just to make it more functional by today's standards."

To accomplish that goal, the building was essentially gutted, save for an auditorium that had been renovated in a separate project. Stantec was able to develop a design that took wings of the building and created the new, modern open lab spaces. That meant dramatic changes to the building's systems. The double-loaded corridors also created a challenge in creating spaces that



*New open lab spaces replaced the smaller individual lab rooms.  
Photo by Thomas Holdsworth.*

could be viewed from the hall and spaces where students and researchers could gather to collaborate, which is an important function of a research building.

"The original building provided no views into the labs, no ability to walk down the hall and get a sense of what's going on in the labs. There were also no places to sit and wait for classes or hang out with your friends," explains Wing. "With a modern science building you spend a lot of time trying to create that informal interaction space. We were able to do that by tweaking the edges of the hallways and creating little niches for people to sit."

Like the other major capital improvements done recently, the \$25.7 million Clapp Langley Crawford project was funded primarily by the PA Department of General Services (DGS). The DGS delivery model involved delegating the management of the project, including procurement, to the university. Those conditions mean bidding the project to at least four prime contractors, which is not Pitt's normal delivery method, but the

university maintained the quality of its responding contractors through a prequalification process. Pitt also hired Mascaro Construction Co. as construction manager/agent to work with architect Stantec in assessing the constructability of the design and administer the construction.

Clapp Langley Crawford's documents went out to bid in early 2014. When bids were opened on February 3, 2014, Pitt got the benefits of an early season bid. The low bidders were experienced with Pitt's campus and the low general construction bidder, Mosites Construction, submitted a \$9.8 million dollar bid that was .006 below the second bidder. In addition to Mosites, which would be responsible for coordinating the separate trades, Kirby Electric was the successful electric contractor and EMCOR/Scalise was the low HVAC, plumbing and fire protection contractor. Contracts were awarded and work commenced in April 2014.

"The main challenge was retrofitting a 60-year-old building up



*Niches for collaboration were created by reworking the original double-stacked corridors. Photo by Thomas Holdsworth.*



to modern mechanical and electrical standards for a state-of-the-art research lab," says Klimchok. "The challenge was fitting the infrastructure into the existing building and renovating the ground floor scientific classrooms. Because of the phasing of the project, they couldn't be completed until the last four months of the job. About 40 percent of the project was done at that time and the classrooms had to be open for student use for the fall term of 2015."

Rytis Spokas, project manager for Mosites Construction, explains that the challenge Klimchok describes had two facets, the physical infrastructure and the schedule.

"The existing infrastructure was sometimes difficult to locate. We were doing all new shafts and runs and we had to cut a lot of holes in the walls," Spokas recalls. "The communications cable was buried in concrete and it was difficult to find utilities at different places in the building. There were no good as built drawings so we were working kind of blind."

"We had to build some pretty complicated coordination models with the contractors because of the low floor-to-floor height. That was compounded by the fact that it's a four-story building but with six levels," explains Wing. "There were a number of intermediate levels. Again, this was designed at a time when they didn't design buildings to be accessible and there was no ADA compliance. We had to put in some secondary lifts but [the layout] also created issues for how to snake the mechanical systems through the building. The building was built in a time where the infrastructure requirements were just very different and the way people moved through buildings was very different."

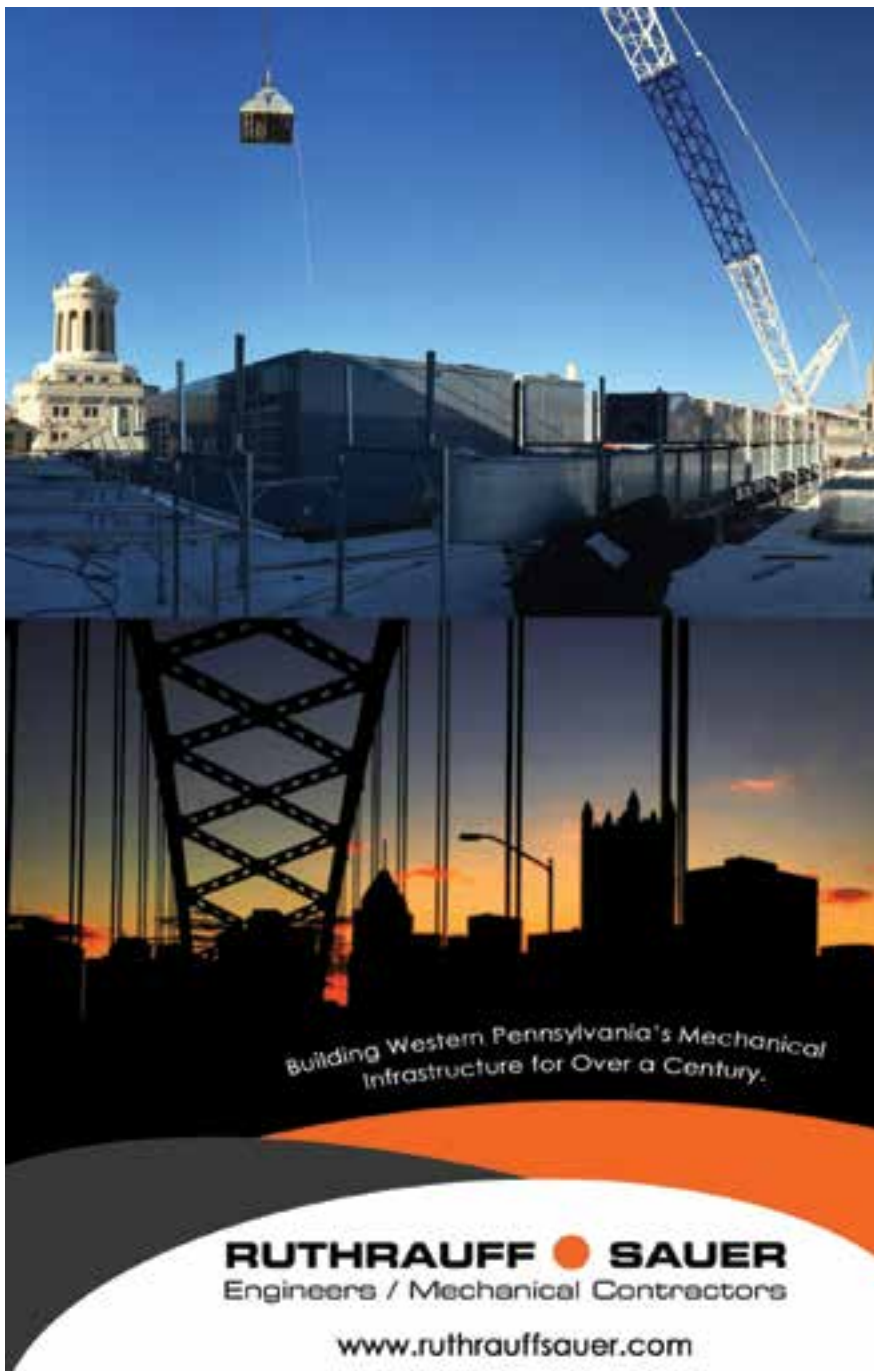
The extensive reworking was also complicated by the project's phasing requirements, which limited the working hours for the contractors because of the use of classrooms.

"The biggest challenge was the schedule. The project was scheduled for three phases and a couple of the floors had to be completely done during summer break," says Spokas. The first year we did the three floors above the ground floor. The first-floor classrooms had to be left alone throughout the year except for during summer break so noise control was a big issue. The students had to be able to take classes without disruption. We had to work crazy shifts to do that. We couldn't work at night because of city ordinances and the students complaining that the noise would keep them from sleeping. We worked from 5:00 until 8:00 in the evening to minimize the noise."

Clapp and Langley Halls are located opposite the Heinz Chapel, running the length of Ruskin Street between Fifth Avenue and Bigelow Boulevard. Like most job sites on Pitt's campus, the Clapp Langley site was cramped, with little room for staging the project or storing material.

"There was limited lay down area. They gave us room in front of Langley Hall but there was no room at Clapp," explains Spokas. "And the mason needed all the room around the building to do its work so we used whatever we could."

Spokas points out that the exterior of the complex received plenty of attention, even though there was no addition to the structure. Cost Company was engaged to restore the limestone





exterior, where possible, and repair the parapets. Some of the limestone slabs were beyond repair, requiring a complicated stone matching exercise. The roof was also replaced and repaired. To accommodate the mechanical system needs, a new penthouse was added. There were also greenhouses on the roof that had to be rebuilt and required an unusual architectural element.

"Some of the greenhouses are used for butterflies and insects. There are some pretty strict requirements for how you glaze for them. It turns out that you actually have to provide glazing that allows certain wavelengths of light into the greenhouse or else the butterflies can't see. That was something that was important to the researchers that we did not expect. You can't just put any old glazing system in a greenhouse if you want to raise butterflies," Wing chuckles.

Schedule aside, the interior renovation proceeded mostly to plan. During the final four-month phase, Mosites Construction supplemented the carpenters doing the drywall and finishes with its own workforce in order to meet the aggressive schedule. That step was part of Mosites' plan for meeting the schedule but there were also bumps in the road that were unplanned.

"The original casework supplier went out of business during the project so that was another challenge," recalls Spokas. "We had to find another manufacturer while the project was ongoing."

Dave Klimchok says his most vivid recollection of the project involved the many unforeseen conditions that are part and parcel to a renovation of an older building. Klimchok notes that Pitt threw a few changes into the process, as well. He gives credit to the way that the team of contractors and designers worked for delivering what the university needed.

"The amount of collaboration and team effort required to fit that much work in the last four months of the project was important. It was not only Mosites and Stantec, but the mechanical and electrical trades as well," Klimchok says. "In a building that's old you're always going to have field conditions pop up that are going to affect the design and Mosites was always very quick to respond and adjust as we moved along."

"I don't know how to emphasize it enough but those scientific class rooms on the first floor were super critical to complete on time. There was no missing it by even one day because there was no other place on campus that those students could take those classes. It's not like

we could have moved them over to Alumni Hall for a couple of weeks. No, those rooms had to be used because, from day one here, we need the capabilities of those lab classrooms."

"We referred to the building as the wedding cake because of the tiers and step-backs. No floor plan was the same as another," Wing jokes. "That meant we couldn't run big shafts, which is what you typically like to do in a laboratory building. A lot of times, universities will repurpose buildings like this into classrooms or offices but this building was located in a place that made it important to Pitt to continue as a lab for biosciences."

Wing believes the opportunity to work on a building like Clapp Langley Crawford was a privilege. He describes the architect's

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Interior of Carnegie Mellon University's Sherman and Joyce Bowie Scott Hall research lab overlooking the Cathedral of Learning at University of Pittsburgh

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University of Pittsburgh.....	Owner
Mascaro Construction Co. LP.....	Construction Manager/Agent
Stantec.....	Architect
Vanderweil Engineers .....	MEP Consulting Engineer
Emcor/Scalise Industries .....	HVAC & Plumbing Contractor
Kirby Electric.....	Electrical Contractor
Cost Company .....	Masonry
Wright Contract Flooring .....	Flooring
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Nycom Inc.....	Casework



Photo by Thomas Holdsworth.

role in the way a professional sports referee talks about a well-officiated game.

"This is a building that was part of the original design for the cluster of buildings based at the Cathedral of Learning. You recognize the importance of the building and try to work with it in a way that it still functions as it was intended," he says. "It's about transforming a building that's historically significant so that it can continue to be state-of-the-art for the next 20 or 30 years. You don't get to leave behind a big mark in terms of recognizing exterior design features but that's okay. When you walk away from a project like this it needs to feel like it's always been this way. These are also the kinds of projects that take the focus of your entire team. You can't coordinate all of these systems without real close coordination from the contractors and engineers and architects."

"At the end of the project we took what was an outdated building and brought it to the highest standards in the industry now," Klimchok asserts. "We went from a building that was pretty tired to a building that's as good as anything else in the country." **EG**



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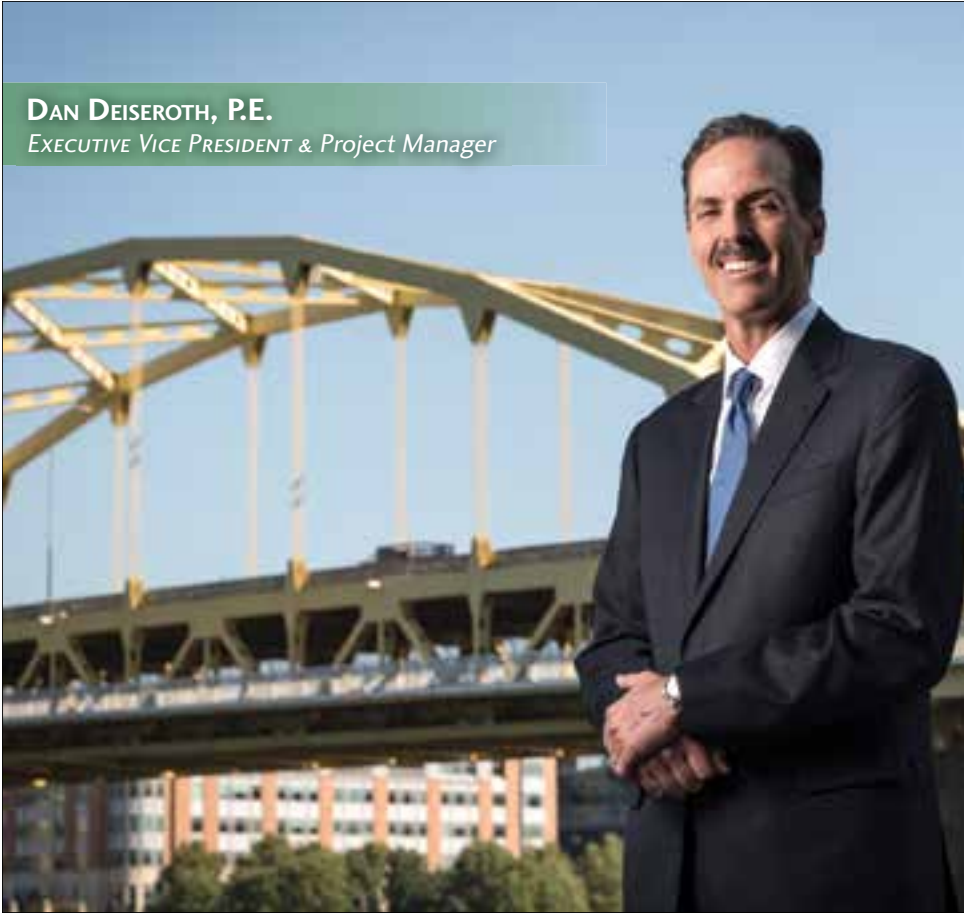
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*(From left) Rob Romack, chief estimator, David Witt, controller, Jim Ferry II, president, and Bill Puhlman, VP of project management and estimating.*

**T**hree generations of Jim Ferry have managed the firm that James J. Ferry founded in 1926. The current president, James J. Ferry II, tends to talk about his business more in terms of where it is going than what Ferry Electric Company is doing today.

"I see a lot of change in our industry over the next five or ten years, more than in the past," he explains. "In a lot of cases the jobs we're dealing with have less information. They are more complicated. They have tighter schedules and higher expectations of quality and safety. Listen, I am just like my competitors. All I do is connect black wires to white wires. The value we bring to that process, I believe, is the ability to understand the change that's happening in construction."

"Jobs are tighter and riskier but that's less a reason to stay out of the businesses than it is to find an opportunity to separate yourself from the pack."

Over the past decade, Jim Ferry and his management team have seen technology and attitude shifts create an opportunity to manage an electrical contracting business differently. The company has adopted prefabrication and building information modeling (BIM) to change the way it delivers projects. Ferry Electric has adopted technology in the office and field, equipping its foremen with iPads in 2013 and using PlanGrid to manage 90 percent of its construction documents. This fall, Ferry Electric expects to field test a Beta version of RealWear's helmet-mounted display technology, which will allow the electricians

on the jobsite to view the drawing or detail while keeping both hands free.

Jim Ferry explains that the move to iPads was something of a revelation about how the technology would be adopted by his crews.

"My foremen are used to change, I would say, but are not always receptive to it. You can imagine I got a little resistance putting iPads in the field," he laughs. "Within six months we had to bring the iPads back in to update software and I couldn't get them back. When an electrician asks my foreman a question about a steel detail that he wasn't expecting to see when he's putting in a cable tray, the foreman can stop right there and pull up all the drawings and answer his question. He used to have to say meet me at coffee time or lunch and we'll look at the drawings."

Like most electrical contractors, Ferry Electric had been prefabricating on some level for decades. The electrician is a following craftsperson, coming onto the jobsite primarily after the interior walls have been constructed and constantly jockeying for position with plumbers and HVAC technicians. The more that wiring assemblies and fixtures can be assembled in advance, the more efficient and safer the electricians' work can be accomplished. Technology improvements, particularly BIM, give electrical contractors the opportunity to prefabricate much larger assemblies with accuracy and reliability. That can make the work more profitable and the workplace more efficient, but the technology does not ensure that in and of itself.

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"I think if you look at prefab from just a margin perspective, you are going to miss the mark because you're not going to understand what it takes and what the potential benefits and risks are," Ferry asserts. "Prefabrication can move your peak manpower to an earlier part of the schedule. But when you get the benefit of affecting the schedule, you also have the burden of moving the thinking and planning that precedes that to get done earlier. If that's not done you haven't improved the process, you've damaged it. But if you can get your MEPs to all look at a project and move some of those time-sensitive activities from your peak manpower months to some place earlier, then it benefits everybody that will be on that job. The project will be safer and the quality is going to be better. Everybody will be working more efficiently so, yes, at the end of the day it will save money for the contractor doing the prefab. But if you start from that point you're never going to see the benefit of it."

Ferry's education on prefabrication came, surprisingly, on a project the company didn't land. The successful contractor won the project because it priced its work based on prefabricating the entire project. But the job wasn't well-planned and much of the work had to be re-done. Ferry Electric's management team met vendors that worked on the job to see what lessons could be learned from the project. Their biggest takeaway from the meeting was that the industry was changing.

"We had been doing some prefabrication for a number of years

but we went all-in on the Nordenberg Hall project at Pitt," says Ferry. "On that job, we used the BIM model. We had PJ Dick [the construction manager] go on to the floors ahead of us and lay out the floors. We used our BIM models to run our racks down all those halls, offsetting around ductwork that wasn't going to be there for a couple of months. We dropped stubs down corridor walls that weren't standing yet. My guys are on those floors all by themselves."

Ferry acknowledges that the result of their work looked a little unusual for a jobsite, but he points out that it also meant that there were 25 percent fewer people on the job site when it came time to hang the drywall or run the ductwork. That's a big contribution to the safety of the project.

The adaptation to new technology and processes is part of the culture at Ferry Electric, Jim Ferry believes. Citing the company's transitions over the years, he credits the employees with the success of change.

"Our employees, our organization has seen a lot of change over the years and has seen successful generational change. When you see change at the highest level of the organization and it goes well, you're not afraid of change," Ferry says. "It's amazing how adaptable people are and how, when given the opportunity, people rise to the occasion and show what they can do to move the company further. You go through 90-some years of that and

*Ferry Electric was the electrical contractor for the Benter Foundation's Avenue Four Analytics offices. Photo by Massery Photography.*



as long as you have a focus on what you're trying to do, and keep a good core group of people around you, then you have a framework to manage those changes."

Perhaps the willingness to change does come from the changes of the past. James J. Ferry started the business in 1926. With plans to be an accountant, Ferry endured his own wrenching change when his father died and Ferry began working at J&L Steel's South Side Works at 17 to provide for his family. Four years later, he left J & L to work for an electrical contractor that was converting gas homes and businesses in Moon Township to electricity. James J. Ferry saw the opportunity that electrification offered and started on his own, going door-to-door in South Side to find homeowners interested in the change. He registered Ferry Electric Company in 1928 and began working with some of the city's largest residential developers. Then came the Great Depression.

It was while Ferry Electric Company was scrambling to keep work coming during the Depression that another door of opportunity opened. The devastating flood of 1936 left tens of thousands of homes and businesses without power. For months, Ferry Electric Company had crews working almost around the clock to rewire Pittsburgh. The work set the company on its way. Ferry Electric Company also landed a contract with Duquesne Light's Range Program, installing more than 20,000 electric ranges as part of the utility company's program to drive electric use.

James R. Ferry joined his father in the 1950s and guided Ferry Electric Company as the company maintained relationships with larger commercial and industrial clients. James J. Ferry II joined the company in 1992, after graduating from Purdue University in 1990 and working for a residential developer in Florida for two years. The eldest Ferry continued to come into the office until his death at age 92. Jim Ferry II expected a similarly gradual transition as he learned the business with his father but, in 1999, James R. Ferry suffered a serious heart attack.

"I left the hospital, came in here the next day and said my father is going to be out of commission for a while so I'm going to be running things," Jim Ferry recalls. "Again, we're fortunate to have such a great group of people here in the office and in the field that it was well-supported and went pretty smoothly. My dad continues to come in and out of the office but that year they began to spend more time in Florida."


Part of the legacy of the James J. and James R. Ferry that continues with the third generation is involvement with the industry and the community. Jim Ferry II is the current board president for the Western PA chapter of the National Electrical Contractors Association (NECA) and vice-president of the PA Builders Exchange board. Like both his father and grandfather, Jim Ferry serves as a trustee for the Western Pennsylvania Electrical Employee Benefit Funds. It's a legacy he intends to pass on to the next generation, although none of Ferry's children have graduated college yet, let alone determined their career paths.

For the time being, Ferry Electric Company is in a strong position. Having reduced its staff in 2009, Ferry Electric has grown again, with 15 people in the office and about 50 electricians and

supervisors in the field. The company is completing a renovation of its basement to accommodate new hires. Jim Ferry is optimistic about the opportunities that should be coming in the next few years but remains committed to being an agent for change.

"I see a competitive future in the industry. We have a good labor partner and I think there are ways that we can solve those competitive situations together," Ferry predicts. "I think the picture changes with the cracker, both before and after. But I think after the cracker brings its own set of opportunities as well. I think we must understand the market and how we're going to approach it, and work with our labor partners to get there. At the end of the day we all have the same goal in mind and that is to get people working."

One thing that Ferry isn't trying to change is the company's approach to its customers.

"The relationships my grandfather and father built with contractors and owners and developers we have tried to maintain and have never strayed from that," Ferry says. "When we look at a project now we're focused on the general contractors or owners who we want to work for. We're selective. We want to go in, do that job and do repeat work with them after that. That's why we have a service division. We want to help them deal with the little headaches so that when the big headaches come along, they know they can rely on us." 

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# LEGAL PERSPECTIVE

## New AIA Contract Documents Change Insurance Requirements

BY SCOTT D. GARBO AND ZACHARY A. ROWLEY

**F**or decades, the American Institute of Architects ("AIA") has published contract documents to allocate the numerous risks on construction projects. While other industry forms are now competing, the AIA Contract Documents remain the most used contract and construction-administration forms in the construction industry. In order to keep pace with industry trends, the AIA publishes revisions to these forms every 10 years. Earlier this year, the AIA released its latest versions of 11 forms, with an additional 18 revised versions to follow this fall. Once all 2017 updates are released, the 2007 forms will only be available for another 18 months.

One of AIA's flagship forms is the A201 General Conditions of the Contract for Construction—roughly 35 pages of general conditions to many of the agreements between the owner and contractor. While most of the modifications to the A201 General Conditions are relatively minor, the AIA made material changes to the insurance provisions.

In lieu of placing the insurance requirements in Article 11 of the A201 General Conditions, the AIA added an Insurance and Bond Exhibit (the "AIA Exhibit"). The addition of the AIA Exhibit is intended, in part, to provide the parties with flexibility in developing insurance requirements, and to allow the parties to easily convey insurance obligations to their insurance agents. Importantly, however, the AIA Exhibit includes substantive updates to the type of liability insurance on which contractors must name owners, architects, and architect's consultants as additional insureds.

Previous editions of the AIA forms required contractors to name the owner, architect, and architect's consultants as additional insureds on their liability insurance policies. However, the AIA Exhibit now expressly requires the contractor to name these parties as additional insureds with coverage not less than the coverage on three specific insurance endorsements: 1) CG 20 10 07 04; 2) CG 20 37 07 04; and 3) CG 20 32 07 04. Each of these endorsements is produced by the Insurance Services Offices (commonly referred to as "ISO")—an organization established to serve the insurance marketplace principally by producing standardized insurance forms. ISO published these three forms utilized by the AIA Exhibit in July 2007—as reflected in the last four numbers of the forms (i.e., "07 04"). However, in prior and subsequent years, ISO has also produced other versions of these additional-insured forms.

The former two ISO endorsements required by the AIA Exhibit generally satisfy the contractor's obligation to

name the owner as an additional insured (the "Owner AIA Endorsements"), whereas the latter endorsement generally satisfies the contractor's obligation to name an architect and the architect's consultants as additional insureds (the "Architect AIA Endorsement").

In relevant part, the Owner AIA Endorsements respectively provide:

### [OWNER AIA ENDORSEMENT NO. 1]

A. Section II – Who Is An Insured is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule<sup>1</sup>, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by:

1. Your acts or omissions; or
2. The acts or omissions of those acting on your behalf; in the performance of your ongoing operations for the additional insured(s) at the location(s) designated above.

B. With respect to the insurance afforded to these additional insureds, the following additional exclusions apply:

This insurance does not apply to "bodily injury" or "property damage" occurring after:

1. All work, including materials, parts or equipment furnished in connection with such work, on the project (other than service, maintenance or repairs) to be performed by or on behalf of the additional insured(s) at the location of the covered operations has been completed; or
2. That portion of "your work" out of which the injury or damage arises has been put to its intended use by any person or organization other than another contractor or subcontractor engaged in performing operations for a principal as a part of the same project.

### [OWNER AIA ENDORSEMENT NO. 2]

Section II – Who Is An Insured is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury" or "property damage" caused, in whole or in part, by "your work" at the location designated and described in the schedule of this endorsement performed for that additional insured and included in the "products-completed operations hazard".

<sup>1</sup> Schedule omitted here and in cited sections below.

Similarly, the Architect AIA Endorsement states:

### [ARCHITECT AIA ENDORSEMENT]

Section II – Who Is An Insured is amended to include as an additional insured the architects, engineers or surveyors shown in the Schedule, but only with respect to liability for “bodily injury”, “property damage” or “personal and advertising injury” caused, in whole or in part, by:

1. Your acts or omissions; or
2. The acts or omissions of those acting on your behalf;

in the performance of your ongoing operations performed by you or on your behalf.

Such architects, engineers or surveyors, while not engaged by you, are contractually required to be added as an additional insured to your policy.

B. With respect to the insurance afforded to these additional insureds, the following additional exclusion applies:

This insurance does not apply to “bodily injury”, “property damage” or “personal and advertising injury” arising out of the rendering of or the failure to render any professional services, including:

1. The preparing, approving, or failing to prepare or approve maps, drawings, opinions, reports, surveys, change orders, designs or specifications; or
2. Supervisory, inspection or engineering services.

By identifying these specific ISO forms by form number and date, the AIA contract documents have removed some of the ambiguity in the type of liability insurance on which the contractor must name the owner, architect, and architect's consultants as additional insureds. However, this detail also creates a danger of the contractor breaching its AIA agreement if the additional-insured endorsement in its liability insurance policy provides less coverage to the owner or architect than the coverage offered in the specified ISO forms. A breach may principally occur in one of three scenarios. First, in lieu of using ISO forms, insurers often create their own additional-insured endorsement. These endorsements created by the insurer commonly provide less coverage than the ISO forms specified in the AIA Exhibit. Second, even if the insurer utilizes the same ISO forms required by the AIA Exhibit, the insurer may still modify the terms of the ISO forms to further limit the available coverage. Third, while an insurer may include an unaltered ISO form, it may use a version other than the July 2014 endorsements.

Importantly, if the coverage procured by the contractor under any of these scenarios is less than the coverage required by the AIA Exhibit, then there is a danger of the contractor becoming liable to the owner, architect, and/or architect's consultant for breach of contract. While there is limited case law directly addressing this issue, courts from around the country have recognized the principle that a party who fails to procure insurance which it agreed to secure, assumes the position of the insurer, and thus, the risk of loss. See *Richmond v. Grabowski*, 781 P.2d 192 (1989) (citing 16A J. Appleman, *Insurance Law & Practice* § 8840 (1981)). In other words, if the owner, architect, or architect's consultant is denied coverage as an additional insured because the contractor purchased an additional-insured endorsement other than that required by the AIA Exhibit, then the contractor may be liable for all damages and attorney fees which would have otherwise been covered by the Owner or Architect AIA Endorsements.

As is often the case with various provisions in construction contracts, the new insurance requirements in the AIA Contract Documents can be complex, and have significant consequences. It is important for contractors to fully understand its contractual requirements to name others as additional insureds on its insurance policy, and to ensure that the proper insurance endorsements are procured. Otherwise, the contractor runs the risk of significant liability for a breach of contract. **BG**

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# FINANCIAL PERSPECTIVE

## The Value of Prediction in Realizing DSM New Construction Portfolio Savings

BY CHRIS BAKER, AIA, PE, BEMP, BEAP, LEED AP BD+C

**F**or more than two decades, energy modeling, often as part of new construction energy design assistance programs offered by utilities around the country, has been used to assist architects and engineers during design. Recently, a team at The Weidt Group analyzed the design models of past projects in comparison to actual building performance to verify that savings predicted through utility programs are being realized. In the analysis, 12 months of metered energy use of 160 buildings—including colleges and universities, K-12 schools, office buildings, retail stores, warehouses, healthcare buildings and police and fire stations—were compared with their respective energy model at the time of construction completion. The findings: electric consumption for the overall portfolio of these 160 projects showed the meter was using four percent more electricity than the design models. For the 57 projects utilizing natural gas, meter usage was one percent less than the models over the portfolio. This analysis confirms quality energy models can be used with confidence to inform design decisions, and utilities and building owners are realizing their expected savings.

### INTRODUCTION

Although use of energy modeling to inform design has become significantly more prevalent, some skepticism remains about its accuracy and, therefore, long-term value. To address this accuracy question, The Weidt Group assembled a team to analyze 160 completed buildings that have all been in operation for a minimum of two years. This group of buildings ranges from educational centers to warehouses.

It is well known that, during operation, individual buildings may be used differently than expected in design—from changes in space use, to occupancy and weather. This acknowledges that some buildings may use more or less than expected due to changes in occupant needs. Thus, over a portfolio of work, how close are design models to their operating buildings? To answer this question, the analysis compared metered energy consumption data to design energy model expectations, looking at the overall performance of the portfolio of buildings. The compiled statistics show variations of the portfolio within four percent, without any correction for weather or occupancy.

### ANALYSIS VALUES AND REALIZED SAVINGS

Energy modeling is best suited for comparative analysis, or assuming the value of implementing one strategy over

another relative to energy code guidelines or energy savings capacity. This is what makes modeling during design so valuable, as building owners and design teams can understand the relative value of one design option versus another. Despite this, a desire often exists to compare design models to actual building performance to indicate if the comparative analyses are sound. The challenge is that factors, such as hours of operation, weather and the final as-built conditions of the building, may vary between the model and the operated building. These challenges result in differences between the model and the metered energy consumption, while still providing reasonably accurate comparative analysis between different design alternatives.

In collectively analyzing this group of projects, the value lies in the average savings over the portfolio. This means that some projects will likely be higher energy users than expected, while some are lower. This is illustrated as an example with the scatter plot below. The line indicates the average savings. Some projects are shown above the line. These projects may or may not be inefficient for many reasons, for instance a building may be utilizing more hours in the space or may have more people, which can lead to increased energy use. However, even if this is the case, they may be utilizing energy in an efficient manner. The same scenario applies to projects below the average. For example, these buildings may operate more efficiently than expected, or they may only be partially occupied, showing that many factors can affect increased or decreased energy use in a building. This is the main reason to focus on the average, as this reflects the impact on the overall utility grid.

In all the data, the key variable is building occupants' capacity to do whatever they please. There is no accurate way to factor actual occupant loads, equipment use or even the weather during design—models can only make educated assumptions. For these reasons, energy model accuracy can be questioned. However, this recent analysis shows that accuracy is achieved at a level that benefits both utility companies and their customers. In fact, over the entire portfolio of 160 buildings analyzed, the actual buildings used only four percent more electricity and one percent less natural gas than the design models predicted. Thus, when looking at a new construction utility program, for example, the design models accurately estimate the savings to the utilities grid, demonstrating that the programs are having the desired impact. Let's look at this from a more comprehensive standpoint. This study included numerous building categories, from office buildings and universities, to warehouses and healthcare buildings. The 62 K-12 schools, providing electric data, used



one percent less electricity than the energy models. The 10 retail buildings used eight percent more electricity than the models. Lastly, the 26 offices used 11 percent more electricity than the models. The variations by building type are likely attributed to different users and building operators. Trusting well-built energy models allows utilities and their customers to accurately predict potential energy savings of a wide portfolio of building types.

To further bolster this point, let's look at natural gas data. Of the 57 buildings tested using natural gas, their building meters recorded one percent less than the model predicted over the portfolio. The 19 K-12 schools used seven percent more gas than the models. The six offices used two percent more gas than corresponding models.

The overall accuracy of the portfolio demonstrates that design teams and owners can provide information that accurately represents how they expect to use and operate new buildings. However, the data also shows that some building types have more variation in actual occupancy that is difficult to predict. Retail buildings, for instance, host an irregular number of customers per day. Office building tenants may work irregular hours, unlike the typical 8:00 AM to 3:00 PM schedule of the average school. Irregular schedules equal unpredictable energy usage. Most healthcare buildings run 24-hours a day, however, there is no standard to predict how many patients will visit emergency departments on any given day.

Energy modeling should first be used to inform energy efficiency strategies during the design process. Taking the time during design to understand how the building is going to be used leads to more accurate models and better savings predictions. While certain observations can be made from building type data, the aggregate effects on the grid show the true value of design models in the end. Using modeling empowers architects, engineers and building owners to invest in strategies that will have the greatest economic and environmental impacts for their particular buildings. This benefits those paying the investors, those paying the utility bills and society at large.

### DATA SUMMARY

Though no investment is without risk, the American Council for an Energy Efficient Economy (ACEEE) describes energy efficiency as having the risk profile of a bond with the financial returns of the stock market<sup>1</sup>. This means the volatility of energy modeling is less than most investments required to construct a building.

<sup>1</sup> Source: <http://cleanenergyaction.org/2013/11/30/exploring-a-carbon-price-for-colorado/>



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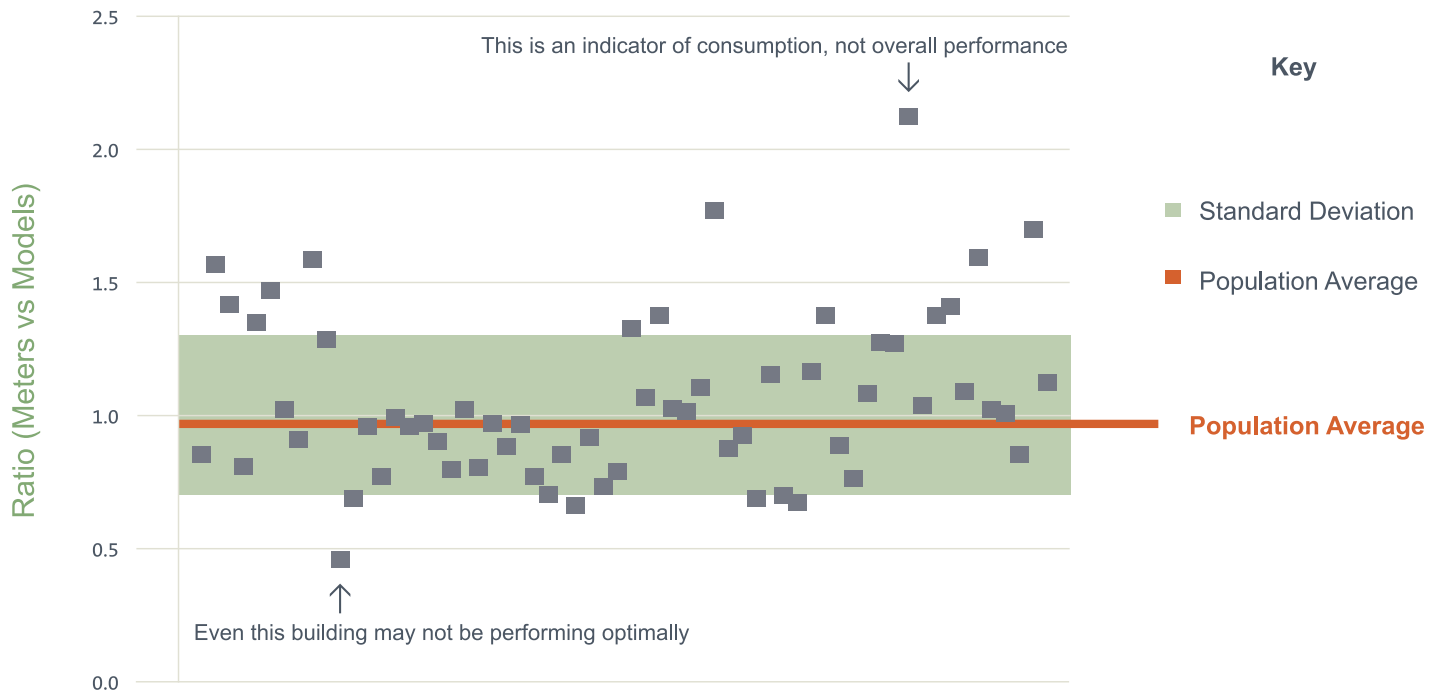
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## Metered Results Compared to Design Models



### CONCLUSION

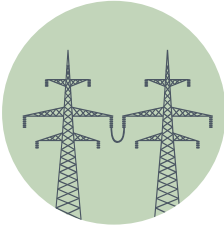
This data combines a comprehensive analysis of 160 buildings of various types. Despite slight variations—often due to weather, occupant behavior and operational decisions—when considered as a portfolio, total electricity consumption fell within four percent of the models, and total natural gas consumption fell within one percent of the models. Although the primary purpose of energy modeling during design is not to predict energy bills, the data reveals that the value proposition of energy modeling extends to utilities, building owners, building tenants, energy policy makers and manufacturers. Energy modeling can, in fact, guide us in creating more energy-efficient commercial buildings. BG

*Chris Baker is senior principal, energy analyst for the Weidt Group, the energy practice of EYP Inc. Chris has over 10 years of experience providing comparative energy analysis to assist building owners achieve high-performance buildings. He is a Registered Architect, a Professional Engineer, a LEED Accredited Professional, an ASHRAE certified Building Energy Modeling Professional and Building Energy Assessment Professional. Chris is a voting member and subcommittee chair of ASHRAE SPC 209 Proposed Standard on Energy Simulation Aided Design and the Buildings Committee Affiliate co-chair for the National Association of State Energy Officials. Chris can be reached by phone at 877-938-1588 or by email at [chrisb@twgi.com](mailto:chrisb@twgi.com).*

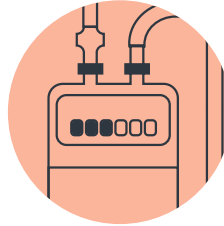


## THE VALUE OF PREDICTION IN REALIZING DSM NEW CONSTRUCTION PORTFOLIO SAVINGS

Although the primary purpose of energy modeling during design is not to predict energy bills, recent portfolio-level analysis reveals the value of modeling extends to utilities, their customers, and all energy efficiency stakeholders.



**160 projects**  
used **4% more**  
electricity than  
the design models



**57 projects**  
used **1% less**  
natural gas than  
the design models

## ELECTRICITY USAGE COMPARED TO THE MODELS

**-1%** **62 schools** used **1% less electricity**  
than the models

**+8%** **10 retail buildings** used **8% more**  
electricity than the models

**+11%** **26 offices** used **11% more**  
electricity than the models

**-12%** **8 warehouse buildings** used **12% less**  
electricity than the models

Individual percentages represent the average energy savings  
based on the analyses performed within each building category.

## NATURAL GAS USAGE COMPARED TO THE MODELS



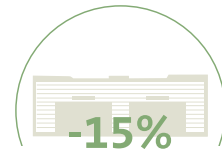
**+7%**  
**19 schools**  
used **7% more**  
**natural gas** than  
the models



**-12%**  
**8 retail buildings**  
used **12% less**  
**natural gas** than  
the models



**+2%**  
**6 offices**  
used **2% more**  
**natural gas** than  
the models



**-15%**  
**5 warehouse buildings**  
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# MANAGEMENT PERSPECTIVE

## Tougher Silica Standards Sneak Up on the Industry

**O**n September 23, 2017 the Occupational and Safety Hazard Administration (OSHA) is implementing new standards that reduce the permissible exposure limits (PEL) for respirable crystalline silica (quartz, cristobalite, and/or tridymite), or silica dust. Crystalline silica is a mineral present in many construction materials and jobsite situations. These can be as varied as limestone aggregate or drywall finishing compound (commonly called mud).

The changes in standards for silica exposure began to show up in 2014 in other industries. OSHA, concerned that silica exposure had the same health risks as asbestos exposure, sought to make industries like mining safer. Although construction was clearly one of the industries where workers had significant exposure to respirable silica, the implementation of the new standards was deferred. Implementation was finally set for June 23, 2017, only to slip again to September 23. Now, with that deadline upon them, contractors and owners are scrambling to understand the ramifications, which will not be minor.

"The revisions were driven by the former head of OSHA, who was a health professor at George Washington University. He pushed for it there," says Bob McCall, safety director for the Master Builders' Association. "There is a lot of silicosis data, injuries in mining for example, but there is little to show that there are problems in construction."

OSHA's desire to make the workplace safer is hard to dispute but their rationale for the silica regulations is unsupported. In their documents, OSHA estimates that the regulations will reduce silicosis deaths by 600 annually; however, there is no data that shows how many construction-related silicosis deaths occur. Moreover, the National Institute for Occupational Safety and Health reports that silicosis deaths overall have declined by 93 percent.

"OSHA understands our concerns with the technical problems of implementing the program but at the same time they have a rule on the books and they just can't keep kicking the can down the road in terms of enforcement," says Kevin Cannon, senior director of safety and health services for the AGC. "I think they're finally getting it in terms of the stakeholders' position on the role and our request for more time or possibly reopening the rule for discussion."

As might be expected, the contracting community is seeking more clarification on the regulations, asking for an injunction to defer them. But oral arguments on the case won't be heard until September 26. In the meantime, contractors and employers involved in construction are preparing for what is an arduous and expensive transition.

Employers must ensure that workers are exposed to less than 50 micrograms of silica during an eight-hour time-weighted average (TWA) day. Employers are required to understand the environments their workers inhabit by monitoring the amount of silica in the air. In certain cases, where the silica levels are below the PEL, monitoring may be discontinued or repeated in six months. If the silica is above the PEL, monitoring must be repeated again in three months. The environmental assessment must account for each worker, in each task group, in each work area on a job site; and new assessments must be taken if methods or work areas change.

Employees must be notified within five days of the assessment results; and, if the results are above the PEL, the employees must be told of the steps taken to reduce the silica exposure. Employees have the right to have a medical exam, including X-Rays and other pulmonary tests, within 30 days of the assessment. Repeat examinations can be requested. Employers are required to document workers who refuse medical exams.

Contractors will be required to maintain a written Exposure Control Plan and to designate an individual responsible for ensuring the plan is followed. As you can imagine, the need for documentation of the employers' responsibility will add a considerable burden to the safety or compliance departments of every contractor. This administrative pain will be especially onerous for smaller, more lean-running operations.

To assist contractors, OSHA has created a table of exposure control guidelines, which specifies what respiratory protection measures should be taken in the various situations where silica dust can be present, both indoors and outdoors. The guide is fairly simple. The ramifications are not.

"It's a complete departure from what we've been doing previously," explains Rick Bowers, safety director for Mascaro Construction. "The burden of the employer is to ensure the safety of our workers and also the employees of other contractors working nearby. As a general contractor, Mascaro is



further responsible for the health and safety of the employees of our subcontractors. We are changing our methods in the field, using wet suppression of dust, vacuums or personal protection devices on our jobsites."

The field changes Bowers describes vary in scale and cost. Because of the nature of silica, field adaptation will take many forms.

"According to our safety [manager], we're at greatest risk when we drill or hammer concrete," says Fred Episcopo, president of Wyatt Inc., an interior and fireproofing contractor. "We know we're going to have to get hammer drills with

vacuum cones. They run about \$1,200. We're already wearing dust masks and respirators for sanding drywall. We've been told that sanding doesn't create enough dust to be a problem but with lower standards, we don't know."

"It's very impactful because it applies to the most common tasks that we perform any day of the week, including dumping a tri-axle of aggregate or dirt. All of those activities create dust that somehow needs to be controlled," explains Justin Fox of Independence Excavating. "The other thing for us in the excavating business is that it will instantly put an end to any open cab machine, of which there are a lot. From here on out we are phasing all that out and everything we buy has a cab now. The cost varies but a cab on a skid steer is \$10,000. On a roller that's probably a \$30,000 or \$40,000 upcharge."

Beyond the cost concerns, there is little or no experience in the field with the equipment solutions to the silica dust problem. John Paul Busse of F. J. Busse Company notes that the guidelines are fairly straightforward but that his company is monitoring to assess how much exposure there is even with the protective measures. There seems to be widespread agreement that monitoring will be extensive at first. Justin Fox explains that Independence Excavating monitored some equipment that were manufactured with cabs to help judge whether or not they could retrofit existing equipment, and got a surprising result.

"We've been doing this for about a year now and it's interesting that even some machines that come from the factory with cabs aren't perfectly airtight," he explains. "You still get some amount of dust that gets through seals and we have had air monitors inside of cabs in new equipment that is over the threshold. When you talk about retrofitting a cab we're not real comfortable with that."

As disruptive as the field responses to the regulatory changes are, the bigger burden on employers may well be the medical testing requirements.

"Anybody who may be exposed to silica has to get a physical with a pulmonary test and a tuberculosis test. They have to complete an extensive health questionnaire and be tested to verify that they have the pulmonary capacity to use personal protection, respirators," explains Bowers. "We have to provide the physician with a record of the employee's previous exposure to silica and estimate their future exposure. The employee has to have another physical again each year. Then we



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have to maintain the records of the physical from the doctor and share those with the employee."

Bowers points out that this record-keeping and verification will be a significant extra cost to Mascaro but that the real problem from the medical requirements comes from the fact as a union contractor, Mascaro won't have record of what silica exposure the worker had prior to employment. That reality won't mitigate the employer's liability for the worker's exposure. The AGC's Kevin Cannon empathizes with the contractors that are struggling to manage the medical testing requirements for the first time.

"The first hurdle is achieving compliance. Then there is the issue of employee testing," he says. "Employees have the right to be tested but what does the employer do when the employee refuses monitoring or tests. How does the employer keep track of that?"

Although OSHA has estimated that the cost of compliance will be \$500 per person, Bob McCall says that their research shows that it will be much higher. Firms with big equipment needs will see costs in the hundreds of thousands. The administrative and monitoring costs will add an ongoing layer of expense. Contractors expressed concern that the high cost of the regulations will create competitive imbalances that handicap the more compliant contractor. Regulatory costs will be passed along to the

projects but, as Justin Fox points out, those costs can't be shared on projects he doesn't land.

"We've been hoping for the best and preparing for the worst, I guess," concludes Fox. "I expect manufacturers will figure out cool and innovative solutions, like wet suppression systems that are portable like a backpack. They will figure something out pretty quickly and we'll be good to go." **BG**

TASKS	MATERIALS
Abrasive blasting	Asphalt (for paving)
Cutting/sawing	Brick/masonry
Demolition	Cement
Drilling	Concrete
Earth moving	Fiber cement products
Grinding	Grout
Jackhammering	Gunite/Shotcrete
Milling	Mortar
Polishing	Paints containing silica
Mixing	Plaster
Sanding	Rock/stone
Sacking/patching	Refractory mortar/castables
Scarifying	Stucco
Scraping	Terrazo
Sweeping/cleaning up	
Pick and shovel work	
Glass cutting	
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# BEST PRACTICE

## What Owners Should Know (But Often Don't) About Their Buildings

**I**f I only knew then what I know now... Anyone over the age of 30 understands that old adage. It's one that applies to construction as it does to life in general. Property owners and occupants get to live with the decisions that were made during design and construction. On occasion, the experience isn't pleasant. Like with most purchases, decisions about what goes into the building are sometimes made with less than full information, or with short-term motives. BreakingGround asked a group of specialty contractors – who regularly get to remediate the impact of those decisions – for their thoughts about the most common maintenance problems, and how those problems might be avoided.

**Pat Riley, Vice President of Operations,  
A. C. Dellovade Inc.**

If there is one significant issue with building envelopes it would be the continuity of the air/vapor barriers. By not having a monolithic air/vapor barrier there are a host of problems that develop in the short term, such as the obvious leaks. Depending on the amount of air and moisture making it into the building envelope, there will be long term issues with heating and cooling, moisture permeation, mold, and, in severe cases, system sweating with seasonal changes.

In almost every case, the subcontractors are chosen based on the low bid for their scope, without consideration for coordinating the building envelope. Moisture problems are not evident until the owner takes possession of the building and the tenant is in life-cycle use. Problems can be avoided by involving a façade specialist early on in the design and pre-construction to review and comment on constructability, a small cost with a large return in the end.

**Scott Ferguson, Project Manager,  
Ferry Electric Company**

The first thing that comes to my mind is most owners could be better about preventive maintenance (PM) on distribution equipment. This frequent PM can consist of infrared scans, lubrication of larger switches (like Pringle switches), and exercising of these larger switches. Switches like Pringle switches usually don't get operated unless there is a problem and, often when there is a problem, they don't function as they are supposed to. These maintenance steps can help avoid major issues down the road and avoid costly repairs or disruption of service. A lot of owners avoid these PM steps due to initial cost considerations but they do prevent major issues in the long run.

Another topic of frequent discussion is an Arc Flash Study. OSHA defines arc flash hazard as "a dangerous condition associated with the possible release of (thermal) energy caused

by an electric arc." Most facilities, unless new, don't have an Arc Flash Program implemented. This is an OSHA requirement as of January 1, 2015.

**Patrick Penvose, Senior Account Manager,  
Lighthouse Electric**

With all of the challenges facing building owners and property managers, it is easy to ignore the items that seem to be functioning properly. We find many of the facility professionals that we work with are stuck using a break-fix method of maintenance, often due to budget restrictions, lack of resources or information.

For building owners, it is best to think of operation and maintenance at the beginning of a project. Request quality as-built drawings, produced by the electrical contractor during construction. In today's modern construction world this should be in the form of a Building Information Model (BIM) and will give you a great place to begin your search for information.

In most cases, the best starting point is the place where you are at the greatest risk. You need to focus on any component that could be considered a single point of failure, upstream of the transformers, panels, and switches that tie together the backbone of your electrical infrastructure. In most cases, this is your main switchgear.

These enclosures can include a variety of mechanisms designed for protection and isolation of the downstream equipment. The failure of any one of these can put your manufacturing, data processing, or any daily operation of your business at risk.

The good news is there are professionals out there that specialize in this. There are two good places for a facility manager to start:

1. Get yourself networked with an experienced electrical contractor that understands the idea of preventative maintenance and asset management. Also, educate yourself on the practices outlined in NFPA 70E as it relates to electrical safety practices. Have your electrical contractor evaluate the age, condition, and specifics of your switch gear. Have them assist in educating you and your staff on the NFPA 70E standard.
2. Work with the contractor to seek the appropriate manufacturers' service provider for your equipment. They are the most qualified to outline the maintenance specifics needed for the type of switch gear in your facility. These providers, along with your electrical contractor, can get you started on a proper maintenance schedule moving forward.





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### Bill Wilson, President, Specified Systems Inc.

Our specialty is commercial windows, low rise curtainwall, and storefronts. We fall under the category of "Contract Glaziers." Since we have been in the market for over 25 years, we are very concerned about after-market issues that our indirect clients face and we get called in on a variety of problematic issues. For the owner/property manager, I have the following recommendations:

**Window glazing:** Whenever possible, use an EPDM (dry glazed product). Window manufacturers push products to the limit and try to beat their competition by 1/10th of a CFM of air infiltration or four more pounds of water test pressure in situations that will never occur. They drop glass in frames and silicone them so heavily that when a glass unit is broken or fails, it takes four hours to change it out. With EPDM you do get a lesser degree of performance and the product will only withstand a tempest and not a hurricane but the glass can be changed out in minutes.

**Glass selection:** Always use a low solar heat gain coefficient glass and always use a dual seal insulated glass unit. Better performance and better quality.

**Glass warranty:** Don't expect that your glass is always covered. Window manufacturers are closing or changing hands all the time. Remember that the warranty only covers the cost of the glass itself and not the labor to change it.

**Window hardware:** Whenever possible, use stainless steel or white bronze. Also, double and single hung windows can be a liability unless you have a capable maintenance person service the windows regularly. At the very least, limit the use of the top sash by fixing it in place and upgrade counter-balances to Class 5.

**Aluminum door hardware:** The most chronic problem for all building owners is "concealed vertical rod" hardware. No building owner ever spends the proper amount of time adjusting and servicing hardware. We always advise using rim panic devices with removable mullions on double doors. Keep it simple and problems go away. The second issue on aluminum doors is using butt hinges or offset pivots. Both are problems easily eliminated by the use of heavy duty continuous hinges.

**Aluminum finishes:** Anodized finishes are basically chemically blended into the metal so they hold up very well. If color is required, I always recommend a 70 percent kynar resin (AAMA 2605) finish. Exotic colors actually should have a clear coat on them.

**Post-construction cleaning damage:** Final cleaning needs to be a quality-controlled process. Manufacturers are very specific about surface cleaning and don't cover damage due to chemical cleaners or abrasives. Make sure your cleaner is aware because their insurance company will not cover the loss due to improper methods.

### **Bruce Bartholomew, CEO, Phoenix Roofing**

Probably the single biggest factor is the selection of the system when the roof is originally installed. For example, if you have a freezer or a pool or a concrete deck, you should have a vapor barrier. There is evidence of a link between concrete decks and white roofs causing moisture to build up beneath the membrane. It's also important to select the type of membrane that's appropriate for the building. If you'll have a lot of foot traffic on the roof, you need a membrane that withstands the wear. If you'll be venting chemicals or exhaust from a kitchen, you need a membrane that stands up to that.

I also strongly suggest taking the geography into account from a design standpoint. LEED is pushing owners to white roofs but Pittsburgh has way more heating days than cooling days. Green roofs are in vogue but often maintaining the roof isn't considered in the design. A green roof looks great when it's planted but after a while it can get overgrown if you can't maintain it.

As far as maintenance goes, don't forget roof access. It's hard to maintain a roof if you need an 80-foot ladder to access it. They don't make 80-foot ladders. You can prevent a lot of problems with basic maintenance. Clean the roof periodically. Check the drains for clogs. Same goes for gutters and downspouts. If water doesn't go where it's supposed to go, bad things tend to happen.

### **Jessica Scalo, Business Development & Marketing Director, Burns & Scalo Roofing and Cuddy Inc.**

The biggest mistake building owners make is not maintaining their roofs. They often feel they have a warranty and when it leaks they will repair it. The warranties from the leading manufacturers are very good but they do require annual maintenance as part of the "owners responsibility" in the warranty document. If this is ignored by the building owner, it's grounds for the manufacturer to void the warranty.

Roofs tend to be, out of sight, out of mind! But roofs begin to age the day after they are installed, primarily from ultraviolet attack from the sun and the thermal shock from expansion and contraction. We have days in our climate that we can experience several seasons in the same day.

So, the owners need to either maintain the roof themselves or hire a professional roofing contractor who specializes in maintaining roofs to prolong the life of the roof beyond the warranty term.

### **John Jordan, Vice President of Service, McKamish, Inc.**

The biggest problem is most owners look at our business as a commodity and that couldn't be further from the truth. Company X doesn't do maintenance the way Company Y does. Everybody changes belts and lubricates. Owners should be



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looking for a service company that can work as a partner to put together a plan, that can work with them as a team to look at their plant and equipment three or five years out to help them accomplish their goals.

If you maintain your equipment properly you reduce your operating costs, increase the useful life of your equipment and allow the equipment to operate properly so that the environment is one that your customers and employees expect.

A lot of people look at the service department as the emergency department. You want to be proactive so you can eliminate emergencies. Do predictive maintenance. Replace equipment when its useful life is ending, not when it has failed. Can you

squeeze another six months or year out of your equipment? Maybe, but if you let equipment fail before replacing it, what is the cost of that emergency to your operation? We have worked with companies over the years that have proven that they save considerably more money by replacing outdated equipment with more efficient ones.

### Paul Scabiloni, President, Marsa Masonry

For existing buildings, salting during winter causes mortar joints to deteriorate. Apply a salt guard each year. Caulking does not last forever. Check caulked joints yearly and replace when bad. Never paint masonry to hide its worn appearance.

If there is a problem with graffiti apply a graffiti guard with a sacrificial sealer. Remove the graffiti and sealer and reapply. Inspect chimneys and high masonry. Wind driven rain and ice will cause the masonry to deteriorate and you will never see it.

In new construction use precast or limestone for sills in lieu of brick rowlocks. Do not hide caulk joints with downspouts, especially with the seam towards the joint. Use galvanized angle irons to cross openings with flashing and weeps. Use precast lintels over openings in block walls to the inside face. Most new products for flashing are difficult to install and are no better than reliable flashings. It's best to use S.S. Drip edge, properly flashed. Always use galvanized anchors in veneer work. Use the right strength of mortar for the work. Type "N" has more lime in it and should be used in exterior veneer masonry. The lime heals any minute cracks caused by expansion and contraction. Never allow the use of a masonry unit less than four inches, whether it's brick or block. Small units may be the first place to crack if there is any movement – shrinkage or expansion. Always have control joints in masonry, whether brick or block. It may seem like everyone should know this but we have been directed to remove expansion joints more than once. Problems will follow. **BG**



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# INDUSTRY & COMMUNITY NEWS



Among the sponsors at St. Clair Hospital Summer Swing were (From left) PJ Dick's Frank Babik and Bernie Kobosky with John Jordan and David Casciani from McKamish.



Merrill Lynch's Mark Battaglia, CBRE's Jamie Pivarnik, Pat Sweeney from Merrill Lynch, and Michael Mascaro at St. Clair Hospital's Summer Swing outing.



(From left) Abel Brown from Laurel Aggregates, NexTier's Dan Penberthy, Marc Felezzola from Babst Calland and Matt Nowaczynski of Clifton, Larson, Allen at the ASA Clay Shoot.



(From left) Mike Daniels and Steve Guy from Oxford Development, Frank Connelly from the Pittsburgh Pirates, Hefron Tillotson's Don Belt, and Michael Mascaro, prior to the CEO Soak, which helped raise \$50,000 for the ALS Association of Western Pennsylvania. Mascaro was also a presenting sponsor of the 25th Anniversary of the ALS Walk that attracted over 2,200 walkers.



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Heather Billstone, development manager with the March of Dimes, visited Mascaro's offices to present John Mascaro, Jr. with a plaque in recognition of Mascaro's support of the annual Transportation, Building & Construction Awards luncheon.



(From left) Billy Hunter from Hunter Truck Sales, Beth Vietmeier and Jason Ritchey from Curry Supply Company and Hunter Truck's Jack Lewis at the CAWP outing.



Representing Rycon Construction at the Lawrenceville Bowl-A-Thon to support Junior Achievement were (left-to-right) Steve Kosmer, Lou Ferraro, Reid Cservak, Mike Penrod, Eric Hollingsworth and Kris Brice (center).



(From left) Maxim Crane's John Werner and Art Golembowski, Rich Saxe from Babst Calland and Ryan Cramer from Penn Line Service.



Golfers from ACE Mentor outing sponsor Ruthrauff Sauer included (from left) Ray Gajski, Mike Surunis, Chad Appelt and Gordon Collins.



(From left) Seubert's Jay Black with Ken Bryan and Mark Bryan from Bryan Construction, Mark Bronder, from CliftonLarsonAllen at the MBA YC Clay Shoot.



(From left) Todd McCaskey from Elmhurst Group, Ben Hunter from Langan Engineers, Elmhurst's Jason McCandless and Burchick's Brian Chlop.



(From left) PJ Dick's Brian Budny, Courtney Glaub, Kristen Eggemeyer and Conelec's Ty Eggemeyer.

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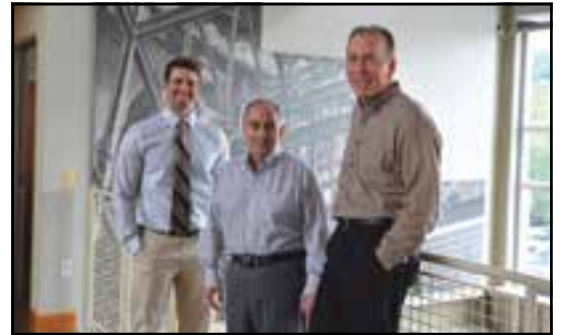
General Contractor



(From left) Jim Bartos, Jim Hart, Bill McMahon and FMS Construction's Ed Gibbons.



EA Evolve co-founder Marc Mondor (left) with O'Shea Browner from Trane at the Green Building Alliance's Chatham Eden Hall campus tour.



Edwin Hasis is the recipient of the 2017 Peter J. Mascaro Fellow in Construction Management. He is a graduate student in the Swanson School of Engineering's Department of Civil and Environmental Engineering. Pictured from left are Edwin Hasis, Mascaro Construction founder Jack Mascaro and John Sebastian from Pitt's Swanson School of Engineering.



(From left) Joe, David and Steve Massaro were among those honoring their mother, Carol Massaro, at the Pittsburgh Italian Scholarship Fund event at Valleybrook Country Club.



# AWARDS & CONTRACTS

**Nello Construction** started construction on a new Subaru dealership in Connoquenessing Township, Butler County for #1 Cochran Motors. Nudell is the architect for the 26,807 square foot new facility.

**Nello Construction** is also underway on a new #1 Cochran Audi dealership on Liberty Avenue in the Strip District. The \$10 million project involves a 19,000 square foot dealership and parking garage for vehicle inventory storage. Nudell is the architect.

Community Bank selected **Nello Construction** to build its new headquarters in North Franklin Township outside Washington, PA adjacent to the Washington Wild Things stadium. The 25,000 square foot building is being designed by NEXT Architecture.

**Nello** is completing construction on the Quantum Distillery for Strange Quark Distilling Co. in Carnegie, PA. Mali Torriero designed the 5,000 square foot renovation at 230 East Main Street.

**A. Martini & Co.** was the successful contractor for Dinsmore & Shohl LP tenant improvements at 6 PPG Place. The project involves the build-out of 19,500 square feet of the 13th floor. Rixey & Blum is the architect.

CBRE Global Investors awarded **A. Martini & Co.** a contract for two projects at Liberty Center. The \$1.7 million renovation will involve the Liberty Center spec suites, management offices and conference rooms. The work was designed by Entos Design.

**A. Martini & Co.** was selected to build the new Fogo de Chao restaurant in the Oliver Building in downtown Pittsburgh. The project involves renovation of 10,180 square feet on the ground floor. The architect is SG Design Inc.

**Landau Building Company** completed construction of the tenant space for Petuum Inc. at 2555 Smallman Street in 3 Crossings. Perkins Eastman Architects is the designer for the 6,000 square foot space.

**Landau Building Company** was awarded interior renovations to the Masonic Village at Sewickley's Star Points Building, a LifeCare community located in Sewickley, PA. This is a three-phase project located on the third floor of the building and will renovate resident rooms and the surrounding hallway finishes, as well as transform the existing art studio into a new salon.

**Landau Building Company** was awarded an office fit out for Ebb Therapeutics, located at 2555 Smallman Street in 3 Crossings. Renovations are to an existing 7,375 square foot shell space and include creating new offices, conference room, engineering lab, and collaborative space. This project is being run in conjunction with Oxford Development Company as the owner's representative and design firm, Renaissance 3 Architects.

**Marks-Landau Building Construction**, a subsidiary of Landau

Building Company, started construction on the Wheeling Hospital Continuous Care Center in Wheeling, WV. The new Continuous Care Center will be a two and three-story free-standing nursing facility consisting of 144 private resident rooms. The project is approximately 106,330 square feet and was designed by Stantec Architecture. Construction is anticipated to be complete in Spring 2018.

**Jendoco Construction** was awarded a contract for classroom renovations to Carnegie Mellon University Porter Hall. Perfido Weiskopf Wagstaff Goettle is the architect for the \$3.5 million project.

**PJ Dick Inc.** has started construction on the \$3 million Keystone Shooting Center, a 21,365 square foot facility at 925 Sheraton Drive in Marshall Township. The architect is AE7 Architects.

Penn State University awarded a \$6.8 million contract to **PJ Dick Inc.** for construction of the new Panzer Stadium lacrosse facility at the University Park campus in State College. APArchitects is the architect.

**PJ Dick** was selected as construction manager for the new \$16 million Terrace Place at Vincentian independent living facility at the Vincentian Sisters continuing care campus off McKnight Road in McCandless. The architect for the 115,000 square foot building is Ewing Cole Architects.

The University of Pittsburgh selected **PJ Dick** as construction manager for its new \$26.5 million life sciences building at the Greensburg campus in Hempfield Township, Westmoreland County. The project's architect is McLachlan Cornelius & Filoni.

Upper St. Clair School District selected **PJ Dick** as CM Agent for its \$16 million capital improvements program, which will include a new 8-lane swimming pool and multi-use complex at the high school, and completion of the Boyce Middle School athletic facilities. McLean Architects is the architect.

**Mascaro Construction** was selected by the PA Department of General Services as the general construction contractor for the \$43.8 million Tippin Gymnasium addition and renovation at Clarion University. DLA+ Architecture & Interior Design designed the project, which includes an 11,000 square foot pool addition and was procured through the Best Value process.

University of Pittsburgh selected **Mascaro** to provide CM at risk services for the renovation of the ninth and tenth floors at Chevron Science Center.

**Mascaro Client Services Group** was selected by PNC to perform renovation work, including MEP upgrades, to its suite at the Duquesne Club.

**Mascaro** is building a 6,272 square foot addition to the Ironworkers Joint Apprenticeship Training Center at Liberty Avenue and 22nd Street in the Strip District. Shawn Ulery is the architect

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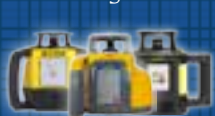
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for the \$3.5 million project, which includes renovations to 8,000 square feet of the existing building.

University of Pittsburgh awarded a contract to **Turner Construction Co.** for the \$5 million Bio-Tech Vivarium renovations at its Pittsburgh Technology Center research facility. The architect is LSYArchitects.

**Massaro Corporation** was awarded a contract for fast-track renovations to the Allegheny Health Network St. Vincent birthing suite in Erie, PA. Bostwick Design Group is the architect for the \$5 million, 40,000 square foot renovation.

**Rycon Construction** is building Campus Advantage and Pinecrest's new \$73 million student housing complex dubbed "The Bridge on Forbes." The 10-story, 300,000 sq. ft. project aims to wrap up construction May 2019.

Capuchin Franciscan Friars awarded **Rycon** a contract for a new \$11.3 million friary. Brenenborg Brown Group is the architect of the 55,600 sq. ft. project which is slated for completion January 2018.

DDR Corp. selected **Rycon** to complete the first phase of redevelopments for retail center West Bay Plaza near Cleveland, Ohio. The \$10 million scope includes demo, façade renovations, and site-work.

**Rycon** is construction manager on Oxford Development's final installment in the Strip District's new 3 Crossings Development, Riverfront West. The 165,000 sq. ft. flex office building was designed by WTW Architects.

A three-month nutritional services cafeteria replacement at St. Clair Hospital is set to begin soon by **Rycon's Special Projects Group**.

**Rycon's Special Projects Group** recently completed an MRI renovation at West Penn Hospital. Radelet McCarthy Polletta was the architect.

Fifteen KeyBank ADA renovations in the Pittsburgh area are being handled by **Rycon's Special Projects Group**. The scope is primarily exterior and about half of the locations are complete. Remaining work will wrap up before the end of October 2017.

**Rycon's Special Projects Group** is completing over \$650,000 of medical renovations in McKeesport and Shadyside Hospitals.

On the 12th floor of One Oxford Centre, renovations for insurance company AIG are underway by **Rycon's Special Projects Group**. Gensler is the architect for the \$300,000 project.

Two PNC bank locations, County Trust in Somerset and Fayette Crossings in Uniontown, are



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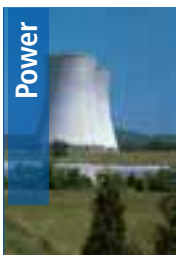
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receiving ADA upgrades by **Rycon's Special Projects Group**.

**Rycon** was awarded \$2.5 million of work for two new National Tire & Battery locations in Georgia. Both locations are approximately 6,800 sq. ft. and will wrap up prior to mid-December 2017. To date, Rycon has completed 14 renovations and 7 new locations for NTB.

Phase two renovation of Magnolia Mall in Florence, South Carolina will be completed by **Rycon**. The 33,000 sq. ft. retail project will continue for six months. Herschman Architects is the designer.

**Rycon** is the construction manager on a new \$2.8 million PetSmart. The 20,100 sq. ft. retail store is located in The Villages, Florida.

A \$528,000 renovation to a Home Depot in the Hunter Creek plaza in Orlando, Florida is set to begin soon. Scope includes interior and exterior modifications. **Rycon** is the construction manager and Brixmor Property Group is the owner.

Approximately \$2 million of work was awarded to **Rycon** for two new projects in the Shoppes on the Green plaza in Sunrise, Florida. Scope includes a grey shell for a bank, an office build-out, and two vanilla shells for future tenants.

IQ Advisors awarded **Rycon** a construction management contract to build Cyan Park townhomes in Cleveland. The 20-unit, 40,200 sq. ft. project is scheduled to break ground mid-September 2017.

**Rycon** jumped nine spots to #87 on this year's ENR's Top 100 Green Building Contractors List.

**Rycon** is handling two BPL Plasma Center renovations in Texas. Averaging 10,000 sq. ft. each, the work on both locations is scheduled to begin this summer and wrap up before the New Year.

As construction manager, **Rycon** recently began facade work on the Golden Gate retail plaza near Cleveland. Herschman Architects is the designer.

Giant Eagle selected **Rycon** to build two new Get-Go Café + Market locations in Ohio totaling over \$3.5 million. DLA+ Architecture is the designer. Both locations are expected to be completed mid-February 2018.

**Facility Support Services (FSS)** was awarded the University of Pittsburgh's Scaife Hall 8th Floor A-Stem Laboratory Renovation project. This biomedical research lab and office space project is scheduled for completion December 2017. The architect is Louviere Stratton & Yokel LLC.

**FSS** was recently awarded two projects with NAVFAC Mid Atlantic at Norfolk Naval Shipyard, Ports-

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**FSS** was recognized by the Pittsburgh Business Times for taking first place in the Real Estate, Construction, and Development category for the Fastest Growing Companies in Pittsburgh. With a 192 percent growth rate, FSS placed fifth in the overall company rankings for 2017, moving up from its 18th ranking in 2016.

Wright Automotive Group awarded **DiMarco Construction Co.** a contract for the addition to its Wright Nissan dealership on Perry Highway in Wexford. The architect for the 21,458 square foot expansion is qk Architecture.

**F.J. Busse Co.** was awarded a contract for renovations to the public restrooms on the seventh through ninth floors of Liberty Center. Desmone Architects is the architect.

Highwoods Properties awarded a contract to **F.J. Busse** for the tenant improvements for Gateway Financial at 4 PPG Place. The \$500,000 project involves renovations to 8,500 square feet on the sixth floor.

Allegheny Health Network selected **Massaro Corporation** as construction manager for its \$25 million Cancer Institute expansion at the Allegheny General Hospital campus. The architect for the project is IKM Inc.

**Massaro Corp.** was awarded a contract for fast-track renovations of the AHN St. Vincent birthing suites in Erie, PA. Bostwick Design Group is the architect for the \$5 million, 40,000 square foot renovation.

University of Pittsburgh Medical Center selected **Massaro Corp.** for its \$4 million central sterile facility at the UPMC Mercy Hospital. The architect is Radelet McCarthy Polletta Architects.



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# FACES & NEW PLACES

**Zach Hayes** joined **Independence Excavating** full time as a surveyor after completing several successful co-op's. Hayes recently graduated from the University of Akron.

**Sean Gulbin** joined **Independence Excavating** in July of 2017 as an estimator/project manager.

**Erin Nunnery** joined **Mascaro** on July 12 as the human resources coordinator. She brings four years of experience and has a Bachelor's degree in history of art & architecture from the University of Pittsburgh.

**Mascaro** welcomed **Lani McCormick** as HSE manager on August 7. Previously, Lani interned at Mascaro and became a full time member of the team upon receiving her Bachelor's degree in safety management from Indiana University of Pennsylvania.

On September 5, **Chris Schweiger** joined **Mascaro** as the director of client development, and brings 20 years of experience in the heavy and civil markets. Chris has a Master's degree in environmental science and management from Duquesne University and a Bachelor's degrees in geography from Ohio University.

**PJ Dick Inc.** announced the expansion and relocation of its Mid-Atlantic office in Exton, PA. Leading the office are **Gary Heinerichs**, regional manager, **Wayne Schrader**, regional operations manager, and **Michael Lehr**, pre-construction manager.

**Richard A. Ranii** joined **Massaro Corporation** in July as assistant project manager. Richard is experienced in banking and finance for the development of Allegheny County senior housing plants. He sits on the Fox Chapel High School Building Authority Board and previously served as a zoning officer and building inspector.

**Shaun Lorentz** joined **Massaro Corporation** in August as a project manager. Shaun has a high level of project management experience in the healthcare market. He also has extensive experience in HVAC and plumbing systems.

**Marissa Broadus** was hired in **Rycon's Special Projects Group** as an administrative assistant. Marissa is currently earning a degree in organizational leadership from Robert Morris University.

With nearly 20 years' experience, **Mike Clark** joined **Rycon's** Atlanta Division as project manager. He is a graduate of North Carolina State University where he earned a degree in Civil Engineering.

Bringing over 30 years' valuable experience to the company, **Michael Della Mea** joined **Rycon's Special Projects Group** as chief estimator. He is a graduate of Penn State University.

In **Rycon's Building Group**, **Justin Hausrath** was hired as an assistant project manager. Justin has a Civil Engineering degree from West Virginia University as well as over seven years' experience in the construction industry.

Estimating Coordinator **Kelly Irwin** was recently hired in **Rycon's** Atlanta office. Kelly brings nearly 20 years' construction experience to the team.

Project Manager **Nelson Rodriguez** joined **Rycon's** Ft. Lauderdale Division. He has a degree in Architectural Engineering and 18-plus years' industry experience.

**Greg Sigler** has been hired in **Rycon's** accounting department as staff accountant. Greg is a recent graduate of Grove City University where he earned a degree in Accounting.

**Rycon** is pleased to announce that **Mike Uhre** was hired as vice president of construction in the Ft. Lauderdale Division. Mike will be responsible for all new construction, and he will assist with pre-construction as well as business development.

Assistant project engineer, **Reese Wamsley**, joined **Rycon's Building Group**. Reese recently graduated from Penn State University's Architectural Engineering program.

**Rycon's** senior project manager **Anthony Rodriguez** was promoted to director of interior construction and will be responsible for interior build-outs for the Fort Lauderdale Division.

Six promotions occurred in **Rycon's Building Group**: **Justin Gotttron** is a lead estimator, **Alec Hanley** is an assistant project manager, **Tim Wier** is the director of estimating, **Jason Sigal** is the director of pre-construction services, **Chris Davis** is a senior project manager, and **Reid Cservak** is an assistant project manager.

**PJ Dick** hired **Michael Montgomery** as director of industrial business development.

**Gateway Engineers** announced that **John Schneider** (formerly of Schneider Engineering) has joined the firm as a project manager. John has 34 years of structural engineering expertise encompassing the full spectrum of building projects, including new construction, renovations and additions, vertical additions, load studies, peer reviews, and expert witness projects. He is a registered professional engineer in Pennsylvania, District of Columbia, Kentucky, Michigan, Nebraska, Ohio, Virginia, and West Virginia.

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**BY KAREN M. WHITNEY, PH.D.**

**CHANCELLOR, PENNSYLVANIA'S STATE SYSTEM OF HIGHER EDUCATION**

**H**ere are a few facts: At this moment, more than 100,000 students are enrolled at the 14 universities that comprise Pennsylvania's State System of Higher Education. That's a big number, and it is our driving mission to ensure that every one of those students succeeds, and that our universities operate as major engines of economic growth and development throughout the state.

Both factors are important to Pennsylvania's future.

We contribute to the economic growth through the development of human capital. The vast majority of our students are Pennsylvania residents who will remain here after they graduate. They will join more than half a million State System University alumni who already live and work here—all vital contributors to their communities, their regions, and the Commonwealth. Graduates of State System universities land great jobs, earn good salaries, are civically engaged, and pay taxes in Pennsylvania.

Each of our universities contributes to its region's economic growth as a major employer—several are the largest or among the largest in their area. While everyone understands that universities are places for teaching, research, and service, many underestimate their role as engines of economic opportunity within our communities.

Here are a few more facts: Our 14 universities generate more than \$6.7 billion annually in economic activity across the Commonwealth, according to the most recent economic impact study conducted on behalf of the State System. That means for every dollar of state funding our universities receive, they generate more than \$11 in economic impact.

What's more, that activity supports about 62,000 external jobs—over and above the jobs directly connected to the universities. Many of those positions are within the hundreds of small businesses that thrive in and around the campus communities. This includes the retailers, restaurants, and other businesses at which

our 100,000+ students and nearly 13,000 employees spend their dollars every day.

Our universities have an undeniable impact.

These are interesting times for our universities and for universities everywhere. The national recession that began in 2008 and continues to have a lingering effect nearly a decade later deeply affected universities across the nation. Nationally, states reduced funding to higher education by nearly \$3 billion during the recession. Not until the last few years have states' economies recovered enough that they could begin to reinvest in higher education.

Here in Pennsylvania, we are grateful that after seven years of flat or reduced funding, the State System has seen increased support in each of the last three state budgets. Our elected leaders know that an investment in the State System is an investment in the future of the Commonwealth.

As comprehensive universities, we draw the vast majority of our students from the surrounding communities. Our universities have taken great strides to reach out to prospective students in order to meet the higher learning needs of those communities. Pennsylvania needs more college graduates and the State System universities are seeking to address that need through the development of new programs in high-demand fields, helping to bolster enrollments, as well.

We will continue to thrive only by working together—students, faculty, staff, administrators, alumni, elected leaders and community members—everyone, side by side. We must be transparent, highly communicative, and collaborative as we build relationships across the Commonwealth that will help advance each university's distinctive role and increase opportunities for students to achieve their goal of a college degree.

As a System, we are taking a hard look at how we operate, the academic programs we offer, and the way we deliver learning throughout the state. There is no doubt the universities that comprise

the State System provide an invaluable service to the citizens of the Commonwealth that goes well beyond the students who attend them. That role must continue. We will maintain our student focus and ensure they continue to have access to a high-quality, high-value education.

We know that our State System universities have an important role in the Commonwealth.

Having served as president of Clarion University for more than seven years before being named interim chancellor of the State System, I understand how important a university is to its surrounding community, its region, and beyond; indeed, to the entire Commonwealth. In my role as interim chancellor, I will continue to advance our mission and lay the groundwork for the next era of leadership.

Just like in states all across America, the public university system is the backbone of the state's economy. Not only does the State System need Pennsylvania's continued support, but we all benefit by having strong universities and a strong State System. It's a partnership that must be maintained for the sake of our students and for the sake of our Commonwealth. **BG**



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ASA Specialty Contractors .....	78
Civil Engineers .....	78
Contractors .....	79
Developers .....	80
Document Handling .....	80
Economic Development .....	80
Engineers .....	81
Environmental .....	81
Finance .....	81
Geotechnical Engineer .....	82
Industry/Trade Group .....	82
Insurance .....	83
Interior Designer .....	83
Land Surveyors .....	83
Legal Services .....	83
Owner's Representative .....	84
Professional Services .....	84
Real Estate Brokers .....	84
Water Management .....	84

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William Snyder – [was@d3a.com](mailto:was@d3a.com)

Design 3 Architecture has been offering architecture, planning, and interior design services to the Pittsburgh region since 1982. We view inherent project constraints as potential opportunities for innovative design solutions. With a philosophy grounded in team collaboration, providing both personal attention and project leadership, Design 3 Architecture does more than solve problems. We provide solutions that are unique, exciting and affordable.



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Kari Miller – [KAMiller@DLAplus.com](mailto:KAMiller@DLAplus.com)

DLA+ is a full-service architecture and interior design firm dedicated to providing Strategic Architecture solutions through a collaborative and integrated approach to delivering projects for our clients in Corporate/Commercial, Higher Education, Sports, Government, Healthcare, and Retail/Hospitality. We are committed to delivering not only a technically successful project, but also one that includes sound principles of sustainable design intended to serve the client and the community well into the future. Fueled by a creative and talented team, our once two-person firm has grown to 35 people in a matter of nine years earning us a spot as the Pittsburgh Business Times' fastest growing professional service firm in 2017, one of the "100 Fastest Growing Companies in Pittsburgh" three years in a row and one of INC 5000 Fastest Growing Companies in the United States four years in a row.



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Kathryn A. Jolley, MBA, ASID, LEED AP  
[KJolley@drsarchitects.com](mailto:KJolley@drsarchitects.com)

Designing for the future, DRS Architects continues to provide innovative and creative architectural solutions as we have for nearly 60 years. We listen carefully to our clients' needs and develop customized responses to each design challenge. We provide architecture, interior design and master planning services through the varied markets of higher education, laboratories, health and wellness, government, hospitality, and corporate offices. Our talented design teams work to develop exemplary projects which enrich daily life, improve communities, advance a sustainable future and promote design excellence.



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Dawn Danyo DiMedio, AIA, LEED AP BD+C  
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A Woman Owned Business providing architecture, planning, interior and environmentally responsible design services to a full range of commercial clients since 1959. The firm commits itself to understanding projects completely, developing working relationships with clients and delivering projects that are technically and aesthetically complete. Every project is given principal attention. We believe this commitment to service yields superior design.



#### HHSR Architects/Engineers

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Pittsburgh PA 15222-3413  
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HHSR has been Building Relationships with our clients since 1953. We are regional leaders in design and construction contract administration, with a portfolio of projects sized from a few hundred to 400,000 square feet. We deliver design solutions through traditional design-bid-build techniques as well as design-build. Ranked annually by the Pennsylvania Builders Exchange as the most active firm in the tri-state region, we sustain our clients' success by providing high-quality and responsive service.



### ikm incorporated

11 Stanwix Street #2200, Pittsburgh, PA 15222  
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 Joel R. Bernard, AIA, NCARB, LEED AP, Principal  
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IKM Incorporated has been providing architecture, planning and interior design services to corporate and institutional clients for 100-years. IKM's mission is to provide innovative and informed architecture that positively impacts the world through leadership in understanding, exploration and decision making. IKM is a member of the American Institute of Architects and the US Green Building Council.

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### Perfido Weiskopf Wagstaff + Goettel

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 T: 412.391.2884 | F: 412.391.1657  
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 Lisa Carver, AIA, LEED AP, Principal  
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PWWG offers architecture, planning, and urban design for projects in multi-family housing; education and technical training; and the rehab, preservation, and adaptive reuse of historic structures. Our awardwinning design work also includes hotels, parking structures, theaters, and commercial operations. For 39 years, from our studios in downtown Pittsburgh, we have assisted owners with detail-oriented service, from early explorations, to coordinating multi-disciplinary teams of engineers, to construction management and LEED commissioning. PWWG is also expert in code and zoning compliance, feasibility and space programming, historic tax credit applications, community outreach, and 3D visualizations.



Renaissance 3 Architects

### Renaissance 3 Architects, P.C.

48 South 14th St., Pittsburgh, PA 15203  
 T: 412-431-2480  
[www.r3a.com](http://www.r3a.com)  
 Deepak Wadhwani – [dw@r3a.com](mailto:dw@r3a.com)

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VEBH ARCHITECTS

### VEBH Architects

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[www.vebh.com](http://www.vebh.com)  
 Contact: Daniel Skrabski – [info@vebh.com](mailto:info@vebh.com)

VEBH Architects has been serving the communities of Southwestern Pennsylvania and beyond for more than 65 years. We are passionate about creating quality environments for our clients. Our designs for workplaces enhance client identity, offer increased productivity, and deliver long-term value to a business, as well as the customers and the community it serves. We are committed to creating great places that inspire, motivate, and ultimately enrich our region and the communities in and around the places we call home.

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 Dennis C. Snyder, President  
 Mike Odasso, Vice President of Sales  
[maodasso@snydercos.com](mailto:maodasso@snydercos.com)

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 Jason Henze – [jhenze@ohdpgh.com](mailto:jhenze@ohdpgh.com)

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 Patrick M. Gallagher, Vice President  
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Gateway Engineers and its predecessors have played an active role in the development of the Ohio Valley since 1882. Our incessant pursuit of project management excellence has created strengths in municipal engineering, consulting work, and all facets of private development including the burgeoning energy industries. The tradition of providing value-added engineering solutions carries on as the company continues to grow. Gateway Engineers staff of registered professional engineers, surveyors, construction inspectors, and landscape architects, along with qualified technicians, is ready to provide the expertise and personalized service which every project deserves. For more information, please visit the new [GatewayEngineers.com](http://GatewayEngineers.com)



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Pennoni is proud to be celebrating our 51st anniversary as a multi-disciplined consulting engineering and design firm. An ESOP company, Pennoni employs over 1,000 professional and technical personnel with 30 offices throughout the Mid-Atlantic States, Ohio, North Carolina and Florida. Pennoni is a full-service provider of Land Development, Landscape Architecture, Structural Engineering, Surveying, Environmental, Transportation, Geotechnical, MEP Design and Energy & Sustainability. Locally, Pennoni has offices in Pittsburgh, State College and Uniontown that service the developer, industrial, transportation, education and the Marcellus Shale industry in Western Pennsylvania, Ohio and West Virginia. We promise to put all of our passion, our knowledge and our skill into doing whatever it takes, every day, every time, for every project.





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 John Frydrych, M.S., P.E.  
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raSmith is a multi-disciplinary consulting engineering firm that is a leader in civil engineering and site development, structural engineering and land surveying. raSmith works with clients to deliver excellence, vision and responsive service. Developers and governmental agencies take advantage of the diverse expertise and team collaboration that is incorporated in every project. The firm provides comprehensive services that include civil engineering, structural engineering, site development engineering, site planning, surveying, water resources engineering, LIDAR (3D laser scanning) and UAS (unmanned aerial systems, or drones) services. Offices are located in Oakmont (Pittsburgh), PA; Brookfield (Milwaukee), Madison, Appleton and Cedarburg, WI; Naperville (Chicago), IL; and Irvine, CA.



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 Matthew E. Smith, P.E.  
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Red Swing Consulting Services views its Clients as Partners; focusing first and foremost on building and maintaining strong relationships and trust. This mutual trust is the foundation of a solid business partnership. Red Swing offers Land Development Consulting Services to take a project from concept through construction. Red Swing has experience in Surveying, Civil Engineering, Infrastructure, Utility, and Telecommunications Projects. Red Swing effectively maximizes the return on investment through a collaborative design approach, utilizing a low impact design philosophy that reduces project capital costs and produces the competitive edge that we and our partners demand.



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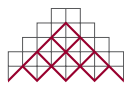
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Emily Landerman – [Emily.Landerman@amartinigc.com](mailto:Emily.Landerman@amartinigc.com)

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Joseph E. Burchick – [joeburchick@burchick.com](mailto:joeburchick@burchick.com)

Burchick Construction is a full-service general contractor founded on the commitment to excellence that Joe Burchick brings to each project the company undertakes. Burchick's management approach is designed to ensure optimum results for our clients, setting the performance standard for construction services. Our executives and managers have broad-based experience delivering construction to the highest standards, regardless of the client's preference for delivery method. Burchick's project team and professional engineers on staff are equally comfortable with a completed design or with providing pre-construction assistance at the earliest stages of design. Burchick has managed commercial, industrial and institutional projects from \$100,000 to \$73 million with equal attention. Burchick Construction, setting the performance standard.



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T: 919-965-5661

www.adventuredev.com

Kevin M. Dougherty – kmd@adventuredev.com

Kevin Dougherty formed AdVenture Development, LLC in 2005. AdVenture Development focuses on commercial real estate development projects and is actively involved in the acquisition, development, leasing and management and has also retained real estate consulting assignments in Pennsylvania, Virginia, West Virginia and North Carolina. Currently being developed in Pittsburgh, PA is McCandless Crossing, a 1.2 million sf mixed-use development. In the Raleigh, North Carolina area a similar development, EASTFIELD, is planned. Kevin and his team are dedicated to exceeding their clients' expectations. Please visit our website at: www.adventuredev.com to learn more.



### **Chapman Properties**

100 Leetsdale Industrial Dr., Leetsdale, PA 15056

T: 724-266-4499

www.chapmanprop.com

Steve Thomas – sthomas@chapmanprop.com

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## **ECONOMIC DEVELOPMENT**



### **Armstrong County Industrial Development Council**

Northpointe Technology Center II

187 Northpointe Boulevard, Freeport, PA 16229

T: 724-548-1500

www.armstrongidc.org

Michael P. Coonley, AICP, Executive Director

economicdevelopment@co.armstrong.pa.us

The Armstrong County Industrial Development Council (ACIDC), established in 1968 is a private 501(c)(3) industrial development corporation. Identified as the lead economic development group within the County, the ACIDC, along with its sister organization the Armstrong County Industrial Development Authority, provides single-point-of-contact service for emerging or expanding business and industry. Owners and operators of four industrial parks, single use and multitenant facilities, the ACIDC works closely with existing or prospective businesses to identify the right location. They also provide financing assistance to companies through government loan/grant programs and private sector financial institutions.



### **Community Development Corporation of Butler County**

112 Hollywood Drive #102, Butler, PA 16001

T: 800-283-0021 | F: 724-283-3599

www.butlercountycdc.com

Steven Gifford, Executive Director

sgifford@butlercountycdc.com

The Community Development Corporation of Butler County (CDC) is the lead economic development organization in Butler County. The CDC is your first contact for economic development in Butler County. The CDC works closely with you to identify the right location for your business. Available land includes 60 acres at the Victory Road Business Park, with a KOZ designation, and 30 acres at the Pullman Center Business Park Expansion. Initial lots at the Pullman site are priced as low as \$50,000 per acre. All utilities are at both sites. The CDC also has financing available for real estate, equipment, working capital and lines of credit.



### **Fay-Penn Economic Development Council**

1040 Eberly Way, Ste. 200, Lemont Furnace, PA 15456

T: 724-437-7913

www.faypenn.org

Bob Stark, Executive Director – Bobs@faypenn.org

Fay-Penn Economic Development Council is on point to grow and diversify the economy in Fayette County, Pennsylvania. We're the pre-eminent "1st stop shop" economic development organization in the county, providing comprehensive, second-to-none business development services through our staff and partners to make clients more competitive in a global marketplace. We do "traditional" economic development – rental space, pad-ready business park acreage, and financing – but also provide innovative programming to support entrepreneurs, develop leaders, and promote the business amenities of Fayette County.



### **Indiana County Center for Economic Operations**

801 Water St., Indiana, PA 15701-1705

T: 724-465-2662 | F: 724-465-3150

www.indianacountyceo.com

Byron G. Stauffer, Jr., Executive Director

byronjr@ceo.co.indiana.pa.us

The Indiana County Center for Economic Operations (the "CEO") was established in 1994 as a county-wide public-private initiative. The CEO Affiliates include the Indiana County Commissioners, the Indiana County Chamber of Commerce, the Indiana County Development Corporation, the Indiana County Tourist Bureau, and Indiana University of Pennsylvania, whom jointly seek to support the continuous improvement and vitality of Indiana County through increased business, economic growth, tourism, education, and the quality of life in Indiana County. The CEO facilitates access to information, resources, and the delivery of integrated programs and services to assist businesses in their efforts to grow and expand.



## Washington County Chamber of Commerce

375 Southpointe Blvd. #240, Canonsburg, PA 15317  
T: 724-225-3010 | F: 724-228-7337  
www.washcochamber.com  
Mary Stollar, Senior Vice President Economic  
Development – marys@washcochamber.com

The Washington County Chamber of Commerce is the largest business organization in Washington County and the second largest chamber of commerce in Southwestern Pennsylvania. The Chamber focuses on economic and business development initiatives to expand the economy of Washington County and was one of the first organizations to publically support the economic benefits and job creation potential of the natural gas industry. Learn more at www.washcochamber.com.



## Westmoreland County Industrial Development Corporation

5th Floor, Suite 520,  
40 North Pennsylvania Ave., Greensburg, PA 15601  
T: 724-830-3061 | F: 724-830-3611  
www.westmorelandcountydcc.org  
Jason W. Rigone, Executive Director  
wccidc@wpa.net

Founded in 1983 by the Westmoreland County Board of Commissioners, the Westmoreland County Industrial Development Corporation (WCIDC) implements a comprehensive economic development strategy to promote growth in terms of job creation, economic output and a stable tax base for Westmoreland County. Through the development of a county-wide industrial park system, a responsive Business Calling Program and involvement in public/private partnerships, WCIDC strives to foster business growth, resulting in job opportunities for the citizens of Westmoreland County.

## ENGINEERS



## Civil & Environmental Consultants, Inc.

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Civil & Environmental Consultants, Inc. (CEC) is a company of professionals who provide integrated design and consulting services at all points in a property's life cycle. CEC's industry experts offer a full complement of evaluation, technical and regulatory insight. Our value lies in the practical knowledge senior leaders contribute along with our broad skill-sets and desire to advance our clients' strategic objectives. We're building trust and our reputation on a local level through personal business relationships while continually assessing our environmental and economic sustainability in the communities where we practice.



## KU Resources, Inc.

### KU Resources, Inc.

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KU Resources, Inc. provides a full range of environmental management and site development engineering services to industrial, commercial, and community based clients. The firm specializes in brownfield redevelopment, environmental site assessment, economic revitalization assistance, regulatory permitting and compliance, remediation design and implementation, and environmental risk management strategies. The firm's engineering and environmental consulting capabilities also include the areas of civil and geotechnical engineering, site development engineering, water resources engineering, mining and quarry services, water quality monitoring, and air quality compliance and permitting.



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### American Subcontractors Assn. of WPA

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Angie Wentz, Executive Director  
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ASA Western PA, the American Subcontractors Association of Western PA, is a non-profit organization dedicated to the representation and advocacy for the subcontractor, specialty trade contractor, supplier and service provider business community; promoting an equitable business environment through providing professional education, networking opportunities, government advocacy and influence throughout the construction industry. ASA was founded in 1966, our chapter was established in 1989. ASA of Western PA has been around for 26 years. Learn more about what ASA Western PA can do for your company by visiting our website or contacting the office.



### Builders Guild of Western PA, Inc.

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www.iwea.org  
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The IWEA is a Trade Association of Union Contractors who work in all aspects of the Ironworking Trade within the Construction Industry. We are a resource for all owners, developers and contractors who are looking for a qualified contractor with a well-trained workforce. Visit our website or call our office for additional information.



Master Builders' Association  
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### Master Builders' Association

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NAIOP Pittsburgh is the regional association of developers, owners, investors, and professionals in commercial real estate. We are the leading industry resource to foster business relationships, promote responsible development and support growth of the region through education, leadership, and advocacy. Visit naioppittsburgh.com for additional information or contact info@naioppittsburgh.org.

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