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MBA

- 7 REGIONAL MARKET UPDATE**
- 13 MARKET METRICS**
- 15 NATIONAL MARKET UPDATE**
- 21 WHAT'S IT COST?**
- 22 FEATURE**
Becoming a Smart City
- 35 PROJECT PROFILE**
Friendship Circle of Pittsburgh
- 45 FIRM PROFILE**
L.R. Kimball/CDI Corporation
- 48 LEGAL PERSPECTIVE**
Owner's Agents Cannot be
Held Liable for Payment
- 50 FINANCIAL PERSPECTIVE**
Cybersecurity: A Business Threat
for Contractors
- 52 MBE/WBE SPOTLIGHT**
Nexus Construction LLC
- 55 TREND TO WATCH**
Bus Rapid Transit: Moving
Oakland Closer to Downtown
- 61 BEST PRACTICE**
An Ancient City Becomes
a Smart City
- 67 INDUSTRY
& COMMUNITY NEWS**
- 71 AWARDS & CONTRACTS**
- 73 FACES & PLACES**
- 76 CLOSING OUT**
William Peduto
Mayor, City of Pittsburgh



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PUBLISHER'S NOTE

We have certainly been taking enough bows and curtain calls in Pittsburgh of late. It's nice to be written about as the city that knows how to get things done. And this publicity sure beats the kind of publicity we got 30 years ago when things weren't going so well. Please forgive me but I'm not sure I like this new-found image as role model.

There is also potential danger in all of this back-slapping. Having others recognize the hard work and great results has been a boost for the collective confidence of Pittsburgh. Care should be taken to prevent that from becoming overconfidence. There is always more than enough credit to be taken when things go well, but things don't always go well and sometimes the margin between good times and bad times is razor-thin. That is probably worth bearing in mind when our leaders are accepting our many kudos.

I think the biggest danger in this Pittsburgh love fest is that we begin to believe our own BS. It is true that the political and civic leaders in Pittsburgh have forged a working relationship that is unusual in the American landscape today; however it is hardly unique. One of the key ingredients for this successful formula has been the willingness of both political leaders and corporate executives to put their respective egos in their back pockets and worry more about what gets done than who gets credit. Now that so much credit is being handed out, this interesting dynamic will be tested.

While there are many who deserve credit, it seems to me that Lady Luck is not getting her fair share.

Public-private partnership was not invented in Pittsburgh but it has been put to good use. That model has been in use in Pittsburgh for quite a while, going all the way back to the days of Jack Heinz and David Lawrence and the formation of the Allegheny Conference. The leaders of the 1980s and 1990s had many good ideas and intentions too but the chips didn't always fall as expected. People seem to forget that Pittsburgh benefited greatly from the first high-tech explosion, the dot.com era. When that economic boom fizzled out so did Pittsburgh's advantage. Great ideas still need a little good fortune to succeed. People here have been trying for a very long time to see their way through to a new economy, a new way. It's great that things are going well right now but it's not too difficult to imagine how that could change.

The last two major economic disruptions in America were caused as much by hubris as by the technical events that sparked them. Now I am not suggesting that Pittsburgh is on the verge of an economic disruption. The facts suggest just the opposite. Nor do I have any evidence that our leaders are resting on their laurels. Maybe I have been here long enough to have developed the Pittsburgh characteristic of expecting

the other shoe to fall but when I see Pittsburgh's mayor on stages across America it makes me a little anxious.

I believe history will show that the progress made in Pittsburgh over the last 10 years was at least in part due to the fact that government was cash-strapped and had little opportunity to meddle. You only have to look at downtown today and compare it to Mayor Murphy's failed vision to understand the government may not have the right answers. Current and future government administrations will need to resist the temptation to push visions that the market pushes back.

Mayor Peduto has been an advocate for the use of technology to improve the lives of Pittsburghers. The vision he has articulated about Pittsburgh as a smart city is a good one. And because an awful lot of what will need to be done to make Pittsburgh a smart city will be in the public domain, his vision and the execution of his administration will be key components of success. Pittsburgh as a smart city will be a smart region too. It is going to take more than one city or one administration to have the benefits of such a region be shared equitably among all its citizens.

Back in 2013, when a whole lot of strange bedfellows pulled together to get the highway bill passed it was a model for how political goals could be achieved. Everyone got a little of what they wanted and no one got everything they wanted. That was a legislative upset pulled off by an underdog alliance. Pittsburgh may be the City of Champions but we have done much better of late as underdogs. Now that everyone is holding us up as a model of the city of the future, Pittsburgh looks more like a front-runner than underdog. I guess it's okay to have the confidence that goes with being a front-runner but it's a short walk from confidence to hubris. We would be well-served to remember that we could still screw this up.



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REGIONAL MARKET UPDATE



The Pittsburgh construction industry benefitted from better-than-normal weather conditions and a steady economy during the first quarter. Both residential and non-residential construction saw year-over-year gains that bested national benchmarks. Regional economic data for the first three months has been less cheery, however.

An anemic pace of job growth continues to be a drag on the Pittsburgh economy. According to the Bureau of Labor Statistics there were 9,200 jobs added in March 2017 compared to the same month in 2016. That growth mostly reverses the decline experienced in February and leaves total employment at 1.16 million in metropolitan Pittsburgh, a level that has remained stagnant during the past five years. In fact, the five-year employment growth total of 9,400 jobs (from March 2012 until March 2017) is virtually the same as the year-over-year difference.

Maintaining the trend of recent years, job losses in manufacturing, construction and mining/logging (which covers the gas industry too) offset gains in information, finance and hospitality. Unemployment in March ticked up three-tenths of a point to 5.3 percent.

Although a lack of new job creation tends to be cited as a concern about Pittsburgh's employment stagnation, there is growing evidence that the flat job market is as much about a mismatched workforce as it reflects too few opportunities. Imagine Pittsburgh, the job opening aggregator maintained by the Allegheny Conference on Community Development, listed more than 31,000 open positions in late April. That level of openings is near record highs and represents a couple thousand more opportunities than the same time in 2016. Two-thirds of the openings require less than a four-year degree but do require specific technical skills or certification. The steadily growing number suggests that employers are looking for skills or experience that the unemployed

population of Pittsburgh does not possess. Were those open positions to be filled by workers counted among the unemployed, Pittsburgh's unemployment rate would be cut in half.

Jobs are the life blood of commercial real estate, the category which has driven the construction market for the past few years. Gains in the sectors that have been growing in recent years have been showing up in increased office demand, which has helped fuel construction in that segment. Declines in retail bricks-and-mortar retail have been somewhat offset by the growth in development of distribution and fulfillment centers, which are benefitting from the online shopping that is hurting retail stores.

First quarter reports from the office sector show that demand for space remains strong and supply remains tight. Real estate service firms CBRE and Newmark Grubb Knight Frank (NGKF) both focused on the strength of the Downtown fringe areas – particularly the Strip and North Shore – where most of the new construction and development have occurred. Oxford's 3 Crossings has attracted high-profile tech tenants Apple and Bosch, as well as Burns & White's new 110,000 square foot headquarters. The project's final office building is being marketed for a lead tenant, which could include startup Argo AI, reported to be looking for 100,000 square feet or more as it moves into 23,000 square feet in The Crane Building. RDC Star LLC may also be angling for Argo with its plan to build a 105,000 square foot office building at 15th and Smallman Streets. On the North Shore, construction should start soon on the 153,000 square foot build-to-suit for SAP.

Driving these fringe market developments has been the strong rental rates that the tech companies have been accepting. Leases in fringe offices have topped \$25 per square foot, with those signed by tech users rising to near \$30 per square foot. Rents in Downtown have also moved higher, reaching the \$30 threshold for average Class A rate for the first time. With these dynamics – along with growing investor interest in Pittsburgh office properties – construction in the office sector will be strong in 2017.

Data from the first quarter showed few surprises in the Pittsburgh housing market, although the raw results may show a big increase in total starts. Year-over-year permits jumped more than 105 percent in the six-county Pittsburgh market but that's a reflection of an aberration in the first quarter of 2016, rather than a change in trend. During the first quarter of last year there were no permits for new apartments, which skews the year-over-year comparison. The 578 units started

By County	SFD	SFA	Total
Allegheny	225	436	661
Beaver	8	14	22
Butler	101	26	127
Fayette	14	0	14
Washington	54	283	337
Westmoreland	43	12	55
Total Pittsburgh MSA 2016:1	425	167	592
Total Pittsburgh MSA 2017:1	445	771	1216
% Change	4.7%	361.7%	105.4%

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from January through March of 2017 were in the pipeline and may mark the busiest quarter for multi-family construction when the year ends. Although there appears to be another wave of apartment development looming to enter the market in the 2019-2020 time period, activity in 2017 should be limited to 1,500 units or less.

Housing starts for the first three months were up slightly for single-family detached homes – 443 compared to 425 in 2016 – and more briskly for single-family attached townhomes, for which permits jumped 18.6 percent to 198 units. The total number of housing units started in the first quarter of 2017 was 1,214.

The results from the first quarter match up well to the economic factors that drive the housing market. Although the overall economy is favorable for the consumer, job creation in Pittsburgh has been flat since 2013 and the number of houses added to inventory match up to the job creation. That analysis overlooks the fact that new home construction lagged job creation dramatically as the economy recovered in Pittsburgh between 2010 and 2013. Looking forward, however, there are some structural problems in Pittsburgh's housing market that could have a negative impact on affordability and the opportunity for the region to grow. Like in other U.S. markets, the major problem is inventory of homes and lots.

The tight inventory of houses for sale in the U.S. is exaggerated by a couple of factors unique to the Pittsburgh market.

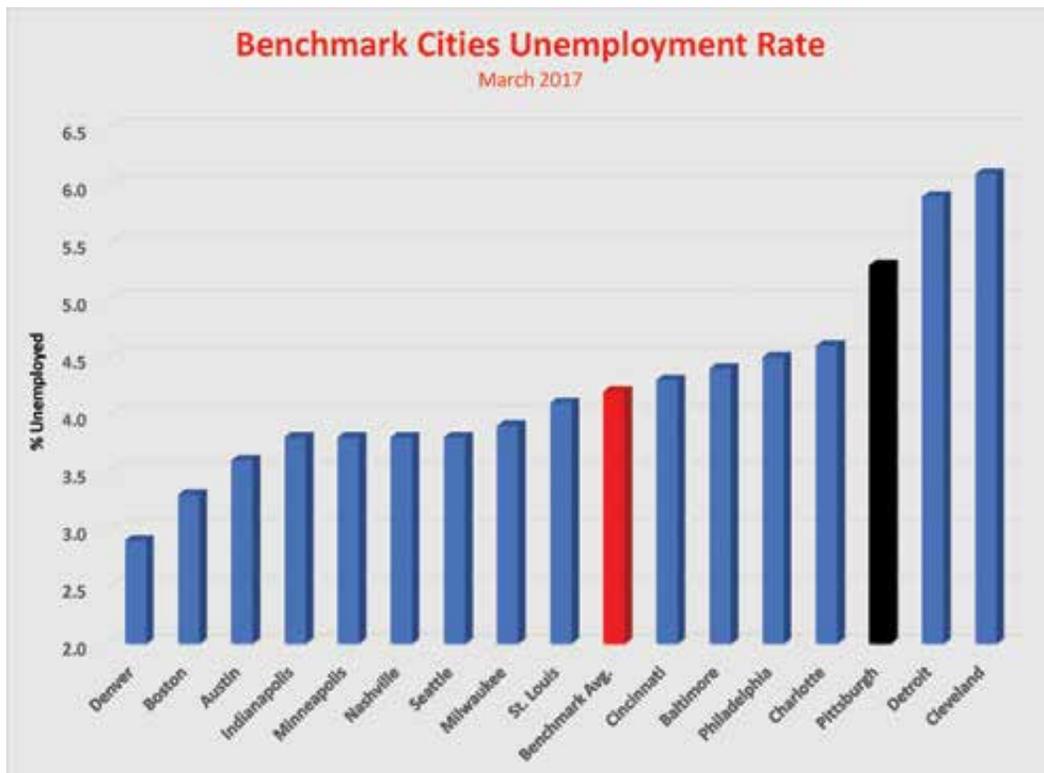
Coming into the downturn in 2008, there were already signs that the inventory of lots for new construction was lighter than normal. As a result of the housing crisis nationally, lenders grew shy of residential development and Dodd-Frank regulations forced developers to have more skin in the game for loans that were done. Pittsburgh's housing market was, and still is, served primarily by developers that are Baby Boomer-owned and less risk averse. These developers were understandably reluctant to take on new projects – especially coming out of a housing-led recession – in higher-risk conditions. At the same time, the higher equity requirements presented a significant capital barrier of entry for newer developers that might have taken up the slack.

Further complicating the development picture is the fact that the residential market in Western PA is dominated by Virginia-based NVR Inc., which builds its Heartland and Ryan Homes brands in metro Pittsburgh. NVR is a strong sales organization, allowing developers that work with the builder to exit new developments with profits much quicker. With a market share north of 40 percent, NVR's model is a disincentive for developers to look for more traditional, custom home projects that may take five years or more to reach profitable absorption levels.

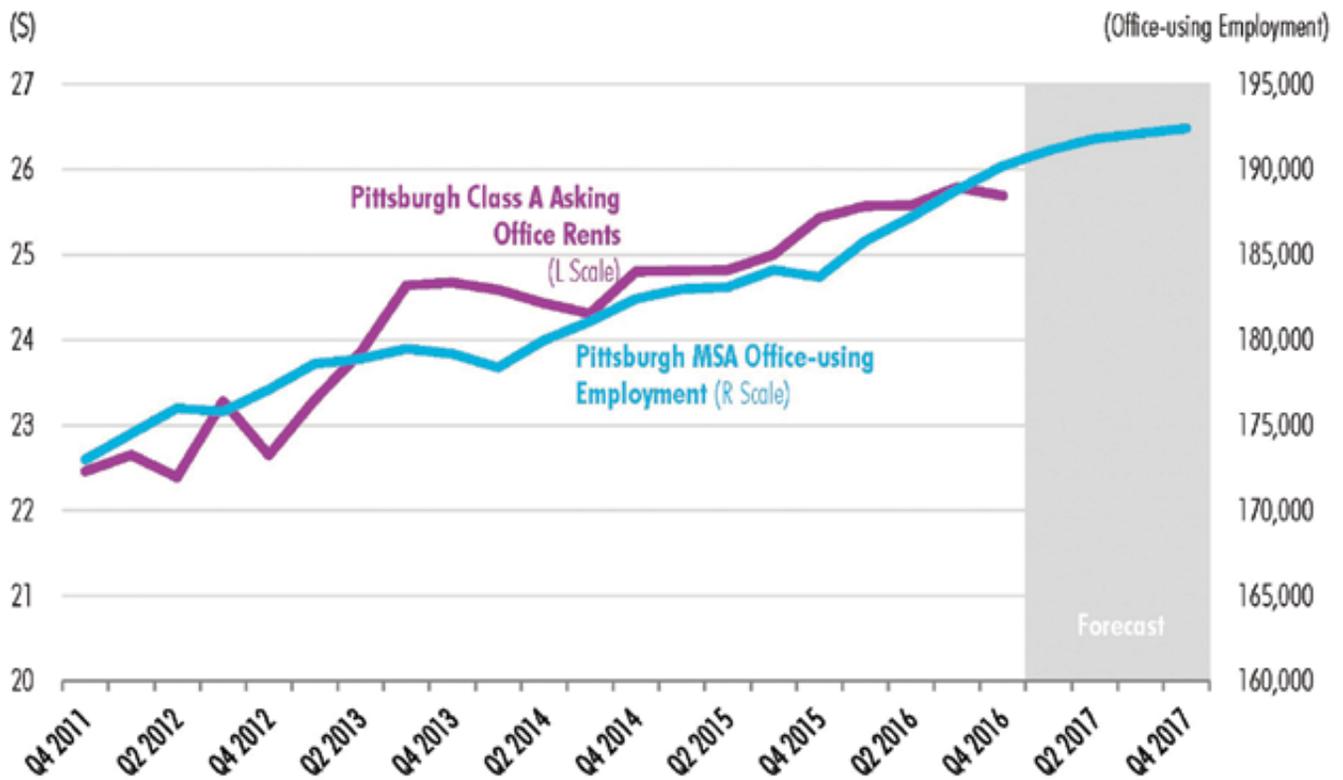
Growth in high technology, financial services and the gas industry has attracted higher numbers of workers under the age of 35 to Pittsburgh than in most cities, creating a pent-

up pool of potential home buyers for the next decade. New construction should be the relief valve for this imbalance but the inventory of lots is insufficient to support more new home construction than the 2,500 to 2,900 units of single-family homes and townhouses that have been the norm during the past five years. Absent a dramatic surge in residential development, Pittsburgh homeowners are likely to see property values continue to rise at higher rates until supply grows. That's good news for owners but a potential drag on Pittsburgh's affordability.

Contracting volume during the first three



Pittsburgh's unemployment rate is third highest among its benchmark peer cities. Source: Pittsburgh Today, U.S. Department of Labor.



Source: CBRE Econometric Advisors, Q1 2017.

months for commercial and non-residential projects hit \$773.8 million. That was a 14.1 percent increase over the \$678 million started during the first quarter of 2016. Non-residential construction during the balance of 2017 will be driven by major projects and investment in the energy and healthcare segments.

UPMC moved three of its major investment projects forward as spring blossomed. In Erie, interviews were held for construction management services for the \$111 million UPMC Hamot patient tower. The healthcare provider began the municipal entitlement process in South Fayette Township for its proposed 280,000 square foot hospital at Newbury Market. And UPMC selected the architect to design its 200,000 square foot ophthalmology research building at UPMC Mercy. Also in the South Hills, St. Clair Memorial Hospital put its \$75 million expansion and renovation program out for construction management proposals.

Butler Health System is pursuing plans to expand into Lawrence County with two regional centers. The organization announced plans to construct a 54,000 square foot outpatient clinic on Wilmington Road in Neshannock Township that will be the new home of Lawrence County Medical. To the south of that, Butler Health plans a similar facility in Shenango Township. Both facilities should cost in the neighborhood of \$20 million to construct and will be located along the I-376 corridor west of New Castle.

As happened in 2016, there has been an uptick in gas mid-stream projects, a number of which are being permitted or reviewed as the quarter ended. Buoyed by improved prospects and demand, midstream companies are looking to add processing and distribution capacity. The shift from coal to gas for electricity generation is behind two proposed power plants. Invenenergy presented its plans for a 550-kilowatt plant to be built in Elizabeth Township and a subsidiary of American Power Ventures acquired land from First Energy at the former Hatfield's Ferry power plant in Greene County. APV Renaissance Partners plans to build a \$600 million, 1,000-kilowatt plant in Monongahela Township.

The region's biggest energy-related project, Shell's ethane cracker and polyethylene manufacturing facility, has begun the construction phase for the new plant. While some "ready works" scope remains to be completed in 2017, the massive multi-year concrete pour is now underway. The project's lead engineer/contractor, Bechtel Energy, estimates that 1,000 workers will be on site by the end of the year, with the first signs of vertical plant construction beginning in early 2018. Based upon the overall schedule, as much as one billion dollars' worth of construction could be put in place in 2017. While the number of workers will grow by five times at the peak of construction from 2018 to 2020, the start of the active phase of the plant construction should begin to impact Pittsburgh's market within the next six months. **BG**

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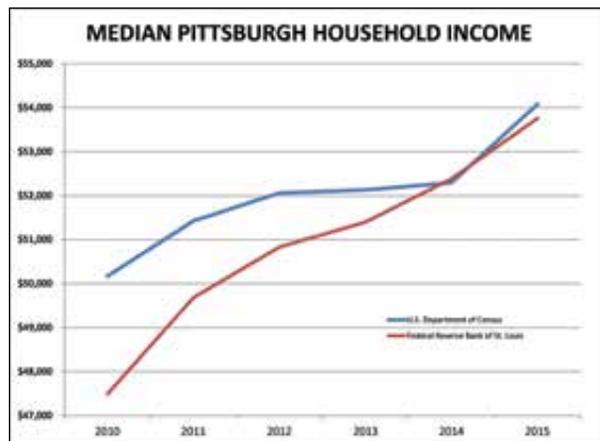
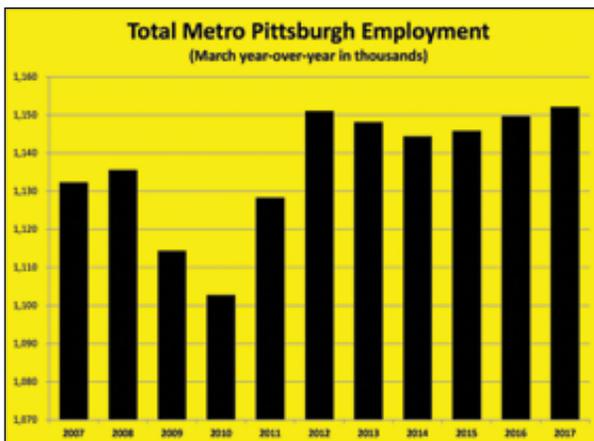
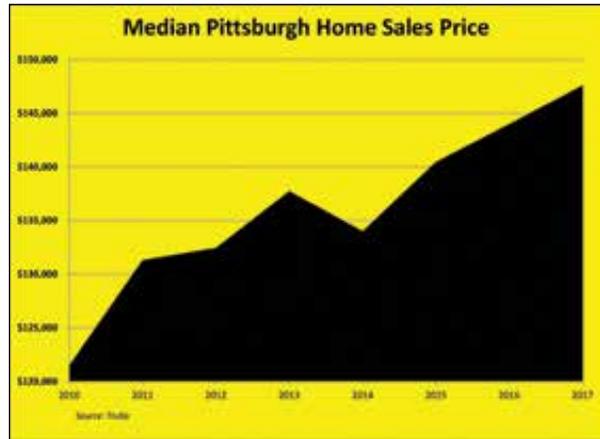
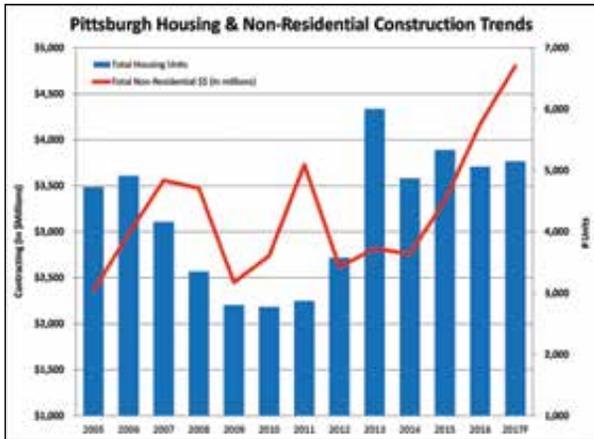
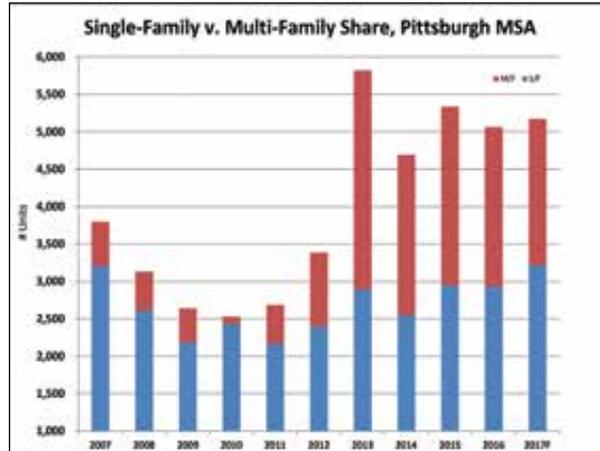
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MARKET METRICS

BENCHMARK	Jan-Mar 2016	Jan-Mar 2017
Total SFD units	425	445
Total SFAMulti-unit	167	771
Total residential \$\$	\$152.8 million	\$238.9 million
Total non-residential \$\$	\$678 million	\$773.8 million
K-12 Additions/renovations	\$146.5 million	\$81.4 million
Healthcare construction	\$186.7 million	\$29.4 million
Hotel construction	\$16.7 million	\$57.4 million
Industrial construction	\$28.4 million	\$113 million
Office construction	\$16.9 million	\$168.5 million
Higher education	\$99.6 million	\$19.7 million



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August 21: Golf outing at Chartiers Country Club

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NATIONAL MARKET UPDATE

Spring 2017 has brought the U.S. economy an even stronger employment picture but also the first signs that the optimism brought on by the election of a pro-business president may not yet be translated into actions.

The Bureau of Labor Statistics' (BLS) April report on hiring showed 211,000 new jobs were created, bringing the unemployment rate to 4.4 percent. April was an improvement on the 98,000 new jobs added in March, a steep drop-off from the recent pace of 200,000-plus new jobs. There were several mitigating factors that need to be considered, not the least of which is that a one-month snapshot provides little usable information.

Robert Bach, director of research for Newmark Grubb Knight Frank, noted in his April 7 weekly email that the March jobs report was both mixed and explainable. Harsher weather in March greatly reduced the hiring in construction. Congress' attempts to overhaul the Affordable Care Act led to uncertainty that halved the amount of hiring in the healthcare sector. Continued expansion of online shopping gutted the retail sector hiring, creating a 35,600-job difference between March's decline and the three-month average gain.

The upside in the April report was the continued better-than-inflation wage increase of 2.5 percent year-over-year;

an increase of 11,000 jobs in the sector that covers oil and gas exploration; and the 263,000 jobs created in the private sector, as reported by ADP. The latter reflects the continued strength of the private sector. The overall lower number is a result of the Trump administration's leaving thousands of federal positions unfilled and presents the potential for a significant bump in jobs in the future.

The portion of the BLS report based on household surveys was more definitively upbeat. The unemployment rate dropped two-tenths of a point to 4.5 percent, as the number of people employed grew by 472,000 and the number of unemployed dropped by 326,000, indicating that new entrants to the labor force are finding jobs. The U-6 rate, which includes marginally-attached workers and those working part-time for economic reasons, fell to 8.9 percent, its lowest rate since the recession began in December 2007.

One interesting trend worth noting in the April report was the widening gap between the "soft" and "hard" economic data being gathered. The gap even received mention in the Federal Reserve's March meetings and in the recent Beige Book on current economic conditions.

Soft data is the more frequently-updated economic information that is the result of behavior surveys, like consumer and

Annual Value of Private Construction Put in Place 2002-2016

(Millions of dollars. Details may not add to totals since all types of construction are not shown separately.)

Type of Construction:																	% change from	
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016 ¹	low	high	
Commercial	59,008	57,505	63,195	66,584	73,368	85,858	82,854	51,128	37,154	39,153	44,312	50,947	60,890	64,273	71,282	92%	-17%	
Automotive	5,807	5,039	5,235	5,614	5,528	6,281	5,840	4,535	3,548	4,270	4,834	4,639	4,830	5,488	6,316	78%	1%	
Sales	2,235	2,099	2,443	2,834	2,285	2,571	2,430	1,564	1,355	1,816	2,079	1,956	2,117	2,135	2,551	88%	-10%	
Service/parts	2,308	1,866	1,978	1,805	2,184	2,356	1,843	2,056	1,679	1,977	2,221	2,313	2,047	2,622	2,802	67%	7%	
Parking	1,285	1,074	814	975	1,059	1,354	1,367	918	511	478	534	370	666	742	982	180%	-30%	
Food/beverage	7,914	8,369	8,232	7,795	7,442	8,046	8,029	4,868	4,605	5,268	5,845	6,594	7,230	7,026	7,604	65%	-9%	
Food	4,207	4,234	3,560	3,128	2,752	2,779	3,124	1,978	2,027	2,840	2,430	2,937	3,447	3,063	3,308	67%	-22%	
Dining/drinking	2,916	3,321	3,937	4,078	3,780	3,957	3,976	2,237	1,911	1,650	2,436	2,141	2,170	2,501	2,753	67%	-32%	
Fast Food	792	813	705	590	910	1,310	930	653	667	779	979	1,516	1,613	1,463	1,543	162%	-4%	
Multi-retail	15,581	15,400	18,828	22,750	29,218	34,751	31,963	18,390	12,488	13,361	14,904	16,686	19,543	19,564	20,700	66%	-40%	
General merchandise	6,009	5,341	6,416	6,740	5,699	7,572	4,373	3,976	3,794	3,368	3,773	2,942	2,792	2,363	2,500	6%	-67%	
Shopping center	6,805	6,867	9,256	12,462	18,417	22,197	22,780	11,447	6,725	6,748	7,934	9,806	12,946	13,261	14,325	117%	-37%	
Shopping mall	2,108	2,231	2,138	2,631	3,616	4,000	4,045	2,171	1,332	2,356	2,288	2,938	2,868	3,044	3,179	139%	-21%	
Other multi-retail	859	961	1,018	917	1,486	982	765	795	635	889	909	1,000	937	896	696	10%	-53%	
Other commercial	12,083	11,249	13,341	11,744	10,874	13,580	12,087	6,300	4,220	3,720	3,934	4,786	4,586	5,149	6,177	66%	-55%	
Drug store	1,644	1,790	1,427	1,315	1,238	1,500	1,967	1,882	1,077	721	785	893	943	539	518	-4%	-74%	
Building supply store	2,471	2,268	2,521	2,416	2,594	3,507	2,539	1,118	772	611	493	506	495	558	534	8%	-85%	
Other stores	7,145	6,214	8,229	7,075	6,135	7,744	6,552	2,528	1,741	1,743	2,069	2,468	2,409	2,905	3,976	128%	-52%	
Other "Other commn."	823	977	1,164	938	907	829	1,029	772	630	645	607	919	739	1,147	1,151	90%	-1%	
Warehouse	11,908	12,345	12,074	12,827	14,491	16,909	16,707	9,730	5,661	6,543	7,047	8,766	13,698	16,099	19,671	247%	16%	
General commercial	10,934	11,004	10,830	11,468	13,493	15,641	15,482	8,781	5,229	6,219	6,575	8,107	12,894	14,997	17,724	239%	13%	
Mini-storage	961	1,326	1,141	1,311	979	1,218	1,125	873	401	241	365	472	589	969	1,899	888%	43%	
Other warehouse	23	15	103	48	19	50	100	76	31	83	107	187	215	133	48	220%	-78%	
Farm	5,611	5,103	5,485	5,854	5,817	6,292	8,227	7,305	6,837	5,991	7,748	9,476	11,005	10,937	10,811	112%	-2%	
Retail (auto, food, multi, other)	41,385	40,057	45,836	47,903	53,062	62,658	57,719	34,093	24,857	26,619	29,517	32,705	36,189	37,237	40,797	64%	-35%	

Source: AGC of America, from U.S. Census Bureau, www.census.gov/constructionspending; Markstein Advisors

Compiled 4/12/2017

Note: Other multi-retail, Other "Other commn." and "Other warehouse" are categories not shown in Census Bureau tables but the amounts are included in the respective subtotals and the Commercial total

A decade after the previous business cycle highs, commercial construction has peaked lower in virtually all property types.

business confidence or business hiring plans. The surveys of this kind – like the University of Michigan’s Consumer Confidence Index – have soared since the election on the expectation that a Trump Administration would lower taxes and regulatory burdens. Thus far, the administration has struggled to impact policy but consumers and business owners have reflected little of this in their responses.

At the same time, hard data – like government employment, retail sales or gross domestic product (GDP) estimates – are showing that the economy is performing pretty much like it has for the past few years. That data has tended to be much less volatile over the course of time and more reflective of the actual economy.

Respondents to soft data surveys remain more upbeat even as hard reports on spending and investment have more muted results. In the March Beige Book, which surveys business owners in all Federal Reserve Bank districts, there were glimpses of the way that the gap is playing out. The Fed’s report noted that action was running behind optimism in several of its districts.

“Participants generally agreed that the recent momentum in the business sector has been sustained over the inter-meeting period. Many reported that manufacturing activity in their Districts had strengthened further, and reports from the service sector were positive. Business optimism remained elevated in a number of Districts. A few participants reported increased capital expenditures by businesses in their Districts, but business contacts in several other Districts said they were waiting for more clarity about government policy initiatives before implementing capital expansion plans.”

Economists have begun to see the trend in consumer and business investing continuing in the same way as in 2016.

Employment gains, increasing compensation and record high household per capita net worth should support similar – or higher – consumer spending during 2017. Likewise, firmer oil prices and improved capital equipment spending are signs of a better business investment environment overall, in spite of the lack of government policy action.

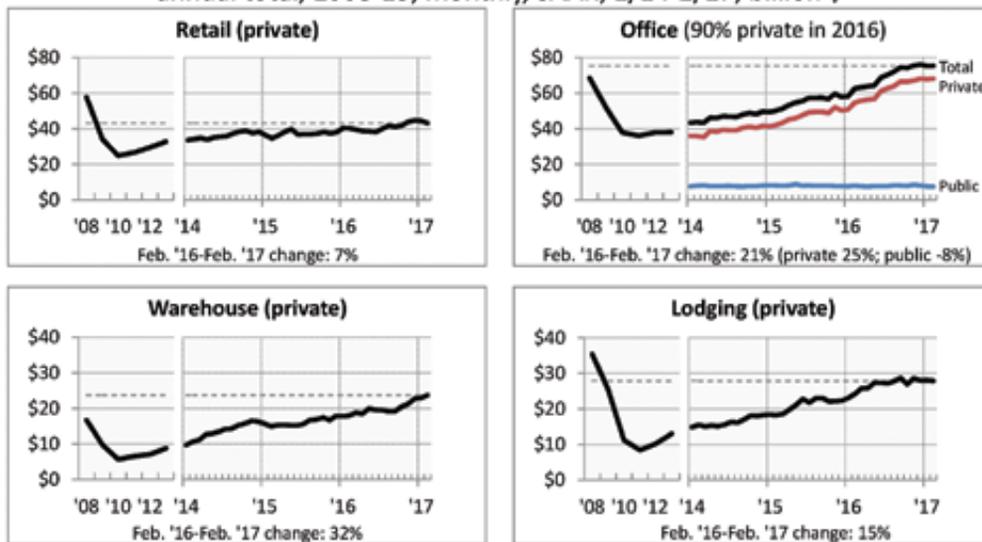
Few observers have moderated their low expectations for first quarter GDP growth beyond one percent but expectations for the second quarter are much higher. There are probably limits to the growth beyond that level, however. A 4.5 percent unemployment rate may make robust job creation more difficult going forward. Promised infrastructure spending will now happen too late to impact 2017. Should spending and investment remain stuck in the current pattern, it is harder to see a path towards GDP gains of three percent or more.

As all types of data are suggesting a possible economic fork in the road in the U.S., the Federal Reserve seems satisfied that its employment and inflation goals have been met and that the process of reversing the intervention taken during the Great Recession can begin in earnest.

At its March 14-15 Federal Open Market Committee meetings, the Federal Reserve Board of Governors held substantive discussions about the reduction of its balance sheet. Federal Reserve assets have swollen to \$4.5 trillion, in part because of its extended period of buying mortgage-backed securities (MBS) in the years following the crisis to provide liquidity to the mortgage market.

Those MBS holdings now reach about \$1.8 trillion. But the Fed has been adding fewer and fewer MBS purchases each month and, with the pace of maturing securities growing rapidly over the coming few years, the share of the Fed’s balance sheet that will be MBS compared to Treasury notes will

Construction spending: developer-financed annual total, 2008-13; monthly, SAAR, 1/14-2/17; billion \$



Source: U.S. Census Bureau construction spending report



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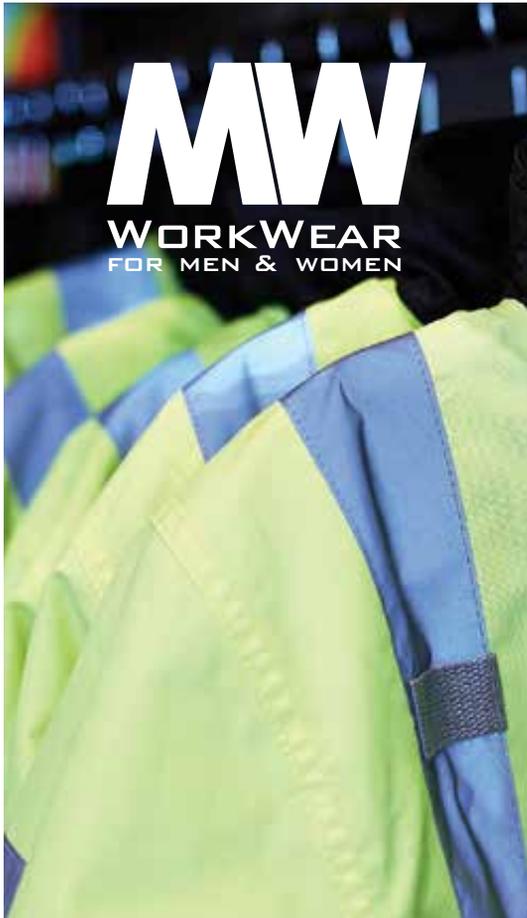
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normalize. It's quite feasible to envision a path to eliminating the trove of MBS bonds, which were once feared to become a permanent toxic asset base, without any disruption to the normal flows of the mortgage bond market. A steep decline in refinancing has also dampened the number of maturing bonds for the Fed to reinvest. Happily, one holdover fear of the last economic crisis may prove to be unfounded and should not impede the residential market going forward.

The most recent data on new home construction saw the long-term trend continue. March's housing starts hit 1.22 million units, a decrease of 6.2 percent from the upwardly-revised February volume. The data came in under analysts' expectations but the difference was attributed to the impact of bad March weather following an unusually warm February. The April 18 report by the Census Bureau showed construction of single-family homes at 821,000 units. Construction of multi-family projects (structures of five or more units) fell to 394,000 units in March, although permits for multi-family surged 13.8 percent during the month.

The Census Bureau reported on April 5 that total construction spending totaled \$1.193 trillion in February, an increase of three percent from February 2016. That total was only \$12 billion below the February 2006 record high, not adjusting for inflation. Private residential spending rose 6.4 percent year-over-year, with multi-family construction spending still growing at double-digit rates. Private non-residential spending grew by 7.5 percent compared to February 2016. Public construction declined by eight percent during the same time. Commercial construction continued to be the leading subcategory but a closer examination of the commercial sector offers an interesting indicator for 2017-2018.

Commercial real estate was hard hit during the 2008-2009 downturn, with property values falling more than 50 percent nationally. Unlike residential properties, however, commercial real estate began recovering as the overall economy did, with absorption following job creation and consumer spending. That recovery allowed many of the troubled assets in loan portfolios and commercial mortgage-backed securities bonds to regain value without being a drag on the financing markets when the loans matured. There have been some structural changes that have limited the post-recovery construction of commercial real estate.

The highest-profile change has been the shift in shopping from stores to online fulfillment. This behavioral change has limited the demand for new retail bricks and mortar dramatically. Compared to the 2007 business cycle peak, multi-tenant retail construction peaked again in 2016 at a level that was 40 percent lower. In 2007, retail construction was 73 percent of the spending on all commercial construction. Last year, the share fell to 57.2 percent. As might be expected, the rise in online shopping has boosted warehouse investment, but the 2016 construction spending was only \$3 billion – or 16 percent – above the 2007 level.

Gains in employment over the past five years have helped push office construction higher but changes in workplace design and habits have reduced the amount of space



needed per worker by 50-to-100 square feet. If the pace of job creation slows, as is expected, construction of offices will slow commensurately. Estimates for 2017 are lower than the growth in 2016 but it's anticipated that U.S. markets will see another five-to-eight percent bump in office building.

What may prove to be the biggest drag on commercial real estate for the next 18 to 24 months will be a more adverse financing environment. The first quarter Federal Reserve Bank Senior Loan Officer Survey found that one-fourth of those surveyed were tightening credit standards for nonresidential property and more than 42 percent said the same for multi-family. Demand for commercial loans was mostly unchanged, with nearly three percent seeing more demand for non-residential real estate.

On the investment side of the financing equation, there seems to be little evidence through the first quarter of declining interest in commercial real estate. The relative paucity of other income-producing investments is keeping interest in commercial real estate high, although year-end 2016 results are showing returns on commercial real estate that are dipping as prices rise and interest rates begin to push cap rates up. Major real estate investment portfolios reported yields that were below ten percent in 2016, with most falling several hundred basis points in return as the year advanced. Should this trend continue and rates creep higher, the risk-adjusted spread between real estate and bonds will begin to chase investors from commercial real estate. Barring some black swan event, however, investor appetite for real estate should enhance the equity side of financing in 2017.

Taken as a whole, the economy after the first quarter of 2017 appears to be one that is near the end of a cycle. Compared to the peak of the previous cycle in 2007, however, the U.S. consumer, business and investor are in decidedly better shape. The lessons learned from the financial crisis are showing in stronger household balance sheets, lower commercial real estate leverage and more conservative business plans. Should the economy begin to slow later in 2017, the U.S. will be buffered against the consequences in ways that it was not in 2007. With the global economy finally showing signs of growth, any domestic drag should be a bump instead of a fall. **BG**

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WHAT'S IT COST?

The April 13 report from the Bureau of Labor Statistics (BLS) on inflation in March drew headlines for its surprising decline in the Consumer Price Index (CPI), which declined 0.3 percent instead of the expected slight rise. That same surprise did not materialize for the Producer Price Index (PPI), nor for the PPI specific to construction.

A 6.2 percent drop in gasoline prices was the biggest factor in the monthly decline in the CPI, which was also weighed down by a record 7.0 percent plunge in the cost of wireless telephone services. The decline in gas prices was mirrored in the price of #2 diesel fuel, which dropped one percent from February; however, the long-term trend in fuel prices is significantly higher and a one-month dip in fuel costs hardly offsets the significant year-over-year moves in basic metals, cement, lumber, and gypsum board.

Kenneth Simonson, chief economist for the Associated General Contractors of America (AGC) noted the long-term trends in several key materials for the construction industry in his analysis of the April 13 data. Simonson wrote:

“Among the most widely used materials in construction, there were price increases over the past 12 months totaling 19 percent for steel mill products, 17 percent for copper and brass mill shapes, 8.8 percent for aluminum mill shapes, 7.6 percent for gypsum products such as wallboard and plaster, and 7.3 percent for lumber and plywood. In addition, the price index for diesel fuel, which contractors use directly and also pay for through surcharges on the thousands of deliveries to construction sites, soared 35 percent.”

According to the BLS report, PPI for final demand in March increased 0.2 percent from February and 2.3 percent year-over-year from March 2016. The PPI for final demand construction rose 0.2 percent for the month and 1.5 percent for the full year. Thus far, competitive pressures and timing have prevented contractors from passing along the higher costs of tight labor and materials. In markets where business conditions are strong or labor is especially tight, prices are moving higher at a faster pace. Those dynamics are worth noting in Western PA, as a handful of major projects get underway later in 2017.

Other noteworthy data from the April report included a higher PPI for residential construction - PPIs for inputs to new residential structures rose 3.5 percent for single-family and 3.9 percent for multifamily housing over the previous year - and an increase in inputs to nonresidential construction of 3.5 percent, which more than doubled the rate of inflation for nonresidential construction put in place. That suggests a squeeze on contractors' profits and a coming increase in price for construction. Also pointing to future increases in cost were

some large increases in major raw materials. Iron and steel scrap prices were up 63 percent year-over-year; liquid asphalt jumped 54 percent; and copper base scrap rose 15 percent.

A glance at the chart comparing prices over the past 12 months reveals few red numbers, a change following years of price deflation in construction materials and building products. Most of the black numbers, however, are small ones. Except for the short-term bump in gasoline and diesel, and the basic metals category, increases in construction material prices are a product of pent-up opportunities to hike prices again. Absent the increased consumption from global markets, like China's, in 2017, construction price increases will be impacted more by short labor supply and contractor selectivity. The fly in the ointment for this forecast is the potential for supply disruption due to an unexpected trade war or political reprisal. **BG**

PERCENTAGE CHANGES IN COSTS	March 2017 compared to		
	1 mo.	3 mo.	1 yr.
Consumer, Producer & Construction Prices			
Consumer price index (CPI-U)	0.3	0.9	2.7
Producer price index (PPI) for final demand	0.2	1.2	2.3
PPI for final demand construction	0.2	0.3	1.5
Costs by Construction Types/Subcontractors			
New warehouse construction	0.1	0.6	2.4
New school construction	0.0	0.6	0.9
New office construction	0.3	0.5	2.3
New industrial building construction	0.0	0.0	0.5
New health care building construction	0.0	(0.4)	0.2
Concrete contractors, nonresidential	0.0	0.0	4.1
Roofing contractors, nonresidential	0.1	0.5	2.4
Electrical contractors, nonresidential	0.1	0.2	(0.5)
Plumbing contractors, nonresidential	0.2	0.6	0.5
Construction wages and benefits	N/A	0.9	2.1
Architectural services	0.3	1.1	1.8
Costs for Specific Construction Inputs			
#2 diesel fuel	(1.0)	2.7	35.3
Asphalt paving mixtures and blocks	(1.0)	4.2	(1.9)
Cement	(0.5)	3.0	4.8
Concrete products	0.3	1.1	2.6
Brick and structural clay tile	0.8	0.3	1.1
Plastic construction products	(0.1)	0.6	1.8
Flat glass	0.1	0.3	1.8
Gypsum products	(0.8)	5.3	7.6
Lumber and plywood	1.9	3.9	7.3
Architectural coatings	(0.1)	(0.2)	1.0
Steel mill products	3.1	7.3	18.8
Copper and brass mill shapes	(3.1)	2.1	16.6
Aluminum mill shapes	1.5	5.2	8.8
Fabricated structural metal	2.0	1.5	4.1
Iron and steel scrap	6.9	23.0	62.7
Source: Bureau of Labor Statistics, Updated March 13, 2017			
Compiled by Ken Simonson, AGC Chief Economist			





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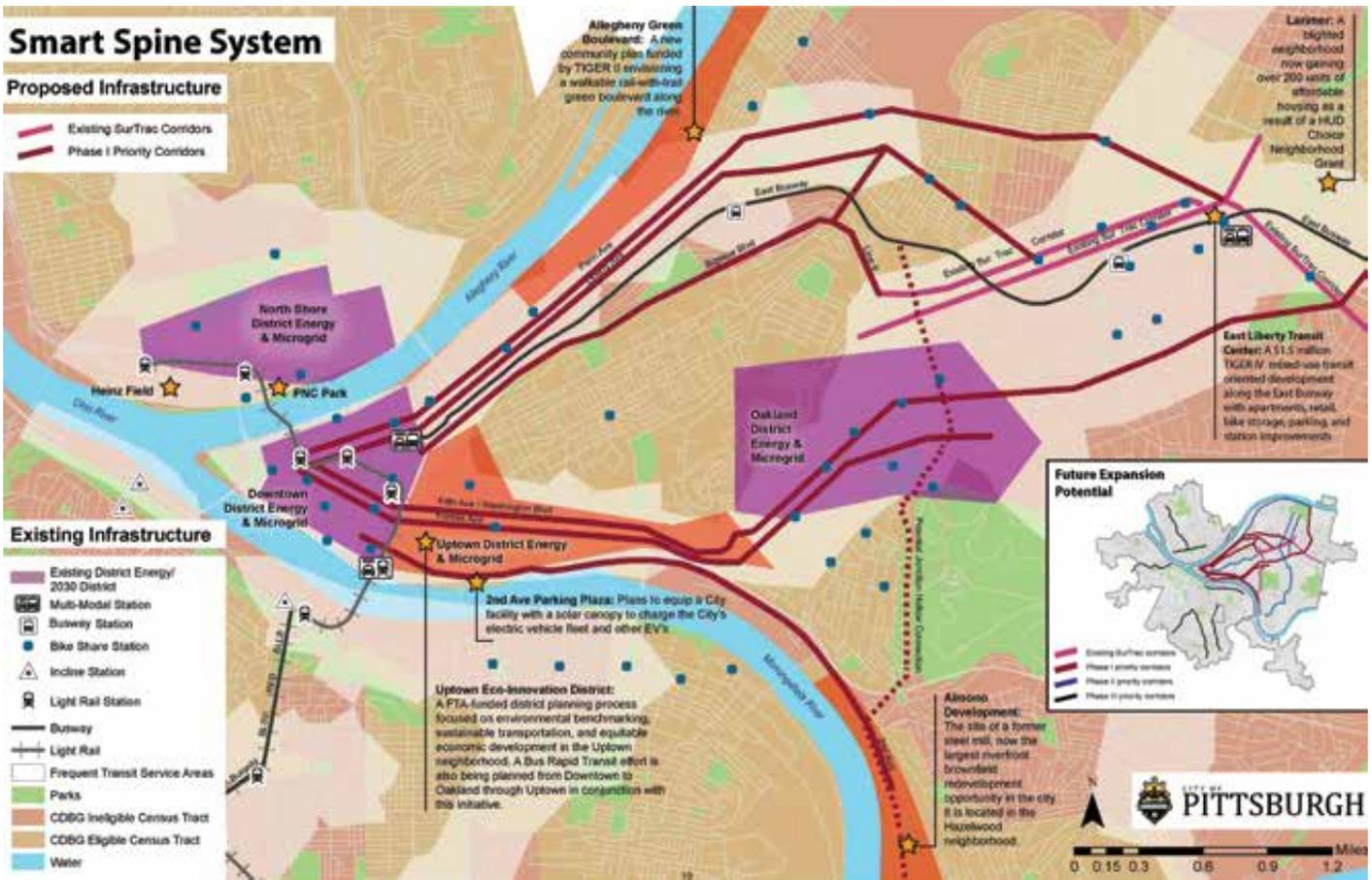
2 Becoming a Smart City

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5 In June of 2016, the City of Pittsburgh received word that its proposal to win the U.S. Department of Transportation/Vulcan Inc.'s \$50 million Smart City Challenge was unsuccessful. The loss of the major funding was disappointing but the process of preparing the response had aligned an All-Star team of partners and it strengthened the Peduto Administration's resolve to make Pittsburgh a smarter city.

6 </h2>



Pittsburgh's Smart Spine system is meant to link the district energy micro-grids and the smart transit communication systems along the city's employment and commercial centers.

"We won Miss Congeniality, but we didn't necessarily wind up with the giant check," jokes Alex Pazuchanics, policy advisor for Mayor Peduto, "So it became more important for the next phase of the Smart City Initiative to really hone in on priorities and think more strategically about how we can use partnerships and leverage other resources."

Pittsburgh's proposal was made in collaboration with Allegheny County, the Port Authority, the URA, Carnegie Mellon, University of Pittsburgh, six of Pittsburgh's leading philanthropic foundations, nearly a dozen non-profit organizations and two dozen industry partners. The latter includes names like IBM, General Motors, Ford, Amazon, Google, Bosch, Zipcar and Uber.

Pazuchanics says the mayor's response to the outcome of the challenge was to redouble the efforts to create a smart city. He says the city's approach is three-pronged.

"It sort of boils down to three different aspects: First, instead of having the U.S. Department of Transportation dictating the technology of the future, let's focus instead on what the use cases are. It's a subtle difference but it focuses us on the kinds of problems we're trying to solve," explains Pazuchanics. "The second thing is to continue to flesh out this idea of data utility. Pittsburgh has one of the best open data policies and data portals for access to information in the country. We have close to 200 data sets on the Western Pennsylvania Regional Data Center (WPRDC).

I think the third leg is developing processes and policies that help the city to adapt to changes coming down the pike that we aren't anticipating. The most obvious example is the influence of autonomous vehicles."

The City of Pittsburgh has continued to move ahead with its Smart City Initiative since the challenge ended. It's begun planning for purchasing electric vehicles for the city fleet. A program to replace 40,000 street lights with devices that also have cameras, Wi-Fi and cellular technology is underway. The first steps on the road to becoming a smart city have been taken.

SMART TRANSPORTATION

Smart cities will employ sensors that will control traffic flow and will allow smart vehicles to communicate with the system and each other. Automated vehicles – cars, trucks, buses and transit vehicles – are integral to the smart transit system. Aside from navigating the vehicle, automation will prevent accidents and provide telemetry that the traffic control center can use to change light sequencing or re-route the vehicles themselves. The idea of transit will be replaced with mobility, freeing planners to expand upon designs to include equivalent access to bikes, mass transit, autos and pedestrians. Big data applications will give cities and businesses the tools to analyze how people are moving and adapt the traffic systems accordingly. Most of

the technologies that will impact smart cities are just emerging, which means that the concept of what a smart city will look like is going to change significantly with each passing year.

The need for smart cities grows each year. In 1900, one person in seven lived in a city. By 2015, the ratio has fallen to one of two people living on the planet and the forecast for 2050 is two out of three living in a city. That's an extra 2.5 billion urban dwellers and the additional urban population is expected to add 233 percent to the number of miles driven. Unabated, the expansion of automobile driving in cities would add 54 trillion car trips annually compared to the number today. This level of growth would have a devastating effect on pollution, productivity, safety and health.

Beyond the sustainability issues, creating a better transportation system is critical to the regional economy and the quality of life. Commuting in Pittsburgh consumes much less of the work day than most major U.S. cities but the regional leaders are aiming at removing difficulty of transportation as a barrier to economic health. At about the same time the city was polishing up its Smart Cities Challenge pitch, the Allegheny Conference on Community Development was undertaking an intensive study of regional transit, conducted by the ad hoc Regional Transportation Alliance (RTA).

Carly Dobbins-Bucklad, senior policy analyst for the Allegheny Conference, helped lead the study for the RTA. She summarizes the goal of the study as "let's all get on the same page in terms of priority so we're building something useful that's not immediately going to be obsolete."

The study's resultant report, *Imagine Transportation 2.0*, develops seven guiding principles. One of them is particularly relevant to the smart transit problem: Make flexible, future-proof investments. This principle seems at once both obvious and futile. The changing nature of technology and people make this a very lofty goal. Dobbins-Bucklad acknowledges that it may be unattainable to achieve future-proof investments but focuses on the thinking that might get you there.

"Ultimately every single project is super local and specific but just asking the question gets you ahead of the game from where planning is today," she notes.

Dobbins-Bucklad used the example of planning for the impact of automated vehicles to illustrate what "future-proof" thinking might look like.

"If you're concerned that automated vehicles will reduce the need for transit, then maybe you

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should not invest in rail," she asserts. "On the other hand if you think they will increase the usage of cars you might expand dedicated public roadways like the East Busway.

"We don't currently have planning rules in place for that kind of decision making. Transportation planning now is based on capacity and our solution for variable demand is to build to the worst-case scenario."

Variable demand is the bane of transit authority existence. Pittsburgh has experienced disruptive demand changes as a result of the collapse of the manufacturing base of its economy. Like other Northern cities, Pittsburgh saw its Downtown workforce shrink as major corporations moved or dissolved and watched its transit patterns shift with those changes. Now, as Pittsburgh's economy thrives and is more predictable, technology is making the future of transit and mobility unpredictable. To Dobbins-Bucklad's point, planning for maximum capacity at this point in transportation history would almost assure failure.

The good news is that the transportation systems themselves may help planners do their jobs. Because of the Internet of things (IOT), computers integrated into most of the devices we use have developed from controlling the devices to communicating with other devices. The McKinsey Group estimates that IOT will have an \$11 trillion economic impact by 2025. In transportation, IOT devices can be used to control the existing systems for traffic lights and vehicles today, while providing the information that plans the system for the future.

The key technology seems to be sensors. Any transportation authority purchasing devices would be well-advised to make sure that sensors are built into the devices, lest they face replacing them in a few years or creating gaps in the systems. Vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) devices are going to become the essential technology for managing mobility in the future. Each of those 40,000 street lights Pittsburgh is replacing will have sensors too. The V2V and V2I devices will ensure that systems understand volume and speed of traffic, the progress of public transit vehicles compared to schedules, and obstacles to normal function. Ultimately, these devices will control some or all of the vehicles on roads and rails.

Just as important will be the information that the sensors feed to the consumers of transportation. The future of mobility, especially in urban areas, will be multi-modal and will likely offer customers choices about how they can get where they are

going. Apps exist today that give approximate times for travel comparing walking, transit and ride-sharing.

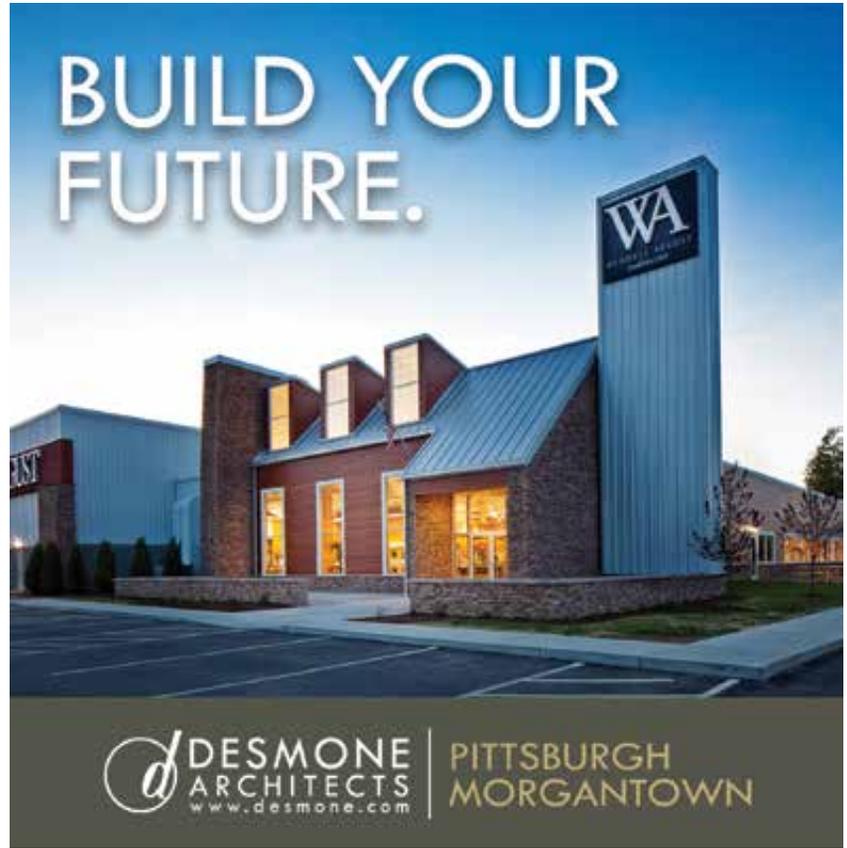
The University of Pittsburgh will be the site of an experiment with one of those apps. TransitScreen, a Washington, DC-based information company, has developed display screens that give real-time information about all modes of transit. The screens have been installed at five Oakland locations: SkyVue Apartments, Sennott Square, UPMC's Falk Medical Clinic, Montefiore and Presbyterian hospitals, as part of the Pitt Smart Living Project. That project is being led by Alexandros Labrinidis, Ph.D., and Kostas Pelechrinis, Ph.D., professors at the University of Pittsburgh's Department of Computer Science and School of Information Science respectively.

The TransitScreen technology combines information from Uber or Lyft, Healthy Ride, Pitt Shuttle, UPMC Shuttle, ZipCar, and Port Authority to give users information they need to make decisions about how they use their time, not just what mode of transportation they might choose.

Matt Caywood, CEO of TransitScreen, believes that transit information changes human behavior. His concern was not so much about transit choice as it was about what people did with the time they spent waiting for their chosen mode of transit. Indeed, Pitt's pilot program is a business development initiative, aimed at attracting people to the restaurants and shops in Oakland. Caywood says that when people have reliable, real-time information about when their transportation will be available, they usually choose to do something other than wait for the bus or train.

He tells a story of the aftermath of a TransitScreen installation in a commercial location. "At one coffee shop in Seattle, the manager had to hire another barista when afternoon sales increased 33 percent," Caywood relates. "Why? People saw how much time they had to wait for the shuttle and would stay for a drink."

Where transit solutions have already been implemented there has been a measurable benefit to business. One of the outcomes of smart transportation is the expansion of pedestrian space. Smarter transportation means fewer cars and vehicles. It also means those driving will be going slower, even though vehicles will take less time to travel. The net result of smart transportation is the commercial spaces see higher consumer traffic that is moving slower, an equation that is a winner for retail or dining. Property values increase for the buildings that house the shops and restaurants. Development flourishes.



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It's a little surprising that the use of technology in the built environment hasn't been a driver of the smart city before now. The "intelligent building" was a buzz word as far back as the 1980s, when building system integration became possible because of the adaptation of the technology driving the PC market. Manufacturers of building access systems were making ID cards in the early days that could limit access to portions of the building and control the lighting and HVAC specific to that individual. But like with PCs, interoperability issues, proprietary software/hardware decisions, competitive pressures, and ever-advancing technology derailed the completion of all those visions of the intelligent building.

Those issues have largely been overcome – although complaints about proprietary engineering persist – and the fact that so many building components have computers integrated into the



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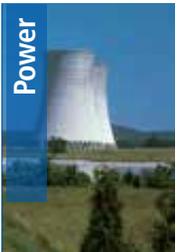
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Leaders are betting that the Bus Rapid Transit line between Oakland and Downtown will spark new life in Uptown and the Hill District. Image courtesy Port Authority of Allegheny County.



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manufacturing makes it feasible to use construction to drive energy efficiency.

"It almost starts in the building world because that's where the Internet of things is beginning," says Dr. Aurora Sharrard, executive director of the Green Building Alliance. "It is kind of a challenge with the older buildings in Western Pennsylvania, which is why you don't see integrated systems in buildings as often as you do in cities where construction is newer and happens at a faster clip."

Pittsburgh's building stock may make integration more challenging but Sharrard points out that the city has an advantage in that some of the world's leading companies in building integration – like Eaton Corp. – are based in the region. For innovation, the research and technology transfer coming from Carnegie Mellon and the University of

Pittsburgh are at the cutting edge of energy.

Accomplishing even small advances in making a city more energy-intelligent is challenging. Compelling technology has to exist first but then private property owners have to become adopters. That means companies have to sell owners on the benefits of adopting. Utilities (and public utility commissions) have to be roped into the process if the technology being adopted requires integration with the power supply network or the energy grid itself. Municipal and state government can help if the technology can be codified but courts have been willing to support the rights of private property owners when codes impose capital improvements.

The biggest hurdle to innovation is often inertia. The U.S. energy grid may seem vulnerable but it is better than 99 percent reliable

"let's all get on the same page in terms of priority so we're building something useful that's not immediately going to be obsolete."





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so the operators are understandably reluctant to test new technologies.

America's electricity grid represents a tremendous opportunity for cities that want to have smarter energy solutions. Setting aside the need for improvements to the massive grid itself, energy users can have a significant impact by taking steps to be less reliant upon the grid.

In this area, Pittsburgh is getting into the game with its district energy plants. These plants make use of existing energy sources to generate electricity on a local, almost neighborhood, level. NRG Energy operates a steam plant on the North Side that services heating and cooling needs of 30 buildings. NRG is currently developing a \$61 million district energy plant – built by Mascaro Construction – to provide those services and generate backup electricity for UPMC Mercy. NRG's plan is to scale up electricity supply as it gains customers. One potential source for those customers is the occupants of the future development of the 28-acre Civic Arena site.

Similar district energy plants are proposed for Oakland, Downtown, Almono, the Strip District and the North Side. Along with the district generation capacity, a micro-grid links the plant to its customers and the main grid. This enhances the security of the energy district and its users, which was one of UPMC's primary interests in the Uptown plant. The micro-grids also represent an opportunity for adding intelligence to the city's energy usage.

Micro-grids have the advantage of being scalable and more efficient than the main grid. Technology allows micro-grids to be linked together through monitoring and communication, which gives the operator information about demand so that it can normalize capacity between multiple micro-grids. Moreover, the connectivity allows the micro-grid to replace the main grid in times of disruption. Micro-grids don't have the capacity limitations that the main grid does, giving operators the chance to enhance their systems by adding storage capacity that can be tapped at optimal times. This can reduce user costs and incentivize the operators to use renewable sources to generate the stored electricity. That, in turn, will be an incentive for battery manufacturers to continue to push the envelope in technology.

"We're seeing lot of startups in the U.S. dedicated to the idea of when and where to get energy, things like software that helps district-scale batteries store electricity off the grid. It figures out how the grid is performing and when to get power onto the grid," observes Sharrard.



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The system of micro-grids described above is part of the City of Pittsburgh's Smart City plan. Linking the micro-grids to optimize generation and create redundancy is only one piece of this regional grid system. There are also plans to create several spines of communications grids that will be used to optimize transportation throughout the city. In October 2016, the U.S. Department of Transportation (DOT) awarded Pittsburgh \$11 million to help with the build-out of this grid or micro-grids. The DOT grant was restricted to the transportation components of the system but the communications capability goes beyond that.

For its part, the city intends to move part of fossil fuel demand into this system by replacing its current vehicle fleet with electric cars and trucks. The City of Pittsburgh will have a direct current micro-grid of its own to charge the vehicles and plans to put charging stations powered by a solar canopy in its Second Avenue Parking Plaza. It will collect information about the performance of the charging stations and electric fleet that can be used to judge the impact on the grid.

This interconnected system of communications is backed up by the Western Pennsylvania Regional Data Center. The WPRDC was created in 2015 and provides a shared technological and legal infrastructure to support research, analysis, decision making, and community engagement. It's managed by the University of Pittsburgh Center for Urban and Social Research, in partnership with Allegheny County and the City of Pittsburgh.

The use of a regional data center, provided it is both sufficiently robust and analytical, could end up being the most important component of the smart city. Big data analytics offers potential for solutions that were unworkable only five years ago. Consider the various types of data that could influence decisions about transit, for example. Historical information about weather, congestion, construction/maintenance, parking, holiday traffic patterns, or any of the extensive sets of data about what influences traffic can be used to predict that morning's commute. How might that influence the routing or scheduling of buses? If the data is shared, how might predictive analytics inform Waze about your best commuting route? What would an automated vehicle do differently on Good Friday compared to the day before?

It may be in the area of predictive analytics and machine learning that this data can be most effective. That's certainly becoming true in the area of intelligent efficiency technology.

Intelligent efficiency makes use of artificial intelligence (or machine learning) to drive equipment

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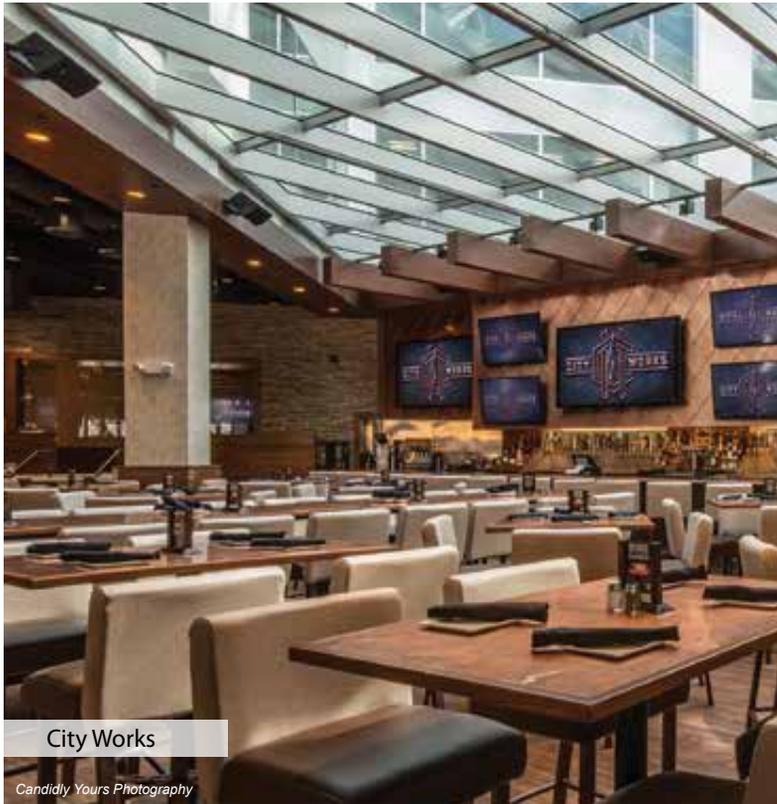
like thermostats to respond and adapt to environmental conditions. These learning thermostats improve energy efficiency by becoming smarter about how they control the environment. Intelligent efficiency reduces energy consumption in homes and informs demand response programs in utility use. Over time, these thermostats and other intelligent devices within the building control systems inform each other and the command system to learn more about optimizing the building's operations.

Initiatives like the 2030 Districts can plug into this kind of machine learning so that property owners within the district can better understand how to improve their individual building operations. At the municipal level, the City of Pittsburgh aspires to provide the same level of intelligence infrastructure for its businesses and citizens.

A smart city is going to be a work in progress. If the information age has taught us anything, it is that innovation will breed more innovation so a city that integrates its transportation, energy and information systems won't be static. That said, a smart city will have less traffic congestion. People will be more productive or will have more free time. Overloaded highway systems will no longer have capacity problems. Pollution will diminish. Citizens will be able to make lifestyle choices without consideration about workplace proximity. Valuable urban real estate can be used for something other than parking cars.

Smart cities are about using data to make things work better and improve quality of life. Smart cities are smart because they create smart citizens armed with information to make better choices in all aspects of their lives. **BG**





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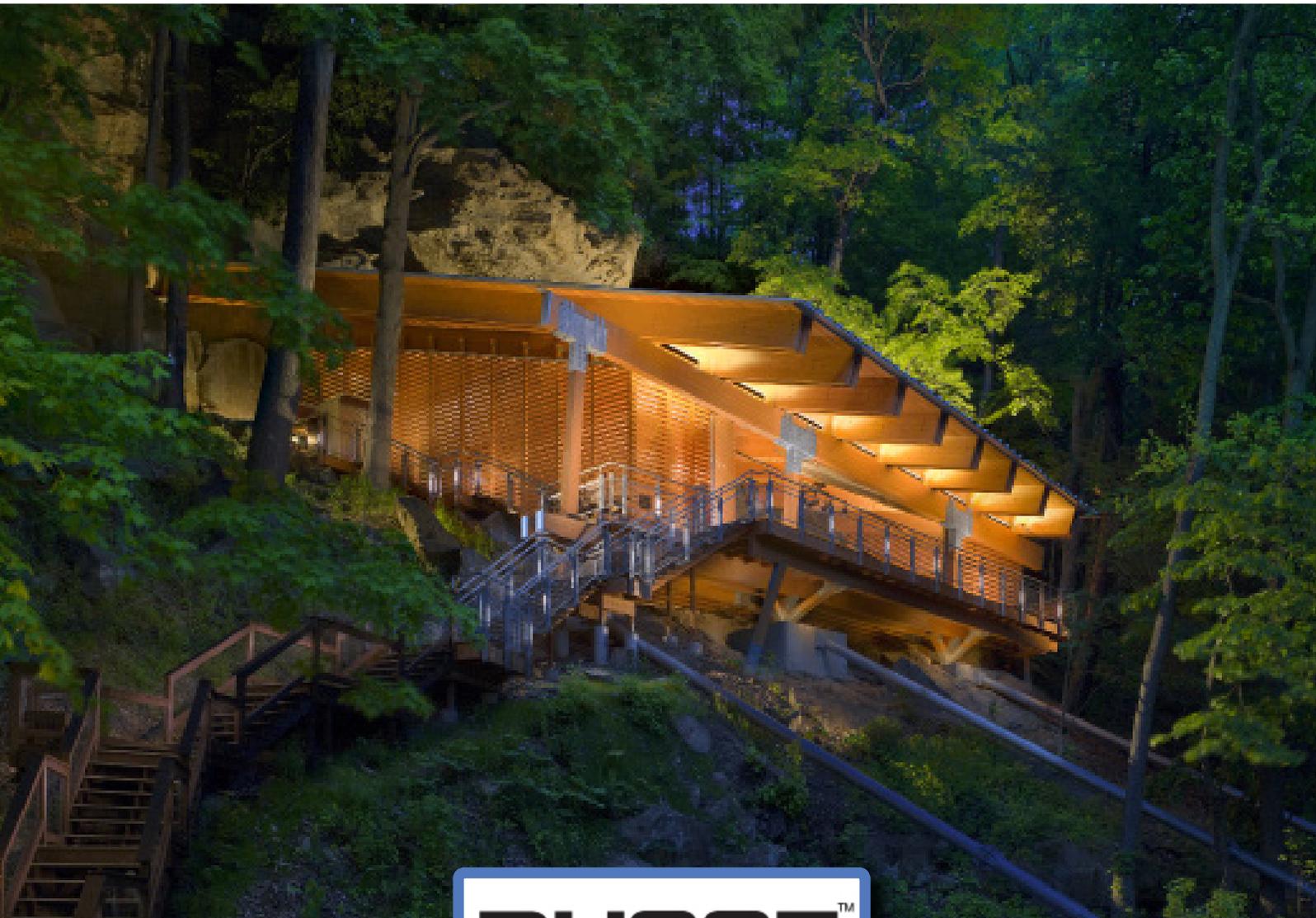
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The rooftop deck adds usable square footage in better weather. Photo by Howard Doughty



FRIENDSHIP CIRCLE OF PITTSBURGH

Most organizations looking to expand select a building that is at least as big as their space requirements. For the Friendship Circle of Pittsburgh, the choice of a new bigger home hinged more on how it would be knit into the Squirrel Hill community. After that criterion was met, there would be a way to make the building what it needed to become.



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Photo by Howard Doughty

"We serve a marginalized segment of the community so we didn't want to find a destination space. We wanted something that already fit into the daily flow of the community," explains Rabbi Mordy Rudolph, the executive director of Friendship Circle of Pittsburgh.

Founded by Rabbi Mordy and his wife Rivkee in 2006, Friendship Circle serves teens and children with special needs. Rabbi Mordy explains that the organization's previous home on Northumberland Street was inadequate for the programs that Friendship Circle ran.

"In eight years Friendship Circle Pittsburgh grew from 12 children with special needs and 25 teens to serving 140 children and 300 teens, straining the non-profit's 1,200 square foot offices on Northumberland Street," says Alan Weiskopf, managing principal at PWWG Architects. "It was important that the new space, like the organization, connect constituents to the community, and be a physical presence in the neighborhood."

"Our goal is to make the community more accessible to all."

"Our goal is to make the community more accessible to all. We run a variety of social events that are aimed at being more inclusive," he says. "We have a growing need in our community for this program. We have events almost daily and they are growing all the time. We wanted space that allowed us to create new programs, almost on the fly, without worrying about having room."

It helped that the board of the Friendship Circle included several experienced real estate and construction professionals, allowing the organization to be more flexible and creative in its selection. That

creativity would prove to be vital. In August 2013, the landmark restaurant Gullifty's closed the doors on its Murray Avenue location. The building was only around 5,200 square feet, about half of what Friendship Circle wanted, but its location was ideal for the organization to be knitted into the neighborhood.

Rabbi Mordy notes that the Murray Avenue location fits socially into the community, as well as being located physically in the center of the Squirrel Hill commercial district. The former Gullifty's restaurant is across Murray from Squirrel Hill's Giant Eagle store, placing it in the path of most members of the community each day.

While the location may have been ideal, repurposing the building was going to take some effort. The building was a theater prior to Gullifty's ownership and the shape of the building was a parallelogram, rather than a square. The steel columns were parallel to the property line instead of the perimeter walls. As the program for Friendship Circle unfolded, it became apparent that the existing structural system would hinder the optimal space plan, necessitating the complete demolition of all of the structure – including the roof – within the footprint of the building. The renovation project became new construction for all intents and purposes, on a site that had little or no room to maneuver.

Architect Stuart Horne, from Seigle Solow Horne Architects, saw the potential in the property that was underneath the renovations.

"It's an incredible location. Since it was a restaurant and a theater we saw it as a tremendous opportunity," Horne says. "The first time I walked through the building I saw the balcony and thought, there are the offices. When I climbed the ladder to look at the roof I thought, we have to do something with this."

It helped that the design architect had been involved with Friendship Circle from its early days. Horne's children had volunteered at the center and he was personally committed to the success of Friendship Circle in the community. The design was intended to represent the organization's personality, to be inviting and welcoming. That ethos pushed Horne to go beyond the minimum standards of the Americans with Disabilities Act. The building is aimed at being truly barrier-free in a way that users won't notice the extra efforts.

"[Stuart] had been on the board of Friendship Circle and led the facilities task force. He was coming at it from the Friendship Circle's



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perspective,” says Rabbi Mordy. “He helped set the table for hiring F. J. Busse and the architect of record, which was someone he believed could complement his work well.”

Supporters of the Friendship Circle raised \$4 million to fund the new facilities, as well as additional funds to endow the program. While this wasn’t a project for which money was no object, the leadership at Friendship Circle was concerned more about solving the problems that the renovation would present and were looking to collaborate with companies they knew well. Because of past experiences, general contractor F. J. Busse Company was called to help in the early stages.

“We were called in because of Mike Locke, who was on the board at the time,” recalls John Paul Busse, the company’s president. “They didn’t want to bid the job. They wanted to do it all union and asked us to do it as a guaranteed maximum price project. After we got into the project, Friendship Circle got a grant from the county, which caused us to carve out a piece of the project for public bidding. It worked to bid the HVAC and plumbing that way but it threw a monkey wrench into the process.”

Busse asked a few of the mechanical contractors that he works with regularly to bid on that package and Gunning Inc. was the successful bidder. Busse notes that Gunning coordinated smoothly on the project, even though they worked directly for Friendship Circle.

Before the mechanical package was bid, however, Busse began demolition while the design was being done, gutting the interior in the winter of 2013-2014. The exploration that followed during demolition uncovered issues that would be challenges. The six months of time before construction started in May 2014 was used to hammer out the design issues. F. J. Busse was able to have input that aided the architects working on the project and saved time once the construction was underway.

“Working with two architects had its challenges. Stuart Horne was doing the design while Perfido Weiskopf was putting it down on paper, so we had to be sure we communicated properly,” Busse notes. “They decided they were going for LEED certification so there were tons of meetings at the beginning to decide what to do with the mechanical systems and the building envelope to meet the LEED requirements.”

The exterior walls of the building were remaining intact but virtually all of the remaining structure and building systems were replaced. Some of the vertical steel remained but there were new columns and foundations throughout much of the building. Busse recounts that the existing soils were surprisingly poor and they had to replace the poor fill before pouring new footers for placing the columns. The new horizontal structure – the floor and roof joists – had to be integrated partially into exterior columns and walls that didn’t match up to the new pattern for the steel. Busse credits steel fabricator Seech Industries with helping to solve that problem.



The addition of a mezzanine gave the building more space for social spaces and meeting rooms without adding to the footprint in a tight urban neighborhood. Photo by Howard Doughty.

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"The biggest challenge was the structural steel. The building was a parallelogram and we were adding a bunch of steel but keeping some of it," Busse says. "When we got to the end at the walls a lot of the steel was missing columns and connections. Luckily we had Seech and they did a 3D model of the whole interior based on our field dimensions. That really helped working that through or we would have been there forever."

The final structural hurdle to overcome was the roof framing. Friendship Circle was having a mezzanine built and planned to use the roof as additional square footage for activities when weather permitted. When the demolition revealed the roof joists, however, there was an unpleasant surprise.

"The roof was all wood-framed. It was two-by-sixes sitting on top of the steel and none of it was attached. There wasn't even a single hurricane clip and a lot of it was rotted," remembers Busse. "They originally wanted to leave the roof as is but when we looked at it there was no way that would work."



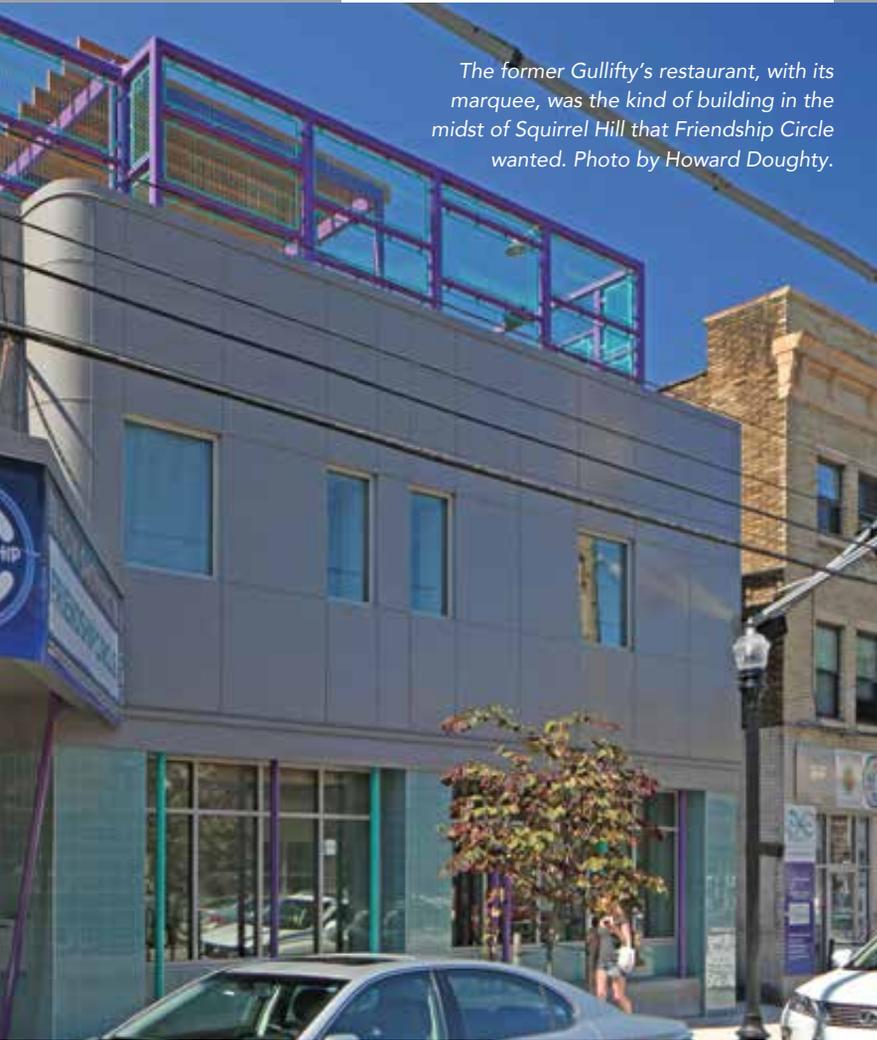
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The former Gullifty's restaurant, with its marquee, was the kind of building in the midst of Squirrel Hill that Friendship Circle wanted. Photo by Howard Doughty.

To remedy the situation, F. J. Busse tore off the existing roof and built new structural steel framing. The existing roof was sloped so steeply that the entrance door in the rear of the second floor didn't have enough room to operate, so Busse popped the roof and reduced the slope of the new roof. Even after the adjustments, there was little room to maneuver the building systems in the space beneath the roof.

"The roof sloped in the back to where there was very little head room. Gunning had some challenges fitting in all the ductwork," Busse notes. "It was a tight site all around. There is a city parking lot behind the building and Murray Avenue in front so there was no place to sit a dumpster. We basically trucked everything out of there. When we were setting the steel we had to talk to the city about using some parking spaces. We ended up leasing eight spaces just so we could bring a crane and a truck in there."

Construction took roughly 11 months, with Friendship Circle of Pittsburgh occupying in May 2015. In addition to the major structural work and new systems, a new masonry stair tower and elevator shaft had been built within the structure. New offices filled most of the upstairs, with space for activities on the ground floor and deck. The existing marquee was used for Friendship Circle's new signage. Beyond the bricks and mortar, Friendship Circle got the programming it wanted.

"There are new flexible spaces and amenities for a range of programming connecting youth with special needs to the community and vice

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versa; activities include organized cooking classes, art clubs, music and drama clubs,” explains Weiskopf. “A new street-level bank of windows opens the space to the neighborhood. The first floor features a full working kitchen, a multi-use room with a stage, a teen lounge and storefront gallery space. The second floor offers administrative offices, parents’ lounge, and work pods to allow participants with special needs to take an active role in driving the organization.”

“Now that the weather is getting nicer the roof-top deck is a larger part of things. We’re planting a garden and having lots more outside activities,” notes Rabbi Mordy. “The building’s big for us but it feels very homey. It’s not cavernous. That’s something that is being met with good vibes.”

The rabbi sees the high level of utility and acceptance as something that was intentional.

“We had a tremendous amount of leadership within the organization that was committed to making things happen. We spent a lot of time meeting with our constituents to talk about how the building should work, how open it should be. There was a lot of input from the community so we didn’t end up with spaces that weren’t big enough or that we didn’t need,” he concludes.

Stuart Horne is most pleased that the finished product accomplished a goal that arose from the early days of meeting with constituents in the community.

“There was a woman there who said that she wanted this building to show how proud we are of our children. That became my goal in designing the project,” he reflects. “We wanted this to be a place where students could come at the end of the school day and feel like they were at home.” **BC**

PROJECT TEAM

Friendship Circle of Pittsburgh	Owner
F. J. Busse Company	General Contractor
PWWG Architects	Architect
Seigle Solow Horne	Owner’s Rep
Massaro Industries	Ceramic Tile
Hanlon Electric.....	Electrical
Gunning Inc.	HVAC & Plumbing
Otis Elevator Systems	Elevator
Specified Systems Inc.	Glazing
Davis-Fetch Corp.	Hollow Metal Doors
Franco Associates	Masonry
Giffin Interior & Fixture	Millwork
Thomarios Painting	Painting
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L.R. Kimball/CDI Studio One designed the new headquarters building for Sheetz in Duncansville, PA.

Five years after global engineering giant CDI Corporation acquired engineering/architecture firm L. Robert Kimball & Associates, new leadership realized that the marketplace needed to better understand how it was serving its clients, especially since the approach wasn't all that new.

"When Bob Kimball started the firm he viewed it as delivering totally holistic services to clients. And it was across the board. It was buildings, roads, airports, land development and geotech," observes Gary Lopera, industry executive/infrastructure at L.R. Kimball. "That model is actually almost more powerful today because there is such a big push on infrastructure. Kimball sits in a unique position to deliver across the board. If you look at infrastructure as transportation, then except for railroads, we cover everything. If you look at the social infrastructure side we're doing schools, justice facilities and correction facilities, which also fills a big need."

Gary Lopera is an AIA Fellow who spent almost 30 years with Michael Graves & Associates, eventually serving as principal of the firm. Lopera joined CDI in June 2014 to oversee the architecture and engineering practices. By the end of 2015, his role had been shifted to managing all of the Kimball operations, as well as having leadership responsibilities in CDI's Energy, Chemicals and Infrastructure practice.

"I think the relationship with CDI allows Kimball to grow to a bigger platform. Kimball is not one of ten companies that provides infrastructure at CDI; Kimball is infrastructure. It's a great time for Kimball right now," Lopera insists.

L. Robert Kimball was a civil engineer by education and training. A decorated officer in the Army Air Corps, Kimball served as lead navigator in B-17 aircraft with the Bloody 100th Bomb Group stationed in Thorpes-Abbotts, England. After serving again during the Korean War, Kimball started a two-person consulting engineering

firm in 1953 that focused on civil engineering and surveying.

That firm blossomed throughout the 1960s and 1970s as the Environmental Protection Agency (EPA) funded waste and water infrastructure projects in virtually every county within what was the footprint of L. Robert Kimball & Associates. With his aviation experience, Kimball launched an aerial mapping practice and designed airports all around the U.S. By the time EPA funding dried up in the 1980s, Kimball's business had grown to include full-service architecture and engineering services. The firm had grown to 16 offices and 550 employees by the new millennium. Kimball's son Jeff was CEO and his daughter Ann, son-in-law Csaba Balasz and son John were all involved in leadership roles.

In June 2010, CDI Corporation announced that it had acquired L. Robert Kimball & Associates.

CDI is a 10,000-person firm that spans the U.S. and parts of the globe. It acquired Kimball to add architecture to its service offerings but also to add infrastructure overall to CDI's capabilities. Unlike many A/E mergers or acquisitions, there was little or no redundancy between the firms.

CDI's origins were as an engineering staffing company, serving mainly the automotive industry. That service grew to serving leading industries and has clients like IBM, Google and Yelp. But CDI's main business is in providing engineering services to industrial and corporate clients around the world.

"We provide fairly sophisticated engineering to the Navy and we do energy and chemicals, serving the Shells, the Dows, the Exxons," notes Lapera. "CDI wanted Kimball because they wanted an infrastructure business. They saw it being a complement to some of their other businesses.

"I think Kimball was culturally a good fit too. Interestingly enough, the guy who started CDI – Walt Garrison – was an aviator in World War II, as was Bob Kimball. And even though CDI is publicly traded, for the longest time it was a family business. I think the value trees were the same. Kimball was a very disciplined, well-run business so it was a good acquisition."

Like most large acquisitions, the Kimball/CDI marriage took a while to gain its footing. Lapera has seen recognition within the past few years that the synergies between the organizations are more apparent.

"Just to give you an example, I sit in the Boeing and GE and United Technologies conference calls so I know what's happening," he explains. "Kimball is now starting to look at these big Fortune 100 companies and finding ways to work with them. We're probably working with chemicals more than other industries and that relates perfectly back to Pittsburgh."



Gary Lapera

CDI is seeing more opportunities running through Pittsburgh because of the growth of the energy and chemical industries here. Lapera says that the first wave of energy expansion and chemicals in Western PA opened CDI's eyes but that the corporation views Pittsburgh as one of its hubs because of Kimball's presence in the region. The Kimball offices in Pittsburgh and Philadelphia are the fastest-growing locations in Pennsylvania, although the Ebensburg office remains the largest. L.R. Kimball branches in Harrisburg and State College have also maintained the staffing levels that existed before the acquisition. Three other offices are in Bridgewater, NJ, Charleston, WV and Dallas, TX.

Philadelphia is home to a new practice that has been born of the CDI/Kimball marriage. Branded as CDI Studio One, the practice is almost virtual in nature. Launched by Lapera as an intra-preneurial startup within L.R. Kimball, CDI Studio One aims to solve the problems of its clients by bringing resources to bear that are nontraditional and may not exist within even CDI's corporate structure.

"The world is changing. For certain clients CDI is the perfect model because you're looking at bringing in different thought leadership. You're not just focusing on A/E teams being the be all and end all of every project," explains Lapera. "We always build a team very specific to the client. We're always trying to figure out who the thought leaders are in that field."

"There's such phenomenal opportunity out there for us and it's very much in the way I think Bob Kimball viewed the business, which is to provide clients with incredibly full services,"

The team about which Lapera speaks includes experts from outside Kimball and CDI. For a recent pursuit of an education commission, for example, CDI Studio One included a former teacher on the team who works for Sextant after a number of years

in education. Her specific expertise was in how technology enhances the learning experience for students and how the design of educational spaces must account for that. Doing a study of the Corrigan Road Pool for Allegheny County, Kimball/CDI Studio One used input from food and beverage experts that Lapera says altered the concepts upon which the design was built.

"When you get the early adopter thought leaders there are a couple of interesting things," observes Lopera. "They look at the models in new ways. The other thing is they tend to operate on a shoestring budget. It's not about how much you spend; it's about how you can maximize every penny, every decision you make. The reality is that it's much more applicable to today's economy. Even for big corporate clients there is no open checkbook."

Next year will mark the 65th anniversary of Bob Kimball's founding of L.R. Kimball. Moving forward from this point, Lopera sees the next steps for Kimball as finding ways to dovetail its services with the non-traditional clients that CDI serves. As an example of this integration of services, long-time CDI client Shell Chemicals invited the firm to propose on its Franklin Project in Monaca as Kimball, not CDI Corporation. Leveraging knowledge and experience from throughout the firm to serve clients, L.R. Kimball/CDI Corp. is operating in the model that Bob Kimball used to succeed in the 1950s.

"There's such phenomenal opportunity out there for us and it's very much in the way I think Bob Kimball viewed the business, which is to provide clients with incredibly full services," says Lopera. "A lot of the legacy of Kimball is still going, phenomenal project managers who can take a client cradle to grave. There is an incredible amount of institutional knowledge and that really matters for clients." **BG**

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LEGAL PERSPECTIVE

Recent PA Court Case Proves Owner's Agents Cannot be Held Liable for Payment

BY JOSHUA LORENZ

The Pennsylvania Supreme Court has finally answered a key question that has been a source of uncertainty for real estate developers, contractors and subcontractors for years: Can contractors hold the people who authorized the work individually liable for payment?

The issue stems from ambiguous language in the Pennsylvania Contractor and Subcontractor Payment Act ("CASPA" or the "Act") of 1994. The Act ensures that owners of a construction project pay contractors and subcontractors in a timely manner for their work. If a contractor has not been paid, CASPA allows an owner seven days to pay the contractor hired to work on a project, and 14 days for a contractor to pay a subcontractor. As defined by the Act, the "owner of a project" is anyone who owns an interest in the property and orders improvements to be made, including any successors who buy or inherit the property and agents of the owner who are acting on behalf of the owner.

CASE IN POINT: SCUNGIO BORST & ASSOCIATES V. 410 SHURS LANE DEVELOPERS

The term "agents of the owner" became a point of contention in a recent case, Scungio Borst & Associates v. 410 Shurs Lane Developers, when a contractor tried to hold an "agent" individually liable for payment. In that case, contractor Scungio Borst & Associates completed construction work on a condominium complex owned by 410 Shurs Lane Developers. Robert DeBolt, who owned a 50 percent share in 410 Shurs, signed the contracts on the company's behalf, and gave verbal direction for Scungio to perform an additional \$2.6 million worth of work. In November 2006, the developer terminated its contract with Scungio Borst, leaving \$1.5 million in outstanding payments.

When Scungio requested payment for the outstanding amount, DeBolt refused on behalf of the company. Scungio then filed a lawsuit under CASPA against both the company and DeBolt, seeking to hold him personally liable. Scungio's suit against 410 Shurs went to trial, and a judge ordered 410 Shurs to pay nearly \$2 million to Scungio.

Meanwhile, DeBolt filed for summary judgment (a legal ruling without a full trial that is intended to resolve the merits of a particular case where there are not disputed material facts), claiming he could not be held personally liable under CASPA

because he was not a party to the contract as an individual. DeBolt contended that only the company was a party to the contract and, thus, only the company could be held responsible under CASPA. The trial judge agreed with DeBolt and granted summary judgment in DeBolt's favor.

Scungio appealed the case to a seven-judge panel of the Superior Court, arguing that DeBolt had been acting as an agent of the company when he ordered the work and, therefore, qualified as an "owner" liable for payment under CASPA. A majority of the judges disagreed with Scungio, asserting that the Act was not intended to create individual liability for agents or representatives of an entity. Rather, CASPA merely grouped "agents" in with property owners to make it clear that project managers, architects and other representative agents were not contractors entitled to the payment benefits under CASPA. In light of its interpretation of CASPA's intent, the Superior Court upheld the lower court's grant of summary judgment against Scungio and agreed that DeBolt should not be held personally liable for payment under CASPA.

Three of the judges disagreed with the lower court's ruling, however, accepting Scungio's argument that the term "agents" has been used in other Pennsylvania laws, such as the Wage Payment Collection Law. In many of those cases, Pennsylvania courts have determined that an "agent" authorized to make decisions on a company's behalf could be held personally liable for payment.

In turn, Scungio appealed the Superior Court's ruling to the Pennsylvania Supreme Court, which agreed to take the appeal and ultimately upheld both the Superior Court's and trial court's rulings. The Supreme Court emphasized that under standard contract law, a contract only imposes liability on the parties to that contract, not to those who merely are acting in a representative capacity.

WHAT DOES THIS MEAN TO THE CONSTRUCTION INDUSTRY?

CASPA originally was designed to ensure that contractors and subcontractors were paid in a timely fashion and to provide statutory remedies in situations where that does not happen. However, the Act was not intended to create a new class of people who are individually liable for contractual payments despite not being a party to the contract. For that reason, even though the term "agents" has been defined and treated much the same as the person or entity whom the

agent represents in certain other contexts under Pennsylvania law, the Supreme Court was clear that it was not extending liability to agents and representatives under CASPA.

Expanding that idea more broadly to the construction industry, this essentially means that when someone acts as an owner's agent (meaning they have the authority to make decisions on behalf of the owner in a representative capacity but are not holders of the contract), he or she cannot be held individually responsible for payment. Unless it is determined that someone was acting outside the scope of his or her representative authority on behalf of the owner – and in so doing creating a direct contractual relationship themselves – only the principal whom the agent represents will be liable.

This distinction is especially relevant for outside parties that tend to operate on an owner's behalf, but are not considered contract holders. For these groups, it is important to remember that as long as you are simply acting as a representative for the owner, and not the contract holder, you are not liable.

By way of example, Developer X hires Contractor Y to build a new shopping mall and they enter into a contract together. Developer X then hires Architect Z as an owner's representative/agent on the project, authorizing Architect Z to initiate or make changes to the work, make key decisions with respect to the project, and otherwise act on behalf of the owner. During the project, Architect Z ordered changes to the work that increased the contract amount significantly. If Developer X refuses or is unable to pay Contractor Y for any of the work it provided on the project – including the additional work – Architect Z, despite being the entity that directed Contractor Y, would not be personally liable. Only Developer X, who may or may not have sufficient assets to cover any liabilities to Contractor Y, could be held responsible. For this reason, using bonds and/or other methods of insurance on a project can provide additional means of payment should an owner default.

In any instance where multiple entities are involved in a construction project, understanding your rights, duties and obligations, as well as those of others on the project, is essential to avoiding potential legal ramifications in the future. This legal analysis should be done before a contract is signed and prior to any work commencing – not when a problem arises on the project and it is too late to address. This same analysis should be applied with respect to contracts between contractors and subcontractors as well. Taking the time to

fully review and understand the roles that each project participant plays is key to leading a project to its successful completion and managing problems as they arise during the process. **BG**

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FINANCIAL PERSPECTIVE

Cybersecurity: A Business Threat for Contractors

BY CHRISTOPHER MELLEN AND IAN SHAPIRO

Recent strides in the construction industry to automate processes—such as accounting, project management and Building Information Modeling (BIM) software—introduces a corresponding set of new cyber risks. Contractors are vulnerable to the same cyber threats that impact any industry—including phishing scams, ransomware attacks and distributed denial of service, to name a few. While larger construction firms have taken measures to increase cybersecurity, many small to mid-sized companies aren't fully aware of what threats they could face, or how to start hedging against them.

Compared to the financial services and healthcare industries, construction companies may not seem like a prime target for hackers, but documented cyber attacks have proven otherwise. Nine construction companies reported experiencing cyber attacks in 2015, an increase from just three incidents the prior year, according to the 2016 Verizon Data Breach Investigations Report.

In addition to proprietary employee data, other potentially vulnerable information includes sensitive client data, tenant personally identifiable information (PII) and non-public material information. Construction firms also house computer-aided design (CAD) drawings and blueprints to sensitive buildings, which hackers can exploit to inflict physical damage. From a national security perspective, firms involved in the construction of sensitive government facilities, critical infrastructure or even facilities for emergency management, public health or medical providers, could also be vulnerable to a cyberattack that might jeopardize those services.

Cybersecurity vulnerabilities in the construction industry are compounded by the growth of cloud computing and the Internet of Things (IoT). For example, as contractors move management and accounting software to the cloud, employees can access those systems on their personal devices. A breach occurring at the personal level, without the proper cybersecurity, could have severe implications for the larger cloud-based ecosystem. The same principle applies for the growing demand for smart devices, such as heating and cooling systems. With increased connectivity, the security and/or vulnerability of each individual device factors into the whole system's integrity.

Cyber under-investment and negligence can cause real financial harm to construction companies. Here are the two

key ways lax cybersecurity could turn into a business problem before a breach takes place.

1. THE COMPANY CAN'T SURVIVE AN INITIAL CYBER VETTING.

New York's Department of Financial Services (NYDFS) recently issued the "first-in-the-nation" cybersecurity regulation. Under this guidance, financial institutions are required to implement written third-party cyber risk policies and confirm strong due diligence practices are used to evaluate the adequacy of third parties' cyber practices. Contractors are increasingly asked to demonstrate sound cybersecurity practices, whether under a law such as the NYDFS cybersecurity regulations or as an emerging best practice. In addition, the standardization of third-party cyber risk assessments makes it easier than ever for companies to vet third-party vendors and contractors. Construction companies that either lack these internal controls or are unable to effectively communicate them may be unable to survive the many request for proposal (RFP) processes—or may even be ineligible to participate or prequalify for a project owner.

2. YOUR COMPETITORS OFFER MORE SECURITY.

All other things being equal and given the financial and reputational fallout from a cyber incident, clients will opt to entrust their data to contractors with strong, documented cybersecurity practices. To protect their own reputations, decision makers within the client's enterprise are likely to place a high priority on this issue, making cybersecurity an important differentiator in the marketplace.

Companies of all sizes are at risk. In 2015, 43 percent of cyberattacks were against small businesses with less than 250 employees, according to data from Symantec. The reputational and fiscal damage resulting from a cyberattack is far more impactful for small businesses. In fact, a Cyber Security Alliance study found that 60 percent of small businesses that experience a substantial cyberattack are permanently put out of business within a six-month period. Cybercriminals may specifically target mid-sized and smaller construction companies, which may not have prioritized cybersecurity like their larger counterparts. Further, it may pose a risk to large general contractors who

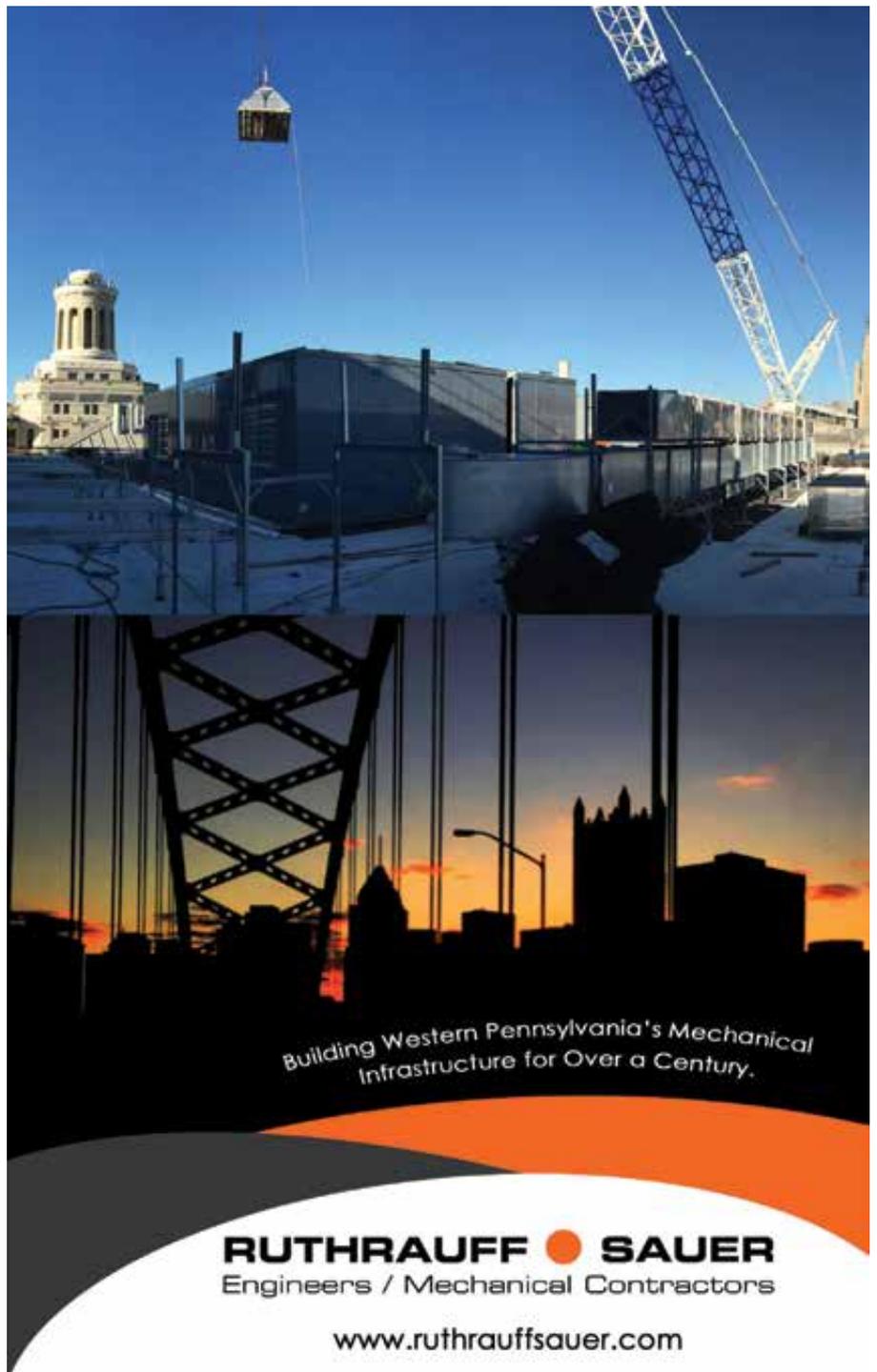
rely heavily on smaller subcontractors, who may not have properly assessed their cybersecurity.

As the construction industry ventures into the technological realm, companies can't afford to ignore cybersecurity. The first step to strengthening cybersecurity is conducting a risk assessment to understand a company's vulnerabilities and business risks. Once contractors have a baseline understanding of their cybersecurity needs, they can shore up their policies. Being able to demonstrate a commitment to strong cybersecurity practices is becoming a key issue for today's contractors, even if they've never experienced a data breach.

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MBE / WBE COMPANY SPOTLIGHT



Bill Taylor isn't the kind of business owner who was burning with entrepreneurial drive. A career steamfitter and project manager, Taylor was coming off an effort to help turn around the troubles of Professional Mechanical Sales & Service when he was approached by several friends who felt Taylor needed to consider a different path. Among the friends was an executive at a contracting company who saw a

need in the Pittsburgh market that Taylor could fill.

"They called and said with Professional Mechanical out of business there is no minority support in the industry. We can't think of any better person," Taylor recalls. "I was hesitant but he said that he'd watch me put out fires for other people my entire career. It was time for me to have my own business."

The kind words and support didn't immediately move Taylor, however. With his friend's help, Nexus Construction was incorporated on February 26, 2015. Registering a company and starting the business didn't coincide for Taylor, who was still concerned about undertaking the risk because of his belief that a mechanical contracting business needed to be well-capitalized if it was going to be taken seriously and succeed.

"I was 53 years old. My reluctance was figuring out what are we building here? What will we create so that we ultimately look back and say this is what we wanted to be? Do I want to make that commitment? I didn't want to do it halfway.

I've been doing this a long time and I know too well the perception that many contractors have of minority-owned or disadvantage businesses in Western Pennsylvania. I didn't want to be categorized like that," Taylor insists.

"I waited until October when I talked with Timmy DeGore, who is my plumbing manager. I said if he would commit to me I would consider it. He said, 'I'm in. I'll start bidding work now.'"

Taylor's confidence in DeGore was well-founded. Hoping to land \$500,000 in contracts during the first year, Nexus Construction tripled that volume. Still cautious, Taylor

pursued work that was publicly-bid or was direct to owners. He intentionally avoided reaching out to the general contractors and mechanical contractors he had worked closely with, preferring to make sure that Nexus was able to land work on its merits and successfully build that work before working the relationships that he had developed over 30 years.

Taylor spent the better part of 18 years with Limbach but was a victim of the downsizing that occurred when Enron, Limbach's parent company, imploded. After a couple years with SSM Industries, Taylor landed at McKamish Inc., spending more than seven years as project manager. He later worked as a commissioning agent for W. G. Tomko Inc. Taylor points to David McKamish as one of the executives he wants to follow as a model for Nexus' management.

"I have a lot of respect and admiration for David. If you look at what we're trying to do here you'll see some similarities," Taylor admits.

For now Nexus is staying lean. Taylor hired long-time friend Tracy Clark as his office manager. Clark worked for many years as an executive assistant in Heinz's legal department and brings administrative order to Nexus. Taylor still spends time in the field but has DeGore and Carl Berry as superintendents and Brandon Hyde as foreman. Taylor has also engaged veteran construction accountant Kevin McQuillan, of the McQuillan Group, and Danielle Proctor, former owner and founder of Amelie Construction, as a consultant to help Taylor better understand the finances of a contracting business.

Nexus Construction is signatory with Steamfitters Local 449 and Plumbers Local 27. Taylor says both locals have been extremely supportive of his efforts and have helped him succeed thus far.



Bill Taylor

In fact, it's the support Nexus has received that Taylor says is by far the biggest surprise he's encountered since starting the company. He says contractors he had little experience with, like Shannon Construction and Mosites Construction, have "rolled out the red carpet" and most of the larger mechanical contractors have looked for opportunities to subcontract portions of their work to Nexus. Although about 85 percent of the work Nexus has done in its first 18 months has been as a subcontractor, the company is now on the bid lists at UPMC and Allegheny Health Network. Taylor says he's been seeing opportunities for developer-driven

design-build work and Nexus is working for the The Davis Companies at the Union Trust Building.

The work with Davis arose from the project that has been Nexus Construction's largest contract to date, the build-out of the Eddie V's Prime Seafood at 501 Grant Street. That project involved a complicated design and a surprising number of changes because of the idiosyncrasies of the architecturally-unique Union Trust Building. Taylor chuckles as he shows photos of the restaurant's oversized, curved linear diffuser.

"That one was a first for me," he says.

Thus far in 2017, Nexus has had a successful bidding season. The contractor has been the low bidder on about \$800,000 in school projects in Fox Chapel, North Allegheny and Pittsburgh Public Schools. Nexus has an aggregate bonding capacity of \$1.5 million with a single project limit of \$750,000. Bill Taylor is still being cautious but after keeping a low profile throughout 2016, he expects to have ample opportunities to grow the right way.

"After the first year my name started to get out there. I would get calls from friends saying 'I didn't know this was you' and I would tell them that was by design," says Taylor. "I don't want this to be a minority company. Between Timmy and myself, we have many years of experience. We are a functional mechanical contractor. We're small. We're still a start up. We just happen to be a minority as well.

"Our goal is to give opportunities to those people who deserve them but might not get them anywhere else. My goal is to make everybody around me better. I want to see you succeed. I want to see our customers totally request you because of the knowledge and support you receive from us. That's what we're trying to build here. Failure is not an option here. Customer dissatisfaction is not an option here." 

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TREND TO WATCH

Bus Rapid Transit is Ready to Roll

Pittsburgh's new economy needs a transit solution. The emergence of the universities and hospitals in Oakland as job creators made that neighborhood the third largest employment center in Pennsylvania, trailing only Philadelphia and Downtown Pittsburgh.

A connection between Downtown and Oakland can accelerate the economic synergy between research and business.

For more than two decades, leaders in Western PA have proposed and entertained proposals for billion-dollar transit expansion projects that required Federal Transit Administration (FTA) funding. In today's world, the time it takes to get a project through the FTA – assuming there is money there in the first place – is no longer practical. Taking 15 years for a solution to be realized almost guarantees that solution will be obsolete.

Fully aware of the difficulty of navigating the funding system – and the problems associated with deciding where to build a major transit system – transit and government leaders from Pittsburgh turned to another emerging solution: bus rapid transit (BRT).

A BRT system uses high tech buses and existing roadways to create dedicated, limited stop bus service. The idea got legs in 2013, when a consortium of 40 stakeholder organizations began talking and sponsored a study by Parsons Brinckerhoff to look at how a BRT system would serve Pittsburgh. Since then the city and county transit leaders have met numerous times with communities and organizations that would be impacted by the BRT, especially those in the Uptown neighborhood, which had originally been skeptical about the BRT because of concerns about losing precious parking.

The process has produced results. Jeanne McNutt, executive director of Uptown Partners, says that residents of the Uptown neighborhood shared concerns about parking and the higher rate of accidents that occur as cars speed along Forbes and Fifth. She feels the communication eased the worries of the neighbors.

"The Port Authority put a hold on the BRT because it wasn't a plan that was integrated with the city planning or land use process," she notes. "Since then the city, county and Port Authority put together a memorandum of understanding to clarify what each would be responsible for."

"We've held a lot of meetings and there is an awful lot of support for this," insists Allegheny County Executive Rich Fitzgerald. "If we're going to grow it's going to be in the two biggest employment centers. If the universities are going to continue to commercialize their research, there will be growth and there's only so much capacity in that corridor."

On March 9, officials from the Port Authority announced the results of the studies and stakeholder meetings, listing the four

route options for a functioning BRT. Three of the four include a dedicated lane that would stop in Oakland, Homewood and East Liberty and reach to Wilkinsburg, while one route would end at the Cathedral of Learning. The mainline offers two options for branches that extend through Shadyside, East Liberty and Highland Park and through Squirrel Hill and Greenfield.

The final decision on the locally-preferred alternative is expected in May. Regardless of what route the system ultimately takes, there are components that are certain about the BRT.

The buses will be different from the existing PAT buses, resembling light rail cars more than buses. The existing streets will look different too. One lane of existing bus only or parking will become the wider dedicated BRT lane. It's expected that there will be a bike/pedestrian lane added in the major corridor, along with streetscape improvements. Modern glazed stations will be built at the few stops. They will be equipped with multi-modal real-time information displays.

There is a real life system operating since 2008 in Cleveland. Dubbed the HealthLine because it connects Cleveland's downtown to its hospital district, the BRT traverses nine miles along Euclid Avenue. After the BRT commenced operations, the commute between the end points of the system went from 45 to 30 minutes and began to entice private investment along the route. In decline before the BRT was built, Euclid Avenue became revitalized. Businesses gained confidence in the permanence of the BRT stations. Crime and drug traffic receded into other areas as ridership on the BRT took off, topping five million, nearly double that of the predecessor bus routes.

Fitzgerald sees the same sort of private investment following the BRT in Pittsburgh. The advantage Pittsburgh has is that the area ripe for development, Uptown, already has a plan for revitalization that is tied to the economic magnets that surround it.

"We've been gearing up the planning for the EcoInnovation District and transit is a big part of it," says McNutt.

Uptown Partners is one of a number of partners in the Uptown/Oakland EcoInnovation District, which is an effort to combine the principles of sustainable development that guide an eco district with the job creation of an innovation district. The area covered in the district is a narrow strip of slightly more than a dozen blocks long and a few blocks wide that spans the distance between the Oakland portal in the east and Uptown. Individual property owners have been pioneering in the Uptown neighborhood for a decade or more. Several entrepreneurs have taken advantage of the low cost of the properties to establish incubators or low-rent multi-tenant buildings that are well-suited for startup businesses.

The EcoInnovation District aims to be more intentional about planning for an environment that is friendly for innovative

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- 2: not an acronym.
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Investment in infrastructure for the BRT would also involve making needed improvements for pedestrian and bike safety on one of Pittsburgh's busiest corridors. Image courtesy Port Authority of Allegheny County.



companies. Access to transportation is an important component of that planning. Having the BRT run on the two main streets of Uptown would ensure transit for workers and customers of these new businesses; but the payoff from the BRT for Uptown will be in the improved infrastructure.

"We don't have a transit problem [in Uptown]. We're on the richest transit route in the region," notes McNutt. "We do have deteriorating streets, sidewalks and sewers. That can be remediated by the BRT project. Grants will include funds for the improvements."

The cost of the project is expected to be between \$200 million and \$250 million, with most estimates on the low side of that range. That cost will include buses and software, but the project will result in a major direct construction investment.

When it's operational, the BRT would reduce the travel time between Oakland and Downtown to nine minutes. That's about half the time the trip takes on average and down significantly from the 22 minutes the trip takes on average at peak rush hour; but the real selling point is BRT's reliability. While bus travel times vary wildly now, and it's not unusual for as many as three buses to be bunched together, the BRT will operate between the two neighborhoods on a regular schedule that has little variation in travel time.

Using a dedicated lane with a dedicated traffic signal eliminates the impact of other traffic. The BRT will have top priority in rush hour and the smart signals will adjust to the BRT's demand by tracking the volume of riders and estimating the time needed at stops because of the volume. Similar optimized signalization operates now on Penn Avenue using a signal system called SurTrac, which was developed at Carnegie Mellon.

"All of the infrastructure will be new," says Amy Silbermann, senior data analyst for the Port Authority. "In Downtown and Oakland that will be signal changes, pedestrian upgrades and bus lane painting. In Uptown, it will mean a full building-to-building reconstruction of the streets and infrastructure."

For a neighborhood that has seen little investment compared to other parts of the city, upgrading the major commercial corridor could make a huge difference to how Uptown is perceived by developers. If you benchmark other transit-oriented development, the kind of infrastructure improvements the BRT would bring to Uptown will spark demand for street-level retail near the BRT stops and for construction of infill office buildings as startups begin to hatch.

"The market signals about reinvestment in a neglected neighborhood like Uptown would be very positive," agrees Carly Dobbins-Bucklad, senior policy analyst for the Allegheny

Conference on Community Development. “You get these other system benefits beyond just the BRT.”

Bucklad was one of the Allegheny Conference’s staff leaders on the Regional Transportation Alliance. She was very involved with the research that went into the Imagine Transportation report that was released this past winter. One element that Bucklad likes about the BRT is its flexibility.

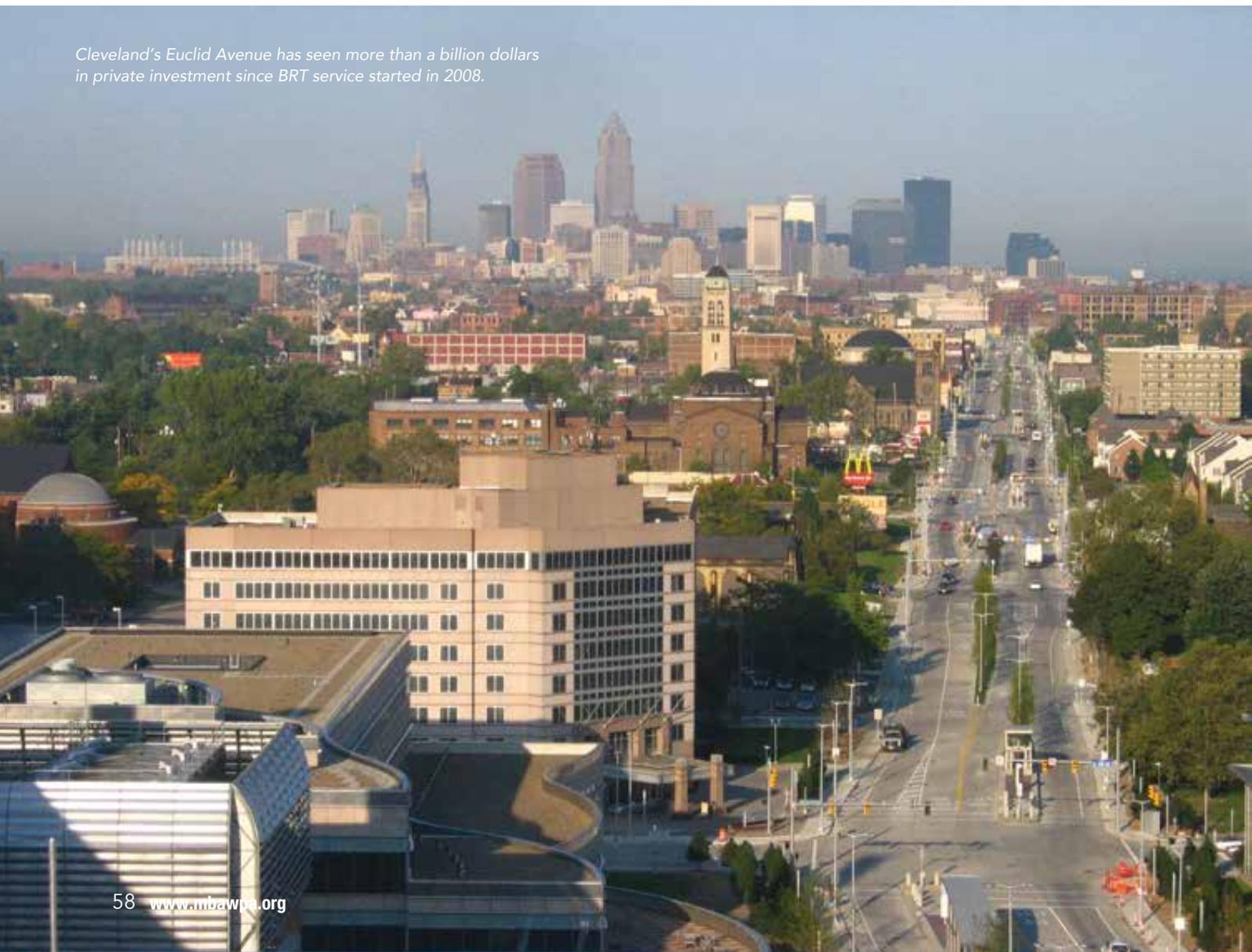
“There’s no downside to streetscaping or upgrading stop lights. If the routing doesn’t work out the way we think it will, [a BRT system] is eminently more flexible than if you built a fixed rail or roadway system,” she says.

The Port Authority plans to continue getting feedback from citizens and organizations after the locally-preferred alternative is selected. If no red lights halt progress throughout the summer, Silbermann says the first grant applications will be submitted in September. Should the Pittsburgh application be approved by the FTA, and state and regional funding is secured, construction will begin in 2019. The BRT could make its first trip around the time 2020 turns to 2021.

It is the BRT system’s flexibility and limited scale that makes it an appealing solution to a problem that may be temporary. Development of the Uptown corridor is ongoing and even if unplanned and unaided, the growth of Oakland will eventually connect the two employment centers. But without planning, that ultimate merger could take much longer than needed and take a shape that doesn’t benefit the nearby neighbors as much. It’s anyone’s guess what impact automated vehicles will have on transit in Pittsburgh’s most densely-populated areas. With a cost that is ten percent of light rail and the ability to adjust the system as it evolves, BRT represents a lesser risk to the political leaders whose support is necessary. Pittsburgh’s leaders seem to grasp that and are optimistic as a result.

“We could do light rail but that would cost \$2 billion and 15 years. We can do BRT with technology and existing streets,” notes Fitzgerald. “It’s a rail system on rubber at a fraction of the cost. I think it will score well with the Federal Transit Authority.” 

Cleveland’s Euclid Avenue has seen more than a billion dollars in private investment since BRT service started in 2008.



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BEST PRACTICE

An Ancient City Becomes a Smarter City

The convergence of technology and civic ambition resulted in a unique scanning project involving a handful of Pittsburghers and one Italian city in October 2016. Using a combination of digital tools, a 12-person team of architects, engineers, digital technicians, drone pilots, software gurus and politicians helped the ancient city of Volterra in Tuscany, Italy, begin to document its built environment. During the two-week trip, participants managed to capture the details of design and construction that took place one thousand years Before Christian Era (BCE) and learned even more about using technology to support the modern built environment.

The International Reality Capture Workshop was a collaboration between the Volterra-Detroit Foundation, Pittsburgh-based Case Technologies, which was the project's primary sponsor, Autodesk and the City of Volterra. The Volterra-Detroit Foundation is a collaboration between the University of Detroit-Mercy School of Architecture and the city of Volterra, where a residential college was established to house about 20 students in a live/study environment.

Architect/Technologist Mark Dietrick has been a board member of the Volterra-Detroit Foundation since 2010 and he helped lead the project to create a digital model of the Etruscan-era Italian city.

Dietrick, who works as director of services at Case Technologies in Carnegie, became involved with Volterra-Detroit at the request of long-time friend Dr. Wladek Fuchs, the president of the foundation. Fuchs and Dietrick studied architecture together through an international exchange program between the University of Detroit-Mercy and Warsaw Polytechnic Institute. Fuchs has long been a student of Volterra, which is the site of the oldest standing Etruscan arch (and one of only two) on Earth. Volterra is also home to a recently unearthed Roman amphitheater and a Roman theater, which was discovered in the mid-1960s.

Volterra's mayor, Marco Buselli, was a champion of the workshop. It was his hope that the project would allow Volterra

to record the architectural and cultural history of this city of 7,000 people, making Volterra a more attractive tourist destination. The city has been continuously inhabited for more than 3,000 years and has both buildings and remains that are at risk from the ravages of time and the earthquakes that shake the region. The collapse of one portion of its Medieval wall in 2014 showed how vulnerable Volterra's ancient structures were and was another impetus for the workshop.

Overriding all of the motives for the project was Volterra's efforts to receive UNESCO's World Heritage site classification. The research and modeling will allow Volterra to document and explain to UNESCO why the World Heritage classification is justified.

"We want to be able to extend the experience of that city to anyone, anywhere in the world. It is a remarkable place. Some of the most important archaeological sites that exist are [in Volterra], including one of the best-preserved Roman theaters from the first century BCE," explains Dietrick. "Certainly, the city wants to be able to showcase that. For people who may never be able to get a chance to go there, they can experience it in some way. We also want to use the digital experience to entice people to visit in person and experience it first-hand."

It was also hoped that the models could be used to address some of the deterioration that was occurring at many of the ancient structures. By using regular future scanning to monitor the ongoing condition of the structures, Volterrans could intercede before a failure might occur. The models could also be used to aid in the reconstruction or reinforcement of a failing building or artifact.

The workshop was proposed in April 2016 and took an intensive effort to plan all of the logistics. Case Technologies' owner, Touf Hassoun, saw the project as an opportunity to expose the capabilities of the technology to a broad audience and jumped at the chance to sponsor.



"When Mark came to me with the idea, I thought it was a no-brainer," says Hassoun. "I've always wanted us to have an international presence."

"From Case Technologies' perspective, we wanted to test new technology in a very challenging environment, which it certainly was," notes Dietrick.

Planning began in earnest during the spring, with Case lining up strong partners for the software and hardware to do the capture and modeling. They found a champion for the project at Autodesk in Tristan Randall from San Francisco and engaged 3D Robotics for the drones and Faro Technologies for the terrestrial laser scanners. In addition to Dietrick and Hassoun, three individuals from Civil & Environmental Consultants, Inc. – Pittsburghers Rob Sinclair and Rick Celender, as well as Matt Bainbridge from Fairmont, WV – joined the team to travel to Volterra.

The team was able to board at the Volterra-Detroit International Residential College rather inexpensively (and included great team meals and wine, which Hassoun says brought the group together to share experiences and coordinate efforts). The convenient accommodations made it easier for the team to work long days flexibly while enjoying an affordable price. Even with the advance planning and expertise of the team members, there were hiccups.

Just prior to the arrival of the Volterra-Detroit group, Italy changed its laws regarding drones. Having lined up both drone aircraft and pilots as key components of the project, the team discovered at the last minute that it would have to use local drones and pilots for that portion of the photogrammetry capture that would be done within Volterra's city limits. While there were concerns initially about changing plans for such a critical piece of the project at

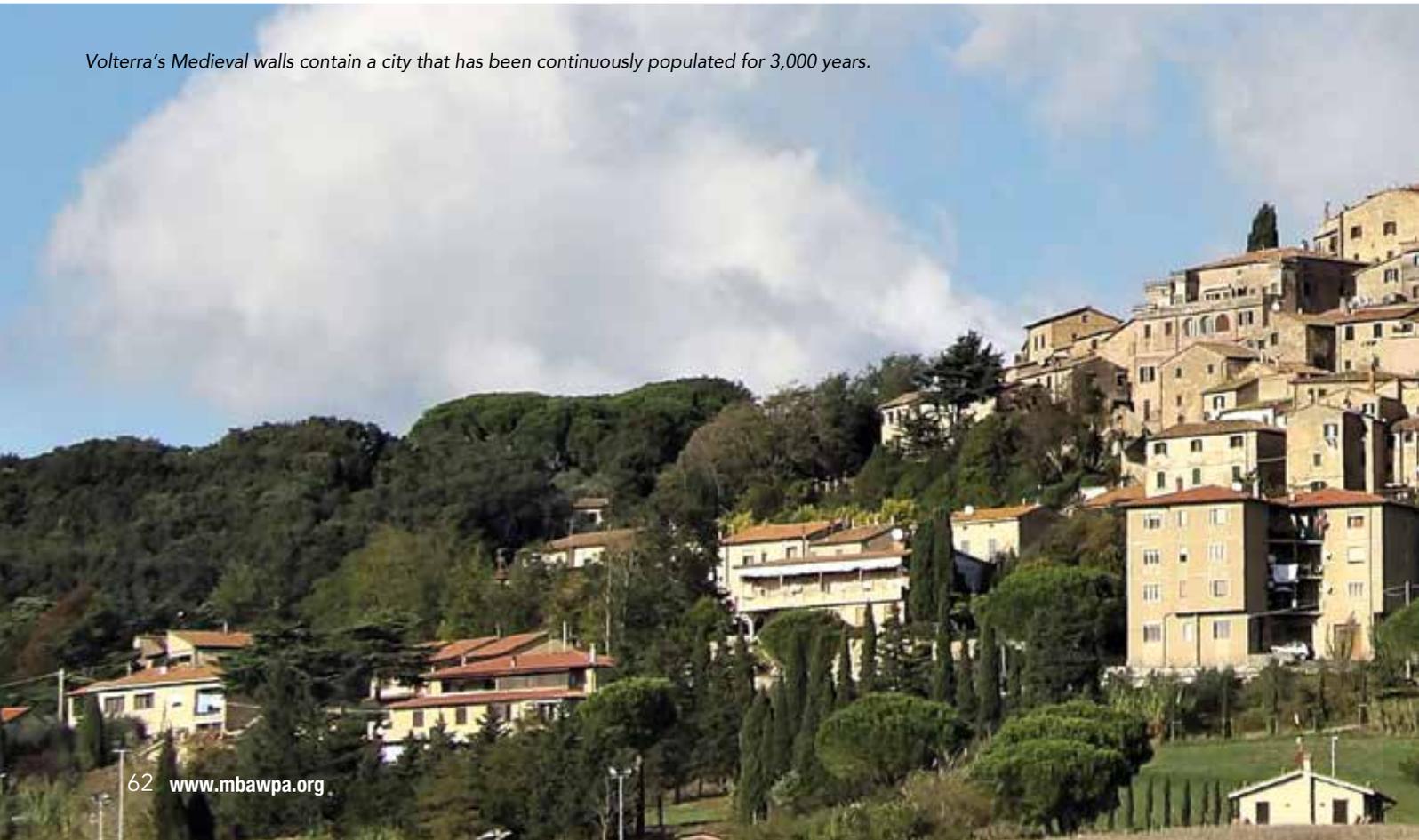
the last minute, Dietrick says Italian partners APRFlyTech were engaged and allayed the concerns with their expertise.

Once in Volterra, the International Reality Capture Workshop team met with Volterra's mayor to identify what portions of the city were important to capture. The Case Technologies/Autodesk team had its own ideas of what it wanted to record, as did Dr. Fuchs and his colleague, Giulia Monday, who is the program director for the foundation in Volterra. A plan of attack was developed and executed at three levels.

First, the team created 3D models of the important historic structures and archeological sites using 3D Robotics' drones equipped with cameras and 3D Robotics' Site Scan software. Faro laser scanners were used to capture the sites as well from ground level. Autodesk ReCap 360 software was used to produce point cloud models of drone imagery using a photogrammetry web service and also was used to register all of the point cloud data into a contiguous model. Finally, the point cloud model was converted into a textured triangulated mesh model that will be combined with geographic information system visuals like topographical surfaces, roads and rivers to create a complete 3D digital model of the city. This model will soon be accessible online for anyone to be able to experience through virtual-reality interaction.

The project team also created detailed 3D building information models (BIM) of several historic buildings by importing the point clouds into Autodesk Revit and modeling BIM objects using the point cloud for reference as if it were a "live survey." Because most the buildings in Volterra are hundreds of years old at least, few are plum or level; and weather and time have made the

Volterra's Medieval walls contain a city that has been continuously populated for 3,000 years.



condition of the materials and connections unique. Roman-era mortar still binds the masonry, while Etruscan structures used no mortar at all. All of these irregularities are recorded accurately in the scans. While this level of detail may not be practical to model in Revit, the underlay scans will supplement the BIM for reference when applicable. Ultimately BIM of important buildings may include additional information for various analytical and operational processes, but getting the structures recorded accurately was a critical first step.

"The first iteration of the model will be a visualization model. It will just be a dimensionally accurate visual record, which is important because nothing there is straight," notes Dietrick. "That was important to [Volterra] because if they do have to rebuild, they will want to do so faithfully."

Finally, Volterra's artifacts, valuable architectural details and sculptures were captured with high-resolution digital cameras and converted into 3D models using Autodesk ReMake software. The technological tool that made this phase practical was photogrammetry, the process of stitching continuous digital photographs to measure and capture objects. A series of overlapping photos are taken, roughly every ten degrees, from all angles surrounding an object or building, and the resultant calculations tie all of the overlapping elements into a 3D model or map. From a practical perspective, photogrammetry allowed the team members to use cameras or Smartphones to capture the widest range of objects as they were encountered. The photograms could also be combined with fixed terrestrial scans or drone images to create an integrated model with more detail.

"We had pretty much everybody capturing things as they walked

through the city," recalls Dietrick. "We told everybody to be on the lookout. If something grabs your attention, capture it."

The resultant models will be used for online historic exhibitions and research, as well as the opportunity to print reproductions of the individual artifacts or components where the technology is available. The latter utility was one that Dietrick found personally useful a couple of months after the workshop concluded.

"I actually captured on camera a piece of an Etruscan urn that was quite detailed and ornamental and then 3D printed it after I got home. I used it for Christmas presents," he chuckles. "I thought it would be a great present to share some of these items."

Another unintended benefit of the capture workshop involved an architectural mystery that Dr. Fuchs was finally able to solve.

Fuchs has been researching the Roman Theater in Volterra for several years already and had created his own 3D model based on physical measurements, records and even the writings of Vitruvius, the Roman architect and engineer whose theories on beauty and perfect natural proportions were the basis of Roman architecture. The theater in Volterra was laid out with most of its elements at symmetrical angles and distances that followed Vitruvian principals of proportion, but Fuchs was always troubled by several key elements that were at asymmetrical angles or non-uniform distances from other elements. Roman architecture isn't known for such randomness or carelessness. Fuchs rejected the arguments that the anomalies were accidental or site specific but had no other explanation for them, until the International Reality Capture Workshop.



The captured data allowed Fuchs to look at these out-of-order details in three dimensions. After studying them in this new way, he discovered that the anomalies were in fact fitting together in a form of complete, however previously undocumented geometric system. Fuchs is now studying other Roman theaters looking for answers about where, and why, this geometric system was also being used by the ancient architects.

Dietrick sees a modern application for the same depth of analysis and envisions using three-dimensional thinking about buildings to assess their highest value.

"I think we can probably say the same thing about any kind of retrofit project. When we undertake a retrofit or adaptive reuse project, we probably don't understand that existing building as well as we should," he says. "We're not able to see all the different aspects when we look at as-built drawings or even walk through it. When we can create a rich three-dimensional model quickly and efficiently and study it in different ways, we should be able to study more creative uses for adaptive building stock."

To that end and spurred on by the work performed during the workshop, the University of Detroit-Mercy recently won a grant to research the use of an indoor drone that it plans to use to capture

some of the abandoned buildings that unfortunately dot much of the Detroit landscape. By studying the interior architecture in detail using the models, the researchers hope to uncover best uses for buildings that could unlock higher value for the property.

Dietrick hopes that sort of value capture becomes reality, but in the meantime he is enthusiastic about how the advanced technology has become so accessible to virtually anyone. The apps that allow photogrammetry model generation (like Autodesk 123D Catch) or commercial 3D printing (like 3D Hubs) are free downloads. A digital camera or Smartphone puts the application in anyone's hands. Property managers can document a potential failure and create a model that an engineer or architect can investigate ahead of a problem. Existing buildings can be modeled and replicated precisely in the event of a fire or other disaster.

More interesting opportunities can result from the marriage of capture technology to augmented-reality technology. Field personnel armed with tablet PCs working in an already-modeled building can point the device at a wall or floor and "see" what lies behind the finished surface. The City of Las Vegas, for example, now has much of its underground utilities modeled. Workers know with digital certainty what is buried beneath the streets without exploration. That saves time, money and utility outages.



The digital wireframe image of the Etruscan arch (inset) was created through photogrammetry and fixed multi-point laser scanning. The information produced a three-dimensional image created by the building information model that was photographic in its resolution.

Rebuilding modern buildings – or even historic American structures – won't be as difficult as trying to reproduce materials and construction techniques that no longer exist. It's not hard to see a future where all buildings exist digitally in three dimensions as well as in reality. Perhaps it's fitting that some of civilization's oldest buildings helped prove that futuristic concept.

The experience definitely whetted the appetite of Case Technologies, which is developing a website dedicated to the Volterra experience. Touf Hassoun has invested in adding laser scanning equipment and software and is anxious to engage in more projects like the International Reality Capture Workshop.

"I'd love to see us do something like this in Egypt, Peru or Greece, where there are ancient cities and artifacts. I want to leverage what we accomplished in Volterra to document other amazing places for the advancement of historical preservation," Hassoun says. 

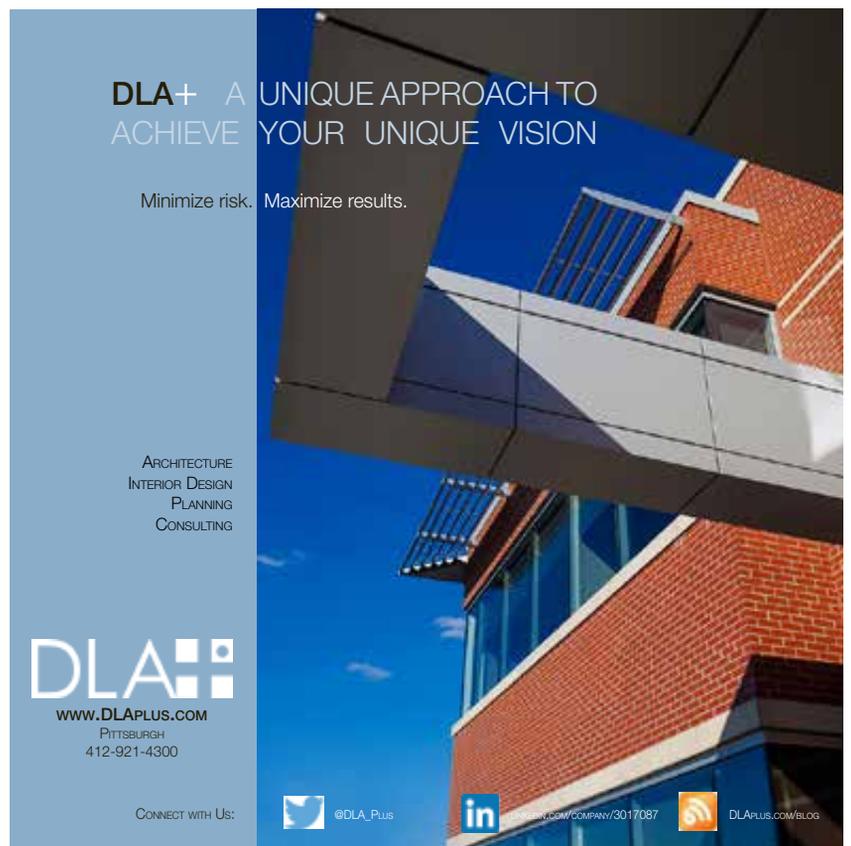



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INDUSTRY & COMMUNITY NEWS



Zak Roberts (left) and Katie Stern from A. Martini & Co. flank Wyatt's Adam Ramsey at the MBA YC kickoff.



Zach Huth from Huth Technologies (left), Brandon Mendoza from the Greater Pittsburgh Chamber of Commerce and Mascaro's Alyssa Kunselman at the PRA's "Wins-day" Annual Report Card luncheon.



GTech's Catherine Chamberlain (left) and Zaheen Hussain flank GBA's Jenna Cramer.



(From left) Peter Walker, Charles Montgomery, Mike Schiller, and Chris Koch



Yasa Petrunak (left) from AE7 and Mary Rose Hopkins from LGA Partners at the April 26 CREW breakfast.



Project manager Zak Roberts and superintendent Kenny Houser (in hard hats in back row) from A. Martini & Co. hosted a Construction Show-and-Tell for students and parents at the Riverview Children's Center. Photo by Mike Leonardi, Candidly Yours.



On Friday, April 21, the associates at The Hayes Design Group - Architects held its second annual "Adopt-a-Landmark program." During the day the firm volunteered at the Woodville Plantation in Bridgeville, PA. Volunteers worked with the Plantation's Facilities Manager to plant, weed and clean-up the landscapes surrounding the Plantation and also replace railroad ties and colonial-style snake fencing.



Millcraft's Lucas Piatt (left) and CBRE's Jeffrey Ackerman at the Pittsburgh Downtown Partnership's annual State of Downtown event.



Jendoco's Chris Klehm (left), Stantec's George Halkias and Christine Mondor from Evolve EA at the Pittsburgh 2030 District annual report.



Brooks Robinson Jr. from the Pittsburgh Cultural Trust (left), Allen & Shariff's Paul Messineo Jr., Anna Siefken from Carnegie Mellon and the Cultural Trust's Ben Boggio (right).



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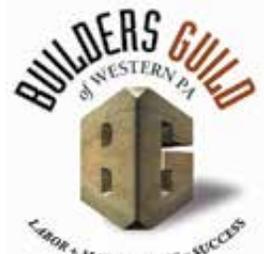
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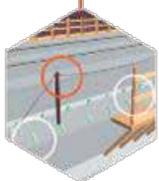


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AWARDS & CONTRACTS

Nello Construction was awarded the general construction contract for the new \$24.7 million Latrobe Elementary School. Axis Architecture designed the 125,000 square foot facility.

Landau Building Company was awarded the Petuum new offices project, located in Oxford's 3 Crossings development in the Strip District. Landau is executing an interior-fit out of existing shell space on the second floor to create the new offices. Construction is expected to be completed by early April 2017. Perkins Eastman is the architect.

Landau Building Company was awarded renovations to the Jewish Healthcare Foundation QIT Space, located in downtown Pittsburgh. The 3,300 square foot interior renovations include a new restroom, installing a canopy to the deck area, installing a new cloud system in the conference room, and other minor interior updates. Solar film will be added the windows as well. The architect of record is Stantec.

East Liberty Presbyterian Church selected **Landau Building Company** as contractor for the renovations to its church and offices. The architect for the \$5 million program is Pfaffmann + Associates.

Dick Building Company is the general contractor for the \$20 million 327 Royal Palm Condominium in Boca Raton, FL. The 24-unit residence is being developed by Group P6. Vander Ploeg & Associates is the architect.

Over the summer recess **Rycon's Special Projects Group** will renovate a 2,300 square foot coffee area in the Student Union at Duquesne University. Perkins Eastman is the architect.

In May, **Rycon's Special Projects Group** will begin a \$2.8 million multi-phase renovation of Duquesne University's Assumption Hall. Scope includes upgrades to the bathroom and laundry rooms on each of the five floors. The whole project will be phased over a two-year span with each phase lasting three months.

Rycon's Special Projects Group is the construction manager for an anatomy and physiology lab renovation in Crawford Hall at the University of Pittsburgh. Work is slated to begin mid-May. IKM Architects is the designer.

Rycon was selected to renovate two Burlington Coat Factory stores in South Carolina and Florida. The combined value of the work is \$5 million.

Jones Lang LaSalle selected **Rycon** to construct two new Chase Bank branches totaling \$3.3 million. Both projects are simultaneously underway in Ocala and Longboat Key, Florida.

Rycon was awarded a \$1.3 million contract to complete tenant improvements for Metro Chef, a 44,300 square foot wholesale restaurant distributor, in Duluth, Georgia.

Mascaro's Client Services Group will renovate 14,000 square feet of West Penn Hospital's Mellon Pavilion, fourth floor, for the Esophageal and Lung Institute, as well as the neurology department.

Mascaro's Client Services Group is in the final phase of concourse lobby renovations at The Pennsylvanian.

First Energy recognized the Bruce Mansfield Dewatering Building project team for their safe work efforts at the First Energy Generation Tripartite Safety Forum. **Mascaro** was the general contractor and worked in excess of 301,499 man hours with zero recordable injuries.

Mascaro was a finalist in the national 2017 Associated General Contractors' Willis Towers Watson Construction Safety Excellence Awards and finished second in the one million plus work hour category. This award recognizes construction companies that excel at safety performance. Criteria is based on management leadership, employee participation, hazard identification and assessment, hazard prevention and control, information and training, program effectiveness, and innovation and new technology.

On April 1, **Mascaro Contracting** received the 2016 Safety Award presented by Constructors Association of Western Pennsylvania and Heavy & Highway Construction Industry Advancement Program. It was in recognition of no lost time accidents and an incident rate below the national average.

Franciscan University of Steubenville awarded a contract to **Jendoco Construction Corporation** for renovations to Egan Hall. The architect for the \$4 million project is MacLachlan Cornelius & Filoni Architects & Planners.

Pittsburgh Theological Seminary selected **Jendoco Construction** to provide preconstruction services for its library project. The \$10-12 million project is still in early design. VEBH Architects is the architect.

Philips North America, LLC has selected **PJ Dick** to provide construction management services for its new 11,000 square foot Pittsburgh Digital Hub project in Oakland. The architect is Perkins Eastman.

The Pittsburgh Area Chapter of ACI awarded **PJ Dick's** Self-Perform Group the Excellence in Concrete Project Award for its work on the Frick Environmental Center project. This is the second year in a row that the Self-Perform Group has received this top honor.

Holy Family Parish and the Diocese of Greensburg awarded a \$940,000 contract to **Volpatt Construction** for the renovations and restoration of Holy Family Catholic Church in Latrobe. The architect is RSSC Architecture.

University of Pittsburgh awarded **Volpatt Construction** a \$1.9 million contract for renovations to the Cathedral of Learning 14th Floor. Strada Architecture LLC is the architect.

Volpatt Construction was the successful contractor on the \$928,000 GSPH Level 4 EOH Pavilion renovation in Parran Hall at the University of Pittsburgh. The architect is Renaissance 3 Architects/Wilson Partners.

Allegheny Valley School District selected **Massaro CM Services** as construction manager for its \$6 million Acmetonia Elementary School. The architect is the Foreman Group.

UPMC awarded a \$5 million contract to **Massaro Corporation** for the renovations to its Kaufmann Medical Building in Oakland. IKM Inc. is the architect.



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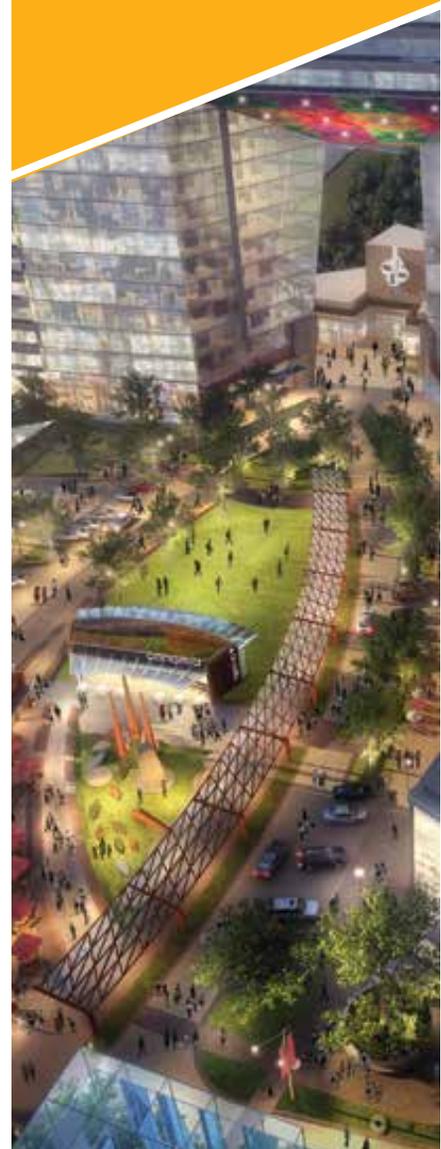
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AWARDS & CONTRACTS

G. M. McCrossin Inc. was the successful bidder on the \$9.2 million sewage treatment plant expansion in Mercer, PA. The engineer for the project is Gannett Fleming Inc.

Volpatt Construction was the successful contractor on the University of Pittsburgh's \$2.4 million Victoria Hall Skills/Sim Lab renovation. The project was designed by EYP Architects and Engineers.

Burchick Construction was awarded a \$2.4 million contract for exterior renovations to UPMC Heritage Place in Squirrel Hill. The project was designed by StructureTech Engineering.

Burchick Construction was awarded a contract for tenant improvements at Schenley Place for the University of Pittsburgh's School of Engineering. The architect is Desmone Architects.

North Hills School District awarded **DiMarco Construction Co. Inc.** a contract for the general trades portion of its \$2.4 million McIntyre Elementary School addition. The architect is Eckles Architecture & Engineering.

DiMarco Construction was awarded the general construction contract for Butler County Community College's \$2.2 million children's learning center. DPH Architecture designed the 6,600 square foot addition and renovation project.

UPMC selected **Turner Construction Co.** as construction manager for its new \$111 million patient tower at the UPMC Hamot facility in Erie, PA. The architect for the project is Bostwick Design Group.

A. Martini & Company was awarded the contract for the Cookson Peirce expansion at the Omni William Penn office building. The architect for the 5,000 square foot renovation is Lab 8 Designs.

TEDCO Construction Corp. was awarded a \$1.5 million contract for the renovation of SMS USA office space. The Design Alliance is the architect.

FACES & NEW PLACES

Rycon Construction added three staff accountants to the company. **Courtney Brownlee**, **Asa Costelnock**, and **Melanie Nichols** bring a total of 19 years' experience to Rycon.

Lydia Rosario, an experienced administrative assistant, was recently hired in **Rycon's** Ft. Lauderdale office.

Senior project manager **William 'Skip' Stein** joined **Rycon's Building Group**. He brings 20-plus years' relevant industry experience to the team.

Dan Stephens, a graduate of Penn State University, has been hired as a project manager within **Rycon's Building Group**. He holds a degree in Mechanical Engineering and has 18-plus years' experience.

Within **Rycon's Building Group**, **Kevin Shaffer** was promoted from assistant project manager to project manager and **Justin Delmaster** was promoted from assistant project engineer to project engineer.

Holly Madeja joined **Mascaro** in April as a project accountant. She is a graduate of The Pennsylvania State University with a bachelor's degree in Business Accounting and previously worked for a technology firm.

Wallace Cogley joined **PJ Dick** as an MEP project manager. Walter has 43 years of experience in the engineering and construction industry. He will provide MEP coordination for PJ Dick's work on the 340,000 square foot Erie Insurance Headquarters Building in Erie, PA.

John Leuch joined **Massaro Corporation** as director of preconstruction, planning and logistics.

Meyer, Unkovic & Scott welcomes **Maxwell Briskman Stanfield** as an associate to our Real Estate & Lending and Corporate & Business Law Practice Groups. Prior to his earlier law firm experience in Pittsburgh, Stanfield worked as an intern in the legal department of CBS Corporation in New York. Stanfield earned his J.D. from Southwestern Law School in Los Angeles, and B.A. from Washington & Jefferson College.



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Upcoming Events

- | | |
|----------|--|
| May 18 | Connect with CREW, Networking Event, Workscape, Inc. |
| May 23 | Luncheon Panel, Omni William Penn Hotel |
| June 13 | Escape the Room, Networking Event, South Side |
| June 23 | CREW/NAIOP Annual Clays Shoot, Seven Springs |
| August 7 | Annual Golf Outing, Birdsfoot Golf Club |

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We hope to see you at one of our luncheon panels or other exciting events!**

Sponsorships are still open for 2017!

Please contact Valerie Kamin, our Sponsorship Director, at vbk@muslaw.com.

Contact Alicia Smith, our Chapter Administrator, at admin@crewpittsburgh.com with any questions.

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CLOSING OUT

BY MAYOR WILLIAM PEDUTO

Innovation is in Pittsburgh's DNA. From the invention of the industrial processes that allowed steel to be affordably mass-produced to the scientific minds that created the vaccine for polio to the construction of the first leg of the nation's interstate highway system -- our city was built on innovation. That fire to create and build led to an explosion of industry and wealth, and a rapidly growing population from the early 1920s to the 1950s. In that period, Pittsburgh produced more than fifty percent of the nation's steel, held the second highest bank assets in the country, and was home to nearly as many corporate headquarters as Chicago and New York City. In 1950 our population was more than twice what it is today.

Pittsburgh also knows the seismic changes that innovation can bring better than nearly any other city in the United States. The collapse of domestic manufacturing in the 1970s and 1980s left the city a shell of its former self, hollowing out neighborhoods and decimating the tax base for a generation. To make matters worse, this economic collapse capped off a period of well-intentioned but sometimes counterproductive urban renewal in transportation and housing that cut highways and bridges through the hearts of vibrant, diverse communities and concentrated low-income residents in socially and economically isolated housing projects. In the course of a decade, Pittsburgh's trajectory flipped from unbridled growth to managed decline. However, through sheer force of will and a tradition of institutional coordination, Pittsburgh bent the curve and has today emerged as a national leader in education, healthcare, and advanced industries, and we have begun to reinvest in infrastructure for the next generation.

Today, we are on the cusp of a new revolution in transportation and informa-

tion technology that has the potential to again reshape the urban environment and our way of life. Pittsburgh's new approach to transportation and "smart city" technologies will place us on the leading edge of that revolution and allow us to adapt in ways that will avoid the mistakes of the past and improve safety, enhance mobility, and address climate change. Our critical transportation infrastructure can no longer be viewed as just a means of travel -- it must evolve into a resilient network that connects people to opportunity and accelerates innovation and data driven decision making.

The US Department of Transportation Smart City Challenge last year demonstrated just how far Pittsburgh has come in its transformation. We competed against cities across the country for a chance at millions to upgrade our infrastructure using new technologies. Pittsburgh was a finalist in the challenge, competing against some of the most advanced cities in the country like Denver and San Francisco. While we weren't successful in the challenge, we have made significant progress, and have already begun implementing parts of our proposal.

Smart Cities are not just about the deployment of new technology for technology's sake. At the core of our approach is a people-first strategy prioritizing interventions that will improve the lives of our residents. For example, many residents are still without adequate transportation options or lack safe routes to access them, leaving them isolated and disconnected from opportunities that others Pittsburghers enjoy. The goal of our investments and partnerships is to deploy infrastructure and assets to address such challenges, while keeping people at the center of our strategy and planning at all times.

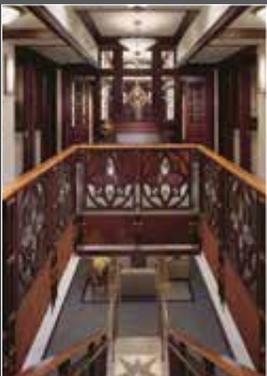
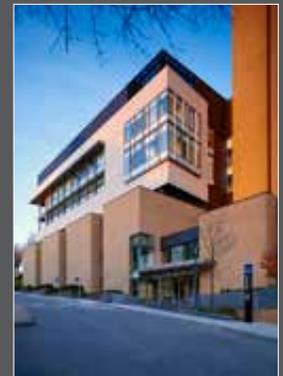
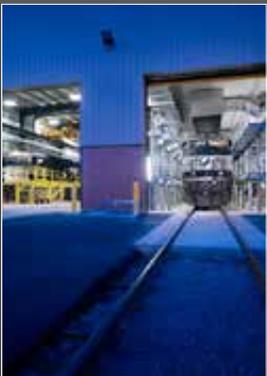
The first step to creating a truly Smart-PGH is developing our network of key



Mayor Peduto

"Smart Spine" corridors -- layering environmental, communications, energy, and transportation infrastructure supported by an array of technology -- to improve connections between neighborhoods and major centers of employment. With these efforts, the City of Pittsburgh will accelerate our work to improve safety, enhance mobility, address climate change, and enhance opportunity. Indeed, we're laying the groundwork for a truly 21st Century vision: a connected city that provides efficient, affordable, safe, and clean access to jobs and services to all of our residents. We're learning from the past, and evolving from who we once were. With our spirit of innovation guiding us, we know that if it's not for all, it's not for us. **BG**

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