Breaking Ground

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PUBLISHER'S NOTE

Well, that certainly escalated quickly.

In the 14 years I've been writing this column a pattern of behavior has emerged that is very consistent. I've either got something in my head that gets written early, or this note is the last thing I prepare in the cycle. For this edition, I'm really happy it's the latter.

I had begun writing this column in the days after the Federal Reserve Bank cut their Fed Funds rate by a half percentage point in response to the coronavirus. This Publisher's Note was going to be something of a rant about the foolishness of that move and a call to calm down in the face of unnecessary panic. I'm glad I procrastinated. Generally, I don't want to write about fast-changing subjects. The coronavirus is something that can't be ignored but boy is it changing quickly.

The principal threat of COVID-19 is to our health, not the economy. It will be a gargantuan task to manage the healthcare impact of the pandemic. To begin with, the lack of early information about COVID-19 creates an environment in which those who view the outbreak as nothing more than another common flu are hard to prove wrong. It may be that those people aren't wrong but that viewpoint encourages behavior that will make the virus spread dangerously fast and far. My own view is that COVID-19 is quite serious, especially since it appears that many people have contracted the virus and recovered without any symptoms, while being just as contagious as anyone displaying symptoms.

Regardless of how well we contain the threat to our collective health, there will almost certainly be an economic threat too. Because the most effective strategy for dealing with COVID-19 is individual isolation, there will be a hole in the economy for a while. That hole – the lack of demand for goods and services – will probably cause a recession.

It seems likely that most establishments will be shut down for some period of time. This will be damned inconvenient for most of us. It will also be economically devastating for many. Employees whose livings depend upon their employers being open – bartenders, retail sales people, and construction workers for example – will be vulnerable to losing their paychecks. Those are the people we need to be mindful of as this thing moves through the U.S. I hope we have a safety net for those who need it.

The safety net will need to be more than that which the federal government provides. Policymakers will face great difficulties in dealing with the economic impact of the crisis. Even in an environment of bipartisan cooperation, which does not describe the current environment, the pace of the outbreak's spread makes it difficult to gather and evaluate data. Political response tends to be slow moving. In the case of workers facing unemployment as a result of social distancing or quarantine, policy decisions meant to minimize downstream economic damage will need to be made early in the disruption. That probably means by April 1. If the initial recovery aid package is any indication, this Congress may not be up to the task.

Unlike in 2008, the root of the crisis is not that people are afraid to spend; it's that they will be unable to spend. After a few weeks, that dynamic will shift to fear. There are ways to mitigate the economic damage and prevent what might be a technical recession from becoming a deeper economic crisis. Those ways involve keeping vulnerable people and businesses solvent:

- Guarantee paychecks. Whether this is through corporate goodwill or government backing, make sure workers can pay their rent or buy groceries.
- Prop up small businesses. Millions of businesses are going to be at risk of failure because their customers aren't able to patronize or pay them, not because they were managed badly. Bail out Main Street while bailing out the airlines. Postpone quarterly tax payments through June. Take measures to reduce the impact of lost revenues.
- Reimburse the healthcare system. Federal backing of state-level expansions of Medicaid will remove barriers to examination and testing. The lack of testing has been an enormous problem for those trying to mitigate COVID-19. As testing becomes available, remove all barriers that might exist.
- Open up trade. Suspend the tariffs that are in place so that the supply chain has a chance to recover as quickly as possible. Disruptions from the pandemic will be bad enough. Help businesses make things again once the dust settles. Go back to trade wars later.

The Federal Reserve Bank's response to the outbreak – and likely the pressure from the White House – has emptied its holster. Dropping interest rates down to 2009 levels will help with businesses that borrow to get through this year and will help the government to issue more debt. There's little else low rates will do. The economy needs a safety net, not a stimulus.

COVID-19 is going to leave a mark on the economy. The steps we take over the coming month or so can prevent businesses from closing and layoffs from mushrooming. We in the private sector can make decisions that are selfless to help ensure that the pain is short-lived. I hope the government takes wise steps. We can impact that too by telling our representatives what we want them to do. That may give them the courage to act selflessly too.

By the time you're reading this my effort to write something relevant about such a fluid situation may seem foolish. Next time we have a pandemic, I'll write about those darn bike lanes.

Jeff Burd

REGIONAL MARKET UPDATE

Dollar Bank
Since 1855

A combination of factors has boosted the start of 2020, giving hope that the market will move another level higher in the coming year. While the prime bidding market is lukewarm compared to the normal winter activity, specialty contractors and suppliers have seen an increase in bidding from projects that had previously been designed and budgeted for which construction documents had not been released. Another positive has been the release of early packages on major projects, like the billion-dollar airport Terminal Modernization Program and the U.S. Steel Edgar Thompson Works, which will unfold over the next 12-18 months.

Before looking more at the start of 2020, it's worth examining 2019 a final time before closing the books on the year.

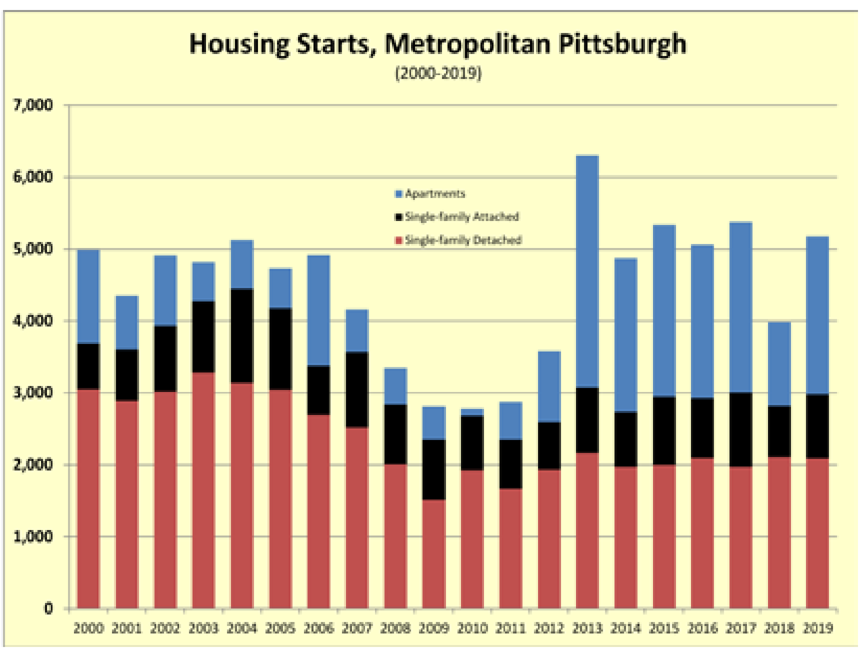
The housing market remained very healthy but short on supply, both for new construction and existing homes. Prices on homes appreciated between five and eight percent, depending on whether the home was existing or new. The supply of homes on the market shrunk further to 3.1 months. Construction of new single-family homes fell slightly to 2,957, down 27 units from 2018. There was a 4.7 percent decline in single-family detached homes, as builders continued to struggle to find available lots and buyers struggled to find homes priced below \$250,000. New construction jumped 25 percent overall, due to an increase of 94 percent in multi-family units built.

The 2,200 units of multi-family was a return to the level of construction that has been the norm since 2013, reversing the decline to 1,164 units in 2018. With a backlog of more than 3,500 units of multi-family in the 18-month pipeline, it's likely that 2020 and 2021 will see construction of at least 2,000 units. With Pittsburgh's demographics supporting growth in the two cohorts that make up the lion's share of renters – those over 55 and under 35 – the multi-family market has support for a few more years of increased construction.

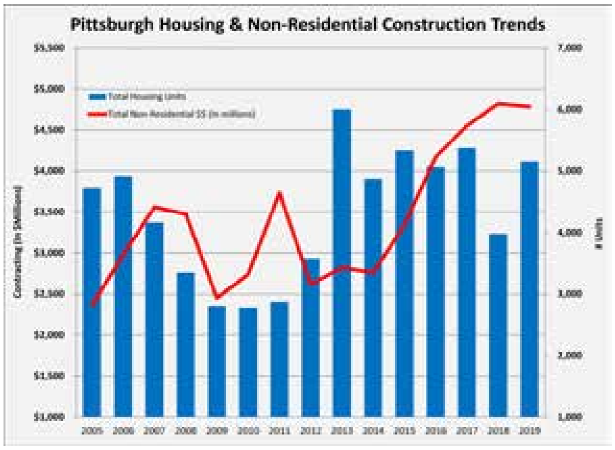
Nonresidential construction was strong but tempered by indecision from owners during 2019. The year began in the aftermath of a 20 percent stock market correction that resulted from the government shutdown and the December 2018 Federal Reserve Bank rate hike. Although fears of an imminent recession melted away quickly after the winter, higher construction costs and worries about available labor led to delays in releasing projects throughout the year. Perhaps ten percent of the potential construction volume eroded during 2019 due to these sorts of delays. That will have an impact on the financial performance for contractors and the supply chain.

Commercial and nonresidential construction volume was slightly lower in 2019, totaling \$4.78 billion compared to \$4.82 billion in 2018. Construction put-in-place at the Shell Franklin plant in Monaca accounted for nearly 29 percent of the 2019 volume. Healthcare construction was the busiest sector, at \$799 million. Office construction accounted for \$519 million and industrial (excluding the Shell cracker) hit \$420 million. Multi-family projects totaled \$316 million. Although the college and university market is facing choppy waters (more on that on page 28), there were \$323 million in projects in that sector in 2019, nearly double the \$169 million spent on K-12 construction.

Like for most years in the previous decade, commercial real estate drove the construction market in 2019. There are some metrics that suggest that commercial real estate may not see growth in the coming year.



Multi-family rebounded in 2019, leading to an increase of 25 percent in new construction. Source: Pittsburgh Homebuilding Report.



As noted, the pipeline of multi-family projects is full coming into 2020. Investors are bullish on the apartment market and there is a significant amount of out-of-town capital and debt targeted at the Pittsburgh market. Even with these positive factors, growth of new multi-family construction will be limited by the supply of skilled labor and the relatively high level of construction already underway. Likewise, demand for industrial properties is already high, meaning that growth in industrial property construction will be less than ten percent, even though available space in Class A industrial property is virtually nonexistent.

Against the limitations of growth in the multi-family and industrial sectors, there is growing softness in the office, retail, and hotel sectors that will be a drag on higher construction volume in commercial real estate overall.

Office construction, which is the largest segment of the commercial market, is facing headwinds from flat employment growth. The technology sectors emerging as economic drivers in Western PA are also driving growth in office space. This is especially noticeable in the micro-markets that have become magnets for emerging tech companies, primarily because of the proximity to the universities in Oakland. Absorption in the Strip District, Lawrenceville, East Liberty, Oakland, and the nascent Hazelwood Green development has been strong. Virtually every new development in projects in these so-called "innovation corridors" has leased up prior to the completion of construction. This strong demand is showing up in rents.

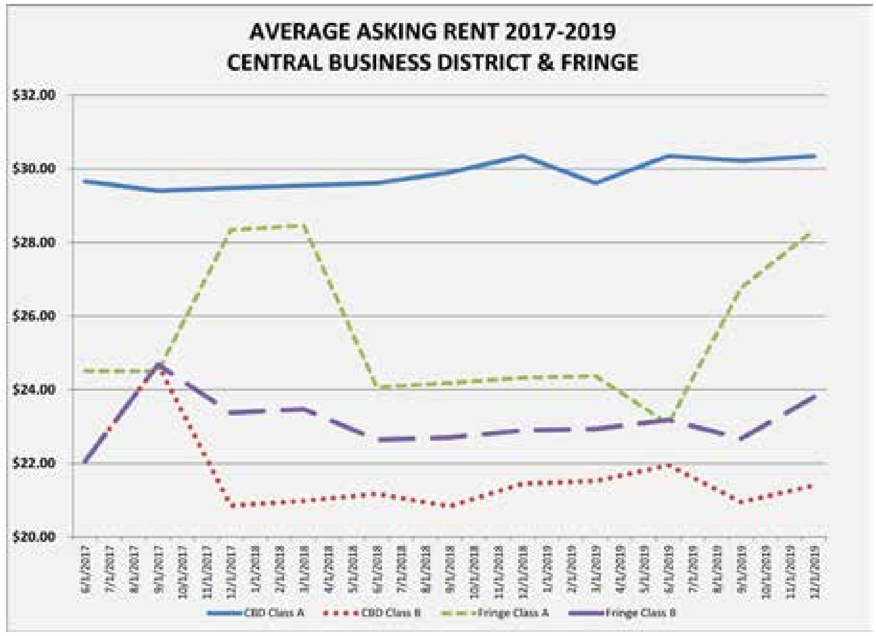
Jerry McLaughlin, executive managing director brokerage for Newmark Knight Frank, pointed out that the average rent for Class A space in the urban fringes was $34 per square foot, compared to $30 per square foot in the Central Business District (CBD). McLaughlin also noted that while the Downtown market faced challenges from declining occupancy and slow demand, rents still increased in 2019.

The strong performance of office development in the urban fringe neighborhoods helped offset the softness in the CBD.

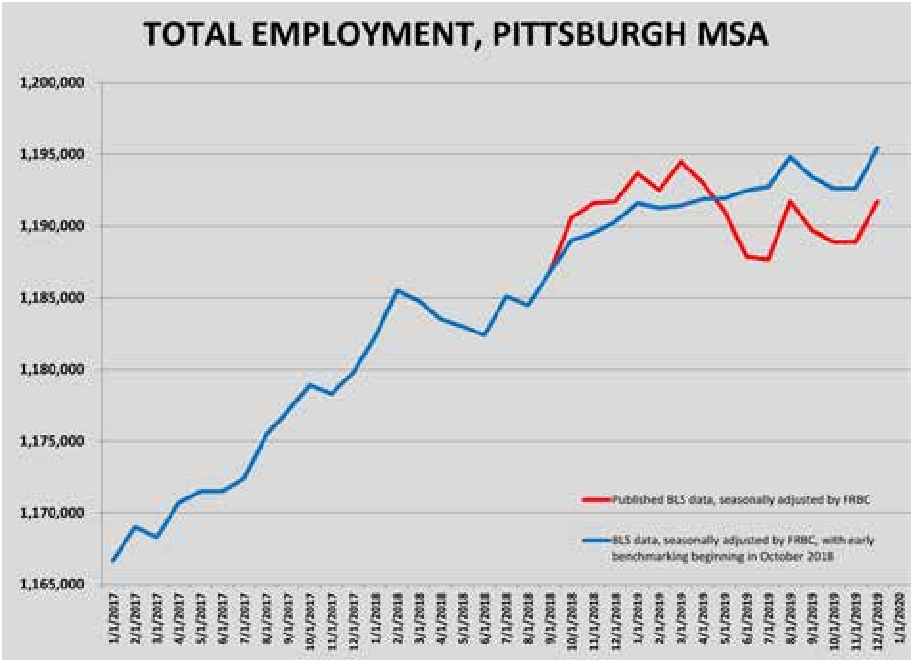
According to Newmark Knight Frank, absorption of office space in 2019 was a net positive 190,133 square feet. This gain was in spite of a negative 600,000 square feet of absorption in the CBD.

Office space demand is a reflection of office job growth. The dynamics of the office market in 2019 (and for 2020 most likely) mirror the activity in hiring in Pittsburgh. Pending final revisions from the Bureau of Labor Statistics (BLS) in April, job growth in metropolitan Pittsburgh is expected to be less than 1,000 jobs. The Federal Reserve Bank of Cleveland, using an early benchmarking methodology that has proven to produce results closer to the final BLS figures, estimates that the job growth was slightly over 5,000 jobs.

The weak year-over-year results do not mean that the market was unchanged. The high demand for space in the innovation corridors reflects the strong employment gains in service sectors, particularly in information technology, which saw a 2.5 percent increase. Offsetting those gains were pull backs



Average asking rents turned sharply higher in the CBD Fringe during 2019, while CBD rents ticked up slightly. Source: CBRE, Pittsburgh Downtown Partnership.



Source: Bureau of Labor Statistics (BLS), Federal Reserve Bank of Cleveland (FRBC).

in most other sectors, including manufacturing, energy, education, financial services, and healthcare.

Employment also grew in the leisure and hospitality sector, including a 0.3 percent increase in retail jobs. While regional consumer confidence and spending data is scarce or unreliable, the job growth in these sectors of the local economy is driven by consumers. Higher spending in stores, restaurants, theaters, and recreational activities occur when people are comfortable with their discretionary income and confident about the near future. Even though unemployment grew to 4.5 percent region-wide, consumers were buoyed by wage growth that outpaced the national average and was nearly double that of inflation.

Higher unemployment was mostly a result of gains in the labor force. The year-over-year expansion of the workforce of 4,200 people does not represent a reversal of the long-term stagnation. The 1.2 million workers in the total labor force matches the total number of jobs in the region, meaning that without significant increases in population – specifically working age population – employment growth is unlikely in 2020.

PNC economist Kurt Rankin, writing in Pittsburgh Quarterly, characterized the Pittsburgh economy as strong in 2020, but cautioned that the tight labor supply would act as a governor on the growth potential for the region.

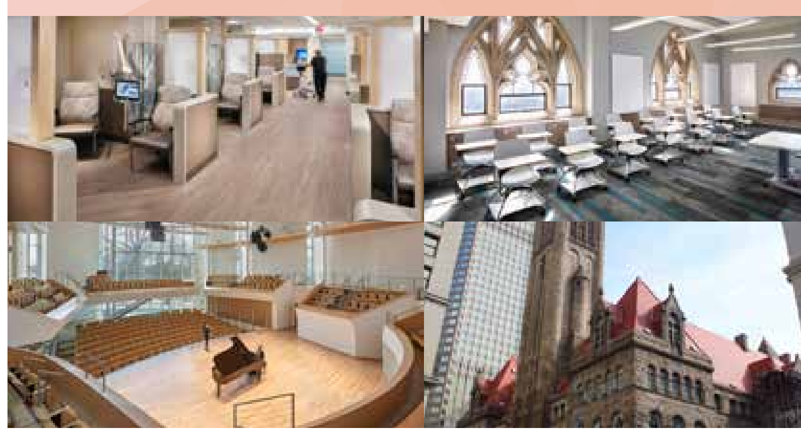
The lower economic growth is not showing up in the construction industry thus far in 2020. Progress on the mega projects – Shell Franklin plant, PIT Terminal Modernization Program, and US Steel Edgar Thompson Works – will push roughly $2 billion in construction or bids into the market. Several of Pitt's $100 million-plus projects that were contracted last year will go to bid and start construction by the third quarter (work on Scaife Hall has begun.) Several major commercial projects have moved off the drawing boards into construction. Bids have been taken on the $70 million Vision 15 in the Strip, Walnut Capital's $100 million Fifth and Halket research building, being built by PJ Dick, and Oxford's 3 Crossings 2.0, being built by Rycon Construction.

Through 60 days, construction starts have totaled more than $700 million (not including any estimate of construction put in place at Shell Franklin). This tally includes three apartment projects of $35 million or more, several new manufacturing projects of $25 million or more, and an average construction cost of $8.3 million. The elevated volume of construction may be getting a lift from the favorable weather, but most of the projects underway were on track to start in the first two or three months of 2020. Notable is the lack of major K-12 projects in the totals.

Notwithstanding the potential disruption from the COVID-19 virus (the first cases in Western PA were detected as BreakingGround went into production), construction volume of $4.5 billion or more is mostly baked into the 2020 forecast. As of early March, architects were reporting strong volume of requests for proposals and land development engineers were reporting no drop-off in opportunities. Most specialty trades had some skilled workers returning to the bench at the beginning of the year, meaning that there was a supply of labor that could pick up the higher volume. With spring about to begin, the construction market looks as strong as expected in 2020. BG

BUILDING EXCELLENCE AWARDS 2019

AWARD WINNERS



NEW CONSTRUCTION OVER $25 MILLION

PHOTO BY ALBERT VECERKA, ESTO PHOTOGRAPHICS

PROJECT:
Carnegie Mellon University, David A. Tepper Quadrangle

CONTRACTOR:
PJ Dick Inc.

OWNER:
Carnegie Mellon University

ARCHITECT:
Moore Ruble Yudell Architects & Planners

MBA SUBCONTRACTORS:
Amelie Construction & Supply, LLC
Century Steel Erectors Co., LP
D-M Products, Inc.
Easley & Rivers Inc.
Franco Associates
Flooring Contractors of Pittsburgh
Giffin Interior & Fixture, Inc.
Lighthouse Electric Company, Inc.
Massaro Industries, Inc.
McCrossin Foundations, LLC
McKamish, Inc.
Noralco Corporation
Phoenix Roofing, Inc.
Specified Systems, Inc.
T. D. Patrinos Painting & Contracting Company

NEW CONSTRUCTION BETWEEN $10 AND $25 MILLION

PROJECT:
Bobby Rahal South Hills Jaguar-Land Rover Dealership

CONTRACTOR:
Dick Building Company

OWNER:
Bobby Rahal Automotive Group

ARCHITECT:
Dean Hess

MBA SUBCONTRACTORS:
Century Steel Erectors Co., LP
Master Woodcraft Corporation
Redstone Flooring, LLC
Schindler Elevator
T. D. Patrinos Painting & Contracting Company

NEW CONSTRUCTION UNDER $10 MILLION


DENMARSH PHOTOGRAPHY INC.

PROJECT:
Carnegie Library of Pittsburgh, Carrick Branch

CONTRACTOR:
Massaro Corporation

OWNER:
Carnegie Library of Pittsburgh

ARCHITECT:
Thoughtful Balance, Inc.

MBA SUBCONTRACTORS:
Century Steel Erectors Co., LP
Marsa, Inc.
Massaro Industries, Inc.
Schlaegle Design Build Associates, Inc.
Specified Systems, Inc.
T. D. Patrinos Painting & Contracting Company

RENOVATION CONSTRUCTION OVER $10 MILLION


IKM INC.

PROJECT:
WVUM Rockefeller Neuroscience Institute Center for Innovation

CONTRACTOR:
Landau Building Co.

OWNER:
West Virginia University Medicine

ARCHITECT:
IKM Inc.

MBA SUBCONTRACTORS:
D-M Products, Inc.
Easley & Rivers Inc.
Flooring Contractors of Pittsburgh
Giffin Interior & Fixture, Inc.
Harris Masonry, Inc.
Lighthouse Electric Company, Inc.
T. D. Patrinos Painting & Contracting Company

RENOVATION CONSTRUCTION BETWEEN $5 AND $10 MILLION

DENMARSH PHOTOGRAPHY INC.

PROJECT:
UPMC Hillman Cancer Center, Third Floor Renovation

CONTRACTOR:
Mascaro Construction Co. LP

OWNER:
UPMC

ARCHITECT:
RM Creative

MBA SUBCONTRACTORS:
Ferry Electric Company
HOFF Enterprises, Inc.
Kalkreuth Roofing & Sheet Metal, Inc.
SSM Industries, Inc.
Tri-State Flooring, Inc.

RENOVATION CONSTRUCTION UNDER $5 MILLION

MASSERY PHOTOGRAPHY

PROJECT:
University of Pittsburgh, Cathedral of Learning 22nd and 23rd Floors

CONTRACTOR:
AIMS Construction

OWNER:
University of Pittsburgh

ARCHITECT:
Pieper O'Brien & Herr Architects

MBA SUBCONTRACTORS:
HOFF Enterprises, Inc.
Pittsburgh Interior Systems, Inc.
Ruthrauff | Sauer, LLC

Photo by Massery Photography.

EXCELLENCE IN CRAFTSMANSHIP, INTERIOR CONSTRUCTION

PROJECT:
Penn State School of Music and Recital Hall

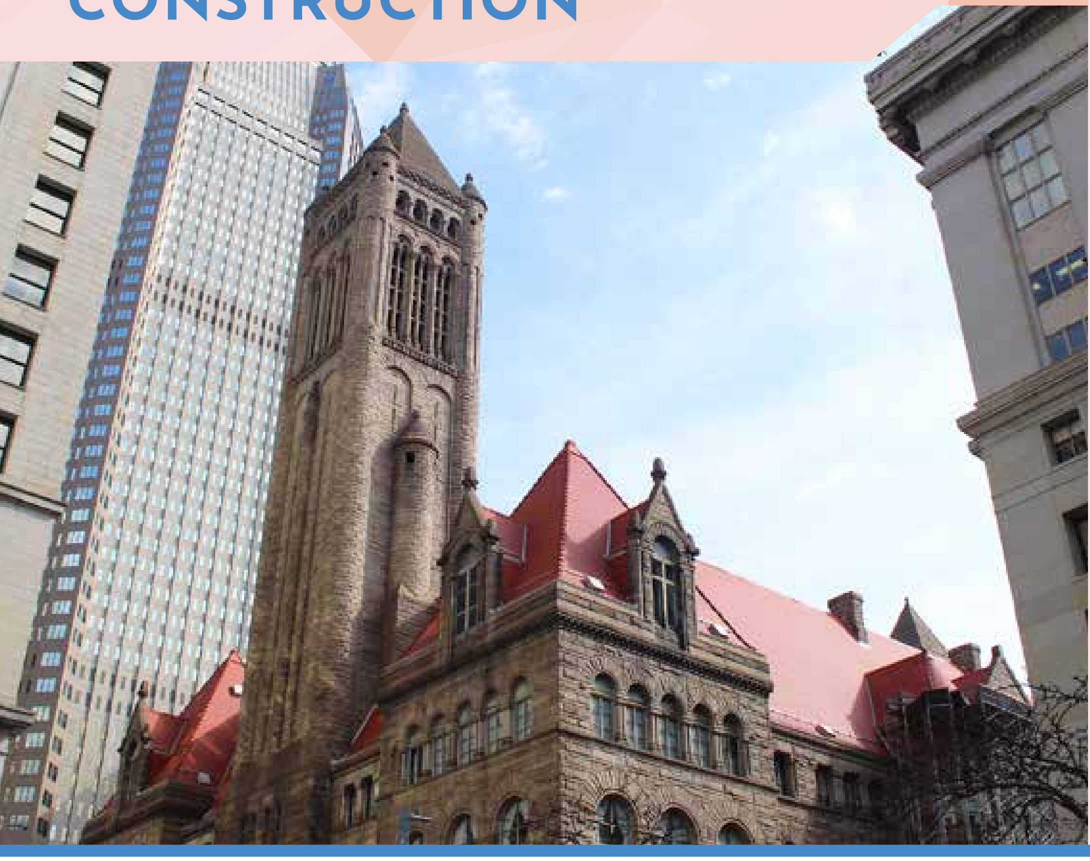
CONTRACTOR:
Giffin Interior & Fixture, Inc.

OWNER:
Penn State University

ARCHITECT:
Bostwick Design Partnership/William Rawn & Associates

ROBERT BENSON PHOTOGRAPHY

EXCELLENCE IN CRAFTSMANSHIP, EXTERIOR CONSTRUCTION



PROJECT:
Allegheny County Courthouse, Phase 1

CONTRACTOR:
Cuddy Roofing Co.

OWNER:
Allegheny County

ARCHITECT:
Milton Ogot Architect

NATIONAL MARKET UPDATE

The first readings on the U.S. economy from the fourth quarter show that the economy grew at an expected slower pace. Gross domestic product (GDP) grew by 2.1 percent from the previous year, according to the first estimate of GDP growth from the Bureau of Economic Analysis (BEA). That matched the output during the third quarter. The slower second half of 2019 resulted in GDP growth of 2.3 percent for the full year, compared to 2018.

Forecasts for GDP growth in 2020 are mostly in line with the activity in the second half of 2019. The fourth quarter Survey of Professional Forecasters pegged GDP growth in 2020 slightly lower, at 1.8 percent. The construction professional forecasters in the AIA Consensus Construction Forecast see GDP growing slightly faster. The lower expectations for GDP are matched with slightly higher predictions for inflation. The BEA forecast for personal consumption expenditures (PCE) in 2020 is 1.9 percent higher. The difference between GDP growth and PCE index has been positive by 0.6 and 0.7 percent the past two years.

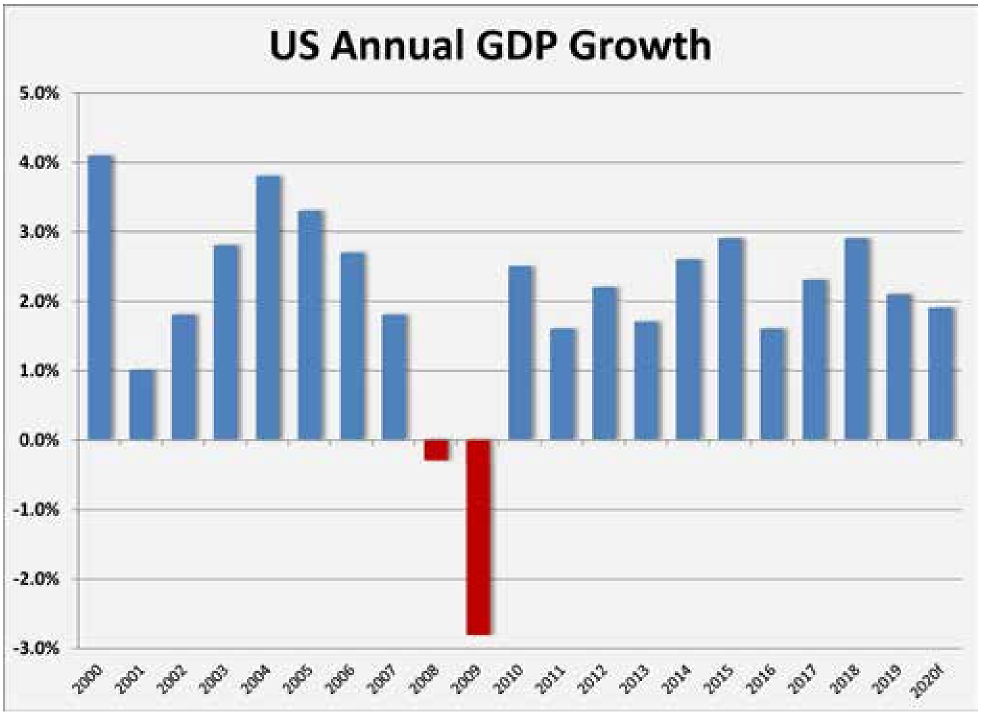
Business confidence and expenditures continued to erode in the fourth quarter but consumer spending stayed strong, boosting growth overall. Exports remain a drag on the economy, a result of weaker global markets, trade wars, and a strong U.S. dollar. As February unfolded, it became clearer that a fourth factor, the coronavirus COVID-19, was going to have an impact that was significant. Because COVID-19 was originally detected in China, early concerns about the economic impact of the outbreak were focused on China's significant role in the global economy. This was particularly true of the global supply chain, much of which runs through China. The size of the Chinese economy, with its growing consumer middle class, increased the threat of global recession, as declining Chinese consumption due to quarantine there produced estimates of GDP growth as low as two percent.

None of these threats from China had receded by mid-March; however, it became clear that the decline in China's economic growth and supply chain disruptions were not going to be the gravest problems caused by the pandemic.

The relative success of social distancing as a mitigation tactic led to widespread closings of businesses and cancellations of events worldwide. The resultant loss in revenue will mean that output during the late winter and early spring will decline precipitously. Based upon early data from China, Taiwan, Singapore, and Japan, the containment put in place in those countries will reduce economic output by between five and ten percent relative to the previous year. Since most of this reduced output will come from reduced consumption, the recovery from the COVID-19 isolation will not be a surge that replaces output that was deferred. Durable goods consumption could see such a surge after the crisis passes, but the loss of wages and wealth will trim that positive response to some extent.

Put into perspective, the decline in GDP caused by the COVID-19 pandemic is certain to exceed the 4.5 percent decline that occurred during the 2008-2009 Great Recession.

Beyond the damage to GDP, the COVID-19 outbreak has a strong potential for triggering downstream financial shocks to the economy. Without financial assistance, some share of the workers who lose jobs will be unable to make loan payments. As defaults on



Source: Bureau of Economic Analysis

car loans, credit cards, and mortgages increase, banks will find it necessary to tighten credit.

It is the cascading effect of the economic impact that presents the greatest risk to the U.S. economy. If consumers fear that the job losses caused by containing the virus are triggering a recession, they are likely to cut back on spending – even if they have not lost their jobs. The fallout from that shift in sentiment – rising unemployment, lower demand, increasing loan delinquency, business failures, and bankruptcy – will create a serious drag on the economy. Coupled with the dramatic drop in oil prices, the fallout from COVID-19 greatly increases the risk of recession.

Source: U.S. Census Bureau

Should a recession be triggered, the U.S. economy is in significantly better condition today than it was in 2008. Consumers are employed to a higher degree. Unlike in 2008, consumers are saving at a high rate, providing some cushion against tougher times. Corporations have used low interest rates and tax cuts to leverage their debt from $2 trillion to $7 trillion. That will make highly-leveraged corporations more vulnerable; however, corporate cash reserves are also high. Early government action to stimulate the economy has included provisions to aid with liquidity for corporations and small businesses.

Turning to the U.S. construction market, the February 19 release of housing starts in January had good news. Although the data showed a decline of 3.6 percent from December, the 21.4

percent increase from January 2019 is an indication that new home construction may be shaking off the dual headwinds of low lot inventory and skilled worker shortage. Building permits surged higher in January, foreshadowing a strong spring construction season. For the full year of 2019, the Census Bureau estimates 1.29 million new housing units. The annualized number of new units in January was 1.567 million units, seasonally adjusted. December's starts were revised upward to an annualized 1.626 million units, the highest number since the peak of the housing bubble in 2006.

Single-family starts approached the one million mark, at 987,000. Multi-family starts continue to defy predictions of a slowdown, increasing by 0.7 percent to 557,000 units. Permits for multi-family units jumped 14.6 percent to 564,000 units. The latter suggests that apartment construction will remain at high levels into the spring.

Economists and industry observers responded positively to the strong housing data, especially on the heels

AIA Consensus Construction Forecast	% Change 2020	2021
Nonresidential total	**1.5**	**0.9**
Commercial total	**0.6**	**(0.2)**
Office	3.0	0.5
Retail & other commercial	(1.3)	(0.9)
Hotel	(0.7)	(1.0)
Industrial total	**0.3**	**0.5**
Institutional total	**2.9**	**2.0**
Healthcare	3.4	(3.5)
Education	3.9	3.3
Religious	(1.9)	(1.9)
Public safety	7.2	2.6
Amusement & recreation	(1.8)	(1.6)

Source: American Institute of Architects of a record December. It is worth noting, however, that December and January have been unusually warm and dry. It will take a few months of data to judge whether or not the favorable construction conditions drove the market.

A robust housing market that includes a double-digit increase in new construction would have a significant positive effect on the overall economy. Questions still remain about the labor capacity required to maintain that level of construction growth and feedback from the National Association of Homebuilders suggests that the tight supply of available lots on which to build has not loosened significantly. But the additional employment that would come from another 100,000 units of new housing would have an impact and growth in the inventory of homes for sale would ease some of the above-trend price appreciation that is contributing to affordability problems.

In contrast to the residential construction market, construction of nonresidential buildings appears to be in a cyclical soft spot. Following a relatively flat 2019, nonresidential construction is expected to see little or no growth in 2020.

The AIA Consensus Construction Forecast, which comes from a panel of representatives from Dodge Analytics, IHS Economics, Moody's, ConstructionConnect, FMI, Markstein Advisors, and Wells Forgo Economics see the economy as more consistent (and less expansive) for 2020 and 2021. The consensus forecast is for an increase in spending on nonresidential building of 1.0 percent in 2020 and 1.5 percent in 2021. Those are levels that will lag the rate of construction inflation. The same panel expected a four percent increase in 2019 but were surprised by the steady decline in business investment during the second half of the year. The economists see no reason to expect a reversal of that trend during an election year, and little expectation of an increase in 2021, regardless of the outcome.

The surprising slowdown in construction came primarily from two sectors. The large education sector of the market was predicted to begin to rebound in 2019 following years of underinvestment. This did not occur. Second, the decline in retail was much steeper than anticipated. Retail construction spending fell by more than ten percent from 2018 to 2019.

Interestingly, none of the forecasts were looking for a recession during the coming two years, even though one year ago more than half of the business economists were calling for a downturn – if not an outright decline in GDP – by 2021. The panel saw several positive factors that would keep the U.S. economy moving higher during the next 12 to 18 months:

- Favorable interest rates
- Low unemployment and positive job creation
- Strengthening housing market
- Trade agreements

Economic conditions are likely to sustain the first two factors for several years, which makes the health of the housing market seem even stronger. The consensus panel saw the recent USCMA and phase one China trade agreements as easing the tensions that the Trump administration had created since mid-2018; however, they also expect international tensions, including unresolved trade issues to be headwinds to economic growth. Other drags on the economy include the aforementioned declining business investment and weak manufacturing, along with the uncertainty that comes with election year politics.

Data from the first month of the year reinforces the low-growth forecast. Construction spending in January was up 1.8 percent, to $1.369 trillion on an annual basis. That follows a 0.2 percent decline in spending in December and a 0.3 percent decline for the full year of 2019 compared to 2018. The decline in 2019 marked the first decline since 2011. January's spending was up 6.8 percent year-over-year but unusually warm weather allowed for unsustainable jumps in infrastructure and residential construction.

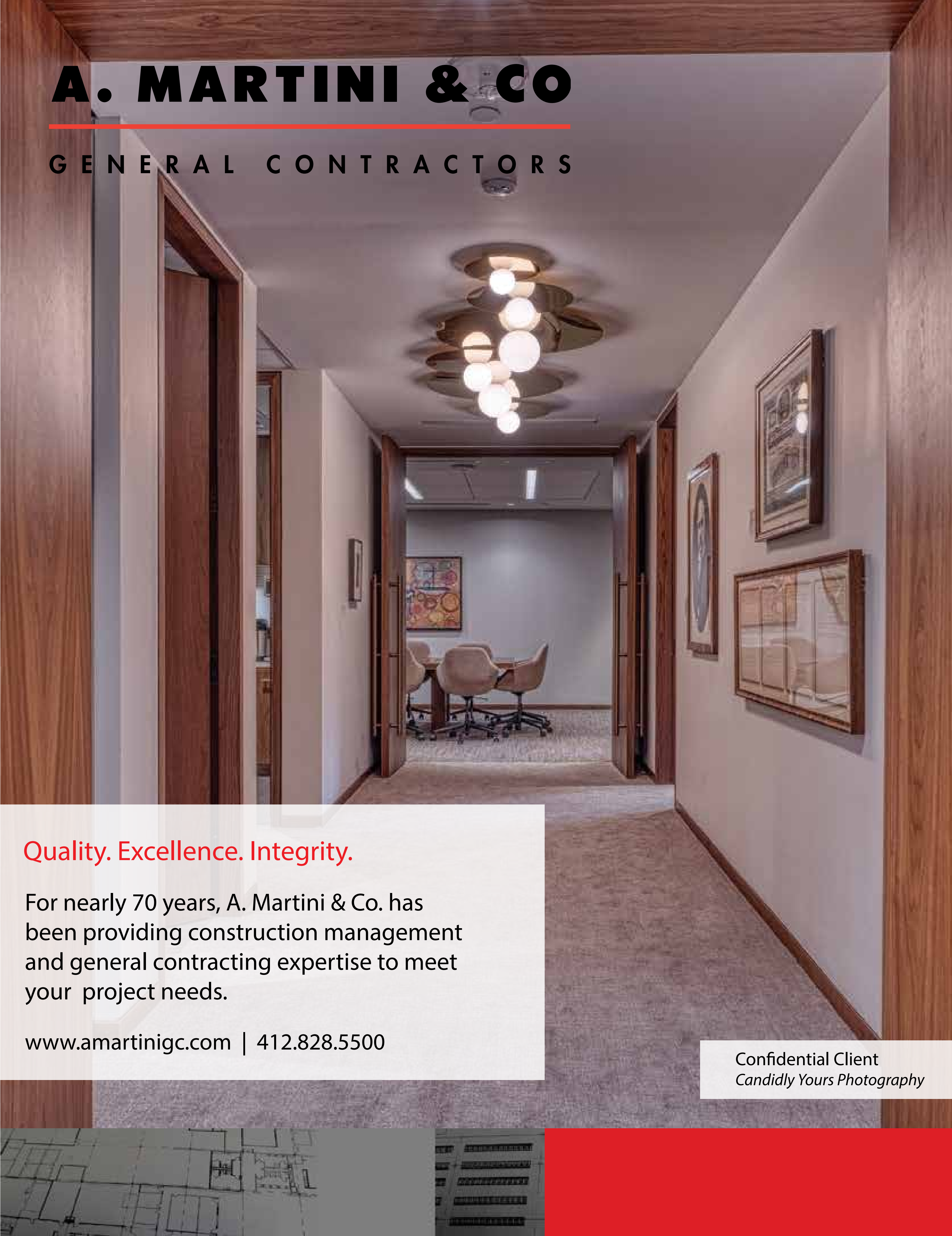
Demand for construction in an economy that is driven by consumers ultimately relies upon jobs and wage growth as fuel. Thus far into 2020, there appears to be sufficient fuel for continued growth.

Employers generated 273,000 net new jobs in February on the heels of the same number of new jobs in January, outstripping expectations. Year-over-year wage growth was at 3.0 percent, marking the 19th consecutive month at or above 3 percent. The unemployment rate decreased again slightly to 3.5 percent. The labor force participation rate remained at 63.4 percent, its highest level since 2013. The only bad news in the January report was the size of the benchmark revisions made to 2018 hiring data. After revisions, the data shows a gain of 193,000 jobs per month, a loss of 360,000 for the year. For 2019, the monthly average fell to 179,000 net new jobs, the smallest gains since 2011.

"In contrast to the residential construction market, construction of nonresidential buildings appears to be in a cyclical soft spot. Following a relatively flat 2019, nonresidential construction is expected to see little or no growth in 2020."

Hiring peaked for the expansion in 2014. The trend since then has been downward. What marks this business cycle as different from past cycles is how gentle the downward trend has been. Previous cycles failed to survive ten years, so it is impossible to compare 2019 to earlier cycles; however, the 175,000 jobs created monthly are roughly double the amount needed to keep up with labor force growth. Moreover, the tight supply of skilled labor is a likely reason why job growth cannot be more robust, even late in the business cycle. Coupled with slowing business investment, the downward trend in job creation can't be ignored as a sign of a slowing economy. As a bellwether alone, however, slower hiring is not a red flag.

Cyclical factors driving construction are indicating a flatter market in 2020, although the resilience of demand continues to surprise. There are no indications that an economic black swan event – overbuilding, asset bubbles, sharply rising interest rates, or inflation – will stop the U.S. economy from expanding somewhat in 2020. It will take more time to judge whether or not a medical black swan has the same impact as an economic black swan. BG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WHAT'S IT **COST?**

PERCENTAGE CHANGES IN COSTS	Jan 2020 compared to		
Consumer, Producer & Construction Prices	1 mo.	3 mo.	1 yr.
Consumer price index (CPI-U)	0.4	0.2	2.5
Producer price index (PPI) for final demand	0.7	0.2	2.1
PPI for final demand construction	0.8	0.8	3.7
PPI for new nonresidential buildings	0.8	0.8	3.7
Costs by Construction Types/Subcontractors			
New warehouse construction	0.4	0.2	4.6
New school construction	1.0	0.8	4.7
New office construction	0.8	1.3	3.2
New industrial building construction	0.5	0.6	4.1
New health care building construction	0.9	0.6	2.9
Concrete contractors, nonresidential	0.4	0.6	4.3
Roofing contractors, nonresidential	0.3	0.3	2.7
Electrical contractors, nonresidential	0.4	0.5	3.5
Plumbing contractors, nonresidential	1.1	1.2	3.9
Construction wages and benefits	N/A	0.4	3.5
Architectural services	0.2	0.2	(1.3)
Costs for Specific Construction Inputs			
#2 diesel fuel	(8.1)	(2.3)	7.2
Asphalt paving mixtures and blocks	7.1	4.7	1.1
Cement	(0.1)	(0.6)	0.8
Concrete products	1.1	0.7	3.3
Brick and structural clay tile	0.3	0.3	1.5
Plastic construction products	0.4	0.1	(0.4)
Flat glass	0.2	0.3	0.4
Gypsum products	2.9	2.9	(0.7)
Lumber and plywood	0.1	0.1	(2.0)
Architectural coatings	0.1	1.1	3.6
Steel mill products	0.3	(3.3)	(15.0)
Copper and brass mill shapes	1.4	2.7	3.3
Aluminum mill shapes	0.3	(0.5)	(4.5)
Fabricated structural metal	(1.9)	(0.8)	(3.3)
Iron and steel scrap	13.9	37.2	11.1
Source Bureau of Labor Statistics, Updated February 13, 2020			
Compiled by Ken Simonson, AGC Chief Economist			

Analysis of the report on January's inflation from the Bureau of Labor Statistics reveals that the downward trend in construction material prices has leveled. Slowing demand from manufacturers and business investment, and easing of trade tariffs, have pushed inflation in general down below the two percent level.

A quick glance at the table of producer price index readings for January shows a big change from the same reading from November. In contrast to November, all the major inflation indexes and all the categories of installed construction are in the black, meaning that the upward pressure from wage hikes is offsetting the lower prices for materials.

The trend for nearly all inputs to construction is for slightly higher prices in the 30-90-day period. For two critical construction material categories - #2 diesel fuel and industrial metals – there were conflicting trends in prices. The impact of falling energy prices has been beneficial during the past 12 months. PPI for diesel was still 7.2 percent higher in January than a year earlier, but the prices have drifted lower over the previous 90 days. Considering the derivative uses of petroleum in other building materials and products, a change in the direction of oil and energy prices would be significant.

Market dynamics are slightly different for industrial metals, including steel, which has seen pricing firm up since the fall. The PPI for structural steel, iron and steel scrap were still lower year-over-year by double-digit percentages in January, but prices were higher since the first of the year. Copper and aluminum inched higher, and stainless steel was up 10.9 percent since December.

The PPI for inputs to new nonresidential buildings was flat since December and was only 2.4 percent higher than January 2019. PPI for nonresidential building construction was 3.7 percent. This measure of inflation was in the five percent range throughout much of 2019. The current trends suggest that construction inflation will exceed producer price inflation by roughly one percent.

One unknowable factor worth watching is the progress in containing the COVID-19 virus. In general, inflation has been driven by demand growth since the Great Recession, as new capacity has not created a glut in supply, except for energy markets. Most forecasts assume that the efforts by the Chinese and the World Health Organization will contain the damage from the virus. If COVID-19 were to become a pandemic or simply linger for additional months as a drag on Chinese business, there will be significant shortages in the supply chain. Factories in China have remained closed after the New Year's holiday ended. If these closings extend into March and April, building product manufacturers will see shortages and price increases would follow. BG

THE BIG COLLEGE CRUNCH

Photo by Albert Vecerka, ESTO Photographics

Stop us if you've heard this one before. A variety of factors are converging to create major – perhaps existential – problems for colleges and universities in the second half of this decade. You are forgiven if you think "didn't they say that last decade?"

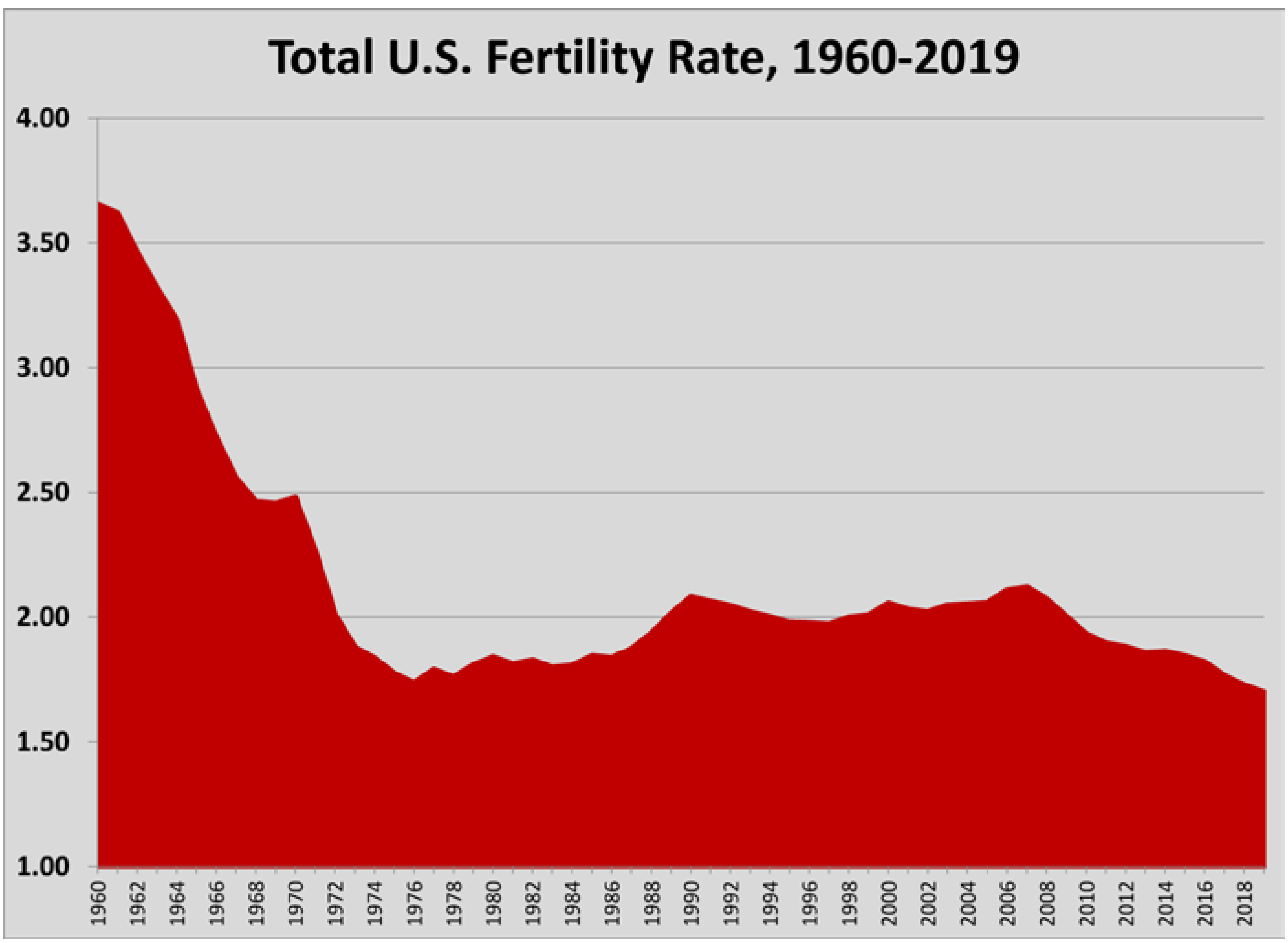
Higher education institutions have faced two potential crises over the past two decades, neither of which were as dire as feared. The coming of age of Generation X, a significantly smaller age cohort than the Baby Boomers that preceded it, was expected to bring declining enrollment in the 1990s. Colleges looked at 2017 with dread, as the end of the Millennial generation's post-secondary education was predicted to create a void in students. Factors other than population distribution saved colleges and universities from the declines that demographics foreshadowed.

The 2020s are likely to be different. Demographics are again working against higher education. Unlike in the 1990s and 2010s, there are not other social and economic factors that will boost enrollment when the number of college aged students declines. In fact, factors other than demographic appear to be conspiring against colleges and universities.

For the past 20 years, institutions of higher education – whether they be public or private – have invested generously in their physical plants. Some of that heightened investment was in response to new technology, either in education or in operating the institution. Most of the increased spending, however, was done in pursuit of the high school senior. As Americans attended college in greater numbers, the institutions engaged in spending to attract those students. College became a buyer's market and dormitories, libraries, recreation facilities, and student activity centers reflected that shift in dynamics.

Going forward, higher education will look different. The consensus among educators is that it will be good to be among the top 100 universities in the U.S. Beyond that, the landscape will become much more competitive. It seems more likely than not that some colleges will not be able to keep their doors open. There isn't one factor that is pushing higher education to a brink of sorts. There will be numerous avenues to follow to remain relevant or, at least, solvent. But colleges need to be considering which of those avenues to pursue now.

If all this sounds a bit apocalyptic for the higher education construction sector, bear in mind that responding to the



Birth rates in the U.S. declined by half from 1960 to 1970. Source: Center for Disease Control tectonic shifts that may come will require investing in the physical plant. There are certainly colleges and universities that will (and are) decommissioning buildings, but there will be a much bigger opportunity that results from positioning higher education to meet the coming needs of students.

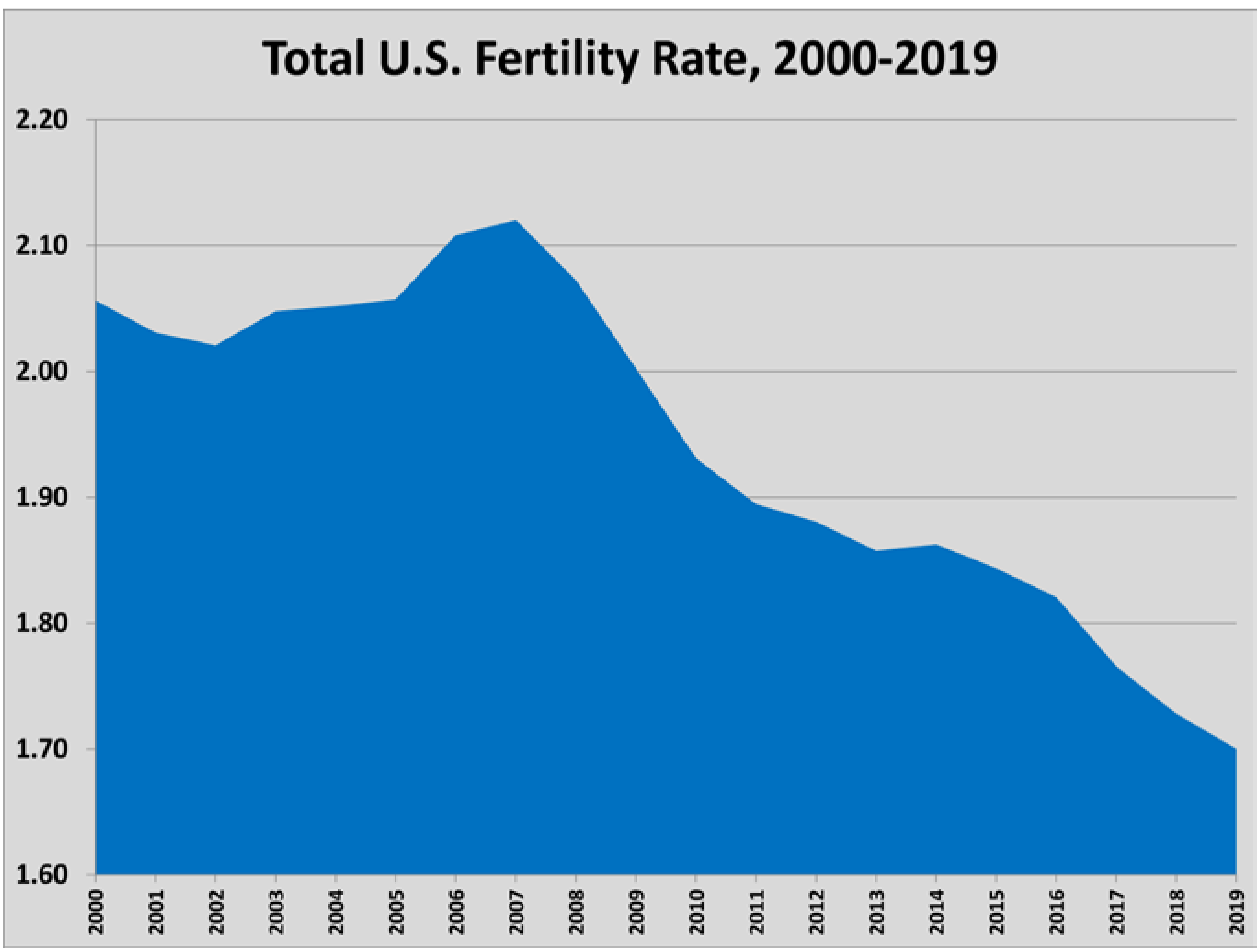
Western PA is a hot bed of colleges and universities. The successes of a few of the universities in Pittsburgh have had a profoundly beneficial impact on the regional economy. But, like in other parts of the country, the institutions vary in condition and preparedness for the future. It's likely that Pittsburgh will be home to at least two universities that will be in that coveted Top 100. The others are working hard at figuring out their place in the landscape before 2030.

Demographics

The trend that is the most ominous for colleges and universities is the demographic change in the U.S. As a result of long-term immigration patterns and varying birth rates, the U.S. is becoming more racially diverse. This reality has had a huge impact on American politics. In more nuanced ways, the change in ethnic and racial makeup is also impacting higher education. But no demographic change will be as disruptive as the declining birth rate.

Declining birth rates are not a new thing in the U.S. During the 1970s, as the first of the Baby Boomers eschewed marriage and younger people became aware of overpopulation as a threat, birth rates fell by more than 50 percent. The cyclical low of that era, 1.738 in 1972, was nearly as low as the 2019 rate of 1.70. Fertility rebounded from there, however, staying at two from 1989 until 2008. The financial crisis of that year, coupled with the long sluggish recovery that followed, seems to have become a persistent disincentive to having children for younger people. The fertility rate has fallen 15 percent since 2008. That's a problem made more challenging by the fact that the rate fell by ten percent by 2010.

Because of the precipitous decline following the Great Recession, high school student graduation drops off by at least ten percent in 2026.



Birth rates in the U.S. have declined each year since the financial crisis. Source: Center for Disease Control

That fact is a chilling indicator of falling enrollment for colleges and universities but, in and of itself, falling birth rates don't spell disaster for higher education. The low fertility rate of the 1970s did not lead to precipitous enrollment in the 1990s, and enrollment in the 2000s reached all-time highs. But that was because the share of the overall population that went to college was growing, so that even though there were fewer 18-to-22-year-old potential college students, the percent that continued education after high school expanded. The share of students attending college today is not increasing.

College achievement among parents is another indicator of future enrollment. Children of college graduates are much more likely to attend a four-year college or university. According to the Digest of Educational Statistics, 90 percent of children will attend college if raised in a household that includes at least one parent with a four-year degree. During the 1990s and 2000s, the percent of parents who had college degrees was growing but was between 60 and 65 percent. That share has peaked at 70 in the late 2010s, which means there is little potential for this halo effect to grow enrollment beyond what the birth rate provides.

There are some areas of disagreement among the various agencies tasked with tracking higher education. The National Center for Educational Statistics (NCES), for example, which publishes numerous enrollment studies, predicted in The Condition of Education in May 2019 that the number of students enrolled in degree-granting secondary education institutions will rise by three percent by 2028. That's quite a decline in growth compared to the 27 percent increase in enrollment between 2000 and 2017, but still an optimistic outlook. NCES pegs its forecast of increased enrollment upon continued high levels of public education participation. The report surprisingly expects enrollment in two-year degree programs to increase only slightly, from 5.9 million students in 2017 to 6.1 million in 2028. The NCES study, in fact, seems to predict modest increases across all institutions. Few other experts see the next decade unfolding that way.

The demographic challenges facing colleges and universities are detailed well in the book, Demographics and the Demand for Higher Education, published by Johns Hopkins University Press in 2018. The book examines the trends that are likely to make life more difficult for higher education institutions over the next decade and suggests changes in how the institutions operate to meet the changing conditions. It also implies that colleges and universities have only a few years to get ahead of the change.

"Disruptive change can provide both challenges and opportunities for improvement. In the next decade, higher education can expect a healthy dose of both," writes the author, Nathan D. Grawe, PhD. "For years, demographic forces have slowly but persistently reshaped the population of young people served by higher education. Today's news cycle reminds us that immigration has simultaneously increased numbers of Hispanic Americans and contributed to population growth in the South and West. Less often discussed in the news, the Department of Homeland Security reports that the number of people from Asia obtaining lawful permanent resident status is essentially the same as that from South and Central America."

Grawe notes that the trends among Asian and Hispanic population segments are counter to the overall trend of decreasing enrollment. In addition to the increasing numbers of people in the U.S. from Asia, South and Central America, college attendance has been growing among these ethnic groups. Asian Americans have the highest college attendance rate of any demographic cohort. Hispanic Americans attending college grew by 15 percent since 2000. Yet these ethnic groups are small enough, 2.5 percent each, that their rising enrollment rates are not enough to counter the prevailing trends overall.

Challenging demographics will not be uniformly challenging. The pool of potential students will be smaller for all colleges and universities, but there is strong evidence that not all institutions will feel the impact of declining demand. Demand for elite schools, and those in the Top 100 in U.S. News and World Report, should remain the same as today. Those regional institutions outside the Top 100 may see declines of 11 to 12 percent. Because of lower birth rates and outmigration, enrollment in Northeastern and Midwestern institutions is expected to be lower than colleges and universities in the South and West. In the Northeast, for example, there are expected to be 17 percent fewer high school graduates in 2026. Institutions located in the Rocky Mountain states should see enrollments increase because population and birth rates have increased.

The birth rates matter because, although college students are highly portable, the majority of students don't venture far from their back yards.

"Higher education is local," says Chris Howard, president of Robert Morris University. "What I mean by that is most people go to school within 100-150 miles of where they live and, ironically, most people take online courses from a university or college within about 50 or 75 miles of their home. Even though you have these mega online universities out there, they are the exception that proves the rule. Most people are going to places that they know. They recognize the brand. They see the billboard. They have friends that graduated from there. There's no place like home."

The population shift to South and Southwest is likely to be another factor pinching enrollment. Because the college education levels of parents in those regions are lower, the rate of college attendance is also lower, 64 percent compared to 72 percent in the Northeast. If more high school students are raised in areas with lower college attendance, it's likely that fewer will attend college.

"There's definitely a demographic cliff but there's also skepticism that people have about higher education," says William Generett, vice president for community engagement at Duquesne University. "There are young people being pushed away from higher ed into technical training and the trades. There is also skepticism because of the cost of higher education. Those factors, along with the demographic cliff, make it a very challenging time for colleges and universities."

It's possible that there will be another source of unexpected student enrollment that fills in the demographic hole coming in 2026, just as happened 20 years ago. Higher education is still reeling somewhat from the effects of the Great Recession, which put a big dent in enrollment in 2010. Although the economy recovered, the same level of demand for a college education didn't return. Duquesne University, for example, is holding steady at 9,400 students but that number was 10,500 a decade earlier.

Economics

The greatest economic challenge facing universities is the most obvious; potentially declining enrollment means declining revenues. The same number of colleges battling for fewer students will face competitive pressures that will finally push down the costs to the students. That probability creates a variety of scenarios.

It is expected that colleges will not feel these pressures equally. As noted above, the forecast for colleges ranked in the top 100 is for rising demand. The "top 100" theory is a partial motivation for the University of Pittsburgh's expansive multi-billion-dollar capital program. Pitt's leadership – like that at Carnegie Mellon and Penn State – believe that the university's growing academic and research reputation (and reasonable tuition) will attract students regardless of demographics. Having deferred major capital spending for an extended period, Pitt is now moving forward with construction that will create 21st Century facilities for student life and academic research. Like Pitt, Penn State is in the midst of investing billions of dollars in facility improvements and expansion. Carnegie Mellon is spending a fraction of what its neighbor is planning, but CMU has started construction on three new buildings over the past year and has plans for another four in the next several years.

Each of these institutions has differing capital program objectives but the motive is more or less the same for all. Pitt, Penn State, and CMU expect to thrive in spite of the demographic challenges and are building facilities that will support the student of the 2020s.

Another aspect of the tougher economics facing higher education is the growing perception, or perhaps acceptance, that college has become too expensive for many people. The costs of higher education soared during the past generation's lifetime. College education financial woes of the Millennial generation are well documented. The aggregate student loan debt burden of the 25-to-40-year old is $498 billion. But a Pew Research Center study from September 2019 found that Millennials have a higher level of credit card debt than student debt. College loans are the biggest debt for Gen Z, which will be attending college throughout this decade.

What is often overlooked in the discussion about higher college debt is the dramatic increase in demand that created it. In 1980, 24 percent of the population between the ages of 25 and 34 were college-educated. By 2015 that share had grown to 36 percent. Even with the unfavorable demographics of the Gen X students, demand for college education grew substantially since the Baby Boomers left college. Surging enrollment encouraged capital spending, creating a physical plant that did more than just shelter and feed college students. It also encouraged tuition hikes.

From 1998 to 2016, the number of U.S. households with college debt doubled, according to the Pew Research Center study. Median loan debt jumped 50 percent from Gen X to Millennial.

Higher costs and loan debt accelerated during the 2000s, but the trend has been moving higher for generations. What appears to be a significant difference from previous generations is the return on investment for a college degree. Purchasing power for the average wage is essentially the same today as it was in 1980. Parents being asked to shell out for today's tuition have become increasingly aware that a bachelor's degree doesn't necessarily precede a career that will easily justify tuition or a student loan.

Further exacerbating this skepticism is the growing awareness of the shortage of skilled labor. One of the societal costs of the steep growth in the share of college-educated people has been the loss of trades people. Construction is but one of many industries that are seeing waves of retirements with an inadequate supply of workers to take up the slack. Over the past five years or so, however, the need for more workers has been marketed extensively. Skilled workers have the opportunity to earn more than their college-degreed classmates. High school seniors who are confronted with the economic uncertainty of paying for college have always had the option of working but the conditions are quite favorable today for that option.

Competition for students among colleges and universities has led to another tactic creating economic strain: discounting.

If you have been shopping for colleges in recent years, you are familiar with this trend. Rather than adjust tuition and costs lower, higher education institutions have instead

Project	Construction Manager
CMU Forbes Beeler Residence Hall	Mosites Construction
CMU Fifth & Clyde Residence Hall	Rycon Construction
CMU Scaife Hall - College of Engineering	PJ Dick Inc.
CMU College of Science/Math New Building	TBD
CMU Skibo Hall/Highmark Center	Mascaro Construction LP
Pitt Victory Heights Central Utility Plant	Turner Construction/Mosites Construction
Pitt Human Performance Center	Massaro Corp./Gilbane
Pitt Medicine, Scaife Hall Expansion	PJ Dick Inc.
Pitt Student Rec Center/Mid-Campus Residence Hall	Mascaro Construction LP
Pitt, One Bigelow Square	TBD
Pitt, Lower Campus Residence Halls	TBD
Duquesne College of Osteopathic Medicine	TBD
CCAC Workforce Development & Training Center	TBD

Source: Tall Timber Group

responded to the affordability concerns by discounting those costs through increased financial aid. While in many cases the aid has been the result of using more endowments for scholarships, more of the discounting has been the granting of financial aid that is unfunded. That means the college is not receiving the financial aid as it would tuition revenue. It simply charges the student less.

The average tuition price among 411 private colleges was discounted by around 49 percent for the 2016-2017 school year, according to a study by the National Association of College and University Business Officers. Updates since then have found that the average discount has not reduced.

Discounting has a short-term negative impact by reducing revenue. But schools that use this practice effectively can reduce their costs to match the new revenue reality and more aggressively attract students. That will come in handy as the pool of new students declines later in the decade. Discounting also allows colleges to maintain higher "sticker prices," which creates a perception of higher value. Colleges that have worked to keep tuition costs lower are hearing from parents that those lower prices imply that the educational quality is lower than colleges and universities with higher prices.

Colleges and universities have another economic cliff approaching: their donors are aging out of their prime giving years. Alumni are the lifeblood of the university development offices. Over the past 20 years, as wealthy Baby Boomers hit their 50s and 60s, this wealthy generation gave generously to their alma maters. As the Boomers age, unless they break from the historic giving patterns of previous generations, their gifts to colleges and universities will decline. This will put a pinch on endowments at a time when endowments will be most needed.

Endowments have been used as a way to fund capital programs, faculties, and scholarships. They have been an effective way to optimize gifts by channeling the proceeds to the needs of the college that are in line with the donors' desires. Football players endow athletic programs. Hedge fund billionaires endow the business school. Musicians endow the addition of a professor of modern jazz. Institutions encourage giving to a general endowment fund, which allows the college or university to support areas of greatest need. General funds also give the institution the ability to make up shortfalls in revenues. Come 2030 that will be very valuable.

University endowments have garnered headlines for their spectacular growth, particularly during the two major bull stock market runs of the 1990s and 2010s. Some, like Harvard University, have tapped alumni superstar wealth managers to build endowments that are valued in the tens of billions. Far too many, however, have not been able to build more than a modest endowment.

The total market value of endowments for all U.S. institutions exceeded $700 billion in 2019. The value of endowments is unusually skewed towards the Top 20 endowments, which comprised 45 percent of the total. The top 120 university endowments – a list that includes Pitt at 26 and CMU at 57 – made up 74 percent of the total of the 5,300 colleges and universities in the U.S. Colleges are looking at ways other than donations to augment those endowments.

"We have sold some assets that have helped bolster our endowments," notes Generett. "Endowments are a predictor of whether a college or university will be able to survive. Schools that have endowments that are $50 million dollar or under could face a threat to their longevity. Duquesne has several of those."

Well-endowed institutions, or those like Carnegie Mellon that regularly attract major gifts, will have the financial wherewithal to manage declines in enrollment or revenues. They will have the opportunity to use endowment proceeds to increase scholarship funding to attract students, or to mobilize endowment funds to finance needed construction projects. Endowments won't be the solution to all of the challenges facing higher education.

Solutions

"There is no university in the country that is going to solve the demographic cliff," laughs David Meadows, senior vice president for finance and administration at Carlow University, when asked about solutions to the challenges that lay ahead. Meadows says that with the demographic cliff approaching, Carlow has responded by investing in areas of strength and growth, ideally through projects that serve multiple goals.

"Any project that provides us the ability to enhance our facilities, serve an increased number of students, and have a positive impact on our accreditation standards is important for us to look at," Meadows explains.

Carlow University's million-dollar upgrade of its nursing simulation labs (see page 47) meets the criteria Meadows spells out. The Health and Wellness program at Carlow has seen growing enrollment. Nursing is a profession that will see a surge in demand as Baby Boomer nurses retire over the next decade. Demographics are supportive of healthcare as a growth profession for the coming 20 years or so. And nursing is a career choice that yields first-year salaries that are above the average for emerging college grads.

"We've looked at which schools are positioned to grow in the future and ask how we can better support those schools. Are there programs that we have that aren't what they need to be?" asks Generett. "Duquesne is solid liberal arts university but we're really strong in the health sciences and business schools. Those are areas where we're seeing some growth.

"One of the things that Duquesne University is doing is opening a medical school. One of the reasons we're doing that is because students who go to medical school pay full price. There is not an expectation that your tuition is discounted or you need a scholarship in order to attend."

That strategic decision to expand its strong healthcare offerings to include an osteopathic medicine college will result in a major new construction project. The $45 million new facility is currently being designed, with the plan to go out to bid in late 2020.

The major capital spending ongoing at University of Pittsburgh, Carnegie Mellon and, to a degree, Penn State are based upon the expectation that their places in the hierarchy of universities will allow them to grow despite the demographics. However, the new facilities are also following strategic goals. Pitt is prioritizing improvements to student life and its core strengths in life science and medical research and education. Carnegie Mellon continues to invest in colleges that research and educate in emerging technologies like computer sciences, engineering, robotics, artificial intelligence, and additive manufacturing.

The many small colleges and universities in the region, which are more likely to feel the demographic and economic pinch, are looking at alternative approaches to higher education. This involves creating courses of study that meet the needs of business, industry, or community. Colleges are also adjusting to the growing ranks of nontraditional students and the instructional changes that will be required in teaching generations of digital natives for the first time.

Chris Howard notes that colleges are widening their recruiting into areas of the country they hadn't recruited before but says that demonstrating a long-distance value proposition to a student planning to attend college close to home is difficult. Moreover, most universities are casting a wider net, increasing the competition further. Howard sees more potential for growth from the nontraditional student.

"Jack Welch famously predicted that the typical student of the future would be a single mom, with two kids, working at a mall managing a Verizon store in Phoenix," Howard says. "That person needs a different approach to ensure that she is going to graduate, to get what she needs to be successful in the world. We think about adult learners and their specific needs, what their physical footprint might be. Online learning is going to be important to that person. That's something that has been ongoing for a while and has become more acute. The nontraditional learner becoming the more traditional learner is one of the big pivots in higher education."

Howard points to the low unemployment rate as another reason for the rise of nontraditional students. The ease of finding employment is an incentive for high school students to work instead of attending college. People are going to work in order to go to college. That trend offers an opportunity to colleges and universities. FedEx Ground, for example, has created a partnership with Robert Morris to offer a discounted tuition on courses ranging from high school graduation to full doctoral programs. Robert Morris has also created partnerships with a number of corporations to provide advanced training and business education to adult learners working there, whether or not those employees have a degree. Robert Morris is partnering with organizations as diverse as Koppers, Port Authority of Allegheny County, Eat 'n Park, Pitt Ohio Express, and the Pittsburgh Penguins.

"We're developing a robust portfolio of curated, almost concierge, professional human capital development programs that we'll deliver on our campus, in their offices, through online or through a hybrid of those," Howard says.

"When you look at that demographic shift, you understand that institutions like Carlow need to change their pedagogy and teaching environment. You need to rethink your facilities to accommodate those changes," says Meadows. "It's a great opportunity to take existing facilities and, with the skill level of contractors and architects today, there is almost nothing you cannot do to renovate and re-energize these facilities for 21st century teaching and instruction."

"Leaders in higher education will need to be highly strategic in relation to the renovation and construction of facilities," says Paul McNulty, president of Grove City College. "Significant investments will still be made to support high-demand programs such as pre-health studies and to maintain essential services for student services."

Grove City's status is somewhat symptomatic of the challenges facing higher education facility planning. McNulty and the college's board of trustees initiated a new master plan when administrations changed in 2015. That plan included the second phase of a $35 million STEM/engineering building modernization and renovations to almost every dormitory. As the college landscape has changed, Grove City's imperatives have quickly evolved. A new $20 million field house was slated to be the next major project on campus, while steps to modernize the dorms are being pondered. Instead of a major building project, the college entered into a partnership with Butler County Community College in 2019 to launch an undergraduate degree nursing program.

Not all the solutions will involve major strategic planning. Virtually all colleges and universities are also tightening their belts.

"We've been working hard at cost containment for a while here. We're always looking for ways to do what we do in a more efficient way," says Generett.

Of course, the most obvious solution to the problem of a shrinking top line is to shrink expenses. Cost containment – what used to be called budget cutting – has limitations. Faculty and facility operations make up a big piece of any college's budget and there are limits to how much you can contain costs of those big-ticket items. Some local colleges and universities are biting the bullet and getting smaller.

Westminster College reorganized and downsized its administration in May 2019. The move is designed to save Westminster $5 million in operating costs annually.

Robert Morris University made the decision in March 2019 to reduce the number of its colleges from five to four, consolidating three of its colleges into two new colleges. That move had a cost cutting impact, but it also gave Robert Morris the chance to focus resources in ways that make the most sense to its mission and the needs of students to come.

Among the strategic objectives developed ahead of the master plan was this: "Utilize existing space more efficiently, to reduce square footage under management and reduce the cost of maintenance and operations."

Allegheny College made the strategic decision to plan to be smaller in the coming decade. A small liberal arts college with a strong academic reputation, Allegheny College began looking towards a revised master plan in 2016 and selected MacLachlan Cornelius & Filoni Architects to update the plan in 2018. The focus was on matching its facilities to its future student population.

Among the strategic objectives developed ahead of the master plan was this: "Utilize existing space more efficiently, to reduce square footage under management and reduce the cost of maintenance and operations." In the master plan's executive summary, MacLachlan Cornelius & Filoni explained that the strategic objectives were "viewed through the lens of an overall enrollment reduction."

Allegheny College's master plan calls for significant renovations

Institution	Value 1/1/17 (in '000s)	Value 12/31/17	% Change
Harvard University	35,665,743	37,096,474	4.0
Yale University	25,413,149	27,216,639	7.1
University of Texas System	23,861,771	25,947,842	8.7
Stanford University	22,398,130	24,784,943	10.7
Princeton University	21,703,488	23,353,233	7.6
Massachusetts Institute of Technology	13,181,515	14,832,483	12.5
University of Pennsylvania	10,715,364	12,213,207	14.0
Texas A & M University	9,858,672	10,808,501	9.6
University of Michigan	9,600,640	10,777,563	12.3
Columbia University	9,041,027	9,996,596	10.6
University of California System	8,367,764	9,837,900	17.6
University of Notre Dame	8,748,266	9,684,936	10.7
Northwestern University	7,478,167	7,947,574	6.3
Duke University	6,839,780	7,911,175	15.7
Emory University	6,902,625	7,613,022	10.3
Washington University, St. Louis	6,526,726	7,214,958	10.5
University of Chicago	6,121,266	6,617,076	8.1
Cornell University	4,524,419	6,516,445	44.0
University of Virginia	5,774,744	6,308,922	9.3
Rice University	5,354,508	5,835,568	9.0

The 20 largest university endowments made up 45 percent of the total of 5,300 institutions. Source: National Center for Education Statistics.

to multiple buildings but little new construction. The work pursues the objectives of improving sustainability and accessibility, preserving the college's architecture, enhancing the branding of Allegheny College, and improving transportation and pedestrian safety. The plan also calls for 11 off-campus student residences and four buildings on campus, with a total square footage of 97,600 square feet.

Delivering a conservative master plan for the coming decade is not as newsworthy or exciting as announcing a plan of massive expansion, but in the environment of the 2020s, such a plan demonstrates stewardship built on data rather than hope.

"Build it and they will come" is not going to be a mantra heard in the facilities departments or board rooms on many college campuses these days. Construction professionals in Western PA are fortunate to have three universities that are building more aggressively than normal. That presents more opportunities than might be expected. No institutions of higher education can afford to be standing still, however, so even colleges that expect to decline in size will still have construction needs. Matching the projections of future enrollment to an institution's physical plant will require construction.

Projections are not necessarily predictions. As noted earlier, similarly dire projections faced higher education a generation earlier, only not to unfold as expected. While experts don't see the potential for countervailing factors – liked increased college attendance as a share – unknown future factors may emerge. What is more likely is that the combination of demographic, economic and social trends will shrink the pool of students attending colleges and universities from 2026 until 2035.

Should that projection become reality, the physical plant of colleges and universities will change. Many institutions will need fewer buildings than they currently have, and virtually all institutions will need a different mix of physical plant assets to meet the needs of the students of the 2020s and 2030s. That will create anxiety for colleges and universities, but also opportunities for the architects, engineers, and contractors that serve them. BG

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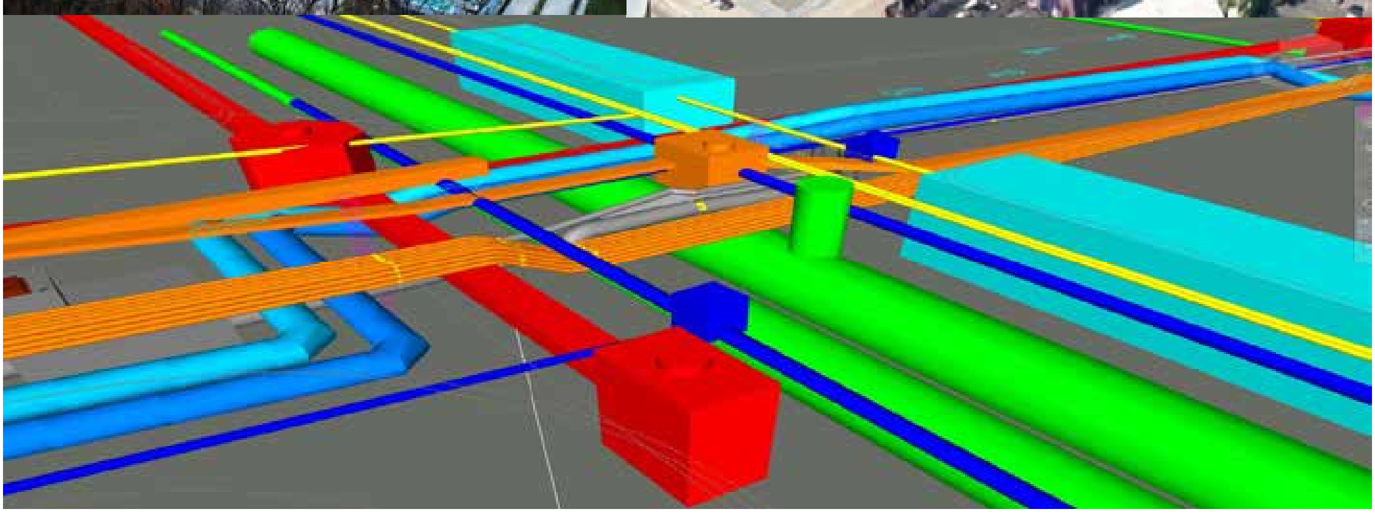

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Instructors and participants interact with the nursing students providing care from a remote control room. Photo by Adam Warner.

PROJECT PROFILE

CURRAN HALL, CELTIC SIMULATION CENTER FOR INNOVATIVE LEARNING

Facility Support Services (FSS) completed a small but intense renovation of Curran Hall's third and fourth floors for Carlow University in the summer of 2018. The $1.2 million renovation is part of a strategic plan to match Carlow's facilities with the programs that will lead the university into the future.

"The impetus behind the project was the growing number of students in our College of Health and Wellness," says David Meadows, senior vice president for finance and administration. "Carlow is one of the preeminent institutions in our region for the health sciences. We have some of the best nursing, respiratory care, and nurse practitioner programs in Western Pennsylvania. As you can imagine, those programs need continued investment in the facilities for those students to simulate the experiences they will have in hospitals and patient situations.

"We felt that we needed to increase the size of our simulation space. We wanted to add about 2,000 square feet of space to our current 2,000 square foot space. We also wanted to renovate the current labs."

"The program involved taking a high-fidelity nursing simulation lab program that they have at Carlow and expanding and upgrading all the technologies involved," says Melanie Como Harris, associate and project manager for IKM Inc., the architect for the project. "Sim labs are very high intensity, tech-driven facilities. There are students working in one room and faculty in another room guiding the procedures. A robot patient lays in the bed, talking and reacting much like a human patient does."

The administrators of the simulations are in a control room across the hall from the simulation rooms. There are several cameras in each of the simulation rooms and the administrators can run three separate simulations at the same time. The instructor speaks to the student through a microphone in the robot as though they are the patient and nursing students are expected to respond to the instructor's comments with treatment. Within the simulation lab, there are patient beds that are outfitted with headwalls, beds, and fixtures that approximate what a nurse will encounter in a live clinical setting. Carlow felt that its simulation labs needed to be updated, in addition to adding more beds. That included making changes to the lobby areas outside the simulation labs.

Harris says that Carlow's health and wellness program leadership was intimately involved in the design of the lobby. She says that they labored over choosing the words applied to a backlit panel


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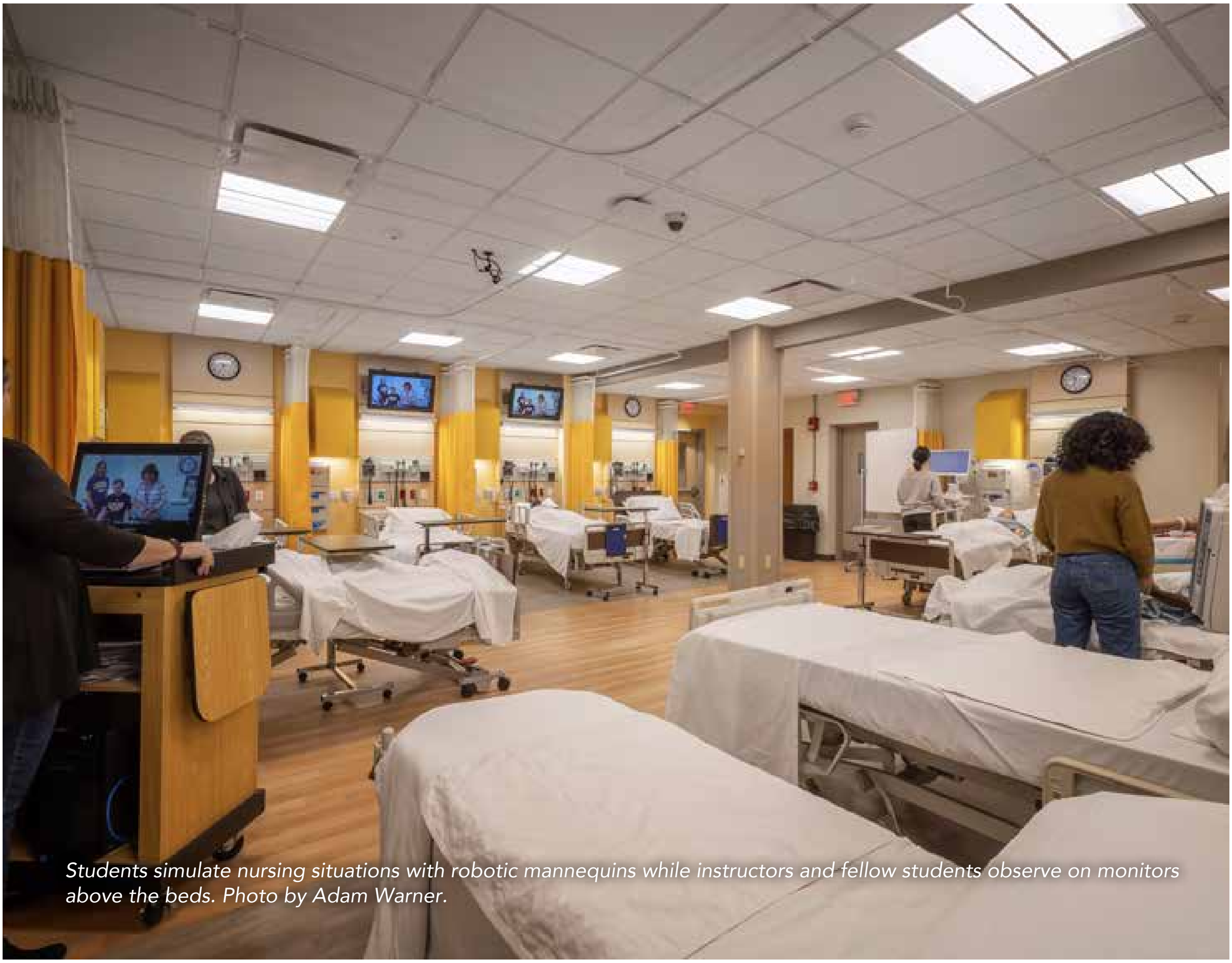

Students simulate nursing situations with robotic mannequins while instructors and fellow students observe on monitors above the beds. Photo by Adam Warner.

that represented the values of the university and department. When given the full spectrum of options from IKM's color palette suggestions, Carlow went immediately to bold saturated colors.

"It's unusual to have a client that is so open to bold saturated colors," Harris says. "Carlow's health and wellness program is very forward thinking. The lobby is part of the stimulation. When we talk to the students, they said that the scariest thing was starting clinical rounds in a hospital. That is when they put a needle in an actual patient. They said as much simulation time they can spend before their actual clinical experience gives them comfort that they're doing things correctly. They gain the confidence that they can then move into a real-world setting."

The university received bids and conducted interviews with the prospective contractors for the Curran Hall renovation. Meadows says that FSS distinguished themselves during the interview process, allaying Carlow's major concerns about the project.

"We were extremely impressed during the interview stages and some of the early bidding with the thought process and methodology that Facility Support was going to bring to the project, particularly because we were taking an entire floor of a 50-year-old academic building and turning it into a high-fidelity simulation space," Meadows says. "We really liked their thoughts on how they would integrate the renovation portion of the project with the new space. We wanted the finished product to be so that a student or parents with a prospective student wouldn't know which was the new space and which was the renovated space."

"We felt that FSS came with a great deal of insight into that and some unique thinking as to how they wanted to work the tight schedule," he continues.

"We asked them about how they approach their semesters and came up with the idea that the two floors could be staggered," explains Brian Palmiere, project manager for FSS. "There is usually a period of a few weeks where there is the introduction of the syllabus and some teaching before getting into the simulation. We knew that we had to get their classroom settings

Photo by Adam Warner.

done as soon as possible so we worked hard at that. They were set up so they could open their doors when students returned for the regular classes. Meanwhile we were able to finish up the trim work and fittings upstairs along with some of the longer lead time items like the bed frames and case work."

FSS had the full summer break, but only the summer break, to complete work on the classroom piece of 4,000 square foot total scope. Work on the simulation space had to be far enough along that it could be completed by mid-September. One of the challenges of the project was that Carlow has some classes during summer break. Located on Fifth Avenue, Curran Hall offered little or no area for staging and no special access or conveyance for materials. FSS did not exactly have the run of the place.

"The big thing was to make sure that we weren't hindering Carlow's operations or the students' day-to-day experience. It was a construction job so I'm sure there was some disruption, but we did what we could to make things be seamless," Palmiere says. "We had a great superintendent, Brice Baker, on site. He worked with the staff to make sure that they were OK with how things were operating, to see if they had any questions or concerns. He was always sure to be very quick about addressing those."

Curran Hall was built in the 1960s but had not been renovated. Information was not readily available, which made the team a bit anxious about what they didn't know about the building. The first surprise took little time to uncover.

"One big problem we ran into right away was during asbestos abatement. As soon as we took the ceiling down, we found that the fireproofing had been sprayed into the metal lath on the deck above. The asbestos fireproofing was integrated into that lath. It was going to be very difficult to remove that without compromising the floor above," recalls Palmiere.

"The existing drawings weren't all that informative about what was going on above the ceilings. A lot of the spaces we were dealing with had not been remodeled since the building was built in the 1960s," says Harris. "The very interesting construction technique that none of us on the team had ever seen before - and I have a historic preservation background - was they had taken wire mesh and used that as the form work for the concrete slab. Some of the concrete had poured through the mesh and created a very irregular surface that the fireproofing adhered to very well."

Palmiere and the asbestos abatement contractor collaborated with IKM to mitigate the problem. FSS suggested a way to hang the ceiling that did not require screwing into the underside of the slab. They developed a secondary support system underneath the slab, so they did not have to penetrate the floor above as frequently. There were still plenty of floor penetrations necessary, however, as plumbing, ductwork or electrical distribution occurred.

"Every time they did make an actual penetration, the hazardous materials contractor had to come back on site and that had to be worked into the sequencing of a very fast-paced construction schedule. That's not normal," Harris explains. "Usually the hazardous materials contractor is involved in the first two or three weeks of the project. Everyone involved, including the hazardous materials contractor, understood what was going on and did not make a big deal out of it. They just did what they had to do."

"It was definitely nerve wracking when we discovered those conditions," agrees Palmiere. "Carlow had a good asbestos abatement contractor on the site and we were all working together so that things went smoothly."

The relatively small footprint of Curran Hall made designing the expanded space more difficult. The 12,500 square foot floor plates were supported by tightly-spaced columns, making it a challenge to allow enough space for the nurses to have 270-degree access to the beds while keeping sight lines free for the instructors who would be in the room. The compact space dictated that there wouldn't be space wasted on corridors, so there was extra thought given to the flow between the rooms. Harris says that the space demanded the layout be efficient and forced Carlow to think carefully about what would and would not be necessary to incorporate into the simulation space.

FSS's team completed the classrooms in time for the start of the fall semester and moved into the simulation labs to wrap those spaces up as planned. By mid-September, when the nursing students were prepared to begin simulations, the new labs in Curran Hall were ready.

"The finished product was tremendously well received by the students, the faculty, and our board of trustees," says Meadows.

"We have been able to accommodate a significantly higher number of nursing and respiratory care students because of the new space. We have actually had other universities in the region that are looking to revamp and re-engineer their simulation and high-fidelity space come to our labs. That's been very good publicity for the Health and Wellness school. We couldn't be more pleased with the work that FSS did. They were a great partner throughout the project."

"Everybody at Carlow, the architect, and all of our subcontractors worked together. They bought into and understood the timeframe we had to work with," says Palmiere. "Everybody was accommodating to help us get the job done the right way and in the time we needed to."

"I don't normally do this but after the project was over, I wrote a letter to the president of FSS telling him how much I enjoyed working with his crew on the project. The relationship was that workable," says Harris. "Everybody involved had the right frame of mind for collaboration. In a project with a tight schedule, everybody must work together to make decisions that are for the good of the project. That's awesome because it's not always like that." BG

PROJECT TEAM

Facility Support Services, LLC .... General Contractor
Carlow University .... Owner
IKM Inc. .... Architect
McKim & Creed .... Mechanical/Electrical Engineer
Neumeyer Environmental Services ...... Asbestos Abatement
Right Electric Inc. .... Electrical
Thomarios .... Painting
Massaro Industries .... Ceramic Tile
Ruthrauff Sauer LLC .... HVAC
W.G. Tomko Inc. .... Plumbing
River City Glass Inc. .... Glass/Glazing
Caldwell's Windoware .... Window Treatments
Tri-State Flooring, Inc .... Vinyl Tile/Carpeting
Graphics 22 .... Signage
Wyatt Incorporated .... Interiors

FSS was selected to provide the installation of a new metal screen wall system on three sides of the fifth floor of the Student Commons Building. The tempered glass and perforated metal panel system replaced the existing handrail systems, ensuring safety of both students and faculty.

The architectural panels were designed by six students at Carlow University. The architect, LGA Partners, refined that design to ensure that the panels could easily be produced and to allow for the proper amount of light and air to pass through each of the panels. The triptych (a series of three interrelated panels) consisted of three main themes illustrated throughout the terrace: Community & Nature, Academics and History.

Explored across 13 triptychs, as well as corner and gap panels, the designs illustrate the Sisters of Mercy's immigration from Ireland to Pittsburgh. The sweeping landscapes embody Carlow's core value of discovery, including a set of panels representing graduation and the values forever instilled in every student's heart.

"Safety and aesthetics were the big challenges. The university asked the students to get involved and come up with an aesthetic that was meaningful to Carlow University," says Justin Yokaites, project manager for FSS. "Safety was a big issue for us. We had to take down the existing handrail and do structural work in the ceiling above after the handrail was removed. The logistics were difficult too. We worked during the summer but the school still does have classes, so we had to work to keep the students out of the beautiful patio there."

Construction took place during the summer break of 2019, wrapping up in August ahead of fall semester classes.

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FIRM PROFILE

INDEPENDENCE PLUMBING, INC.

One of the regional quirks of the construction industry in Western PA is the Allegheny County Plumbing Code. Allegheny County requires a master plumber be employed to receive a permit for plumbing work. That seems logical but the scope of services included in plumbing includes underground sewer construction that don't require master plumbers outside Allegheny County. The Allegheny County requirements were new to Independence Excavating when the company opened its offices in Pittsburgh. After a few years of frustration, Independence Excavating decided to turn the situation into an opportunity and launched Independence Plumbing in 2019.

"The main reason we started Independence Plumbing is because for years in Allegheny County, in order for us to do private water line, storm, and sanitary work, we had to pull a permit and we were not master plumbers," says Jim Schulties, plumbing estimator/ project manager for Independence Plumbing. "We would end up subcontracting with one of the plumbing contractors to provide a foreman or supervisor, someone who was licensed to pull a permit. We decided in 2017 that by 2019 we wanted to pull our own plumbing permits. It did not make sense to hire a plumber and not generate income."

Independence Plumbing is division of Independence Excavating. It works as a specialty plumbing contractor in Western PA, including Erie and east to State College, West Virginia, and the Washington DC/Virginia markets. It works as a subcontractor to regional general contractors, a prime contractor on publicly funded projects, and as the plumbing workforce for the civil contracts that Independence Excavating lands.

"When I got here, I didn't know that Allegheny County had the plumbing code it has. As time went on, it made sense to spin off the plumbing group as its own entity. It's just another service we can offer our customers," says Justin Fox, vice president and general manager of Independence Excavating. "We believe that general contractors and owners want to write fewer contracts. Every time they add another subcontractor it adds another layer of complexity and sequencing. And there is a lot of synergy between the plumbing and the civil business."

"There is a lot of overlap on both sides," agrees Schulties.

"Just in 2019 those synergies worked well at the AHN facility on Agnew Road that we did for Rycon and the Wexford Medical Mall for AHN. We're working in Washington DC on two different jobs that are civil and plumbing," says Fox.

The internal synergies justified launching the plumbing business but to gain a foothold, Independence Plumbing must establish itself with the general contractors, construction managers, and owners. In a market that has a deep bench of mechanical contractors, that requires a period of auditioning, a reality that tests the patience of new businesses. Schulties, who worked for mechanical contractor Rabe Environmental Systems in Erie prior to joining Independence Plumbing in April 2019, admits to being impatient.

"We've been successful in public projects. We're getting good bids out there, but it's been harder to get opportunities in the private sector. I just think it's the fact that we're new," says Schulties. "We're prequalified to bid the work at the major hospitals, UPNC and AHN. We have a laundry list of prequalifications to allow us to bid the private work, but we haven't been getting as much feedback as we would like from the market."

"One of the biggest challenges has been getting our name out there," says Matt Allanson, project manager. "We were able to leverage the relationships Independence Excavating developed with some of their customers, like Rycon, PJ Dick, or The Buncher Company. The challenge is to get our name in front of more of the general contractors, especially those that do interior work that we wouldn't have worked with before."

Fox, who manages Independence Plumbing for its parent company, takes a longer view of the way the market has reacted to a new entrant.

"Although it's been a little harder to secure jobs that we would like, I've been surprised by the feedback we have received," Fox says. "I'm encouraged that PJ Dick, Rycon, Massaro and others are talking to us and inviting us to bid. We may not be getting all the feedback we want, but general contractors are interested. They know that although we are in the audition phase, we're backed by a good organization with a good reputation."

Independence Plumbing has succeeded in winning work at the Butler County Annex, Clarion University, and Slippery Rock University. Fox notes that the synergies between the two business units were invaluable in Independence Excavating securing the $20.9 million first phase of the airport Terminal Modernization Program, as uncertainty about the scope of the site plumbing work wasn't an issue for the company.

As they look to the next few years, the leadership at Independence Plumbing is encouraged by the market and the initial successes the company has had.

"The success we've had is because of the people," says Allanson. "We had swung and missed twice before Jim came on board. He and [superintendent] Dustin Chehovits really got things started."

"One of the things that stand out to me is the overall experience we have," says Schulties. "From the foreman we have, to Dustin

Jim Schulties

and me, everybody has a minimum of 20 years of plumbing experience. It's not newbies trying to do the installation work. They are seasoned journeymen who have been installing projects throughout Pittsburgh."

Allanson looks forward to building upon the early success to create the scale the market requires. Independence Plumbing is still small, with five craftspersons managing and executing the work. The next steps will require more investment.

"We have some capability for prefabrication but as our plumbing business grows, we can expand our shop space for larger prefabrication. That's the way the market is going," he says "That's definitely in the long-term plan. If we are going to be successful, we have to keep up with the firms that are already doing that."

Schulties acknowledges that he's been pleased with the progress Independence Plumbing has made in the ten months he's been on board, even if he is impatient for more. He allows that his ambition for Independence Plumbing has more to do with developing a good reputation and building a great team than becoming the biggest plumbing contractor. His boss agrees.

"We're going to deliver a quality product. Our reputation depends upon it," says Fox. "We're here for the young long haul. You have to start somewhere. You crawl, then you walk, then you run. We are in the crawling stage but we're going forward. That's the important thing." BG

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THE EXPANSION OF POTENTIAL LIABILITY OF CONSTRUCTION MANAGERS AND CONSULTANTS

BY SCOTT CESSAR, ESQ.

Over the last decade or so, there has been far more judicial willingness to adopt legal theories that result in an increased risk of exposure to construction managers (CM) and consultants working on construction projects. This has resulted in a greater likelihood of lawsuits being filed that name CMs and consultants as defendants and a greater likelihood of those lawsuits surviving efforts to have the lawsuits dismissed prior to trial. The consequence of more claims has led to increased costs for legal expenses, for settlements, and for uncompensated personnel time devoted to the defense of the claims.

This expansion of potential liability may be broken into two sets: (1) claims for pure economic loss not arising from property damage or personal injury by parties not in a contractual relationship with a CM or consultant and (2) claims for property damage or personal injury by a party not in a contractual relationship with a CM or consultant.

The first set concerns claims by a contractor against a CM or consultant that its breach of duties owed to the owner on a project and/or its provision of incomplete or inaccurate information on a project, which it knew, or should have reasonably anticipated, would be relied on by the contractor, resulted in damages to the contractor.

For many years, in the great majority of jurisdictions, CMs and construction managers were insulated from such claims by the economic loss rule, which prohibited third parties from asserting negligence claims against parties to recover pure economic losses, not caused by personal injury or property damage, from parties to which they were not in privity of contract.

The economic loss rule, however, has been eroded significantly over the years by the growing judicial adoption of the Restatement (Second) of Torts §552 (a),[1] which states that entities in the business of supplying information that they know or should reasonably anticipate will be relied on by third parties may be held responsible for money damages if this information is proven to cause harm to a third party that relied on the information.

The great majority of states have now adopted the Restatement Second of Torts §552 (a).

"Similarly, in New York, a court held that a CM could be held potentially liable to a contractor for money damages for negligent misrepresentations based on its alleged failure to identify defects in the design documents, because the CM had a duty to review those documents."

The consequence is that, for example, in Tennessee, a court found that a CM could be held potentially liable to a concrete contractor for money damages based on its allegation that the CM had incorrectly measured and set the bench marks to which the concrete floors were poured. Similarly, in New York, a court held that a CM could be held potentially liable to a contractor for money damages for negligent misrepresentations based on its alleged failure to identify defects in the design documents, because the CM had a duty to review those documents.

The second set concerns claims by injured workers or adjacent property owners against CMs or consultants for damages for personal injury or property damage. Following the Restatement Second of Torts §324(a), a CM or consultant may be held liable if it either "gratuitously or for consideration" renders services that it should recognize could cause physical harm and, in rendering such services, fails to exercise reasonable care, which results in harm.

Just about every state has either adopted Restatement Second of Torts §324(a) or recognizes the same cause of action based on the common law doctrine of negligent undertaking.

The consequence is that, for example, in the District of Columbia, an environmental consultant was held to be potentially responsible to a worker who claimed injuries due to exposure to contaminated soils, based on the fact that the consultant prepared the environmental assessment report and had an ongoing obligation to monitor air conditions. In another example, in Arizona, a CM was held to be potentially responsible for almost $4 million in property damages caused when a sprinkler system malfunctioned, based on the CM's obligation to supervise the system's installation.

In these cases, the language of the CM and consultant's contracts are closely scrutinized by the courts as to the duties they agreed to undertake, as well as their actual conduct on the project, in determining whether they could be potentially liable such that the case should go to a jury.

A subset of this expansion of liability of CMs and consultants is whether a party may claim that it is an intended third-party beneficiary of the owner's contract with the CM or consultant. Here, courts will scrutinize the owner's contract with the CM or consultant to determine if third parties were entitled to rely on the information provided by the CM or consultant. Thus, in the District of Columbia case discussed above, the environmental consultant was also held to be potentially responsible to the excavation subcontractor for any damages that the injured worker might recover from the excavation subcontractor based on faulty air monitoring, under the theory that the excavation subcontractor was an intended third-party beneficiary of the owner-consultant contract.

In order to protect themselves as best as can be, CMs and consultants should take care in the negotiation and drafting of contracts to not accept broad delegations of duties inconsistent with their actual scope of work. If possible, they should include disclaimers in their contracts as to who may rely on their work product and expressly state that third parties are not intended beneficiaries of those contracts. Although this will not preclude potential liability in all states, it will certainly be useful if the case goes to the jury. In addition, CMs and consultants should consult with their insurance broker to be sure that they have robust coverage in view of the magnitude of their potential liability exposure.

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[1] The Restatement (Second) of Torts is a legal treatise prepared by the American Law Institute that sets forth principles of American common law as it relates to torts, which are acts or omissions that cause harm to a third party.

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CRIME AND COMPLACENCY: WITH CYBER CRIME ON THE RISE, WHY DO ORGANIZATIONS LACK A COMMITMENT TO IMPLEMENTING CYBERSECURITY BEST PRACTICES?

BY MATTHEW J. SCHIAVONE, CPA, CISSP, CISA

There is no one-size-fits-all cybersecurity solution. Instead, we must focus on reducing the chance that an incident will occur and the impact it will have when it does. We do this by leveraging best practices, recognized frameworks, and continual policy improvement.

Or do we? According to the 2019 Hiscox Cyber Readiness Report, the number of firms reporting cyber incidents rose from 45 percent in 2018 to 61 percent in 2019. As well, the cost of cybercrime is on an aggressive upward trajectory, up on average 61 percent in 2019. But while threats and incidents increase, complacency holds sway. The report revealed a decline in the number of firms achieving an "expert" score for their cybersecurity strategy and execution, from 11 percent in 2018 to 10 percent in 2019.[1]

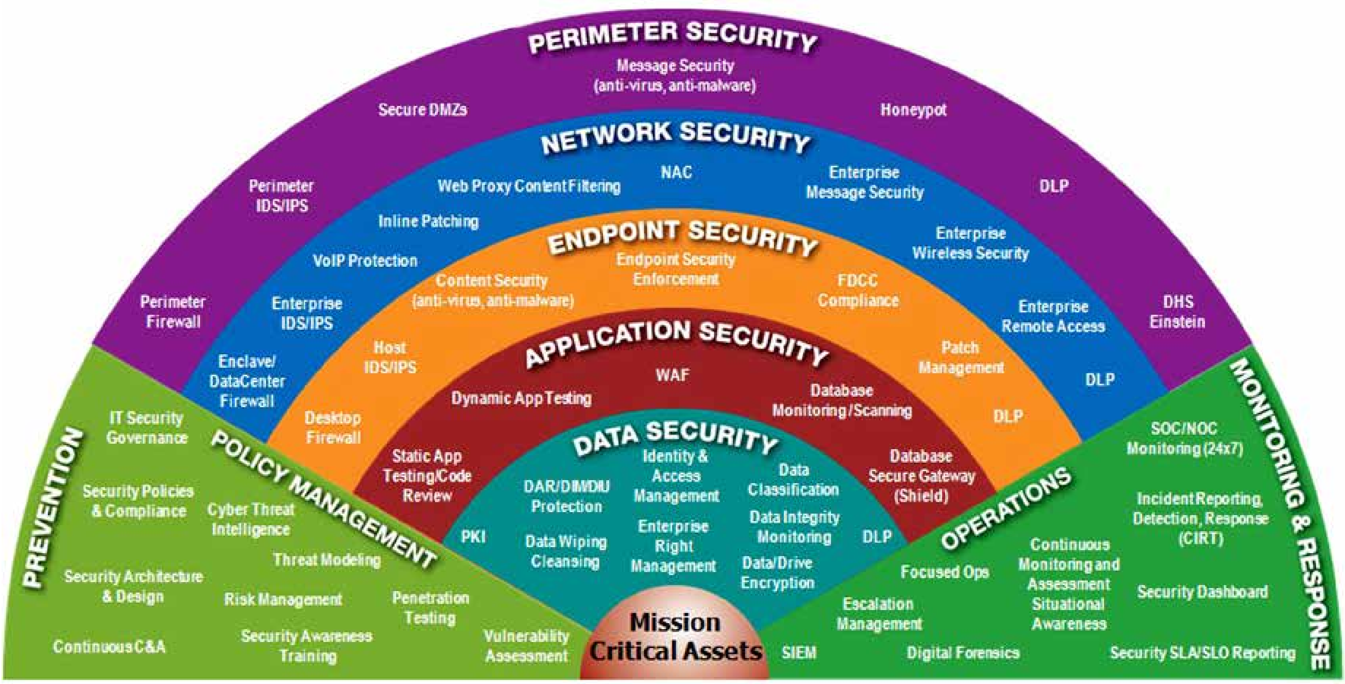
While companies seem disinclined to act, their markets may force them to do so. The time has come when implementing a cybersecurity program isn't just for a business's own protection. Regulations and contracts are demanding action as the world looks to strengthen its anti-cybercrime posture. In this digital world, we are all connected, a fact that has been demonstrated by a multitude of impactful cyber incidents.

In 2013, Target experienced one of the most infamous of breaches: more than 110 million personal and financial identities compromised; $162 million in damages. While Target dominated the headlines, the breach came through an unprotected small business, Fazio Mechanical, a refrigeration contractor and vendor to the retailer. A phishing email tricked a Fazio employee into releasing malware into its computer system, which eventually allowed the malicious attackers access to Target's systems. The rest, as they say, is history.[2]

Third-party vendor risk remains one of the most troubling cybersecurity issues. Managing vendors and their accompanying risks is critical to any cybersecurity initiative—and one of the most important reasons for your organization to adopt an effective cybersecurity program. If you aren't assessing the risk your vendors have on your business, others will be concerned about the risk you could have on theirs.

If you are a small business, the opportunity to partner with larger organizations may hinge on your ability to protect yourself from cybercriminals. In 2018, the Opus & Ponemon Institute revealed that, "59 percent of companies experienced a data breach caused by one of their vendors or other third party. In the U.S. that percentage was even higher at 61 percent."[3] The Hiscox study confirmed the findings. Nearly two-thirds of respondents, 65 percent, reported experiencing one or more cyber-attacks over the previous year as a result of a weak link in their supply chain.

Over half the firms responding to the Hiscox study now include cybersecurity key performance indicators (KPIs) in their contracts with suppliers. But while 65 percent of enterprise



firms do so, only 39 percent of small firms said they had adopted such policies. The trend promises to continue, with more enterprise organizations adopting these KPIs while the practice trickles into the smaller companies.

Regulators stepping up

No business, large or small, will be excused from implementing best cybersecurity practices. And each organization will have to demonstrate compliance, to some degree, to meet various demands—be it contract or regulatory.

Consider initiatives like the Department of Defense's (DoD's) Cybersecurity Maturity Model Certification (CMMC). The recent CMMC responded to two issues. The first was the DoD's inability to trust and verify that their contractors complied with the NIST 171 framework as required by Defense Federal Acquisition Regulation Supplement (DFARS) clause 252.204-7012[4]. A second issue was contractors' reluctance to implement the framework at all, or to do so correctly.

As of August 2020, every DoD contractor will have to be certified through the CMMC program, which involves implementing the DoD's CMMC framework and obtaining a third-party audit to certify the requirements have been met. The directive applies to all businesses, large and small, looking to do business with the DoD. Those firms will have to comply with one of five levels of maturity depending on the type of services they provide.

This is not the first DoD program of its kind. Its Federal Risk and Authorization Management Program (FEDRAMP) has similar requirements and consequences. All DoD cloud service providers must implement FEDRAMP controls and undergo annual third-party attestation.

States responding with regulations

While your business partners will be looking for comfort in your compliance with risk management best practices, you need to address your own needs in terms of internal vendor risk management.

The Hiscox study revealed that only 34 percent of companies keep a comprehensive inventory of third parties; 69 percent of respondents indicated that a lack of centralized control was challenging their ability to do so. That could also be a reason for the lack of a mature security program at your organization. Still, your organization will have to meet partnership and customer demands for data security—and new state regulations designed to force organizations to develop and communicate compliance with a cybersecurity program that aligns with best practices.

Two such noteworthy pieces of legislation are the California Consumer Privacy Act (CCPA) and the Ohio Data Protection Act (ODPA). The CCPA requires companies to uphold their "duty to implement and maintain reasonable security procedures and practices appropriate to the nature of the information to protect the personal information."[5] You might not conduct business in California or have customers in that state, but you can expect this type of regulation to come to states where you are doing business.

The ODPA incentivizes businesses to comply with a recognized security framework in order to achieve safe harbor in the event of a breach. The Act specifies industry-recognized security frameworks for Ohio businesses to incorporate into their cybersecurity policies. It does not require adherence to some minimum cybersecurity standard, but is intended as an incentive for businesses to achieve a higher level of cybersecurity through voluntary action. If a business has a cybersecurity program that meets one of the Act's requirements, it is eligible to use that as an affirmative defense in the event of a lawsuit resulting from a data breach. Currently, the ODPA recognizes the following frameworks:

- NIST "Framework for Improving Critical Infrastructure Cybersecurity"
- NIST Special Publication 800-171
- NIST Special Publications 800-53 and 800-53a
- The "Federal Risk and Authorization Management Program" (FedRAMP) Security Assessment Framework
- The "Center for Internet Security - Controls for Effective Cyber Defense"
- ISO/IEC 27000 Family "Information Security Management System"[6]

The California and Ohio regulations make two noteworthy points: they establish the need to implement a recognized cybersecurity framework and to demonstrate reasonable compliance with that framework, compliance that can be demonstrated through independent third-party attestation or audit. Notably, each point is also inherent in a viable vendor risk management program.

Assuredly, the expanding digital world will perpetuate cybersecurity concern and risk, and stakeholders—internal as well as external—will increase their insistence on limiting risk. As well, regulators increasingly will implement laws to force the adoption of best practices and the need to demonstrate compliance with established cybersecurity frameworks.

Recommendations

Third-party attestation or compliance reports help create efficient and effective responses to vendors' risk management questionnaires. Often, one audit and one report can satisfy the queries and demands of hundreds of relationships, saving you time and money when being inundated with such requests.

The AICPA's System and Organization Control (SOC) 2 Attestation is a non-industry specific mechanism designed to provide assurances to internal and external stakeholders alike. The framework addresses an organization's ability to achieve any combination of the five trust service principles—security, privacy, availability, confidentiality and processing integrity. At its core it is meant to demonstrate how a particular organization achieves those trust service principals and provides for an effective control environment. SOC 2 Attestation may not be applicable to all organizations or fulfill all regulatory obligations, but it is worth discussing with your trusted business advisor.

Some steps you can take to protect your organization:

1. Talk to a professional and consider undergoing a risk assessment. A risk assessment will not only help identify major threats and vulnerabilities, it will help determine what cybersecurity frameworks and best practices suit your business needs. Moreover, this will provide a head start into Step 2.
2. Conduct a readiness or maturity assessment. A readiness assessment typically implies an assessment of audit preparedness, whereas a maturity assessment will communicate your level of maturity against the established best practice. Regardless of which assessment you conduct, the effort will align your current practices to an established framework and help identify gaps or weaknesses in your program. Ideally it will produce a roadmap to facilitate cost-effective ongoing security improvement.
3. Remediate. Correct the errors and fill the gaps that will allow you to reasonably comply with the best practices.
4. Demonstrate your compliance. Undergo regular audits to document and communicate your efforts.
5. Commit to ongoing improvement. Best practices and regulations change. Moreover, no cybersecurity program is fully mature. A good auditor will give you recommendations on actions to take to facilitate continual improvement within your program. This is key, as complacency is not a good practice. BG

[1] hiscox.com/sites/default/files/content/documents/2019-Hiscox-Cyber-Readiness-Report.pdf

[2] pymnts.com/news/2015/target-home-depot-reveal-full-breach-costs/

[3] businesswire.com/news/home/20181115005665/en/Opus-Ponemon-Institute-Announce-Results-2018-Third-Party

[4] acq.osd.mil/dpap/policy/policyvault/USA002829-17-DPAP.pdf

[5] dpwcyberblog.com/2019/07/the-biggest-risk-with-ccpa-may-be-cybersecurity-not-privacy-10-things-companies-are-doing-now-to-prepare/

[6] Ohio Attorney General Mike DeWine's CYBEROHIO Initiative For additional information, contact the Attorney General's office at AttorneyGeneral.gov or by calling 800.282.0515

Matt Schiavone is a senior manager with HBK CPAs and Consultants. He can be reached at MSchiavone@hbkcpa.com.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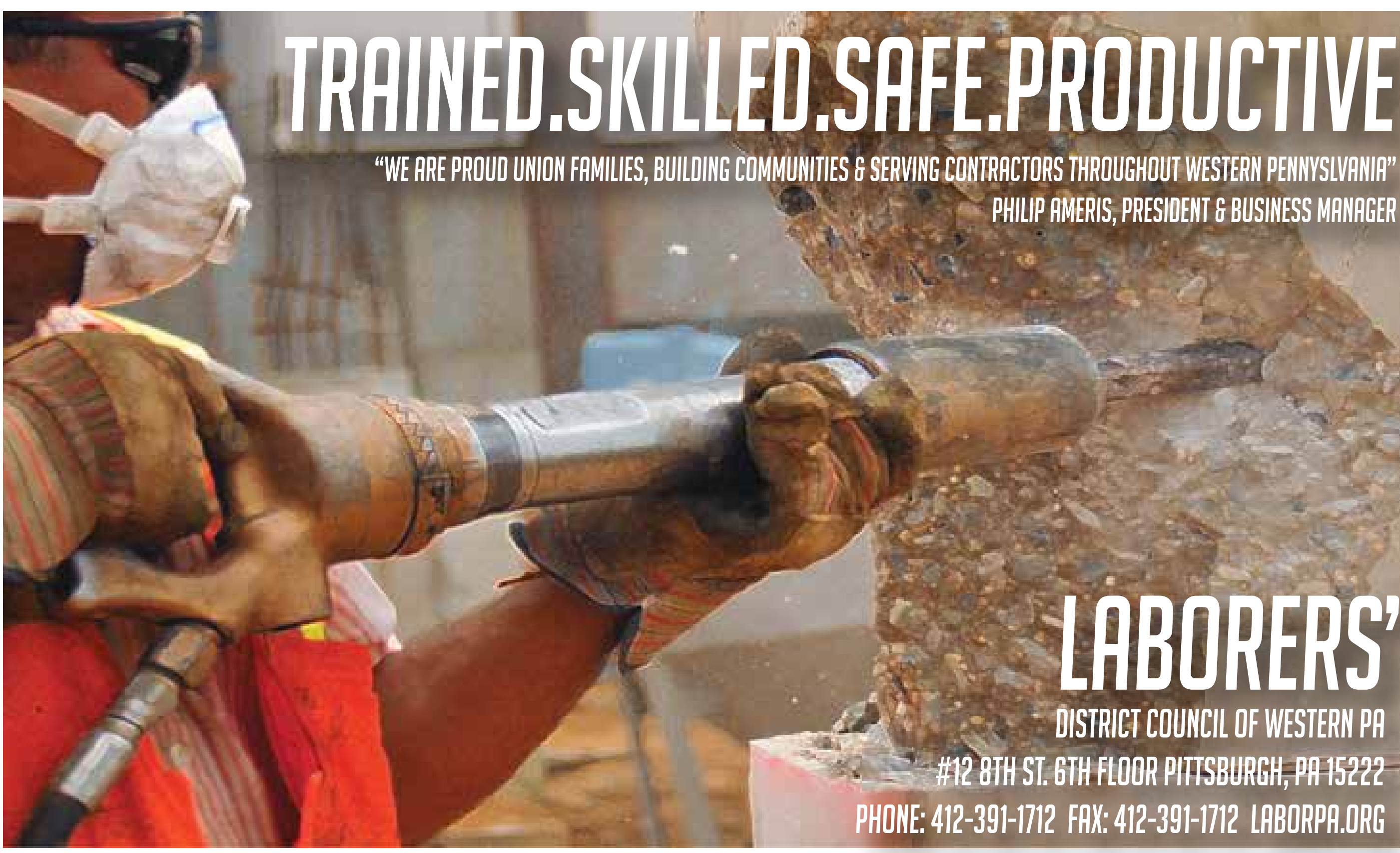
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BEST PRACTICE

HOW EARLY SECURITY INVOLVEMENT CAN IMPROVE YOUR NEXT BUILDING PROJECT: CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN (CPTED) STRATEGIES THAT MAXIMIZE SECURITY, MAINTAIN ARCHITECTURAL VISION AND IMPROVE FUNCTIONALITY.

BY HERB BRYCHTA, PSP, CISSP

In a world of ever evolving risk, security is an immediate concern. Beyond security guards and access control, how can security be seamlessly integrated into building projects to enhance safety, increase efficiency and deliver better value?

Whether in support of a real estate acquisition, new building construction, or modernizing an existing space, early security involvement can impact several critical aspects of a project. This article outlines optimal timing for security involvement and key considerations for how Crime Prevention Through Environmental Design (CPTED) concepts can be integrated to support safer spaces without sacrificing function or aesthetics.

Optimal Timing for Security Involvement

To effectively integrate critical features and systems into a physical space, security must be involved throughout a project. This results in a more natural flow without behind-the-scene protocols impacting people's experience. Recurring operating expenses for security systems and guards can be reduced with security-informed design at early stages. Key milestones for security involvement include:

- Scope Development and Due Diligence: During project planning, security can guide scope development and long-term planning. An evaluation of site-specific threats and identification of solutions to mitigate those potential risks can prove valuable during site selection and planning phases.
- Project Kick-Off: An understanding of compliance requirements is crucial to determine specific security needs. Security professionals can provide guidance on regulatory requirements, such as drug storage for medical buildings; however, they can also provide guidance on how to meet insurance requirements, integrate corporate values, etc.
- Concept Design: As the design starts to take shape, it's time to focus on how people will move through the physical space. Make security part of that discussion. Smart placement of restricted areas can reduce the number of card readers, cameras and guards. Also, you can plan for the natural and efficient flow of both employee and visitor traffic.
- Design: A security expert can provide vital input on card reader, alarm and camera locations. Access control should be as integrated and unobtrusive as possible, not an afterthought.
- Construction Documents: Normally, security doesn't get involved until this step. At this point, it may be too late to effectively address security concerns. With early involvement, security can inform planning and design decisions to achieve cost-effective solutions that enhance the safety, look and functionality of a space.

The CPTED Advantage

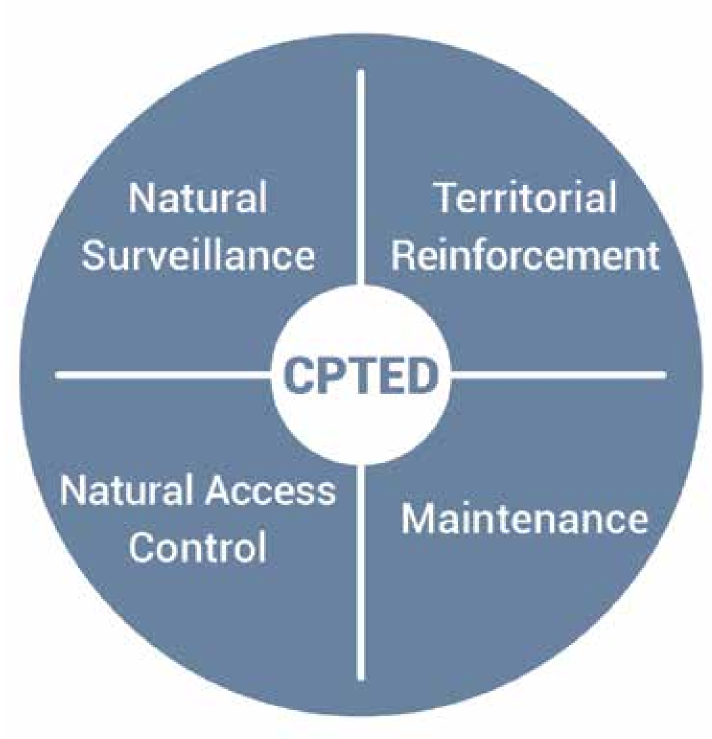
When security is a part of a project from the beginning, principles of Crime Prevention through Environmental Design (CPTED) can be integrated. These principles focus on controlling the built environment to produce behavioral effects that are likely to reduce crime and increase safety.

Pre-Project Planning	Project Kick-Off	Concept Design	Design
Security analysis for due diligence, site analysis and selection Facility and campus security assessment	Compliance Requirements	Layout and circulation review	Security systems placement

CPTED uses natural elements and aspects of the design together to create a holistic security solution. Lighting, natural access control and surveillance can be incorporated in a way that enhances the experience of a space. In addition to the visual impact, security measures such as gates and bollards are not always effective deterrents. This is especially important in hospitals, higher education campuses and other public spaces where the perception of open access is important.

These four key CPTED tenets help create safer spaces while still supporting the most visible aspect of a project, the architecture:

1. Natural Access Control: Considering how people will move throughout a space is key to natural access control. The space should be designed for intuitive wayfinding. Deliberate placement of entrances and non-public areas is critical. For example, at Disney World, the design does not encourage visitors to accidentally wander into maintenance areas or employee break rooms. Natural access control also reduces the need for fences and bollards that can detract from the architecture.



2. Natural Surveillance: CPTED is focused on actively involving legitimate users of a space in security. Based on the design, users will see certain areas and their attention is directed accordingly. To guide people to what you want them to see:
   - Orient seating to look out of windows.
   - Plan landscaping that does not obstruct sightlines to areas like parking lots, doors and first-floor windows.
   - Plan adequate lighting to illuminate doors and potential hiding spaces so users will be able to clearly see these areas.

   If people are looking at a specific area, they are more likely to see and report suspicious activity. Intentional implementation of natural surveillance also serves as a deterrent to discourage criminals.

3. Territorial Reinforcement: This concept involves clearly defining property lines, employee-only areas and other secure areas. Property line solutions include fences, short walls, and well-maintained shrubs. Even a change of road or sidewalk surface can alert people that they have left public property. Well-placed signage with clear direction such as "Please wait here until called," "Employees only," or "Electrical equipment - Shock Hazard" also reinforces boundaries.

   When coupled with strong natural access control, staff will be able to rapidly identify lost users. People who are lost will feel out of place and will have a natural inclination to return to the proper area.

4. Maintenance: It is important to go over maintenance considerations in design to have a thorough understanding of long-term needs. Maintenance plans should account for upkeep of shrubs and trees so that they don't create hiding spaces for criminals or interfere with natural surveillance.

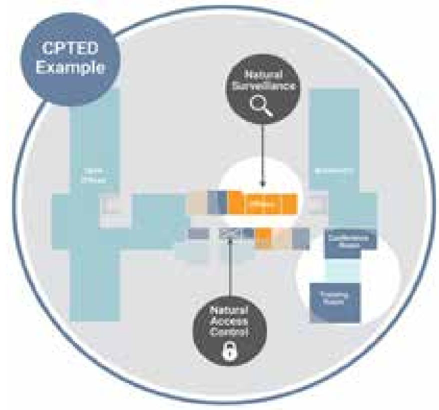
A More Secure, Functional Solution and Why it Works

How can these CPTED principles be applied?

This example of a whole-floor renovation in an office-type building demonstrates how early integration of security can result in improved functionality and safer spaces.

Looking at the details of this example space, confidential work is completed in the light blue areas. Due to the nature of their work, these employees are at risk of violence from unhappy customers. A training room, accessible to anyone, is positioned in the bottom right corner of the space, far from the elevators.

This layout incorporates natural access control. The only way onto the floor is the elevator. The stairs are for emergency exit only. There is some degree of natural surveillance of the elevator area from a few offices. However, there is no natural surveillance of the training room, employee break room or corridor.



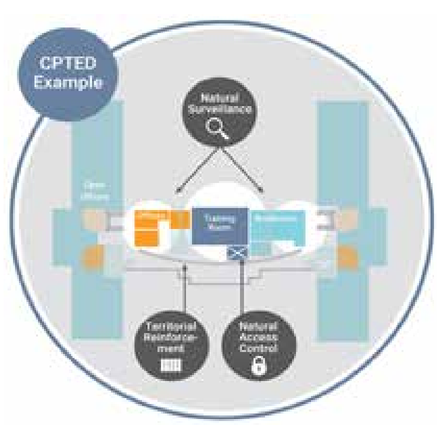
Except for the doors to the offices, there is no clear definition of public and private space. Without this delineation, visitors may access those employee-only spaces, walking past the employee break room or conference room. Territorial reinforcement relies not only on direct definition of space, but also on people and actions looking out of place. That is not possible in this layout.

From a long-term cost perspective, had the facility been built according to this plan, a staff member would likely be required to monitor visitors during classes. Almost certainly, printed signs with "Please keep your voice down, we are trying to work" would be taped to walls and doors, noting the frustrations of staff members due to visitor interruptions.

How can the design be adjusted to better incorporate territorial reinforcement?

In this revised layout, the training room is in the center of the floor, across from the elevator. The large open area is recast as public space with short corridors leading to more private areas such as private offices and break room. Visitors have no reason to be in those spaces, so they generally won't enter them. Those that do will look and feel out of place and can be assisted back to their proper locations.

With a few adjustments in the layout, the security of the space is strengthened. Long-term, the added costs to monitor visitors are also avoided.



The bottom line on cameras, alarms and cost savings

No matter how well a space incorporates CPTED concepts, security systems are a necessity. Security systems in the form of alarms, card readers and cameras all have a purchase cost, an ongoing maintenance cost, an ongoing operational cost (someone has to issue fobs, someone has to monitor cameras) and an end of useful life. Using CPTED concepts reduces both the upfront investment and recurring costs. Designing with natural access control in mind leads to fewer doors needing card readers, alarm sensors and camera coverage. That translates to less maintenance hours fixing broken equipment. Designs should also incorporate enclaving, a form of territorial reinforcement, by locating the most at-risk assets behind multiple zones of progressively increasing security. Then, fewer guards, card readers and alarm sensors are needed.

Moreover, designing with natural surveillance in mind provides better sightlines, which can reduce the number of cameras needed to cover a certain area. Cameras record evidence and support surveillance. Cameras do not stop crime. Cameras can only support surveillance if they are monitored by a user who can dispatch responders. The more cameras you have, the more people are needed to monitor them effectively. There is software which can increase the number of cameras that a user can monitor at one time, but there is still a limit. It is more cost- effective to design with natural surveillance in mind rather than to purchase more cameras and hire more people to monitor those cameras. With contracted security staff costing anywhere from $25-30 per hour on the low end and upwards of $100 or more per hour on the high end, security costs can quickly add up. Designing to reduce your guard requirement by one guard can easily save you over $100,000 per year in operating costs.

One size does not fit all

With security, one size does not fit all. It is important to understand that it is entirely possible to secure your organization into near non-functionality, which has other impacts. Security is a supporting function, which must be balanced with operational needs and organizational culture. Involving a security professional from the onset of a building project can help deliver a better value in the form of a more cost-effective, aesthetically pleasing, functional and safer space.

Herb Brychta, is manager, security risk management at AE Works, a Pittsburgh headquartered multi-disciplinary building design and consulting firm. He is a graduate of the United States Military Academy and received his Masters Degree in Security Management from John Jay College of Criminal Justice. He can be reached at herb@ae-works.com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EVENT CHAIR

Bob Hurley
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11:30 a.m. General reception and networking
12:30 p.m. Lunch, program and award presentation
1:30 p.m. Conclusion

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INDUSTRY & COMMUNITY NEWS

The Master Builders' Association of Western Pennsylvania, Inc. (MBA) and the Construction Advancement Program (CAP) awarded three scholarships this year at the MBA's Annual Membership Reception. The scholarship awardees were Derek Miller, Anthony Mash, and Rachel Dancer. Collectively, the University of Pittsburgh School of Engineering's Construction Management/Civil Engineering Program students received $15,000. Since the MBA & CAP teamed to provide annual scholarships in 1998, more than $200,000 in scholarships has been provided. MBA Education Committee Chair Jim Frantz from TEDCO Construction (left) with top scholarship winner Derek Miller.

More than 200 people enjoyed Gentlemen's Night Out on the North Shore, hosted by Aviary Trustee Michael Mascaro from Mascaro Construction, on February 7. The event, benefitting the National Aviary, raised over $175,000 in support of the National Aviary's work to save birds and protect their habitats. Picture from left are U.S. Representative Conor Lamb, Michael Mascaro, and Allegheny County Executive Rich Fitzgerald. Photo by Keith Gubish

Jim Frantz with top scholarship winner Rachel Dancer.

Jim Frantz with top scholarship winner Anthony Mash.

(From left) Melanie West, Michele Perrotto, and Melissa Pisarcik, from Mascaro Construction. Photo by Keith Gubish.

(Clockwise from top right) Mark Jones, Linwood Harris, James Shealey, and Alex Matthews of Highmark. Photo by Keith Gubish.

The ribbon-cutting for JA BizTown was held on January 28. The facility gives students an opportunity to explore all the career opportunities that are available in our region. The Mascaro storefront teaches students about the different career paths available in the construction industry. Pictured from left are Dorin Dickerson, Jamie Gildersleeve, Gretchen Mummert, Jason Koss from CAWP, John Mascaro, Jr., and Michael Mascaro.

Jendoco's Katey Andoloro and Tim Mackin from D-M Products at the MBA Annual Membership Reception January 16.

(From left) PJ Dick's Eric Pascucci, Dick Macurak from D-M Products, and Jeff Turconi from PJ Dick.

(From left) Ray Volpatt Jr., KML Carpenters' Bill Waterkotte, and John Mascaro.

KDKA's Larry Richert (left) talks with the MBA's Eric Starkowicz prior to emceeing the Building Excellence Awards ceremony on February 27 at Heinz Field. The Evening of Excellence drew nearly 1,400 attendees to network and honor the construction industry's best projects.

Turner's Chris DiLorenzo and Drew Kerr (right).

(From left) Morgan Zollman from Harris Masonry, Reed Building Supply's Davaughn Alston and Aaron Reed, and Jerre Harris from Harris Masonry.

Westridge's Holly Childs (left) with Sharon Landau.

(From left) Amanda Payne from Liberty Mutual Surety with Heather Miller and Michael Brodzinski from Lockton.

Elmhurst's Jason McCandless (left) and Dave Meuschke from Burchick Construction.

(From left) Kalkreuth Roofing & Sheet Metal's Joe Congie, Josh Wack and Steve Greene.

(From left) Architect Milton Ogot, Cuddy Roofing's Chaz McNulty, and Bridget Canedy from Milton Ogot's office.

Jennifer Landau (left) with Kenny Rockwell from WVU and IKM's Brian Roth.

(From left) Mobile Medical's Marianne Karg, Kevin Cannon and Nazia Shah from AGC of America, and the MBA's Bob McCall.

(From left) NEXT Architecture's Dan Delisio, Ryan Hayes, Gary Lotz from Dick Building Co. and PJ Dick's Bernie Kobosky.

The MBA's executive director Dave Daquelente and Tony Thompson from Meyer Unkovic & Scott at NAIOP's annual banquet.


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AWARDS & CONTRACTS

Rocky Bleier Construction Group was selected as general contractor for the $4.9 million Richard G. Laube Cancer Center expansion at Armstrong County Memorial Hospital in Kittanning, PA. The Architect is levelHEADS Inc.

Mascaro Construction has begun construction on the first phase of the $900 million US Steel Edgar Thompson Works modernization/expansion in Braddock. The engineer is Fluor.

Mascaro received a contract for renovations at Heinz Hall to take place during this summer. Work includes the complete painting of the front of the house, renovations of several suites, and installation of a new roof on the loading dock.

Mascaro received a contract for the reconfiguration of the main entrance of Forbes Hospital to enhance safe access and improve the Mosside Boulevard intersection.

Mascaro was selected as construction manager for the new $90 million headquarters and training facilities for the Carolina Panthers, to be built in Rock Hill, SC.

A. Martini & Co. is the construction manager for the $5 million restoration of the historic August Wilson House in the Hill District. The architect is Pfaffmann & Associates Architects.

Turner Construction Co. was selected as construction manager for the $25 million lobby and lower floor exterior renovations to Highmark's headquarters at 120 Fifth Avenue. The architect is AE7 Architects.

Penn State University selected **Turner Construction Co.** as construction manager for its $112 million Liberal Arts Research and Teaching Building at the University Park Campus in State College. Bohlin Cywinski Jackson is the architect.

Shannon Construction was awarded the contract for the tenant improvements for Siemens Mobility Group at The Waterfront in Homestead. The project involves building out 65,000 square feet of space at the former Macy's store.

Jendoco Construction Corp. was selected as construction manager for the $5.7 million Forker Laboratory Building Renovation at the Penn State Shenango Campus in Sharon, PA. BHDP Architecture is the architect.

Radnor Property Group/Harrison Street awarded **Jendoco Construction** the contract for renovations to St. Martin Hall, which will be used as residences for Duquesne University students. The architect for the $18 million renovation is Indovina Associates Architects.

Burke & Company, LLC dba **S.P. McCarl & Company**, a business specializing in mechanical contracting, achieved national certification as a Women's Business Enterprise by the WBECEAST, a regional certifying partner of the Women's Business Enterprise National Council.

Lithia Motors selected **Uhl Construction Co.** for the addition and renovations to its Moon Township Volkswagen dealership. The $2.6 million project includes 8,500 square feet of new construction and renovations to 30,000 square feet of existing space. The architect is Carson Veit Junge Architects PC.

Lithia Motors also selected **Uhl Construction Co.** as construction manager for the addition and renovations to its South Hills Subaru dealership. The $5 million project includes 17,000 square feet of new service shop and renovations to 40,000 square feet of existing space. The architect is Carson Veit Junge Architects PC.

Uhl Construction Co. is the design/build general contractor for a $1.8 million, 20,000 square foot parking deck for Baierl Automotive Group at the Baierl Toyota in Marshall Township. The architect is RSSC Architecture.

PPG Industries Inc. awarded **Uhl Construction** a contract for its Ad Mix Paint Cell Laboratory Renovation. The project involves renovations to a 2,000 square foot lab within the Springdale, PA manufacturing plant.

A.M. Higley Co. was awarded a contract for the $9 million David L. Lawrence Convention Center Green Roof Phase 2. The project involves demolition of 50,000 square feet of roof/deck, replacement with new green roof, planters, amenities, and pavers. Indovina Associates Architects is the architect.

Allegheny Health Network selected **A.M. Higley Co.** as construction manager for the $2 million cable infrastructure replacement at Grove City Hospital. The project is being designed by McKim & Creed Engineering and The Design Group.

Volpatt Construction was the successful contractor on the $4 million expansion and renovation of the Carnegie Library of Pittsburgh Downtown Branch on Smithfield Street. The architect is Loysen + Kreuthmeier Architects.

Allegheny Health Network selected **Volpatt Construction** as construction manager for the $3.5 million Allegheny Valley Hospital 2D Renovations in Natrona Heights, Harrison Township.

Volpatt Construction was selected for the Allegheny Health Network Forbes Regional Hospital Hybrid Operating Room in Monroeville. IKM Inc. is the architect.

Carnegie Mellon University awarded **Volpatt Construction** for the next phase of Hamerschlag Windows Replacement. The architect for the $700,000 project is Perfido Weiskopf Wagstaff Goettle.

University of Pittsburgh selected **Volpatt Construction** for the Eureka Building First Floor Renovation. LGA Partners is the architect.

Volpatt Construction is doing renovations to the Duquesne Light Company suite at the Duquesne Club. Michael Baker International is the architect.

Wheeling Hospital selected **Volpatt Construction** for its $7 million Acuity Long-Term Acute Care Facility. The architect is Stantec.

Robinson Township selected **Massaro Construction Management Services** as construction manager on its new $4 million, 9,600 square foot police station. The architect is Hayes Design Group.

The Pennsylvania Turnpike Commission awarded a $20.7 million contract to **Mosites Construction** for updates to the Allegheny Tunnel in Somerset County.

Rycon's Building Group is constructing a new, $38 million, 220-unit apartment building, 23rd & Railroad, in the Strip District for SteelStreet Capital Partners and Oxford Development. The complex will include 33 units of co-living space, in which occupants share multi-bedroom apartments, much like dormitories. WTW Architects is the architect on the 218,000 square foot project.

Rycon's Special Projects Group began renovation work on a multi-phased two-floor 58,000 square foot innovation center for Kraft Heinz. The project will include labs, open offices, and conference areas.

Work on a new grow and processing facility for Holistic Industries is underway by **Rycon's** Special Projects Group. This $3.7 million cannabis facility consists of a 23,000 square foot expansion of interior agricultural grow facilities which include ten flower rooms and two dry rooms.

In Arlington, VA, **Rycon's** Special Projects Group was selected to renovate a 6,000 square foot second floor surgical center within the Virginia Heart building. The $1.7 million center includes five pre/post surgery areas, medical offices, nurses station, reception area, and staff lounge.

Renovations will soon begin on Allegheny General Hospital's genomics laboratory. **Rycon's** Special Projects Group is the CM at-Risk on this 7,000 square foot, $4.9 million project.

Rycon's Special Projects Group began renovation work on two cardiovascular office suites located in the St. Clair Hospital Professional Office Building. The 1,700 square foot space is anticipated to be complete in late March 2020.

Rycon is the construction manager awarded the $9 million, 19,500 square foot Jaguar Land Rover car dealership in Spokane Valley, WA for AutoNation.

Work on a new $1.1 million Tire Kingdom for TBC Corp. is underway by **Rycon** in Oxford, FL. The 6,800 square foot structure is anticipated for completion July 2020.

In Garner, NC, **Rycon** is constructing a new, Firestone Complete Auto Care facility. The $1.4 million project is expected to be complete May 2020.

Rycon began work a new, 6,000 square foot transportation facility for the South Euclid Lyndhurst School District in South Euclid, OH. The $2.2 million project includes a masonry office and maintenance facility, as well as asphalt parking areas for the school district's buses and drivers.

In Cleveland, OH, **Rycon** began renovation work on the ERT Data & Technology Corporate. The $1.8 million job encompasses 21,000 square feet and is on track to wrap up in April 2020.

Renovations to Brush High School in Lyndhurst, OH are underway. **Rycon** is the general contractor working on the $5.7 million, 29,000 square foot project.

Work on the Casal Aveda Institute in Niles, OH has begun. **Rycon** is renovating the $1.2 million, 13,300 square foot cosmetology training center.

In Orwell, OH, construction on the next phase of the Kennametal Operational Plant has started. This $1.3 million phase is a part of **Rycon's** renovation and addition work on the entire, $34.4 million, 105,500 square foot industrial plant.

Rycon was awarded the construction of a new Chase Bank in Marco Island, FL. The $2.3 million project covers 2,700 square feet of space. Within the last year, **Rycon** was chosen to complete new construction and renovation work on six other Chase Bank projects in Florida, Ohio, and Pennsylvania

In Horsham, PA, **Rycon** is renovating a PNC Bank Vendor Finance Office. The 3,700 square foot expansion will increase the total square footage to 11,000 square feet of usuable first floor office space. **Rycon's** Casework & Millwork Division will fabricate and ship custom casework for the expansion.

Allegheny County Airport Authority awarded a $20.9 million contract to **Independence Excavating** for the general construction of the Terminal Modernization Program Early Access Site Package. The architect and engineer are Gensler and HDR Engineering.

UPMC awarded **AIMS Construction** a $1.8 million contract for the UPMC Mercy Hospital Neurointerventional Radiology renovations. The architect is IKM Inc.

AIMS Construction was the successful contractor on the UPMC Presbyterian University Hospital First Impressions renovations. IKM Inc. is the architect.

UPMC awarded a contract to **AIMS Construction** for the UPMC Children's Hospital Spec CT. DRS Architects is the architect.

Ionetix selected **AIMS Construction** for its $425,000 Cyclotron Installation at UPMC Presbyterian Hospital. Bostwick Design Partnership is the architect.

Landau Building Company completed the 1,338 square foot Phase I portion of the WVU Medicine Emergency Department Expansion project at Ruby Memorial Hospital in Morgantown, West Virginia. Construction has begun on the final 5,259 square foot phase and is expected to be completed in April 2020. IKM is the architect.

Landau Building Company is renovating level 5 of the WVU Medicine Physician's Office Center (POC) in Morgantown, West Virginia. Work includes over 20,000 square feet of medical office space and a pedestrian bridge connecting to the Rockefeller Neuroscience Building. Construction is scheduled to be complete by the end of March 2020. IKM is the architect.

Landau Building Company is renovating the entrance, lobby, retail pharmacy, and two main corridors on the first floor of WVU Medicine's Physician's Office Center (POC) in Morgantown, West Virginia. The project is scheduled to be completed in April 2020. IKM is the architect.

Landau Building Company has begun a Linear Accelerator (LINAC) Replacement and Alterations project on the first floor of Heritage Valley Health System in Beaver for UPMC Hillman Cancer Center. Completion is scheduled for the end of April 2020. The architect is CPL.

PJ Dick is providing CM at Risk services for Walnut Capital on the $5 million Bakery Refresh 2020. Strada Architecture LLC is the architect for the 12,400 square foot new retail building.

PJ Dick is providing CM at Risk services for a 48,000 square foot renovation of an existing manufacturing facility and data center for the new global headquarters of Astrobotic, a space robotics company that seeks to make space travel accessible to the world. New work will include manufacturing spaces including clean room manufacturing, general office and conference spaces, cafeteria, and a "mission control" room. The project ws designed by AE7 Architects.

PJ Dick is providing CM at Risk services for Liberty East Phase 1.

PJ Dick is providing CM at Risk services for the $10 million Hazelwood Green Roundhouse Renovation. The architect is GBBN Architects.

PJ Dick is providing construction management services for the University of Pittsburgh's $4.5 million Cathedral of Learning Ground Floor Renovation. The architect is McLachlan Cornelius & Filoni Architects.

STEVENS is the contractor for the new 250,000 square foot specialty steel manufacturing plant for Ameri-Precision Metals in Canonsburg, PA.

First National Bank selected **Dick Building Co.** as contractor for its new $2.3 million branch office in Kennedy Township. DPH Architecture LLC is the architect.

Dick Building Co. was awarded a general construction contract for the new GetGo Café + Market on Route 22 in Murrysville. The architect is DLA+ Architecture & Interior Design.

Landau Building Company was selected as construction manager for the renovations to Grove City College's Buhl Library. PWWG Architects is the architect for the $8 million project.

Visionet Systems selected **Mosites Construction** to manage renovations to its facilities at 111 Technology Drive in Findlay Township. The architect is Renaissance 3 Architects.

Turner Construction was the successful contractor on Price Waterhouse's $12 million, 70,000 square foot tenant improvements at One Oxford Centre. The architect is Gensler.

FACES & NEW PLACES

Turner Construction Co. announced that **Peter Hamilton**, CPE, LEED AP was promoted to preconstruction manager. Hamilton has over 12 years of experience in the construction industry. He earned a Bachelors of Architecture and a Masters, Civil Engineering from the New Jersey Institute of Technology.

Jendoco Construction Corporation announced the promotion of **Katey Andaloro** to project manager. Andaloro has an architectural engineering degree from Penn State University and joined Jendoco in 2015.

The Board of Directors of the Master Builders' Association announced the appointment of **Alex Dick** to its board of directors. Alex Dick is chief operating officer of **Dick Building Company.**

Dan Ford joins **Rycon's** Special Projects Group as a senior estimator. He brings 26 years' experience to the company.

Rycon's Cleveland office welcomes **Tiffany Kreps** as a project manager. A graduate of East Carolina University with a degree in Construction Management, she brings 10 years' experience to the company.

In **Rycon's** Casework & Millwork Division, **Theresa Ortiz-Palsa** has been hired as a project manager. She brings 17 years' experience to the team.

Hannah Schell joins **Rycon's** Special Projects Group as a project engineer. She is a recent graduate of the University of Pittsburgh.

Rycon's Atlanta office welcomes **Joel Vasquez** as an assistant estimator.

Recent promotions within **Rycon's** Special Projects Group: **Jim Froehlich** and **Brendan Madden** as project executives, and **Cono Passione** and **Armand Tortorice** as directors of special projects.

Anthony Rodriguez was recently promoted to project executive within **Rycon's** Ft. Lauderdale office, and **Parth Patel** was recently promoted to project manager within **Rycon's** Philadelphia office.

PJ Dick has hired **Shane Fishel** as a senior estimator. Shane worked as an estimator at Easley and Rivers from 2008 to 2019, and then he worked as a project manager at Bryan Construction from 2019 to 2020. Shane has a degree in business marketing/management from Penn State University.

PJ Dick has hired **Benjamin Kottler** as a project engineer. Prior to joining PJ Dick, Kottler worked for Kiewit Building Group in Honolulu, HI, building educational facilities for the University of Hawaii. Benjamin has a civil engineering degree from the University of Pittsburgh.

PJ Dick has hired **Robert T. Underwood** as assistant project superintendent. Robert most recently worked as a field engineer and QC manager for Railworks Tracks Services in Monaca, PA. He also has field engineering experience with Whiting-Turner, as well as residential and commercial painting experience. He has a Bachelor of Science degree in Industrial Engineering.

PJ Dick has hired **Nicholas Suchta** as a project manager. Nicholas has 15 years of experience working as a subcontractor in the ornamental metal and glass, and building envelope trades. He has worked predominantly in New York City and Philadelphia for two main companies: American Architectural Inc. and M. Cohen and Sons Inc. Nicholas also has an extensive background in metal and glass design. He has a Bachelor of Arts degree in English and History of Art and Architecture. Nicholas also has a certificate of design training in AutoCAD.

PJ Dick recently hired **Susan A. Joseph** as assistant project superintendent. Susan most recently worked at Hensel Phelps where she worked as a field engineer. She also completed an internship with Infinity Construction. She has a Bachelor of Science in Construction Management from Kent State University. Susan currently lives in Lawrenceville, PA.

PJ Dick has hired **Richard Huss, Jr.**, as a QA/QC Manager. Richard has 40 years of management experience in heavy industrial construction of power plants (both nuclear and fossil fuel), air separation, steel mill and air quality. His experience includes safety, quality, craft supervision, scheduling and field engineering. He graduated from Greater Johnstown Area Vocation Technical School majoring in structural and architectural design.

Killian Bozzo joined the Buildings Estimating Group at **Mascaro** on January 13 as a project engineer. He recently graduated from Duquesne University with a dual degree in finance & accounting. He has worked as a carpenter's laborer since 2012.

Joe Mascaro started on January 20 as a project engineer within the Buildings Estimating Group at **Mascaro.** Joe previously interned with Mascaro each summer since 2016 and has recently graduated from the University of Pittsburgh with a dual degree in finance and marketing.

Casey Mrazik has completed four internships with **Mascaro** and is a graduate of Penn State University with a degree in civil engineering. She began her full-time employment as a project engineer on January 20.

WVUM Rockefeller Neuroscience Institute Center for Innovation

Landau Building Company

Carnegie Library of Pittsburgh, Carrick Branch

Massaro Corporation

Carnegie Mellon University, David A. Tepper Quadrangle

PJ Dick Incorporated

Bobby Rahal South Hills Jaguar-LandRover Dealership

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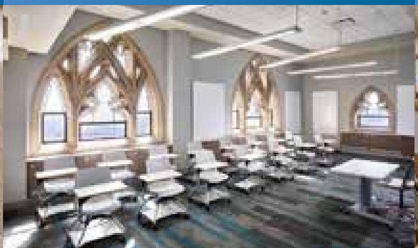
CONGRATULATIONS TO THE 2019 MBA BUILDING EXCELLENCE AWARD WINNERS!

UPMC Hillman Cancer Center, Third Floor Renovation

Mascaro Construction Company, LP



University of Pittsburgh, Cathedral of Learning 22nd and 23rd Floors

AIMS Construction

Penn State School of Music and Recital Hall

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CLOSING OUT

BY DR. CHRISTOPHER B. HOWARD

The late Speaker of the House Tip O'Neil famously said "All politics is local." Much the same could be said for higher education. With the exception of a relatively small number of elite institutions, most colleges and universities are regional, drawing the majority of their students from within 150 miles of campus. Even online students tend to pick a school close to their home, the success of mega universities such as Southern New Hampshire and Arizona State notwithstanding.

That would seem to be bad news for institutions in the Northeast and the Midwest, where the number of college-bound high school graduates has been declining for years. But demographics do not have to be destiny. Years ago, Robert Morris University anticipated a slide in traditional undergraduate enrollment and crafted several strategies to buck this trend, including:

- Using predictive analytics to boost retention and graduation rates, thanks to highly personalized academic interventions and supports;
- Build enrollment pipelines through programs for veterans and partnerships with community colleges, K-12 school systems, and education organizations;
- And become a preferred strategic partner to corporations and other organizations to help them provide employees with education, training, and professional development.

Each of those strategies has been successful for RMU, but that third item on the list is particularly notable for the seismic shift it portends in how higher education is delivered and consumed. Brandon Busteed, president of Kaplan Education Partners, has a pithy way of putting it: Whereas people used to go to college in order to get a job, increasingly people will get a job in order to go to college.

Case in point: RMU recently signed an agreement with FedEx Ground to provide an exclusive tuition discount to 105,000 employees in the U.S. and Canada, which they can use to earn a certificate, bachelor's, master's, or doctoral degree for little or no cost. Think of the partnership between Arizona State University and Starbuck's to allow the coffee chain's employees to earn a tuition-free diploma through ASU online. More and more employers will follow the example of Starbuck's and FedEx Ground, investing in workers who will follow a nontraditional path to a college degree.

In addition to degree programs, RMU is partnering with corporations on a variety of other talent development initiatives, each one customized to meet the needs of individual employers. These include leadership development, customer service training, and succession planning with partners who have ranged from Eat'n Park to the Pittsburgh Penguins to Koppers. Some of these programs are delivered in the workplace, some on our campus, and some at both.

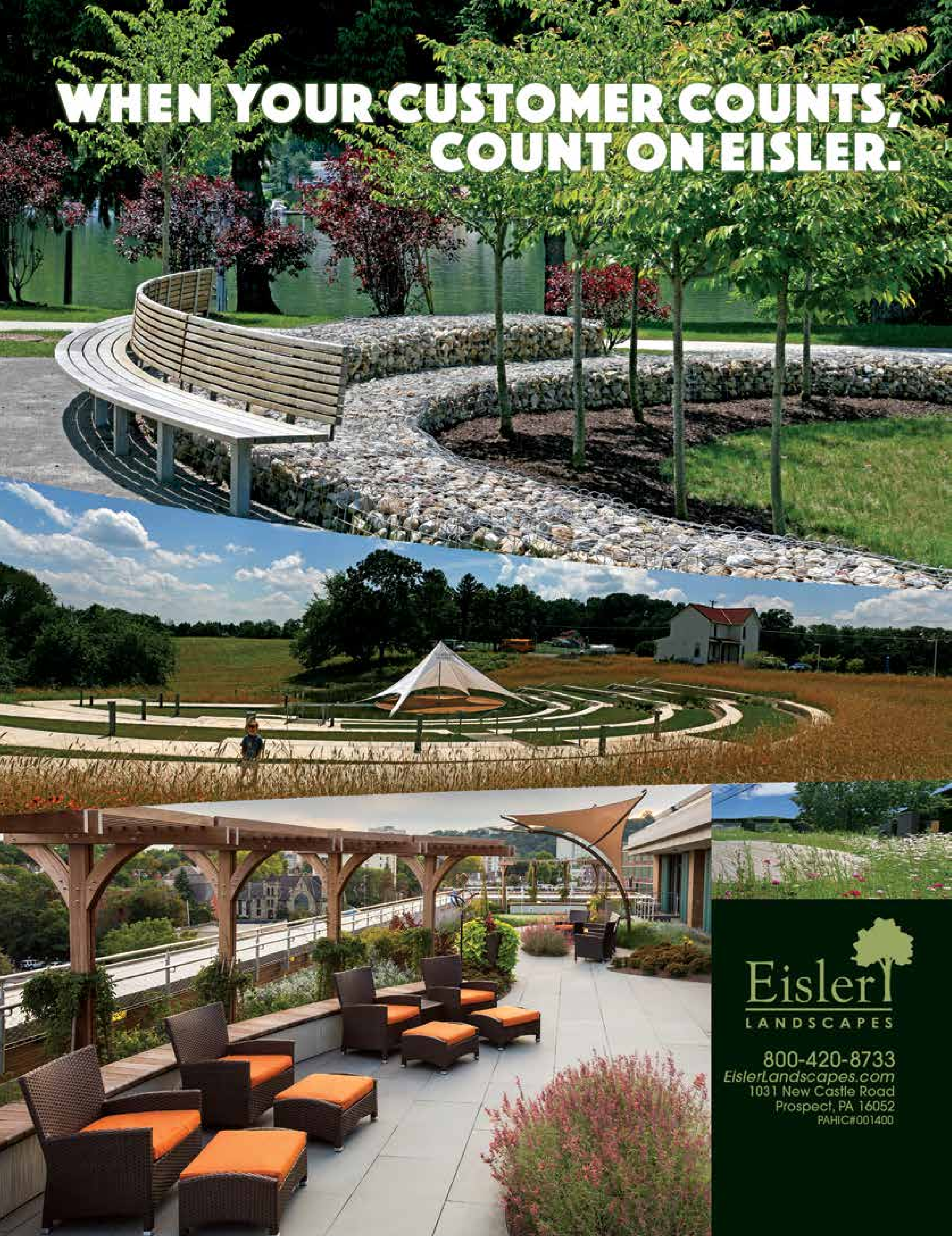
For many colleges and universities, these trends mean the end of big, shiny construction projects aimed at attracting traditional-age residential students. In other words, no more lazy rivers and climbing walls. Instead, we will need adaptable workspaces optimized for multiple uses and multiple modes of learning. And we will need to figure out how to monetize under-utilized campus facilities, given that our campuses were built for student populations that are no longer growing.

RMU, for example, recently opened the UPMC Events Center, a 161,000 sports and entertainment facility that is home to our NCAA Division I basketball and volleyball teams. That may sound like a traditional college sports palace, but with some key differences. For one, it includes a conference center that is attracting corporate meetings, seminars, and trade shows. We are leveraging our corporate relationships to drive business at the events center, and using the events center to help us cultivate more and more corporate partnerships.

Second, we partnered to manage the building with OVG Facilities, which runs sports and entertainment complexes nationwide. They've brought in performing artists including Bob Dylan, Sara Bareilles, Bryan Adams, and the Tedeschi Trucks Band, to name just a few. All in all, the UPMC Events Center isn't just about giving our athletes a great place to play basketball, or attracting more students to attend games. It's a critical component in our strategy to diversify revenue and position RMU for the "next next" in higher education.

Chris Howard is the eighth president of Robert Morris University. Dr. Howard is a graduate of the U.S. Air Force Academy, where he earned a Rhodes Scholarship and received the Campbell Trophy, the highest academic award in the country for a senior football player. He earned his PhD from Oxford University and an MBA from Harvard University.

Chris Howard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