Breaking Ground

THE MAGAZINE OF THE MASTER BUILDERS' ASSOCIATION OF WESTERN PENNSYLVANIA

JULY/AUGUST 2020

HEALTHCARE MARKET UPDATE

AGH Academic Cancer Center

MBA

VOLPATT
CONSTRUCTION

#WeAreVolpatt

commercial industrial institutional

Contents 2020

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

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

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On the cover: AGH Academic Cancer Center
Photo by Adam Warner

***Correction:** The name of Fritz Leitenerger, from Willis Towers Watson, was misspelled in the feature article of the May/June edition of BreakingGround.*

PUBLISHER'S NOTE

Living in America since March definitely makes me believe the invocation, "May you live in interesting times" is a warning, not a blessing.

The pandemic that washed ashore in February has altered the way we live, probably permanently on some level. Since Memorial Day, it has also become clear that the movement for racial justice that is also washing over the United States is having a big impact too. The question is whether the impact will be lasting or not. With the daily drumbeat of breaking news, I am skeptical of our nation's ability to maintain focus to meet this movement, but I believe there is a window open for policy changes and growth.

The moment seems like a good one to talk about minority participation in the construction industry. Pittsburgh's track record with minority-owned contracting firms is not particularly good. That's not necessarily an indictment of the Pittsburgh construction industry, since the track record of inclusion for minority-owned businesses in all Pittsburgh industries is pretty poor. But it's not exactly a rallying cry to say, "We're no worse than other industries."

There have been concerted efforts to increase the share of the workforce and business ownership for minorities, especially African Americans, that go back to the 1960s. A black operating engineer named Nate Smith worked tirelessly at that time to increase participation levels for minorities in the local unions. Smith, the Black Construction Coalition, labor unions, and local general contractors created Operation Dig/The Pittsburgh Plan in 1970 to increase the minority workforce to 1,250 by 1975. The effort fell well short. The Urban Redevelopment Authority and numerous corporate partners have created minority participation goals and requirements on virtually every major project built in Western PA over the past 40 years. The region's trade unions, trade schools, and countless associations have put together numerous training and workforce development programs to boost participation. Mentorship programs designed to foster minority business ownership have sprung up and fallen back down. And yet, here we are.

Assigning blame will help no one at this point. Racism certainly played a part in this in the past, but the status quo is sustained by complacency. We need to fight this complacency to usher in more equity in our industry and region. If this moment is to truly be different, blame is irrelevant. But it is instructive to look at past failures to learn why failure occurred.

It was the rationale of Operation Dig that expanding the role of minorities in the construction labor force would lead to an increase in minority-owned construction companies, much as the wave of immigrant construction workers in the early 20th century spawned hundreds of contracting firms in the decades that followed. Many of those firms still exist. Why didn't Operation Dig spark a wave of African American construction workers? Was it too much to expect that young black workers would be attracted to work in an industry that was almost all white? If the racial makeup of the construction workforce has changed little since 1970, how will the outcome be different today? What will it take to make the construction industry attractive to minority workers? These are questions with complicated answers that go well beyond the construction industry, but the industry can make a good faith effort to get to those answers.

Race is the one issue for which Pittsburgh hasn't been able to take a victory lap in the celebration of its recent transformation. Clean up the environment: check. Rebuild the economy: check. Overcome racial inequality: crickets.

We won't accomplish racial equality in the same way as we improved other aspects of the regional landscape, but we can start by admitting what we have been doing isn't working. I don't think we Americans understand each other very well. Why aren't more African Americans interested in pursuing well-paying construction careers? What can be done to encourage that? Why is it more difficult for minority entrepreneurs to start businesses in construction? What can be done to ensure that minority-owned firms survive? Perhaps we should ask. Sincere dialogue is not the answer. It's the first step. If we do it right, that dialogue will lead us to do things differently.

A few years ago I interviewed the CEO of ImbuTec, for a profile of his firm. I asked him a question about the business environment for minorities in Pittsburgh, expecting to hear about how open and welcoming it was. His answer, that it was oppressive, let me know I was clueless. It was humbling and uncomfortable to find out that I had so little understanding of how difficult it was for a peer whose skin was a darker color than mine.

We have a well-founded confidence in our problem-solving abilities in the construction industry. It's been an incredibly satisfying career to have served the construction industry, so I hope the industry can be a leader in racial equality too. Recently, the AGC of America launched its effort to bring inclusion into the construction workplace. It's called the Culture of CARE. The MBA and several MBA members have already taken the AGC's pledge to be leaders in building such a culture.

Pittsburghers have proven to be solvers of hard problems. If the Pittsburgh construction industry views the lack of minority participation as a problem to be solved, we will do better. The most innovative industries in the world are the most diverse. That should be incentive enough to tackle the discomfort of changing to make construction a path that all of our neighbors can follow.

Jeff Burd

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For those clinging to the theory that Pittsburgh would be spared the worst of the impact from the COVID-19 pandemic, the first batch of data on the regional economy proved otherwise. Like virtually every large metropolitan area in the U.S., unemployment in Pittsburgh jumped by ten points from March to April. According to the Department of Labor, the unemployment rate in Pittsburgh's seven counties went from 5.2 percent in February, to 6.1 percent in March, and 16.3 percent in April.

The number of unemployed persons in metropolitan Pittsburgh exceeded 200,000 in April. The cyclical low for regional unemployment happened in February 2019, when 44,400 Pittsburghers were looking for work.

Some of the unemployed workers surveyed or counted in April returned to work after employers received payroll protection payments later in the month. The significance of this trend showed up in the jump in U.S. employment in May. In metro Pittsburgh, the share of recalled workers was slightly lower than the U.S. average in May, with 178,500 unemployed, or 15 percent of the workforce.

Early data on job losses around the country offered some hope that Pittsburgh might escape the steep decline in employment. In many major markets unemployment was much lower in the sectors that now define the Pittsburgh economy. Sectors that saw declines in the low single digits elsewhere included scientific research and development, life sciences, financial services, and information technology. These economic drivers – along with healthcare, education, and advanced manufacturing – will still serve the Pittsburgh region well as an economic foundation; and may provide a significant recovery by the time summer ends. Three months past the beginning of mitigation and shelter in place, however, it's clear that Pittsburgh may not enjoy the soft landing that the region experienced following the financial crisis in 2008-2009.

Unlike in 2009, the oil and gas industry is not going to be a buffer against the downturn in the overall economy. The role that the exploration of the shale formations played in limiting the 2008-2009 recession in Western PA is often understated. In 2020, however, the energy sector is facing its own cyclical problems unrelated (for the most part) to the pandemic.

American successes at fracking have driven prices for oil and natural gas to record low levels, especially adjusted for inflation, over the past five years. The economic shock from the COVID-19 mitigation measures has sucked demand from the marketplace. Drillers have responded by cutting production. Rig counts for natural gas have fallen, even in the Marcellus and Utica footprint, where the count has dropped from 54 to 30 over the past year. These cyclical issues have compounded structural problems in the energy sector, setting off a round of consolidation. The realignment of the oil and gas industry will set the stage for recovery in the sector, but not for the next year or two. That means Western PA will not receive the boost in demand that it experienced from 2009 to 2013.

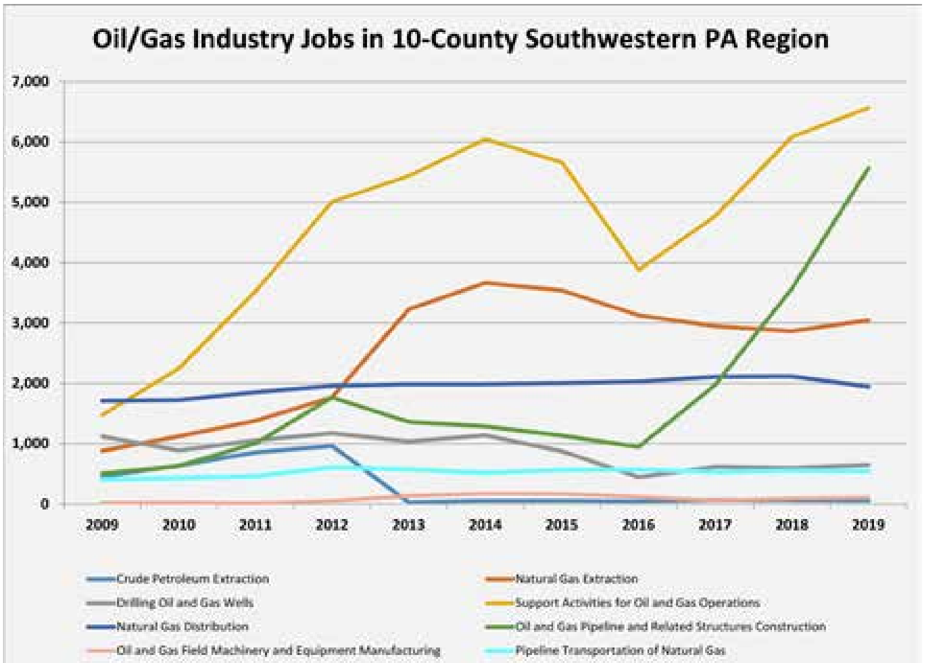
As of mid-June, construction was continuing to ramp back up at the Shell Franklin plant in Monaca, but conditions in the oil and gas industry have dampened the development of the downstream economic growth that was anticipated just six months ago. PTT announced that its final investment decision on the proposed ethane cracker in Dilles Bottom, OH has been postponed, probably until the first quarter of 2021. With completion and activation of Shell's Monaca plant delayed by the construction shutdown, plans for the ethane storage infrastructure have also been slowed.

An examination of the other major sectors that drive the Pittsburgh construction economy finds few strong spots.

Of major concern to the construction economy is the damage the pandemic has inflicted upon two of the main drivers: healthcare and higher education. Healthcare has been impacted most directly by COVID-19. Revenues for the regional hospitals were down dramatically during March, April, and May, when

2020 Municipal Revenue Losses						
County		**Low**		**Medium**		**High**
Allegheny	$	82,711,498	$	188,629,597	$	323,142,601
Armstrong	$	1,145,687	$	2,784,257	$	4,757,912
Beaver	$	5,053,445	$	12,054,884	$	20,696,778
Butler	$	6,430,951	$	15,020,069	$	25,384,088
Fayette	$	2,312,096	$	5,611,160	$	9,497,251
Washington	$	10,516,100	$	21,485,053	$	38,913,740
Westmoreland	$	9,754,242	$	23,428,054	$	39,921,604
Total Pittsburgh MSA	**$**	**117,924,019**	**$**	**269,013,074**	**$**	**462,313,974**

Source: PA Department of Community Development, University of Pittsburgh Graduate School of Public and International Affairs.

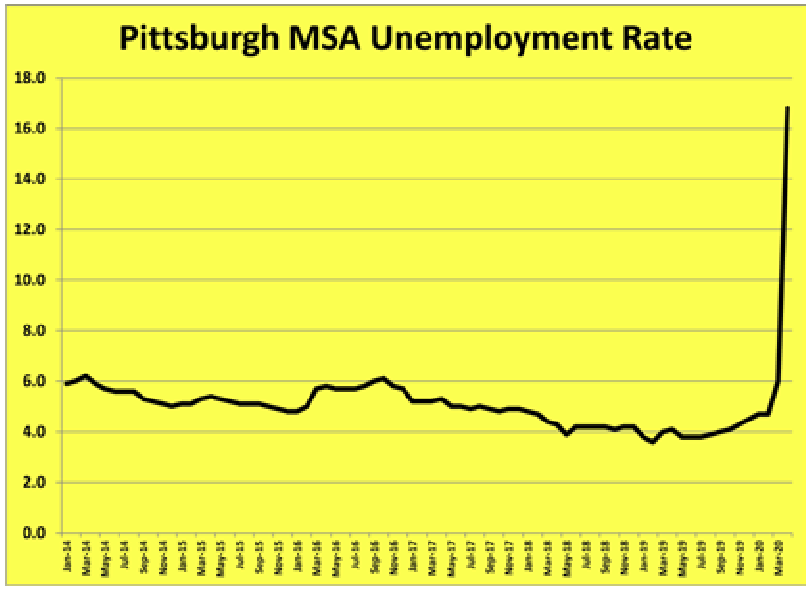


Record low prices and collapsing demand have curtailed gas exploration and forced layoffs in 2020 following an improving 2019. Source: Allegheny Conference on Community Development.

elective surgery and procedures were ordered to halt. (Read more detail on this in the feature article). Pennsylvania's shelter-in-place orders hurt primary care practices too. As patient flows resumed in mid-May, healthcare providers saw needed upticks in revenues and reimbursements for service; however, the financial difficulties will force delays in capital spending. For 2020 and 2021, maintenance and infrastructure modernization will be the primary focuses of capital budgets.

Higher education was already facing long-term structural challenges before the financial burdens that came from sending students home for the semester in March. Pittsburgh is home to two of the universities that were looking at somewhat brighter prospects for the 2020s and had plans for more than $1 billion in capital spending. The sudden unexpected loss in revenues and the uncertainty about future enrollment put projects on hold throughout the region. Pitt and Carnegie Mellon both slowed down their ambitious programs, which were poised to add half-dozen new buildings to the Oakland campuses next year. Progress on the handful of $100 million projects in preconstruction at Pitt are not expected to see progress for a year.

The problems related to COVID-19 in 2020 will extend beyond this year. Universities and colleges expect enrollments to decline by as much as 15 percent for 2021. As of June, more than 100 lawsuits had been filed against colleges and universities seeking refunds of tuition for the difference between an online and in-person education for the second semester of 2020. The pandemic will likely accelerate changes that higher educational institutions were going to face to deal with the changing landscape of 2025 and beyond. During that process, however, demand for construction will be diminished.



Unemployment jumped above 16 percent in April in Pittsburgh. Source: Department of Labor, Pittsburgh Today.

Commercial real estate, which has been a driver of the construction industry for more than a decade, will see challenges over the next 24 months. Occupancy will decline in an office market that was already softening. Demand for industrial space seems more robust, although the supply will be tested by more conservative investment and financing activities needed for construction. The multi-family sector, which had recovered to the levels of construction seen in 2013-2017, should still see support from demographics and the normal shift from renting to owning during a recession; however, the pace of new construction will be dampened from what was planned in 2020.

Industrial property is the one segment of the market that is showing signs of recovery. While the bread and butter industrial real estate – the 10,000 square foot to 50,000 square foot user – is struggling with the deep recession, the logistics user is getting tailwinds from the nature of the current emergency. The unexpected jump in e-commerce that has accompanied the months of sheltering at home is likely to be durable. Regional fulfillment and last-mile distribution is driving unusual demand for larger spaces. In Pittsburgh, where industrial occupancy was very high coming into the recession, demand for large, Class A space will mean new construction.

"I have seen more requirements for 200,000 square feet or more than at any time in my career," says Mateo Villa, vice president at CBRE. "I don't know that any of the requirements are new since COVID, but the conditions have accelerated the trend that was in place."

The areas hardest hit in commercial real estate, hospitality and retail, were also market sectors that played a small role in the Pittsburgh construction market. Hotels are not expected to see a return to pre-recession revenue per average room until at least 2022. Pittsburgh area lenders expect to see some hotels developed more recently go into default. But the pipeline of new hotels and motels was virtually empty coming into 2020. Retail construction in Pittsburgh had been confined to small neighborhood strip centers and infill for several years. While that's likely to slow through 2021, the impact of the decline in construction will be negligible in Western PA.

Perhaps the most troubling impact of the COVID-19 recession is the loss of state and local tax revenues.

Having navigated the aggressive spread of the COVID-19 virus during the early spring, Western PA businesses may face another headwind related to the pandemic in 2021: financially strapped local government. With commercial activity halted for almost three months, municipal and state governments have been starved of sales taxes. Incomes will be reduced for 2020 and corporations will almost certainly pay less in taxes. Driving was severely curtailed, robbing both the state and municipal governments of fuel taxes and toll revenue.

The drought comes as regional municipal governments were beginning to emerge from a generation of financial problems. Pittsburgh's Act 47 journey was well chronicled but other municipalities in Western PA also entered and exited the Commonwealth's fiscal oversight. A powerful blow like the economic shutdown will reverse the upward trend for nearly all local government bodies, with the potential to see dozens of municipalities seek relief from the state at a time when the Commonwealth is also in a fiscal bind.

David Miller, professor at University of Pittsburgh's Graduate School of Public and International Affairs, and the Pennsylvania Economy League recently presented a study of the financial impact of the pandemic on local government. The forecast, given at a June 11 webinar by the Allegheny Conference on Community Development, assumed three scenarios of varying degree of distress. The best-case scenario predicts that the 525 municipalities located in the ten county Southwestern PA region will lose more than $123 million in 2020 revenues. The worst-case scenario sees losses exceed $484 million. Based upon an exhaustive review of municipal reserves, Miller warned that a dozen municipalities could face insolvency in 2021, with as many as 112 under water in the worst case.

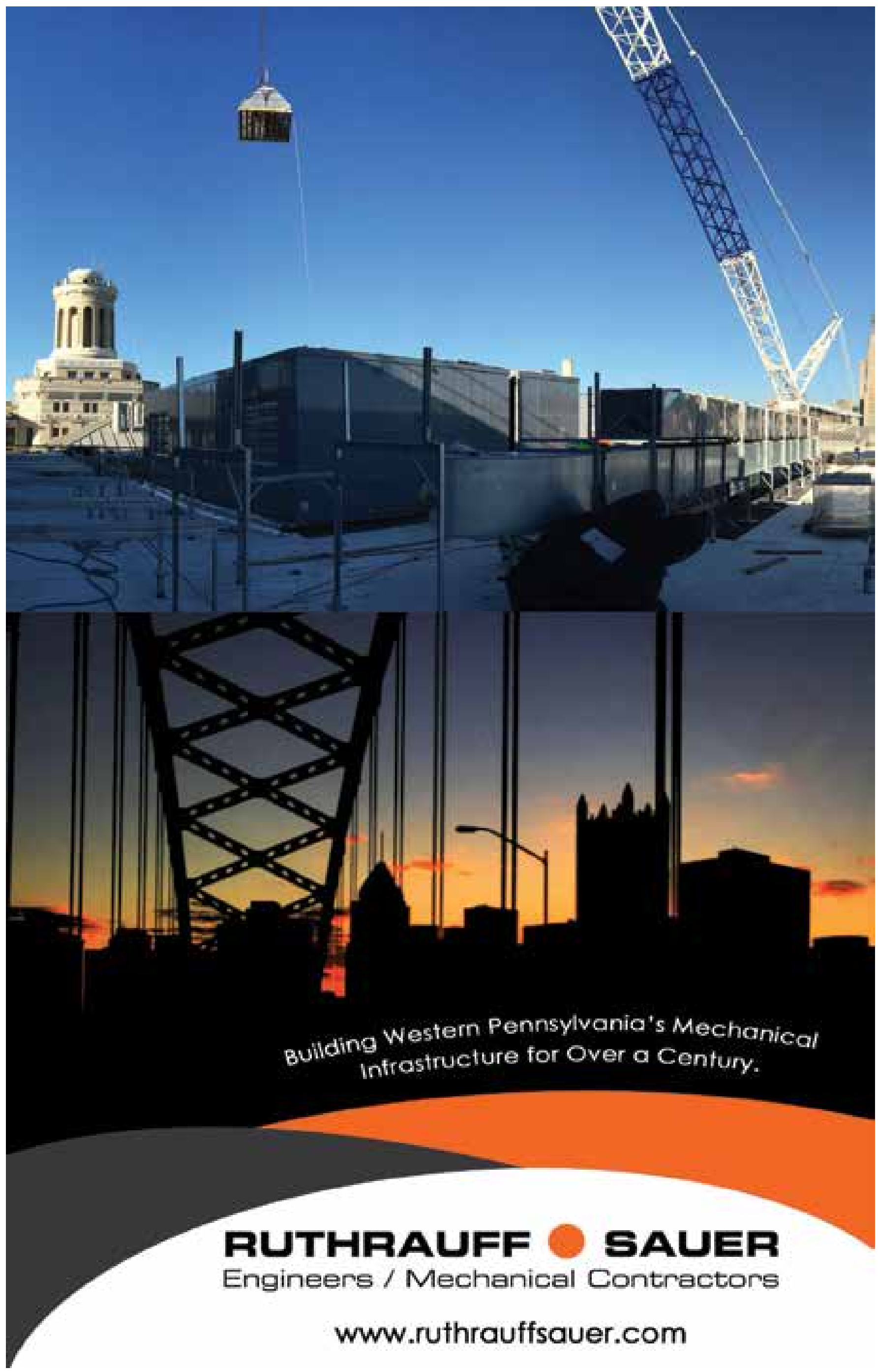
The impact on the local economy would be severe. Recovery from the lost revenue will require the layoff of thousands of government workers, offsetting expected gains in private employment. Road and sewer construction would be deferred. Capital spending would be steeply reduced. Government subsidy, which has been a key component of almost every large commercial development in Western PA, would dry up.

One upside that Miller identified is that the fiscal pressure that insolvency would apply might finally be the catalyst for consolidation of services, which has been resisted almost universally. Cash-strapped municipal governments will look to counties to cover law enforcement and maintenance. Counties will look to force municipalities that should logically be consolidated (Homestead, West Homestead, and Munhall for example) to reduce the burden of services that must be absorbed. The resultant efficiency would be a boon to regional taxpayers and to regional development. But there would be significant pain involved in achieving such efficiency.

Pittsburgh's emerging technology sector offers the opportunity for the strongest recovery from the pandemic-induced recession. Although it's unlikely that the prospects of the tech sector will spark the immediate resurgence of the speculative office/lab development that was in the hopper in Oakland, Lawrenceville, and the Strip District, the projects that are proceeding will rely upon the renewed expansion of technology innovation to drive occupancy. As of mid-June construction was restarting on the $75 million Vision on Fifteenth in the Strip and Walnut Capital's $60 million Innovation Research Tower at Fifth Avenue and Halket Street. Wexford Science and Technology was moving forward with its 180,000 square foot tower on Forbes Avenue.

While other developments aimed at attracting tech users have pulled back from construction, the companies that might occupy those spaces continue to thrive. Even as recession deepened, a number of the corporations that have led Pittsburgh's tech resurgence – Google, Amazon, Facebook – have seen their value grow. The problems caused by COVID-19 offer opportunities for Pittsburgh-based efforts to provide solutions. The major institutions located in Pittsburgh are very involved in discovering therapies or a vaccine for the coronavirus. Others are activating research in artificial intelligence, robotics, Internet-of-things, cybersecurity, and life sciences to meet the challenges of the world after the virus recedes.

Construction related to the forward-looking work at Pittsburgh's institutions and private sector partners is the first green shoot for the recovery in 2021. BG



NATIONAL MARKET UPDATE

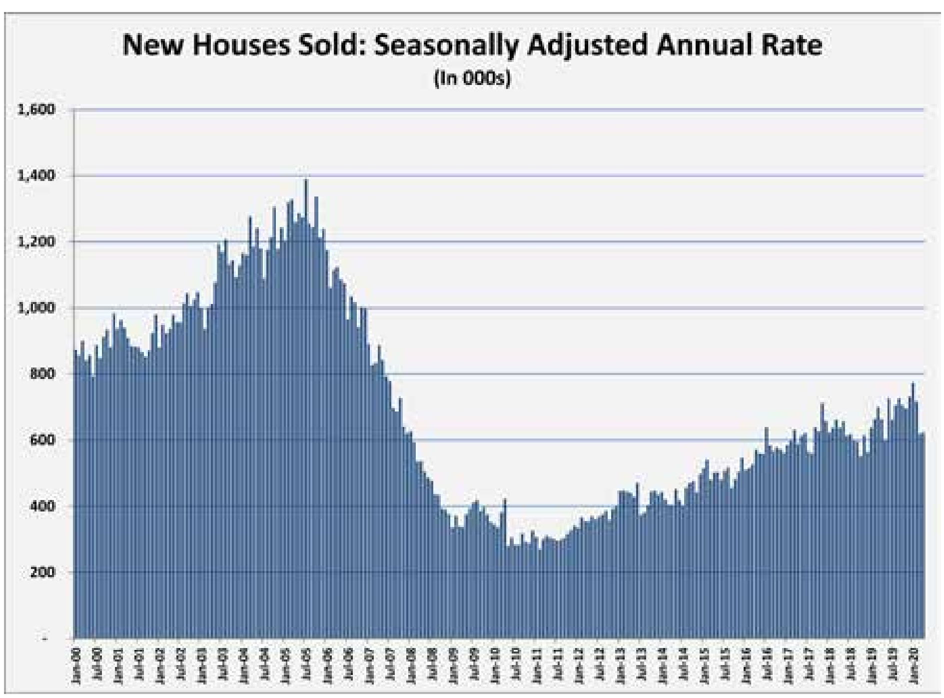
The nature of the economic disruption caused by mitigation of the COVID-19 coronavirus makes it more difficult than "typical" recessions to predict. Unlike post-World War II recessions, the current downturn had few negative leading trends. The abrupt loss of 40 million jobs, coupled with the enforced loss of demand for most goods and services, created a drop-off with little or no precedent. As the dust settles on the mitigation efforts in most of the U.S., however, there are some signals about how and where the economy will recover. It's also more possible to see the fragility of the economy in the coming months.

Political considerations aside, the efforts of the Congress and the Federal Reserve Bank were going to be most effective if the economic aid offered allowed consumers and businesses to survive until the rate of infection could be controlled. As summer begins, there is evidence those goals have been achieved, with the caveat that the aid could never have been enough to assure that all people and businesses would receive what they needed.

Still, the impact of the government's programs on the safety net was surprising. As a result of the $1,200 per person payments and $600 unemployment bonus, personal incomes rose in April by 10.5 percent from March and 11.7 percent year-over-year. Those were the highest increases since the data has been kept. Real personal consumption declined 17.3 percent compared to April 2019. Consumption of services fell 12 percent. In May, however, retail sales rebounded by 17.7 percent, reflecting the reopening in most states and better-than-expected consumer confidence. The University of Michigan's Consumer Sentiment Index rose to 78.9 in June, with the confidence in current conditions increasing 13 points to 87.8. Those levels are on a par with readings from mid-2013, when recovery from the Great Recession was well underway. Readings on household net worth may also explain the surprisingly high confidence. Household net worth was $110.8 trillion in June. That's well above the total net worth at the end of 2018 and twice the net worth of households at the bottom of the 2009 recession.

Most surprising was the apparent recovery in hiring in May. The June 5 report from the Bureau of Labor Statistics (BLS) showed 2.5 million new jobs. Roughly half of the hiring was in the leisure and hospitality sector of the economy, one which was particularly hard hit during the pandemic-induced shutdown in March and April. Economic activity in the industries served by hospitality workers had not increased significantly in May, however, suggesting that the job gains were a result of payroll protection loan conditions instead of demand. Payroll additions in the manufacturing (225,000 jobs) and construction (464,000) sectors should prove to be more durable and related to demand.

Although the headline unemployment rate from the June 5 report was 13.3 percent, there were errors in counting 4.9 million temporarily furloughed workers by the BLS that push the real unemployment rate to 16.1 percent. Those same errors were made in April, when unemployment jumped to 19 percent. The understated unemployment rate does not change the fact that a net 2.5 million more people were working in May than April; and the increase in labor participation rate was an additional surprise that indicates employment was improving. An analysis of the BLS report showed that the vast majority of those who were unemployed in May had been out of work fewer than ten weeks. That fact suggests that laid off workers still have an



Surprising increases in new home sales since March show potential for underlying strength in the economy. Source: U.S. Department of Commerce, Federal Reserve Bank of St. Louis.

economic backstop for the balance of the summer. It also presents an opportunity for a quicker recovery than was previously expected.

What should temper the optimism sparked by the surprise upturn in employment is the fact that the underlying economic conditions hadn't sparked a commensurate increase in demand in May. Because the Payroll Protection Program requires that firms keep workers for at least eight weeks in order to receive funds, the durability of the May gains is questionable. For example, more than half the jobs gained in restaurants came from establishments still closed or operating at reduced dining levels. It remains to be seen whether or not those employees can be retained after subsidies expire.

May's report on manufacturing activity showed that demand had not yet rebounded for manufactured goods. The Institute for Supply Management (ISM) index of purchasing managers (PMI) registered 43.1 for May. That was up two points from April but well below the reading of 50 that reflects equilibrium. The reading for new orders moved from 27.1 to 31.8. ISM PMI has been trending down for more than two years but remained stubbornly above 50 for most of that time, even jumping close to 52 in February 2020. Forecasters do not expect the PMI to rise above 47 in July.

The quick response to the recession by consumers resulted in a savings rate of 33 percent, a level unseen since the Cold War Era in the 1950s. The reliance on consumer spending for gross domestic product (GDP) growth all but assures a record decline in the second quarter; however, the consumer frugality extends the safety net for households that could spark recovery. Such a recovery will still be dependent upon a medical solution to the COVID-19 virus. Infection rates have jumped in virtually all states as businesses reopened, although most have remained well below levels that would strain the healthcare system. Assuming that the summer weather does slow COVID-19, businesses and government have three to four months to prepare for

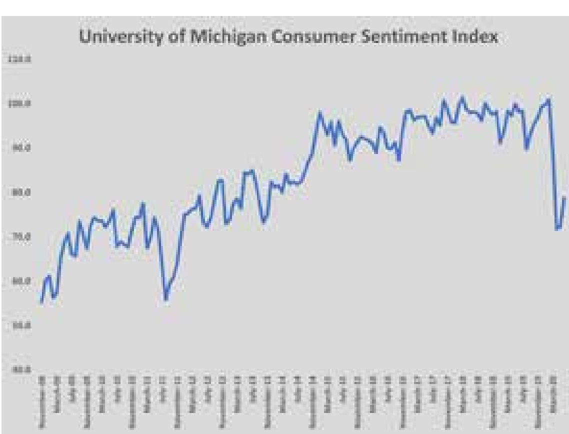
potential outbreaks in the fall. Effective preparation could allow economic recovery to be unaffected by higher infection levels.

Data on construction has been less useful in forecasting the coming quarters. Through May 1, construction activity remained roughly seven percent above the levels of the first four months of 2019. While the headline construction spending total reported by the Commerce Department declined 2.9 percent in April, to $1.35 trillion, that volume was higher than any month prior to 2020, and 4.2 percent higher than the three-year average. Volume was lifted by the fact that construction activities continued during the shutdown in 47 of 50 states, and backlogs coming into 2020 were unusually high. Census Bureau methodology also probably overstated actual construction volume and it's likely that revisions to some of the government estimates will bring those totals lower in the coming months.

"First of all, since it is a mix of projects in their first month up through their last month, most projects that were already underway continued in April. You would not expect to see a dramatic drop in the first month [of a recession]," explains Kenneth Simonson, chief economist for the Associated General Contractors. "The other factor is that there are a lot of modeling imputations that go into this report and Census probably heard from fewer contractors than usual. That meant that the model was more responsible for the estimate. We will find out in coming months whether that amount of construction happened or not when they hear from the contractors."

Simonson did note that the 2.9 percent decline from March was unusually steep. He said that a drop of that magnitude had occurred only 13 times in the history of the data series going back to 1993.

No economist can see a path forward that keeps construction volumes at the record high levels, as the impact of plunging GDP, consumer spending, business investment, and government appropriations



Consumer sentiment rose in June for the second consecutive month.

will be felt in the late second and third quarters. The latter category is a particularly important indicator. State and municipal governments began to feel the pinch of lost revenues in May, laying off 487,000 government workers. Should federal assistance for local government fail to materialize by summer, a round of severe layoffs for public employees is expected. Such layoffs will add to the duration of the downturn and will severely limit the level of capital spending on construction.

"I assume there will be more construction of what I call last-mile distribution centers and I think there will be some beefing up of communications to drive more cell towers and data centers. But coming out of this, construction will be much slower to recover than other sectors," Simonson predicts. "Owners have taken a big hit in their revenue flow. They have unexpected expenses and uncertainty about what their revenue will be like going forward. All of those things will be negatives for a quick recovery for construction even if the rest of the economy bounces back."

One bright spot in the construction economy has been the residential real estate sector. The sector underperformed most other parts of the economy during the decade-long recovery. Sales of existing homes and new home construction have slowed since the pandemic broke in mid-March, but not nearly to the degree that other consumer-driven segments of the economy have. Sales of new homes have actually jumped since a big drop in April. A decline in the median price of new construction shows that the lower end of the market is faring better than the high end and the reported higher traffic by builders suggests that there may be some underlying long-term strength in the economy that has been overshadowed by the short-term drop in consumer demand.

Housing starts declined by 26.4 percent in April and rebounded by 5.4 percent in May. Permits for new single-family homes rose 14.4 percent in May, however, indicating that future starts will be much higher. Through the first five months of 2020, permits for new homes was up 1.8 percent year-over-year. Homebuilders responded to the improved market with a surge in the National Association of Home Builders Housing Market Index in June. Builder confidence jumped to 58, well above the break-even reading of 50. The 21 point jump from May was the largest in the history of the index.

Economists hope that lower household debt, high savings rates, and record low unemployment coming into the recession will be a safety net that was not present in 2008 or 2001. Rising investment in residential construction is an early sign of economic recovery. The impact of easing restrictions as summer unfolds will indicate whether the late spring increases in sales and construction are sustained.

The impact of the pandemic on multi-family has been muted. Landlords have responded to the soaring unemployment with rent deals but the average rent decreased by 0.2 percent from April to May, a decline that was smaller than the drop in consumer prices overall. Prospects for the apartment market longer term should favor affordable and mid-range properties, especially if the recession lingers. A protracted housing recession, like the one that followed the financial crisis, will suppress home ownership and drive more households to rent.

Financing for multi-family and other commercial real estate remains an open question as the second quarter ends. Unlike in 2009, when financing was frozen and unable to meet improving demand, commercial finance entered the year in solid position in terms of liquidity, capacity, and the underlying performance of commercial properties. An extended recession will erode that strength but, for now, there remains plenty of capital waiting to be deployed for commercial real estate. Until there is marketplace agreement on property pricing, the ability to finance acquisitions and new development will be very difficult, but there are early signs that deals can be done.

The Federal Reserve's quick and strong response to the economic shutdown has proven effective at stopping the early bleeding, but the extent to which the Fed responded leaves it with little additional ammunition should more stimulus be needed. Fed Chairman Jerome Powell was less than optimistic in his June 9 remarks to Congress; however, he was clear that the central bank expected the near zero interest rate environment to persist through 2022. That forward guidance should steady investors who are examining real estate options and offers local governments that need to borrow the confidence that government debt will be cheap for three years. Powell's remarks included the Fed's forecast of five percent GDP growth in 2021 and of unemployment at 9.3 percent at the end of 2020.

Viewed from the perspective of December 2019, unemployment of 9.3 percent would have seemed disastrous (and impossible). Some six months later, the prospect that the unemployment rate could fall to single digits by year's end seems hopeful.

All hopeful forecasts for the end of 2020 and 2021 rest on the virus remaining no more of a public health threat than other serious coronaviruses have been. Should the current upward trend in infections lead to an outbreak similar to what was experienced in March and April, the "green shoots" of recovery in May and June will wither. Another lockdown would be devastating to the economy, but consumers have also shown an unwillingness to return to the market even without formal orders to shelter in place. At least for the summer, the U.S. remains in a public health emergency first, and an economic emergency second. BG

WHAT'S IT **COST?**

A world-wide decline in demand in March and April pushed commodities prices much lower in May. The most recent reading on inflation from the Bureau of Labor Statistics suggests that the heightened competition for fewer construction projects has begun to push the cost of construction put in place significantly lower as well. As businesses begin to open throughout the U.S. the need to build backlog and maintain employment should intensify this trend.

The June 10 report on consumer and producer prices was much more erratic than normal, with short-term and longer-term pricing trends diverging on a number of materials. Dramatic swings in supply and demand throughout the spring explain the divergence, which will continue into summer until there is more consistent consumer and business behavior.

There are a few consistent trends that have driven the pricing lower. Most significant among these is the steep drop in energy prices, particularly the price of oil and natural gas. The price of oil, which plummeted from $63 per barrel on January 2 to $11 per barrel on April 21, has contributed to declines in diesel fuel, asphalt, roofing, and manufactured goods. The price of #2 diesel fuel fell 12.8 percent from April to May, even as the price of crude oil recovered to $35 per barrel by Memorial Day. Diesel fuel is down 53.9 percent compared to one year ago.

A glut in the supply of oil preceded the plunge in demand. The same dynamics have driven prices for natural gas below $1 per million BTU. That pushes the price of plastics lower, along with materials with gas feedstocks.

Excess capacity for steel manufacturing was also a major influence on pricing for steel-related commodities during the past year. The global recession eroded most of the demand for steel during the spring, even as China's main steel manufacturing plants remained open during that country's regional shutdown. The price of steel, copper, and aluminum products are all down by double digits compared to May 2019, although the price of iron and steel scrap rebounded by 11.3 percent from April to May 2020 as oil prices recovered. Iron and steel scrap prices have seen a 25-point turnaround in price during the past 12 months.

Costs of construction put in place remain consistent, with the price of most types of buildings falling within a tight range near the 2.7 percent year-over-year increase in the cost of new nonresidential structures. Prices for specialty construction also remain consistent, driven by the 3.1 percent increase in wages and benefits. Only the price for roofing contractors is above three percent, however, as the tightening market conditions are exerting downward pressure. As construction safety protocols for infection control are implemented, this trend may reverse as productivity slows. BG

PERCENTAGE CHANGES IN COSTS	May 2020 compared to		
Consumer, Producer & Construction Prices	**1 mo.**	**3 mo.**	**1 yr.**
Consumer price index (CPI-U)	0.0	(0.9)	0.1
Producer price index (PPI) for final demand	0.4	(0.8)	(0.8)
PPI for final demand construction	(0.1)	0.5	2.5
PPI for new nonresidential buildings	(0.1)	0.5	2.6
Costs by Construction Types/Subcontractors			
New warehouse construction	(0.7)	(0.9)	1.6
New school construction	(0.1)	0.7	2.7
New office construction	0.1	0.6	2.7
New industrial building construction	(0.1)	0.9	2.9
New health care building construction	(0.2)	0.1	2.4
Concrete contractors, nonresidential	(0.1)	0.0	2.2
Roofing contractors, nonresidential	0.6	1.6	3.7
Electrical contractors, nonresidential	0.2	0.9	2.8
Plumbing contractors, nonresidential	0.0	0.0	2.2
Construction wages and benefits	N/A	0.4	3.1
Architectural services	0.1	0.2	(0.7)
Costs for Specific Construction Inputs			
#2 diesel fuel	(12.8)	(44.2)	(53.9)
Asphalt paving mixtures and blocks	0.0	(6.2)	(1.6)
Cement	(1.3)	0.6	(0.9)
Concrete products	(0.1)	0.8	3.0
Brick and structural clay tile	0.1	0.2	1.7
Plastic construction products	(0.5)	0.6	0.5
Flat glass	0.1	0.3	1.5
Gypsum products	(0.2)	(1.4)	(0.5)
Lumber and plywood	1.4	(1.7)	(1.6)
Architectural coatings	(0.1)	0.3	1.0
Steel mill products	(3.1)	(2.9)	(13.1)
Copper and brass mill shapes	1.1	(4.9)	(10.3)
Aluminum mill shapes	(4.0)	(9.0)	(14.9)
Fabricated structural metal	0.9	0.3	(1.0)
Iron and steel scrap	11.3	(3.0)	(13.9)

Source Bureau of Labor Statistics, Updated June 10, 2020
Compiled by Ken Simonson, AGC Chief Economist

Healthcare **2020**

Photo by Adam Warner.

Pennsylvania's healthcare system was on a roll coming into 2020, but there were some challenges to be faced. The hospital systems in Pittsburgh, two of which have spread their tentacles well outside the region, had great financial performance in 2019. The bruises inflicted during the painful separation of UPMC and Highmark were fading. But the road ahead had some bumps. Margins were tightening and pressures to reduce healthcare's costs were coming from insurers, patients, employers, and politicians. Demographics were supportive for healthcare demand but were going to be a challenge for the healthcare workforce. A shortage of doctors and nurses loomed.

Then the novel coronavirus COVID-19 hit.

Like everything else, healthcare has been inexorably altered by the pandemic. Operations have been drastically altered. Revenues were impacted. Staff is finding new ways to work that will persist after the threat of the virus abates. But what's different for healthcare from higher education, for example, is that the pandemic was happening in its facilities. Hospitals not only felt the economic pinch, they also were the front lines for the testing, diagnosis, and treatment of the virus patients.

Whatever overarching trends are impacting healthcare for the future, it already appears that there will be two parallel tracks for the changes that occur in facilities: those that were happening before the pandemic and those that are happening because of the pandemic.

Hospital executives, healthcare providers, architects, and engineers are clear that there were some significant construction and real estate trends driving the market towards the future. Technology adoption was on the rise. Patients were gaining more influence and power in the delivery models for healthcare. Costs were growing beyond what were seen as tolerable by the marketplace. COVID-19 has accelerated some of these trends. It has also made some less urgent. Even after reliable treatment and a vaccine are discovered for COVID-19, the healthcare system in the U.S. is likely to remain on a higher level of alert for the next "super flu." And that will be reflected in its facilities.

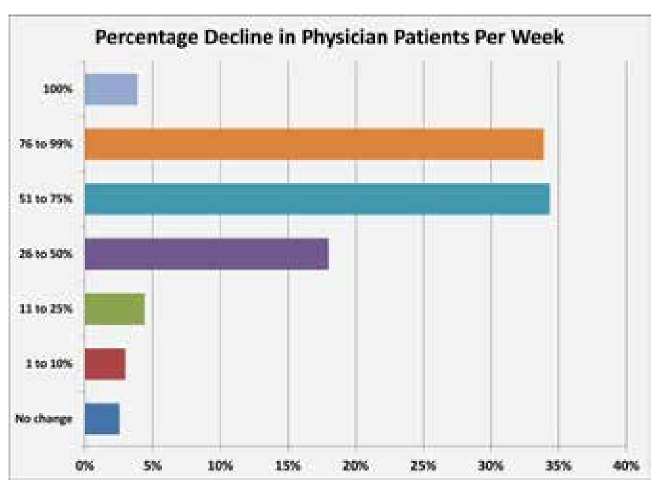
Some of the existing trends, like telemedicine and private inpatient rooms, are synchronized with the response to the coronavirus. The pandemic also feeds the trends towards efficiency and distribution of services outside a centralized flagship hospital. To that degree, the impact on construction by COVID-19 won't be as disruptive in healthcare – setting aside financial issues – as it will be in the hospitality or office sectors. But because of the nature of the capital programs of the healthcare systems in Western PA, COVID-19 is likely to have a significant impact on the proposed plans of UPMC and Allegheny Health Network (AHN).

Where Healthcare Was Heading

The growth in population outside the U.S. and the impact of a globalized economy has led to significant changes in how healthcare is delivered around the world. There are a number of trends that reflect these demographic changes, such as expanded public health care, increased healthcare spending per capita, and the expansion of non-traditional players (like Google or Amazon) into healthcare delivery. Most of the trends in medicine are centered on a few major themes: expanded access, lower cost, increased awareness of wellness and prevention, and the adoption of more new technology.

Some of these trends are emerging or growing in the U.S. Most notable among them are the growth in technology adoption and the increased focus on wellness, particularly as the number of people living with chronic conditions explodes. Much attention has been given to expanding access to healthcare and reducing costs – especially for pharmaceuticals – but the reality is that neither of these two important changes has become trends. The number of Americans with health insurance has declined slowly but steadily since the peak in 2015, although the number in 2020 is still more than 40 percent higher than in 2014.

Pittsburgh area healthcare and design professionals reveal that many of the identified emerging national trends are not making an impact in Western PA. In part, that's because some of the trends will not gain momentum or will be undone by political or industry action. Mostly it seems that the trends impacting construction in Western PA's healthcare market are focused on the specific issues of the region: an aging population, the dynamics of the UPMC-Highmark competition, the older physical plant, and the access to cutting-edge technology being developed by the universities in Pittsburgh.



More than two-thirds of physicians in PA saw a decline in patient visits of between 50 and 99 percent in March and April. Source: PA Medical Society.

Construction is moving quickly out of the ground on the UPMC Vision and Rehabilitation Hospital at UPMC Mercy. Photo by Mascaro Construction LP.

Healthcare construction is a significant share of the market in Western PA. Over the past five years, for example, there has been roughly $2.7 billion in construction starts in new space or major renovations in the healthcare sector. Another $2 billion in ongoing maintenance and repairs has been undertaken. Only the office sector and the industrial sector (because of the Shell Franklin plant) have seen higher construction volumes in the seven-county metropolitan Pittsburgh market.

Beyond the year-in, year-out impact of healthcare on construction, the industry was in the midst of a multi-year boom coming into 2020. St. Clair Memorial Hospital was working towards a 2021 opening for a $100 million expansion and renovation at its Mt. Lebanon/Scott Township campus. A new $150 million Children's Hospital was underway at West Virginia University Medicine's (WVUM) campus in Morgantown. The region's two largest healthcare systems were each in the process of investing billions of dollars into facilities, making headlines in 2017 and 2018.

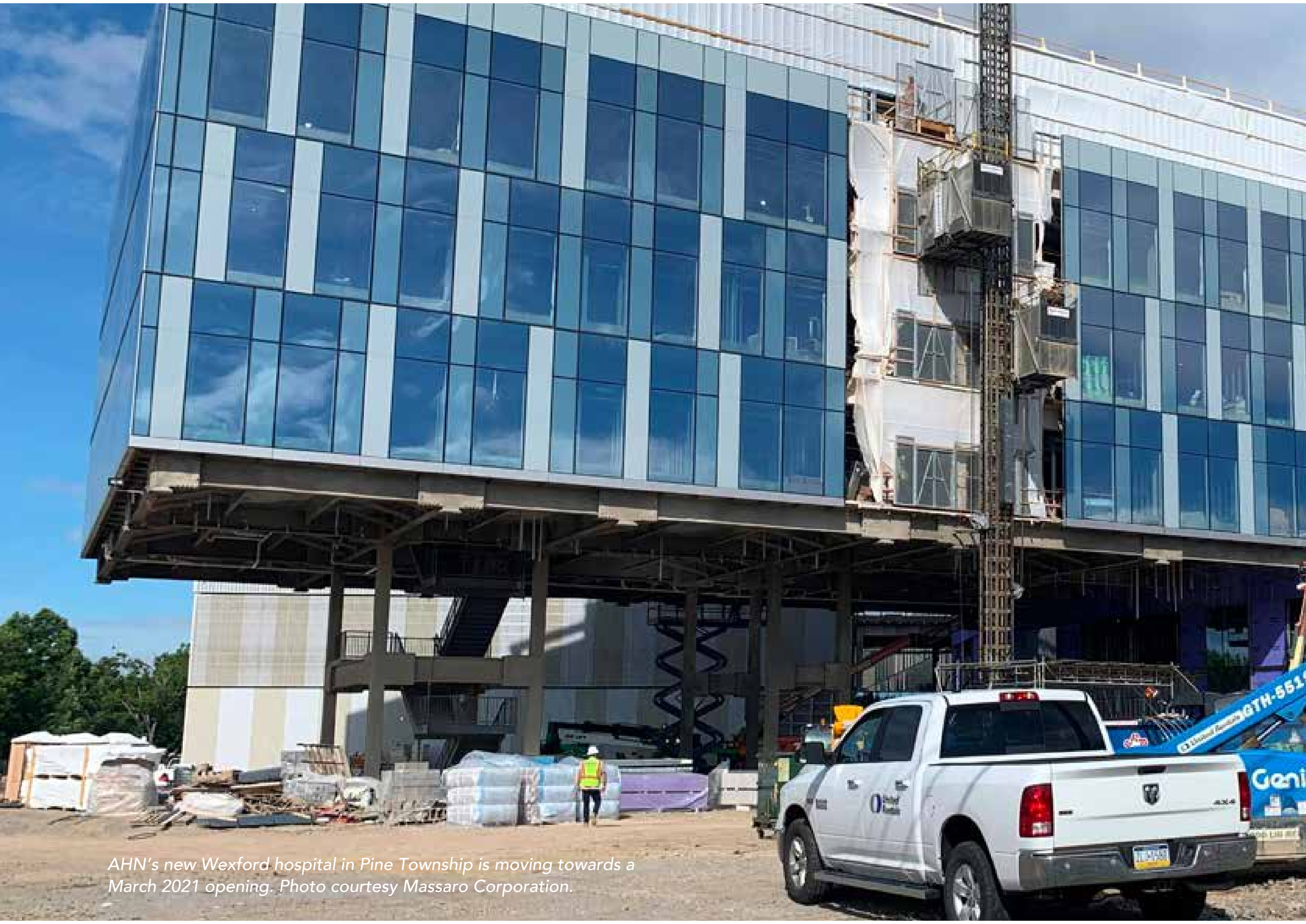
AHN had started or completed new cancer and ambulatory centers in Butler, Center Township in Beaver County, Monroeville, and Fox Chapel, and was wrapping up its Academic Cancer Center at Allegheny General Hospital. Three new neighborhood mini-hospitals were open in McCandless, Hempfield, and Brentwood, with a fourth under construction in Harmar Township. And AHN was well under construction on its $220 million new hospital in Wexford. Plans were beginning for a $400 million cardiovascular tower at Allegheny General Hospital.

UPMC made bigger headlines with its plans for three major hospitals in the city. As of spring 2020 the $450 million Vision and Rehabilitation Hospital at UPMC Mercy was coming out of the ground. Plans were underway for the construction of the $900 million Heart and Transplant Hospital at UPMC Presbyterian to start in third quarter 2021, and for the $250 million UPMC Shadyside bed tower and Hillman Cancer Institute expansion to get underway in 2021 and 2022. These projects were part of a construction boom overall that was going to create thousands of new construction jobs and stretch the skilled labor force to the limit.

But years before the COVID-19 outbreak, changes in the healthcare landscape had begun to impact the new construction boom.

"There is a push to deliver more services in an outpatient environment. That's a trend that is continuing to gain momentum," observes John Schrott, president of IKM Inc.

"The majority of the facilities we are working with are trending towards what services can transfer to an outpatient environment and what procedures critically need to be



AHN's new Wexford hospital in Pine Township is moving towards a March 2021 opening. Photo courtesy Massaro Corporation.

inpatient," says David Wells, principal at RM Creative. "What owners have determined is that if they can provide care in an outpatient hospital-based environment, it gets them better reimbursement from Medicare and Medicaid. They can increase revenues in an environment that doesn't have all the costs associated with the inpatient support infrastructure."

The trend that Wells and Schrott observe has its origins in the reimbursement landscape that changed with the Affordable Care Act (ACA) in 2010. The passage of ACA was intended to make healthcare providers more responsive to patients, including basing a portion of the Medicaid and Medicare reimbursement – the standards for most reimbursements – on patient satisfaction surveys. A decade after ACA's passage, Republican erosion of aspects of the law has not changed the trend towards greater patient empowerment. Patients have consistently expressed a strong preference for delivery of services closer to their homes and away from large, centralized hospitals.

Medicaid and Medicare have recognized this trend. Insurers also recognize that regardless of who pays for services the cost of healthcare is spiraling towards unaffordable levels. As a result, insurers favor outpatient services. Outpatient centers also require less support from staff and physical plant, which makes it cheaper for providers to operate. And reimbursements for services rendered in hospital-based outpatient environments garner the best rates, meaning that providers can generate income that exceeds expenses by 20 to 40 percent more in those facilities.

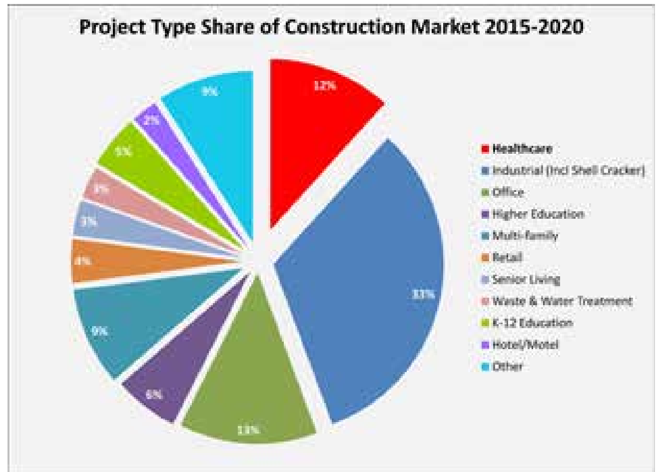
This trend is evident in the construction starts from the past five years. In addition to the outpatient centers mentioned above there have been new outpatient and ambulatory care facilities (which are by definition hospital-based) built by

WVUM in Fairmont, WV and Waynesburg; and by UPMC in Hampton Township, Ebensburg, and Erie, along with several facilities at existing hospital sites. An ambulatory center was also part of St. Clair Hospital's expansion.

Building a hospital-based outpatient center means that there will be construction details that are different than a center that is designed more as a medical office building. The Commonwealth of Pennsylvania has stricter guidelines for mechanical systems, sizes of rooms for exams and procedures, and clearances within the facilities that make the outpatient center more like a hospital. But the outpatient facility, even if it is a surgery center, will require less infrastructure and support to operate. Construction costs tend to be less by $100 per square foot or more.

"Health care providers are able to extend a hospital license to an outpatient facility. For a designer that means it is considered a hospital-based environment and is covered by the Facility Guideline Institute's requirements for outpatient facilities," notes Wells. "The facilities have to then make sure they are complying with those requirements for the added level of care. Because of that they are subject to review by the Pennsylvania Department of Health Division of Acute and Ambulatory Care."

James Rohrbach, chief financial officer for Allegheny Health Network, says the trend towards outpatient care is



Construction of healthcare facilities made up 12 percent of the total volume of work in metropolitan Pittsburgh since 2015. Source: Tall Timber Group.

expanding, merging with the trend to reduce costs.

"Outpatient facilities are working on consolidation of services. When I look across the region or the country, our biggest opportunity is to provide services in a more seamless fashion in terms of any location," Rohrbach explains. "From a construction standpoint, we'll see more consolidation of services in one location. I think we'll see fewer stand-alone centers for things like diagnostics or physical therapy. From a customer experience perspective, having access to all the services is important. And frankly there is pressure on the industry to reduce cost and, to the extent that we can co-locate those services, the industry will be a lot more successful."

Schrott observes that the pressure on healthcare providers to reduce costs was bringing renewed emphasis on optimizing space and operations.

"Even before the pandemic there was a push to gain efficiencies. In operating room design, for example, we saw the push to have the sterile supplies much closer to the case. Hospitals are looking to shorten the turnover between cases. If they can squeeze one more procedure in every day it has a big benefit," he says. "Operating rooms are the economic engines of the hospital and we have seen how that plays out when elective surgeries were cut during the early stage of the pandemic. Even before the pandemic there was a push to look at logistics and to look at facility design to increase efficiency, decentralize supply and get what was needed closer to where it was needed."

The operational and financial pressures on healthcare providers were influencing the construction environment before COVID-19. The new hospital construction planned by UPMC at Presbyterian University Hospital, Shadyside Hospital, and Hillman Cancer Institute had already been delayed by a year or more from the schedules announced originally. Excela Healthcare had no major new construction in the pipeline and St. Clair Hospital was pulling back major


Although the headlines have been about major new hospitals in the city, there has been a dramatic increase in construction of new community-based outpatient facilities, like this UPMC facility in Hampton Township. Photo by Massery Photography.

capital spending after its expansion is completed. AHN was planning to shift its focus back to addressing its existing facilities in 2021 and 2022.

"The Wexford hospital is obviously the biggest project we have going right now but everything else that's approved going forward is largely renovation within existing buildings. There is no new footprint for projects that are approved now," says Dick Thompson, vice president for facilities and real estate for AHN. "We have made a major investment in our cancer program and there are other programs that we are looking at making major investments in to bring them into the 21st century."

Thompson explains that AHN is still working at making improvements to facilities that were ignored for more than a decade preceding the merger with Highmark.

"There is still a huge amount of modernization that is needed going forward," he says. "Many of the inpatient units that we have, never had a full renovation associate with them. We're looking at how we can do renovation for those units."

The difference in how Pittsburgh's two largest healthcare systems approached their facilities since the turn of the century may have influenced how each positions itself in the marketplace. During the past two decades, UPMC has built three new hospitals and a cancer institute, and spent billions expanding and modernizing its facilities. Its marketing has emphasized its world-class physicians and research, seeking to draw patients to its mainly centralized facilities. AHN, on the other hand, inherited flagship hospitals in need of updated infrastructure. Its capital focus has been instead to build new outpatient and community facilities that tell patients that AHN has listened to their desire to have treatment in the suburbs.

From all appearances, both approaches have served the healthcare systems well. In early 2020, however, a global public health crisis interrupted the plans of both AHN and UPMC to shift or continue investing in their physical plant to support their vision of the healthcare marketplace. The impact of the COVID-19 pandemic will have a transformative impact on the short-term and long-term capital investment in healthcare.

What Has Changed?

"Maybe the most frustrating part of this is that, coming into 2020, we were in the strongest position we've been as an organization for quite a long time," says Rohrbach. "When I look at the financials for all the healthcare systems across Pennsylvania they were in a stronger position in 2019 than the year before. It's safe to say that in the region the systems were doing well. The good news is that financial strength set the industry up to weather the storm."

The storm was swift and devastating. From mid-March, when the Center for Disease Control and Gov. Wolf issued orders restricting surgery and procedures to those deemed "medically urgent," hospitals lost their primary sources of revenue. Moreover, the shelter-at-home orders that

"I suspect it won't be until the calendar fourth quarter that hospitals understand the true economic impact of the virus. ..."

accompanied the shutdown of elective procedures also all but eliminated patient visits of any kind. For most systems, there was a compounding effect to the pandemic because hospitals prepared for a flood of patients by keeping capacity open and maintaining staffing levels. It was a recipe for deep financial losses. Estimates are that hospitals in Pennsylvania lost more than $900 million in revenue during the six weeks of shutdown. Pittsburgh's largest hospitals experienced that pain.

AHN reported a $59.5 million operating loss in the first quarter of 2020, with estimates of lost revenue of $161 million from March 15 to April 30. That means at least one-third of the second quarter will have similar circumstances.

UPMC had a $41 million operating loss during first quarter, mostly due to loss of surgeries and procedures. It increased its cash position from $351 million to $1.7 billion from March 31, 2019 to March 31, 2020.

In response to this unprecedented financial jolt the government took some healthcare-specific steps to try to mitigate hospital losses.

Traditional waiting rooms may become a thing of the past.

"The CARES Act provided funding in two forms. First, they provided grants to offset the impact of the virus. Second, they provided accelerated payments for Medicare," notes Rohrbach. "Providers were effectively able to get an interest-free loan for the payments that they would receive from Medicare. Hospitals were able to receive six months in advance and physicians could receive four months. The grants are a small portion of the money that was lost. The accelerated payments will have to begin being paid back in August."

Rohrbach notes that the provisions from the CARES Act were essential but cautions that the larger share of the funding lifeline depends upon services being provided to match the advances from Medicare. Without catching up on procedures and billing during the intervening months, repayment of the advanced funding will be a drag on finances.

"August is coming quickly," he warns. "I think there will be a lot of pressure on liquidity in the healthcare space in the short term."

The plight of hospitals during the pandemic has been well-documented. What has received less attention is the financial stress of the healthcare system's foundational element, the personal care physician (PCP).

Mitigation measures in all states included avoidance of doctors' offices for anything other than emergency or necessary visits. That has resulted in a massive loss in revenues for PCP practices across the U.S. Physicians switched gears fairly adroitly as the virus spread, moving quickly to telemedicine as a way to treat many patients; however, fees for telemedicine appointments are lower, as are reimbursements. Compounding the revenue problem are the delays in getting reimbursements from insurers during the shutdown and the delays in billing from the more limited staffing in PCP offices.

Losing PCP practices, either to closing doors or mergers with large practices, will be bad for healthcare consumers. Fewer PCPs reduces competition, raising prices. In areas that are already underserved by PCPs, consolidation will just broaden these healthcare deserts. Losing more density of healthcare providers will reduce the number of referrals to specialists. More people will put off treating nagging ailments and chronic conditions if the PCP office is inconvenient. That will result in higher hospital admissions and escalating costs of treatment for serious conditions that could have been treated cheaper at an earlier stage.

As Pennsylvania was beginning to reopen in mid-May, the Pennsylvania Medical Society published the results of a survey it conducted of 983 physicians and 160 medical practice administrators in 55 counties throughout the commonwealth. Of those surveyed, 13 percent were in Allegheny County.

- 56 percent say the number of procedures performed at their facility dropped by at least 76 percent since the pandemic began in March.
- While the use of telemedicine jumped from 13 percent (before the pandemic) to 86 percent during the pandemic, 27 percent report telemedicine reimbursement as "difficult" or "very difficult."
- 12 percent say their medical practice has either temporarily or permanently closed; 18 percent are not sure if their medical practice will close.
- Staff reductions:
  - » 76 percent have reduced clerical staff
  - » 69 percent have reduced nurse staff
  - » 49 percent have reduced nurse practitioners or physician's assistants
  - » 43 percent have reduced physicians on staff

During the severe downturn in patient visits, 77 percent of the administrators said they had applied for government-funded small business assistance and two-thirds reported receiving emergency payments from the Centers for Medicare & Medicaid Services. That aid is intended to get physician practices through to the other side of the crisis but what will determine how many of these practices will survive will be the extent to which patients make up for the visits deferred during March and April.

The good news thus far is that patients have been returning to hospitals since the restrictions were lifted on April 27. From system to system the results have been different, but elective surgery and routine procedures have increased. The bad news is that recovering from the pandemic will have an impact on construction put in place over the next couple of years.

"As patients have sought out the essential care that they postponed during March and April, UPMC is now fully operational at pre-COVID levels, and we anticipate no long-term impact on revenues," says Gloria Kreps, vice president, public relations for UPMC.

"From the end of April until now we've been in a recovery. We haven't gotten back to 100 percent of our historical volumes so we're all still in recovery mode," says Rohrbach. "To the extent that the provider systems have had extensive losses, including AHN, those losses get funded through reserves. Our reserves are what funds construction projects. In the short term I think systems will reevaluate their capital spending."

AHN has cut its capital spending for the coming year, although it made the decision to continue funding projects under construction. Ken Rockwell, manager of planning, design, and construction for WVU Medicine, reports that WVUM has also pared spending until its revenue picture is clearer.

"As soon as the virus hit, the finance office started looking at budgets. We took a deep dive into our capital spending plans to figure what was essential and what supported the response to COVID-19," Rockwell says. "The good news is the patient census has grown. The hard part is that it's a hard time to be a patient at the hospital. You can't have visitors. You can't really have help getting to and from appointments. The more patients we get in house, the more elective surgeries we can do, the better the cash flow and the more capital projects we can pull off the deferred list."

Where Healthcare Is Heading

Financial uncertainty may be the most significant outcome of the COVID-19 outbreak for the healthcare systems, but it's not the only one. Regardless of whether hospitals recover financially quickly or not, there will be construction done directly as a result of the pandemic. These COVID-driven projects fall into one of two categories: work done in response to the virus and work done as a result of behavior changed by the virus.

Engineer Pat Branch, the regional manager for McKim & Creed in Pittsburgh, has a veritable laundry list of modifications to mechanical and electrical systems that will be done to limit the possibility of infection transmission. These include more isolation or negative pressure rooms, HVAC work to meet or exceed ASHRAE 170 requirements for ventilation, air purification and filtration, and boosting relative humidity to optimize immunity. He expects facilities to develop or update measures to prevent Legionella. And Branch expects more investments in information technology to support patient monitoring and telemedicine.

The latter is the most significant healthcare trend to emerge from the pandemic. The use of technology in healthcare was expanding ahead of the outbreak but remote doctor's appointments were hardly on a wave upward. Six weeks of limited access to physicians changed that trend.

"The pandemic has crystallized the role of telemedicine in healthcare," says Schrott. "You don't have to construct a special television studio to accommodate that. Physicians and patients have learned how to deal with the existing technology and I think telemedicine has found its place."

"Telemedicine is the one big thing that's been buzzing around here because that's the thing that we think will change the way we do business in the future," agrees Rockwell. "The virus has made us realize that we can have telemedicine. We've talked about it in the past and used it on a limited basis, but patients have now gotten used to talking to the doctor with an iPad. I fully expect that will be more of a driver in the future."

According to Rohrbach, the future may be now.

"The thing that may impact construction in the long term is that during the pandemic we were able to quickly pivot to tele-healthcare. We had many offices that were closed during the pandemic but we were able to set up telemedicine relatively quickly," he says. "We went from a small number of telemedicine visits per day to a point where we were doing over 4,000 telemedicine visits per day. That has been a significant change in the way medicine has been delivered during the pandemic. Frankly, that provides an opportunity to revisit how much bricks and mortar we really need."

AHN recently announced that they were reducing some of their outpatient office space directly as a result of how quickly patients have embraced telemedicine. Rockwell sees a similar impact at WVUM.

"From an outpatient and clinic perspective, it helps us control the sizes of the space we look at because we know there is more of component for telemedicine," he says. "Instead of building 20 exam rooms, we'll have a nice high-tech doctor's office. The pandemic helped us realize just how many people can do their job from home and that will have an effect on the office space on campus in the future."

Schrott has yet to see the correlation that will result from telemedicine and would like to see how the pandemic-induced behavior ages before making predictions. He does believe that the drastic change in healthcare delivery this spring will have a broader impact.

"I don't see that it will have a big impact on the footprint at this point in time. The bigger impact will be whether or not we embrace technology in new and different ways. Is the waiting room still going to be a waiting room? Are we going to finally embrace technology like the 'no wait' apps that restaurants have?" he asks. "Patients can text the doctor's office that they are in the parking garage and receive a text that they can proceed directly to examination room. The registration and insurance verification can all happen electronically. You really don't have to interface physically with anybody but the physician and the assistant. I'll be curious to see of any of that has legs as we pull out of the pandemic."

New technology is driving some of the renovation projects at AHN facilities, according to Dick Thompson.

"We're looking at improving the number of operating rooms and the technology in them," he says. "For example, very few procedures are open heart surgery anymore. There are now minimally-invasive procedures that solve major problems in cardiac, orthopedics, and neurosurgery. As we look at how technology has changed and how everybody is living longer, the kinds of things that are presenting now are more complex. It's a challenge to adapt old facilities to new technology."

"The fourth quarter has become the best surgical quarter because patients wait until their deductible has been met to have procedures done in November and December," Schrott explains.

Beyond the potential for increased use of technology, the pandemic accelerated the existing trend of eliminating double-occupancy rooms. Hospitals have not been putting two patients in a room for years to mitigate hospital-acquired infections. A virus that spreads as rapidly as COVID-19, and requires immediate isolation, makes private rooms a must.

"We still have semi-private rooms that we'd like to make private rooms with modern esthetics and conveniences for the patients," says Thompson.

"New facilities and facilities that get renovated cannot have two patients in one room anymore. As facilities renovate – and this is a big deal for older facilities that are currently licensed and grandfathered in to allow two patients per room – there has been a move afoot to make those updates and go to single patient rooms," explains Wells. "It's the right thing to do for a lot of reasons, one of which is that it's a good idea when there's an infection spreading that you don't know how to treat.

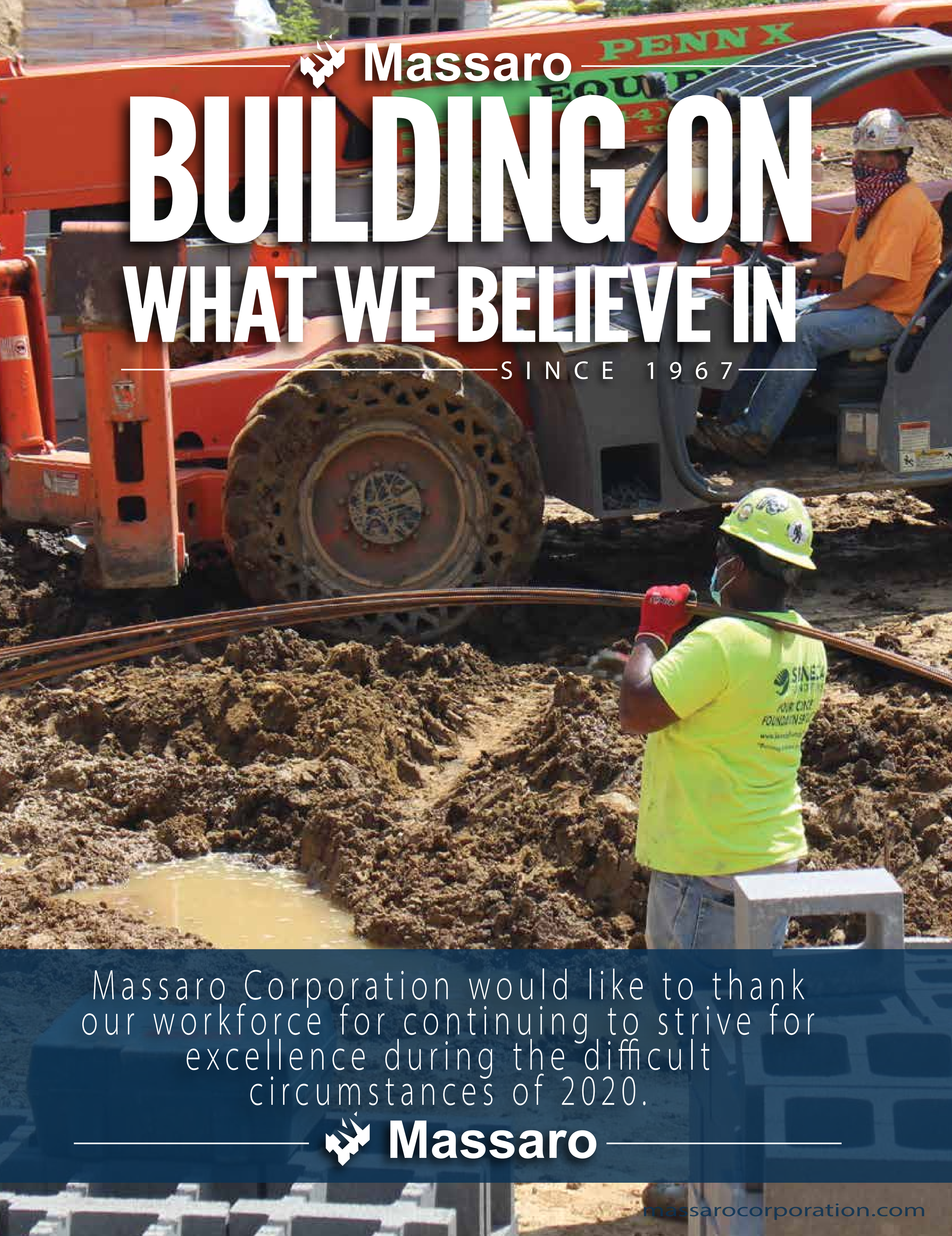
"A related thing is that hospitals are looking at their private rooms to make them acuity adaptable, meaning that they can flex from being a standard inpatient room to one that can treat a more complex case, almost an ICU level case."

In the coming year or so, it is almost certain that the pandemic will limit the amount of healthcare construction that is done. First, it's worth remembering that as of July 2020, the novel coronavirus was still a pandemic. State and federal governments removing restrictions did not eradicate the infection. Even if the alarming rise in hospitalizations in June stabilizes, the outbreak will depress healthcare activity to some degree until there is a vaccine or effective therapy. In the meantime, the financial damage done to healthcare is significant.

Ken Rockwell estimates that in 2020, excluding the Childrens' Hospital project, WVUM will spend one-third of the $180 million it invested in the Ruby Hospital campus last year. AHN and UPMC have announced cutbacks in capital spending. Projects that will proceed will either be mission-critical or will be revenue generators, like imaging or surgery. Perhaps economic activity will recover quickly and there will be a return to normalcy in 2021, but that does not appear to be the scenario that hospital systems are preparing to meet. With access to healthcare likely to be an election year issue, it will probably be the end of 2020 until there is better clarity about what the next turn in healthcare will look like.

John Schrott says that IKM saw an uptick in requests for proposals in June, but that the clients were transparent about their intentions to purchase services for programming and schematic design, rather than proceeding to construction. Those proposals were all for outpatient surgery or oncology, he noted.

"I suspect it won't be until the calendar fourth quarter that hospitals understand the true economic impact of the virus. The fourth quarter has become the best surgical quarter because patients wait until their deductible has been met to have procedures done in November and December," Schrott explains. "Hospitals are not going to know the true economic impact until they can see what their surgical schedule looks like in the fourth quarter. They are going to need to see what their overall economic health is before they begin to think about capital expenditure projects." BG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Massaro Corporation would like to thank our workforce for continuing to strive for excellence during the difficult circumstances of 2020.
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The new steel and glass atrium wall had to interface with three existing structures, including the monumental North Avenue tower. Photo by Adam Warner.

PROJECT PROFILE

ALLEGHENY GENERAL HOSPITAL ACADEMIC CANCER CENTER

In June the first patients began treatment at the new Allegheny General Hospital Cancer Center. The facility is the physical manifestation of the $200 million capital investment by the partnership of Allegheny Health Network (AHN) and John Hopkins Medical.

The announcement of the partnership, and the resultant new cancer center, started the ball rolling on a compressed delivery process.

"The timeline of the cancer center project was partly driven by the announcement of the $200 million dollar capital investment," says Mark Hartman, senior project manager for AHN. "They said when it was going to be completed before we could tell them when it could be completed."

In Spring 2017, AHN's team began the initial planning for delivering the project. AHN has a preference for hiring construction managers early in the design process, looking to get input on cost and constructability from contractors that are in the marketplace. For the Cancer Center, this approach would be vital. Requests for proposals went out to architects and construction managers at nearly the same time. IKM Inc. was chosen as architect in July 2017. In October of that year, AHN selected Massaro Corporation as construction manager.

"Both IKM and Massaro had several competitors. Everyone that competed for the project had good teams. Their prices were competitive and we liked all of their approaches," recalls Hartman. "What helped both Massaro and IKM was that they had been involved in building the only other major cancer center in Pittsburgh."

Programming for the new facility was underway when Massaro was selected. Hartman says that the speed with which the design was expected to develop presented a difficult early challenge.

"To put it into context, back in 2017 when we were procuring services, the concern was about the expiration of the consent decree between Highmark and UPMC. No one really knew what kind of world was going to exist the day after that expired," he explains. "That issue, of course, came and went last summer but, at the time we needed speed and we needed the project done by late summer of 2019. It was a very aggressive and quick programming study. We got about a month or so into programming and realized we were putting ten pounds of stuff in a five-pound bag, so we had to expand our program and add some square footage. That meant getting more funding approvals."

AHN's decisions slowed preconstruction, which gave some breathing room to the design development. The site chosen for the Cancer Center was an infill piece of ground that lay between AGH's South Tower and the Sandusky Street Garage along North Avenue. IKM developed a solution for the new building that was driven by AHN's program and location.

The new construction is a steel-framed, 83,000 square foot structure. The $52 million Academic Cancer Center is an asymmetrical multi-level building that is dominated by a large glazed atrium. The atrium rises more than four stories high at its main entrance on the eastern end of the structure, and curves towards North Avenue as it extends to the west at the connection to the Sandusky Street parking garage. The atrium was an important expression of the project's physical programmatic needs.

"Allegheny Health Network created a state-of-the-art cancer care program and this building was designed to let everyone know that is happening," says Roger Hartung, partner at IKM Inc., the architect for the project. "If we had just repeated the same yellow brick, no one would know that anything different was going on. When we started talking to AHN about this, they wanted an expression of technology and investment in medicine. That's where the aesthetic comes from."

Hartung explains that beyond the purely aesthetic considerations, the use of the curved glass exterior was an architectural solution to the problem of connections that the site presented. Set between three main structures, the Academic Cancer Center was used to connect unrelated parts of the hospital, none of which could be disturbed.

"It certainly would have been easier to have built this on a different site. AHN wanted to have this front and center on North Avenue because the cancer center is so important to them," Hartung continues. "The building touches five other places in the hospital that were built at different times. The other thing with the atrium is that it consolidates three important entrances to the Cancer Center. At that nexus will be the main valet entrance, which comes from the Sandusky Street Garage. There will be an internal entrance for people who want to park at the James Street Garage or are coming from other places in the hospital. And then there is another entrance that is coming off the North Avenue main entrance to the hospital. That atrium coordinates all those entrances into one space that helps visitors organize and way find. It looks like a unique expressionistic shape but it all results from the program of the building and the site constraints. It created this wonderful opportunity from all of these challenges."

Photo by Adam Warner.

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During preconstruction, there was an enabling MRI relocation project that was done from March until June. When excavation and demolition began in July 2018, the team saw how the site was imposing limitations and challenges that wouldn't occur on a more open location.

"It was a very difficult site bound on three sides by the hospital and a parking garage. It was a challenge to maintain service and access without impacting the user groups inside the hospital while we were building a major addition," says Matt Morris, project manager for Massaro Corp. "The helipad is directly adjacent to our site so we had to have direct communication with Life Flight while we were using our cranes. The logistics of helicopter flights had to be factored into our planning."

"It was an infill project so we weren't in the existing hospital during any of this project. Tying into the hospital was a challenge, making sure that all of the elevations lined up. We scanned the outside of the building and put that into the architect's model to make sure that the floor elevations lined up. There were some underground obstructions, some utilities that we had to work around. Allegheny General has been built over many decades and there were multiple iterations of drawings that had to be gone through to find the historical information."

The tight site, and the fact that the new building would have radiation oncology two levels below grade, meant that excavation would have to be precise and there would be extensive shoring to protect the pedestrians and existing hospital buildings. Amelie Construction and Supply, which was doing the micro-pile foundations, did not catch a break from Mother Nature.

"If you remember the end of 2018, it was the wettest winter on record and that's when we were doing all of our excavation and drilling," recalls Morris. "We had a lot of lost days to weather. The fill sites were all closed so we couldn't get trucks. It's been pretty much a six- or seven-day week since we began in July of 2018."

"Site logistics were challenging to manage safely and cleanly without affecting patient care, or visitors, or making the city and the neighbors unhappy," says Hartman. "That was an hourly challenge not a daily challenge."

A further logistical challenge of the site was access. Once excavated, the footprint of the building addition was a two-story bowl that had no ground level access in any direction.

"Because the site was bound by concrete walls we had to put a ramp in to get access to the hole, but the walls were so high that we had to stage the ramp a couple of times to get the drill rig in-and-out," explains Morris. "There was a lot of sequencing involved just to get access to the site. That was abnormal even for an urban setting. And the helicopters were a level of complexity all their own. There was also a gamma knife project running inside the hospital that was unrelated to this project. That equipment came into the hospital through our site so we had to pour a temporary runway and coordinate the delivery of that equipment through our site. That was coordinated months in advance."

Photo by Amelie Construction & Supply.

Overhanging all of the logistical and construction challenges was the schedule. Although a summer 2019 accommodation by UPMC and Highmark provided relief from the earliest completion date, AHN was still anticipating a 20-month duration from the start of excavation. That left about ten months from the time the Cancer Center was coming out of the ground in July 2019. Hartman recalls that the construction manager approached the project with unconventional plans for addressing a compressed schedule.

"Massaro brought some ideas to the table about how they would procure services and engage trade partners," he says.

"We utilized some design-assist specialty contractors on the mechanical and electrical side that allowed for coordination to go more smoothly. We did some heavy prefabrication on the mechanical and electrical systems," says Morris.

Massaro Corp. promoted the idea of design assistance for the major subcontractors. While the form of contract did not migrate to a full shared-risk design-assist agreement, the mechanical and electrical contractors, McKamish Inc. and Wellington Power Corp., were engaged early in the process and participated in vetting the design. Hartman acknowledges that this delivery method didn't fully utilize the potential for design assist, but working closely with critical specialty contractors provided important benefits.

For the specialty contractors the project presented several key challenges. First, of course, was schedule. The extended planning and procurement compressed the time for construction. Some of the major subcontractors were delivering the project with design assistance but that still left less than nine months for completion of construction. In addition, the nature of the project site meant there would be little or no area for laydown or storage of materials, and even less for construction waste. One solution that helped mitigate the

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problems was prefabrication.

"Our challenge was to build a hospital in six months. We tried to fabricate as much as we could ahead of time to cut down on those hours in the field. Anything that made sense we fabricated," says Jim Regan, project manager for McKamish. "We didn't start installing anything until the end of July and we had systems filled by the end of January."

McKamish worked with the engineers building the BIM model prior to construction starting and used the lead time to fabricate almost all of the plumbing for the underground site, domestic water, endwalls, and medical gases, and the risers, ductwork, grooved piping, and pumps for the HVAC systems. Logistics was also a big part of the strategy. McKamish purchased virtually all of the equipment in advance and stored

"There was good teamwork from the first day. Throughout the project there were key personnel that moved on or were promoted into another role, but there was always the consistency of the team work,"

it in its warehouse in Shaler Township.

"We were already doing work on another project in Allegheny General Hospital. Jim and his team set up a small fabrication shop in a mechanical room in the hospital rather than in our shop in Lawrenceville," says Dave Lyon, vice president of operations for McKamish. "We were able to create tons of small fabrications and just walk them down to the job site instead of trucking them. We spend a lot of dollars warehousing equipment that we purchased in advance. At the end of the day I don't know that we saw a huge cost savings because of the prefabrication that we did, but the goal was to get the building open on time."

The COVID-19 outbreak ultimately thwarted the best efforts to get the building open on time. The statewide shutdown prevented the PA Department of Health from doing inspections from March through May, meaning the completed project wasn't given final inspection until June 9, even though it was ready in late March. Hartman credits the attitudes of the team for persevering through the challenges.

"There was good teamwork from the first day. Throughout the project there were key personnel that moved on or were promoted into another role, but there was always the consistency of the team work," Hartman says. "I think both IKM and Massaro have that spirit of collaboration. The construction team did its best to preplan or adapt to the conditions and circumstances as the project went along."

"It was a heavy team effort," agrees Morris. "There was a heavy pull plan effort to make sure that it was as tight a schedule as possible. Subcontractors were involved in schedule development. It wasn't just us telling them dates. They were helping develop the dates and durations. We rented a house near the site that all of the major subcontractors used for their supervisors. We had on-site, full-time project managers for both McKamish and Wellington so we had access to the key people at the right time."

Roger Hartung credits the delivery method with setting the stage for the collaboration that evolved.

"Massaro was hired as CM right after we were hired so they came to all of the design meetings. That worked very well," he says. "I think having the construction manager at all the user group meetings is very helpful because when changes are discussed later, because of budget or unforeseen conditions, the construction manager understands the design decisions and why we made the choices we made. The team is much better informed. I need to give AHN credit for putting the project together that way. They saw this way of delivering the project as beneficial to them and they were absolutely right." BG

PROJECT TEAM

Massaro Corporation	Construction Manager
Allegheny Health Network	Owner
Oxford Development Company	Owner's Representative
IKM Inc.	Architect
Firsching, Marstillar, Rusbarsky & Wolf Engineering	Mechanical/Electrical Engineer
The Gateway Engineers, Inc.	Structural/Civil/Site Engineer
Noralco Corporation	Demolition/Excavation
Amelie Construction & Supply, LLC	Foundations/Shoring
Marsa, Inc.	Masonry
Steel Supply and Engineering	Structural Steel
T.D. Patrinos Painting & Contracting Company	Interior Contractor
Lisanti Painting Company	Painting
D-M Products Inc.	Glass & Glazing
A.C. Dellovade Inc.	Wall Panels
Phoenix Roofing, Inc.	Roofing
Modany-Falcone, Inc.	Concrete
McKamish, Inc.	HVAC/Plumbing
Wellington Power Corporation	Electrical
Preferred Fire Protection	Fire Protection
Otis Elevator Co.	Elevators
Dan Taylor Interiors Inc.	Flooring
Massaro Industries, Inc.	Ceramic Tile
H.B. Reynolds Inc.	Aluminum Curtain Wall
Giffin Interior & Fixture, Inc.	Casework/Millwork

FIRM PROFILE

RAM ACOUSTICAL CORPORATION

Over the next four years, Daryl Pitzer, executive vice president of RAM Acoustical Corporation, will transition into ownership of the Beaver Falls-based interior contractor. That transition will mark the retirement of Rich Ostrom, who founded the company in 1975.

Ostrom acknowledges that the transition is occurring during a challenging time to be in the construction industry. He and Pitzer expect that the performance of RAM Acoustical will meet the challenge, as it has many times before, because of the people that the company relies upon.

"The ride isn't over! You just have to work through it. Very few people working have been on as long of a ride me," Ostrom laughs. "I think consistency has helped us get through the valleys. Everyone here knows how to do their job."

"It's like Bill Belichick says, put the right people in the right position," Pitzer agrees. "We work with our superintendents to decide who is the right superintendent and the right foreman for each project. You put the right people in the right positions."

RAM Acoustical Corp. was a successor company to Ostrom Plastering Company, which was the business Ostrom launched in 1962 with help from his father. Rich Ostrom worked at Sherwood Ostrom Plaster Contracting from his early teens. His father's business was a residential plastering specialty contracting company. Although the industry is in his blood, Rich Ostrom veered from it initially, earning a degree from Allegheny Tech in electronic engineering while working as an apprentice plasterer. After working as a camera operator for WQED, he accepted a position in the construction department at Boeing in Seattle, WA. After a year, Ostrom and his wife moved their young family back to Western PA and he became a journeyman plasterer.

As a journeyman, Ostrom became skilled at spraying plaster and envisioned using the new technology to grow his father's business and take it in new directions. Sherwood Ostrom did not share his son's vision.

"My father was happy doing what he was doing so he told me that I should go do what I wanted to. I went to work for Siciliano Brothers," Ostrom says. "My dad ended up being offered a permanent position as a maintenance director for the Beaver County Housing Authority. He decided he would give me $2,000 and 30 planks and I started Ostrom Plastering."

"I got beat up pretty badly early on. We had some major problems with finances," he continues. "I met Jim Biddle, from Mader Construction, at a national convention. We hit it off and he knew I was struggling. When Jim took over Mader [in 1975] he came down to see how I was running the business. We went to my attorney and drew up papers for a new business. Rochester Acoustical was one of their subsidiaries, so we set up Rochester Acoustical Mader or RAM."

During the late 1970s and early 1980s, the drag from multiple severe recessions kept RAM's growth slow but several bits of good fortune provided the impetus for long-term improvement. The first was the successful outcome of a lawsuit Ostrom Plastering filed to recover a sizable payment due for a project in Youngstown. That result gave RAM some breathing room. In 1982 RAM landed a large housing project in Franklin that Ostrom says went very well. And, as the recession was ending the following year, RAM was awarded a contract for the new Cranberry Mall.

"From that point on, we never lost money in any year again," he says.

Around the time the Cranberry Mall project was wrapping up, in 1985, Daryl Pitzer joined the company as a part-time laborer. He primarily drove trucks and worked in the yard with Sherwood Ostrom, who had retired form the Housing Authority. Pitzer went to Geneva College and, after his four years, returned to RAM. Rich Ostrom recognized Pitzer's ambition and talent, giving him more responsibility in estimating and project management. Over the next decade, Pitzer gained the experience Ostrom was hoping he would and emerged as a leader.

"I studied electrical and industrial engineering at Geneva so that helped me," Pitzer says. "The industrial engineering included accounting and time studies, so that was very helpful. Mainly, though, I just learned from the school of hard knocks."

During the 1990s and 2000s, RAM built its resume of major public and private projects, growing its crew of workers and office staff. The building boom of the mid-2000s brought RAM's employment to its peak at 260 people.

"Our growth really took off when we did the casino in Erie. The owner from Wheeling bird dogged us to do the job," Ostrom recalls. "That was our first million-dollar check. It was a seven- or eight-million-dollar project."

"Daryl has been that way all along and it is one of the big reasons we are successful. He looks at everything before the job is estimated and knows the job completely before a bid goes out of here," Ostrom says.

Today RAM has between 160 and 170 workers on the payroll in the field. The office staff includes eight people. During the strong construction market of the late 2010s, RAM dealt with a problem that was unique in Rich Ostrom's career.

"We lost 17 key people to general contractors when they started self-performing their drywall work," Ostrom says. "That included superintendents. We had to really focus on building our bench, but it turned out to be a good thing. We have a lot of apprentices. We are become a much younger company."

The transition of leadership is the final step of what Ostrom has been planning for five years. He spent three months away from the business in 2015 when his wife experienced a serious illness during a vacation in Las Vegas. Ostrom says that while he was able to perform all his normal responsibilities with the help of technology, the time away changed his working relationship with the business.

"I lost touch with my company," Ostrom recalls. "We had good people and they took care of the business. If they needed me they could call me, but I wasn't talking to them constantly as I normally did. When I came back, I knew it wasn't the same and that's when I started thinking it was time to sell."

RAM entertained offers and got very close to an agreement with an out-of-town contractor, but the deal fell apart at the end. At that point Pitzer stepped forward.

Pitzer laughs when asked when he started thinking about owning the company.

"I think it was probably as early as 1995," he says. "It was pretty much since I started working here."

"I knew he had that potential the day he came to work in the yard with my dad. It was pretty obvious," Ostrom says.

It's not a surprise that Pitzer's philosophy is not very different from Ostrom's. As an owner Ostrom takes a long view about the business. Pitzer came up through the business and his estimates reflected as complete an understanding of how the project was to be built as possible. That approach permeates the RAM team.

"I would call it thoroughness. We evaluate projects for what they are," Pitzer explains. "We're very open in our office. We consult our superintendents and foremen on production during the estimate. If we are estimating a big project, we bring our supervisors in and ask how they feel we will build the project. It gets a lot more thorough during the negotiations. I guess we try to micromanage it. There are a lot of times when I look at a project and can tell we will not be low because of how we look at the project.

"Daryl has been that way all along and it is one of the big reasons we are successful. He looks at everything before the job is estimated and knows the job completely before a bid goes out of here," Ostrom says. "We know that we can do almost any project but we're still careful about the work we do. I've kept the profits in the business. It's a simpler business to run when there's cash available. We've built relationships with a group of general contractors who trust us and we trust them. That's been another key to our success."

"It's been a great career even though there have been a lot of struggles. We have done over 4,000 projects. That's pretty crazy," Ostrom continues. "Daryl knows what he has to do. He knows he can come to me, but he doesn't need to come to me very often. Now he has two sons in the business so he will do well." BG

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Rich Ostrom

Daryl Pitzer

IMPACTS OF COVID-19 ON EXISTING AND FUTURE PROJECTS

BY MARC J. FELEZZOLA, ESQ.

The COVID-19 pandemic has resulted in a "new normal" that was likely not accounted for in pricing and scheduling for projects awarded prior to the pandemic ("existing projects"). As owners and contractors move forward with new projects in a post-pandemic world, there is incredible uncertainty to what extent COVID-19-related requirements will impact future projects ("Future Projects"). This article addresses some of the major risks that owners and contractors face on both existing projects and future projects.

Existing Projects

A. Impacts

The forced COVID-19 shutdown and subsequent resumption of existing projects will likely result in costs to contractors for demobilization and remobilization, downtime/standby, possible material and labor escalation costs, and extended general conditions ("primary impacts"). These primary impacts typically arise with every suspension or delay to a project and are not unique to COVID-19 forced stoppages. Whether and to what extent these costs are recoverable by contractors depends on the terms of the applicable contract, and in particular its force majeure language. However, because a force majeure event is by definition an event not caused by the owner or contractor, the parties typically bear their own costs associated with the delay caused by the force majeure event. The contractor cannot recover its delay/suspension costs but does get a schedule extension; and the owner cannot recover any costs it incurs as a result of the delay. If nothing else, the contractor will almost certainly be entitled to a change order extending the project schedule for at least the length of the forced shutdown.

Beyond the primary impacts are the costs and schedule impacts associated with resuming work under drastically different circumstances. These impacts range from new social distancing requirements and correlating prohibitions (e.g., limiting use of an elevator at the job site to one worker at a time; prohibitions on sharing equipment) and potential manpower caps (e.g., limits on workers allowed in enclosed portions of a job site in counties that remain in the red or yellow phase; government imposed limits on gathering sizes) to added direct job costs for handwashing stations, thermal scanners, and additional sanitization and personal protection equipment ("secondary impacts"). The aggregate result of these secondary impacts will be a reduction in efficiency, a forced change to contractors' as-planned means and methods, and an increase in contractors' direct job costs, all of which will result in a contractor seeking a change order for additional costs, additional time, or both.

On top of the primary and secondary impacts are indirect jobsite impacts in the form of material and equipment supply chain disruptions due to factory and manufacturing facility shutdowns or slowdowns, potential workforce shortages due to pandemic-related illness or concerns, and corresponding increases in materials, equipment, and labor prices (collectively, "tertiary impacts"). Some of these tertiary impacts will not be fully realized immediately, and each will further magnify the schedule impacts and additional costs discussed above.

At the same time, the post-pandemic world will look very different for owners. Certain projects previously fast-tracked as guaranteed revenue generators may lose their luster (e.g., movie theaters, certain restaurant projects, and some energy-related projects) prompting owners to voluntarily suspend the project even though construction may resume, or even terminating the project for convenience. For other projects, owners will want to consider whether to pay for acceleration measures to recover the time lost to the forced shutdown, or at least maintain the as-planned durations for construction work and limit any delay in completion to the time of the forced shutdown (i.e., pay for acceleration efforts necessary to offset schedule impacts of secondary and tertiary impacts). Social distancing requirements, potential manpower caps, and uncertainties surrounding available workforce members may hinder acceleration efforts; at the very least, it will likely make them more difficult and expensive than they would have been pre-pandemic.

Moreover, there remains significant potential for the forced shutdown of a particular project due to a potential or confirmed COVID-19 case at the jobsite. Similarly, the potential for another industry-wide shutdown looms with the threatened resurgence of the coronavirus in the fall. On the other hand, as the number of new COVID-19 cases continue to drop and restrictions are eased, contractors may begin to return to more and more pre-pandemic efficiencies and practices. Needless to say, the path forward remains uncertain.

B. Steps Owners and Contractors Can Take to Mitigate Impacts and Future Risks

What steps can owners and contractors take to address the above impacts and mitigate against future risks for existing projects?

Project owners, contractors, and all major subcontractors should meet to discuss the "new normal" of the post-pandemic landscape and reset project expectations. During this meeting, the parties should establish new safety protocols and procedures that comply with all relevant OSHA, CDC, state, and local governmental mandates. The Construction Industry Safety Coalition published a model COVID-19 Exposure Prevention, Preparedness, and Response Plan for Construction (available here: http://www.buildingsafely.org/wp-content/uploads/2020/04/

CISC-COVID-19-Exposure-Prevention-Preparedness-and-Response-Plan-Version-2-4838-8641-5802-3.docx) that may serve as a good starting point. The parties should also establish a new, workable construction schedule in light of the currently known circumstances and impacts. The parties could also consider what, if any, equitable price adjustment(s) they agree upon to address the secondary and tertiary impacts to contractors along with any owner-desired acceleration efforts the owner wants. As part of the equitable adjustment discussion, contractors and subcontractors should be prepared to discuss any mitigation efforts (and associated costs) available to overcome disruptions to supply chains, including alternative sourcing for key equipment to alleviate or overcome any delivery delays due to pandemic-related factory closures. Finally, the parties should consider establishing a contingency to account for potential future shutdowns and a plan for how to share savings, if any, realized by continued loosening of pandemic-related limitations.

Although collaboration and agreement on equitable adjustments will likely result in a more harmonious project, we anticipate some owners (and contractors with respect to their subcontractors) will cite no damage for delay language and force majeure language in their contracts to refuse price adjustments as a result of schedule impacts resulting from the pandemic. Contractors and subcontractors will respond by pointing to differing site conditions language, change in law clauses (to the extent their contracts have them), or other contract provisions entitling them to equitable price adjustments. In the event the parties do not agree about whether an equitable adjustment in price is warranted (or cannot agree on the amount of adjustment), contractors and subcontractors should strictly comply with any claims notice provisions in their contracts and keep track of all additional expenses, including expenses due to loss of efficiency or changes to as-planned means and methods, using a force account.

The outcome of disputes over the propriety and amount of equitable price adjustments will ultimately turn on a number of factors, including the relevant contract language. However, owners and contractors should expect judges, juries, and arbitrators to be sympathetic that contractors' and subcontractors' pricing did not contemplate and account for COVID-19 impacts and it may be unfair to saddle them with those costs when they are incurred for the benefit of constructing the owner's project. Thus, owners should expect courts, juries, and arbitrators to look for ways to provide at least some price relief to contractors and subcontractors even in situations where the owners have the most stringent contract language in their favor.

Future Projects

Parties to contracts for future projects will no longer be able to claim that they could not expect or foresee pandemic-related impacts. Beyond that, the impact of COVID-19 on future projects remains uncertain. Will new cases of COVID-19 continue to drop? Is a vaccine or therapeutic treatment on the horizon that would enable an even more accelerated return to the status quo? Will loosening of restrictions and cooler temperatures result in a "second wave" of infections?

Because of these uncertainties, in addition to agreeing upon safety protocols and procedures for addressing COVID-19 risks and potential exposure at the jobsite, parties negotiating construction contracts should include a pandemic contingency specifically earmarked for addressing and covering unanticipated costs due to pandemic-related causes. The parties can negotiate language to address how and when the contingency monies are to be distributed; how to distribute any unspent contingency monies (i.e., "savings"); and whether, and to what extent, the owner is obligated for pandemic-related costs over and above the contingency amount. This can also be considered a learning experience to highlight that "force majeure" clauses should be considered carefully and drafted to reflect the true intent of the parties. BG

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MAXIMIZING FORGIVENESS – CONSIDERATIONS FOR A PAYCHECK PROTECTION PROGRAM LOAN

BY BRIAN MATTHEWS

As of June 12, over 4.5 million small businesses have applied for and received a portion of the $659 billion financial relief package that was established on March 27 when President Trump signed into law the Coronavirus Aid, Relief and Economic Security Act (CARES Act). More than 434,000 construction industry-related businesses account for 12.43% of the disbursed funds.

The CARES Act provides, among other things, funding to the Small Business Administration (SBA) to modify existing loan programs and establishes a new program to assist small businesses adversely impacted by the COVID-19 pandemic. The Paycheck Protection Program (PPP) gives the SBA authority to extend 100% federally guaranteed loans to assist small businesses in keeping workers employed during the pandemic.

Approved loans carry with them the opportunity to be partially or fully forgiven under Section 1106 of the CARES Act, which makes them attractive to small businesses that had continued to operate even though many were experiencing hardship as a direct result of restrictions imposed by federal, state and local public health agencies in efforts to minimize the public's exposure to the virus.

For small businesses, especially, maximizing forgiveness is critical, so on June 5, President Trump signed the Paycheck Protection Program Flexibility Act (Flexibility Act), which made many borrower-friendly changes to the PPP, some of which impact the borrower's ability and likelihood of full forgiveness.

Borrowers looking to maximize forgiveness should consider:

Understanding Certifications

Borrowers were required to make a number of certifications with their PPP loan application process, including:

- The uncertainty of economic conditions makes the loan necessary
- The borrower will use the loan proceeds to retain workers and maintain payroll or make mortgage, lease and utility payments
- The borrower does not have a duplicative application for a loan for the purpose and amounts applied for under PPP
- The borrower has not received a duplicative loan under the PPP since February 15, 2020

Construction companies that received loans greater than $2 million should be aware that they will be subjected to a review of the loan application. If the SBA determines during the course of its review that a borrower lacked an adequate basis for the certification regarding the need for the loan, the agency will seek repayment of the outstanding PPP loan balance and will inform the lender that the borrower is not eligible for loan forgiveness. If the borrower repays the loan after receiving notification, however, the SBA will not pursue administrative enforcement. Those borrowers (including their affiliates) with total loans of less than $2 million will be deemed to have made the required certification of necessity in good faith.

The SBA has since cautioned that, "Borrowers must make this certification (i.e., the need for the loan) in good faith, taking into account their current business activity and their ability to access other sources of liquidity sufficient to support their ongoing operations in a manner that is not significantly detrimental to the business." Unfortunately, the agency has not defined what "significantly detrimental to the business" means with regard to the ability to access other sources of liquidity. Therefore, each company should consider access to other sources of liquidity, such as working capital (cash) and debt facilities (line of credit).

To address the construction industry's "current business activity," consider analyses and comparisons of what would have happened "but for" COVID-19 and "but for" the PPP. To do so, look at the following scenarios:

- Budget with COVID-19, but without a PPP loan
- Budget with COVID-19 and PPP
- Budget of expectations without COVID-19
- Prior year/same period results
- Impact on bonding and credit ratings for reduced borrowing availability
- Impact on current projects and future projects
- Impact on bids, awards and project announcements

Flexibility Act Changes

The Flexibility Act made several significant changes to the PPP. One of the most significant changes will assist construction companies that were shut down as they get back to work - an extension of the covered loan period from 8 to 24 weeks. It also gives borrowers that have received a PPP loan prior to June 5 the option to elect an 8-week covered period, which could be beneficial to those that were not shut down during the pandemic.

The minimum maturity of the remaining loan portion has been extended to five (5) years from the earlier established term of two (2) years for those loans that are approved after June 5. For loans approved prior to the passing of the Flexibility Act, borrowers and lenders may make modifications to their loan agreements to extend the term to

5 years. Additionally, the deferral period of loan payments has been revised to be the earlier of the date on which the amount of loan forgiveness is determined and remitted to the lender [from the SBA] or ten (10) months following the end of the borrower's covered period.

Eligible Cost Limitations

A borrower is eligible for a potential maximum loan forgiveness equal to the amount they spent on payroll and non-payroll costs during the covered period, starting on the date of loan origination. In maximizing the forgiveness, companies will need to know about limitations and allocated costs, as well as what is eligible and what is not.

The first limitation to consider is that non-payroll costs are restricted to 40% of the company's forgivable amount, as amended by the Flexibility Act. That means if a company received a loan for $100,000 and spent $50,000 on eligible payroll costs, the forgivable amount of the loan is limited to $83,333 (i.e., $50,000/60%).

Payroll and Non-payroll Eligible Costs

Payroll costs for owner-employees are treated differently and more closely align with provisions applicable to self-employed/independent contractor businesses. That is, payroll costs are limited to proportional proportion of 2019 cash compensation and health insurance and retirement benefits made on their behalf, subject to the $100,000 annualized threshold. The limitation is to be considered across all businesses according to the forgiveness application.

General partners are capped by the amount of their 2019 net earnings from self-employment, which is required to be reduced by the sum of claimed Section 179 expense deductions, unreimbursed partnership expenses and depletion from oil and gas properties, multiplied by 0.9235.

The rules are clear that bonuses and hazard pay are eligible forgivable payroll costs.

Eligible payroll costs include:

- Cash compensation (limited to an annualized amount of $100,000 during the covered period)
  - » Salary, wages or other compensation
  - » Vacation, parental, family, medical or sick leave
  - » Dismissal or separation
- Noncash compensation
  - » Employer portion paid for the continuation of group health care
  - » Employer paid retirement benefits
  - » Employer state and local taxes assessed on employee compensation

Non-payroll costs include:

- Interest payments on any business mortgage obligation for real or personal property incurred prior to February 15, 2020
- Payments of business rent for real or personal property under a lease in force before February 15, 2020
- Business utility payments for the distribution of electricity, gas, water, transportation, telephone or internet access for which service began before February 15, 2020

Borrowers are eligible for loan forgiveness for non-payroll costs that were (1) paid during the covered period, or (2) incurred during the covered period and paid on or before the next regular billing date, even if the billing date is outside the covered period. For example, if the Company's loan origination date was June 1, 2020, and was also the start of their covered period, the covered period would end on July 26, 2020. Utilities are typically due and paid by the 10th day of the following month. Eligible forgivable utility costs would include payments of May, June and the costs incurred during the period from July 1 through July 26 that were paid in August, even though they were paid after the covered period ended.

Borrowers are not eligible for forgiveness on advance payments of mortgage interest.

Construction companies should take note that rent payments for non-payroll costs include personal property, such as equipment, that are under leases in force before February 15, 2020 for business purposes.

Forgiveness Reductions

Maximizing a company's forgiveness involves not only knowing the reduction of forgiveness rules presented above, but also the safe harbor rules that are available to borrowers.

Forgiveness calculations not only consider what construction companies pay during their covered period, but also note that borrowers that use loan proceeds for allowable purposes may have their forgiveness reduced if their fulltime equivalent (FTE) employee numbers are not the same as they were during a base period as defined by the CARES Act. That is, if the borrower's FTEs during the base period in 2019 (or 2020, if elected) is greater than the number of FTEs during the covered period, then the forgiveness will be reduced by that percentage. Additionally, borrowers that have reduced employee wages and salaries may also have a reduction of the loan forgiveness if that reduction was greater than 25% of non-highly compensated employees. The reduction is related only to employees who did not receive, during any single pay period during 2019, wages or salary at an annualized rate of pay in an amount more than $100,000.

Companies are exempt from the reduction in loan forgiveness based on the number of FTE employees if both of the following conditions are met: (1) the borrower reduced its FTE employee levels in the period beginning February 15, 2020, and ending April 26, 2020; and (2) the borrower then restored its FTE employee levels by no later than June 30, 2020 to its FTE employee levels in the pay period that included February 15, 2020.

A safe harbor exists for companies that restore reduced wages and FTE counts to levels prior to the COVID-19 pandemic as of December 31, 2020, amended by the Flexibility Act.

Borrowers should note to reduce any potential reduction inloan forgiveness for any employee to whom they made a good faith, written offer to rehire during the covered period or the alternative covered period that was rejected by the employee, or any employees who, during the covered period or alternative covered period, were terminated for cause, voluntarily resigned or voluntarily requested and received a reduction of their hours.

Another safe harbor added with the Flexibility Act includes rehire exemptions related to whether a borrower is unable to rehire individuals who were employed as of February 15, 2020 of similar qualifications to those employed as of February 15, 2020, or unable to return to the same level of business activity due to compliance with requirements established by various governmental entities related to the maintenance of standards for sanitation, social distancing, or any other worker or customer safety requirement related to COVID–19.

Documentation Requirement

Borrowers must collect and maintain documentation to support qualifying expenses which may be just as important to knowing the rules for a company to maximize their forgiveness. Some examples that the SBA has identified include:

- Bank account statements or third-party payroll service provider reports
- Tax forms (or equivalent third-party payroll service provider reports) for the periods that overlap with covered period that have been reported or will be:
  - » Payroll tax filings to the IRS (typically, Form 941); and
  - » State quarterly business and individual employee wage reporting and unemployment insurance tax filings to the relevant state
- Payment receipts, cancelled checks, or account statements documenting the amount of any employer contributions to employee health insurance and retirement plans that the Borrower paid.
- Copy of lender amortization schedules
- Receipts or cancelled checks verifying eligible payments
- Lender account statements from February 2020, the months of the Covered Period and one month after the end of the Covered Period verifying interest amounts and eligible payments
- Copy of current lease agreement and receipts or cancelled checks verifying eligible payments from the Covered Period
- Lessor account statements from February 2020, from the Covered Period through one month after the end of the Covered Period verifying eligible payments
- Copy of invoices from February 2020 and those paid during the Covered Period and receipts, cancelled checks, or account statements verifying those eligible payments

Utilize Your Resources

As your company concludes its loan period, engage in discussions with your bank and your business advisors including accountants and attorneys who can help you through these difficult times. They are going to be helpful resources throughout the forgiveness process, during the loan period and after this pandemic.

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YOUR LONG-TERM SUCCESS POST COVID-19 HINGES ON DOING THESE THREE THINGS

BY DAVID SULLIVAN, CPA

Over the course of just a few short months, the spread of COVID-19 has affected virtually every aspect of our lives, both personally and professionally. Not only are we all having to adapt to remote work on an individual basis, businesses also face the enormous challenge of figuring out how to advance their strategic objectives in this new reality. Everything from business development and client delivery methods, to training, staff development, and building a strong culture has to be reexamined and reconfigured for the current environment.

And while every business will have to deal with the challenges of re-opening their offices, if you're an engineering or design firm, there are some particular steps you need to take to help ensure your long-term success. Understanding exactly how the global pandemic will affect your business's bottom line, responding quickly, and taking the appropriate steps to mitigate any potential risks will be key.

Although the current environment is unlike anything we've seen before, there are certainly parallels with the global financial crisis of 2008 in terms of best practices for weathering the storm. Businesses that planned, made decisions quickly and executed well on their business strategy fared better coming out of the Great Recession. Below, I've outlined three of the most important things you should be doing right now to help put your firm in the strongest position possible in this environment.

Focus on Financial Forecasting

During any major disruption, whether it's a market downturn or the current global pandemic, it's always important to revisit your financial forecasts and recalibrate them to reflect your latest assumptions. That's true even if your firm hasn't yet been directly impacted by the current crisis, since there's always the possibility that it will be affected further downstream.

For example, if you do a lot of work for state agencies in Pennsylvania or local municipalities, it might all be business as usual right now. But bear in mind that things could change once new budgets come out that reflect the effects of COVID-19. If your firm's focus is on higher education facilities, the pandemic could delay decisions to build new dormitories and academic buildings in the months and years ahead. There are countless examples like these that most engineering and design firms either already are, or eventually will be, exposed to, putting them at considerable financial risk.

The best way to mitigate that risk is to look at your forecasts and adjust your approach accordingly. You'll want to focus on what the current crisis's impact has already been, or may soon be, on your future revenue potential so that you have a clear picture of what your cash flow will look like for the balance of 2020 and beyond. Based on that assessment, you may need to make some tough decisions about how you're spending money.

You may find, for example, that you need to reduce your staffing levels, or temporarily cut back on payroll or benefits. Likewise, although you have probably seen your expenses drop considerably in recent months due to a halt in travel and entertainment, as well as an overall slowdown in marketing and business development activities, now is the time to reevaluate your spending. We've just lived through 12 years of economic growth and, if you're like most firms, you will have added to your overhead costs significantly during that time.

Take a close look at your expense structure and identify where you can trim any fat that has accumulated. Perhaps that means reevaluating the technology you use, your office space needs, or any number of other overhead costs. Finding ways to work leaner and more efficiently will help ensure your ability to weather the downturn.

Ultimately, you need to determine what an acceptable outcome is for your business. If you were targeting a profit margin of between 11 and 15 percent prior to the pandemic (which is the average for midsized engineering and design firms), how will you ensure that you stay at or exceed that level going forward? In the short term, you may need to make some tough choices so that you remain at a healthy level of profitability. Beyond simply controlling costs, you'll also want to revisit your key performance indicators and come up with a plan for how you'll attain them going forward if you've slipped. The key with all of this work is to have a realistic view of where you're at so that you can take the actions necessary to keep your business healthy and strong.

Given the urgency of the current situation, let me make one thing clear: Now is not the time to be learning how to create a financial forecast. Rather, you'll want to partner with an expert who knows your industry, can guide you through the process, and help you focus your attention on the right areas.

Understand the Implications of Government Stimulus

Throughout the crisis, the U.S. government has taken unprecedented action to help sure up the economy, including providing considerable relief for small and medium-sized businesses. One of the most notable steps was establishing the Paycheck Protection Program (PPP), a loan through the U.S. Small Business Administration (SBA) that's designed to provide a direct incentive for small businesses to keep their workers on the payroll. Other incentives have included making changes to the tax law, such as deferring the payroll tax, introducing retention credits, making changes in how net operating losses can be utilized, and changing how certain fixed asset investments can be written off.

While steps like these have provided a lifeline to hundreds of thousands of businesses across the country affected by the pandemic, they can create challenges as well. There are a lot of new laws and information to understand and there will certainly be more coming. If you've accepted a PPP loan, for example, getting that loan forgiven is critical if you don't want it to become a liability on your balance sheet. Meanwhile, navigating all of the changes to the tax laws will make tax planning this year far more difficult than in the past.

It's important to ensure you achieve the best financial outcome for your business by understanding these new programs. In many cases, that will mean making sure you are working with a financial and tax advisor who understands what new legislation stands to benefit you the most, and how best to take advantage of it.

Plan for the Long Term

Leadership, incentive compensation programs, and succession planning have long been challenges for engineering and design firms, and they promise to only become more important going forward. Figuring out how to transition your organization to a new generation of leaders is critical for its long-term success. All the more so given that some of your senior staff who are Baby Boomers may be exiting your firm in the coming years, leaving you with a gap in potential leadership.

If you don't already have a succession plan, it's time to put one in place. You'll need to have honest and upfront discussions with any leaders who will be exiting and those who are looking to move up in the firm over the next one to five years. It's important to create detailed plans that cover both the financial impacts of anyone's exit from the firm as well as how their responsibilities will be transitioned to others. And, even if you already have a plan in place, now is a good time to reevaluate whether it still makes sense in this new environment.

A few years back, I had the pleasure of helping Pittsburgh-based Gateway Engineers implement a succession plan that brought a third generation of ownership to the firm. As part of the process, we developed a generational model which addressed leadership, ownership, and related financial planning considerations that helped provide a future vision and a clear path for their key stakeholders. Gateway's CEO Jason Jesso had this to say about the experience; "The plan we put in the place in 2015 is one of the reasons why we've been able to make our way through the current pandemic so successfully. It has helped us bring up our next generation of leaders, while giving everyone a clear view of our long-term vision, both of which are critical in times like these."

Navigate the Road Ahead with Confidence

While taking the right steps to weather the current environment may seem daunting, the good news is that you don't have to go it alone. Make sure you have the right advisor to partner with and to give you the expert advice you need to navigate your way through these uncertain times. Challenging times like these call for a dynamic approach to leadership and a high level of flexibility. Every engineering and design firm is going to need to pay attention to the information that they have in front of them, make sense of it all, and be able to respond quickly. Wait to do so, and you'll be at a real disadvantage. BG

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MULTI-TRADE PREFABRICATION MAKES A FIRST AT AHN WEXFORD

At the intersection of technology and frustration, innovation can often be found. Contractors, searching to go beyond the frustrations of design-bid-build have been increasingly using the capabilities of building information modeling (BIM) to prefabricate more components of a construction project. At the Allegheny Health Network's new Wexford hospital, three specialty contractors combined these capabilities to perform what is believed to be the first integrated multi-trade prefabrication in Western PA.

The contractors, W. G. Tomko Inc., Lighthouse Electric, and Easley and Rivers Inc. collaborated to produce fully-constructed corridor racks, which were installed intact at the new hospital site. Fabricated at Tomko's Finleyville shop, the racks included all of the above-ceiling mechanical and electrical distribution and equipment, fully fireproofed and finished with drywall.

The multi-trade collaboration was a response to the desires of the construction manager, a Massaro/Gilbane joint venture, to use as much prefabrication as possible on the project. Gilbane's project executive, Ray Rigsby, had gained experience with specialty contractor prefabrication managing projects in Cleveland. The willingness to entertain design-assist subcontracts made the opportunity very desirable to the specialty contractors, especially those that were already moving in that direction.

"At Wexford we were always going to prefabricate because that's the way the market's moving. It's the way we have to adapt to the labor situation," says Jesse Mikec, director of safety at Lighthouse Electric. "The difference in the story in Wexford is that it was a Massaro-Gilbane-Tomko-Lighthouse approach. We put all our problems together and solved them together. Companies have been doing this out west for a long time. That's finally changing in Pittsburgh. It works so much better than plan-and-spec hard bid."

"Gilbane had just finished a bed tower at the Cleveland Clinic and Ray Rigsby had wanted to do multiple trade racks here. That was the driving force in the interview before we even had the job," says Dan White, president of W. G Tomko, Inc. "They wanted to check that we had the capabilities to do a 3-D model and facilitate a multi-trade rack. It was originally to be done in a warehouse on Neville Island. I think we came to the front of the pack because we had the ability to host the fabrication here. It made more sense for Tomko to do it at our shop, especially when one of the other trade partners that was chosen, Lighthouse Electric, is just three miles down the road."

Specialty contractors have been expanding the application of prefabrication of building systems for more than a decade, as computer-aided design and manufacturing technology allowed for piping, sheet metal, and electrical assemblies to be built in a controlled shop environment and assembled in

Fully fabricated rack sections were lifted onto the hospital floor for installation through temporary "docks" in the building's exterior walls. Photo by W. G. Tomko Inc.

Site conditions varied dramatically between the floors that had the prefabricated racks and the lower levels that were constructed conventionally. Photo by W. G. Tomko Inc.

the field. BIM enhances prefabrication, allowing more trades to fabricate assemblies and sections of finished systems with precision, confident that there will be little or no retrofitting required in the field. What was being proposed at AHN Wexford, however, was a step beyond what was commonly being done. Massaro/Gilbane was asking for racks that were completed, including all the ductwork, piping, electrical, HVAC equipment, steel, fireproofing, and drywall, which could be lifted into place with no need for anything more than connections to the lateral distribution.

The last member of the team to the table was Easley and Rivers (E&R). The drywall contractor was initially uncertain about the benefit to their scope of work, since the racks are primarily built to carry the mechanical and electrical systems. Neal Rivers, vice president at E&R, said the discussions during the preconstruction process convinced them that the multi-trade prefabrication effort was worthwhile.

"When you're a drywall contractor, working in a corridor can really get messy. You can have problems regardless of what you estimated, or your experience or historical data," Rivers says. "From one hospital to the next the work above the ceiling is very different and very difficult to manage, so to eliminate those unknowns was a great benefit to us. We were able to control our risk in an aspect of a project that is usually the riskiest."

While BIM was accurate enough to drive the accurate prefabrication of the racks, the specialty contractors conducted an exhaustive and expensive planning process prior to the beginning of fabrication.

"We did pull planning like [the prefabrication] was a project itself. You have to go to a manufacturing mindset because you have to allow each trade to get in to the rack to perform their work efficiently," explains White. "There were a lot of meetings and coordination just to make the process work. We took the worst-case scenario and built a full-blown mockup to see what the weight and sizes would be. We had all the trades come in and just picked it apart to see what it would take to build. We welded steel lifting points to the rack so that we could lift it and see what the worst-case scenario for that would be. We tried to duplicate all of the conditions that would be in the field."

The individual specialties cooperated with the design team on the building model. After the planning and fabricating issues were resolved, a fully constructed rack mockup was shown to 15 managers and executives representing Allegheny Health Network and the design team.

"We had done some projects [with prefabrication] but not to that extent. We have done some with piping pre-manufactured but nothing with a full corridor," notes Tom Bartlett, senior vice president at consulting engineer WSP. "Having all the trades working together in a factory was pretty innovative. Frankly, I would never have expected them to have all the corridors done prior to the studs going up on the floors where they utilized that concept. That put us way ahead on those floors."

The installation plan involved lifting the completed racks through a temporary dock in the exterior of the building once the concrete floors were poured. The 20-foot sections of rack were lined up on the floor and then lifted into place and hung from the structural steel above by using pre-threaded connections that matched the racks to the all-threaded rod above. Once the installation was underway the schedule was ambitious, enough so that the construction management team hedged its bets.

"There was some concern in advance that this might not work as well as planned. We knew the Tomko-Lighthouse-Easley and Rivers team would do everything in their power to make it work but it hadn't been tried in the field yet," admits Ryan Cole, project manager for Massaro Corp. "We made the decision to prefabricate on the third and fourth levels, and to stick build the first and second levels."

That decision looked like a good one on the first night of the lift. An excess of caution on the lift, coupled with some oversights at the site, prevented the installation of more than one rack. That was an outcome no one was hoping for.

"On the initial day, we had some anxious moments because they only got one rack installed. We didn't have enough days in the schedule for that pace," Cole jokes. "We sat down and had a 'lessons learned' session about how we were installing them to find out what worked and what didn't. The next day they installed three racks and quickly got to where they were doing seven racks per night."

"We put so much effort into the manufacturing process that I thought the field was taking the same considerations," recalls White. "The first night we were making sure everything was perfect. It was like a finely tuned ballet. We brought the rack in through the exterior, had it in position, and my foreman announced that he had to go retrieve the all thread while we waited. My head nearly exploded. We had the all thread attached from that point on."

Productivity in the field ramped up rather quickly after that. White says that the estimate for the installation was four racks per night. With an emphasis on beating the estimate, the Tomko/Lighthouse/E&R team worked out logistics to get six racks installed per nightly shift. After the third night, production shifted comfortably to eights racks per shift, with a one-night best of ten racks.

The enhanced productivity in the field magnified one of the principal benefits of the prefabrication delivery model. All the specialty contractors involved saw their labor usage decline at least 30 percent. Moreover, the labor that was utilized in the shop instead of the field experienced the consistent comfortable conditions of a manufacturing setting, rather than the inconsistent weather conditions of a field setting. Lifting prefabricated racks above an empty floor also provided an unexpected benefit: improved safety conditions.

"From a base level safety standpoint, you have a major corridor section completed and lifted in the air in a matter of days, as opposed to stopping for material and having people in the corridors," notes Cole. "It was a huge benefit from a safety standpoint. That might not be the first thing people think about when you talk about prefab."

"In a conventional corridor construction situation there is waste everywhere. People have tools and material stored all over. You're fighting for corridor space and the trades are right on top of each other. It's every man for himself," says Mikec.

"If our electricians do their job and they spend one-third of their time elevated on a ladder, they are obviously at risk. If we can take the electrician off that ladder and reduce the time at risk to one-tenth of the day, then we reduce the risk of an accident. There are a lot of injuries from work being done above the electrician shoulders. On the Wexford job the work was done on tables on the ground. Heck, the electricians were standing on a mat, so their feet didn't even hurt!"

Of course, the biggest benefit of the multi-trade prefabrication was in the time saved in the field. By lifting the racks at night onto an open floor, the work of building out the rest of the floor could continue seamlessly from one day to the next.

Racks were prefabricated individually in the shop to include all of the mechanical and electrical distribution, then fireproofed and sheathed in drywall. Photo by W. G. Tomko Inc.

Fabrication of the corridor racks processed through 13 work stations in Tomko's shop. Photo by W. G. Tomko Inc.

"We had a very small crew chopping out of a mile's worth of corridor as opposed to who knows how many people would have been required on site, depending upon the progress and flow of the project," notes Rivers.

"From the owner's perspective the prefabrication helped Gilbane-Massaro maintain the schedule. It had a lot to do with keeping them on the critical path," says Jesse Campayno, project director for the owner's representative Oxford Development Co. "The ease of the installation avoided a lot of repetitive work that was done in the shop instead of in the field. It was an overall addition to the project that ensured that the contractors were maintaining the project schedule."

"It was cool to watch people, all with different hardhats, get together and lift a big chunk of corridor in unison," agrees Mikec. "Every 40 to 50 minutes they were getting 20 feet of corridor fully installed and fireproofed.

Dan White puts the labor utilization and output into perspective. He estimates that Tomko alone would have used a crew of 30 workers to stick build the racks in six weeks. By prefabricating the racks with trade partners in its shop, Tomko used a crew of eight workers and completed the fabrication and shipping in one 48-hour week.

The participants are clear that none of the success in the shop or field would have been possible without the planning effort, including the use of design-assist trades that were brought into the process while design was being completed.

"You can only have a project like this if it is design-assist and has the amount of front-end planning Wexford had," says Rivers. "We spent essentially a year prior to the start of pouring concrete developing this and getting it all worked out. For an interior contractor it is so rare that we have that amount of time on the front end."

"The team approach was big for us," says Mikec. "We had a lot of design input, which was what the customer wanted. We were able to pull together a lot of the innovation we wanted. At the end of the day I don't know that it amounted to a lot of dollars but it saved the customer a lot of time and the job site ran smoother."

"I can't tell you how many hours went into planning this, even Googling countless videos of rack installations to see how others had done it," laughs White. "No one had done it with drywall attached. It was something that had not been done here in Western Pennsylvania, but I will tell you that there's nothing I would do differently. There's nothing that we had to do over in the field. The mistakes were made during the planning, fabricating, and assembling the mockup."

Campayno started his career as a plumber and spent 30 years working for mechanical contractors in the region. He had a critics' eye for the work that was done on the corridor systems.

"I'm getting to an age where not too much impresses me anymore," he jokes. "What Tomko, Lighthouse, and Easley and Rivers did was impressive." BG

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EMBRACING CLEAN DESIGN: HOW THOUGHTFUL DESIGN CHOICES CAN SLOW THE SPREAD OF DISEASE

BY KENDALL CURTIS AND MARLEY OSWALT, NCIDQ

As the design world responds in real time to the coronavirus pandemic, a surge of "clean" design recommendations is suddenly available. These suggestions describe everything from how to integrate antimicrobial materials to how to improve air quality, implement sensor technologies, and approach space planning in the workplace to incorporate social distancing measures. While some of these are short-term strategies, many hint at a larger movement toward "clean design"—a series of design choices rooted in the need to protect public health long-term.

Just as environmentalism inspired comprehensive building standards—such as LEED and WELL—the recent design trends inspired by disease prevention will soon coalesce into a more established series of guidelines and best practices. These standards will place new responsibility on building ownership to make their buildings feel safe to tenants who have become more aware of how their surroundings can impact their health.

As we begin to envision the increased sensitivity of office design in the wake of COVID-19, there is also a more cautionary lesson to learn from the environmental movement. Many have noted that the growing public awareness of sustainability and "green" design also gave rise to "greenwashing"—the use of vague environmental shortcuts in the interest of marketing a product or building as environmentally friendly.[1] If designers, manufacturers, and building owners fail to make conscientious choices in the wake of COVID-19, the move towards "clean" environments could provoke a new era of "cleanwashing."

While the responsibility for preventing direct person-to-person disease transmission falls largely on the individual, building owners and landlords will be expected to become more cognizant of potentially hazardous elements within a space such as poor ventilation, densely crowded areas,

The "office" is a solution designed by Falk Built. Image courtesy Falk Built.

and high-touch surfaces. Although the CDC currently states that surface transmission is not a primary means of contracting COVID-19,[2] the research is ever-evolving; a person may still be able to contract the disease by touching their face after touching an infected surface. According to a recent study, a cluster of COVID-19 cases originating in a shopping mall in Wenzhou, China, may have been connected through contact with a contaminated object.[3]

Developing intensive cleaning practices, encouraging social distancing, and designing with hygiene in mind will not only mitigate the spread of disease but also convey to tenants that the building's owner is committed to ensuring their safety. Conversely, a building that does not appear to be following recommendations for cleanliness and social distancing stands to make people feel unsafe and drive away business. Working with architects and designers to implement a set of "clean" design practices will create a building that offers a feeling of safety to occupants while providing effective long-term preventative measures.

Below are some ways to ensure you take adequate measures in working with your architect to ensure your building tenants thrive.

Steps to Avoid "Cleanwashing"

The following examples show how building and business owners can go beyond minor upgrades to address the major components of creating clean spaces.

Encourage Tenant Accountability by Increasing Accessibility

Consider the tenants' journey from the building's door to their desk. What surfaces will they touch? How many crowded spaces will they pass through? Envisioning every surface and space a person encounters in their daily routine will help to inform the most essential placements for things like hand sanitizer, signage, and spatial cues. For good measure, consider placing sanitizer at all entrances, exits, and gathering spaces throughout the building. Be sure to maintain a backstock of supplies and research the integrity of your brands; the EPA offers a comprehensive list of products that meet their criteria for use against COVID-19.[4]

To the best of your ability, create an accessible and barrier-free journey through the building. Where possible, designate entrances and exits as one-way to avoid crowding. In places where queues form, use floor markings or decals to indicate the recommended six feet of separation. Integrate signage to help enforce restricted elevator or waiting area capacity. Providing tenants with clear guidelines and accessible preventative measures encourages them to do their part in curbing the spread of disease while reminding them that you're invested in their wellbeing.

Design the Details with Cleaning in Mind

Though a building design may include an abundance of surfaces that are made to be easily cleaned or wiped down, many still have moldings on the walls or deep reveals within millwork that would create ledges or nooks where dust, dirt, and bacteria can collect. Conduct an assessment of hard-to-clean spots and add them to the deep-cleaning protocol. Planning new spaces doesn't mean sacrificing your design aesthetic; keep your millwork simple and avoid unnecessary vertical or horizontal surfaces in detailing your new office.

Developing intensive cleaning practices, encouraging social distancing, and designing with hygiene in mind will not only mitigate the spread of disease but also convey to tenants that the building's owner is committed to ensuring their safety. Conversely, a building that does not appear to be following recommendations for cleanliness and social distancing stands to make people feel unsafe and drive away business.

Integrate Touchless Technologies

Best practices suggest upgrading a building's bathrooms to include sensor-operated appliances, but this must go beyond adding automatic paper towel dispensers to make a meaningful difference in how easily disease spreads. Be sure to carry this through to all bathroom appliances, such as soap dispensers and faucets, to create a truly touchless hand-washing experience. In bathroom design planning, consider a doorless layout, like those used in airports and other transportation hubs. Where doors are already in place, install foot pulls and replace stainless steel push plates and door knobs with copper or brass alternatives, which have inherent antimicrobial properties.[5]

Select Easy-to-Clean Building Materials

A facility might strive to become healthier by upgrading the frequency of its cleaning protocol, but choosing the right building materials also contributes to creating a clean atmosphere. Recent design trends toward the use of reclaimed wood and rusted metal decor, for instance, don't project an image of cleanliness. Instead, design a space to have minimal porous surfaces in high traffic locations. Using mosaic tile may be elegant, but the many grout joints collect germs and are more difficult to clean. If carpet is unavoidable, consider replacing with carpet tiles, which are more easily replaced. As noted above, materials like copper and brass are less hospitable to the coronavirus compared to stainless steel and plastic. The materials in high-touch areas should also be able to withstand frequent cleaning. Tenants might begin by cleaning their spaces more aggressively, but replacing old materials with antimicrobial or easy-to-clean alternatives will make a big overall impact on the cleanliness of the space.

Stay Informed and Collaborative

While many building owners are doing their best to adapt in real-time to the challenges posed by the current pandemic, it's important to acknowledge that this global experience will have irreversible effects on our collective perception of public space. The widespread investment in clean design is not a trend or a quick-fix; it is the beginning of a movement that will outlast the current strain of coronavirus. As "clean" becomes an easy sales point, make honest, good design decisions with integrity. Be transparent with your tenants about the changes you have made and intend to make, and keep an open line of communication with designers about the best short- and long-term options for creating a safer, healthier space for tenants. BG

[1] Greenwashing

[2] How COVID-19 Spreads

[3] Indirect Virus Transmission in Cluster of COVID-19 Cases, Wenzhou, China, 2020

[4] List N: Disinfectants for Use Against SARS-CoV-2

[5] Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1

Kendall Curtis and Marley Oswalt are interior designers at AE7 in Pittsburgh. They can be reached at Kendall.Curtis@ae7.com or Marley.Oswalt@ae7.com.

AWARDS & CONTRACTS

AIMS Construction was awarded a $1.7 million contract for the Allegheny Health Network Lower Burrell Outpatient Clinic renovation. The architect is DRS Architects.

UPMC awarded **AIMS Construction** a contract for a single proton emitted computed tomography (SPECT) CT at UPMC Children's Hospital. DRS Architects is the architect.

AIMS Construction was awarded a $1.9 million contract for the UPMC St. Margaret's Hospital Roof and New Air Handler construction. The architect is MacLachlan Cornelius & Filoni Architects.

AIMS Construction was also awarded a contract for the construction of a radiography/fluoroscopy room at UPMC St. Margaret's Hospital. Cannon Design is the architect.

UPMC selected **AIMS Construction** as contractor for its UPMC Presbyterian First Impressions renovations. The architect is IKM Inc.

Baldwin-Whitehall School District awarded a general contract to **DiMarco Construction** for the J. E. Harrison Middle School Temporary Classroom Renovations. The architect is HHSDR Architects & Engineers.

Caliber Contracting Services was the successful contractor on ALCOSAN's Building Façade Renovations. The project was designed by Whitman Requardt & Associates.

Rycon Construction was the successful general contractor on Community College of Allegheny County's new $23 million Workforce Development and Training Center on the North Side. Desmone Architects designed the 60,000 square foot new facility.

Spear Street Capital and Trammel Crow selected **Rycon Construction** as construction manager for the $25 million redevelopment of the former Sears Outlet at 27 51st Street in Lawrenceville. The project involves converting the building into 265,000 square feet of office space. The architect is Perkins Eastman Architects.

PJ Dick Inc. started construction on the 310,000 square foot, 10-story Innovation Research Tower, being developed by Walnut Capital Partners at Fifth Avenue and Halket Street in Oakland. A portion of the ground level will be dedicated to retail space and there will also be below-grade parking. The architect is Strada Architecture LLC.

Mt. Aloysius College selected **PJ Dick Inc.** as construction manager for a $15 million complete renovation of its Ihmsen Hall in Cresson, PA. The architect is Weber Murphy Fox, Inc.

Shannon Construction is under construction on a $800,000 tenant build-out for Matthews Marking Systems at Cranberry Business Parks in Cranberry Township. NEXT architecture LLC is the architect.

Shannon Construction was awarded a contract for the build-out of 8,000 square feet for Clifton Larson Allen in the Union Trust Building. NEXT architecture LLC is the architect.

Landau Building Company has begun refresh work on the Emergency Department and 10 beds at Fairmont Hospital in Fairmont, WV for WVU Medicine. Work includes carpentry, floor covering, painting, plumbing, and mechanical as needed to get the hospital operational.

Landau Building Company has been contracted by RIDC for electrical repairs and restoration work on Building S at Keystone Commons, located in Braddock, PA. The 4-story, 180,000 square foot structure sustained water damage on several floors.

Mascaro was awarded the general construction portion of the $100 million ALCOSAN - North End Plant Expansion project as part of the odor control and plant expansion at the wastewater treatment facility.

Rocky Bleier Construction Group started construction on the $700,000 West Penn Hospital Grossing Lab renovation/relocation for Allegheny Health Network. The architect is JPT Architect PC. H.F. Lenz Co. is the consulting engineer.

In Pittsburgh's SouthSide Works, **Rycon** was responsible for the demolition of two former office tenants, Soffer and Catalyst, and construction of a white box for a future tenant. Strada was the architect for this 10,500 square foot project.

Within The Stacks at 3 Crossings, **Rycon's** Building Group provided construction management services for the $7.8 million fit-out for a medical research and development company. Jones Lang LaSalle was the Owner's rep and Perkins Eastman was the architect for the 45,000 square foot project.

Oxford Development Company is the owner, WTW Architects is the architect, and **Rycon's** Building Group is the construction manager for the new $25 million flex office space called 75 Hopper Place in the Strip District's 3 Crossings development. The six-story, 193,000 square foot building is designed to achieve LEED Silver Certification.

Rycon's Special Projects Group was awarded a $2.2 million, 3,000 square foot Chase Bank project in Bridgeville, PA. Work kicked off early June 2020 and will continue until October 2020. Within the last year, Rycon was chosen to complete new construction and renovation work on ten other Chase Bank projects in Florida, Ohio, and Pennsylvania.

In Philadelphia, PA, **Rycon** was selected to fit-out floors 39 and 49 of Three Logan Square for Brandywine Realty Trust. The six-week project will wrap up mid-August 2020.

Rycon is providing professional services such as preconstruction, an on-site superintendent, and local market experience, to support an interior build-out for the Environmental Protection Agency's Headquarters in Philadelphia. PA.

In Cleveland, OH, **Rycon** continues to complete renovations totaling over $19.2 million throughout PNC Center. Currently underway are modifications to the revolving doors and elevator doors as well as phase two of upgrading the buildings automated system.

Rycon was chosen to construct a new $1.3 million Tire Kingdom in Ft. Walton Beach, FL. The 6,200 square foot project is slated for completion December 2020. In the past three years, **Rycon's** built six other Tire Kingdoms throughout Florida totaling over $9.3 million.

In Canton, GA, **Rycon** was selected to build a new $1.2 million Credit Union of Georgia which will include a two-lane ATM drive-through with canopy. The 3,000 square foot project is expected to wrap up November 2020.

Repeat client Fresenius Medical Care awarded **Rycon** two projects in Florida; a dialysis center fit-out in Ruskin and a shell renovation in Tallahassee. Renovations to two surgery centers totaling over $4.3 million for Fresenius Medical Care are in progress in Arlington, VA and Raleigh, NC.

A. Martini & Company was awarded a contract by J. P. Morgan Chase for its new 3,000 square foot Chase Bank Fox Chapel branch in O'Hara Township. The architect is Feinknopf Macioce Shappa Architects.

Yarborough Development & Construction was the successful general contractor on the South Fayette Middle School Classroom Alterations in South Fayette Township. The architect is Hayes Design Group.

St. Vincent College awarded contracts to **Volpatt Construction** for multiple renovations to its Aurelius Hall and Wimmer Hall residence halls in Latrobe, PA.

Carl Walker Construction will start construction mid-July on the new 376-car parking garage at the $75 million Vision on Fifteenth development in the Strip District. The architect is AE7 Architects.

Blackhawk School District awarded a $1,093,000 general contract to **Caliber Contracting Services** for the secure entrance alterations to Blackhawk Senior High School in Chippewa Township, Beaver County. Eckles Architecture & Engineering is the architect for the $1.875 million renovation.

TEDCO Construction is renovating offices for Federated Hermes on the 18th floor of Federated Tower. TEDCO is also doing renovations for Steptoe & Johnson PLLC at Southpointe, the church of Jesus Christ of Latter Day Saints, and for the University of Pittsburgh at the Cathedral of Learning.

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WNA Engineering, Inc.
Zilka and Associates, Inc. Architects
Zurich NA Construction

FACES & NEW PLACES

Tim Fryer, LEED Green Associate, joined the Operations Department at **Burchick Construction Company** as project manager on May 4. Fryer has worked in the construction industry in the Pittsburgh area for the last 20 years. He is a graduate of Purdue University with a degree in building construction management.

Burchick Construction Company announced that **Jordan Crosby** joined the company as director of business relations. Crosby will be supporting Burchick in business development and procurement activities. Her previous experience includes strategic communications and capacity-building in the fields of engineering and public policy, as well as educational leadership in architecture and the fine arts. Crosby earned a Bachelor of Arts degree from Hamilton College and Master of Arts from The University of California-Davis.

Ann Christie, project engineer, joined **Mascaro** on June 9. She will be based out of Rock Hill, South Carolina, working on the Carolina Panthers Rock Hill Development project. Ann graduated from Clemson University with a Bachelor of Science in civil engineering, with an emphasis on construction management.

On June 8, **Haley Turkovich** started part-time for the summer at **Mascaro** after serving three rotations in the co-op program. Haley will graduate from the University of Pittsburgh, Swanson School of Engineering in December. She is assigned to the UPMC Vision and Rehabilitation Hospital at Mercy.

Matt Faust joined **Mascaro** on June 1. He is a recent graduate of Kent State University with a Bachelor of Science in construction management, and a concentration in mechanical, electrical, and plumbing. Matt completed two internships with Mascaro during the summers of 2017 and 2018.

Jay Johnson joined **Mascaro** as a superintendent at the UPMC Vision and Rehabilitation Hospital at Mercy project. Jay has over 30 years of experience in the construction industry working on multimillion-dollar commercial projects for government and private-sector clients.

John George joined **Mascaro** as health safety environmental manager at the UPMC Vision and Rehabilitation Hospital at Mercy project. John recently received his bachelor's degree from Slippery Rock University with a double major in safety management and leadership.

Jeremy Kishlock has joined **PJ Dick** as a project superintendent working on the Mt. Aloysius College Ihmsen Hall project. He brings 18 years of experience to the companies and has previously worked for Clayco and Continental Building Systems as a project superintendent.

New to **Rycon's** accounting department, with over 20 years of relevant experience, is **Melissa Holtz** as staff accountant.

Rycon's Atlanta office added **Brian Mulligan** as director of business development. He is a graduate of Marquette University with over 30 years industry experience.

Jason Brown joined **Rycon's** Atlanta office as a project manager. He brings over 25 years of experience to the team.

CLOSING OUT

BY CYNTHIA HUNDORFEAN

The novel coronavirus (COVID-19) pandemic has been an extraordinary challenge for everyone – all professions, families, and walks of life.

For those of us who work in health care, the last few months have also been a learning experience.

At Allegheny Health Network, we've learned we can achieve more by working together. For example, our ongoing collaborations with other regional health providers, manufacturing companies, as well as our own parent company, Highmark Health, have strengthened our region's collective response to the pandemic.

We've learned that the larger Western Pennsylvania business community can benefit from our enterprise's guidance related to the reopening of offices and resumption of daily operations, which is why we are creating tools to help businesses and their employees safely adapt to the realities ahead.

And we've also learned a great deal about our patients and their preferences. Because of COVID-19, we changed the way we see many of our patients, asking them to avoid waiting rooms and in-person visits in favor of phone consultations, video visits, and other forms of telemedicine. Our patients have heeded that advice and, in turn, have embraced the ease of virtual care.

Before COVID-19, AHN carried out a few dozen virtual visits per day. Now, we provide several thousand per day. Why spend time in a car, more time in a waiting room, and still more time during the ride back home when so many routine appointments can be completed in 10 or 15 minutes online?

While AHN had been executing a strategic pivot to virtual medicine prior to the arrival of COVID-19, the formidable challenges created by the pandemic have accelerated our organizational transformation, and validated the rationale of our long-term strategy. There will always be a need for in-person contact between patient and physician, but virtual care is no longer the future of medicine – it's here, and it's here to stay. People appreciate convenient, on-demand health care, and there's nothing more convenient than being seen by a physician from the comfort of your own home.

This transformation won't be unique to AHN. The entire health care industry will look different post-coronavirus, with an increased reliance on telemedicine. One might naturally wonder how this industry-wide transition will affect the future of health care infrastructure and construction – especially right here in Pittsburgh, where AHN is still in the midst of a significant expansion.

As readers of this publication may know, AHN's multi-year, multi-billion dollar capital investment included the construction of five new regional cancer centers, a new Academic Cancer Center at Allegheny General Hospital, three new "neighborhood" hospitals, two significantly expanded emergency departments, and a new multi-specialty Health + Wellness Pavilion in Erie. Still under construction are a neighborhood hospital in Harmar Township, Allegheny County, and a new, 160-bed full-service hospital in the Wexford area.

I can't speak for all health care organizations, but for AHN, the expansion of telemedicine capabilities and the construction of new community hospitals, cancer centers, and emergency departments are two prongs of the same strategy – to create more close-to-home, high-quality health care options for the patients and families of Western Pennsylvania.

While we envision an increasing share of our primary, secondary, and urgent care consultations occurring virtually, our patients will still need convenient access to emergency care, surgical centers, cancer care, obstetrical services, and other vital health care resources. We also need to maintain a comprehensive and geographically diverse clinical presence for those patients who don't prefer online communications, or for those populations that may not have reliable internet access.

As the last few months have shown, the future can be hard to predict. But we can prepare for it. By investing in virtual portals as well as new facilities, by applying human-centered design principles to our new health care spaces, and by connecting those access points through a robust electronic medical records system, AHN is creating a care network that will be readily accessible to patients and communities when they need it most – no matter what uncertainties the future may hold.

Cindy Hundorfean is president and CEO of the Allegheny Health Network.